Methanex Motunui and Waitara Valley Combined Monitoring Programme Annual Report 2015-2016

Technical Report 2016-50

ISSN: 1178-1467 (Online)
Document: 1677107 (Word)
Document: 1783149 (Pdf)

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January 2017

Executive summary

Methanex New Zealand Limited (Methanex) operates methanol production facilities located at Motunui and Waitara Valley, in the Waitara River catchment. This report for the period July 2015 to June 2016 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess Methanex's environmental performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of Methanex's activities.

Methanex holds 11 resource consents, which include a total of 111 special conditions setting out the requirements that Methanex must satisfy. Methanex holds two consents to allow it to take and use water from two abstraction points on the Waitara River. Six consents allow the discharge of effluent /stormwater into the Manu and Waihi Streams and the Tasman Sea via the Waitara marine outfall. Methanex also holds two consents to discharge emissions into the air at its sites. Finally, one consent provides for a structure in the Waitara River associated with the water take.

During the monitoring period, Methanex demonstrated an overall High level of environmental performance at its Motunui site and a High level of environmental performance at its Waitara Valley site.

The Council's monitoring programme for the year under review at each site included four inspections, continuous self monitoring by Methanex (specifically involving collection of water samples for physicochemical analysis), review of regularly provided consent holder data, two inter-laboratory comparisons and a site visit relating to the requirements of the *Resource Management (for Measurement and Reporting of Water Takes) Regulations 2010*.

The monitoring showed that Methanex operated both sites in accordance with the requirements of their resource consents. As in previous years, the facilities were well managed and a high level of housekeeping was maintained. There were two unauthorised incidents recording non-compliance in respect of Methanex's activities at the Waitara Valley site during the period under review. Both incidents were considered to be unforeseeable and related to mechanical failures or unanticipated issues at the site. In addition both events were adequately mitigated or remedied by Methanex after they occurred. For this reason no enforcement response was considered appropriate or necessary.

During the year, Methanex demonstrated a High level of environmental performance with the resource consents at both facilities. Their administrational performance has been rated as Good, as although the performance against most consent conditions with respect to the administrative compliance was high, issues around testing of the integrity of the water take pipeline and meeting the requirements of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010* are yet to be resolved. Methanex have been open and participative in their communication with regard to their progress on these issues.

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

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

This report includes recommendations for the 2016-2017 year.

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1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2015 to June 2016 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Methanex New Zealand Ltd (Methanex). This company was formed on the first of January 2015, when the two previously separate Methanex companies (Methanex Motunui Ltd and Methanex New Zealand Ltd) were amalgamated.

Methanex operates a methanol production facility located on the coast at Motunui, close to Waitara (the Motunui site), and a second facility located 2.5 km south east and upstream of the mouth of the Waitara River (the Waitara Valley site). Both sites are situated in the Waitara River catchment. Together, these can produce up to 6,500 tonnes of methanol a day.

This report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by Methanex that relate to abstractions and discharges of water within the Waitara River catchment, and the air discharge permits held by Methanex to cover emissions to air from their sites.

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

The Council began reporting its monitoring of Methanex in 1990. This report is the 36th report to be prepared by the Council to cover Methanex's various consented activities and their environmental performance.

1.1.2 Structure of this report

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

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites though annual programmes;
- the resource consents held by Methanex in the Waitara River catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted in the Company's site/catchment.

Section 2 presents the compliance monitoring of the Motunui site during the period under review, including scientific and technical data. Thereafter the results are discussed, together with their interpretations, and their significance for the environment.

Section 3 presents the compliance monitoring of the Waitara Valley site during the period under review, including scientific and technical data. Thereafter the results are discussed, together with their interpretations, and their significance for the environment.

Section 4 presents a summary of recommendations to be implemented in the 2016-2017 monitoring year.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

(a) the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
(b) physical effects on the locality, including landscape, amenity and visual effects;
(c) ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
(d) natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
(e) risks to the neighbourhood or environment.

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

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by Methanex, this report also assigns them a rating for their environmental and administrative performance during the period under review.

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year. **Administrative performance** is concerned with Methanex's approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

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

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

Environmental Performance

- **High:** No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

- **Good:** Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during monitoring, from self reports, or in response to unauthorised incident reports, but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

  For example:

  - High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
  - Strong odour beyond boundary but no residential properties or other recipient nearby.

- **Improvement required:** Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.

- **Poor:** Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

Administrative performance

- **High:** The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.

- **Good:** Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

- **Improvement required:** Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

- **Poor**: Material failings to meet the administrative requirements of the resource consents. Significant intervention by the Council was required. Typically there were grounds for an infringement notice.

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

1.2 Historical overview and process description

Historical overview

The Motunui facility was constructed in 1983 and was originally operated by the New Zealand Synthetic Fuels Corporation to produce petrol from natural gas, during the 'Think Big' era. The decision to build the facility was made under the *National Development Act 1979*. New Zealand Synthetic Fuels Corporation operated two production units, Methanol 1 and Methanol 2 as well as a gasoline to methanol plant. At that stage, crude methanol was an intermediate product in the process.

From 1995 to 2004 the Motunui site ran at close to full production. Around the end of this period, shifts in world demand favoured the production of high grade methanol and this became more profitable for Methanex than its current operation of conversion of methanol to petrol. As a consequence the synthetic petrol part of the facility was de-commissioned and dismantled in October 2008 following a four year period during which the facility had remained idle. One production unit, Methanol 2, was restarted in 2008 and the restart of Methanol 1 took place in 2012. Presently the Motunui site operates at full capacity.

The Waitara Valley site was originally established by Petralgas Chemicals NZ Limited (a 50:50 New Zealand government and Alberta Gas partnership) in 1983 as a self-contained facility to convert gas from the offshore Maui field into high grade methanol. Subsequently the facility changed ownership to Petrocorp and Fletcher Challenge Methanol until 1994 when Methanex Motunui Limited gained ownership of the site. In

1989, a second distillation tower was installed at the site to enable crude methanol supplied from the Motunui site to be processed into high grade methanol at the Waitara Valley site. The construction of two methanol distillation towers at the Methanex Motunui site in 1994 and 1995 led to modifications of the Waitara Valley site, to allow transfer of crude and refined methanol between the two sites and the port. The Waitara Valley site which had continued to operate between 2004 and 2008 while production at the Motunui facility had ceased, was laid up in November 2008 soon after the restart of the larger Motunui facility. The Waitara Valley site retained importance as a storage facility and a load out site for product going by truck to Tauranga. A restart of the Waitara Valley facility took place in October 2013.

Methanol manufacture
Production of methanol from natural gas (sourced from various Taranaki fields) involves a three stage process. A brief outline of the methanol production process is given below:

- **Phase 1: Reforming**
  Natural gas entering the plant undergoes a preparation treatment involving the removal of contaminants (such as sulphur) prior to the reforming process. The processed gas is then mixed with steam (processed from water taken from the Waitara River) at approximately 500 °C, before being passed through a reformer containing a nickel catalyst at 900 °C. The heat is achieved by burning fuelgas, a mixture of natural gas and waste gases from within the process. Waste heat is recovered for steam generation before the flue gases are discharged to the atmosphere at about 110 °C. A synthesis gas is produced in the reformer which contains hydrogen, carbon dioxide, carbon monoxide, methane and nitrogen.

- **Phase 2: Compression and synthesis**
  The next phase of the process requires the synthesis gas produced in the reformers to be pressurised (1,500 kPa to 8,600 kPa). The synthesis process involves changing the synthesis gas through a further chemical reaction to a form of crude methanol. This reaction involves the channelling of compressed gas into a methanol converter containing a copper/zinc catalyst which yields crude methanol.

- **Phase 3: Distillation**
  The distillation process is a low-pressure process, whereby the crude methanol is purified to form chemical grade methanol. There are two distillation towers at Waitara Valley and two at Motunui, which are used to carry out this process.

1.3 Resource consents

Section 13(1)(a) of the RMA stipulates that no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove or demolish any structure or part of any structure in, on, under, or over the bed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Methanex currently holds a consent for a flood control structure in the Waitara River.

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

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

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

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Methanex no longer holds a consent for the discharge of contaminants onto land as its sludge disposal is undertaken as a permitted activity under the Regional Freshwater Management Plan.

A summary of the consents presently held by Methanex in relation to activities at its Motunui and Waitara Valley sites is given in Table 1 below. Where separate consents are held for the same activity at the different sites, these consents typically share similar or identical conditions. Further detail on Methanex's consents is provided in section 2 and 3 of this report. A copy of each of the consents can be found in Appendix I.

Table 1 Summary of consents presently held by Methanex

Consent	Purpose	Site to which the consent relates
0820-2	Water take from Waitara River	Motunui
0822-2	Discharge uncontaminated stormwater to Waihi and Manu streams	Motunui
0825-3	Discharge uncontaminated stormwater to an unnamed tributary of the Waitara River	Motunui, at the Motunui intake
0827-3	Discharge wastewater to an unnamed tributary of the Waitara River	Motunui, at the Motunui intake
3400-2	Discharge treated wastewater and stormwater to the Tasman Sea	Motunui
4042-3	Discharge contaminants to air	Motunui
0801-2	Water take from Waitara River at two locations	Waitara Valley
0802-2	Discharge stormwater to the Waitara River	Waitara Valley
3399-2	Discharge treated wastewater and stormwater to the Tasman Sea	Waitara Valley
3960-2	Construct rock groyne in the Waitara River	Waitara Valley
4045-3	Discharge contaminants to air	Waitara Valley

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets out obligations upon the Council to gather information, monitor, and conduct research on the exercise of resource consents, 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 both sites consisted of four primary components.

1.4.2 Programme liaison and management

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

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

1.4.3 Site inspections

Both the Motunui and Waitara Valley sites were inspected four times during the monitoring period for the purpose of site inspections. An additional inspection of only the Waitara Valley facility was undertaken at the end of the monitoring period to determine compliance with the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*. Site visits mainly involved compliance inspections and the taking of split samples for inter-laboratory comparisons.

With regard to consents for the abstraction of or discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by Methanex were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Data review

Methanex undertakes a significant amount of self-monitoring of their own activities and associated environmental impacts. The data gathered is reported to the Council on

a monthly basis, and is reviewed by the Council to determine compliance with resource consent conditions.

The raw water abstraction rate from two locations on the Waitara River for the Motunui site was measured continuously. Monthly reports detailing wastewater and stormwater discharge rates, volumes and composition were provided by Methanex to the Council. Wastewater effluent was monitored for a number of parameters with frequencies ranging from continuously (flow and pH) to monthly (trace metals).

These regular records provided to the Council are detailed in Table 2.

Table 2 Regular consent holder monitoring reporting requirements

Consent	Reporting requirement	Provision to the Council	
		Frequency required by consent	Frequency provided by consent holder
0820-2	Abstraction rate and volume	Yearly	Monthly
0801-2			
0802-2	Testing of stormwater quality	Consent not exercised	
0822-2	Testing of stormwater quality	Not specified	Monthly
3399-2 3400-2	Testing of treated waste and stormwater	Yearly	Monthly
	Records of volumes and rate discharged	Monthly	
	Records of chemical dosing	Yearly	
4045-3	Air quality monitoring	3 Yearly	3 Yearly
4042-3		2 Yearly	2 Yearly

Methanex is also required to provide the Council with several reports addressing various receiving environments, site activities and investigations. These reports are outlined below. Details of the reports received during the 2015-2016 monitoring year (which relate to both sites) may be found in the Motunui and Waitara Valley results sections of this report.

Air emissions

Methanex is required to supply Council with a report every two years addressing air emission issues from Motunui. This report is a requirement of consent 4042-3 (granted in April 2008).

The Waitara Valley consent has similar requirements but different time frames. Consent 4045-3 requires a three yearly report on technological advances regarding various emissions (including the cooling tower plume), an inventory of emissions from the distillation tower, energy efficiency improvements and any other matters relating to the mitigation of emissions.

Methanex reports on emissions from both sites in a biennial report. The latest biennial report was received in May 2016 and addresses the monitoring, developments and investigations undertaken in 2014 and 2015. The next report is expected in 2018 to cover the 2016 and 2017 calendar years.

Methanex is also required to supply Council with a report every five years addressing advances in technology to minimise the effect of the Motunui site's water vapour plume. This report is a requirement of consent 4042-3 (granted in April 2008). The most recent report was received in October 2014, and the next report will be due in 2019.

Water take from the Waitara River
Methanex is required to supply Council with a report every two years addressing the programme Methanex has in place to reduce their use of water. This report is a new requirement of consent 0820-2 and 0801-2 (granted in April 2008). The most recent report was received in December 2014. The next report was due in 2016 and was received during the 2015-2016 monitoring period. These reports cover developments and initiatives over the two preceding years.

Methanex is also required to supply Council with a report every five years showing the results of the testing of the water take pipeline. This report is a new requirement of consent 0820-2 and 0801-2 (granted in April 2008). The first report was due in 2013.

Contingency plans
Consent 3399-2 and 0822-2 both require the provision of a contingency plan by Methanex to the Council. It is required that these are maintained and consent 3399-2 specifies that the contingency plan should be reviewed every two years. These plans were received by the Council in September 2014 and a review of these is expected again in 2016.

Marine outfall
Every five years Methanex is required to supply Council with certification of the integrity and dilution performance of the marine outfall pipe. This is a pipe that provides for the discharge of wastewater/stormwater approximately 1,250 m offshore from the mouth of the Waitara River in the Tasman Sea. The marine outfall report is a new requirement of consent 3400-2 and 3399-2 (granted in April 2008). The first report was due in 2013. Methanex have had discussions with Council with regard to this work due to a number of issues. This report was received during the 2013-2014 monitoring period.

Treated stormwater and wastewater annual report
Methanex is also required to supply Council with a report annually addressing their waste treatment discharges. This is a requirement of consent 3400-2 and 3399-2 (granted in April 2008). The last report covered the 2014 calendar year, and was received in April 2015. An agreement was reached with the Council that as monthly reports are supplied by Methanex there would be no requirement for an additional annual report as effectively the collation of the monthly reports equate to annual reporting.

1.4.5 Inter-laboratory comparisons

On two occasions during the monitoring period samples from the Motunui and Waitara Valley methanol sites were taken by the Council and Methanex simultaneously. Both laboratories analysed the samples for parameters relevant to the consents and the results were compared.

2. Motunui

2.1 Process description

The Motunui facility (photo 1 and figure 1) has two production units. The Methanol 2 production unit was restarted and began to produce methanol in October 2008 after lying idle for four years. The Motunui Methanol 1 production unit began producing methanol again in July 2012. Increased monitoring was implemented during that restart. The monitoring was reduced back to normal levels during 2013-2014 and has continued as such during the current monitoring period.

Photo 1 Cooling towers and distillation stacks at the Methanex Motunui site

Figure 1 presents the layout of the site and references various components that will be referred to in this report.

2.1.1 Water discharges

There are various sources of wastewater from processes associated with the methanol manufacturing activities at the site, including water treatment wastes, boiler, cooling tower and other blowdowns, sewage, process effluents and stormwater.

- Sludge removed from the clarifiers is allowed to settle in the sludge lagoons. The water from this process is either allowed to evaporate or is discharged via the outfall.
- Naturally occurring dissolved salts in the abstracted river water are removed using ion exchange resins. Process boiler condensates for reuse also go through ion exchangers to remove trace minerals. The resins are regenerated using sulphuric acid and sodium hydroxide. The waste flow is neutralised prior to discharge via the outfall.
- The on-site boilers are fed with demineralised water with added deposit and corrosion control agents. To prevent a build-up of contaminants in the boiler water

a portion of the boiler water is continuously removed (blowdown) and replaced with fresh treated water. This wastewater goes to the blowdown pond and is discharged via the outfall.

- The cooling towers function by the evaporation of treated clarified river water. Dissolved river salts could build up rapidly in the water and therefore substantial quantities (about one seventh of the volume) is blown down during each recirculation cycle. The cooling water blowdown may contain corrosion inhibitors, dispersants, surfactants, biocides and antifoams. This wastewater also goes to the blowdown pond and is discharged via the outfall.
- Process wastewaters from the methanol plant saturators and miscellaneous wastes from gauge glasses, sample connections, pump pads, vessel drains and the like.

Those process effluents that require treatment are diluted with other cleaner waste streams and are passed through a trickling filter and activated sludge system before being discharged via the ocean outfall.

Historically, domestic effluent was pumped to a New Plymouth District Council (NPDC) sewer line for treatment at the Waitara Wastewater Treatment Plant (WWWTP). Thereafter the treated wastewater was discharged to the Tasman Sea via the Waitara marine outfall. In the 2013-2014 monitoring period, major work was undertaken to convert the WWWTP to a pump station. The Waitara pump station was commissioned on 15 October 2014 at which point pumping of Waitara municipal sewage to the New Plymouth Wastewater Treatment Plant (NPWWTP) commenced, and treatment and discharge of municipal sewage to the Tasman Sea via the Waitara marine outfall ceased.

Stormwater from the processing areas of the site that has the potential to be contaminated, drains into the stormwater pond under gravity and is then pumped to the effluent treatment plant and discharged via the marine outfall. Stormwater from the tankage area is pumped over into the process sewers which flow to the storm pond. The stormwater falling on the non-process areas of the western half of the site (Figure 1) is directed by "v" ditches running alongside the roads to a dam known as the Duck Pond and then out to the Tasman Sea via the Manu Stream. Stormwater falling on the eastern side of the site is directed to unnamed tributaries of the Waihi Stream via outfalls and a small sedimentation pond.

Sludge from the storm pond, off-spec pond and blow down pond stored in lagoons 2, 3, and 4 was removed during 2006. The sludge in lagoon 1 was removed later after drying out over the 2007 summer. All of the sludge was disposed of at Redvale landfill at that time.

With the site running at full production again, three of the four previously emptied sludge ponds are being used only for dewatering the less contaminated river-silt backwash from the Waitara River water. The other sludge pond will be used to keep more contaminated waste streams separate.

Figure 1 Motunui site layout and water sampling site locations

2.1.2 Emissions to air

The major sources of emissions to air are shown in Figure 2. The greatest quantities of air discharges from the Methanex complex were emitted from the reformer stacks when the site recommenced production. The flue gases are the products of combustion reactions within the steam reformers. They comprise gases typical of any combustion processes based on natural gas i.e. nitrogen passing through the process unchanged from the atmospheric air drawn in to support combustion, water (from oxygen in the air reacting with hydrogen in natural gas), carbon dioxide (created similarly) and residual oxygen. There are also traces of nitrogen oxides due to atmospheric nitrogen oxidising in the heat of the reformers.

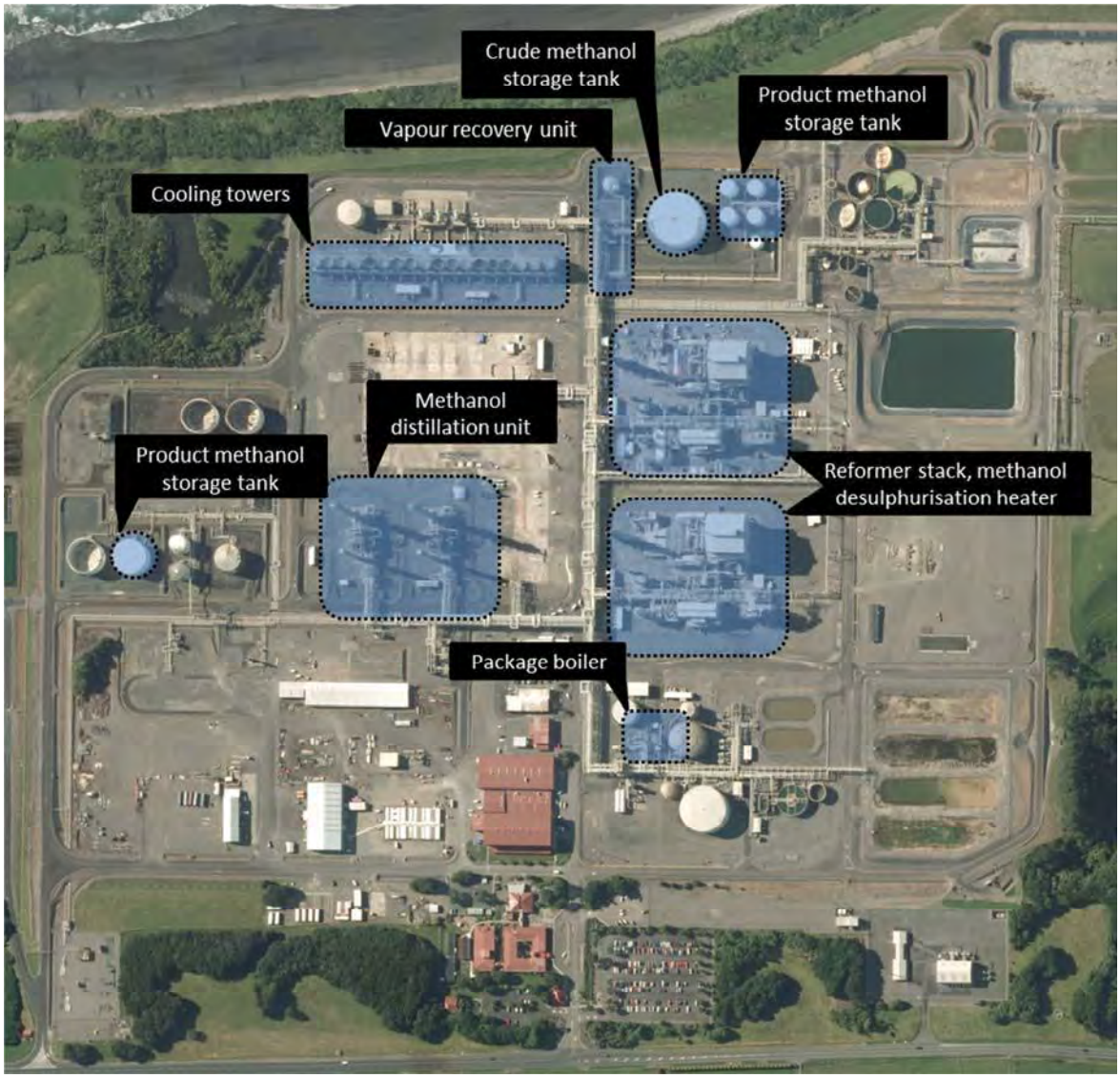

Figure 2 Major process air emission sources at Motunui

Energy efficiency and usage

The integrated nature of the site allows energy recovery and utilisation. At the same time, a large amount of energy is required to drive some of the reactions and refining stages. The volume of gas that may be accessed as raw feedstock by Methanex is fixed by the capacity of the feedstock systems, so that increased productivity and profitability are determined by in-house efficiency and loss control. More specifically,

as in-plant efficiency increases, then the amount of carbon dioxide emitted as an exhaust gas per unit of product decreases.

The feedstock gas is preheated by excess heat recovered from other parts of the process, before being reformed to synthesis gas by the injection of steam and with additional heat energy generated by burning both natural gas and waste streams. The exhaust flue gases also have heat recovered from them, to preheat the feedstock gas and to raise steam.

The reaction of the synthesis gas over a catalyst to produce methanol releases heat, which is captured via heat exchanges for use elsewhere. Unreacted synthesis gases are bled off to avoid accumulation and are burnt in the reformer as fuel.

Distillation of the methanol to a chemical-grade (high purity) standard requires heat energy, partly supplied from the reformer process. Purge gases and liquids from the distillation process are recovered for further distillation, with any residues ("fusel oil") being burnt as fuel.

Initiatives to improve energy efficiency undertaken by Methanex have included communication sessions with shift workers to identify energy saving opportunities in addition to constant monitoring of energy performance.

2.1.3 Solid waste

Sludge from the clarifiers has been removed periodically, while the only opportunity to clean and remove sludge from the blowdown pond, cooling tower sump and off-spec pond is when the entire site is shutdown, as these facilities are in constant use. The solid wastes are placed in the sludge lagoons at the south eastern corner of the site and are allowed to dry. The dried sludge and on occasion spent catalyst and resin, have in the past been disposed of to land in a consented area owned by Methanex just outside the boundary fence, northwest of the Motunui site. The last sludge disposal occurred in 2000.

In 2004 the majority of the sludge disposal area was sold to Shell Todd Oil Services and has since been used as part of the Pohokura production station development. With the restart of Motunui, three of the four sludge lagoons are used to dewater river silt from the clarifiers. This sludge is kept separate from other more contaminated material (for example the solid waste cleaned from the other effluent ponds and spent ion exchange resins) so that it can be disposed of more easily. The lagoons have a large storage capacity and therefore disposal of dewatered sludge will occur on an infrequent basis.

2.2 Resource consents

Methanex currently holds six resource consents for the operation of its Motunui petrochemical plant. A summary of the requirements imposed by each of the consents is provided in Sections 2.2.1 to 2.2.4 and copies of the resource consents are included in Appendix I.

A list of the consents currently held by Methanex during the monitoring period in relation to the Motunui site is given in Table 3 below.

The early consents for this site were granted to New Zealand Synthetic Fuels Corporation Limited as National Development (New Zealand Synthetic Fuels Corporation Limited) Order 1982 under the *National Development Act 1979*. In May 1993, the consents were transferred to Methanex Motunui Limited, following the merger of Fletcher Challenge Methanol and Methanex Corporation Canada.

Table 3 Consents held in relation to the Motunui site, July 2015 - June 2016

Consent	Granted	Review date	Expiry date	Purpose	Volume (m^3/day)
0820-2	29/04/08	30/06/15	1/06/21	Water take from Waitara River	33,600
0822-2	29/11/12	1/06/15	1/06/27	Discharge uncontaminated stormwater to Waihi and other streams from the Motunui plant	-
0825-3	31/03/08	1/06/15	1/06/21	Discharge stormwater at the Motunui intake facility	-
0827-3	31/03/08	30/06/15	1/06/21	Discharge wastewater at the Motunui intake facility	1,000
3400-2	29/04/08	30/06/15	1/06/21	Discharge treated plant effluent and contaminated stormwater to Tasman Sea	12,096
4042-3	12/02/08	30/06/18	1/06/28	Discharge to air from methanol and gasoline manufacture	-

Historical consents

Consents 3400, 0820, 0825, 0827 and 4042 were due to expire during 2008 and 2009. These consents were renewed in 2008. Consent 0822 expired and was renewed in 2012. Consents 1244 and 1245 related to taking groundwater and discharging groundwater to the Waihi and other streams for the purpose of ground stabilisation and protecting the site against seismic hazards. Methanex ceased exercising this consent on 5 December 2004 and with current scientific knowledge, the abstraction is no longer considered necessary for stability of the site during seismic activity. These consents expired in 2009 and were not renewed. Redundant infrastructure pertaining to this consent may still be seen around the Motunui site.

Consents 4543 and 4640 related to air emissions from the methanol distillation process. These were surrendered by Methanex as they were superseded by the new air discharge consent 4042-3.

Summaries of consent conditions

In the sections that follow, summaries of Methanex's Motunui consent conditions are provided. It should be noted that these summaries may not reflect the full requirements of each condition. The consent conditions in full may be found in the resource consents which are appended to this report.

2.2.1 Water abstraction permits

Methanex holds one consent to abstract surface water for use at the Motunui site as described below.

Consent 0820-2: Abstraction from Waitara River

Methanex holds water permit 8020-2 for the abstraction of water from the Waitara River for use in the Motunui methanol production plant. This permit was issued by the Council on 29 April 2008 under Section 87(d) of the RMA. It is due to expire on 01 June 2021.

