Taranaki Ventures Limited
Wairere Exploration Wellsite
Monitoring Programme Report

Technical Report 2013–90

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Executive summary

Taranaki Ventures Limited established a hydrocarbon exploration site located on Cornwall Road, within the Eltham district, in the Waiau catchment. The site is called Wairere wellsite. This report covers the period from 9 January 2013 – 5 May 2013. During this period, a wellsite was established, and a wellsite drilled and tested. The wellsite is now in production.

This report for Taranaki Ventures Limited describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess Taranaki Ventures Limited's environmental performance in relation to drilling operations at the Wairere wellsite during the period under review, and the results and environmental effects of Taranaki Ventures Limited's activities.

Taranaki Ventures Limited holds a total of 6 resource consents for the activities at the Wairere wellsite, which include a total of 73 consent conditions setting out the requirements that Taranaki Ventures Limited must satisfy. Taranaki Ventures Limited holds consent **9426-1** to take groundwater; consent **9427-1** to take surface water; consent **9424-1** to discharge emissions to air associated with exploration activities; consent **9428-1** to discharge stormwater and sediment from earthworks during construction onto and into land; consent **9425-1** to discharge emissions to air associated with production activities; and consent **9423-1** to discharge treated stormwater associated with exploration activities to land**.**

The Council's monitoring programme for the period under review included 5 inspections of the site and surrounding environment, at approximately fortnightly intervals. In total 3 stormwater samples were collected for analysis.

The monitoring showed that, in general, good processes and procedures were implemented. A strong focus on the environment by all personnel ensured that the site was mostly clean and tidy.

Any spills on-site were quickly cleaned up to avoid the potential for a contaminant to travel to surface water. The site's stormwater system worked effectively.

Owing to the distance of the wellsite to the nearest stream being approximately 30m, the stream was visually inspected by an Inspecting Officer on each occasion. Chemical analysis or a bio-monitoring survey were un-necessary as no evidence of effects on the stream environment were observed by the Inspecting Officer.

Staff on-site were cooperative with requests made by officers of the Council, with any required works being completed quickly and to a satisfactory standard.

During the monitoring period, Taranaki Ventures Limited demonstrated a high level of environmental performance and compliance with the resource consents. The site was generally neat, tidy, and well maintained.

This report includes recommendations for future drilling operations at this and other sites.

Production testing at the site is on going to evaluate the productivity of the hydrocarbon bearing formations targeted in this drilling programme.

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1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period 09 January 2013 – 05 May 2013 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Taranaki Ventures Limited. During the period under review, the company established a wellsite, drilled, and tested.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by Taranaki Ventures Limited that relate to exploration activities at Wairere wellsite located off Cornwall Road in the Eltham District.

One of the intents of the Resource Management Act 1991 (the Act) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of Taranaki Ventures Limited's use of water, land, and air, and is the first report by the Council for the site.

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 Act and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consent held by Taranaki Ventures Limited in the Waiau catchment, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted at the Wairere wellsite during exploration activities.

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 during future drilling operations.

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

(a) The neighbourhood or the wider community around a discharger, and may include cultural and socio-economic effects;
(b) Physical effects on the locality, including landscape, amenity and visual effects;
(c) Ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
(d) Natural and physical resources having special significance (e.g. recreational, cultural, or aesthetic); and
(e) Risks to the neighbourhood or environment.

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

1.1.4 Evaluation of environmental and consent performance

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

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

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

- **improvement required (environmental)** or **improvement required (compliance)** (as appropriate) indicates that the Council may have been obliged to record a verified unauthorised incident involving measurable environmental impacts, and/or, there were measurable environmental effects arising from activities and intervention by Council staff was required and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at 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 (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.

1.2 Process description

Site management
Taranaki Ventures Limited holds a 5 year Petroleum Mining Permit No. 51150 to prospect, explore, and mine for condensate, gas, LPG, oil and petroleum within an area of 377.030 Km^2. The Wairere wellsite is one of many sites within this area that have been established in order to explore, evaluate and produce hydrocarbons.

The Wairere wellsite is located approximately 300 m along Cornwall Road, approximately 2 km from Eltham.

The Wairere wellsite was established in 2012 and involved the removal of topsoil to create a firm level platform on which to erect a drilling rig and house associated equipment. Site establishment also involved the installation of:

- Wastewater control, treatment and disposal facilities;
- A system to collect and control stormwater and contaminants;
- A flare pit; and
- Other on-site facilities such as accommodation, parking and storage.

The nearest residence is approximately 200m away from the wellsite. Bunding, earthworks and good site location helped minimise any potential for off-site effects for the neighbours.

Well creation
The process of drilling a well can take a few weeks to several months, depending on the depth of the well, the geology of the area, and whether the well is vertical or horizontal.

Drilling fluids, more commonly known as 'drilling muds', are required in the drilling process for a number of reasons, including:

- As a safety measure to ensure that any pressurized liquids encountered in the rock formation are contained;
- To transport drill cuttings to the surface;
- To cool and lubricate the drilling bit;
- To provide information to the drillers about what is happening down hole and the actual geology being drilled; and
- To maintain well pressure and lubricate the borehole wall to control cave-ins and wash-outs.

The well is drilled progressively using different sized drill bits. The width of the well is widest at the surface as smaller drill bits are used as the well gets deeper. Once each section of the well is drilled, a steel casing is installed. Cement is then pumped down the well to fill the annulus (the space between the steel casing and the surrounding country rock). This process is repeated until the target depth is reached, with each section of steel casing interlocked with the next.

Production tubing is then fitted within the steel casing to the target depth. A packer is fitted between the production tubing and casing to stop oil/gas/produced water from entering the annulus. The packer is pressure tested to ensure it is sealed.

The construction aspects that are most important for a leak-free well include the correct composition and quality of the cement used, the installation method, and the setting time. The aim is to ensure that the cement binds tightly to the steel casing and the rock, and leaves no cavities through which liquids and gases could travel.

Once the well is sealed and tested the casing is perforated at the target depth, allowing fluids and gas to flow freely between the formation and the well.

Management of stormwater, wastewater and solid drilling waste
The Wairere wellsite is located approximately 30m to the west of the nearest waterbody which is an unnamed tributary of the Waiau catchment.

Management systems were put in place to avoid any adverse effects on the surrounding environment from exploration and production activities on the wellsite. There are several sources of potential contamination from water and solid waste material which require appropriate management. These include:

- Stormwater from 'clean' areas of the site [e.g. parking areas] which run off during rainfall. There is potential that this runoff will pick up small amounts of hydrocarbons and silt due to the nature of the activities on-site;

- Stormwater which collects in the area surrounding the drilling platform and ancillary drilling equipment. This stormwater has a higher likelihood of contact with potential contaminants, particularly drilling mud;
- Produced water which flows from the producing formation and is separated from the gas and water phase at the surface; and
- Drill cuttings, mud and residual fluid which are separated from the liquid waste generated during drilling.

An important requirement of the site establishment is to ensure that the site is contoured so that all stormwater and any runoff from 'clean' areas of the site flow into perimeter drains. The drains direct stormwater into a skimmer pit system on-site consisting of two settling ponds. Any hydrocarbons present in the stormwater float to the surface and can be removed. The ponds also provide an opportunity for suspended sediment to settle. Treated stormwater is then discharged from the wellsite onto and into land, and consequently into an unnamed tributary in the Waiau catchment.

Drilling mud and cuttings brought to the surface during drilling operations are separated out using a shale shaker. The drilling mud and some of the water is then reused for the drilling process. Cuttings were collected in bins located at the base of the shaker and disposed of offsite at a consented facility.

Flaring from exploration activities

It is possible that flaring may occur during the following activities:

- Well testing and clean-up;
- Production testing;
- Emergencies; and
- Maintenance and enhancement activities [well workovers].

