

Methanex Motunui and Waitara Valley  
Combined Monitoring Programme  
Triennial Report  
January 2010 - June 2013  
Technical Report 2013–72

ISSN: 0144-8184 (Print)  
ISSN: 1178-1467 (Online)  
Document: 1282370 (Word)  
Document: 1296429 (Pdf)

Taranaki Regional Council  
Private Bag 713  
STRATFORD

February 2014



## Executive summary

The following Triennial Report by the Taranaki Regional Council (the Council) summarises operations at Methanex Motunui (NZ) Ltd (Methanex) and results of the monitoring programme associated with the resource consents held by Methanex during the monitoring period January 2010 to June 2013.

Methanex operate methanol production facilities located at Motunui and Waitara Valley, in the Waitara River catchment. The Motunui facility restarted methanol production in October 2008 after four years of the plant lying idle. The Waitara Valley plant was laid up in November 2008 soon after the restart of the larger Motunui facility; during the period under review this site was being kept in a state of readiness to allow a restart in a matter of months if required. The Waitara Valley site retained importance as a storage facility and a load out site for product going by truck to Tauranga; this function was ongoing. The Motunui facility was operating at approximately 50% production up until 2012, when the Meth I plant came online; the plant is now operating at full production. A restart of the Waitara Valley plant is planned for July/August 2013.

This report for the period January 2010 – June 2013 describes the status of the ongoing environmental monitoring programmes implemented by the Taranaki Regional Council with regard to the Company's activities.

Over the monitoring period, excluding renewals, Methanex held a total of six resource consents relating to the operation of the Motunui plant. These consents included 85 special conditions setting out the requirements that the Company must satisfy in order to minimise risk of damage to the environment or overuse of resources. Consent 0822-1 expired during the monitoring period (12 March 2012) and was renewed as 0822-2 on 29 November 2012 with a number of changes to the conditions. Consent 3400-2 was varied on 18 June 2012 to include a condition allowing an increase in the use of the chemical 'Spectrus CT1300' to control Legionella bacteria outbreaks. The Company held one consent to allow it to take and use water, one consent to discharge plant effluent into the Tasman Sea, three consents to discharge uncontaminated stormwater into the Waitara River and Waihi and other streams, and one consent to discharge emissions into the air.

There were twenty nine compliance inspections undertaken at the Motunui plant during the period under review, with no major issues noted. The frequency of site inspections was increased in 2012 to ensure the restart of the Meth I plant had no issues.

The Company held a total of five resource consents (excluding renewals) for the operation of the Waitara Valley methanol plant, which included a total of 52 special conditions setting out requirements that the Company must satisfy. The Company held one consent to allow it to take and use water, one consent for a groyne in the Waitara River, one consent to discharge plant effluent into the Tasman Sea, one consent to discharge uncontaminated stormwater into the Waitara River and one consent to discharge emissions into the air.

There were eleven compliance inspections, one inspection in relation to the National Environmental Standard (NES) for measuring and reporting of water takes, two advice and information inspections, and one incident investigation undertaken at the Waitara Valley plant during the period under review, with no major issues noted.

Methanex continued to provide the Council with monthly monitoring data associated with the Motunui and Waitara Valley surface water abstractions, effluent and stormwater discharges each month. Inter-laboratory comparisons were made of split stormwater and plant effluent samples to audit the reliability of the data provided by Methanex. The results of the portions of the samples tested by the onsite Methanex laboratory and the Taranaki Regional Council laboratory showed good agreement in most cases, and the few differences that were found were resolved at the time. There were two Unauthorised Incident recorded in respect of this consent holder during the period under review, but no environmental impacts were observed in relation to either incident.