The point of abstraction is on the true right bank, 10 km from the sea. River flow volumes are measured at the Bertrand Road gauging site two kilometres downstream of the abstraction point.

The original Consent 0820-1 was granted in October 1981. A variation to the consent was granted in December 1986, permitting an additional 130 l/s. Additional requirements imposed by the conditions of the variation related mainly to monitoring and provision of information. Consent 0820-1 expired on 12 March 2009 and was superseded by renewed consent 0820-2.

A further variation to this consent was granted on 15 November 2005 to allow Methanex to supply water abstracted under this consent to Shell Todd Oil Services for their horizontal directional drilling associated with the development of the Pohokura field. The purpose of the varied consent was changed, however the conditions of the consent remained the same.

Consent 0820-2 includes seven special conditions.

Special conditions 1 and 2 of this renewed consent set out a maximum rate of abstraction of 1,400 m^3/hr (approximately 390 l/s) when the flow rate of the Waitara River measured at Bertrand Road is greater than 4,600 l/s. No water is to be taken when the river falls below this level.

Special condition 3 requires the installation and maintenance of a water meter and specifies the technical requirement around this.

Special condition 4 requires the consent holder to avoid, remedy and mitigate any adverse effects as a consequence of exercising the consent.

Special condition 5 requires screening of the intake structure to prevent the entrainment of fish.

Special condition 6 and 7 are lapse and review provisions.

2.2.2 Water discharge permits

Methanex currently holds four consents to discharge water from the Motunui site, as described below.

Consent 0822-2: Discharge of uncontaminated stormwater to an unnamed tributary of the Waihi Stream
Consent 0822-1 expired in March 2012 and a renewal, consent 0822-2 presently provides for the discharge of stormwater from the site. This permit was issued by the Council on 29 November 2012 under Section 87(e) of the RMA. It is due to expire on 1 June 2027. The original consent 0822-1 was granted on 25 May 1981.

Special condition 1 of the original consent required that any stormwater originating from process or tankage areas, or areas where the level of contamination or likely contamination is significant, shall be retained in the stormwater holding pond for treatment and discharge via the marine outfall.

In 2005, during the period that the site was not operating, Methanex sought a change in special condition 1 of consent 0822-1. This was to allow for free draining of uncontaminated stormwater from the entire site as the site power was to be isolated and all other services to the site disconnected or decommissioned including the on-site wastewater treatment plant.

The requested change of wording to the condition enabled stormwater from the listed areas to be discharged into the Waihi and other streams but ensured that if or when the site was operating again, the stormwater would be treated and discharged via the marine outfall.

With the renewed activity at the site, all stormwater from the processing and tankage area is again controlled in holding ponds and discharged via the marine outfall at Waitara.

Through the renewal of this consent the number of special conditions was reduced from 26 to nine. The pH range was changed from 6.5-9.3 to 6-9.5 following discussions with Council regarding the natural fluctuations of pH. In addition the consent defines the catchment areas for the collection of stormwater as: 240,000 m^2 for the tributary of the Waihi Stream and 294,000 m^2 for the Duck Pond which feeds the Manu Stream.

Special condition 1 requires that the best practicable option is adopted at all times.

Special condition 2 specifies the catchment area.

Special condition 3 requires the maintenance of a contingency plan.

Special condition 4 requires the preparation of a stormwater management plan.

Special condition 5 requires that the constituents of the discharge shall meet certain standards.

Special conditions 6 and 7 place restrictions on changes in water quality of the tributaries of the Waihi Stream or Manu Stream.

Special condition 8 relates to changes in chemical use or processes around the site that could affect the nature of the discharge.

Special condition 9 is a review provision.

Consent 0825-3: Discharge of stormwater from water supply headworks to Waitara River tributary

The original consent (consent 0825-1) granted in 1982, provided for the discharge of up to 2,000 m^3/day of stormwater, including emergency water treatment plant overflow, from a water supply headworks to an unnamed tributary of the Waitara River off the end of Tikorangi Road. The stormwater enters the small tributary via an energy dissipation structure about 50 metres from the river. A new consent was issued on 8 September 1993 for a period until 12 March 2009. That consent was again renewed in March 2008 (consent 0825-3). It contained a provision allowing review in 2015 and will expire in 2021. Consent 0825-3 differs from the earlier consent in that it does not limit the volume or rate of water discharged but instead limits the increase in turbidity of the receiving waters to no more than a 50% increase after reasonable mixing.

Special condition 1 requires that the consent holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

Special condition 2 requires that the consent be exercised in accordance with the documentation supplied in support of the application.

Special condition 3 limits an increase in turbidity in receiving waters.

Special condition 4 and 5 are lapse and review provisions.

Consent 0827-3: Discharge of wastewater from water supply headworks to Waitara River tributary

The original consent was granted in 1982 and a new consent was issued on 8 September 1993 for a period until 12 March 2009. Consent 0827-2 provided for the discharge of up to 1,000 m^3/day of wastewater containing settled solids, including solids generated by cleaning a water supply line, from a water supply headworks to an unnamed tributary of the Waitara River off the end of Tikorangi Road. The wastewater enters the small tributary via an energy dissipation structure about 50 metres from the river.

A special condition in consent 0827-2 required that the timing of scouring or cleaning operations coincide with periods of high turbidity in the river. In contrast, the current renewed consent (consent 0827-3) requires a limit of a 50% increase in turbidity as measured in NTU after a reasonable mixing zone in the receiving waters. The consent was renewed as consent 0827-3 on 31 March 2008 with the intention of a review in 2015 and expiry in 2021.

Special condition 1 limits the maximum daily discharge to 1,000 m^3/day.

Special condition 2 requires that the consent holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

Special condition 3 requires that the consent be exercised in accordance with the documentation supplied in support of the application.

Special condition 4 limits an increase in turbidity in receiving waters.

Special condition 5 is a review provision.

Consent 3400-2: Discharge of plant effluent to Tasman Sea
Coastal consent 3400-2 provided for the discharge of up to 12,096 m^3/day of treated wastewater and stormwater from the manufacture of methanol and synthetic gasoline. The discharge is into the Tasman Sea via a pipeline extending about 1,250 metres off shore from the Waitara River mouth. The maximum rate of discharge is 140 l/s. The previous consent 3400-1 also provided for inclusion of up to 1,000 m^3/year of treated water draw-off from gasoline storage tanks at the Omata tank farm, however this has been removed from the consent 3400-2 granted in 2008.

The consent was varied on 18 July 2012 following problems that year with restricting levels of the bacterium *Legionella* to safe numbers (<10 cfu/100 ml). The variation included a new condition to allow the maximum daily limit of the water treatment chemical 'Spectrus CT1300' to be increased to 40 kg/day if a spike in the numbers of the bacteria *Legionella* is detected. This was to ensure that future outbreaks of *Legionella* could be effectively controlled and also allowed for increased dosing when the Methanol 1 production unit was brought online. The variation was granted on 18 July 2012 and the consent is due to expire in June 2021.

Special condition 1 requires that the consent holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

Special condition 2 requires the consent holder to keep records of the volume of effluent and provide these to the Council on a monthly basis.

Special condition 3 limits the volume and rate of the discharge.

Special condition 4 requires a minimum initial dilution factor to be met.

Special condition 5 limits the concentration of suspended solids.

Special condition 6 and 7 require certain water quality parameters to be met.

Special condition 8 limits what water treatment chemicals may be used and their relative dosing limits.

Special conditions 9 to 12 and 14 discuss the requirements of Methanex to advise the Council of any proposed changes in water treatment or cleaning chemicals, or equivalent chemicals, in order that limitations may be placed on their discharge, if necessary, for protection of the receiving waters.

Special condition 13 specifies the sampling point for condition 5, 6, 7 and 8.

Special condition 15 outlines what effects the discharge may not give rise to after a mixing zone of 200 metres.

Special condition 16 requires a contingency plan, to maintained and put into operation in the event of spillage, accidental discharge, or pipeline failure.

Special condition 17 states discharge of domestic sewage is not a permitted activity under this consent.

Special condition 18 requires Methanex to notify the Council at least seven days prior to the consent first being exercised.

Special conditions 19 and 20 require reports to be received from Methanex. Methanex must certify the structural integrity and dilution performance of the outfall at least every five years. An annual report on the performance of the effluent disposal system is also required and must detail compliance with conditions of the consent.

Special conditions 21 and 22 deal with the lapse and the review provisions of the consent.

Other consents to discharge from the Waitara marine outfall

Historically consent 3400 was one of several resource consents that provide for the discharge of wastes via the Waitara marine outfall. Methanex had originally planned to have its own marine outfall. The local iwi, Te Atiawa, fought against this decision, and won a change to have the effluent discharged through a renovated joint outfall at the mouth of the Waitara River.

In recent years, the discharges at the outfall have originated from three sources, these being the two Methanex sites and the WWWTP. The latter was constructed in 1991 and 1992 by NPDC and AFFCO (a meat-works Company which used the outfall until 1997). It was used to treat both domestic and meat-works effluent which had previously been discharged through the outfall with minimal treatment.

During the previous 2014-2015 monitoring period, NPDC completed work towards the conversion of the WWWTP to a transfer pump station (and associated pipeline infrastructure) that redirects wastewater to the NPWWTP. The marine outfall is no longer used by NPDC for the regular discharge of treated wastewater. Therefore for the current monitoring period only Methanex holds resource consents to regularly discharge treated process water from its two sites, via the Waitara marine outfall, and this discharge presently contains no sewage. NPDC however still holds a consent for the discharge of partially treated municipal sewage. This consent is only to be exercised as a contingency during unusually high volume flows of wastewater, such as exceptional stormwater infiltration, that cannot physically be piped through to the NPWWTP.

NPDC is now the owner and administrator of the outfall, and Methanex has a contract in place with NPDC for access to discharge through it. NPDC retains responsibility for the maintenance of the outfall. During 1991, a refurbishment of the outfall was undertaken to provide a 25 year life period and to improve the initial dilution. This process included the insertion of an impervious plastic liner through the pipeline, improvement of the stability of the pipeline on the seabed, and installation of a new diffuser.

Key discharge consents that have been associated with the Waitara marine outfall are summarised in Table 4 below.

Table 4 Discharges from the Waitara marine outfall

Consent	Consent holder	Effluent source	Volume m^3/day	Current status
3397-2	New Plymouth District Council	Treated domestic, minor industrial and stormwater	11,950 (previously 7,258)	This consent was surrendered upon completion of the redirection of waste to NPWWTP as well as the completion of required compliance monitoring.
7862-1	New Plymouth District Council	Screened and disinfected municipal wastewater	Limited period not volume	The discharge was permitted during conversion of the WWWTP to the Waitara pump station. Since the conversion has occurred, no further discharges under this consent are permitted.
7861-1	New Plymouth District Council	Screened untreated municipal wastewater	Limited period not volume	This consent became active upon the commencement of pumping to the NPWWTP. This discharge is only permitted in the event of high rainfall events when the instantaneous inflow to the Waitara pump station exceeds 280 l/s, or when the inflow to the pump station exceeds 18,800 m^3 in the previous 24-hour period, or when the storage tanks at the Waitara pump station are full and the inflow to the Waitara pump station exceeds the transfer pumping rate of 140 l/s.
3398-2	Anzco Foods Waitara Limited	Treated wastes arising from food manufacturing and associated activities	12,960	As of July 2009, Anzco Foods Waitara Ltd discharge under a trade waste agreement with NPDC. They withdrew their application for consent renewal on 23 July 2010.
3399-2	Methanex Motunui Limited	Methanol plant (Waitara Valley)	5,000	Presently exercise this consent.
3400-2	Methanex Motunui Limited	Methanol plant (Motunui)	12,096	Presently exercise this consent.

2.2.3 Air discharge permits

Methanex holds one air discharge consent for the Motunui site.

Consent 4042-3: Discharges to air from the Motunui methanol plant
Methanex holds air consent 4042-3, to cover the discharge of emissions to air from activities associated with the production of methanol (and previously gasoline) at the Motunui site.

The Council issued this permit on 23 March 1994 as a resource consent under Section 87(e) of the RMA. A minor variation to remove requirements relating to carbon dioxide emissions was granted on 6 April 2005. It was due to expire on 1 June 2009 but has been renewed, the new consent (4042-**3**) commenced on 12 February 2008 and expires in June 2021.

There are 17 special conditions attached to this consent.

Special condition 1 requires that the consent holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

Special condition 2 requires that the consent be exercised in accordance with the documentation supplied in support of the application.

Special condition 3 requires that emissions are minimised.

Special condition 4 sets out requirements if certain alterations are made to the site.

Special condition 5 requires that the consent holder commission reports detailing the technology available in regards to minimisation of the adverse effects of the water vapour plume from the cooling tower. These are to be supplied to the Council every five years.

Special condition 6 requires that another report be prepared and supplied to the Council every two years detailing how emissions from the site may be minimised or mitigated and containing an inventory of these emissions. It also requires that improvements in energy efficiency be detailed in the report.

Special condition 7 to 10 limits the ground level concentrations of methanol, carbon monoxide, and nitrogen dioxide.

Special condition 11 requires that the consent holder compile and maintain an inventory of emissions discharged from the site and include this with the reporting set out in special condition 6.

Special condition 12 restricts offensive or objectionable odour at or beyond the property boundary.

Special condition 13 restricts significant adverse ecological effects.

Special condition 14 – 17 refer to the monitoring, review and lapse of the consent.

2.2.4 Discharge of wastes to land

Methanex currently does not hold any consents to discharge sludge waste onto or into land, all sludge is currently held in purpose-built lagoons for dewatering and later disposed of appropriately to land as permitted by Rule 29 of the Regional Fresh Water Plan for Taranaki (RFWP).

2.3 Results

2.3.1 Site inspections

Site inspections are an important part of the monitoring programme, allowing discussion of Methanex's resource consents and relevant environmental issues. A Council report is written following each site inspection.

Council officers carried out four compliance monitoring site inspections on 7 October, 26 November 2015, 25 February and 24 May 2016 as well as two compliance monitoring sampling visits for the purpose of collecting a split sample on 11 November 2015 and 10 May 2016.

During the compliance monitoring site inspections, various areas of the site were observed. This typically included sighting the ponds and sludge lagoons, the containment and associated bunding, the cooling towers, the utilities area, the flare, the water/effluent treatment area and the stormwater discharge points to waterways

either side of the Motunui site. Inspecting officers inspected these areas for any apparent discharges, infrastructure issues/damage or potential risks.

The condition of any detectable emissions to air was also noted at each inspection, with particular reference to the cooling tower and the reformer.

7 October 2015 at 1430hrs
An inspection of both the Motunui and Waitara Valley facilities was undertaken by Council staff, accompanied by Gary Rielly (Methanex personnel). The Motunui site was inspected first and the following observations were made.

Overall the site was managed well with no off-site emissions or discharges detected.

Although not presently in use, Methanex personnel advised that the off-spec pond is to have a new liner installed, so that the pond may be recommissioned to provide extra storage for stormwater.

Methanex personnel also advised that cooling tower cell refurbishment would be ongoing for the next few years. All refuse from cooling tower cell refurbishment was being disposed of to New Plymouth District Council's Colson Road landfill. In addition to this, work was progressing with regard to the re-lining of methanol containment bunds with HDPE. The inspector was unable to access this area, but noted that rest of the bunded area was clear, tidy and in good condition.

At the time of the inspection, Methanol 1 was not operating, being shut down for major replacement work inside the production unit.

The Motunui water intake was also inspected. At the time of the inspection, the water intake locations were underwater. The intake structure and bunding around the plant/machinery were noted to be in a tidy and good condition.

Methanex staff advised that these were regularly backwashed to shift debris and prevent silt build-up around intake structure. The facility is reported to be checked every shift, with a regular ongoing maintenance programme in place. Sediment control/mitigation measures that are in place, include regular backwashing to reduce silt build-up in tanks. Sediment-laden backwash is only discharged to river during high flow/flood events (to reduce or eliminate any downstream effect).

Multiple systems were noted to be in place to facilitate fish passage at the intake structures. These include fish bypass, underwater lights to attract and lure fish away from intake, and plates across the intake structures to act a physical barrier. Methanex staff advised that these were checked on a regular basis as part of the ongoing maintenance schedule.

Methanex staff advised that the water take meter was obsolete as it was not fit for purpose. Two other meters were installed. However the Waitara Valley meter was non-operational at the time of the inspection due to problems with the supply pipe. The Motunui meter was currently operational. It was noted that discussions were underway internally and with TRC staff regarding upgrade and installation of meters to better quantify the water take.

26 November 2015 at 0900hrs
An inspection of both the Motunui and Waitara Valley facilities was undertaken by Council staff, accompanied by Ben Lawn (Methanex personnel). The Motunui site was inspected first and the following observations were made.

Overall the site was managed well with no off-site emissions or discharges detected.

Work was progressing in relation to the re-lining of bunds around methanol storage tanks with HDPE. It is expected that this task would be finished by the end of the year.

It was noted that Methanol 1 replacement work had been completed and Methanol 2 refurbishment had commenced. No catalyst change was to be required for Methanol 2, as there were only repairs to pipework necessary. Surrounds were clear and tidy, with no sign of spills.

25 February 2016 at 1400hrs
An inspection of the Motunui and Waitara Valley facilities, as well as the intake structure was undertaken by Council staff, accompanied by Ben Lawn (Methanex personnel). The Motunui site was inspected first and the following observations were made.

Overall the site was managed well with no off-site emissions or discharges detected.

At the time of inspection it was reported that the off-spec pond re-lining project was on hold.

Methanex personnel advised that a second pH meter was to be installed at the composite sampler of the outfall effluent.

HDPE liner replacement work was ongoing around the methanol storage tanks. A small separate tank area had been completed and successfully flood tested. The old bund liner material (cleanfill scrapings) were to be spread and recontoured on the Motunui site.

Methanex personnel advised that the catalyst changes had been completed on both Methanol 1 and 2.

The intake facilities were inspected. These were found to be in good condition and operating as expected. Council staff were informed that the fish screening was checked along with rest of structure as part of regular maintenance schedule.

Methanex personal confirmed that water take meter replacement planning was still underway and that this would require a total site shutdown.

Following the inspection Methanex confirmed the following: The cleaning out of the water intake screens was scheduled to be performed annually. This included the high lift chambers where the settling ponds are located as well as the low lift chambers which are at the river level and included filtering screens. The low lift chambers had not been cleaned during the past few years due to river conditions not allowing divers to dive near the intake. The high lift chambers had been cleaned annually as scheduled.

24 May 2016 at 1100hrs

An inspection of both the Motunui and Waitara Valley facilities was undertaken by Council staff, accompanied by Ben Lawn (Methanex personnel). The Motunui site was inspected first and the following observations were made.

Overall the site was managed well and was tidy, with no off-site emissions or discharges detected.

The off-spec pond re-lining project had remained on hold. It was anticipated to start 2017. The secondary pH meter installation at the composite sampler (outfall effluent) was also reported to be on hold.

The HDPE liner replacement work around the methanol storage tanks was near completion. All areas had been successfully flood tested.

A contractor was unloading sulphuric acid at the time of the inspection in the utilities area of the site. There were no signs of spills or leaks, and the chemical bunding was secure and in good condition.

2.3.2 Production unit restart programme

The following schedule of production unit shutdowns was received from Methanex for the Motunui site (Table 5).

Table 5 Programme of production unit shut downs for 01 July 2015 to 30 June 2016

Trip Date	Restart Date	Production unit	Description
01-Jul-15	09-Jul-15	Methanol 2	Plant trip during restart due to high radial vibrations on circulator
09-Jul-15	11-Jul-15	Methanol 2	Plant shut down to repair leak on water side manway of saturator water heater
18-Jul-15	19-Jul-15	Methanol 1	Plant shut down to steam out reformer tubes to clean up hot banding caused by Pohokura outage
27-Aug-15	02-Sep-15	Methanol 1	Plant tripped due to E-0104 B preheater stopping
02-Sep-15	19-Oct-15	Methanol 1	Plant shut down after further SCC, stayed down for replacement of syngas loop piping.
19-Oct-15	20-Oct-15	Methanol 1	Trip during restart due to reformer box pressure
20-Oct-15	23-Oct-15	Methanol 1	Trip during restart due to leak on HP Steam Attemporator nozzle
29-Oct-15	05-Dec-15	Methanol 2	Plant shut down for replacement of converter effluent piping affected by SCC
11-Dec-15	12-Dec-15	Methanol 1	Steam out due to hot banding
12-Feb-16	12-Feb-16	Methanol 1	Steam out due to hot banding
24-May-16	25-May-16	Methanol 1	Syngas compressor and circulator tripped after power spike

2.3.3 Surface water

2.3.3.1 Surface water abstraction monitoring by Methanex

Consent 0820-2 to take water from the Waitara River requires abstraction rates of less than 1,400 m^3/hour. All records provided by Methanex for the Motunui abstraction, show rates below the allowable maximum level.

Consent 0820-2 specifies that no water may be taken when the flow of the Waitara River at the Bertrand Road gauging station falls below 4,600 l/s. The Waitara River flow did not fall below this level during the 2015-2016 monitoring period. Appendix II shows the hydrographs for the Waitara River at Bertrand Road for the monitoring period.

Water use reduction report

The Council received a report from Methanex in May 2016 relating to water use reduction at the Motunui site during the 2014 and 2015 calendar years. This report is a requirement of condition 4b of Consent 0820-2 (Motunui). It is attached to this compliance monitoring report as Appendix III.

In their report Methanex recognise both the environmental and economic benefits of reducing their water usage. Methanex reported that they continue to implement measures at both sites to reduce water consumption. At Motunui the 'A' cell of the cooling tower has undergone refurbishment which has included investigations into how the efficiency and performance of the cell could be improved. Energy consumption by the cell was found to improve by 17% and it is expected that there has been an associated improvement in water use efficiency. Methanex intends to continue with this work on the other cells of the cooling tower.

Pipeline integrity report and the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*

Condition 4 of Consent 0820-2 requires that Methanex undertake testing of the intake to the site every five years to establish pipeline integrity. This work was due to be completed during 2013. Methanex have investigated methods to undertake this effectively without damaging the existing infrastructure. They have remained in regular communication with Council on this matter however have not been able to satisfy this condition of their consent. The Council is aware of the practical issues around achieving this and have indicated that if verified flow meters at both the sites and the point of take read in agreement, then this could provide a method to establish the integrity of the pipeline.

Methanex are yet to meet the requirements of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*. Previously, Council officers attended a verification of the accuracy of the Motunui raw water flow meter (Plant 61) which confirmed that this meter was reading accurately. However, there is a distance of 8.7 km between the point of take and the Motunui site itself and the regulations require that the flow meter is positioned at the point of take. Although a flow meter is present at the point of take, it is not possible to undertake a verification with the present arrangement of pipework.

With two recent incidents associated with the waste water infrastructure and other upgrade works that have become necessary on that pipeline, the Council retained concern with regards to the integrity of the water take pipeline and therefore have begun to seek a more urgent response.

A factor that complicates the situation is that although the full Motunui water take is fed to Motunui, the Waitara Valley Take is split with an unknown proportion fed to both sites.

There is a reasonable level of public interest in ensuring that the consented rate of take is not likely to be exceeded especially during low flow events. This was evidenced at the time of the original consent application.

However, there are some factors that indicate that the water take meters are providing reasonable readings and that the pipeline is not significantly leaky. Specifically Methanex were able to provide preliminary data from both meters (located at Motunui and the point of the take) with the Waitara Valley offtake isolated. When correlated, the data between this and the Motunui meters shows reasonable agreement. There are also a number of procedures implemented by Methanex to routinely monitor their low pressure pipelines, which is not dissimilar to the monitoring of the high pressure lines. In addition to this, Methanex have identified the existing off-takes and determined that these will not affect the flow rate between the sites and the point of take.

As further reassurance, Methanex typically takes water well below the consent limit: From the 2015-16 data:

- At Motunui the maximum take was 1,269 m^3/hr (consent limit 1,400 m^3/hr) and if averaged over the year the take was 876 m^3/hr (median 989 m3/hr).
- At Waitara Valley the maximum hourly take was 245 m^3/hr (consent limit 300 m^3/hr) and if averaged over the year the take was 172 m^3/hr (median 187 m^3/hr) and
- At Waitara Valley the maximum daily take was 5,269 m^3/day (consent limit 8,640 m^3/day) and if averaged over the year the take was 4,135 m^3/day (median 4,483 m3/hr).

Given this, any loss of water along the water take pipeline would need to be a significant amount to breach the consent limit.

Methanex advised that the installation and verification of water takes at the point of take was possible, but not a preferable option to them. It would be a significant cost to the organisation due to the pipework reconfiguration as well as installation of the meters and associated telemetry gear. In addition it would mean the operation and maintenance of four meters instead of two and would require a full plant shutdown for the installation to take place. Methanex indicated that if this were the Council's preferred option they would proceed with the installation of two verifiable meters at the point of take. The Council have indicated that an exemption to this requirement is not suitable in this case, because the requirement is imposed at national level and at the time Methanex were unable to indicate compliance with pipeline integrity testing conditions in their abstraction consents. Therefore the Council will require the installation of these flow meters. Methanex has initiated a project plan to achieve this.

Council staff visited the sites of the two water takes to discuss the installation/verification of flow meters on 06 April 2016.

During the site visit, the following was noted:

- The majority of water is taken from the Motunui water take - as much as possible. If the water take is stopped, then Waitara Valley would not be able to operate almost immediately, while Motunui could possibly operate for up to a day.

- Methanex staff reported that they have experienced good reliability with their pumps and flow meters.
- Metering of the water takes at the Motunui and Waitara Valley sites is useful for their utilities operations, but the primary reason is to meet resource consent requirements.
- A straight length of pipeline is required to allow for the verification of water take meter. At the onsite meeting it was suggested that at the Waitara Valley site, the tar seal alongside the pump station could be excavated and potentially the pipeline would be sufficiently straight in this area for a verification to be undertaken.
- For installation of a water take meter at the Motunui site, the suggestion was made that this could be done within a day and possibly at an access point already provided with some excavation alongside to allow verification.

At a subsequent meeting on 19 July 2016 Methanex staff presented a proposed project to install a flow meter at the Waitara Valley site.

There have been two changes in engineering staff since the initial on site meeting. Progress on this work has been slow.

2.3.3.2 Effluent monitoring

During July 2015 to June 2016 the Motunui site was operating continuously, although refurbishment works meant that at times one of the two reformer units were not operating.

Effluent monitoring data gathered by Methanex was sent to the Council on a monthly basis. The data is made up of continuous online data, laboratory analysis of a 24-hour composite effluent sample and mass discharge of water treatment chemicals calculated by Methanex using chemical consumption data.

Photo 2 The Motunui site's blow down pond (decommissioned flare 2 can be seen in the background)

Continuous measurement

Flow and pH are measured by online analysers, and recorded continuously. The figures reported to the Council are daily averages (m^3/h), daily maximum (l/s) and daily volume (m^3/day) for flow, and minima, maxima and daily averages for pH. A summary of the outfall effluent data is presented in Table 6.