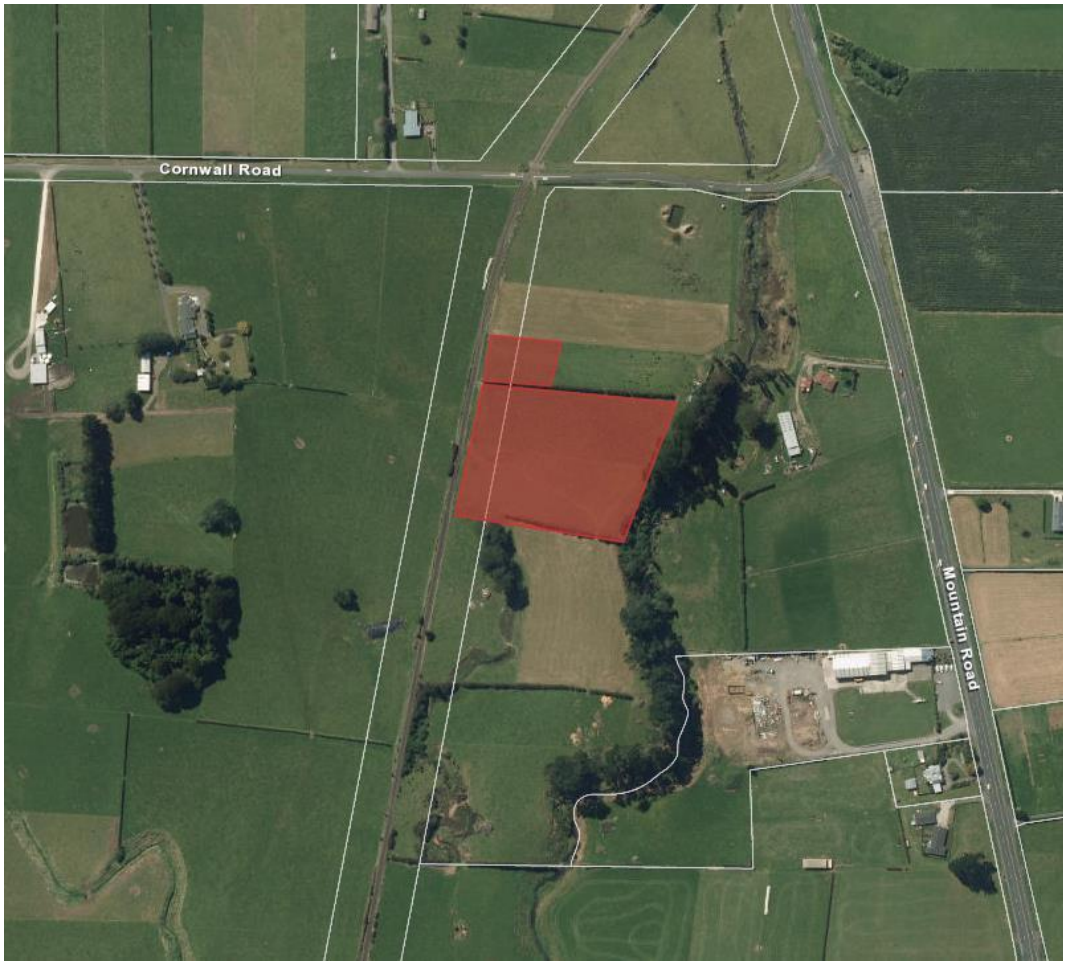

Photo 1 Aerial view showing the location of Wairere wellsite

1.3 Resource consents

1.3.1 Background

Taranaki Ventures Limited holds 6 resource consents related to exploration activities at the Wairere wellsite site, as follows:

- Water Permit **9426-1**; granted 17 January 2013,
- Water Permit **9427-1**; granted 11 February 2013,
- Discharge Permit **9423-1**; granted 17 January 2013,
- Discharge permit **9425-1**; granted 7 February 2013,
- Discharge Permit **9428-1**;granted 18 December 2012 and
- Discharge Permit **9424-1**; granted 7 February 2013

Each of the consent applications were processed on a non-notified basis as Taranaki Ventures Limited obtained the landowner approvals as an affected party, and the Council were satisfied that the environmental effects of the activity would be minor. The consents are discussed in further detail below.

Copies of the consents and the Council reports describing the associated activities are contained within Appendix I of this report.

1.3.2 Water abstraction permit (groundwater)

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

The Council determined that the application to take groundwater fell within Rule 49 of the Regional Freshwater Plan for Taranaki (RFWP) as the rate and daily volume of the groundwater abstraction may have exceeded that of the permitted activity (Rule 48). Rule 49 provides for groundwater abstraction as a controlled activity, subject to two conditions:

- *The abstraction shall cause not more than a 10% lowering of static water-level by interference with any adjacent bore;*
- *The abstraction shall not cause the intrusion of saltwater into any fresh water aquifer.*

Taranaki Ventures Limited holds water permit **9426-1** to take groundwater that may be encountered as produced water during exploration and production operations at the Wairere wellsite.

Any produced water will be from reserves far below that which is used for domestic or farm purposes. In addition, there are no known groundwater abstractions within a radial distance of 1100 m from the proposed wellsite. Shallow groundwater (which does not have any saltwater content) was to be protected by casing within the bore hole. Given these factors, the abstraction would not cause the above effects.

In granting the consent it was considered that the taking of groundwater was unlikely to have any adverse effect on the environment.

The Council was satisfied that the proposed activity would meet all the standards for a controlled activity. It was therefore obliged to grant the consent but imposed conditions in respect of those matters over which it reserved control. Those matters over which the Council reserved its control were:

- Volume and rate of abstraction;
- Daily timing of abstraction;
- Effects on adjacent bores, the aquifer, river levels, wetlands and sea water intrusion;
- Fitting of equipment to regulate flows and to monitor water volumes, levels, flows and pressures;
- Payment of administrative charges;
- Monitoring and report requirements;
- Duration of consent; and
- Review of the conditions of consent and the timing and purpose of the review.

This permit was issued by the Council on 17 January 2013 under Section 87(d) of the Act. It is due to expire on 1 June 2029.

Consent conditions were imposed on Taranaki Ventures Limited to ensure that adverse effects were avoided in the first instance. A summary of conditions can be viewed within Table 2, Section 3.3.

A copy of the permit is attached to this report in Appendix 1.

1.3.3 Surface water take

Section 14 of the Resource Management Act 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.

The taking and use of surface water falls for consideration under Rule 16 of the RFWP as a discretionary activity as the standards of Rule 15 could not be met.

Provided the activity was to be conducted in a sensible manner, and in accordance with the recommended special conditions, then no significant effects were anticipated.

Taranaki Ventures Limited holds water take permit **9427-1** to take water from the Mangawharawhara Stream for wellsite and well drilling activities.

This permit was issued by the Taranaki Regional Council on 11 February 2013 under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2023.

Consent conditions were imposed on Taranaki Ventures Limited to ensure that adverse effects are avoided in the first instance. A summary can be viewed in Table 3, Section 3.3.

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

1.3.4 Water discharge permit (treated stormwater and treated produced water)

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

The Council determined that the application to discharge treated stormwater, treated produced water and surplus drill water fell within Rule 44 of the RFWP, which provides for a discharge as a discretionary activity.

The discharge of stormwater may result in contaminants (e.g. sediment, oil) entering surface water. These contaminants have the potential to smother or detrimentally affect in-stream flora and fauna. On-site management of stormwater, as discussed in 1.2 above, is necessary to avoid/remedy any adverse effects on water quality.

Taranaki Ventures Limited holds water discharge permit **9423-1** to discharge treated stormwater and produced water from hydrocarbon exploration and production operations at the Wairere wellsite onto land.

Consent conditions were imposed on Taranaki Ventures Limited to ensure that adverse effects were avoided in the first instance. A summary of conditions can be viewed in Table **6**, Section 3.3.