Officers of the Taranaki Regional Council noted that, as in previous years, the facilities are well managed, and in general a high standard of housekeeping was maintained at both sites and consent conditions were largely met. The Motunui plant which was restarted in 2008 is running well with no evidence of environmental effects noted. The Meth I plant at the Motunui site was restarted in 2012, the restart was completed with no major incidences. At the end of the period under review, the Waitara Valley Plant was being held in care and maintenance, and not producing any methanol. A restart was planned for the latter half of 2013.

Overall Methanex has demonstrated a high level of environmental performance in relation to the Waitara Valley and Motunui plants. This report includes recommendations for the 2013-2014 year.

## Table of contents

	Page
1. Introduction	1
1.1 Compliance monitoring programme reports and the Resource Management Act 1991	1
1.1.1 Introduction	1
1.1.2 Structure of this report	1
1.1.3 The Resource Management Act (1991) and monitoring	2
1.1.4 Evaluation of environmental performance	2
1.2 Resource consents	3
1.3 Monitoring programme	4
1.3.1 Introduction	4
1.3.2 Programme liaison and management	4
1.3.3 Site inspections	4
1.3.4 Data review	5
1.3.5 Inter-laboratory comparisons	6
2. Motunui	7
2.1 Process description	7
2.1.1 Water discharges	8
2.1.2 Emissions to air	11
2.1.3 Solid waste	11
2.2 Resource consents	13
2.2.1 Water abstraction permits	13
2.2.2 Water discharge permits	15
2.2.3 Air discharge permits	20
2.2.4 Discharge of wastes to land	20
2.3 Results	21
2.3.1 Water	21
2.3.1.1 Site inspections	21
2.3.1.1.1 <i>Legionella</i> bacteria	24
2.3.1.1.2 Meth I restart programme	24
2.3.1.2 Surface water abstraction monitoring by the Company	27
2.3.1.3 Surface water	27
2.3.1.4 Inter-laboratory comparisons	36
2.3.1.5 Methanex Motunui annual report	39
2.3.2 Meth I restart monitoring	39
2.3.3 Air	39
2.3.3.1 Inspections	39
2.3.3.2 Consent requirements	40
2.3.4 Soil	40
2.4 Investigations, interventions, and incidents	40
2.5 Discussion	43
2.5.1 Discussion of plant performance	43
2.5.2 Environmental effects of exercise of consents	44

2.5.2.1	Environmental effects of exercise of water discharge permits	44
2.5.2.2	Environmental effects of exercise of air discharge permits	44
2.5.2.3	Environmental effects of exercise of permit allowing discharge of wastes to land	44
2.5.3	Evaluation of performance	44
2.5.4	Recommendations from the 2009 Annual Report	50
2.5.5	Alterations to monitoring programmes for 2013-14	51
2.5.6	Exercise of review of consent	51
2.6	Recommendations	51
3.	Waitara Valley	53
3.1	Process description	53
3.1.1	Water discharges	55
3.1.2	Emissions to air	55
3.1.3	Solid wastes	55
3.2	Resource consents	56
3.2.1	Water abstraction permits	56
3.2.2	Land use permit	57
3.2.3	Water discharge permits	57
3.2.4	Air discharge permit	59
3.3	Results	60
3.3.1	Water	60
3.3.1.1	Site inspections	60
3.3.1.2	Abstraction monitoring by the Company	63
3.3.1.3	Effluent monitoring	63
3.3.1.4	Inter-laboratory comparisons	67
3.3.1.5	Methanex Waitara Valley annual report	70
3.3.1.6	Uncontaminated stormwater	70
3.3.2	Air	71
3.3.2.1	Inspections	71
3.3.2.2	Consent requirements	71
3.4	Investigations, interventions, and incidents	71
3.5	Discussion	72
3.5.1	Discussion of plant performance	72
3.5.1.1	Environmental effects of exercise of water permits	72
3.5.1.2	Environmental effects of exercise of air discharge permit	72
3.5.2	Evaluation of performance	72
3.5.3	Recommendations from the 2009 Annual Report	76
3.5.4	Alterations to monitoring programmes for 2013-2014	77
3.5.5	Exercise of review of consent	77
3.6	Recommendations	77
4.	Summary of recommendations	79
	Glossary of common terms and abbreviations	80
	Bibliography and references	82