Table 6 Summary of the Motunui's monitoring results of plant effluent during 2015-2016 (Consent 3400-2)

	Unit	Minimum	Maximum	Consent limit	Number of breaches
Continuous measurement					
Flow (daily average)	m^3/day	n/a	7,905	12,096	0
pH	-	6.05	8.95	6-9	0
Daily measurement					
Chemical oxygen demand	g/m^3	<25	130	200	0
Methanol	g/m^3	<2	<2	15	0
Suspended solids	kg/day	<6	72	500	0
Petroleum hydrocarbons	g/m^3	<1	<1	10	0
Monthly measurements					
Copper	g/m^3	<0.05	<0.05	0.50	0
Nickel	g/m^3	<0.10	<0.10	1.00	0
Zinc	g/m^3	<0.10	<0.10	1.00	0

A proportional sampler is used to create a daily composite sample representative of the daily flow of Motunui effluent. This is analysed by the Methanex laboratory, to determine compliance with their discharge consent 3400-2. A summary of this data is included in Table 6 above.

On numerous occasions a visual check of the effluent sample indicated hydrocarbons were present (as a visible film), however subsequent sampling showed that the hydrocarbon concentrations were within consent limits.

Chemical dosing rates

Consent 3400-2 (for discharge of process waste from the Motunui site) sets mass discharge limits on the water treatment chemicals used on the site. Methanex calculates water treatment chemical mass discharge rates using chemical consumption data. A summary of this data for the monitoring period is presented in Table 7.

Table 7 Summary of Motunui chemical discharge data (calculated) for July 2015 to June 2016

Consent 3400-2 (special condition 8)					
Chemical	**Unit**	**Minimum**	**Maximum**	**Average**	**Consent Limit**
Gengard GN8020	kg/day	17	120	78	300
Spectrus BD1500	kg/day	0	40	15	200
Spectrus BD1501E	kg/day	6	11	8	70

Consent 3400-2 (special condition 8)					
Chemical	**Unit**	**Minimum**	**Maximum**	**Average**	**Consent Limit**
Spectrus CT1300	kg/day	0	28	9	20 (40 for control of Legionella)
Spectrus NX1100	kg/day	11	20	15	50
Inhibitor AZ8104	kg/day	37	95	67	300
Steamate NA0880	kg/day	15	25	21	40
Cortrol OS 7780	kg/day	0	55	25	400
Cortrol OS 5601	kg/day	4	48	16	200
Optisperse HTP 7330	kg/day	15	64	31	120
Optisperse HTP 73611	kg/day	17	36	24	120
Foamtrol AF2290	kg/day	0	0	0	40
Betz Dearborn AE1115	kg/day	13	38	26	60
Klairaid PC 1190P	kg/day	39	121	78	600
Flogard MS6209	kg/day	0	32	11	40
Flogard POT6101	kg/day	24	34	28	60

There were no breaches in chemical dosing limits during the monitoring period at this site.

Legionella control

In late January 2016, Methanex advised Council that they intended to perform an additional dose of Spectrus CT1300 at the Motunui cooling tower due to a positive legionella result and low free chlorine results. This would be above the 20 kg/day limit but within the 40 kg/day limit under condition 9 of resource consent 3400-2. Methanex were also investigating using sodium hypochlorite (13% solution) to dose the cooling tower in addition to their routine chlorine gas to bring up the free chlorine levels.

By early February the situation had returned to normal. The cause of the low chlorine levels had been investigated and was thought to be as a consequence of recent high temperatures combined with a lower amount of chlorine dosage which was believed to have led to bacterial growth overtaking and using the free chlorine. The additional chlorine dosage had returned the cooling tower to normal free chlorine levels. No sodium hypochlorite was used. Legionella tests were performed throughout the period and came back below 'at risk' levels.

Equivalent Chemical

On 14 October 2015 Methanex applied for approval to change four of the water treatment chemicals used in the cooling system at the Methanex Motunui and Waitara Valley sites. These changes are necessary as more effective, efficient and safer chemicals become available and are adopted by the industry.

Methanex provided information on the proposed usage rate and the composition of the replacement chemicals. The matter was treated as a notification pursuant to special conditions 10-12 on coastal permit 3400-2.

Methanex has proposed to change four of the water treatment chemicals used at both sites to treat cooling and boiler feed water. The table below sets out the original chemical, the replacement chemical and the maximum daily discharge of each of the chemicals used at the Motunui site.

Table 8 Replacement chemicals Motunui October 2015

Chemical presently used		Proposed replacement chemical	
Name	Max. daily discharge (kg)	Name	Max. daily discharge (kg)
Spectrus CT1300	40	Spectrus NX1100	65
Cortrol OS7780	400	Cortrol OS5601	200
Spectrus BD1500	200	Spectrus BD1501E	70
Flogard MS6209	40	Flogard POT6101	60

The Council was advised that the reason for the change is that the replacement chemicals are new generations of the chemicals that they will replace. Methanex have also indicated that these replacement chemicals may be considered equivalent as per the definition in both consents.

The Council reviewed the information provided and considered the purpose of the chemical, the potential for environmental effects and the break down products. With consideration to these factors and subject to the information received from Methanex, the Council accepted that these chemicals could be accepted as the equivalent of the existing chemicals.

No review of conditions on consent 3400-2 was required in respect of the discharge of the proposed replacement water treatment chemicals.

This was the most recent of a number of similar applications that have occurred in the past.

Marine outfall report
A five-yearly report on the structural integrity of the Waitara marine outfall was received from Methanex on 3 February 2014. This is a requirement of special condition 19 of Consent 3400-2. OCEL consultants have been contracted by NPDC (who retain responsibility for maintenance of this structure) to inspect and maintain the structure. Significant maintenance of the structure took place in 2012 and 2013 following the OCEL report finding various potential risks associated with the structural integrity of the outfall and its ability to resist the impact of a 100 year environmental event. Work undertaken to address the issues has included the removal of tube worm growth and the replacement of tie-down straps. A modelling exercise was carried out to determine the dilution performance of the outfall which was found to be within compliance limits as per special condition 4 of Consent 3400-2. The next report will be due in 2019.

Contingency plan
In accordance with consent 3400-2 and 0822-2, Methanex is required to maintain a comprehensive contingency plan for the Motunui site, which would be put into operation in the event of spillages, accidental discharges or pipeline failure. Methanex provided a revised plan including a 'Specific Response Procedure', a 'Notification of

Environmental Exceedances Procedure', and a 'Reporting of Environmental Exceedances Procedure' for the Motunui site in November 2009. These spill contingency planning documents were found to be satisfactory. Consent 3400-2 requires revision of the spill contingency planning every two years. Methanex provided a revision of their contingency plan in June 2010 and May 2012. The 2014 contingency plan was received by the Council in September 2014. This contingency plan was reviewed by Council officers and found to be satisfactory. The next review is expected before the end of 2016.

2.3.3.3 Uncontaminated stormwater

Stormwater outlets for uncontaminated stormwater are situated in the Waihi catchment on the eastern side of the Motunui site and at the sea cliff via the 'Duck Pond' on the northern side of the site (Figure 1).

Photo 3 The Duck Pond sampling point at the Motunui site

Photo 4 The Waihi stream sampling point at the Motunui site

Weekly grab samples of the stormwater discharges were taken and analysed for four water quality characteristics by Methanex staff. The two sampling sites are shown in Photo 3 and 4. The analytical sample results provide an indicator as to whether or not the discharge was contaminated. The results of the Methanex stormwater monitoring for July 2015 to June 2016 are summarised in Table 9 below.

Table 9 Summary of Motunui stormwater monitoring data for 2015-2016

Consent 0822-2					
Parameter	**Unit**	**Minimum**	**Maximum**	**Average***	**Consent limit/ *Guideline***
Duck Pond (photo 3)					
pH	**-**	6.30	7.60	7.08	**6 - 9.5**
Petroleum hydrocarbons	**g/m^3**	N/A	<1	N/A	**<5**
Conductivity at 25°C	**µs/cm**	70	132.0	100.6	***<300*** *
Total suspended solids	**g/m^3**	<6	41.0	8.4	**<100**
Visual hydrocarbons	**# Pass / # Fail**	Tests passed: All	Tests failed: 0	----	**PASS**
Waihi Stream (photo 4)					
pH	**-**	**5.8**	9.5	6.79	**6 - 9.5**
Petroleum hydrocarbons	**g/m^3**	N/A	<1	N/A	**<5**
Conductivity at 25°C	**µs/cm**	23.00	261.00	138.38	***<300*** *
Total suspended solids	**g/m^3**	<6.00	40.00	9.68	**<100**
Visual hydrocarbons	**# Pass / # Fail**	Tests passed: All	Tests failed: 0	----	**PASS**

* Guideline value, not a consent requirement.

Duck Pond discharge

The quality of the stormwater discharge from the Duck Pond was well within the agreed guideline or consent limits for uncontaminated stormwater on each monitoring occasion.

Waihi Stream

With the exception of pH, the stormwater samples analysed from the Waihi Stream monitoring site were within agreed limits required by the consent. Methanex reported one low pH value to the Council. The confidence limit for the test is +/- 0.1 pH unit. As the low pH was close to this limit and the pH of the stream has shown some seasonal and natural fluctuation (which may be attributed to algal proliferation, recent rainfall or groundwater input), this is considered an insignificant breach of the consent conditions.

Lichen removal

At the end of May 2016, Methanex advised that they intended to remove lichen from the road surfaces around the Motunui site. Bio Lichen Concentrate, a caustic based product would be sprayed specifically to the road marking areas. Methanex advised that this would only be done on sunny days to ensure there was no runoff. Testing of the Waihi Stream and Duck Pond for pH would be undertaken as per normal. They

also indicated that they intended to sweep the lichen off after application of the chemical and contain the sweepings.

Methanex confirmed that the lichen removal was performed. The Waihi Stream and Duckpond were tested following this, with no change in the pH being recorded.

2.3.3.4 Inter-laboratory comparisons

On two occasions during the monitoring period, the Council carried out inter-laboratory comparisons on both the composite outfall sample and the Motunui site's stormwater. The results of the inter-laboratory comparisons, which also serve the purpose of compliance monitoring checks, are shown in Table 10 and Table 11. Results from both laboratories for the Motunui effluent samples met the consent limits during the monitoring period. A comparison of the laboratory results showed there were some minor variation in values determined by the laboratories; these discrepancies were considered to be within a reasonable range and therefore presented no cause for concern.

Table 10 Inter-laboratory comparison of Motunui outfall composite sample results

Motunui outfall - IND003005 (Consent 3400-2)						
Parameter	**Unit**	**Consent limits**	**11 November 2015**		**10 May 2016**	
			Methanex	**TRC**	**Methanex**	**TRC**
Ammonia as N	mg/l		<0.1	0.091	0.6	0.608
Chemical oxygen demand	mg/l	200	<25	25	35	40
Conductivity @ 25 °C	µs/cm		612	602	2020	1969
Copper	mg/l	0.5	<0.05	0.02	<0.05	0.01
Methanol	mg/l	15	<2	<1	<2	<1
Nickel	mg/l	1.0	<0.10	<0.02	<0.1	<0.02
pH		6.0-9.0	7.8	7.7	8	8
Total hydrocarbons	mg/l	10	<1	<0.5	<1	<0.5
Total suspended solids	mg/l	daily discharge <500kg	<6	3	20	11
Zinc	mg/l	1.0	<0.1	0.069	<0.1	0.056
Turbidity	NTU		2.7	1.4	2.2	2.1

Table 11 Results of Motunui stormwater inter-laboratory comparison between Methanex and the Council

Motunui site stormwater (Consent 0822-2)						
Parameter	**Unit**	**Consent limits**	**Duck Pond (STW002012)**		**Waihi Stream (STW002013)**	
			Methanex	**TRC**	**Methanex**	**TRC**
11 November 2015						
Ammonia as N	mg/l		<0.1	0.010	<0.1	0.086
Conductivity @ 25ºC	µs/cm	300*	94	92.4	216	211
Copper	mg/l		<0.05	0.05	<0.05	<0.01

Motunui site stormwater (Consent 0822-2)						
Parameter	**Unit**	**Consent limits**	**Duck Pond (STW002012)**		**Waihi Stream (STW002013)**	
			Methanex	**TRC**	**Methanex**	**TRC**
Nickel	mg/l		-	<0.02	<0.10	-
pH		6.0-9.5	7.5	7.4	6.8	6.6
Total hydrocarbons	mg/l	5	<1	<0.5	<1	<0.5
Total suspended solids	mg/l	100	17	15	<6	<2
Zinc	mg/l		<0.1	0.038	<0.1	0.081
Turbidity	NTU		8.8	12	1.4	1.3
Zinc filtered	mg/l			<0.005	<0.1	0.076
10 May 2016						
Ammonia as N	mg/l		n/a	n/a	4.5	4.55
Conductivity @ 25ºC	µs/cm	300*	n/a	n/a	160	154
Copper	mg/l		n/a	n/a	<0.05	<0.01
Nickel	mg/l		n/a	n/a	<0.10	-
pH		6.0-9.5	n/a	n/a	8.1	7.8
Total hydrocarbons	mg/l	5	n/a	n/a	<1	<0.5
Total suspended solids	mg/l	100	n/a	n/a	30	22
Zinc	mg/l		n/a	n/a	<0.10	0.155
Turbidity	NTU		n/a	n/a	12	9.5
Zinc filtered	mg/l		n/a	n/a	<0.10	0.053

* Not a consent limit, but a guideline limit
n/a Sample could not be collected due to very low pond level.

Results from each laboratory for stormwater discharges met the consented water quality criteria on all occasions.

Overall there was good agreement between the inter-laboratory analytical sample results.

2.3.3.5 Methanex Motunui annual report

Condition 20 of consent 3400-2 requires Methanex to provide the Council with an annual report on its wastewater treatment and disposal system, including monitoring results of the discharge and compliance with the consent.

Annual reports for July 2015 to June 2016 were received by Council via monthly reports, and fulfil this consent requirement.

2.3.4 Air

2.3.4.1 Inspections

During the monitoring period the Council did not receive any formal complaints regarding odour or other discharges to air as a result of the Motunui site and their activities.

In early July 2015 Methanex and Council received one unconfirmed report of flaring at Motunui that had generated significant smoke that had settled in the valley. The report was received the following day and therefore as the smoke had already dissipated, Council could not investigate the incident to determine compliance. However a wind rose (using data collected at New Plymouth Airport, Figure 3) for the period 1800hrs to 2200hrs indicated that it was unlikely that the smoke would be attributable to the flaring that Motunui undertook while restarting the production unit. Methanex had also undertaken their own internal investigation into the matter without any success in determining the cause or source of the event.

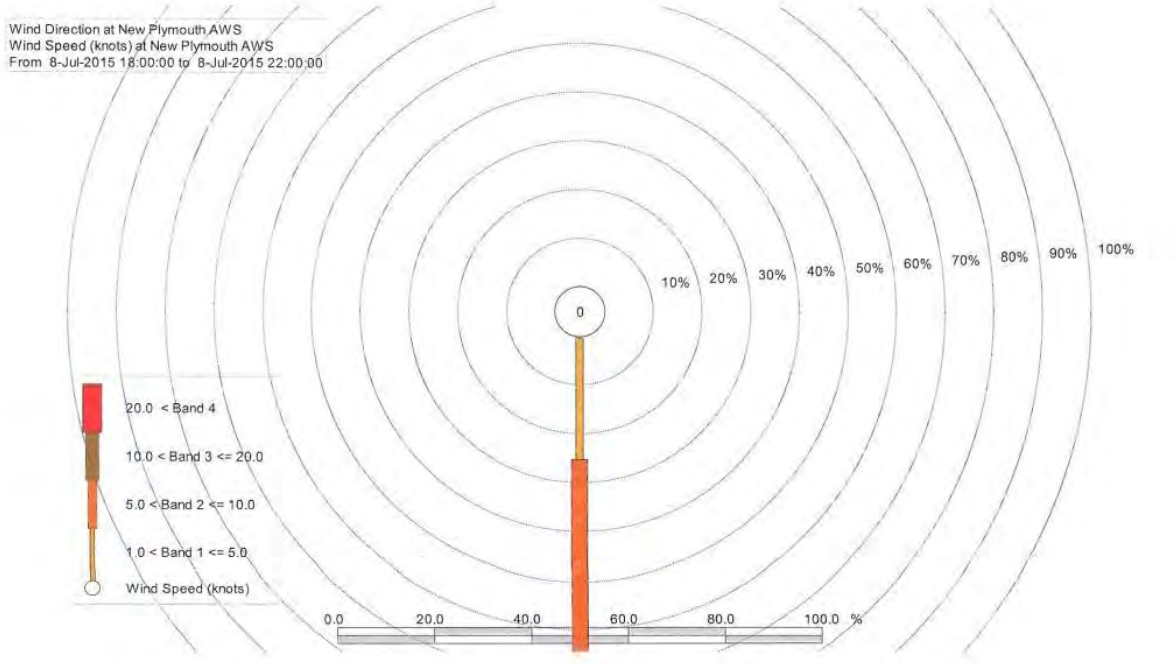

Figure 3 Windrose 8 July 2015, New Plymouth Airport

There were a couple of instances during March 2016 in which local unconfirmed odours were reported with the source being stated as unknown. Methanex also investigated these odours, through their own internal enquiries, as the complainant had contacted them directly. The Council developed a wind rose (Figure 4) from data collected at New Plymouth Airport. The wind direction was from the receptor towards Methanex rather than from Methanex. Both Methanex's and the Council's investigations were unable to source the odour and suggested that it was unlikely to be attributable to the activities at the Motunui site.

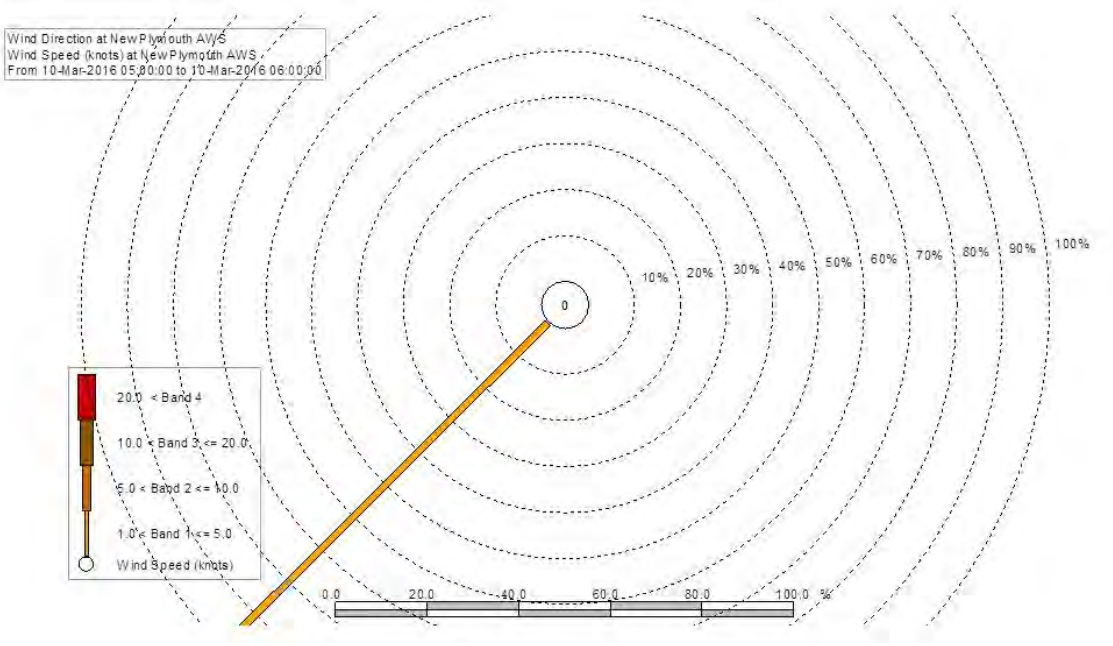

Figure 4 Windrose 10 March 2016, New Plymouth Airport

No effects on the receiving environment beyond the site perimeter were detected during any of the site inspections.

2.3.4.2 Consent requirements

Plume abatement report
Condition 5 of resource consent 4042-3 required a report, outlining options for reducing the adverse effects of the cooling tower plume. The consent specified that these reports should be provided in February 2009 and every five years thereafter. The most recent report was received in October 2014.

The report was discussed and included as an Appendix in the 2014-2015 Motunui and Waitara Valley Combined Annual Report. The next report is due in 2019.

Biennial air emissions report
Condition 6 of consent 4042-3 requires Methanex to provide the Council with a biennial report on its air emissions, including a revision of any technological advances in the reduction or mitigation of emissions, a detailed inventory of emissions (excluding carbon dioxide), outlining any energy efficiency measures, and addressing any other issues relevant to minimisation or mitigation of emissions.

A biennial report covering the period January 2014 to December 2015 was received in May 2016. The report is included as Appendix IV.

Methanex reported that they had not identified any new technological advances that could reduce emissions while being commercially viable. The results of perimeter monitoring contained in the report indicated the measured emissions were well within the consent requirements. It was also reported that Methanex were continuously seeking ways in which to improve energy efficiency and that it was related to operating costs which provided additional incentive to minimise energy use around the site. Recent examples of such initiatives included the refurbishment of the Motunui cooling

tower which has resulted in a 17% reduction in energy demand from the cell that was refurbished. Additionally new preheaters that have been installed in the Motunui reformers have improved energy efficiency in that part of the site.

The next biennial report is expected in 2018 and will be discussed in the 2017-2018 compliance monitoring report.

2.3.5 Soil

Methanex no longer holds any consent to discharge contaminants to land. Historically Methanex held a consent (ref. 4907-1) to dispose of approximately 2,000 tonnes of river silt/sludge annually. The majority of the disposal area was sold to Shell Todd Oil Services, and a partial transfer of the consent occurred in 2004. In November 2007 the Council received (and subsequently granted) an application for surrender of the consent.

Presently the sludge lagoons collect river silt that has been backwashed from the clarifiers. In time this silt will be spread to land belonging to Methanex as permitted by Rule 29 of the RFWP.

2.3.6 Investigations, interventions, and incidents

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holder. During the year matters may arise which require additional activity by the Council for example provision of advice and information, or investigation of potential or actual courses of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

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

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

In 2015-2016 there were no non-compliant events recorded by Council that were associated with Methanex's Motunui site.

2.4 Discussion

2.4.1 Discussion of site performance

Previous high standards of housekeeping were apparent at all inspections undertaken at the Motunui site. The Motunui site is presently running at full capacity with both production units on line. Maintenance and improvements of the site have been undertaken during the period under review.

Methanex continued to manage activities allowed by the consents it holds for the site well within consent limits over this monitoring period. Methanex has a current contingency plan with respect to the operation of the wastewater consent at the Motunui site. Methanex maintains comprehensive spill contingency equipment on site, and personnel are trained with respect to spill response.

Production related emissions to air from the site continued during the period under review. No consent non-compliances were noted and no confirmed complaints were received regarding flaring or the cooling tower plumes.

2.4.2 Environmental effects of exercise of water abstraction permits

The Motunui consent allows for a water take of up to 1,400 m^3/hr. Typically the water take is much lower, in the range of 450 – 1,200 m^3/hr. In part, this is due to the water reduction initiatives instigated by Methanex. At certain stages of the monitoring year, only one of the two production units were operating, so reducing water demand considerably over those periods.

Methanex personnel have been in ongoing discussion with the Council on attaining compliance with the regulations and their consent conditions in regard to water take pipeline integrity and flow meter positioning and verification issues. However it is noted that Methanex have been unhurried in their progress and the Council will require that the matter is resolved or a plan is set in place to resolve it in the next monitoring period.

2.4.3 Environmental effects of exercise of water discharge permits

Methanex staff continued to provide the Council with monthly monitoring data. With the exception of one low pH value, the parameters measured were all within consented limits for the water discharge consents held. The low pH value was considered an insignificant breach of the consent condition and likely as a consequence of natural fluctuation in water chemistry of the stream.

Inter-laboratory comparisons between the Council and Methanex laboratories showed good and reasonable agreement of results.

2.4.4 Environmental effects of exercise of air discharge permits

The controls in place to minimise and mitigate the safety risks to operators onsite of air pollution also ensure that there is a low likelihood of adverse environmental effects offsite. Modelling of air emissions when the site was at full capacity in 2001 has shown emissions levels far below consent limits which are set in line with National Environmental Air Quality Standards.

Neighbourhood effects
No offensive or objectionable odours were noted at the site boundary during any site visit undertaking by Council staff. Furthermore the Council has not received any specific complaints regarding the cooling tower plume through the monitoring period under review. One complaint that suggested the flaring occurring at Motunui had resulted in objectionable smoke accumulating in the valley at night, could not be

substantiated as the complaint was made the next day when the effects were no longer present.

Ecological effects
No adverse environmental effects were detected during the period under review.

2.4.5 Evaluation of performance

A tabular summary of Methanex's compliance record under its current active consents for the year under review is set out in Table 12 to Table 17.

Table 12 Summary of performance for Consent 0820-2

Purpose: ***To take water from Waitara River***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. The volume taken shall not exceed 1,400 m^3 /hr	Daily maximum flow rates provided monthly	Yes
2. The taking of water is managed to ensure that river flow no less than 4,600 l/s	Continuous gauging at Bertrand Road	Yes
3. Installation and maintenance of a water meter for water take data	Monthly data reports provided	Yes
4. Water conservation measures–incl. five-yearly testing of pipeline integrity and two-yearly report on water conservation	Water conservation reports received May 2016. Pipeline testing is overdue. Methanex and Council have been in discussion on how best to achieve this	Water conservation report received Pipeline testing report on hold through discussion with Council
5. Appropriate screening of intake structure to prevent fish entrainment	Inspection and liaison with consent holder	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**Good**

Methanex have been unable to satisfy condition 4 of Consent 0820-2 with regards to the testing of pipeline integrity. Given that they have been in discussion with Council, their performance rating has not been reduced in either of the previous two reports. However at the time of writing this report, the Council has begun to request a more urgent response, especially following recent pipeline failure of both the raw water and effluent pipelines. As a result their administrative performance rating has been set as good. If the matter is not significantly progressed or resolved in the 2016/17 period it is likely to be rated as poor.

A separate requirement relating to the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010* may affect how Methanex achieves compliance with this consent condition.