This permit was issued by the Council on 17 January 2013 under Section 87(e) of the Act. It is due to expire on 1 June 2029.

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

1.3.5 Water discharge permit (stormwater and sediment – earthworks)

Section 15(1)(a) of the Act 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.

Council considered that the application fell under Rule 27 of the RFWP as a controlled activity (which may be non-notified without written approval), subject to one standard/term/condition to be met:

- *A site erosion and sediment control management plan shall be submitted to the Taranaki Regional Council.*

Taranaki Ventures Limited supplied a site erosion and sediment control management plan in support of the application.

The Council was satisfied that the activity would meet all the standards for a controlled activity. It was therefore obliged to grant the consent but imposed conditions in respect of those matters over which it reserved control. Those matters over which the Council reserved its control were:

- Approval of a site erosion and sediment control management plan and the matters contained therein;
- Setting of conditions relating to adverse effects on water quality and the values of the waterbody;
- Timing of works;
- Any measures necessary to reinstate the land following the completion of the activity;
- Monitoring and information requirements;
- Duration of consent;
- Review of conditions of consent and the timing and purpose of the review; and
- Payment of administrative charges and financial contributions.

Taranaki Ventures Limited holds water discharge permit **9428-1** to discharge stormwater and sediment from earthworks during construction of the Wairere wellsite onto and into land.

This permit was issued by the Council on 18 December 2012 under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2017.

Consent conditions were imposed on Taranaki Ventures Limited to ensure that adverse effects are avoided in the first instance. A summary of conditions can be viewed in Table **7**, Section 3.3.

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

1.3.6 Air discharge permit (exploration activities)

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

The Council determined that the application to discharge emissions to air associated with the exploration activities at the Wairere wellsite fell within Rule 9 of the Regional Air Quality Plan (RAQP).

The standard/term/conditions associated with Rule 9are as follows:

- *Flare or incinerator point is at least 300 metres from any dwelling house;*
- *The discharge to air from the flare must not last longer than 15 days cumulatively, including of testing, clean-up, and completion stages of well development or work-over, per zone to be appraised; and*
- *No material to be flared or incinerated, other than those derived from or entrained in the well steam.*

Provided the activities were conducted in accordance with the applications and in compliance with the recommended special conditions, then no significant effects were anticipated.

Taranaki Ventures Limited holds air discharge permit **9424-1** to discharge emissions to air from hydrocarbon exploration activities including flaring or incineration of petroleum or combustion of returned hydraulic fracturing fluids associated with well development or redevelopment and testing or enhancement of well heads production flows at the Wairere wellsite.

This permit was issued by the Council on 7 February 2013 under Section 87(e) of the Act. It is due to expire on 1 June 2029.

Consent conditions were imposed on Taranaki Ventures Limited to ensure that adverse effects are avoided in the first instance. A summary of conditions can be viewed in Table **5**, Section 3.3.

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

1.3.7 Air discharge permit (production activities)

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

The Council determined that the application to discharge emissions to air associated with the production activities at the Wairere wellsite fell within Rule 11 of the RAQP.

The standard/term/condition of Rule 11 states that the:

- *Flare or incinerator point is a distance equal to or greater than 300 metres from any dwelling house.*

Taranaki Ventures Limited holds air discharge permit **9425-1** to discharge emissions to air associated with production activities at the Wairere wellsite including flaring associated with emergencies and maintenance and minor emissions from other miscellaneous activities.

This permit was issued by the Council on 7 February 2013 under Section 87(e) of the Act. It is due to expire 1 June 2029.

Consent conditions were imposed on Taranaki Ventures Limited to ensure that adverse effects are avoided in the first instance. A summary of conditions can be viewed in Table 4, Section 3.3.

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

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the Act sets out obligation/s upon the Council to: gather information, monitor, and conduct research on the exercise of resource consent and the effects arising, within the Taranaki region and report upon these.

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

The monitoring programme for exploration well sites consists of seven primary components. They are:

- Programme liaison and management;
- Site inspections;
- Chemical sampling;
- Solid wastes monitoring;
- Air quality monitoring;
- Discharges to land (hydraulic fracturing and deep well injection); and
- Ecological surveys.

The monitoring programme for the Wairere wellsite focused primarily on programme liaison and management, site inspections, and discharges to land. However, all seven components are discussed below.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Council in ongoing liaison with resource consent holders over consent conditions and their interpretation and application, 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

Inspection and examination of wellsites is a fundamental and effective means of monitoring and are undertaken to ensure that good environmental practices are adhered to and resource consent special conditions complied with.

The inspections are based on internationally recognised and endorsed wellsite monitoring best-practice checklists developed by the Alberta Energy Resources Conservation Board and the USEPA, adapted for local application.

The inspections also provide an opportunity for monitoring officers to liaise with staff about on-site operations, monitoring and supervision; discuss matters of concern; and resolve any issues in a quick and informal manner.

Inspections pay special attention to the ring drains, mud sumps, treatment by skimmer pits and the final discharge point from the skimmer pit on to land and then any potential receiving waters.

During each inspection the following are checked:

- Weather;
- Flow rate of surface waters in the general vicinity;
- Flow rate of water take;
- Whether pumping of water was occurring;
- General tidiness of site;
- Site layout;
- Ring drains;
- Hazardous substance bunds;
- Treatment by skimmer pits/sedimentation pits;
- Drilling mud;
- Drill cuttings;
- Mud pit capacity and quantity contained in pit;
- Sewage treatment and disposal;
- Cementing waste disposal;
- Surface works;
- Whether flaring was in progress, and if there was a likelihood of flaring, whether the Council had been advised;
- Discharges;
- Surface waters in the vicinity for effects on colour and clarity, aquatic life and odour;
- Site records;
- General observations; and
- Odour (a marker for any hydrocarbon and hazardous chemical contamination).

1.4.4 Chemical sampling

The Council may undertake sampling of discharges from site and from sites upstream and downstream of the discharge point to ensure that resource consent special conditions are complied with.

1.4.5 Solid wastes

The Council monitors any disposal of drill cuttings on-site via mix-bury-cover to ensure compliance with resource consent conditions.

In recent times consent holders have opted to remove drilling waste from the site by contractor and dispose of it at licensed disposal areas (land farming), which are monitored separately.

1.4.6 Air quality monitoring

Air quality monitoring is carried out in association with the well testing and clean-up phase, where flaring can occur.

Assessments are made by Inspecting Officers of the Council during site inspections to ensure that operators undertake all practicable steps to mitigate any effects from flaring gas.

Inspecting Officers check that that plant equipment is working effectively, that there is the provision of liquid and solid separation, and that staff onsite have regard to wind direction and speed at the time of flaring.

The flare pit is also inspected to ensure that solid and liquid hydrocarbons are not combusted within the flare pit.

It is also a requirement that the Council and immediate land owners are notified prior to any gas being flared. This requirement was checked to ensure compliance with the conditions.

1.4.7 Ecological surveys

Ecological surveys in any nearby streams may be carried out pre and post occupation of the well site to assess whether the activities carried out on-site, and associated discharges have had any effect on ecosystems. However, as the Wairere wellsite is still being occupied, and the fact that visual inspections of the receiving water didn't show any effects from the discharges, no ecological surveys have been undertaken during this monitoring period.

2. Results

2.1 Water

2.1.1 Inspections

The Wairere wellsite, adjacent land and streams were inspected **5** times during this monitoring period.

Below is a copy of the comments that were noted on the day of each inspection.

21 January 2013
An inspection of the site found that it was clean and tidy with good bunding/containment in place. The skimmer pits were empty and no stormwater was discharging from the site. Water was being trucked onto the site. The nearby streams were clear with no effects observed at the time of inspection.