Appendix I	Resource consents held by Methanex Motunui Limited Motunui plant	85
Appendix II	Resource consents held by Methanex Motunui Limited Waitara Valley Plant	87
Appendix III	Hydrograph for the Waitara River at Bertrand Road for the monitoring period January 2010 to June 2013	89
Appendix IV	Methanex Motunui Limited biennial air quality reports for Motunui and Waitara Valley plants 2010 and 2012	92
Appendix V	Methanex Motunui Limited biennial water use reduction reports 2010 and 2012	94

## List of tables

Table 1	Consents held in relation to the Motunui plant, January 2010 - June 2013	13
Table 2	Uncontaminated stormwater discharge criteria 0822-1 and 0822-2	15
Table 3	Summary of the variation to consent 3400-2 granted 18 July 2012	18
Table 4	Effluent component concentration limits for Motunui – consent 3400-2	18
Table 5	Consents for discharges from the Waitara Outfall	19
Table 6	Summary of the site inspections undertaken for the Motunui plant from January 2010 to June 2013	21
Table 7	Summary of Motunui effluent discharge data for 2010	27
Table 8	Summary of Motunui effluent discharge data for 2011	28
Table 9	Summary of Motunui effluent discharge data for 2012	29
Table 10	Summary of Motunui effluent discharge data for 2013 (January to June)	30
Table 11	Summary of Motunui stormwater monitoring data for 2010	32
Table 12	Summary of Motunui stormwater monitoring data for 2011	32
Table 13	Summary of Motunui stormwater monitoring data for 2012	33
Table 14	Summary of Motunui stormwater monitoring data for 2013 (January to June)	33
Table 15	Results from the investigative borehole monitoring within the uncontaminated stormwater catchment at Motunui	35
Table 16	Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2010	36
Table 17	Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2011	36
Table 18	Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2012	37
Table 19	Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2013	37
Table 20	Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2010	37
Table 21	Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2011	38
Table 22	Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2012	38
Table 23	Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2013	38
Table 24	Waihi Stream stormwater boiler water incident results	41
Table 25	Summary of performance for Consent 0820-2 to take water from Waitara River	45

Table 26	Summary of performance for Consent 0822-1 Discharge of stormwater into Waihi and Manu Streams	45
Table 27	Summary of performance for Consent 0822-2 Discharge of stormwater into Waihi and Manu Streams	46
Table 28	Summary of performance for Consent 0825-3 Discharge of stormwater into Waitara River unnamed tributary	47
Table 29	Summary of performance for Consent 0827-3 Discharge of wastewater into Waitara River unnamed tributary	47
Table 30	Summary of performance for Consent 3400-2 Discharge of effluent and stormwater into Tasman Sea	48
Table 31	Summary of performance for Consent 4042-3 Discharge of emissions into the air – methanol distillation and ancillary facilities	49
Table 32	Consents held in relation to the Waitara Valley plant, January 2010 – June 2013	56
Table 33	Effluent component concentration limits for Waitara Valley	58
Table 34	Summary of the site inspections undertaken for the Waitara Valley site from January 2010 to June 2013	60
Table 35	Summary of the Waitara Valley plant’s monitoring results of plant effluent during 2010	64
Table 36	Summary of the Waitara Valley plant’s monitoring results of plant effluent during 2011	65
Table 37	Summary of the Waitara Valley plant’s monitoring results of plant effluent during 2012	65
Table 38	Summary of the Waitara Valley plant’s monitoring results of plant effluent during 2013	66
Table 39	Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2010	67
Table 40	Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2011	68
Table 41	Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2012	69
Table 42	Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2013	69
Table 43	Summary of performance for Consent 0801-2 Take water from Waitara River	72
Table 44	Summary of performance for Consent 0802-2 Discharge of uncontaminated stormwater to Waitara River	73
Table 45	Summary of performance for Consent 3399-2 Discharge of treated wastes into the Tasman Sea	74
Table 46	Summary of performance for Consent 3960-2 Construction of rock groyne	75
Table 47	Summary of performance for Consent 4045-3 Discharge of emissions into the air	75