Table 13 Summary of performance for Consent 0822-2

Purpose: ***To discharge of stormwater from outfalls into Waihi and Manu Streams***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adoption of best practicable option to minimise effects	Inspection and liaison with consent holder	Yes
2. Limitation on stormwater catchment area – specific to application refer to drawing g10637	Inspection and liaison with consent holder	Yes
3. Contingency plan to be maintained and followed in event of a spill. Contingency plan to be supplied to the Council	Contingency plan received and reviewed in December 2014	Yes
4. Stormwater management plan to be maintained. To be supplied to the Council and approved	Stormwater management plan received and reviewed	Yes
5. Discharge sample analysis. Sampling to occur at specified points from the Waihi Stream and the Duck Pond. Analysed for pH, SS and total recoverable hydrocarbons	Sample analysis results received. With the exception of one insignificant pH breach, all results were within consent limits	Yes
6. Manu Stream: Discharge cannot cause specified adverse effects beyond mixing zone	Inspection – observation. Receiving water sample analysis	Yes
7. Waihi Stream: Discharge cannot cause specified adverse effects beyond mixing zone	Inspection – observation. Receiving water sample analysis	Yes
8. The Council is to be notified of any changes that may affect the nature of the discharge	No notification received	Yes
9. Review of consent	Next scheduled in June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable

Table 14 Summary of performance for Consent 0825-3

Purpose: ***To discharge of stormwater from Motunui intake facility into Waitara River unnamed tributary***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Best practicable option to prevent and minimise adverse effects	Discussion with consent holder	Yes
2. Activity undertaken in accordance with application documentation	Liaison with consent holder	Yes

Purpose: *To discharge of stormwater from Motunui intake facility into Waitara River unnamed tributary*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
3. Discharge cannot cause specified increase in turbidity in Waitara River beyond the mixing zone	Liaison with consent holder	Yes
4. Lapse of consent	Consent given effect to	N/A
5. Review of consent	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

Table 15 Summary of performance for Consent 0827-3

Purpose: *To discharge of wastewater into Waitara River unnamed tributary*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Maximum daily discharge shall not exceed 1,000 m^3/day	Liaison with consent holder	Yes
2. Adoption of best practicable option	Ongoing liaison with consent holder	Yes
3. Activity undertaken in accordance with application documentation	Liaison with consent holder	Yes
4. Discharge cannot cause specified adverse effects on turbidity in Waitara River beyond the mixing zone	No incidents reported. Liaison with consent holder	Yes
5. Review of consent	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable

Table 16 Summary of performance for Consent 3400-2

Purpose: *To discharge of effluent and stormwater into Tasman Sea*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Consent holder to adopt best practicable option to prevent or minimise adverse effects	Inspections, liaison and review of reported data	Yes

Purpose: ***To discharge of effluent and stormwater into Tasman Sea***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
2. Consent holder to maintain a record of the volume of effluent discharged each day	Monthly reports provided	Yes
3. Maximum daily discharge 12,096 m^3/day, 140 l/s	Monthly reports received	Yes
4. Minimum initial dilution of effluent 100:1	Outfall designed to specific design. Modelling exercise was undertaken and reported with the five-yearly marine outfall report received in February 2014	Yes
5. Maximum daily discharge of suspended solids 500 kg	Review of analytical information provided in self-monitoring data and inter-laboratory comparison	Yes
6. pH not to exceed range of 6 to 9	Review of analytical information provided in self-monitoring data and inter-laboratory comparison	Yes
7. Limits on concentration of COD, hydrocarbons, methanol, copper, nickel, zinc	Review of analytical information provided in self-monitoring data and inter-laboratory comparison	Yes
8. Allowable water treatment chemicals and volumes	Liaison with consent holder and inspections	Yes
9. Maximum daily limit of treatment with Spectrus CT1300 in response to *Legionella*	Liaison with consent holder and consent holder reports. This condition was exercised during this monitoring period	Yes
10. Approval from the Council required to discharge 'equivalent' chemical.	Permission for approval to replace four chemicals was granted in October 2015	Yes
11. Definition of 'equivalent'	N/A	N/A
12. Discharge of equivalent chemical requires written request	Not required	N/A
13. Conditions 5,6,7 and 8 apply to effluent prior to entry into outfall line	Monitoring and sampling carried out with regard to this requirement	N/A
14. Limits in conditions 7 and 8 apply unless the Council has given approval for a short term change	Not required	N/A
15. Effects on receiving waters	Historical marine ecological surveys (separate programme)	Yes
16. Consent holder to maintain contingency plan	Contingency plans provided September 2014 and reviewed as satisfactory	Yes
17. No domestic sewage in discharge	Liaison with consent holder. Domestic sewage is routed to the WWTP, not directly to the outfall	Yes

Purpose: *To discharge of effluent and stormwater into Tasman Sea*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
18. Consent holder to notify the Council at least seven days before consent is first exercised	Notification on file	Yes
19. Consent holder to certify the structural integrity and dilution performance of outfall at least every five years	Received a report satisfying this requirement	Yes
20. Consent holder to supply an annual effluent report by 31 March each year	Reports received monthly and reviewed as satisfactory	Yes
21. Lapse of consent	Consent given effect to	N/A
22. Review of consent	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

Table 17 Summary of performance for Consent 4042-3

Purpose: *To discharge emissions into the air – methanol distillation and ancillary facilities*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adoption of best practicable option to minimise adverse effects	Inspection and liaison with consent holder	Yes
2. Minimisation of emissions through control of processes	Inspection and liaison with consent holder	Yes
3. Consultation and approvals required prior to alterations to plant or processes	Inspection and liaison found no alterations to plant or processes requiring additional approvals	Yes
4. Provision of a report on cooling tower plume abatement	Report received October 2014. Next report expected in 2019	Yes
5. Biennial written air discharge emission and mitigation reports	Received May 2016. Next report expected in 2018	Yes
6. Maximum ground-level concentrations of methanol beyond site boundary	Previous modelling has shown compliance when site in full operation	Yes
7. Maximum ground-level concentrations of carbon monoxide beyond boundary	Previous modelling has shown compliance when site in full operation	Yes
8. Maximum ground-level concentrations of nitrogen dioxide beyond boundary	Previous modelling has shown compliance when site in full operation	Yes
9. Maximum ground-level concentrations of other contaminants beyond boundary	Previous modelling has shown compliance when site in full operation	Yes

Purpose: *To discharge emissions into the air – methanol distillation and ancillary facilities*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
10. Inventory of emissions to be provided with biennial emission mitigation report	Received May 2016	Yes
11. No offensive or objectionable odour at the site boundary permitted	Inspection	Yes
12. Adverse effects on ecosystems not permitted	Inspection of surrounding environment found no adverse effects	Yes
13. Optional review provision – notification within 6 months of receiving report (condition 5)	Consent was reviewed as part of the renewal process – 4042-3, granted 12 February 2008	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

N/A = not applicable

In assessing a compliance and environmental performance ranking for Methanex, consideration was also given to the incidents that occurred during the monitoring period as well as overall environmental performance and risk management. During the period, Methanex demonstrated high level of environmental performance and compliance with the resource consents for the Motunui installation as defined in Section 1.1.4. Their administrational performance has been rated as Good as although the performance against most consent conditions with respect to the administrational compliance was high, issues around testing the integrity of the water take pipeline and meeting the requirements of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010* are yet to be achieved. Methanex have been open and participative in their communication with regard to their progress on these issues.

2.5 Recommendations from the 2014-2015 Annual Report

In the 2014-2015 Annual Report it was recommended:

1. THAT monitoring of water abstractions from the Methanex Motunui plant in the 2015-2016 year continue at the same level as in 2014-2015.
2. THAT monitoring of water discharges from the Methanex Motunui plant in the 2015-2016 year continue at the same level as in 2014-2015.
3. THAT monitoring of air emissions from the Methanex Motunui plant in the 2015-2016 year continue at the same level as in 2014-2015.
4. THAT the Council considers whether or not the current water meter location is acceptable.
5. THAT Methanex continue with investigations on the required testing to establish water intake pipeline integrity at intervals of at least every five years and that this either result in the undertaking of the required testing or a variation of consent conditions.

Recommendation 1, 2 and 3 were fully implemented in the monitoring period.

Communication between Methanex and the Council has been on-going in relation to the location and verification of the water meters.

There has been ongoing discussion and investigation between Methanex and the Council staff with regard to the five yearly water intake pipe integrity report. There are some complexities in determining the best method to undertake the required testing without damaging the existing infrastructure.

2.6 Alterations to monitoring programmes for 2016-2017

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

The compliance monitoring programme for 2015-2016 was essentially unchanged from that for 2014-2015, on the grounds that the Methanex Motunui site had achieved a good level of environmental performance and the existing monitoring programme was adequate to provide sufficient data to assess environmental performance. It is now proposed that for 2016-2017, the programme be maintained at the same level as the programme for 2015-2016.

A recommendation to this effect is attached to this report.

2.7 Recommendations

1. THAT monitoring of consented activities at the Methanex Motunui site in the 2016-2017 year continues at the same level as in 2015-2016.
2. THAT Methanex prioritises and advances work towards achieving compliance with the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*.
3. THAT Methanex continue with investigations on the required testing to establish water intake pipeline integrity at intervals of at least every five years and that this either result in the undertaking of the required testing or a variation of consent conditions.

3. Waitara Valley

3.1 Process description

The Waitara Valley site had been shut down since 2008 and was restarted in October 2013 following significant maintenance and refurbishment work.

The Waitara Valley site (Photo 3) is a 1,500 tonne/day methanol production facility, which could produce 900,000 tonnes/year of chemical grade methanol. Actual production varies with the availability of natural gas.

Methanex Waitara Valley site is divided into several discrete areas associated with the on site production of methanol (Figure 3).

The processing area includes the reformer, main compressor, and the distillation units (D1 & D2). The distillation towers are the tallest structures on the site at 51.5 metres, followed by the reformer stack at 38 metres. Product storage area consists of one substantial storage tank and six smaller tanks. A cooling tower and the main servicing facilities are located in the utility area. It is noted that the cooling tower technology in place at the Waitara Valley site differs from the system used at Motunui and the cooling tower is considerably smaller in size.

Photo 3 Methanex Waitara Valley site

Figure 3 Waitara Valley site layout and water sampling site location

3.1.1 Water discharges

There were various sources of wastewater from processes associated with the methanol manufacturing activities at the site, including water treatment wastes, boiler, cooling tower and other blowdowns, process effluents, domestic effluent and stormwater. The primary sources of water discharges, and the main features of the site are identified in Figure 3. This effluent is produced in a similar manner to that described in this report for the Motunui site (refer to section 2. 1. 1. of this report).

The Waitara marine outfall is the primary method used to dispose of stormwater and wastewater from the site.

Discharges to the Waitara River now occur very infrequently and only after consultation with Council. A small area of the site in the vicinity of the ponds and domestic wastewater treatment area flows overland to a small tributary of the river. A diesel tank in this higher risk area is bunded, and the sump under the diesel tank is sampled and tested prior to discharge.

3.1.2 Emissions to air

The principal emissions from the site were:

a) flue gases from the reformer furnace stack. These comprise typical products from the combustion of natural gas i.e. nitrogen, water vapour, oxygen, carbon dioxide, and traces of nitrogen oxides and carbon monoxide;
b) flue gases from the boiler stacks, which were similar to the above;
c) steam emissions from various vents;
d) water vapour and water droplets from the cooling tower, which could contain entrained water salts and treatment chemicals; and
e) organic vapours (particularly methanol) from the distillation column vents.

3.1.3 Solid wastes

Solid wastes were previously generated at the site. The main source of this was sludge from the ponds. When the ponds were de-sludged, the material was allowed to dry on-site and tested so that the appropriate method of disposal could be determined.

3.2 Resource consents

Methanex holds five active resource consents (excluding renewals) for the operation of the Waitara Valley site. A summary of the requirements imposed by each of the consents is provided in Sections 3.2.1 to 3.2.4 and copies of the resource consents are included in Appendix II.

A summary list of the consents held by Methanex in relation to Waitara Valley is given in Table 17.

The early consents were granted to Petralgas Chemicals NZ Limited. In May 1993, the Company was changed to Methanex Waitara Valley Limited, following the merger of Fletcher Challenge Methanol and Methanex Corporation Canada. The consents were transferred into the name of Methanex Motunui Limited in 2005.

Table 18 Consents held in relation to the Waitara Valley site, July 2015 – June 2016

Consent	Purpose	Volume (m^3/day)	Review date	Expiry date
0801-2	Water take from Waitara River for the Waitara Valley petrochemical plant	7,200	Jun 2015	Jun 2021
0802-2	Discharge stormwater from the Waitara Valley site to the Waitara River	-	Jun 2015	Jun 2021
3399-2	Discharge treated wastewater and stormwater to Tasman Sea	5,000	Jun 2015	Jun 2021
3960-2	Construct rock groyne in Waitara River	-	Jun 2015	Jun 2021
4045-3	Discharge to air from methanol plant	-	Jun 2015	Jun 2021

Summaries of consent conditions
In the sections that follow, summaries of Methanex's Waitara Valley consent conditions are provided. It should be noted that these summaries may not reflect the full requirements of each condition. The consent conditions in full may be found in the resource consents which are appended to this report.

3.2.1 Water abstraction permits

Methanex holds one resource consent to abstract water for the Waitara Valley site as described below:

Consent 0801-2: Abstraction from the Waitara River
Methanex holds water consent 0801-2 to cover the abstraction at two points upstream of the methanol plant. The original permit was issued by the Council on 23 July 1980 under Section 87(d) of the RMA. It was due to expire in May 2008 and renewed as consent 0801-2 on 29 April 2008. This consent will expire in June 2021.

There are eight special conditions attached to this consent.

Special conditions 1 and 3 set out a maximum rate of abstraction of 300 m^3/hr (approximately 83 l/s) when the flow rate of the Waitara River measured at Bertrand Road is greater than 4,600 l/s. No water is to be taken when the river falls below this level.

Special condition 2 requires that the consent holder must maximise the water take from the Motunui intake structure and minimise that taken from the old Waitara Valley intake.

Special condition 4 requires the installation and maintenance of a water meter and specifies the technical requirement around this. This condition specifies the format and frequency at which the water abstraction records are to be forwarded to the Council.

Special condition 5 requires the consent holder to avoid, remedy and mitigate and adverse effects as a consequence of exercising the consent. This includes five yearly testing and reporting of the pipeline integrity between the production site and take as well as the provision of a two yearly report on water use reduction programmes. Special condition 6 requires screening of the intake structure to prevent the entrainment of fish.

Special condition 7 and 8 are lapse and review provisions.

3.2.2 Land use permit

3960-2: Rock groyne in Waitara River
Methanex holds land use permit 3960-2 which provides for the construction of a rock groyne in the Waitara River to control against river bed degradation in the vicinity of the water intake structure. This permit was issued by the Council on 23 September 1991 under Section 87(a) of the RMA. It was due to expire on 1 June 2003. The consent was renewed on 14 May 2003 and is due to expire on 1 June 2021. There are three special conditions attached to the consent.

Special condition 1 requires that the consent holder notify the Council prior to undertaking maintenance that may impact on the bed of the river.

Special condition 2 requires that when the structures are no longer required, they be removed and the area reinstated, and that the Council must be notified prior to their removal.

Special condition 3 provides for a review of the consent to be undertaken in June 2015. The consent is due to expire on 1 June 2021.

3.2.3 Water discharge permits

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

Methanex currently holds two consents to discharge water from the Waitara Valley site, as described below.

Consent 0802-2: Discharge of uncontaminated stormwater to the Waitara River
The original discharge permit (consent 0802-1) was granted by the Council on 25 May 1981 under Section 87(e) of the RMA. That consent expired in June 2008. The renewed consent (consent 0802-2) presently provides for the discharge of stormwater to the Waitara River from the Waitara Valley site and is due to expire in June 2021.

There are seven special conditions attached to this consent:

Special condition 1 requires that the consent holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

Special condition 2 requires that the consent be exercised in accordance with the documentation supplied in support of the application.

Special condition 3 requires that the consent holder test the levels of contaminants in the stormwater prior to discharge and report these to Council.

Special condition 4 limits the concentration of certain analytes in the discharge and specifies the pH range.

Special condition 5 require certain water quality parameters to be met downstream of the discharge point and mixing zone.

Special conditions 6 and 7 relate to the lapse and review provisions of the consent.

Consent 3399-2: Discharge of effluent to Tasman Sea
Methanex holds coastal discharge consent 3399-2 to cover the discharge of treated wastes, including process and water treatment wastes and domestic sewage, and contaminated stormwater from the Waitara Valley site into the Tasman Sea. The discharge occurs via the Waitara marine outfall which discharges approximately 1,250 metres offshore from the Waitara River mouth. This consent was granted by the Council on 11 October 1989 under Section 87(e) of the RMA with an expiry date in May 2008. The renewed consent (consent 3399-2) presently provided for the discharge of up to 5,000 m^3/day, with a maximum discharge rate of 60 l/s.

There are 20 special conditions attached to this consent:

Special condition 1 requires that the consent holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

Special condition 2 requires the consent holder to keep records of the volume of effluent and provide these to the Council on a monthly basis.

Special condition 3 limits the volume and rate of the discharge.

Special condition 4 requires a minimum initial dilution factor to be met.

Special condition 5 limits the concentration of suspended solids.

Special condition 6 and 7 require certain water quality parameters to be met.

Special condition 8 limits what water treatment chemicals may be used and their relative dosing limits.

Special conditions 9 to 11 and 13 discuss the requirements of Methanex to advise the Council of any proposed changes in water treatment or cleaning chemicals, or equivalent chemicals, in order that limitations may be placed on their discharge, if necessary, for protection of the receiving waters.

Special condition 12 specifies the sampling point for condition 5, 6, 7 and 8.

Special condition 14 outlines what effects the discharge may not give rise to after a mixing zone of 200 metres.

Special condition 15 requires a contingency plan, to maintained and put into operation in the event of spillage, accidental discharge, or pipeline failure. The plan is to be provided to Council initially after the granting of the consent and reviewed by the consent holder thereafter on a two yearly basis.

Special condition 16 specifies that the discharge of domestic sewage (human effluent) will not be permitted following the closure of the Waitara municipal WWTP.

Special conditions 17 and 18 require reports to be received from Methanex. Methanex must certify the structural integrity and dilution performance of the outfall at least

every five years. An annual report on the performance of the effluent disposal system is also required and must detail compliance with conditions of the consent.

Special conditions 19 and 20 relate to the lapse and review provisions of the consent.

Since 2011, Methanex implemented an onsite sewage treatment system, which discharges as treated water to grass on site.

3.2.4 Air discharge permit

Methanex holds one air discharge consent for the Waitara Valley site.

Consent 4045-3: Discharges to air from the Waitara Valley methanol plant
Methanex holds air discharge consent 4045-3, to cover the discharge of emissions from combustion and other activities associated with the production of methanol at Waitara Valley.

The Council issued this permit on 6 December 1995 as a resource consent under Section 87(e) of the RMA. A minor variation to remove requirements relating to carbon dioxide emissions was granted on 6 April 2005. The consent was due to expire on 1 June 2008 but has been renewed as consent 4045-3, granted in April 2008 and is now due to expire in June 2021.

There are 14 special conditions attached to this consent.

Special condition 1 requires that the consent holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

Special condition 2 requires the consent holder to operate all plant and processes to keep emissions to a practical minimum.

Special condition 3 specifies that the consent holder must notify the Council prior to any plant or process change which is likely to substantially change the amount or nature of emissions.

Special condition 4 requires the consent holder to supply a report to the Council, every three years. It must include a review of emission control technology, an emissions inventory, energy efficiency measures and any other relevant issues.

Special conditions 5 through 8 set limits on various gaseous contaminants (methanol, carbon monoxide, and nitrogen oxides) to protect the receiving environment and human health.

Special condition 9 restricts offensive or objectionable odour at or beyond the property boundary.

Special condition 10 specifies that the discharges authorised by the consent should not cause significant adverse effects on local ecosystems.

Special condition 11 is a review condition, including provisions for review of best practicable options in emission control technology.

Special condition 12 requires effects monitoring.

Special condition 13 is a lapse condition.

Special condition 14 allows for provisional review.

3.3 Results

3.3.1 Site inspections

As outlined in section 2.3.1 of this report Council officers carried out four compliance monitoring site inspections on 7 October, 26 November 2015, 25 February and 24 May 2016 as well as two compliance monitoring sampling visits for the purpose of collecting a split sample on 11 November 2015 and 10 May 2016.

7 October 2015 at 1430hrs
An inspection of both the Motunui and Waitara Valley facilities was undertaken by Council staff, accompanied by Gary Rielly (Methanex personnel). The following observations were made during inspection of the Waitara Valley site:

Overall the site was managed well and tidy with no off-site emissions or discharges detected.

The inspecting officer was advised that the onsite sewage unit was to be replaced with a greater capacity unit in the next 12 months. No issues were detected by the officer with regard to the current unit.

Methanex personnel advised that they had maintained ongoing groundwater monitoring at site of the July Methanol spill (refer to section 3.4 of this report). Levels in affected groundwater bore were slowly decreasing down to detection limit. A final report would be provided shortly. Methanex staff were investigating a groundwater flow analysis to be conducted at Motunui (such an analysis had already been undertaken for the Waitara Valley site). It was mentioned that the intention of this would be to use the results in establishing an annual groundwater monitoring programme at Motunui as per what was in in place at Waitara Valley.

26 November 2015 at 0900hrs
An inspection of both the Motunui and Waitara Valley sites was undertaken by Council staff, accompanied by Ben Lawn (Methanex personnel). The Waitara Valley site was inspected after Motunui and the following observations were made.

The Waitara Valley production unit had been shut down for refurbishment. Overall the site was well managed and tidy, with no off-site emissions or discharges detected.

There were upgrades occurring in the vicinity of the chemical storage area. This area was found to be tidy, with no sign of spills.

The upgrade planning of the onsite sewage facility was still underway. This area was similarly found to be well-maintained with no odour or sign of spills.

25 February 2016 at 1400hrs
An inspection of the Motunui and Waitara Valley sites, as well as the intake structure was undertaken by Council staff, accompanied by Ben Lawn (Methanex personnel). The Waitara Valley site was inspected after Motunui and the following observations were made.

Overall the site was well managed and tidy, with no off-site emissions or discharges detected.

The storm pond was empty in preparation for removal of silt sludge from water treatment. The sludge disposal location was to be confirmed following results of testing. It was intended that this would be sent to the Redvale landfill (Auckland) if heavy metals were found to be present, otherwise it would be potentially spread to land.

At the time of the site visit, new insulation was being installed in distillation tower. Pigging of pipework and leak detection work were also ongoing.

24 May 2016 at 1100hrs
An inspection of both the Motunui and Waitara Valley sites was undertaken by Council staff, accompanied by Ben Lawn (Methanex personnel). The Waitara Valley site was inspected after Motunui and the following observations were made.

Overall the site was well managed and tidy, with no off-site emissions or discharges detected.

The storm pond was near empty, with the contents mainly rainwater following recent wet weather. Sludge removal had been completed. The sludge was stockpiled on site, with the intention that it would likely be disposed of at Colson Road landfill following metal testing analysis.

The chemical storage facility was found to be tidy, with the bunding secure and in good condition and no sign of spills. Maintenance work was being undertaken in this area at the time of the inspection. Resin had been recently cleaned out and this was to be disposed of to landfill.

3.3.2 Production unit restart programme

The following schedule of production unit shutdowns was received from Methanex Waitara Valley (Table 19).

Table 19 Programme of production unit shut downs for 01 July 2015 to 30 June 2016

Trip date	Restart date	Production unit	Description
24-Nov-15	10-Dec-15	Waitara Valley	Plant shut down due to leak on pipe fitting on outlet of process gas separator Plant kept down to carry out repairs to known leaks and defects
05-Mar-16	21-Mar-16	Waitara Valley	Plant shutdown due to gas restrictions caused by Pohokura shutdown
21-Mar-16	27-Mar-16	Waitara Valley	Length of shutdown exceeded length of gas outage

3.3.3 Surface water

3.3.3.1 Surface water abstraction monitoring by Methanex

Since 1992, water for operation of the Waitara Valley site has been supplied from headworks constructed for supply of the Methanex Motunui site. The headworks are located approximately one kilometre above the Bertrand Road bridge, and supplement the supply from the original Mamaku Road headworks.

Daily volumes of water entering the Waitara Valley site from the Waitara River are recorded and reported to the Council on a monthly basis.

Consent 0801-2 allows Methanex to take up to 300 m^3/ hr from the Waitara River (Figure 5) when the river flow at the Bertrand Road gauging station is above 4,600 l/s (16,560 m^3/hour). A hydrograph of river flows at the Bertrand Road gauging station based on data for calculated mean daily flows during the 2015–2016 monitoring period is attached to this report as Appendix II. The Waitara River flow did not fall below the consent limit of 4,600 l/s level during the 2015-2016 monitoring period. Reported maximum daily abstraction rates were within allowable limits at all times.

Figure 5 Waitara Valley water take

Water use reduction report
The Council received a report from Methanex in May 2016 relating to water use reduction at Waitara Valley during the 2014 and 2015 calendar years. This report is a requirement of condition 5b of Consent 0801-2. It is attached to this compliance monitoring report as Appendix III.

In their report Methanex recognise both the environmental and economic benefits of reducing their water usage. Methanex reported that they continue to implement measures at both sites to reduce water consumption.

Resource Management (Measurement and Reporting of Water Takes) Regulations 2010
In July 2014, Methanex unsuccessfully attempted to undertake a verification of the accuracy of the Waitara Valley site's raw water flow meter (FT-5011). In order to undertake a successful verification, piping modifications will be required to provide a new straight pipe section suitable for the proving meter. For this to be installed, a full-site shutdown will be necessary. Methanex's next shutdown is currently scheduled for 2018.

As an interim measure, Methanex used data from their control system and compared the live readings from other flow meters in the Waitara Valley water treatment plant downstream of FT-5011. They found that FT-5011 reads approximately 3% higher than the other meters, indicating reasonable accuracy.

The matter is still being explored by the Council and Methanex and at the time of writing this report, Methanex had developed a project plan for the installation of flow meters and pipe work at Waitara Valley.

3.3.3.2 Effluent monitoring

Wastewater from the Waitara Valley site is treated and discharged to the Waitara marine outfall. During the period under review, treated plant effluent comprised process and water treatment wastes and stormwater. The discharge is provided for by consent 3399-2.

Effluent monitoring data gathered by Methanex was sent to the Council on a monthly basis. The data is made up of continuous online data, laboratory analysis of a 24-hour composite effluent sample and mass discharge of water treatment chemicals calculated by Methanex using chemical consumption data.

Continuous measurement
Flow and pH are measured by online analysers, and recorded continuously at the Waitara Valley effluent discharge point. The figures reported to the Council are daily averages (m^3/hr), daily maximum (l/s) and daily volume (m^3/day) for flow, and minima, maxima and daily averages for pH. A summary of this data is presented in Table 20 and Table 21.

Special condition 6 of consent 3399-2 states,

"THAT the pH of the effluent shall not exceed the range pH 6 to pH 9 unless it is to be combined with the lime treated wastewater from the Waitara Wastewater Treatment Plant, in which case, it shall not exceed the range of pH 6 to pH 11."

As the WWWTP ceased operation in August 2014, the pH values of 6 and 9 are used for assessing consent compliance.

Analysis of composite samples
A proportional sampler is used to create a daily composite sample representative of the daily flow of effluent. This is analysed by the Methanex laboratory, to determine compliance with their discharge consent 3399-2. A summary of this data is presented in Table 20.

Table 20 Summary of the Waitara Valley site's monitoring results of effluent during 2015-2016

	Unit	Minimum	Maximum	Consent limit	Number of breaches
Continuous measurement					
Volume of discharge	m^3/day	0	5,146	5,000	1
pH	-	6.03	8.94	6-11	0
Daily measurement					
Petroleum hydrocarbons	g/m^3	<1	2	10	0
Methanol	g/m^3	<2	<2	15	0
Suspended solids	kg/day	<4	72	500	0
Monthly measurements					
Ammonia	g/m^3	<0.10	5.20	200	0
Copper	g/m^3	<0.05	<0.05	0.5	0
Nickel	g/m^3	<0.10	<0.10	1.0	0
Zinc	g/m^3	<0.10	<0.10	2.0	0

The effluent discharge rates are limited by consent 3399-2 to a daily discharge of not more than 5,000 m^3 and at a maximum rate of 60 l/s. From the data provided by the consent holder, a minor exceedance was recorded on one occasion on 23 August 2016. The volume of effluent discharged that day was recorded as 5,146 m^3. From and including 21 to 24 August, the maximum flow rate of effluent was recorded at 69 l/s which exceeded the consent limit of 60 l/s. An explanation of these events was submitted by Methanex in the monthly report. It stated that this occurred due to damage to the flow meter resulting in inaccurate results. Methanex arranged a replacement for the flow meter and made temporary repairs.

Chemical dosing rates

Consent 3399-2 (for discharge of process waste from the Waitara Valley site) sets mass discharge limits on the water treatment chemicals used on the site. Methanex calculates water treatment chemical mass discharge rates using chemical consumption data. A summary of this data for the monitoring period is presented in Table 21.