11 February 2013
Drilling was taking place on this site. The site was clean and tidy with no signs of any recent spills. The ring drain was inspected and observed to be in a good working order.

15 March 2013
A water sample was collected for analysis from the second skimmer pit to ensure consent conditions would be complied with should a discharge occur**.**

8 April 2013
There was no activity occurring on site and the access gates were locked. The site was clean and tidy. The ring drains were dry. Both skimmer pits were full and it appeared that the second pit had not discharged for some time. No effects were observed as a result of stormwater discharging onto the adjacent paddock. A sample of the stormwater in the second pit was taken to ensure consent conditions would be complied with should a discharge occur.

3 May 2013
There was no activity occurring on site. The valve on the discharge pipe from the skimmer pits was closed and no stormwater was discharging from the site. A water sample was taken from the second skimmer pit for analysis.

2.1.2 Results of abstraction and discharge monitoring

During the period under review, stormwater was not observed discharging. There were 3 skimmer pit stormwater samples collected during the review period for this report and chemical analysis of the stormwater was carried out. All of the stormwater samples were collected from the second skimmer pit at the Wairere wellsite.

Analysis of the samples collected showed that all of the discharges would have been in compliance with resource consent conditions should a discharge have occurred (see further below).

All sewage was directed for treatment through a septic tank system and removed by contractor to a licensed disposal facility. Inspections of the stormwater discharge found it to be mostly clear. No odours were found to be associated with the discharge.

Table 1 Results of water samples taken from the skimmer pits on three occasions during the monitoring period

Parameters	Consent limit	15 March 2013	8 April 2013	3 May 2013
Chloride (g/m^3)	**50**	7.3	24.1	2.5
pH	**6-9**	**7.2**	8.4	7.2
Suspended Solids (g/m^3)	**100**	19	9	13
Hydrocarbon ($g/m^{3)}$	**15**	<0.5	<0.5	<0.5

2.1.3 Results of receiving environment monitoring

The authorised discharges offsite were onto land from the skimmer pits. It is considered that the discharge was unlikely to reach a surface water body due to the small catchment area of the site.

The receiving surface water body was visually inspected in conjunction with site inspections. No effects were observed and the stream appeared clear with no visual change in colour or clarity. There was also no odour, oil, grease films, scum, foam or suspended solids observed in the stream during the monitoring period.

2.2 Air

2.2.1 Inspections

Air quality monitoring inspections were carried out in conjunction with general compliance monitoring inspections. See Section 2.1.1 above for comments concerning site inspections.

2.2.2 Results of discharge monitoring

Taranaki Ventures Limited hold consents 9424-1 and 9425-1 to discharge emissions to air. Neither of these consents were exercised during the period under review.

2.2.3 Results of receiving environment monitoring

No monitoring of the receiving environment was carried out as inspections found no offensive or objectionable odours, smoke or dust that were associated with activities at the site.

No chemical monitoring of air quality was undertaken during the testing phase of the Wairere wellsite as the controls implemented by Taranaki Ventures Limited did not give rise to any concerns with regard to air quality.

2.2.4 Other ambient monitoring

No other ambient air sampling was undertaken, as the controls implemented by Taranaki Ventures Limited did not give rise to any concerns with regard to air quality.

2.3 Land

2.3.1 Inspections

Land monitoring inspections were carried out in conjunction with general compliance monitoring inspections. See Section 2.1.1 above for comments concerning site inspections.

2.3.2 Land status

The well site was constructed on a flat rural dairy farming area. Relatively minor earthworks were required to construct the site. The land had not been reinstated at the time of the last inspection on 3 May 2013 as the well was still currently producing, and the site is still in use.

2.4 Contingency plan

Taranaki Ventures Limited has provided a general contingency plan, as required by Condition **4** of resourse consent **9423-1** with site specific maps which cover all onshore sites that they operate. The contingency plan has been reviewed and approved by officers of the Council.

2.5 Investigations, interventions and incidents

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The 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.

Incidents may be alleged to be associated with a particular site. If there is 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 period under review, there were no incidents recorded by the Inspecting Officers during inspections.

Any minor actual or potential non-compliance with consent conditions were addressed during site inspections. Taranaki Ventures Limited staff would quickly take steps to ensure that requests made by Council Inspecting Officers were adhered to without delay.

3. Discussion

3.1 Discussion of consent exercise

Of the **6** resource consent relating to the Wairere wellsite, only **4** were exercised during the period under review: Consent **9426-1** (take groundwater), **9427-1** (take surface water), **9423-1** (to discharge treated stormwater and produced water), and **9428-1** (to discharge stormwater and sediment from earthworks during construction)**.**

Consents **9424-1** (air discharge associated with production) and **9424-1** (air discharge associated with exploration) were not exercised during the period under review.

Monitoring has shown that the management on-site ensured that no effects to the environment occurred during the monitoring period.

3.2 Environmental effects of exercise of consents

Stormwater

The discharge of stormwater from earthworks has the potential for sediment and other contaminants to enter surface water where it may detrimentally affect in-stream flora and fauna. To mitigate these effects, Taranaki Ventures Limited established perimeter drains during the construction of the wellsite, and care was taken to ensure runoff from disturbed areas was directed into the drains or directed through adequate silt control structures.

Once the well was constructed, attention was given to controlling stormwater that ran off the wellsite and the associated plant and equipment.

Adverse effects on surface water quality can occur if contaminated water escapes through the stormwater system. Interceptor pits are designed to trap sediment and hydrocarbons through gravity separation. Any water that is unsuitable for release via the interceptor pits was directed to the drilling sumps, or removed for off-site disposal.

Taranaki Ventures Limited also undertook the following mitigation measures in order to minimize off-site adverse effects:

- All stormwater was directed via perimeter drains to the skimmer pits for treatment prior to discharge;
- Additional bunding was constructed around the bulk fuel tank, chemical storage area, and other areas where runoff from areas containing contaminants could occur;
- Regular inspections of the interceptor pits occurred; and
- Maintenance and repairs were carried out if required.

Interceptor pits do not discharge directly to surface water, instead they discharge onto and into land where the discharge usually soaks into the soil before reaching any surface water. However, if high rainfall had resulted in the discharge reaching the surface water, significant dilution would have occurred.

There are numerous on-site procedures included in drilling and health and safety documentation that are aimed at preventing spills on-site, and further procedures that address clean-up to remedy a spill situation before adverse environmental effects have the opportunity to occur (e.g. bunding of chemicals and bulk fuel).

Groundwater

Small amounts of groundwater may have been encountered as produced water during operations at the wellsite. It was anticipated that the abstraction of groundwater would not impact on any groundwater resource and that the groundwater would not be affected as it would be protected by the well casing.

Flaring

The environmental effects from flaring have been evaluated in monitoring reports prepared by the Council in relation to the flaring emissions from specific wells in the region.

The Council has previously undertaken field studies at two wells (one gas, and the other producing oil and heavier condensates); together with dispersion modelling at a third site[1]. More recently two studies have focused on field investigations and modelling of emissions from flares involving fracturing fluids.[2]

In brief, the previous studies found that measurements of carbon monoxide, carbon dioxide, and methane concentrations to be safe at all points downwind, including within 50 m of the flare pit. Measurements of suspended particulate matter found concentrations typical of background levels, and measurements of PM_{10} found compliance with national standards even in close proximity to the flare. Beyond 120 m from the flare pit, concentrations of polyaromatic hydrocarbons (PAH) approached background levels, as did levels of dioxins beyond 250 m from the flare.

In summary, the studies established that under combustion conditions of high volume flaring of gases with some light entrained liquids etc., atmospheric concentrations of all contaminants had reduced by a distance of 250 m downwind to become essentially typical of or less than elsewhere in the Taranaki environment (e.g. urban areas). These levels are well below any concentrations at which there is any basis for concern over potential health effects.