## List of figures

Figure 1	Motunui site layout and water sampling site locations	10
Figure 2	Major process air emission sources at the Motunui plant	12
Figure 3	Locations of the investigative boreholes installed to monitor high conductivity readings at the uncontaminated stormwater outlets.	35
Figure 4	Motunui sampling sites in relation to boiler water incident with site overview map (insert)	42
Figure 5	Waitara Valley site layout and water sampling site location	54

## List of photos

Photo 1	Methanex Motunui site	8
Photo 2	Methanex Waitara Valley site	53

# **1. Introduction**

## **1.1 Compliance monitoring programme reports and the Resource Management Act 1991**

### **1.1.1 Introduction**

The following report is the triennial report associated with the monitoring programmes for resource consents held by Methanex Motunui (NZ) Limited (Methanex). Methanex maintained facilities and holds consents for a petrochemical plant situated at Motunui, (State Highway 3 north of Waitara), in the Waitara River catchment. The Company also holds consents for and operated a methanol production plant situated at Mamaku Road, Waitara Valley, in the Waitara catchment.

This report covers the results and findings of the monitoring programmes implemented by the Council in respect of the consents held by Methanex that relate to abstractions and discharges of water within the Waitara catchment, and discharges to air from both sites. Methanex held a consent to abstract groundwater at the Motunui site, which expired in June 2009. Groundwater abstraction ceased at the Motunui site on 5 December 2004.

One of the intents of the Resource Management Act (1991) 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 is integrating its environmental monitoring programmes and reporting the results of the programmes jointly. This report discusses the environmental effects of Methanex's use of water, land and air resources.

### **1.1.2 Structure of this report**

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the Resource Management Act and the Council's obligations and general approach to monitoring sites through annual programmes, lists the resource consents held by Methanex and outlines the nature of the monitoring programme in place for the period under review.

Methanex's activities in relation to the Motunui and Waitara Valley sites are then discussed in separate sections (section 2 and section 3).

In each subsection 1 (e.g. section 2.1) there is a general description of the industrial activities and discharges, an aerial photograph or map showing the location of the site, and an outline of the matters covered by Methanex's permits.

Subsection 2 presents the results of monitoring of Methanex's activities during the period under review, including scientific and technical data, and any information on the Council's Register of Incidents.

Subsection 3 discusses the results, their interpretation, and their significance for the environment in the immediate vicinity of the site under discussion.

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

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

### 1.1.3 The Resource Management Act (1991) and monitoring

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

- (a) The neighbourhood or the wider community around a discharger, and may include cultural and socio-economic effects;
- (b) Physical effects on the locality, including landscape, amenity and visual effects;
- (c) Ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
- (d) Natural and physical resources having special significance (e.g., recreational, cultural, or aesthetic);
- (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’ as is appropriate for each discharge source. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the Resource Management Act to assess the effects of the exercise of consents. In accordance with section 35 of the Resource Management Act, the Council undertakes compliance monitoring for consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents. Compliance monitoring, including impact monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach and that of consent holders to resource management, and, ultimately, through the refinement of methods, to move closer to achieving sustainable development of the region’s resources.

### 1.1.4 Evaluation of environmental performance

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

- a **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or inconsequential (such as data supplied after a deadline) non-compliance with conditions.
- a **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the monitoring period were negligible or minor at most, or, the Council did not record any verified unauthorised incidents

involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices, or, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with, and any inconsequential non compliances with conditions were resolved positively, co-operatively, and quickly.