Table 21 Summary of Waitara Valley chemical discharge data (calculated) for July 2015 to June 2016

Water treatment chemicals - consent 3399-2 (calculated)					
	Unit	**Minimum**	**Maximum**	**Consent limit**	**Number of breaches**
Klaraid PC1192	Kg/day	8	59	150	0
Spectrus BD1500	Kg/day	0	8	50	0
Spectrus BD1501E	Kg/day	1	2	25	0
Spectrus CT1300	Kg/day	0	4	5	0
Spectrus NX1100	Kg/day	0	4	9	0

Water treatment chemicals - consent 3399-2 (calculated)					
	Unit	Minimum	Maximum	Consent limit	Number of breaches
Inhibitor AZ8104	Kg/day	4	16	30	0
Steamate NA0880	Kg/day	0	20	25	0
Cortrol OS7780	Kg/day	0	50	300	0
Cortrol OS5601	Kg/day	0	0	300	0
Optisperse HTP 73301	Kg/day	1	18	50	0
Optisperse HTP 73611	Kg/day	3	19	50	0
Optisperse PO5211A	Kg/day	0	0	15	0
Foamtrol AF2290	Kg/day	0	0	2	0
Gengard GN8020	Kg/day	6	29	70	0
Flogard MS6209	Kg/day	0	5	20	0
Flogard POT6101	Kg/day	5	4	15	0

Compliance with conditions on effluent composition was achieved throughout the monitoring period from July 2015 to June 2016.

Equivalent chemical
As detailed under section 2.3.3.2 of this report, on 14 October 2015 Methanex applied for approval to change four of the water treatment chemicals used in the cooling system at both sites. No review of conditions on consent 3399-2 was required in respect of the discharge of the proposed replacement water treatment chemicals.

The table below sets out the original chemical, the replacement chemical and the maximum daily discharge of each of the chemicals used at the Waitara Valley site. It was noted that there was a transition period over which both the replacement and original were used, but their combined maximum daily discharge remained well below the limits set out in the consent and subsequently agreed and approved by Council.

Table 22 Replacement chemicals Waitara Valley October 2015

Chemical presently used		Proposed replacement chemical	
Name	Max. daily discharge (kg)	Name	Max. daily discharge (kg)
Spectrus CT1300	5	Spectrus NX1100	9
Cortrol OS7780	300	Cortrol OS5601	300
Spectrus BD1500	50	Spectrus BD1501E	25
Flogard MS6209	20	Flogard POT6101	15

3.3.4 Uncontaminated stormwater

All stormwater from process areas is contained on the Waitara Valley site in the stormwater pond. Consent 0802-2 allows for the discharge of uncontaminated stormwater to the Waitara River. In April 1994, Methanex made a decision to discharge all routine stormwater from the site via the Waitara marine outfall (consent 3399-2).

The Waitara River discharge (consent 0802-2) occurs very rarely and only when there is an extreme rainfall event, when the pumps to the outfall cannot keep up with the stormwater received from the site.

To monitor any effects to the Waitara River caused by the stormwater discharge, a total of 37 biological surveys of three sites were carried out between June 1983 and May 1994. No adverse effect on riverbed macroinvertebrate communities or algal populations were found, which could be attributed to the stormwater discharge.

This consent was not exercised during the 2015-2016 monitoring period.

3.3.5 Inter-laboratory comparisons

The Council carried out inter-laboratory comparisons on two occasions during the monitoring period under review. Split samples were collected from the Waitara Valley site effluent, and analysed by Methanex and the Council. The results of the inter-laboratory comparisons are shown in Table 23. The exercise also serves as a compliance monitoring check.

Table 23 Inter-laboratory comparison on Waitara Valley effluent composite sample results

Waitara Valley process effluent - IND002005 (Consent 3399-2)						
Parameter	Unit	Consent limits	11 November 2015		10 May 2016	
			Methanex	TRC	Methanex	TRC
Ammonia as N	mg/l		0.7	0.654	5.2	5.3
Chemical oxygen demand	mg/l	200	<25	21	36	31
Conductivity @ 25 °C	µs/cm	*300**	1550	1540	1780	1727
Copper	mg/l	0.5	<0.05	0.02	<0.05	0.02
Methanol	mg/l	15	<2	<1	<2	<1
Nickel	mg/l	1.0	<0.10	<0.02	<0.1	<0.02
pH		6.0-11.0	8.4	7.9	7.9	7.8
Total hydrocarbons	mg/l	10	<1	<0.5	<1	<0.5
Total suspended solids	mg/l	daily discharge <500 kg	7	<2	14	12
Zinc	mg/l	1.0	<0.10	0.021	<0.1	0.072
Turbidity	NTU		4.8	4.8	7.4	5.4

* Guideline limit; not a consent limit

Results from each laboratory for stormwater discharges met the consented water quality criteria on all occasions. Conductivity was elevated in the 2015 and 2016 samples, but with consideration of the other analytical results, this was not considered to be of concern.

Overall there was good agreement between the inter-laboratory analytical sample results for the 2015-2016 monitoring period.

3.3.5.1 Methanex Waitara Valley annual report

Condition 15 of consent 3399 requires Methanex to provide the Council with an annual report on its wastewater disposal system, including the performance of the outfall and compliance with the consent. It was agreed in 2010 that this annual report would consist of monthly reports submitted to the Council on the performance of the wastewater disposal system. Methanex have produced and provided monthly reports throughout the monitoring period and thus comply with this condition.

3.3.6 Air

3.3.6.1 Inspections

During the monitoring period, inspections of the Waitara Valley site were completed by an officer of the Council. Inspections are integrated for air and water related monitoring.

No discernible effects on the receiving environment beyond the site perimeter were noted during any of the inspections.

3.3.6.2 Consent requirements

Special condition 4 of resource consent 4045-3 requires that, every three years from the date of granting the consent, Methanex provides the Council with a report covering the following:

- Options for reducing or mitigating emissions, focusing on odorous emissions, carbon dioxide and the cooling tower plume.
- An emissions inventory (excluding carbon dioxide).
- Energy efficiency measures implemented at the Waitara Valley site.
- Any other relevant matters.

Methanex supplied a combined report for both Motunui and Waitara Valley in May 2016 covering the 2014 and 2015 calendar years. The findings of the report are summarised in the Motunui section (section 2.3.4.2) of this report and the full report is attached as Appendix IV.

3.4 Investigations, interventions, and incidents

In 2015-2016 there were two non-compliant event recorded by Council that was associated with Methanex's Waitara Valley site.

Discharge of treated wastewater to land (Incident IN/32171)
On 13 August 2015 at 0840hrs the Council received a self notification from Methanex regarding a discharge of treated wastewater, overflowing from one of the pump wells, at the Methanex Waitara Valley site. This discharge was from a new section of pipework, connecting the two sites. Treated effluent flowed back up the pipe and discharge overland into a farm drain. This was an unexpected consequence of the new pipework. It was estimated that approximately 5 to 10 m^3 of water overflowed from the well and flowed down onto the farm drain in front of the stormwater ponds. No impact was expected or noted on the receiving water occurred with the Motunui wastewater composition being at normal purity with non-detectable levels of various

constituents tested for. The Company investigated corrective actions to prevent reoccurrence. No further action was taken by Council as the event was not foreseeable and the likely environmental effects were considered to be insignificant.

Discharge of methanol to groundwater (Incident IN/32119)

On 27 July 2015, the Council received a self-notification from Methanex that a spill of approximately 200 l of methanol had occurred onsite at Waitara Valley.

An inspection of the Methanex Waitara Valley site was carried out following the notification. The site inspection identified the location of the spill and clarified the process of events that led to the methanol spilling onto the ground and into a groundwater bore. It was identified that staff were draining methanol from a pipe to an intermediate bulk container (IBC). The flow stopped and staff were confident that the pipe had been drained. The staff left the area and when they returned they noted that the spill had occurred. The spill covered an area of approximately 3 m^2 and flowed towards a low point where a groundwater bore was located. Methanol was observed around the bore cover. The bore had been sampled and methanol detected at relatively significant levels. Council agreed that the bore should be pumped out to remove any remaining methanol that was still in the bore.

Further investigation found that a non-return valve had failed under pressure causing methanol to flow into the IBC and overflow. The non return valve was replaced. A down gradient bore was tested for methanol with no methanol detected. A programme of regular pumping out of the bore and testing this and other surrounding bores was implemented. This programme was continued with until the bore showed no traces of methanol by mid October 2015.

Generally groundwater sample results revealed low concentrations of methanol within the affected bore. There was a spike in methanol recovered from the bore shortly after the programme of pumping out the bore commenced. This was thought to be as a result of the pumping drawing methanol containing groundwater from around the bore back into it. Due to the location of the incident and the readings from surrounding bores as well as with consideration of the relatively short half life of methanol (1 to 7 days), the effects arising from the spill were likely to be very minor in nature (if any at all).

As the incident was a result of mechanical failure and the discharge was suitably remediated, enforcement was not considered appropriate or necessary.

Two reports were received from Methanex in relation to this incident and are included with this report as Appendix V.

3.5 Discussion

3.5.1 Discussion of site performance

During each inspection by the Council, officers have noted that the facility is well managed, with a high standard of housekeeping apparent. Incidents relating to treated wastewater and methanol spills were self-reported by Methanex during the monitoring period. In both cases the likely environmental effects were considered minor. No enforcement action was considered appropriate or necessary in response to either event as both were unforeseeable and appropriate responses were undertaken by Methanex.

3.5.2 Environmental effects of exercise of water permits

Methanex continued to show good control of the activities permitted by the resource consents associated with the Waitara Valley site and no adverse environmental effects in relation to the water takes or discharges to the marine outfall were observed during the period under review.

3.5.3 Environmental effects of exercise of air discharge permit

Neighbourhood effects
Methanex continued to show good control of the activities permitted by the air discharge resource consents associated with the Waitara Valley site. No off-site effects were noted during the period under review.

Ecological effects
No adverse environmental effects were observed during the period under review.

3.5.4 Evaluation of performance

A tabular summary of Methanex's compliance record for the year under review is set out in Table 24 to Table 28.

Table 24 Summary of performance for Consent 0801-2

Purpose: ***To take water from Waitara River***		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Limit on total volume of water from the two intakes no more than 300 m^3	Review of self-monitoring data provided monthly	Yes
2. Water take should be maximised from the Motunui intake structure	Liaison with the consent holder	Yes
3. Water take managed to ensure Waitara River flow at Bertrand Rd > 4,600 l/s. No taking to occur when the river level falls below this	Ongoing monitoring of river levels and Methanex self-monitoring data	Yes
4. Installation and maintenance of an appropriate water meter and provision of records to the Council	Review of abstraction records provided to the Council	Yes
5. Provision of reports on the testing of pipeline integrity and water use reduction programmes	Water conservation reports received May 2016 Pipeline testing is overdue. Methanex and Council have been in discussion on how best to achieve this	Water conservation report received Pipeline testing report on hold through discussion with Council
6. Appropriate screening of intake to prevent fish entrainment	Inspection and liaison with consent holder	Yes
7. Lapse condition	N/A	N/A
8. Review provision	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A

Purpose: *To take water from Waitara River*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**Good**

N/A = not applicable

Methanex have been unable to satisfy condition 4 of Consent 0801-2 with regards to the testing of pipeline integrity. Given that they have been in discussion with Council, their performance rating has not been reduced in either of the previous two reports. However at the time of writing this report, the Council has begun to request a more urgent response, especially following recent pipeline failure of both the raw water and effluent pipelines. As a result their performance rating has been set as good. If the matter is not significantly progressed or resolved in the 2016/17 period it is likely to be rated as poor.

A separate requirement relating to the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010* may affect how Methanex achieves compliance with this consent condition.

Table 25 Summary of performance for Consent 0802-2

Purpose: *To discharge uncontaminated stormwater to the Waitara River*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adoption of best practicable option	Inspections and liaison with consent holder. Consent not exercised during this monitoring period	N/A
2. Activity to be undertaken generally in accordance with the consent application documentation	Consent not exercised during this monitoring period	N/A
3. Any stormwater to be discharged to the Waitara River to be tested and results provided to the Council for approval before discharge	No discharge reported	N/A
4. Specified chemical constituents not to be exceeded in the discharge	Consent not exercised during this monitoring period	N/A
5. Specified prohibited effects on the receiving water	Consent not exercised during this monitoring period	N/A
6. Lapse condition	N/A	N/A
7. Review provision	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**N/A**
Overall assessment of administrative performance in respect of this consent		**N/A**

Table 26 Summary of performance for Consent 3399-2

Purpose: *To d*ischarge treated wastes into the Tasman Sea		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Consent holder to adopt best practicable option to prevent or minimise adverse effects	Inspections (and separate programme)	Yes
2. Consent holder to maintain a record of the volume of effluent discharged each day	Monthly reports received	Yes
3. Maximum daily discharge 5,000 m^3/ day, 60 l/s	Monthly reports received. A couple of high readings were recorded due to a faulty flow meter. Data from these days have been excluded when considering compliance with this consent condition	Yes
4. Minimum initial dilution of effluent 100:1	Outfall designed to specific design and physical modelling was undertaken. Review of effluent data and volumes discharged was also undertaken	Yes
5. Maximum daily discharge of suspended solids 500 kg	Monthly reports	Yes
6. pH not to exceed range of 6 to 11	Monthly reports	Yes
7. Limits on concentration of COD, hydrocarbons, methanol, ammonia, copper, nickel, zinc	Monthly reports	Yes
8. Allowable water treatment chemicals and volumes	Inspection and liaison with consent holder	Yes
9. Approval from the Council required to discharge 'equivalent' chemical	Approval was given to substitute four water treatment chemicals	Yes
10. Definition of 'equivalent'	N/A	N/A
11. Discharge of equivalent chemical requires written request	Not required during monitoring period	Yes
12. Conditions 5, 6, 7 and 8 apply to effluent prior to entry into the outfall line	Monitoring/sampling undertaken in accordance with this provision	N/A
13. Limits in conditions 7 and 8 apply unless the Council has given approval for a short term change	Limits met	Yes
14. Effects on receiving waters	Previous marine ecological surveys (separate programme)	N/A
15. Consent holder to maintain contingency plan	Contingency plan received in September 2014	Yes
16. No domestic sewage in discharge after closure of Waitara Municipal WWTP	Domestic sewage discharged to land	Yes
17. Consent holder to certify the structural integrity and dilution performance of outfall at least every five years	Report received February 2014. A commercial diver survey was undertaken to inspect the integrity of the outfall in November 2013. The dilution performance was analysed through a modelling exercise	Yes

Purpose: *To discharge treated wastes into the Tasman Sea*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
18. Consent holder to supply an annual report by 31 March each year	Reports received monthly and reviewed as satisfactory	Yes
19. Lapse of consent	N/A	N/A
20. Review of consent	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

Table 27 Summary of performance for Consent 3960-2

Purpose: *To construct a rock groyne in the Waitara River*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Notification prior to maintenance works	No maintenance work required	N/A
2. Removal of structures when no longer required	Structure still required	N/A
3. Optional review provision re environmental effects	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**N/A**
Overall assessment of administrative performance in respect of this consent		**N/A**

Table 28 Summary of performance for Consent 4045-3

Purpose: *To discharge contaminants into the air*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Adoption of best practicable options likely to minimise adverse effects on the environment	Ongoing inspection and liaison with consent holder	Yes
2. Minimisation of emissions through control of processes	Ongoing inspection and liaison with consent holder	Yes
3. Consultations prior to alterations to the plant or processes	Inspection and liaison found no alterations to plant or processes requiring additional approvals	Yes
4. Triennial written air discharge report	Report received May 2016	Yes
5. Maximum ground-level concentrations of methanol beyond boundaries	Previous modelling has shown compliance when site in full operation	Yes
6. Maximum ground-level concentrations of carbon monoxide beyond boundaries	Previous modelling has shown compliance when site in full operation	Yes

Purpose: *To discharge contaminants into the air*		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
7. Maximum ground-level concentrations of nitrogen dioxide beyond boundaries	Previous modelling has shown compliance when site in full operation	Yes
8. Maximum ground-level concentrations of other contaminants beyond boundaries	Previous modelling has shown compliance when site in full operation	Yes
9. No offensive or objectionable odour at or beyond the site boundaries	Inspection	Yes
10. Adverse effects on ecosystems not permitted	Inspection of neighbourhood found no adverse effects	Yes
11. Optional review provision – notification within 6 months of receiving report (condition 4) re environmental effects	No review	N/A
12. Monitoring to the satisfaction of the Council	Annual review and ongoing liaison.	Yes
13. Lapse condition	N/A	N/A
14. Review provision	Adopted 2013/14 monitoring report recommendation to not review consent. No further provision for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**High**
Overall assessment of administrative performance in respect of this consent		**High**

In assessing a compliance and environmental performance ranking for Methanex, consideration was also given to the incidents that occurred during the monitoring period as well as overall environmental performance and risk management. During the period, Methanex demonstrated high level of environmental performance and compliance with the resource consents for the Waitara Valley site as defined in Section 1.1.4. Their administrational performance has been rated as 'Good' as although the performance against most consent conditions with respect to the administrative compliance was high, issues around testing the integrity of the water take pipeline and meeting the requirements of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010* are yet to be achieved. Methanex have been open and participative in their communication with regard to their progress on these issues.

3.6 Recommendations from the 2014-2015 Annual Report

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

1. THAT monitoring of water abstractions from the Methanex Waitara Valley plant in the 2015-2016 year continue at the same level as in 2014-2015.
2. THAT monitoring of water discharges from the Methanex Waitara Valley plant in the 2015-2016 year continue at the same level as in 2014-2015.
3. THAT monitoring of air emissions from the Methanex Waitara Valley plant in the 2015-2016 year continue at the same level as in 2014-2015.

4. THAT the Council considers whether or not the current water meter location is acceptable.
5. THAT Methanex continue to investigate the required testing to establish water intake pipe integrity and that this either results in undertaking of the required testing or a variation of consent conditions.

Recommendations 1, 2 and 3 were carried out in full.

Communication between Methanex and the Council has been on-going in relation to the location and verification of the water meters.

There has been ongoing discussion and investigation between Methanex and the Council staff with regard to the five yearly water intake pipe integrity report. There are some complexities in determining the best method to undertake the required testing without damaging the existing infrastructure.

3.7 Alterations to monitoring programmes for 2016-2017

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

The compliance monitoring programme for 2015-2016 was essentially unchanged from that for 2014-2015, on the grounds that the Methanex Waitara Valley site has maintained a high level of environmental performance (where the incidents have been excluded) and the existing monitoring programme was adequate to provide sufficient data to assess environmental performance. It is now proposed that for 2016-2017, the programme be maintained at the same level as the programme for 2015-2016.

Recommendations to this effect are attached to this report.

3.8 Recommendations

1. THAT monitoring of consented activities at the Methanex Waitara Valley site in the 2016-2017 year continues at the same level as in 2015-2016.
2. THAT Methanex prioritises and advances work towards achieving compliance with the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*.
3. THAT Methanex continue with investigations on the required testing to establish water intake pipeline integrity at intervals of at least every five years and that this either result in the undertaking of the required testing or a variation of consent conditions.

4. Summary of recommendations

1. THAT monitoring of consented activities at the Methanex Motunui site in the 2016-2017 year continues at the same level as in 2015-2016.
2. THAT monitoring of consented activities at the Methanex Waitara Valley site in the 2016-2017 year continues at the same level as in 2015-2016.
3. THAT Methanex prioritises and advances work towards achieving compliance with the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*.
4. THAT Methanex continue with investigations on the required testing to establish water intake pipeline integrity at intervals of at least every five years and that this either result in the undertaking of the required testing or a variation of consent conditions.

Glossary of common terms and abbreviations

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

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.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m.
Council	The Taranaki Regional Council.
Cu*	Copper.
Cumec	A volumetric measure of flow- 1 cubic metre per second (1 m^3/s).
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
F	Fluoride.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Incident Register	The incident register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
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.
m^2	Square metres.
m^3	Cubic metres.

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.
mg/l	Milligrams per litre.
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).
Ni	Nickle.
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
NPDC	New Plymouth District Council.
O&G	Oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons).
pH	A numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
RMA	*Resource Management Act* 1991 and including all subsequent amendments.
SS	Suspended solids.
Sulphuric Acid	A strong, dense, colourless and oily acid, used commonly for commercial/manufacturing purposes. It has strong dehydrating properties and is also a good oxidising agent.
Temp	Temperature, measured in °C (degrees Celsius).
Turbidity	Turbidity, expressed in NTU.
WWTP	Waste water treatment plant.
Zn*	Zinc.

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

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

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Appendix I

Resource consents held by Methanex

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

Water Permit

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

Name of Consent Holder:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH
Consent Granted Date:	29 April 2008

Conditions of Consent

Consent Granted:	To take water from two sites on the Waitara River for use at the Waitara Valley methanol plant at or about 2618429E-6240375N and 2619820E-6238250N
Expiry Date:	1 June 2021
Review Date(s):	June 2015
Site Location:	Waitara Valley Intake Structure, Mamaku Road, Waitara and Motunui Intake structure, East Bank, Waitara River
Catchment:	Waitara

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

General conditions

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

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

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

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

Special Conditions

1. The total volume of water taken from the two intake sites shall not exceed 300 cubic metres per hour.

2. The consent holder shall maximise the water take from the Waitara River at the Motunui intake structure and minimise abstraction at the Waitara Valley intake structure.

3. The taking of water authorised by this consent shall be managed to ensure that the flow in the Waitara River at Bertrand Road gauging station is no less than 4600 litres per second. No taking shall occur when the flow is less than 4600 litres per second.

4. The consent holder shall install, and thereafter maintain, a water meter that will record the rate and volume of water taken(date, hourly abstraction rate, and daily total abstraction) to an accuracy of ± 5% and make these records available to the Chief Executive, Taranaki Regional Council in a suitable digital format, no later than 31 July of each year. The water meter shall be capable of being equipped with a digital data logger compatible with the Taranaki Regional Council's hydrologic recording software.

5. Notwithstanding the terms and conditions of this consent the consent holder shall take all reasonable steps to avoid, remedy or mitigate any adverse effect on the environment arising from the exercise of this consent, including, but not limited to, the efficient and conservative use of water. This shall include:

a. testing of the pipeline from the intake to the plant every five years to establish pipeline integrity; and
b. a written report to the Chief Executive of Taranaki Regional Council, at intervals not exceeding two years, on the results of water use reduction programmes.

6. The consent holder shall ensure that the intake structure is appropriately screened to avoid the entrainment of fish. The intake shall be regularly monitored and maintained to achieve compliance with this condition.

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

8. 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 2015, for the purpose of : [a] ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; [b] the amount of water authorised to be taken is consistent with the consent holders reasonable requirements.

Signed at Stratford on 29 April 2008

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:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH
Consent Granted Date:	31 March 2008

Conditions of Consent

Consent Granted:	To discharge stormwater from the Waitara Valley Methanol Plant into the Waitara River at or about 2618495E-6241539N
Expiry Date:	1 June 2021
Review Date(s):	June 2015
Site Location:	Waitara Valley Methanol Plant, Mamaku Road, Waitara
Legal Description:	Lot 1 DP 13541 Blk V Waitara SD
Catchment:	Waitara

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

General conditions

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

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

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

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

Special conditions

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

2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 4599. In the case of any contradiction between the documentation submitted in support of application 4599 and the conditions of this consent, the conditions of this consent shall prevail.

3. The consent holder shall test the levels of contaminants in the stormwater prior to discharge into the Waitara River and advise the Chief Executive of Taranaki Regional Council of the results. The stormwater shall not be discharged until the Chief Executive of Taranaki Regional Council has advised the consent holder that the discharge will comply with the standards specified in condition 5.

4. The following constituents of the discharge shall not be exceeded in the discharge:

Constituent	**Standard**
pH (range)	6.0-9.0
suspended solids	100 gm^{-3}
hydrocarbons	15 gm^{-3}
methanol	15 gm^{-3}

5. After allowing for a 50 metre mixing zone extending downstream of the discharge point the discharge shall not give rise to any of the following effects in the receiving waters of the Waitara River:

   a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
   b) any conspicuous change in the colour or visual clarity;
   c) any emission of objectionable odour;
   d) the rendering of fresh water unsuitable for consumption by farm animals;
   e) any significant adverse effects on aquatic life.

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

7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2015, 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 31 March 2008

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:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH
Consent Granted Date:	29 April 2008

Conditions of Consent

Consent Granted:	To take water from the Waitara River for use at the Motunui plant at or about 2619820E-6238250N
Expiry Date:	1 June 2021
Review Date(s):	June 2015
Site Location:	Motunui Intake Structure, East Bank, Waitara River
Catchment:	Waitara

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

General conditions

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

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

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

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

Special conditions

1. The volume of water taken shall not exceed 1400 cubic metres per hour.

2. The taking of water authorised by this consent shall be managed to ensure that the flow in the Waitara River at the Bertrand Road gauging station is no less than 4,600 litres per second. No taking shall occur when the flow is less than 4,600 litres per second.

3. The consent holder shall install, and thereafter maintain, a water meter that will record the rate and volume of water taken(date, hourly abstraction rate, and daily total abstraction) to an accuracy of ± 5% and make these records available to the Chief Executive, Taranaki Regional Council in a suitable digital format, no later than 31 July of each year. The water meter shall be capable of being equipped with a digital data logger compatible with the Taranaki Regional Council's hydrologic recording software.

4. Notwithstanding the terms and conditions of this consent the consent holder shall take all reasonable steps to avoid, remedy or mitigate any adverse effect on the environment arising from the exercise of this consent, including, but not limited to, the efficient and conservative use of water. This shall include:

   a. testing of the pipeline from the intake to the plant every five years to establish pipeline integrity; and

   b. a written report to the Chief Executive of Taranaki Regional Council, at intervals not exceeding two years, on the results of water use reduction programmes.

5. The consent holder shall ensure that the intake structure is appropriately screened to avoid the entrainment of fish. The intake structure shall be regularly monitored and maintained to achieve compliance with this condition.

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

7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2015, for the purpose of: [a] ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; [b] the amount of water authorised to be taken is consistent with the consent holders requirements.

Signed at Stratford on 29 April 2008

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:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH 4342
Decision Date:	29 November 2012
Commencement Date:	29 November 2012

Conditions of Consent

Consent Granted:	To discharge uncontaminated stormwater from outfalls into an unnamed tributary of the Waihi Stream at or about (NZTM) 1711804E-5683660N and into the the Manu Stream at or about (NZTM)1710848E-5683737N
Expiry Date:	1 June 2027
Review Date(s):	June 2015, June 2021
Site Location:	State Highway 3, Motunui, Waitara
Legal Description:	Lot 1 DP 324944 Pt Ngatirahiri 2F Pt Lot 1 DP 10081 Ngatirahiri 2C1C 2B2B2 2B2A1 2C1B 2B2A2B Pt 2B1 2B2A2A 2B2B1 2C1A [Discharge source & site]
Catchment:	Waihi

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

General condition

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

Special conditions

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

2. The stormwater discharged shall be from a catchment area not exceeding 240000 m^2 for the Waihi Stream tributary, and 294000 m^2 for the "Duck Pond", as specified in Methanex drawing number g10637 supplied with application 5748 .

3. The consent holder shall maintain a contingency plan that details measures and procedures to be undertaken to prevent spillage or any discharge of contaminants not authorised by this consent. The contingency plan shall be followed in the event of a spill or unauthorised discharge and shall be certified by the Chief Executive, Taranaki Regional Council as being adequate to avoid, remedy or mitigate the environmental effects of such a spillage or discharge.