The measures to be undertaken by Taranaki Ventures Limited to avoid or mitigate actual or potential adverse environmental impacts on air quality included:

- The use of a test separator to separate solids and fluids from the gas during all well clean-ups, and workover activities where necessary, thus reducing emissions to air. In particular, this would reduce the potential for heavy smoke incidents associated with elevated PAH and dioxin emissions;
- Records of flaring events were to be kept by Taranaki Ventures Limited and provided to the Council, should they have occurred;

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[1] Taranaki Regional Council, *Fletcher Challenge Energy Taranaki Ltd, Mangahewa 2 Gas Well Air Quality Monitoring Programme Report 1997 – 98*, August 1998.

[2] Taranaki Regional Council: *Atmospheric Dispersion Modelling of Discharges to Air from the Flaring of Fracturing Fluid*, Backshall, March 2013; and *Investigation of air quality arising from flaring of fracturing fluids -emissions and ambient air quality, Technical Report 2012– 03,* Taranaki Regional Council May 2012.

- Every endeavor was to be made by Taranaki Ventures Limited to minimise the total volume of gas flared while ensuring that adequate flow and pressure data would be gathered to inform their investment decision; and
- Every endeavor was to be made by Taranaki Ventures Limited to minimise smoke emissions from the flare.

Odour and dust

Suppression of dust with water was to be implemented if it was apparent that dust may be travelling in such a direction to adversely affect off-site parties. Odour may stem from the product, flare, or some of the chemicals used on-site. Care was taken to minimize the potential for odour emissions (e.g. by keeping containers sealed, and ensuring the flare burnt cleanly).

Hazardous substances

The use and storage of hazardous substances on-site has the potential to contaminate surface water and soils in the event of a spill. In the unlikely event of a serious spill or fire, the storage of flammable materials could have resulted in air, soil and water contamination.

Taranaki Ventures Limited was required to implement the following mitigation measures:

- All potentially hazardous material were to be used and stored in accordance with the relevant Hazardous Substances and New Organisms regulations;
- All areas containing hazardous chemicals were bunded;
- Ignition sources were not permitted on any site;
- Sufficient separation of chemicals from the flare pit were maintained for safety reasons;
- In the unlikely event of a spill escaping from bunded areas, the site perimeter drain and interceptor pit system was implemented to provide secondary containment on-site; and
- A spill contingency plan was prepared that sets out emergency response procedures to be followed in the event of a spill.

Summary

There were no environmental effects observed to water, land or air as a result of the exploration drilling during the monitoring period. There were no unauthorised discharge to water or the air observed from the Wairere wellsite.

3.3 Evaluation of performance

A tabular summary of Taranaki Ventures Limited's compliance record for the period under review is set out in Tables 2 – 7.

Table 2 Summary of performance for Consent 9426-1 to take groundwater that may be encountered during exploration and production operations at Wairere wellsite

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. The abstraction must not cause more than a 10% lowering of static water level by interference with any adjacent bore	Complaints	Yes – no complaints were received
2. The abstraction does not cause the intrusion of salt water into any freshwater aquifer	Water sampling adjacent bores pre/post drilling	Yes
3. A well log to 1,000 m must be submitted to the Council	Well log to 1,000 m submitted	Yes
4. Consent shall lapse if not implemented by date specified	Notification received and confirmed by inspection	N/A
5. Notice of Council to review consent	Not exercised	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**

Table 3 Summary of performance for Consent 9427-1 to take and use water from the Mangawharawhara Stream for hydrocarbon exploration activities at the Wairere wellsite

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Maximum volume of water to be abstracted	Inspection of Company records	Yes
2. Install water meter	Inspection of Company records	Yes
3. Certified water meter	Inspection of Company records	Yes
4. Repair water meter	Inspection of Company records	Yes
5. Water meter must be accessible	Site inspection	Yes
6. Maintain abstraction records	Inspection of Company records	Yes
7. Records kept and submitted every 12 months	Inspection of Company records	Yes
8. No water shall be taken between 1 January and 1 April inclusive	Inspection of Company records	Yes
9. Best practicable option to avoid, remedy or mitigate any adverse effects	Visually inspecting site, procedures & processes	Yes
10. Properly screen the intake structure	Inspecting the intake screen	Yes
11. Consent lapse	N/A	N/A
12. Review, amend, delete or add to conditions of consent	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**

Table 4 Summary of performance for Consent 9425-1to discharge emissions to air associated with production activities at the Wairere wellsite

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. 24hrs notice of flaring to the Council when flaring is longer than 5 minutes in duration	Notification received 24hrs prior to flaring	N/A – consent not exercised
2. 24hrs notice of flaring to the dwelling within 300 m and land owners within 200 m	Notification of flaring received/not received	N/A – consent not exercised
3. Flaring must only occur within the flare pit lined with impermeable material	Inspection of flare pit and flare	N/A – consent not exercised
4. Only substances originating from well stream to be combusted in flare pit	Visual inspection of site	N/A – consent not exercised
5. Liquid and solid separation to occur before flaring to minimise smoke emissions	Inspection of flare pit and flare	N/A – consent not exercised
6. Best practicable option adopted	Visually inspecting site, procedures & processes	N/A – consent not exercised
7. No offensive odour or smoke beyond boundary	Assessment by investigating officer	N/A – consent not exercised
8. All storage tanks to have vapour recovery systems fitted.	Visual inspection of site	N/A – consent not exercised
9. Control of carbon monoxide	Chemical analysis of emissions	N/A – consent not exercised
10. Control of other emissions	Chemical analysis of emissions	N/A – consent not exercised
11. Analysis of typical gas and condensate stream from field to be made available to the Council	Available upon request	N/A – consent not exercised
12. Log all flare events longer than 5 minutes (10 minutes aggregate or longer than 120 minutes) including time, duration, zone and reason for flare	Inspection of Company records	N/A – consent not exercised
13. Consent shall lapse if not implemented by date specified	Notification of flaring received/not received	N/A – consent not exercised
14. Notice of Council to review consent	No provision for review during period	N/A – consent not exercised
Overall assessment of consent compliance and environmental performance in respect of this consent		**N/A – consent not exercised**

Table 5 Summary of performance for Consent 9424-1 to discharge emissions to air from flaring of hydrocarbon exploration activities

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Flaring shall not occur for more than 20 days per zone, for up to four zones per well, for up to 8 wells	Inspection of records	N/A – consent not exercised
2. Flaring must only occur within the flare pit lined with impermeable material	Inspection of flare pit and flare	N/A – consent not exercised
3. 24hrs notice of flaring to the Council for initial flare of each zone	Notification received 24hrs prior to flaring	N/A – consent not exercised
4. 24hrs notice of flaring to the dwelling within 300 m and land owners within 200 m	Notification of flaring received/not received	N/A – consent not exercised
5. Only substances originating from well stream to be combusted in flare pit	Visual inspection of site	N/A – consent not exercised
6. Liquid and solid separation to occur before flaring to minimise smoke emissions	Inspection of flare pit and flare	N/A – consent not exercised
7. No liquid or solid hydrocarbons are to be combusted in the flare pit	Inspection of flare pit and flare	N/A – consent not exercised
8. If liquid or solid hydrocarbons are combusted in the flare pit a report shall be submitted	Flaring report received/not received	N/A – consent not exercised
9. Best practicable option adopted	Visually inspecting site, procedures & processes	N/A – consent not exercised
10. No offensive odour or smoke beyond boundary	Assessment by investigating officer	N/A – consent not exercised
11. Control of carbon monoxide	Inspections confirming chemical analysis not required	N/A – consent not exercised
12. Control of other emissions	Inspections	N/A – consent not exercised
13. Analysis of typical gas stream from field to be made available to the Council	Available upon request	N/A – consent not exercised
14. All storage tanks to have vapour recovery systems fitted.	Visual inspection of site	N/A – consent not exercised
15. Log all flaring including time, duration, zone and volumes flared	Inspection of Company records	N/A – consent not exercised
16. Consent shall lapse if not implemented by date specified	Exercise of consent confirmed by inspection	N/A – consent not exercised
17. Notice of Council to review consent	No provision for review during period	N/A – consent not exercised
Overall assessment of consent compliance and environmental performance in respect of this consent		**N/A – consent not exercised**

Table 6 Summary of performance for Consent 9423-1 to discharge treated stormwater, and produced water from hydrocarbon exploration and production operations at the Wairere wellsite onto and into land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to adopt best practicable option at all times	Visually inspecting site, procedures & processes	Yes
2. Stormwater discharge shall be collected from a catchment area of no more than 1.5 ha.	Notification received	Yes
3. 5 days notice prior to site works and drilling	Notification received	Yes
4. Maintain a contingency plan	Contingency plan received and approved	Yes
5. The stormwater system shall be designed, managed and maintained in accordance with information submitted	By comparing submitted & approved plans with the built site inspection	Yes
6. All discharges to be applied at a rate that dos not allow ponding or run off	Inspection of Company records	Yes
7. All discharges directed for treatment through skimmer pit.	Visual inspection of stormwater system	Yes
8. Stormwater pits to be impermeable	Visual inspection of stormwater system	Yes
9. Stormwater pits capacity of no less than 200m^3	Visual inspection of stormwater system	Yes
10. Constituents in the discharge shall meet standards	Sampling of discharge	Yes
11. 48 hours prior notice of reinstatement	Inspection of Company records	N/A
12. Consent shall lapse if not implemented by date specified	Exercise of consent confirmed by inspection	N/A
13. Notice of Council to review consent	No provision for review during period	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**

Table 7 Summary of performance for Consent 9428-1 to discharge stormwater and sediment from earthworks during construction of the Wairere wellsite onto and into land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Authorises the consent holder to discharge stormwater from no more than 14,000 m^2	Inspection of Company records	Yes
2. Consent holder to adopt best practicable option at all times	Visually inspecting site, procedures & processes	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
3. 7 days written notice prior to site earthworks	Notification received	Yes
4. All runoff shall pass through settlement ponds or traps with a minimum capacity of 100 m^3	Site erosion and sediment control plan submitted	Yes
5. Condition 4 will not apply when site is stabilised	Visual inspection	Yes
6. All earth worked areas shall be stabilised as soon as practicable	Visual inspection	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**

During the monitoring period, Taranaki Ventures Limited demonstrated a high level of environmental performance and compliance with the resource consents.

3.4 Exercise of optional review of consents

Each resource consent includes a condition which allows the Council to review the consent, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of the resource consent, which were not foreseen at the time the application was considered or which it was not appropriate to deal with at the time. The next provisions for review are in 2017.

Based on the results of monitoring during the period under review, it is considered that there are no grounds that require a review to be pursued.

3.5 Change to any future monitoring programmes

In designing and implementing the monitoring programmes for air and water discharges and water abstractions at well sites in the region, the Council takes into account the extent of information made available by previous and other authorities, its relevance under the Act, the obligations of the Act in terms of monitoring emissions/discharges and effects, and of 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 well site processes within Taranaki.

The Council has routinely monitored well site activities for more than 20 years in the region. This work has included in the order of hundreds of water samples and bio-monitoring surveys in the vicinity of well sites, and has demonstrated robustly that a monitoring regime based on frequent and comprehensive inspections is rigorous and thorough, in terms of identifying any adverse effects from well site and associated activities. Accordingly the Council had for a time not routinely required the imposition of additional targeted physicochemical and biological monitoring unless a site-specific precautionary approach indicated this would be warranted for certainty and clarity around site effects.

However, the Council has also noted a desire by some community members for a heightened level of information feedback and certainty around the results and outcomes of monitoring at well sites to occur or has occurred. Notwithstanding the long track record of a demonstrable suitability of an inspection-based monitoring programme, the Council has therefore moved to extend the previous regime, to make the sampling and extensive analysis of treated stormwater discharge and bio-monitoring of surface water ecosystems, an integral part of the basic monitoring programme for such activities.

The monitoring of future consented activities at Wairere wellsite shall be extended to include an ecological survey.

A recommendation to this effect is present in section 4 of this report.

4. Recommendations

1. THAT this report be forwarded to the Company, and to any interested parties upon request;

2. THAT the Company be asked to inform the Council of the intention to either drill, test or undertake reinstatement;

3. THAT the monitoring of future consented activities at Wairere wellsite be extended to include an ecological survey;

Glossary of common terms and abbreviations

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

Al*	aluminium.
As*	arsenic
Biomonitoring	assessing the health of the environment using aquatic organisms
BOD	biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate
BODF	biochemical oxygen demand of a filtered sample
Bund	a wall around a tank to contain its contents in the case of a leak
CBOD	carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate
cfu	colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample
COD	chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Condy	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
Cu*	copper
DO	dissolved oxygen
DRP	dissolved reactive phosphorus
E.coli	*Escherichia coli*, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
Ent	Enterococci, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre of sample
F	Fluoride
FC	Faecal coliforms, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
Fresh	elevated flow in a stream, such as after heavy rainfall
g/m^3	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
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)
NO_3	nitrate, normally expressed in terms of the mass of nitrogen (N)
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water
O&G	oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons)
Pb*	lead
pH	a numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	measurement of both physical properties(e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment
PM_{10}	relatively fine airborne particles (less than 10 micrometre diameter
Resource consent	refer Section 87 of the RMA. Resource consent include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
RMA	Resource Management Act 1991 and subsequent amendments
SS	suspended solids,
Temp	temperature, measured in °C (degrees Celsius)
Turb	turbidity, expressed in NTU
UI	Unauthorised Incident
UIR	Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan
Zn*	zinc

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

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

Appendix I

Resource consents

Discharge Permit

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

Name of Consent Holder:	Taranaki Ventures Limited P O Box 8440 NEW PLYMOUTH 4342
Decision Date:	17 January 2013
Commencement Date:	17 January 2013

Conditions of Consent

Consent Granted:	To discharge treated stormwater from hydrocarbon exploration and production operations at the Wairere wellsite onto land where it may enter the Mangawharawhara Stream at or about (NZTM) 1711917E-5637239N
Expiry Date:	1 June 2029
Review Date(s):	June 2017, June 2023
Site Location:	Wairere wellsite, Cornwall Road, Eltham (Property owner: MG & K Wyss)
Legal Description:	Lot 1 DP 19439 (Discharge source & site)
Catchment:	Waingongoro
Tributary:	Mangawharawhara

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 actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.

2. Stormwater discharged shall be collected from a catchment area of no more than 1.5 ha.

3. At least 5 working days prior, the consent holder shall advise the Chief Executive, Taranaki Regional Council of the date of each of the following events:

   a) commencement of any site works, and
   b) commencement of any well drilling operation.

   If either of these events is rescheduled or delayed, the consent holder shall immediately provide further notice advising of the new date.

   Any advice given in accordance with this condition shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.

4. The consent holder shall maintain a contingency plan that, to the satisfaction of the Chief Executive, Taranaki Regional Council, details 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. The contingency plan shall be provided to the Council prior to discharging from the site.

5. Subject the other conditions of this consent the design, management and maintenance of the stormwater system shall be undertaken in accordance with the information submitted in support of the consent application 7268.

6. The discharge shall be applied at such a rate and over such an area of land that it infiltrates the soil and does not pond or run off to water.

7. All runoff from the site shall flow to a perimeter drain and skimmer pit. Perimeter drains shall be designed, including by having a positive grade and low permeability, to ensure that runoff flows directly to the skimmer pit without ponding.

8. All skimmer pits and any other stormwater retention areas shall be lined with an impervious material to prevent seepage through the bed and sidewalls.