4. The consent holder shall maintain a stormwater management plan that documents how the site is to be managed to minimise the contaminants that become entrained in the stormwater. This plan shall be followed at all times, shall be certified by the Chief Executive, Taranaki Regional Council, and shall include but not necessarily be limited to:

   a) the loading and unloading of materials;
   b) maintenance of conveyance systems;
   c) general housekeeping; and
   d) management of the interceptor system.

5. Constituents of the discharge shall meet the standards shown in the following table.

Constituent	**Standard**
pH	Within the range 6.0 to 9.5
suspended solids	Concentration not greater than 100 gm^{-3}
total recoverable hydrocarbons	Concentration not greater than 5 gm^{-3}

This condition shall apply to the uncontaminated stormwater prior to entry into the body of water commonly known as the "Duck Pond" and the unnamed tributary of the Waihi Stream at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

6. After allowing for reasonable mixing, within a mixing zone extending to the downstream end of the body of water known as 'The Duck Pond' the discharge shall not give rise to any of the following effects in the receiving waters of the Manu Stream:

   a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
   b) any conspicuous change in the colour or visual clarity;
   c) any emission of objectionable odour;
   d) the rendering of fresh water unsuitable for consumption by farm animals;
   e) any significant adverse effects on aquatic life.

7. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the discharge points into the unnamed tributary of the Waihi Stream the discharge shall not give rise to any of the following effects in the receiving waters of the Waihi Stream:

   a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
   b) any conspicuous change in the colour or visual clarity;
   c) any emission of objectionable odour;
   d) the rendering of fresh water unsuitable for consumption by farm animals;
   e) any significant adverse effects on aquatic life.

8. The consent holder shall notify the Chief Executive, Taranaki Regional Council, prior to making any changes to the processes or operations undertaken at the site, or the chemicals used or stored on site that could alter the nature of the discharge. Any such change shall then only occur following receipt of any necessary approval under the Resource Management Act. Notification shall include the consent number, a brief description of the activity consented and an assessment of the environmental effects of any changes, and be emailed to consents@trc.govt.nz.

9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2015 and/or June 2021, 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 29 November 2012

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Coastal Permit

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

Name of Consent Holder:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH
Consent Granted Date:	29 April 2008

Conditions of Consent

Consent Granted:	To discharge treated wastewater and stormwater from the Waitara Valley methanol plant into the Tasman Sea via the Waitara marine outfall at or about 2615711E-6246696N
Expiry Date:	1 June 2021
Review Date(s):	June 2015
Site Location:	at or beyond 1250 metre offshore from Waitara River mouth
Catchment:	Tasman Sea

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

General conditions

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

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

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

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

Special conditions

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

2. The consent holder shall maintain a record of the volume of effluent discharged each day to an accuracy of ±5% and make these records available to the Chief Executive, Taranaki Regional Council in a digital format compatible with Council software, no later than 20th of the following month.

3. The maximum daily discharge shall be 5000 cubic metres per day at a maximum rate of 60 litres per second.

4. The consent holder shall ensure that the minimum initial dilution of the effluent above the outfall diffuser shall be 100:1.

5. The maximum daily discharge of suspended solids shall be 500 kilograms.

6. The consent holder shall ensure that the pH of the effluent shall not exceed the range of pH 6 to pH 9 unless it is to be combined with the lime treated wastewater from the Waitara Wastewater Treatment Plant, in which case, it shall not exceed the range pH 6 to pH 11.

7. On the basis of 24-hour flow proportioned composite samples, constituents of the discharge shall meet the standards shown below:

Constituent	**Standard**
Chemical oxygen demand	concentration no greater than 200 gm^{-3}
Hydrocarbons	concentration no greater than 10 gm^{-3}
Methanol	concentration no greater than 15 gm^{-3}
Ammonia	concentration no greater than 200 gm^{-3}
Copper	concentration no greater than 0.5 gm^{-3}
Nickel	concentration no greater than 1.0 gm^{-3}
Zinc	concentration no greater than 2.0 gm^{-3}

8. Subject to condition 9, only the water treatment chemicals listed in Table 1 shall be discharged, and the daily quantity discharged shall not exceed the limits given Table 1 below.

Table 1: List of water treatment chemicals

Purpose	**Trade name**	**Maximum Daily discharge (kg)**
Corrosion control in high pressure boiler	Optisperse HTP 7330 & 73611	50
Corrosion control in medium pressure boiler	Optisperse PO5211A	15
Oxygen removal from boiler feed water	Cortrol OS7780	300
pH control of steam/condensate to prevent corrosion.	Steamate NA0880	25
Corrosion control of re-circulating cooling water.	Continuum AEC3109	100
Control biological activity in cooling water	Spectrus BD1500	50
Corrosion control of re-circulating cooling water	Inhibitor AZ8104	30
Reduce foam formation of cooling water	Foamtrol AF2290	2
Coagulant	Klaraid PC 1192	150

9. In addition to the water treatment chemical listed in Table 1 [condition 8], water treatment chemicals considered to be 'equivalents' may be discharged as an alternative to those listed in Table 1, provided approval for the equivalent chemical has been given by the Chief Executive of Taranaki Regional Council in accordance with condition 11.

10. For the purpose of this consent an 'equivalent' is defined as a chemical that, when compared the chemical listed in Table 1, the Chief Executive of Taranaki Regional Council has determined that:

a) it is of a similar nature and used for a similar purpose;
b) it has similar breakdown products; and
c) it has potential environmental effects that are similar.

11. Any discharge of an equivalent chemical in accordance with condition 9, shall only occur after a written request to discharge an equivalent chemical has been approved by Chief Executive Taranaki Regional Council. Any such request shall include:

a) name of equivalent chemical;
a) proposed concentration of equivalent in the discharge; and
b) details of the nature of the chemical including its breakdown products; and
c) an assessment of the potential effects of the change on the receiving environment.

Note that the Chief Executive of Taranaki Regional Council may take up to 20 days to consider the request.

12. Special conditions 5, 6, 7 and 8 apply to effluent prior to entry into the outfall line, at a designated sampling point approved by the Chief Executive of Taranaki Regional Council.

13. The limits in special conditions 7 and 8 apply unless the Chief Executive of Taranaki Regional Council has given approval for a short term change for the purpose of routine maintenance including physical and chemical cleaning and catalyst changeouts, as per condition 11.

14. After allowing for reasonable mixing, being outside of a zone of 200 metres from the centreline of the outfall diffuser, the discharge shall not give rise to any of the following effects in the receiving waters:

a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
b) any conspicuous change in the colour or visual clarity;
c) any emission of objectionable odour;
d) any significant adverse effects on aquatic life, habitats or ecology;
e) any undesirable biological growths.

15. The consent holder shall maintain a comprehensive contingency plan, to be put into operation to prevent unauthorised discharge resulting from spillages, accidental discharges or pipeline failure. The plan shall be provided to the Chief Executive, Taranaki Regional Council no more than thirty [30] days after this consent is first exercised and thereafter reviewed at two yearly intervals.

16. There shall be no domestic sewage [human effluent] in the discharge authorised by this consent following the closure of the Waitara municipal wastewater treatment plant.

17. At the request of the Chief Executive, Taranaki Regional Council, but at intervals of no less than five years, the consent holder shall certify the structural integrity and dilution performance of the outfall.

18. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, an annual report on its waste treatment system discharges. The annual report shall include:

    a) daily volumes;
    b) results of any and all analyses undertaken by or on behalf of the consent holder; and
    c) compliance with the consent.

    This report shall be provided by the 31st March each year and covering the previous calendar year period.

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

20. 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 2015 or within 3 months of receipt of notification under condition 11, 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 29 April 2008

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Coastal Permit

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

Name of Consent Holder:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH 4342
Decision Date (Change):	29 July 2013
Commencement Date (Change):	29 July 2013 (Granted: 29 April 2008)

Conditions of Consent

Consent Granted:	To discharge treated wastewater and stormwater from the Waitara Valley Methanol Plant into the Tasman Sea via the Waitara marine outfall
Expiry Date:	1 June 2021
Review Date(s):	June 2015 and/or within 3 months of notification under special condition 11
Site Location:	At or beyond 1250 metre offshore from Waitara Rivermouth
Grid Reference (NZTM)	1705615E-5684951N
Catchment:	Tasman Sea

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

General conditions

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

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

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

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

Special Conditions

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

2. The consent holder shall maintain a record of the volume of effluent discharged each day to an accuracy of ±5% and make these records available to the Chief Executive, Taranaki Regional Council in a digital format compatible with Council software, no later than 20th of the following month.

3. The maximum daily discharge shall be 5000 cubic metres per day at a maximum rate of 60 litres per second.

4. The consent holder shall ensure that the minimum initial dilution of the effluent above the outfall diffuser shall be 100:1.

5. The maximum daily discharge of suspended solids shall be 500 kilograms.

6. The consent holder shall ensure that the pH of the effluent shall not exceed the range of pH6 to pH 9 unless it is to be combine with the line treated wastewater from the Waitara Wastewater Treatment Plant, in which case, it shall not exceed the range pH 6 to pH 11.

7. On the basis of 24-hour flow proportioned composite samples, constituents of the discharge shall meet the standards shown below:

Constituent	Standard
Chemical oxygen demand	concentration no greater than 200 gm^{-3}
Hydrocarbons	concentration no greater than 10 gm^{-3}
Methanol	concentration no greater than 15 gm^{-3}
Ammonia	concentration no greater than 200 gm^{-3}
Copper	concentration no greater than 0.5 gm^{-3}
Nickel	concentration no greater than 1.0 gm^{-3}
Zinc	concentration no greater than 2.0 gm^{-3}

8. Subject to condition 9, only the water treatment chemicals listed in Table 1 shall be discharged, and the daily quantity discharged shall not exceed the limits given Table 1 below.

Table 1: List of water treatment chemicals

Purpose	Trade name	Maximum Daily discharge (kg)
Corrosion control in high pressure boiler	Optisperse HTP 73301 & 73611	50
Corrosion control in medium pressure boiler	Optisperse PO5211A	15
Oxygen removal from boiler feed water	Cortrol OS7780	300
pH control of steam/condensate to prevent corrosion.	Steamate NA0880	25
Corrosion control of re-circulating cooling water.	Gengard GN8020 Flogard MS6209	70 20
Biocidal dispersant	Spectrus BD1500	50
Corrosion control of re-circulating cooling water	Inhibitor AZ8104	30
Reduce foam formation of cooling water	Foamtrol AF2290	2
Coagulant	Klaraid PC 1192	150
Secondary biocide	Spectrus CT1300	5

9. In addition to the water treatment chemical listed in Table 1 (condition 8), water treatment chemicals considered to be 'equivalents' may be discharged as an alternative to those listed in Table 1, provided approval for the equivalent chemical has been given by the Chief Executive of Taranaki Regional Council in accordance with condition 11.

10. For the purpose of this consent an 'equivalent' is defined as a chemical that, when compared the chemical listed in Table 1, the Chief Executive of Taranaki Regional Council has determined that:

    a) it is of a similar nature and used for a similar purpose;
    b) it has similar breakdown products; and
    c) it has potential environmental effects that are similar.

11. Any discharge of an equivalent chemical in accordance with condition 9, shall only occur after a written request to discharge an equivalent chemical has been approved by Chief Executive Taranaki Regional Council. Any such request shall include:

    a) name of equivalent chemical;
    a) proposed concentration of equivalent in the discharge; and
    b) details of the nature of the chemical including its breakdown products; and
    c) an assessment of the potential effects of the change on the receiving environment.

    Note that the Chief Executive of Taranaki Regional Council may take up to 20 days to consider the request.

12. Special conditions 5, 6, 7 and 8 apply to effluent prior to entry into the outfall line, at a designated sampling point approved by the Chief Executive of Taranaki Regional Council.

13. The limits in special conditions 7 and 8 apply unless the Chief Executive of Taranaki Regional Council has given approval for a short term change for the purpose of routine maintenance including physical and chemical cleaning and catalyst changeouts, as per condition 11.

14. After allowing for reasonable mixing, being outside of a zone of 200 metres from the centreline of the outfall diffuser, the discharge shall not give rise to any of the following effects in the receiving waters:

    a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
    b) any conspicuous change in the colour or visual clarity;
    c) any emission of objectionable odour;
    d) any significant adverse effects on aquatic life, habitats or ecology;
    e) any undesirable biological growths.

15. The consent holder shall maintain a comprehensive contingency plan, to be put into operation to prevent unauthorised discharge resulting from spillages, accidental discharges or pipeline failure. The plan shall be provided to the Chief Executive, Taranaki Regional Council no more than thirty (30) days after this consent is first exercised and thereafter reviewed at two yearly intervals.

16. There shall be no domestic sewage (human effluent) in the discharge authorised by this consent following the closure of the Waitara municipal wastewater treatment plant.

17. At the request of the Chief Executive, Taranaki Regional Council, but at intervals of no less than five years, the consent holder shall certify the structural integrity and dilution performance of the outfall.

18. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, an annual report on its waste treatment system discharges. The annual report shall include:

    a) daily volumes;
    b) results of any and all analyses undertaken by or on behalf of the consent holder; and
    c) compliance with the consent.

    This report shall be provided by the 31st March each year and covering the previous calendar year period.

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

20. 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 2015 or within 3 months of receipt of notification under condition 11, 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 29 July 2013

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Coastal Permit

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

Name of Consent Holder:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH
Consent Granted Date:	29 April 2008

Conditions of Consent

Consent Granted:	To discharge treated wastewater and stormwater from the Motunui methanol plant into the Tasman Sea via the Waitara marine outfall at or about 2615711E-6246696N
Expiry Date:	1 June 2021
Review Date(s):	June 2015
Site Location:	At or beyond 1250 metres offshore from Waitara River mouth
Catchment:	Tasman Sea

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

General conditions

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

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

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

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

Special conditions

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

2. The consent holder shall maintain a record of the volume of effluent discharged each day to an accuracy of ±5% and make these records available to the Chief Executive, Taranaki Regional Council in a digital format compatible with Council software, no later than 20th of the following month

3. The maximum daily discharge shall be 12,096 cubic metres per day at a maximum rate of 140 litres per second.

4. The consent holder shall ensure that the minimum initial dilution of the effluent above the outfall diffuser shall be 100:1.

5. The maximum daily discharge of suspended solids shall be 500 kilograms.

6. The consent holder shall ensure that the pH of the effluent shall at all times be within the range of pH 6 to pH 9.

7. On the basis of 24-hour flow proportioned composite samples, constituents of the discharge shall meet the standards shown below.

Constituent	**Standard**
Chemical oxygen demand	concentration no greater than 200 gm^{-3}
Hydrocarbons	concentration no greater than 10gm^{-3}
Methanol	concentration no greater than 15 gm^{-3}
Copper	concentration no greater than 0.5 gm^{-3}
Nickel	concentration no greater than 1.0 gm^{-3}
Zinc	concentration no greater than 1.0 gm^{-3}

8. Subject to condition 9, only the water treatment chemicals listed in Table 1 shall be discharged, and the daily quantity discharged shall not exceed the limits given in Table 1.

Table 1: List of water treatment chemicals

Purpose	Trade name	Maximum Daily
Corrosion control in high pressure boiler	Optisperse HTP 7330 & 73611	120
Corrosion control in medium pressure boiler	Optisperse PO5211A	20
Oxygen removal from boiler feed water	Cortrol OS7780	400
pH control of steam/condensate to prevent corrosion.	Steamate NA0880	40
Corrosion control of recirculating cooling water.	Continuum AEC3109	300
Control biological activity in cooling water	Spectrus BD1500	200
Corrosion control of recirculating cooling water	Inhibitor AZ8104	300
Control biological activity in cooling water	Spectrus NX1100	50
Control biological activity in cooling water	Spectrus CT1300	20
Corrosion control of recirculating cooling water	Flogard MS6207	40
Reduce foam formation of cooling water	Foamtrol AF2290	40
Coagulant	Klaraid PC 1190P	600
Flocculant	Betzdearborn AE1115	60

9. In addition to the water treatment chemicals listed in Table 1, water treatment chemicals determined to be 'equivalents' may be discharged as an alternative to those listed in Table 1, provided approval for the equivalent chemical has been given by the Chief Executive of Taranaki Regional Council in accordance with condition 11.

10. For the purpose of this consent an 'equivalent' is defined as a chemical that, when compared the chemical listed in Table 1, the Chief Executive of Taranaki Regional Council has determined that:

    a) it is of a similar nature and used for a similar purpose;
    b) it has similar breakdown products; and
    c) it has potential environmental effects that are similar.

11. Any discharge of an equivalent chemical in accordance with condition 9, shall only occur after a written request to discharge an equivalent chemical has been approved by Chief Executive Taranaki Regional Council. Any such request shall include:

    a) name of equivalent chemical;
    b) proposed concentration of equivalent in the discharge; and
    c) details of the nature of the chemical including its breakdown products; and
    d) an assessment of the potential effects of the change on the receiving environment.

    Note that the Chief Executive of Taranaki Regional Council may take up to 20 days to consider the request.

12. Special conditions 5, 6, 7 and 8, apply to effluent prior to entry into the outfall line, at a designated sampling point approved by the Chief Executive of Taranaki Regional Council.

13. The limits in special conditions 7 and 8 apply unless the Chief Executive of Taranaki Regional Council has given approval for a short term change for the purpose of routine maintenance including physical and chemical cleaning and catalyst changeouts, as per special condition 11.

14. After allowing for reasonable mixing, being outside of a zone of 200 metres from the centreline of the outfall diffuser, the discharge shall not give rise to any of the following effects in the receiving waters:

    a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
    b) any conspicuous change in the colour or visual clarity;
    c) any emission of objectionable odour;
    d) any significant adverse effects on aquatic life, habitats or ecology;
    e) any undesirable biological growths

15. The consent holder shall maintain a comprehensive contingency plan, to be put into operation to prevent unauthorised discharge resulting from spillages, accidental discharges or pipeline failure. The plan shall be provided to the Chief Executive, Taranaki Regional Council no more than 30 days after this consent is first exercised and thereafter reviewed two yearly intervals.

16. No discharge of domestic sewage [human effluent] shall be permitted under the exercise of this consent.

17. The consent holder shall notify the Chief Executive, Taranaki Regional Council at least seven days before this consent is first exercised.

18. The consent holder shall on request by the Chief Executive, Taranaki Regional Council, but at intervals of no less than five years, certify the structural integrity and dilution performance of the outfall.

19. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, an annual report on its waste treatment system discharges. The annual report shall include:

    a) daily volumes;
    b) results of any and all analyses undertaken by or on behalf of the consent holder;
    c) compliance with the consent.

    This report shall be provided by the 31st March each year and covering the previous calendar year period.

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

21. 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 2015 or within 3 months of receipt of notification under special condition 11, 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 29 April 2008

For and on behalf of
Taranaki Regional Council

_____

Director-Resource Management

Coastal Permit

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

Name of Consent Holder:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH 4342
Decision Date [change]:	18 July 2012
Commencement Date [change]:	18 July 2012 [Granted: 29 April 2008]

Conditions of Consent

Consent Granted:	To discharge treated wastewater and stormwater from the Motunui methanol plant into the Tasman Sea via the Waitara marine outfall at or about (NZTM) 1705615E-5684951N
Expiry Date:	1 June 2021
Review Date(s):	June 2015 and/or within 3 months of receiving notification under special condition 12
Site Location:	At or beyond 1250 metres offshore from Waitara River mouth
Catchment:	Tasman Sea

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 with section 36 of the Resource Management Act.

Special conditions

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

2. The consent holder shall maintain a record of the volume of effluent discharged each day to an accuracy of ±5% and make these records available to the Chief Executive, Taranaki Regional Council in a digital format compatible with Council software, no later than 20th of the following month

3. The maximum daily discharge shall be 12,096 cubic metres per day at a maximum rate of 140 litres per second.

4. The consent holder shall ensure that the minimum initial dilution of the effluent above the outfall diffuser shall be 100:1.

5. The maximum daily discharge of suspended solids shall be 500 kilograms.

6. The consent holder shall ensure that the pH of the effluent shall at all times be within the range of pH 6 to pH 9.

7. On the basis of 24-hour flow proportioned composite samples, constituents of the discharge shall meet the standards shown below.

Constituent	**Standard**
Chemical oxygen demand	concentration no greater than 200 gm^{-3}
Hydrocarbons	concentration no greater than 10gm^{-3}
Methanol	concentration no greater than 15 gm^{-3}
Copper	concentration no greater than 0.5 gm^{-3}
Nickel	concentration no greater than 1.0 gm^{-3}
Zinc	concentration no greater than 1.0 gm^{-3}

8. Subject to condition 10, only the water treatment chemicals listed in Table 1 shall be discharged, and the daily quantity discharged shall not exceed the limits given in Table 1.

Table 1: List of water treatment chemicals

Purpose	Trade name	Maximum Daily discharge (kg)
Corrosion control in high pressure boiler	Optisperse HTP 7330 & 73611	120
Corrosion control in medium pressure boiler	Optisperse PO5211A	20
Oxygen removal from boiler feed water	Cortrol OS7780	400
pH control of steam/condensate to prevent corrosion.	Steamate NA0880	40
Corrosion control of recirculating cooling water.	Continuum AEC3109	300
Control biological activity in cooling water	Spectrus BD1500	200
Corrosion control of recirculating cooling water	Inhibitor AZ8104	300
Control biological activity in cooling water	Spectrus NX1100	50
Control biological activity in cooling water	Spectrus CT1300	20
Corrosion control of recirculating cooling water	Flogard MS6207	40
Reduce foam formation of cooling water	Foamtrol AF2290	40
Coagulant	Klaraid PC 1190P	600
Flocculant	Betzdearborn AE1115	60

9. The maximum daily limit of the water treatment chemical 'Spectrus CT1300' may be increased to 40kg/day in response to increased levels of the bacteria Legionella if detected by the consent holder, to minimise the risk to human health. The Consent holder must notify the Council within 24 hours if this increased dose is utilized.

10. In addition to the water treatment chemicals listed in Table 1, water treatment chemicals determined to be 'equivalents' may be discharged as an alternative to those listed in Table 1, provided approval for the equivalent chemical has been given by the Chief Executive of Taranaki Regional Council in accordance with condition 12.

11. For the purpose of this consent an 'equivalent' is defined as a chemical that, when compared the chemical listed in Table 1, the Chief Executive of Taranaki Regional Council has determined that:

    a) it is of a similar nature and used for a similar purpose;
    b) it has similar breakdown products; and
    c) it has potential environmental effects that are similar.

12. Any discharge of an equivalent chemical in accordance with condition 10, shall only occur after a written request to discharge an equivalent chemical has been approved by Chief Executive Taranaki Regional Council. Any such request shall include:

    a) name of equivalent chemical;
    b) proposed concentration of equivalent in the discharge; and
    c) details of the nature of the chemical including its breakdown products; and
    d) an assessment of the potential effects of the change on the receiving environment.

    Note that the Chief Executive of Taranaki Regional Council may take up to 20 days to consider the request.

13. Special conditions 5, 6, 7 and 8, apply to effluent prior to entry into the outfall line, at a designated sampling point approved by the Chief Executive of Taranaki Regional Council.

14. The limits in special conditions 7 and 8 apply unless the Chief Executive of Taranaki Regional Council has given approval for a short term change for the purpose of routine maintenance including physical and chemical cleaning and catalyst changeouts, as per special condition 12.

15. After allowing for reasonable mixing, being outside of a zone of 200 metres from the centreline of the outfall diffuser, the discharge shall not give rise to any of the following effects in the receiving waters:

    a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
    b) any conspicuous change in the colour or visual clarity;
    c) any emission of objectionable odour;
    d) any significant adverse effects on aquatic life, habitats or ecology;
    e) any undesirable biological growths

16. The consent holder shall maintain a comprehensive contingency plan, to be put into operation to prevent unauthorised discharge resulting from spillages, accidental discharges or pipeline failure. The plan shall be provided to the Chief Executive, Taranaki Regional Council no more than 30 days after this consent is first exercised and thereafter reviewed two yearly intervals.

17. No discharge of domestic sewage [human effluent] shall be permitted under the exercise of this consent.

18. The consent holder shall notify the Chief Executive, Taranaki Regional Council at least seven days before this consent is first exercised.

19. The consent holder shall on request by the Chief Executive, Taranaki Regional Council, but at intervals of no less than five years, certify the structural integrity and dilution performance of the outfall.

20. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, an annual report on its waste treatment system discharges. The annual report shall include:

    a) daily volumes;
    b) results of any and all analyses undertaken by or on behalf of the consent holder;
    c) compliance with the consent.

    This report shall be provided by the 31st March each year and covering the previous calendar year period.

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

22. 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 2015 or within 3 months of receipt of notification under special condition 12, 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 18 July 2012

For and on behalf of
Taranaki Regional Council

_____

Director-Resource Management

Discharge Permit

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

Name of Consent Holder:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH
Consent Granted Date:	12 February 2008

Conditions of Consent

Consent Granted:	To discharge contaminants into the air from the Motunui methanol plant and ancillary facilities at or about 2621399E-6245496N
Expiry Date:	1 June 2028
Review Date(s):	June 2013, June 2018, June 2023
Site Location:	Main North Road, Motunui, Waitara
Legal Description:	Lot 1 DP 334095 Pt Ngatirahiri 2F Blk Pt Lot 1 DP 10081 Ngatirahiri 2C1A Blk Ngatirahiri 2C1C Blk Lot 1 DP 16686 Pt Ngatirahiri 2B2B2 Blk Ngatirahiri 2B2A1 Blk Ngatirahiri 2C1B Blk Ngatirahiri 2B2A2B Blk

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

General conditions

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

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

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

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

Special conditions

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

2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 4596. In the case of any contradiction between the documentation submitted in support of application 4596 and the conditions of this consent, the conditions of this consent shall prevail.

3. The consent holder shall at all times operate, maintain, supervise, monitor and control all processes so that emissions authorised by this consent are maintained at the minimum practicable level.

4. Prior to undertaking any alterations to the plant, processes or operations which may significantly change the nature or quantity of contaminants emitted from the site, the consent holder shall consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act.

5. The consent holder shall commission reports that detail the technology that could minimise the adverse effects of the water vapour plume from the cooling tower. These reports shall:

a) be prepared by an appropriately qualified independent person approved by the Chief Executive, Taranaki Regional Council;

b) be provided to the Chief Executive, Taranaki Regional within 12 months of the commencement of this consent [in accordance with Section 116 of the Resource Management Act 1991] and at intervals not exceeding 5 years thereafter;

c) detail the: costs; expected levels of reduction in adverse effects; and practical implications of introducing the technology(s) at the Motunui plant;

d) provide an assessment of what constitutes the "best practicable option" for minimising the adverse effects of the water vapour plume from the cooling tower.

6. Other than as provided for under condition 5, the consent holder shall also provide to the Chief Executive, Taranaki Regional Council, within two years from the date on which this consent is granted and every two years thereafter a written report:

a) reviewing any technological advances in the reduction or mitigation of emissions, especially but not exclusively in respect of potential or actual odorous emissions, how these might be applicable and implemented at the Motunui plant, and the costs and benefits of these advances; and

b) detailing an inventory of emissions [excluding carbon dioxide] from the site of such contaminants as the Chief Executive, Taranaki Regional Council may from time to time specify following consultation with the consent holder; and

c) detailing any measures that have been taken by the consent holder to improve the energy efficiency of the Motunui petrochemical plant; and

d) addressing any other issue relevant to the minimization or mitigation of emissions from the site that the Chief Executive, Taranaki Regional Council considers should reasonably be included.