9. Skimmer pits shall have a combined capacity of no less than 200 m^3.

10. Constituents in the discharge shall meet the standards shown in the following table.

Constituent	Standard
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm^{-3}
total recoverable hydrocarbons	Concentration not greater than 15 gm^{-3} [as determined by infrared spectroscopic technique]
chloride	Concentration not greater than 50 gm^{-3}

11. The consent holder shall advise the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the reinstatement of the site and the reinstatement shall be carried out so as to minimise adverse effects on stormwater quality. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.

12. This consent shall lapse on 31 March 2018, 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.

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 2023, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 17 January 2013

For and on behalf of
Taranaki Regional Council

_____

Director-Resource Management

Discharge Permit

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

Name of Consent Holder:	Taranaki Ventures Limited P O Box 8440 NEW PLYMOUTH 4342
Decision Date:	7 February 2013
Commencement Date:	7 February 2013

Conditions of Consent

Consent Granted:	To discharge contaminants to air from hydrocarbon exploration at the Wairere wellsite, including combustion involving flaring or incineration of petroleum recovered from natural deposits, in association with well development or redevelopment and testing or enhancement of well production flows at or about (NZTM) 1711948E-5637154N
Expiry Date:	1 June 2029
Review Date(s):	June 2017, June 2023
Site Location:	Wairere wellsite, 76 Cornwall Road, Eltham (Property owner: MG & K Wyss)
Legal Description:	Lot 1 DP 19439 Blk X Ngaere SD (Discharge source & site)

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

General condition

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

Special conditions

1. Flaring shall not occur on more than 20 days, cumulatively, per zone for each well [with a maximum of 3 zones per well], for up to 6 wells.

2. Flaring shall only occur in a thermal oxidiser or flare pit that is located at NZTM 1711948E-5637154N and lined with impermeable material that prevents any liquid from leaking through its base or sidewalls.

3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, at least 24 hours before the initial flaring of each zone being commenced. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.

4. At least 24 hours before any flaring, other than in emergencies, the consent holder shall provide notification to the occupants of all dwellings within 300 metres of the wellsite and all landowners within 200 metres, of the commencement of flaring. The consent holder shall include in the notification a 24-hour contact telephone number for a representative of the consent holder, and shall keep and make available to the Chief Executive, Taranaki Regional Council, a record of all queries and complaints received in respect of any flaring activity.

5. No material shall be flared or incinerated, other than those derived from or entrained in the well stream.

6. To the greatest extent possible, all gas that is flared must first be treated by effective liquid and solid separation and recovery.

7. Only gaseous hydrocarbons originating from the well stream shall be combusted, except that if, for reasons beyond the control of the consent holder, effective separation can not be achieved and combustion of liquid hydrocarbon is unavoidable, the consent holder shall reinstate effective separation as soon as possible and if separation can not be achieved within 3 hours combustion must cease.

8. If liquid hydrocarbon is combusted in accordance with condition 7 the consent holder shall prepare a report that details:

   (a) the reasons that separation could not be achieved;
   (b) the date and time that separation was lost and reinstated;
   (c) what was done to attempt to reinstate separation and, if it the attempt was unsuccessful the reasons why.

   The report shall be provided to the Chief Executive, Taranaki Regional Council within 5 working days from the date of combustion of liquid hydrocarbon.

9. The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or potential effect on the environment arising from any emission to air from the flare, including, but not limited to having regard to the prevailing and predicted wind speed and direction at the time of initiation, and throughout, any episode of flaring so as to minimise offsite effects [other than for the maintenance of a pilot flare flame].

10. The discharge shall not cause any objectionable or offensive odour or any objectionable or offensive smoke at or beyond the boundary of the property where the wellsite is located.

11. The consent holder shall control all emissions of carbon monoxide, nitrogen dioxide, fine particles (PM10) and sulphur dioxide to the atmosphere from the site, in order that the maximum ground level concentration of any of these contaminants arising from the exercise of this consent measured under ambient conditions does not exceed the relevant ambient air quality standard as set out in the Resource Management [National Environmental Standards for Air Quality Regulations, 2004] at or beyond the boundary of the property on which the wellsite is located.

12. The consent holder shall control all emissions to the atmosphere from the site of contaminants other than those expressly provided for under special condition 11, in order that they do not individually or in combination with other contaminants cause a hazardous, noxious, dangerous, offensive or objectionable effect at a distance greater than 100 metres from the discharge.

13. The consent holder shall make available to the Chief Executive, Taranaki Regional Council, upon request, an analysis of a typical gas and condensate stream from the field, covering sulphur compound content and the content of carbon compounds of structure C6 or higher number of compounds.

14. All permanent tanks used as hydrocarbon storage vessels, shall be fitted with vapour recovery systems.

15. The consent holder shall record and make available to the Chief Executive, Taranaki Regional Council, a 'flaring log' that includes:

    (a) the date, time and duration of all flaring episodes;
    (b) the zone from which flaring occurred;
    (c) the volume of substances flared;
    (d) whether there was smoke at any time during the flaring episode and if there was, the time, duration and cause of each 'smoke event'.

16. This consent shall lapse on 31 March 2018, 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.

17. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review:

    (a) during the month of June 2017 and/or June 2023; and/or

(b) within 1 month of receiving a report provided in accordance with condition 8;

for any of the following purposes:

(i) dealing with any significant adverse effect on the environment arising from the exercise of the consent which was not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or

(ii) requiring the consent holder to adopt specific practices in order to achieve the best practicable option to remove or reduce any adverse effect on the environment caused by the discharge; and/or

(iii) to alter, add or delete limits on mass discharge quantities or ambient concentrations of any contaminant;

(iv) reducing emissions or environmental effects that may arise from any loss of separation.

Signed at Stratford on 7 February 2013

For and on behalf of
Taranaki Regional Council

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Chief Executive

Discharge Permit

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

Name of Consent Holder:	Taranaki Ventures Limited P O Box 8440 NEW PLYMOUTH 4342
Decision Date:	7 February 2013
Commencement Date:	7 February 2013

Conditions of Consent

Consent Granted:	To discharge emissions to air associated with hydrocarbon producing wells at the Wairere wellsite at or about (NZTM) 1711948E-5637154N
Expiry Date:	1 June 2029
Review Date(s):	June 2017, June 2023
Site Location:	Wairere wellsite, 76 Cornwall Road, Eltham (Property owner: MG & K Wyss)
Legal Description:	Lot 1 DP 19439 Blk X Ngaere SD (Discharge source & site)

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

General condition

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

Special conditions

1. Other than in emergencies, the consent holder shall notify the Chief Executive, Taranaki Regional Council, whenever the continuous flaring of hydrocarbons [other than purge gas] is expected to occur for more than five minutes in duration. Notification shall be no less than 24 hours before the flaring commences. Notification shall include the consent number and be emailed to worknotification@trc.govt.nz.

2. At least 24 hours before any flaring, other than in emergencies, the consent holder shall provide notification to the occupants of all dwellings within 300 metres of the wellsite and all landowners within 200 metres, of the commencement of flaring. The consent holder shall include in the notification a 24-hour contact telephone number for a representative of the consent holder, and shall keep and make available to the Chief Executive, Taranaki Regional Council, a record of all queries and complaints received in respect of any flaring activity.

3. Flaring shall only occur in a flare pit that is located at NZTM 1711948E-5637154N and lined with impermeable material that prevents any liquid from leaking through its base or sidewalls.

4. No material shall be flared or incinerated, other than those derived from or entrained in the well stream.

5. To the greatest extent possible, all gas that is flared must first be treated by effective liquid and solid separation and recovery.

6. The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or potential effect on the environment arising from any emission to air from the flare, including, but not limited to having regard to the prevailing and predicted wind speed and direction at the time of initiation of, and throughout, any episode of flaring so as to minimise offsite effects (other than for the maintenance of a pilot flare flame).