7. The consent holder shall control all emissions of methanol to the atmosphere from the site, so as to ensure that maximum ground level concentrations of methanol do not exceed 9 mg/m^3 measured as a one hour average under ambient conditions, at or beyond the boundary of the site.

8. The consent holder shall control all emissions of carbon monoxide to the atmosphere from the site, so as to ensure that the maximum ground level concentration of carbon monoxide measured under ambient conditions does not exceed 10 mg/m^3 [average exposure over any period of eight hours or longer], or 30 mg/m^3 [one hour average], at or beyond the boundary of the site.

9. The consent holder shall control all emissions of nitrogen dioxide or its precursors to the atmosphere from the site, so as to ensure that the maximum ground level concentration of nitrogen dioxide measured under ambient conditions does not exceed 200 ug/m^3 [one hour average], or 100 ug/m^3 [twenty four hour average], at or beyond the boundary of the site.

10. The consent holder shall control all emissions to the atmosphere from the site of contaminants other than methanol, carbon monoxide, and nitrogen dioxide and its precursors, so as to ensure that the maximum ground level concentration for any particular contaminant at or beyond the boundary of the site is not increased above background levels:

    a) by more than 1/30 th of the relevant Occupational Threshold Value Time Weighted Average, or by more than the Short Term Exposure Limit at any time; or

    b) if no Short Term Exposure Limited is set, by more than three times the Time Weighted Average at any time [Workplace Exposure Standards effective from 2002, Department of Labour].

11. The consent holder shall compile an inventory of emissions discharged to air from the incinerator stacks including the date, time, nature of discharge and any visual impact of emissions offsite. The data gathered shall be supplied as part of report on air emissions stated in special condition 6.

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

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

14. Pursuant to section 128(1)(a) of the Resource Management Act, the Taranaki Regional Council, may review any or all of the conditions of this consent by giving notice of review within six months of the provision of a written report under special conditions 5 or 6; for the purpose of reviewing the best practicable option or options available to reduce or remove any adverse effects on the environment [including, but not limited to, minimisation of the cooling tower plume], or to deal with any significant adverse ecological effect on any ecosystems, including but not limited to habitats, plants, animals, microflora, and microfauna.

15. The exercise and effects of this consent shall be monitored to the satisfaction of the Chief Executive, Taranaki Regional Council.

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

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 during the month of June 2013 and/or June 2018 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 12 February 2008

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:	Methanex Motunui Limited Private Bag 2011 NEW PLYMOUTH
Consent Granted Date:	29 April 2008

Conditions of Consent

Consent Granted:	To discharge contaminants into the air from the Waitara Valley methanol plant at or about 2618266E-6241201N
Expiry Date:	1 June 2021
Review Date(s):	June 2015
Site Location:	Waitara Valley Methanol Plant, Mamaku Road, Waitara
Legal Description:	Lot 1 DP 13541 Blk V Waitara SD

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

General conditions

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

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

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

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

Special conditions

1. The consent holder shall at all times adopt the best practicable option [including but not limited to, minimising carbon dioxide emissions] to prevent or minimise any actual or likely adverse effect on the environment arising from emissions from the site. `Best practicable option' [as defined in section 2 of the Resource Management Act 1991] shall be determined by the Taranaki Regional Council, taking into account the information supplied by the consent holder under condition 4 of this consent, and following review as set out under condition 11 of this consent.

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

3. Prior to undertaking any alterations to the plant, processes or operations which may significantly change the nature or quantity of contaminants emitted from the site, the consent holder shall consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act.

4. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, within three years from the date on which this consent is granted and every three years thereafter a written report:

a) reviewing any technological advances in the reduction or mitigation of emissions, especially but not exclusively in respect of potential or actual odorous emissions and the cooling tower plume, how these might be applicable and/or implemented at the Waitara Valley methanol plant, and the costs and benefits of these advances; and

b) detailing an inventory of emissions [excluding carbon dioxide] from the methanol distillation tower of such contaminants as the Chief Executive, Taranaki Regional Council may from time to time specify following consultation with the consent holder; and

c) detailing any measures that have been taken by the consent holder to improve the energy efficiency of the Waitara Valley methanol plant; and

d) addressing any other issue relevant to the minimisation or mitigation of emissions from the site that the Chief Executive, Taranaki Regional Council, considers should be included.

5. The consent holder shall control all emissions of methanol to the atmosphere from the site, so as to ensure that maximum ground level concentrations of methanol do not exceed 9 mg/m^3 measured as a one hour average under ambient conditions, at or beyond the boundary of the site.

6. The consent holder shall control all emissions of carbon monoxide to the atmosphere from the site, so as to ensure that the maximum ground level concentration of carbon monoxide measured under ambient conditions does not exceed 10 mg/m^3 [average exposure over any period of eight hours or longer], or 30 mg/m^3 [one hour average], at or beyond the boundary of the site.

7. The consent holder shall control all emissions of nitrogen dioxide or its precursors to the atmosphere from the site, so as to ensure that the maximum ground level concentration of nitrogen dioxide measured under ambient conditions does not exceed 200 ug/m^3 [one hour average], or 100 ug/m^3 [twenty four hour average], at or beyond the boundary of the site.

8. The consent holder shall control all emissions to the atmosphere from the site of contaminants other than methanol, carbon dioxide, carbon monoxide, and nitrogen dioxide and its precursors, so as to ensure that the maximum ground level concentration for any particular contaminant at or beyond the boundary of the site is not increased above background levels:

   a) by more than 1/30 th of the relevant Occupational Threshold Value Time Weighted Average, or by more than the Short Term Exposure Limit at any time; or

   b) if no Short Term Exposure Limited is set, by more than three times the Time Weighted Average at any time [Workplace Exposure Standards effective from 2002, Department of Labour].

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

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

11. Pursuant to section 128(1)(a) of the Resource Management Act, the Taranaki Regional Council, may review any or all of the conditions of this consent by giving notice of review within six months of the provision of a written report under special condition 4; for the purpose of reviewing the best practicable option or options available to reduce or remove any adverse effects on the environment, or to deal with any significant adverse ecological effect on any ecosystems, including but not limited to habitats, plants, animals, microflora, and microfauna.

12. The exercise and effects of this consent shall be monitored to the reasonable satisfaction of the Chief Executive, Taranaki Regional Council.

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

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 2015, 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 29 April 2008

For and on behalf of
Taranaki Regional Council

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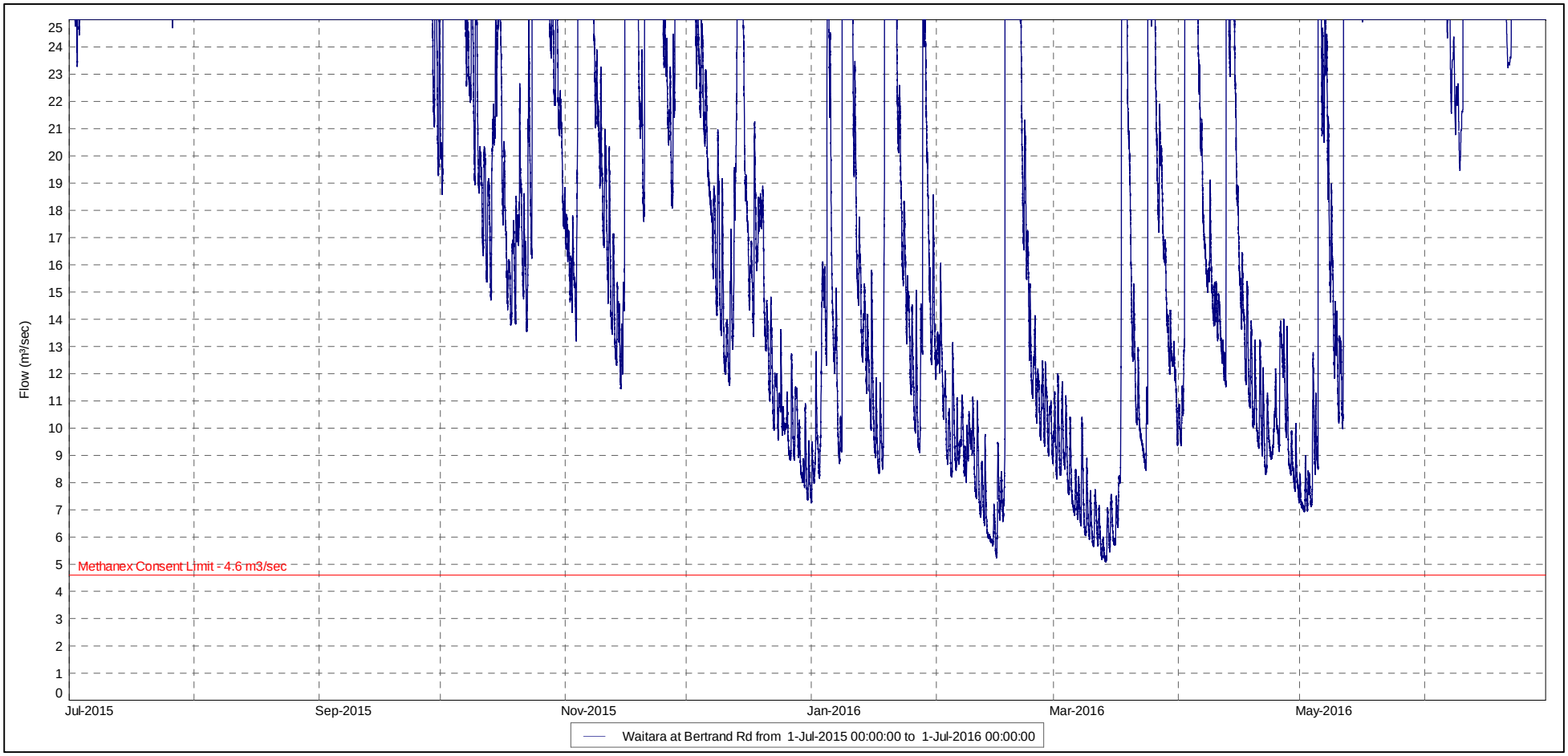
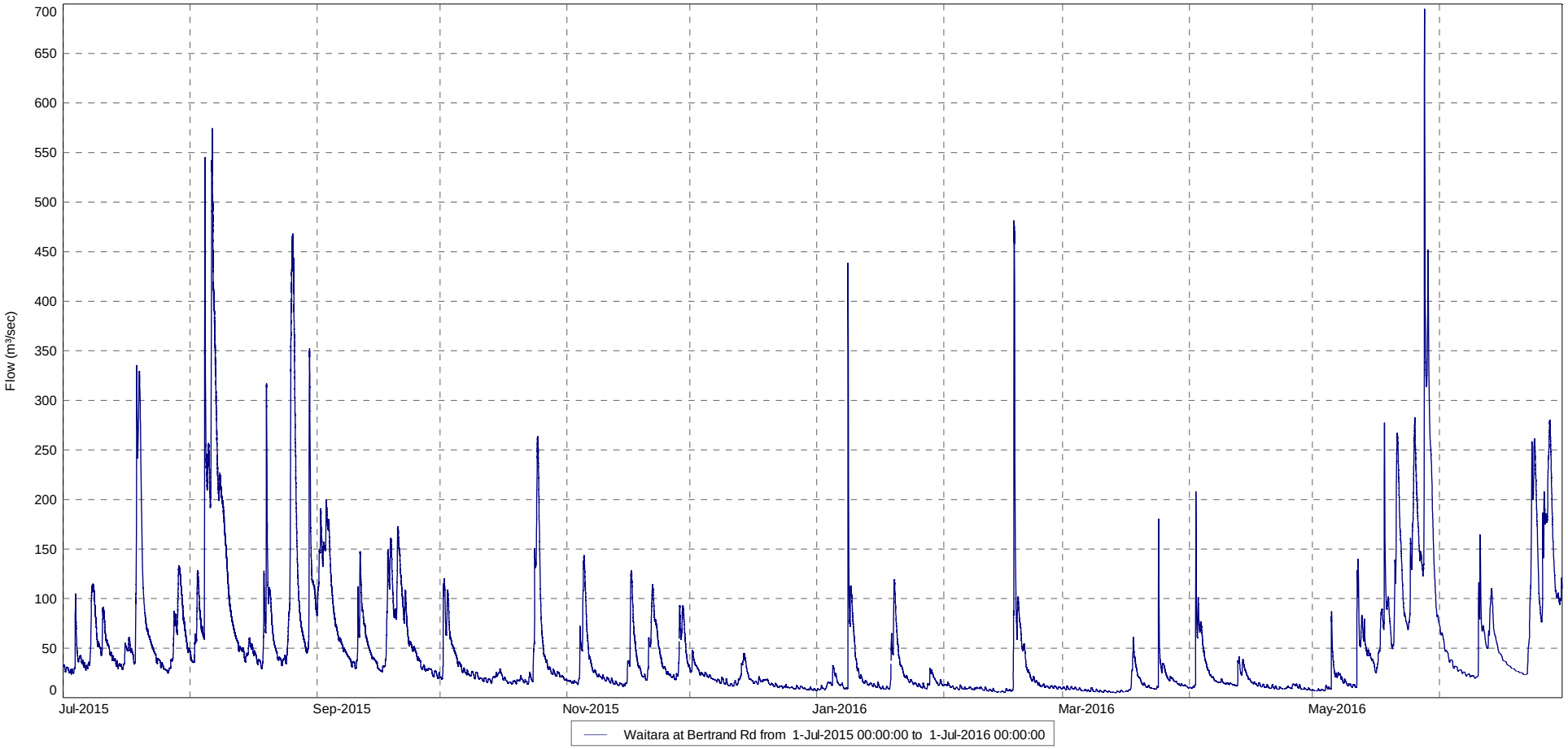
Director-Resource Management

Appendix II

Hydrograph for the Waitara River at Bertrand Road for the monitoring period July 2015 to June 2016


Flow (m³/sec)
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Methanex Consent Limit = 4.6 m3/sec
Jul-2015
Sep-2015
Nov-2015
Jan-2016
Mar-2016
May-2016
Waitara at Bertrand Rd from 1-Jul-2015 00:00:00 to 1-Jul-2016 00:00:00


Flow (m³/sec)
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
Jul-2015
Sep-2015
Nov-2015
Jan-2016
Mar-2016
May-2016
Waitara at Bertrand Rd from 1-Jul-2015 00:00:00 to 1-Jul-2016 00:00:00

Appendix III

Methanex’s biennial water reduction report

Methanex New Zealand Limited
409 Main North Road, SH3
Motunui
Private Bag 2011
New Plymouth 4342
New Zealand

Telephone: +64 6 754 9700
Facsimile: +64 6 754 9701

www.methanex.com

METHANEX®

A Responsible Care® Company

April 28, 2016

Taranaki Regional Council
Private Bag 713
Stratford

Attention: Helen Meintjes

BIENNIAL WATER USE REDUCTION REPORT FOR METHANEX NZ LTD.
MOTUNUI & WAITARA VALLEY PLANTS
2014/2015 REPORTING PERIOD

1. Introduction

Methanex New Zealand Ltd is to provide this biennial report to the Taranaki Regional Council to meet conditions in the consents granted for taking water from the Waitara River for use at the Motunui and Waitara Valley plants.

The consents are:

Motunui Plant: 0820-2

Waitara Valley Plant: 0801-2

2. Summary of Plant Operation and Water Use

Motunui Plant:

The Motunui plant produced methanol during all of the 2014/2015 reporting period. The consent allows for a water take of 1400 cubic meters per hour, and typically the water take with both units operating was 1000 – 1100 cubic meters per hour. Continuous focus was placed on the efficient use of water; both through recycling within the process and through ensuring minimum amounts were using in operations such as back-flushing ion exchange units.

During this reporting period work began on a refurbishment program of the Motunui Cooling Tower. This began with investigations into the condition of 'A' cell to give an indication of the work that would be required to bring the tower back to its original cooling capacity and also to investigate any improvements that could be made to its design performance. This resulted in significant replacement of parts within the cell and the inclusion of several small improvements. The refurbishment has resulted in approximately a 17%

reduction of energy consumed by this cell. Due to the heat exchange efficiency gains this will also have resulted in a reduction of water needed as make-up in the cooling system, and while it is difficult to quantify the quantity of this reduction, we are confident that there will be an effect. A plan is now in place to progressively work through the cells of the tower carrying out the same refurbishments and improvements, with the next one (now in progress) being 'E' cell.

During this reporting period investigations were also carried out into the viability of recycling wastewater to the cooling tower as make-up water. At this stage indications are that this is not practical due to the quality of the wastewater, although a final decision is awaiting more testing and analysis of results.

Waitara Valley Plant:
The Waitara Valley plant produced methanol during all of the 2014/2015 reporting period. The consent allows for a water take of 300 cubic meters per hour, with the actual water take typically being around 200-220 cubic meters per hour. There were no new initiatives undertaken at this plant that resulted in a drop in water consumption, but, as with the Motunui plant, continuous focus was placed on the efficient use of water as part of normal plant operation.

3. Conclusion

For this reporting period the water takes for both plants remained well within permitted levels of water extraction from the Waitara River. The use of minimal amounts of water is of importance to Methanex, both from the company's commitment to the Responsible Care and Principles for Sustainability ethic and due to the cost benefits gained from the efficient use of resources. During this reporting period Methanex demonstrated a responsible approach to the use of water, through the continuous focus on the efficient use of water at both plants and the major work undertaken on the Motunui cooling tower.

Report Prepared by:

Gary Rielly
Sustainability and Quality Leader

Appendix IV

Air emissions report for Methanex Motunui and Waitara Valley sites

Methanex New Zealand Limited
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Motunui
Private Bag 2011
New Plymouth 4342
New Zealand

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www.methanex.com

A Responsible Care® Company

May 5, 2016

Taranaki Regional Council
Private Bag 713
Stratford

Attention: Helen Meintjes

AIR EMISSIONS REPORT FOR METHANEX NZ LTD. MOTUNUI & WAITARA VALLEY PLANTS

2014/2015 REPORTING PERIOD

Introduction

Methanex New Zealand Limited is required to supply the Taranaki Regional Council with a report every two years for its Motunui plant and every three years for its Waitara Valley plant addressing requirements detailed in the air discharge consents for the sites.

The consents are:

Motunui Plant: 4042-3

Waitara Valley Plant: 4045-3

Methanex is supplying this combined report for both the Motunui and Waitara Valley plants.

Both the Motunui and Waitara Valley plants produced methanol during all of this reporting periods, apart from short-term outages for maintenance purposes.

Air Emissions Report

[A] Review of Technological Advances to Reduce or Mitigate Emissions

No new technologies for reducing emissions from the plants were identified that are commercially viable during this reporting period. No air emissions related complaint was received from the public, and neither was any objectionable odour

noticeable under ambient conditions within the boundaries of the plants during this period.

[B] Inventory of Emissions (excluding carbon dioxide)

No request from the TRC was received for an inventory of any particular contaminates, however Methanex commissioned monitoring and calculations of emissions as per the following tables.

Stack Emissions

Plant	Date	Production Unit	CO mg/m^3	NO_x mg/m^3	SO_2 mg/m^3
Motunui	29/10/14	Reformer 1	<LOQ	306	<LOQ
	29/10/14	Reformer 2	<LOQ	322	<LOQ
	29/10/14	Auxiliary Boiler	<LOQ	226	<LOQ
Waitara Valley	16/12/14	Reformer	43	539	<LOQ
	16/12/14	Auxiliary Boiler 1	819	125	<LOQ
	16/12/14	Auxiliary Boiler 2	<LOQ	160	<LOQ

LOQ for CO is 0.25ppm
LOQ for SO_2 is 1.24ppm

Stack emissions analysis was carried out by Watercare Services Ltd – Air Quality group, using a Combustion Gas Analyser. These analyses were carried out while the plants were operating at >95% production under stable conditions.

Annual Tank and Loading Methanol Emissions

All of Methanex's methanol storage tanks except for one do not have vapour recovery systems installed, and emissions from these storage tanks and road tanker loading were modelled using US EPA 'TANKS' calculation software. Emissions from the one tank that does have a vapour recovery system fitted, the Crude Methanol storage tank, were calculated using Methanex laboratory analysis results

2014

Source	Methanol tonnes
Motunui Tanks	172
Waitara Valley Tanks	543
Omata Tanks	290
Port Tanks	424
Truck Loading (Waitara Valley)	0.11
Ship Loading (Port Taranaki)	52
Total 2014	**1481**

2015

Source	Methanol tonnes
Motunui Tanks	143
Waitara Valley Tanks	570
Omata Tanks	302
Port Tanks	336
Truck Loading (Waitara Valley)	0.11
Ship Loading (Port Taranaki)	49
Total 2015	**1400**

The tank emissions include both working losses which occur during filling and breathing losses which occur through vapour expansion and contraction as a result of changes in temperature and barometric pressure.

Motunui Incinerator

The Motunui plant incinerator has been permanently decommissioned; hence there were no emissions to report from this.

[C] Ambient Atmospheric Monitoring

Perimeter monitoring for methanol, carbon monoxide and nitrogen dioxide was carried out in 2014 and 2015 at both sites by Watercare Services Ltd – Air Quality Group and the following tables record these results:

2014 Motunui Site

Location	North		East		South		West	
Monitoring period	29/10/14 13:31–14:31		29/10/14 11:10–12:10		29/10/14 14:42 – 15:42		29/10/14 12:20 – 13:20	
Unit	ppm	mg/m^3	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3
CO *	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL
Unit	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$
NO_2 **	1.17	2.43	1.17	2.44	1.28	2.67	1.31	2.72

2014 Motunui Site

Location	North		East		South		West	
Monitoring period	15/12/14 11:05 – 12:05		15/12/14 12:07– 13:07		15/12/14 13:10 – 14:10		15/12/14 10:00 – 11:00	
Wind Direction	SW		SE		SE		SW	
Wind Speed (m/s)	2.5		2.0		0.8		2.1	
Temperature (°C)	22.2		23.0		25.1		22.1	
Relative Humidity (%)	40.2		38.0		35.0		41.6	
Barometric Pressure (hPa)	1007.4		1009.2		1011.2		1007.4	
Conditions	Sunny		Sunny		Sunny		Sunny	
Unit	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3
Methanol ***	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ

2014 Waitara Valley Site

Location	North		East		South		West	
Monitoring period	16/12/14 11:32 – 12:30		16/12/14 09:10 – 10:10		16/12/14 08:05 – 9:05		16/12/14 10:32 – 11:32	
Wind Direction	S		NE		SW		SW	
Wind Speed (m/s)	1.0		1.2		0.9		1.0	
Temperature (°C)	25.0		20.0		18.2		23.0	
Relative Humidity (%)	31.0		41.2		57.9		28.8	
Barometric Pressure (hPa)	1013.5		1013.2		1013.2		1013.3	
Conditions	Sunny		Sunny		Sunny		Sunny	
Unit	ppm	mg/m^3	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3
CO *	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL
Unit	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$
NO_2 **	2.62	5.39	2.17	4.45	3.60	7.39	12.29	25.23
Unit	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3
Methanol ***	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ

2015 Motunui Site

Location	North		East		South		West	
Monitoring period	10/12/15 07:10 -- 08:10		10/12/15 10:21 – 11:21		10/12/15 09:18 – 10:18		10/12/15 08:14 – 09:14	
Wind Direction	W		W		W		W	
Wind Speed (m/s)	4.2		2.5		1.8		4.0	
Temperature (°C)	12.4		17.7		15.0		14.6	
Relative Humidity (%)	70.6		53.8		62.7		61.6	
Barometric Pressure (hPa)	1012.8		1012.3		1012.3		1012.8	
Conditions	Cloudy		Cloudy		Cloudy		Cloudy	
Unit	ppm	mg/m^3	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3
CO *	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL	<LDL
Unit	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$
NO_2 **	1.47	3.01	11.01	22.60	4.43	9.09	2.41	4.94
Unit	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3
Methanol ***	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ

2015 Waitara Valley Site

Location	North		East		South		West	
Monitoring period	10/12/15 15:05 – 16:05		10/12/15 11:58 – 12:58		10/12/15 13:00 – 14:00		10/12/15 14:02 – 15:02	
Wind Direction	W		W		W		W	
Wind Speed (m/s)	2.6		2.4		2.5		2.5	
Temperature (°C)	19.5		17.3		17.8		17.4	
Relative Humidity (%)	45.2		50.6		47.5		47.2	
Barometric Pressure (hPa)	1013.0		1013.2		1013.0		1013.0	
Conditions	Sunny		Sunny		Sunny		Sunny	
Unit	ppm	mg/m^3	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3
CO *	<LDL	<LDL	<LDL	<LDL	0.06	0.07	0.10	0.13
Unit	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$	ppb	$\mu g/m^3$
NO_2 **	1.54	3.17	1.93	3.96	1.80	3.70	1.63	3.34
Unit	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3
Methanol ***	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ

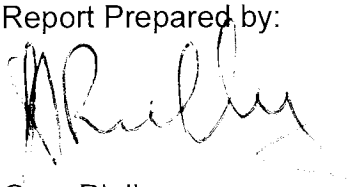
For all the above ambient monitoring results in this section:
*The lower detection limit (LDL) for CO is 0.05ppm or 0.2% of concentration reading, whichever is greater. mg/m^3 is corrected to 0 °C, 101.3 kPa
** $\mu g/m^3$ is corrected to 0 °C, 101.3 kPa
*** The limit of quantification of RAE VOC gas monitor used for logging the Methanol concentration is 0.04 ppm (0.06 mg/m^3). The average concentration from the four locations monitored is <0.04 ppm or <0.06 mg/m^3.

[D] Energy Efficiency

Because the cost of energy makes up a large portion of the operating costs associated with the production of methanol, Methanex has a significant incentive to continuously improve energy efficiency by 'trimming' the way in which it operates the plants. This includes using steam efficiently and minimising the number of cooling tower fans in use.

During this reporting period work began on a refurbishment program of the Motunui Cooling Tower. This began with significant replacement of parts and the inclusion of several small improvements within one of the cells in the tower and this has resulted in approximately a 17% reduction of energy consumed by this cell. A plan is now in place to progressively work through the cells of the tower carrying out the same refurbishments and improvements, with the next one (now in progress) being 'E' cell.
New preheaters have also been installed in the Motunui reformers which have improved performance in regards to reducing the amount of air slippage, also giving energy efficiency gains.

Report Prepared by:



Gary Rielly
Sustainability and Quality Leader

Appendix V

Methanex incident reports – IBC methanol overflow

Incident Investigation Report

Incident Title: IBC methanol overflow
Incident Number: IN-TAR-20150721-003
Incident Date: 21/7/2015
Location: Waitara Valley Pipeline Pumps
Investigation Team: Paul Freeman, Terry Richardson
Taproot Review Team:
SMT Review Team:
SMT Review Date:

Incident Summary

On the 21st July draining of the 010 pipeline at WV commenced in preparation for the Master tags to be applied, once applied permitting could occur on the 22nd for the Hot Tap work to remove the hand valve at WV boundary. The draining process involved clearing the bulk of the Methanol by blowing back to the main storage tank using nitrogen. The residual methanol was removed by wilden pump and draining into the 500l IBC. The Operator was present during the draining process.

On completion of the draining of the line to the IBC at around 1pm, the Operations Project Co-ordinator made the decision to leave the drain valve open and leave the hose from this drain point connected to the IBC. This decision was based on the fact that draining was complete but potential existed for the line to drip Methanol due the length of the drained down pipework. As part of the agreed line isolation the drain valve was required be in the open position. He did consider disconnecting the drain line from the IBC and setting up a drip tray to allow the drain valve to remain open, but discarded this idea as the drain was already connected to the IBC. (Considered the safer option)

On the 21st at 5.30 pm the Distillation Field Operator checked the IBC level and isolated pipework and no issue was found. At 5.45pm the Distillation Operator placed "C" RDT on recirculation and continued with his other duties prior to shift handover. The nightshift Distillation Operator performed his checks in the area at 7.00pm and found the IBC overflowing. The drain valve feeding the IBC was immediately isolated and the Shift Team Leader was informed. The Methanol wetted area was approximately 3 m around the IBC with the general slope of the ground being towards the test borehole.

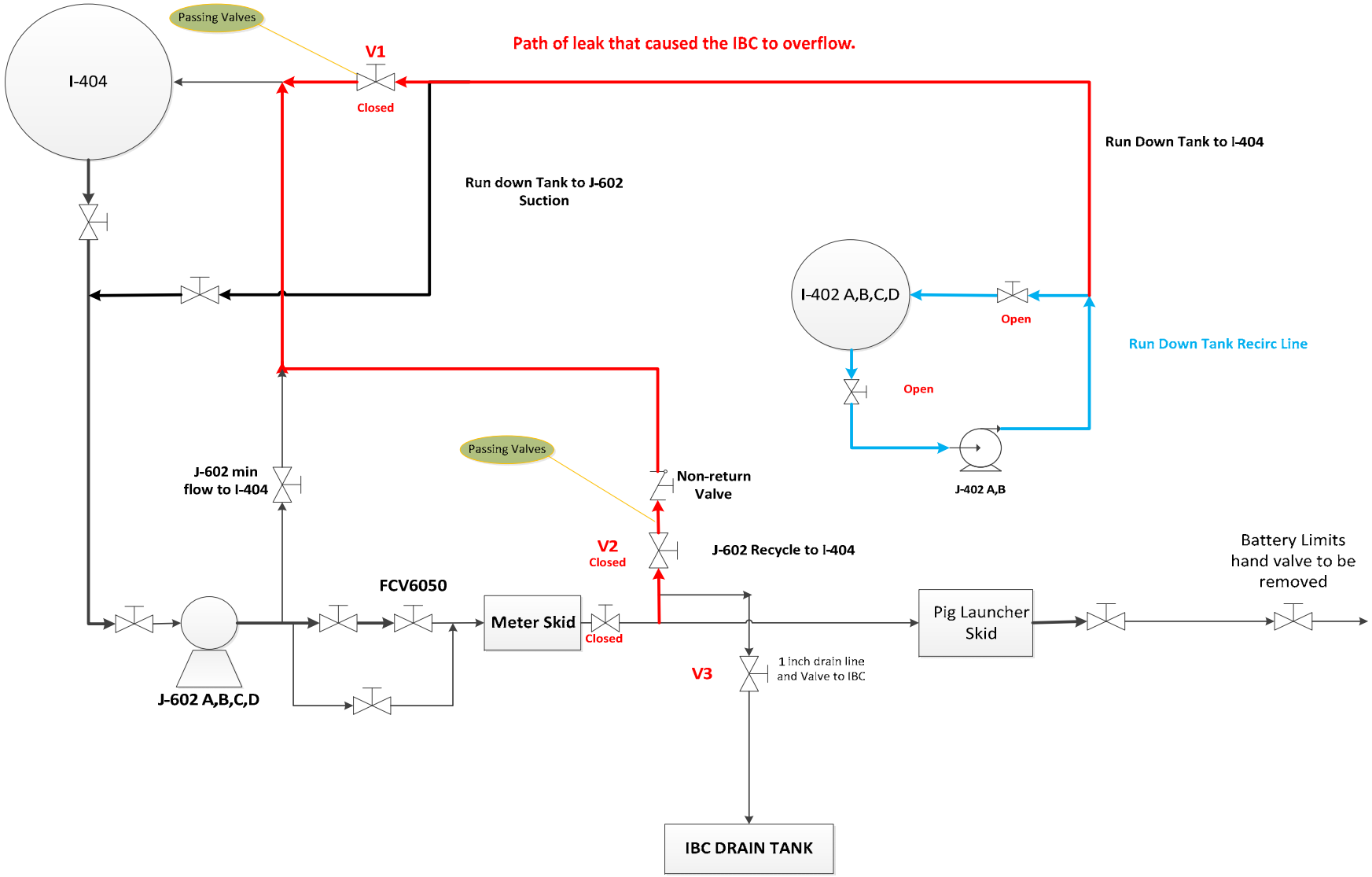
The Investigation into how the methanol entered the isolated pipework identified that the valves V1 and V2 had passed methanol while "C" RDT was on recirculation.

Immediate Corrective Actions

Drain Isolated to prevent further ground contamination.

Incident Investigation Report

Photographs / Drawings



Incident Investigation Report

METHANEX
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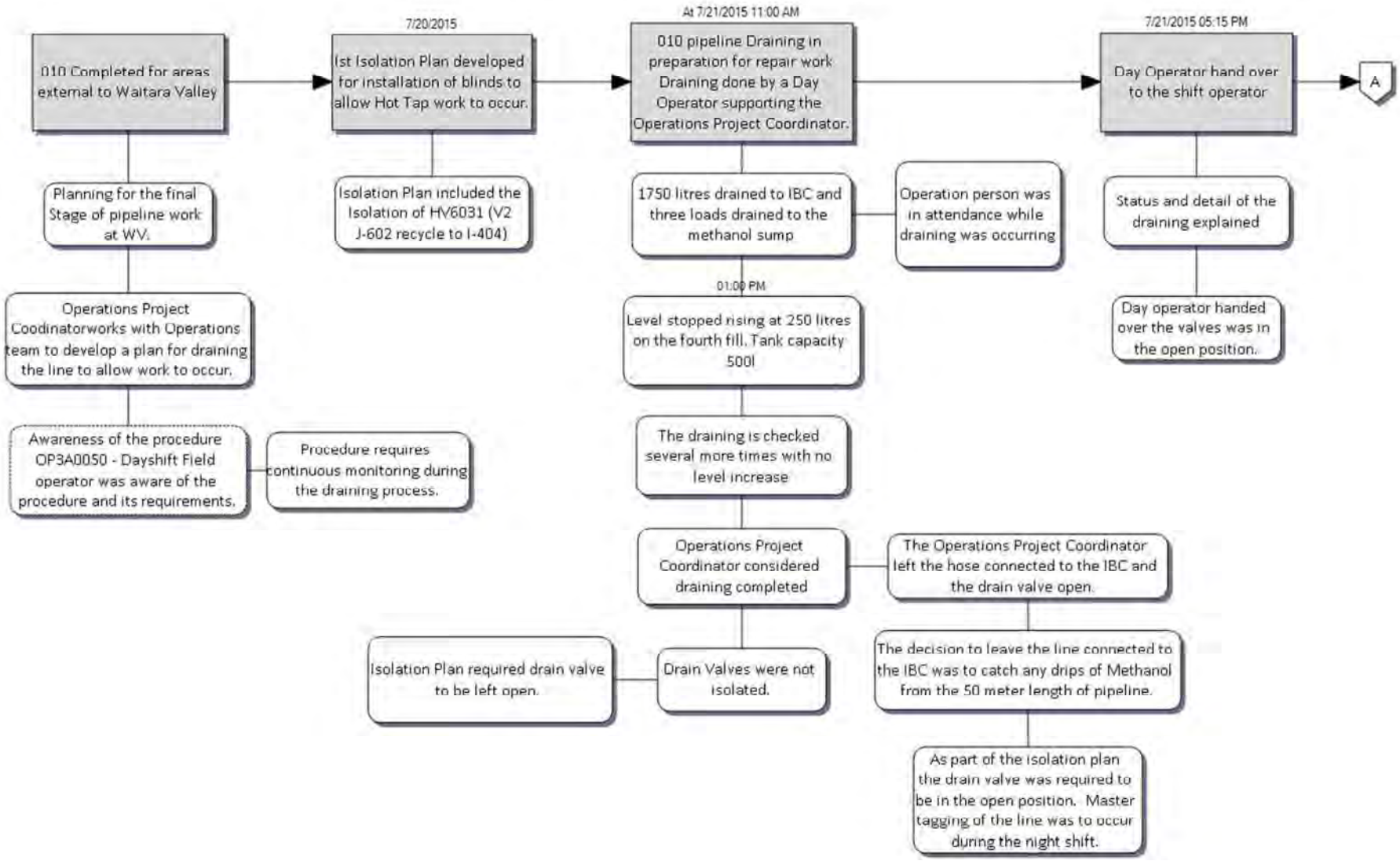
Incident Investigation Report

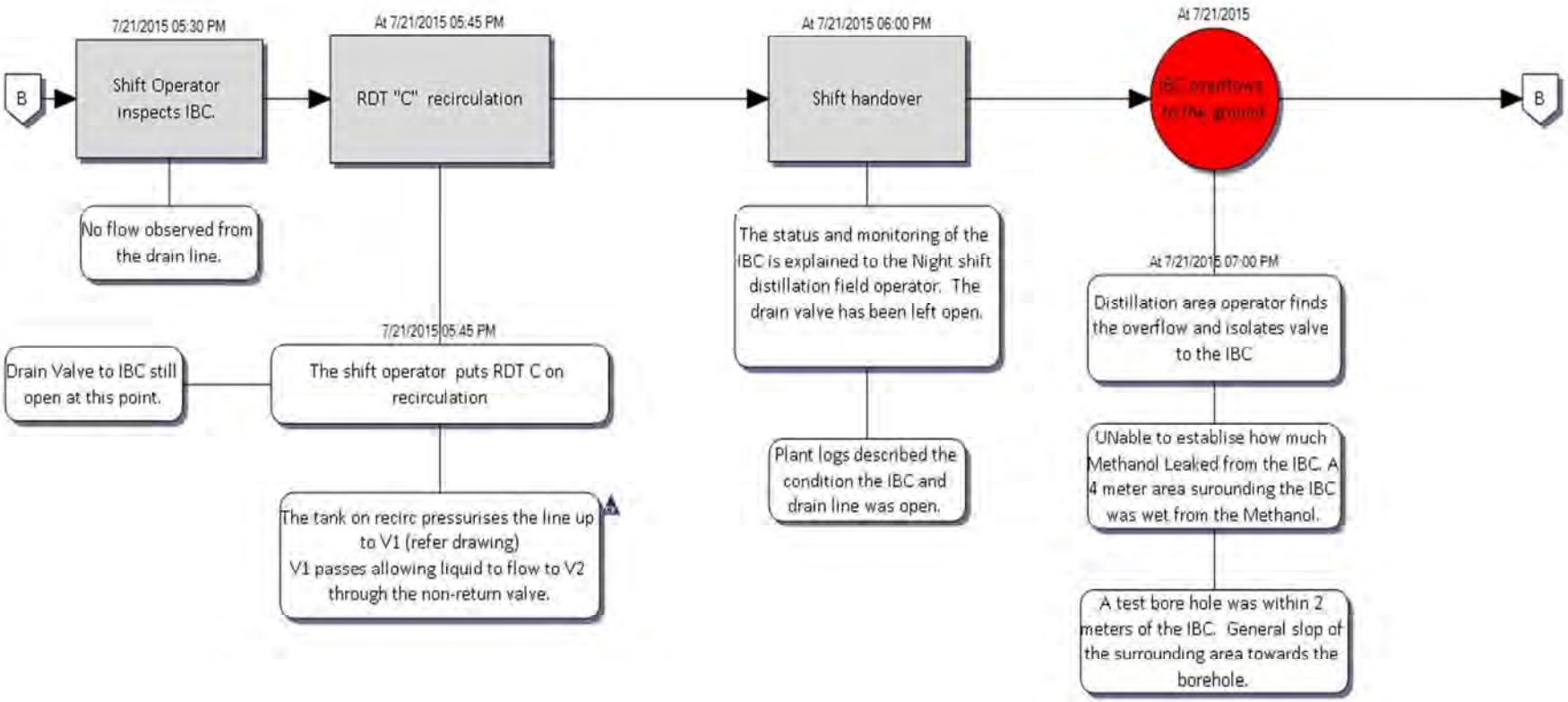
Causes and Corrective Actions

Causal Factor	Comment	Root Cause	Corrective Action	Responsible	Deadline
The tank on recirc pressurises the line up to V1 (refer drawing) V1 passes allowing liquid to flow to V2 through the non-return valve.	A test was carried out that proved these valves were passing.	Equipment Difficulty KMI Root Cause. - Excessive Wear and tear	Modify Isolation and Draining of Process Procedure OP3A0050 (Section 2) to include consideration of potential effects from connected adjacent processes that are isolated by single isolation valves only.	Terry Richardson	30/9/15

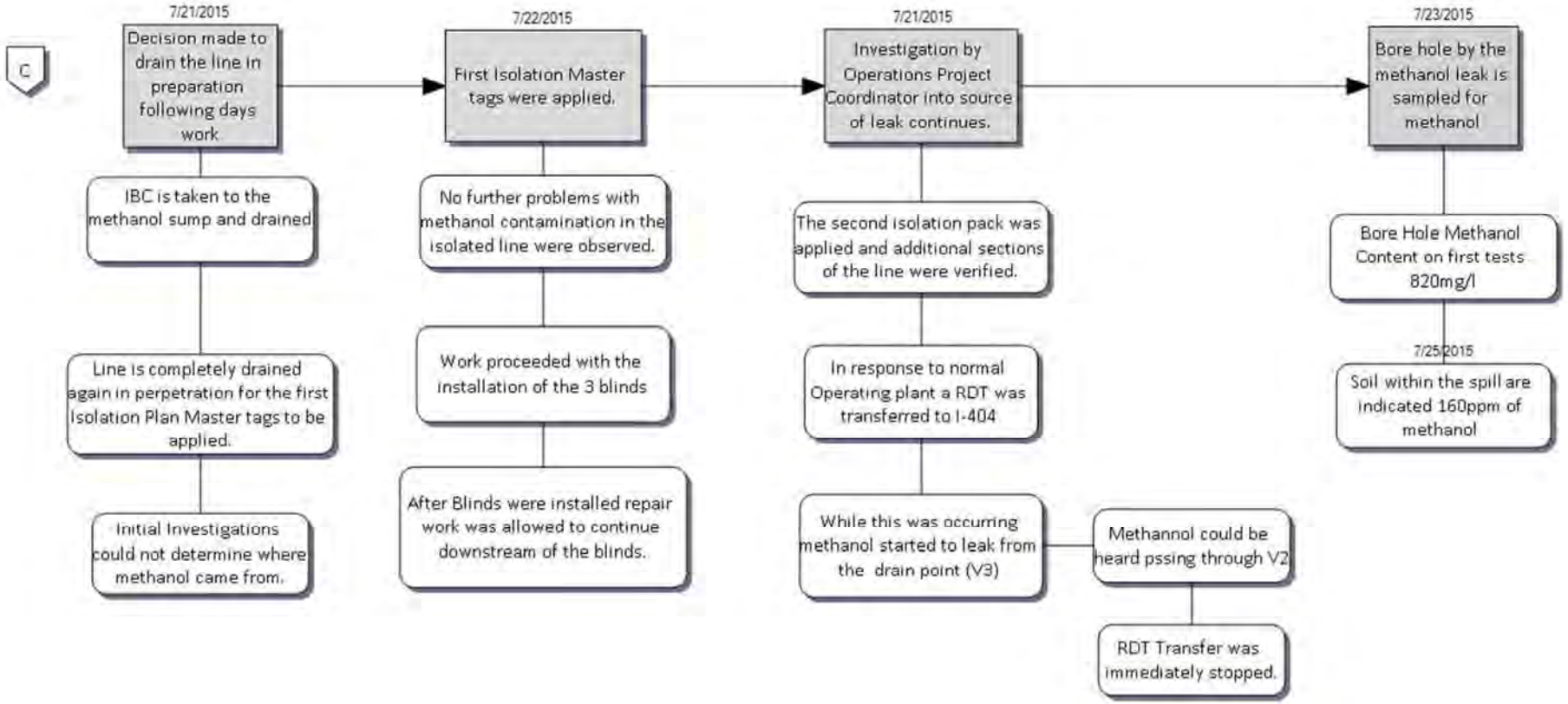
Incident Investigation Report



Incident Investigation Report



Incident Investigation Report



Bore 10 Methanol Testing Summary:

July 21st - IBC overflow incident occurred with methanol flowing to Bore 10

July 24th - Bore 10 tested to determine if methanol had reached groundwater, with results being 820 mg/L, Bore 10A results <2 mg/L

July 27th - Surface water around the Bore 10 cap tested results 38,000 mg/L, Bore 10A tested to see if contamination was upstream results <2 mg/L

July 27th - TRC notified of the IBC methanol spill.

July 28th - Bore 10 results 31 mg/L, Surface water around the Bore 10 cap results 120 mg/L, Soil sample next to Bore 10 results 160 mg/L

July 29th - Bore 10 results 140 mg/L

July 30th - TRC inspected the IBC spill location. Requested by TRC to pump out bore hole and continue testing and keep them informed. The contents of the Bore 10 were pumped out that afternoon.

July 31st - Bore 10 results 550 mg/L, Bore 2A results <2 mg/L.

August 4th - Contents from Bore 10 were pumped out again. The bore is pumped out throughout the week.

August 6th - Bore 10 results 1300 mg/L, Bore 2A results <2 mg/L, Bore 10B results <2 mg/L. Bore 10 is pumped out daily over the weekend.

August 10th - Bore 10 results 880 mg/L, Bore 10B results <2 mg/L, Bore 2A results <2 mg/L

- Bore 10 is now being pumped out daily with testing occurring twice weekly. It is expected that the methanol is seeping into the bore as we pump the water out. This explains why the results have gone up once we started pumping. We are planning to keep pumping the bore out until we see a reduction in the methanol levels. We will also test bores 10A and 8B to determine if there is any possible methanol occurring upstream.

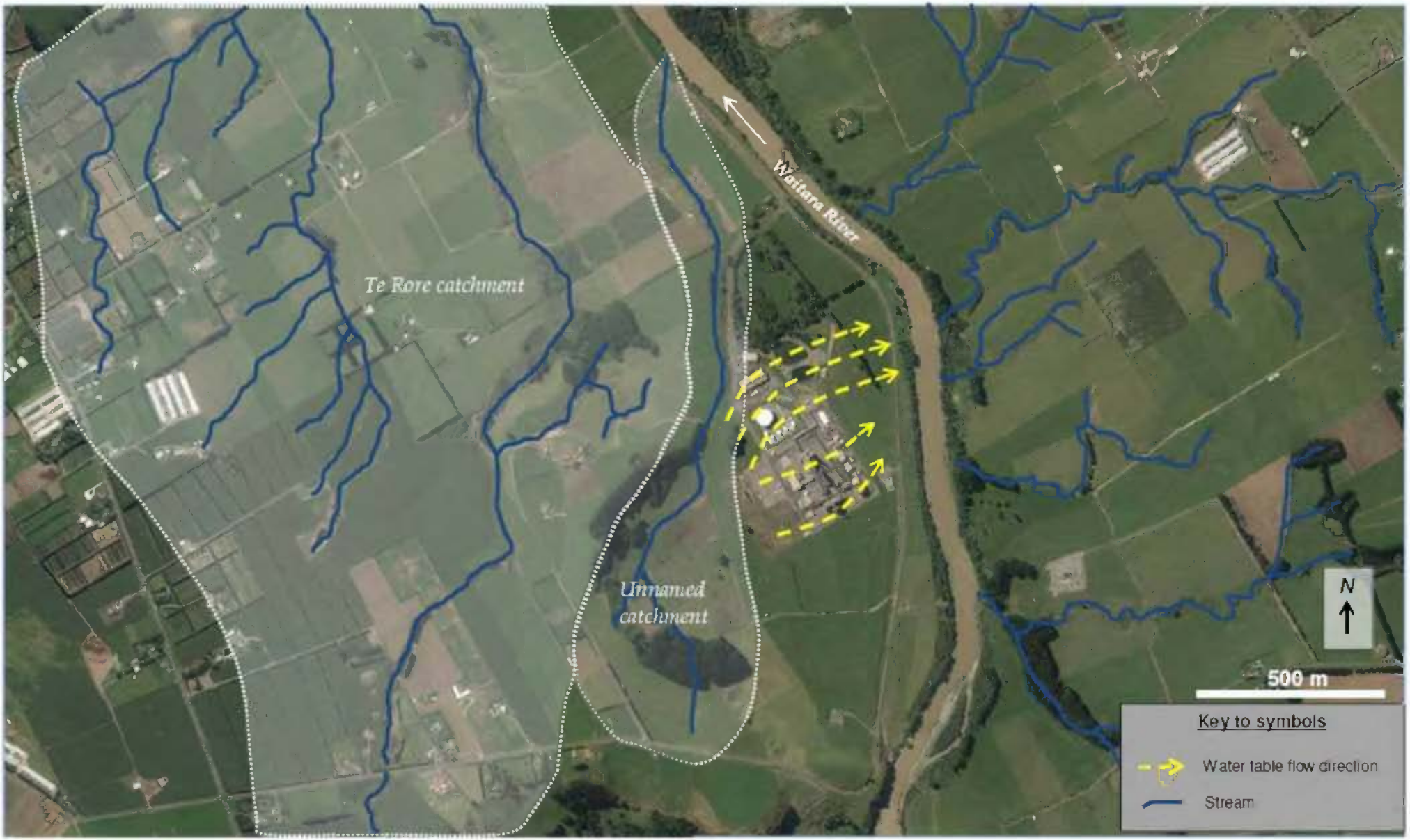


Figure 5 Principal direction of water table flow under Methanex Waitara Valley plant and surface water features (Geosearch October 2014)

Borehole ID	Northing mN (Taranaki 2000)	Easting mE (Taranaki 2000)	Northing mN (NZTM)	Easting mE (NZTM)	Height m (To Lid)
Control	811832.88	401650.97	5679269.28	1707924.16	17.77
1	812096.32	401902.73	5679529.23	1708179.39	17.52
2A	812212.76	401847.44	5679646.38	1708125.69	17.68
2B	812265.20	401806.47	5679699.35	1708085.44	16.75
3	812129.65	401971.97	5679561.62	1708249.05	17.97
4	812008.97	401839.90	5679442.76	1708115.40	17.64
5	812435.09	401825.19	5679868.93	1708106.44	8.65
6	812302.65	401906.94	5679735.43	1708186.38	9.02
7	812378.91	401912.30	5679811.59	1708192.76	10.41
8A	811974.10	401962.54	5679406.25	1708237.53	17.47
8B	812119.14	401852.56	5679552.72	1708129.54	17.63
10	812141.03	401822.57	5679575.01	1708099.86	16.75
10A	812130.47	401819.79	5679564.49	1708096.94	16.80
10B	812165.89	401848.81	5679599.51	1708126.42	16.87
11	812029.43	401952.64	5679461.69	1708228.38	17.72
16	812126.97	401959.99	5679559.10	1708237.04	17.89
17	812141.03	401964.90	5679573.09	1708242.14	17.99
18	812150.25	401949.50	5679582.51	1708226.87	17.83
19	812160.80	401935.55	5679593.25	1708213.06	17.52
45	812500.37	401945.18	5679932.57	1708227.27	8.84
46	812399.53	402005.44	5679830.95	1708286.15	8.83
47	812207.93	401640.99	5679644.33	1707919.24	16.33

Figure 2 Survey plan of groundwater monitoring well locations October 2014

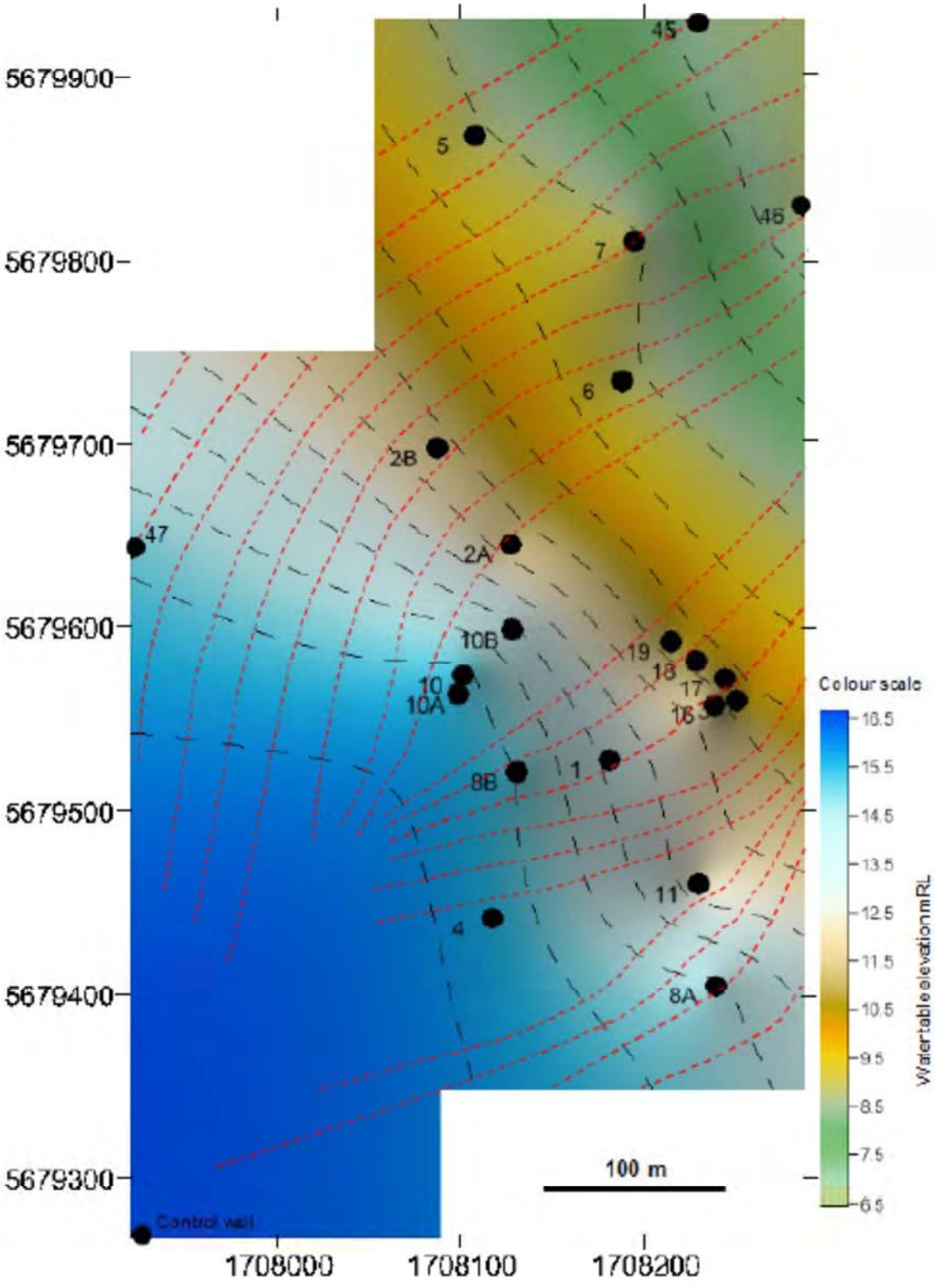


Figure 3 Static water table map for Methanex Waitara Valley site 7 October 2014. Plan view colour relief model and flow net