7. The discharge shall not cause any objectionable or offensive odour or any objectionable or offensive smoke at or beyond the boundary of the property where the wellsite is located.

8. All permanent tanks used as hydrocarbon storage vessels, shall be fitted with vapour recovery systems.

9. The consent holder shall control all emissions of carbon monoxide, nitrogen dioxide, fine particles (PM10) and sulphur dioxide to the atmosphere from the site, in order that the maximum ground level concentration of any of these contaminants arising from the exercise of this consent measured under ambient conditions does not exceed the relevant ambient air quality standard as set out in the Resource Management [National Environmental Standards for Air Quality Regulations, 2004] at or beyond the boundary of the property on which the wellsite is located.

10. The consent holder shall control all emissions to the atmosphere from the site of contaminants other than those expressly provided for under special condition 9, in order that they do not individually or in combination with other contaminants cause a hazardous, noxious, dangerous, offensive or objectionable effect at a distance greater than 100 metres from the flare pit.

11. The consent holder shall make available to the Chief Executive, Taranaki Regional Council, upon request, an analysis of a typical gas and condensate stream from the field, covering sulphur compound content and the content of carbon compounds of structure C6 or higher number of compounds.

12. The consent holder shall record and make available to the Chief Executive, Taranaki Regional Council, a 'flaring log' that includes:

    (a) the date, time and duration of all flaring episodes;
    (b) the zone from which flaring occurred;
    (c) the volume of substances flared;
    (d) whether there was smoke at any time during the flaring episode and if there was, the time, duration and cause of each 'smoke event'.

13. This consent shall lapse on 31 December 2018, 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.

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 of review during the month of June 2017 and/or June 2023, for any of the following purposes:

    (a) dealing with any significant adverse effect on the environment arising from the exercise of the consent which was 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 the consent holder to adopt specific practices in order to achieve the best practicable option to remove or reduce any adverse effect on the environment caused by the discharge; and/or

    (c) to alter, add or delete limits on mass discharge quantities or discharge or ambient concentrations of any contaminant.

Signed at Stratford on 7 February 2013

For and on behalf of
Taranaki Regional Council

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Chief Executive

Water Permit

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

Name of Consent Holder:	Taranaki Ventures Limited P O Box 8440 NEW PLYMOUTH 4342
Decision Date:	17 January 2013
Commencement Date:	17 January 2013

Conditions of Consent

Consent Granted:	To take groundwater, as 'produced water', during hydrocarbon exploration and production activities at the Wairere wellsite at or about (NZTM) 1711948E-5637154N
Expiry Date:	1 June 2029
Review Date(s):	June 2017, June 2023
Site Location:	Wairere wellsite, Cornwall Road, Eltham (Property owner: MG & K Wyss)
Legal Description:	Lot 1 DP 19439 (Site of take)
Catchment:	Waingongoro
Tributary:	Mangawharawhara

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 ensure the abstraction does not cause more than a 10% lowering of static water-level by interference with any adjacent bore.

2. The consent holder shall ensure the abstraction does not cause the intrusion of salt water into any freshwater aquifer.

3. The consent holder shall submit a summary well log to a depth of 1000 metres, within three months of the completion of drilling. The report shall:

   a) provide a log to show the true vertical depth to all geological formation tops intersected within the freshwater zone;

   b) identify the true vertical depth to, and thickness of, any freshwater aquifers intersected by the well;

   c) identify the true vertical depth to the freshwater- saline water interface in the well.

4. This consent shall lapse on 31 March 2018 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.

5. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2017 and/or June 2023, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 17 January 2013

For and on behalf of
Taranaki Regional Council

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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:	Taranaki Ventures Limited P O Box 8440 NEW PLYMOUTH 4342
Decision Date:	11 February 2013
Commencement Date:	11 February 2013

Conditions of Consent

Consent Granted:	To take and use water from the Mangawharawhara Stream for hydrocarbon exploration activities at the Wairere wellsite at or about (NZTM) 1712040E-5637216N
Expiry Date:	1 June 2023
Review Date(s):	June 2017
Site Location:	Wairere wellsite, 76 Cornwall Road, Eltham (Property owner: MG & K Wyss)
Legal Description:	Lot 1 DP 19439 Blk X Ngaere SD (Site of take)
Catchment:	Waingongoro
Tributary:	Mangawharawhara

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

General condition

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

Special conditions

1. The volume of water taken shall not exceed 30 cubic metres per day, at a rate not exceeding 25 litres per second.

2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter at the site of taking. The water meter shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of ± 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 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 have a limited lifespan.

3. 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;

   (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.

4. 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.

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

6. The consent holder shall maintain a record of the taking including date, rate, pumping hours and daily volume abstracted and supply these records to the Chief Executive, Taranaki Regional Council, upon request.

7. 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.

8. No taking shall occur between 1 January and 1 April inclusive.

9. At all times the consent holder shall adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment associated with the abstraction of water, including, but not limited to, the efficient and conservative use of water.

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

11. This consent shall lapse on 31 March 2018, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1](b] of the Resource Management Act 1991.

12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2017, 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 11 February 2013

For and on behalf of
Taranaki Regional Council

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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:	Taranaki Ventures Limited P O Box 8440 NEW PLYMOUTH 4342
Decision Date:	18 December 2012
Commencement Date:	18 December 2012

Conditions of Consent

Consent Granted:	To discharge stormwater and sediment, deriving from soil disturbance undertaken for the purpose of constructing the Wairere wellsite, onto land where it may enter the Mangawharawhara Stream at or about (NZTM) 1711917E-5637239N
Expiry Date:	1 June 2017
Site Location:	Wairere wellsite, 76 Cornwall Road, Eltham (Property owner: MG & K Wyss)
Legal Description:	Lot 1 DP 19439 Blk X Ngaere SD (Discharge source & site)
Catchment:	Waingongoro
Tributary:	Mangawharawhara

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

General condition

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

Special conditions

1. This consent authorises the discharge of stormwater from no more than 14,000 m^2 of land where earthworks is being undertaken for the purpose of establishing the Wairere wellsite.

2. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.

3. At least 7 working days before the commencement of earthworks for the purpose of wellsite construction and establishment, the consent holder shall notify the Taranaki Regional Council of the proposed start date for the earthworks. Notification shall include the consent number and a brief description of the activity consented and shall be emailed to worknotification@trc.govt.nz.

4. All run off from any area of exposed soil shall pass through settlement ponds or sediment traps with a minimum total capacity of:

   a) 100 cubic metres for every hectare of exposed soil between 1 November to 30 April; and

   b) 200 cubic metres for every hectare of exposed soil between 1 May to 31 October;

   unless other sediment control measures that achieve an equivalent standard are agreed to by the Chief Executive of the Taranaki Regional Council.

5. The obligation described in condition 4 above shall cease to apply, and accordingly the erosion and sediment control measures may be removed, in respect of any particular area, only when the area is stabilised.

   Note: For the purpose of conditions 5 and 6, "stabilised" in relation to any site or area means inherently resistant to erosion or rendered resistant, such as by using rock or by the application of basecourse, colluvium, grassing, mulch, or another method to the reasonable satisfaction of the Chief Executive, Taranaki Regional Council and as specified in the Taranaki Regional Council's Guidelines for Earthworks in the Taranaki Region, 2006. Where seeding or grassing is used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once, on reasonable visual inspection by an officer of the Taranaki Regional Council, an 80% vegetative cover has been established.

6. All earthworked areas shall be stabilised vegetatively or otherwise as soon as is practicable and no longer than 6 months after the completion of soil disturbance activities.

   Note: For the purposes of this condition "stabilised" has the same definition as that set out in condition 5.

Signed at Stratford on 18 December 2012

For and on behalf of
Taranaki Regional Council

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Director-Resource Management