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

For reference, in the 2012-2013 year, 35% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 59% demonstrated a good level of environmental performance and compliance with their consents.

## 1.2 Resource consents

Section 13(1)(a) of the Resource Management Act 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 Resource Management Act stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14. Methanex currently holds two abstraction consents for the Waitara River.

Section 15(1)(a) of the Resource Management Act stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations. Methanex currently holds five water discharge consents. One water discharge consent expired during the monitoring period being reported on.

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

Sections 15(1)(b) and (d) of the Resource Management Act 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 they no longer conduct any sludge disposal activities.

## **1.3 Monitoring programme**

### **1.3.1 Introduction**

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

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

The monitoring programme for the Methanex sites consists of four primary components.

### **1.3.2 Programme liaison and management**

There is generally a significant investment of time and resources by the Council in ongoing liaison with resource consent holders over consent conditions and their interpretation and application, in discussion over monitoring requirements, preparation for any reviews, renewals, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

### **1.3.3 Site inspections**

The Waitara Valley and Motunui sites were visited twenty seven times during the monitoring period. Site visits were mainly involved compliance inspections and the taking of split samples for inter-lab comparisons but also included a fish mitigation inspection, additional compliance inspections during the Meth I restart, an NES-related inspection of the water take, and information and advice visits. With regard to consents for the abstraction of, or discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by the consent holder were identified and assessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council.

### 1.3.4 Data review

Methanex undertakes a significant amount of self-monitoring of environmental performance. The data gathered is reported to the Council on a monthly basis. The raw water abstraction rate from the Waitara River for the Motunui plant was measured continuously and the plant effluent was monitored for a number of parameters with frequencies ranging from continuously (flow and pH) to monthly (trace metals). Abstraction of raw water from the Waitara River and effluent discharges at the Waitara Valley plant occurred sporadically during the monitoring period, and records were provided when this occurred. Monthly reports detailing daily water abstraction rates and volumes as well as effluent discharge rates and composition were provided by Methanex to the Council. Stormwater discharging from the Motunui plant was monitored weekly by Methanex with results included in the monthly report to the Council.

Methanex is also required to provide the Council with several reports addressing various receiving environments and time periods. These reports are outlined below.

#### **Air emissions:**

Methanex is required to supply Council with a report every two years addressing air emission issues. This report is a requirement of consent **4042-3** (granted in April 2008). A biennial report for 2008 and 2009 was received in 2010. A second biennial report was received in 2012 covering the 2010-2011 monitoring period.

Methanex is also required to supply Council with a report every five years addressing advances in technology to minimise the effect of the water vapour plume. This report is a requirement of consent **4042-3** (granted in April 2008). The last report was received in 2009, and the next report will be due in 2014.

#### **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** (granted in April 2008). The first report was received in March 2010 and the second report was received in August 2012.

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** (granted in April 2008). The first report is due in 2013.

#### **Marine Outfall emissions:**

Methanex is required to supply Council with a report every five years certifying the integrity and dilution performance of the marine outfall pipe. This report is a new requirement of consent **3400-2** (granted in April 2008). The first report is due in 2013. Methanex have had discussions with Council with regard to this work due to a number of issues including:

- a) the outfall is not owned by Methanex, but by NPDC; and
- b) the length and depth of the pipeline (1.2km long and 11 metres deep) will make the logistics of carrying out the work difficult.

Methanex have held discussions with NPDC but no conclusions have been reached.

Methanex is also required to supply Council with a report annually addressing their marine waste treatment plan. This is a requirement of consent **3400-2** (granted in April 2008). The last report covered the 2008 year, and was received in 2009. 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.

### **1.3.5 Inter-laboratory comparisons**

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

## **2. Motunui**

### **2.1 Process description**

The Motunui 'Meth II' plant was restarted and began to produce methanol in October 2008. Variation to consent conditions had previously been granted on 30 March 2005 to allow continuous stormwater discharge to either the Waihi Stream or the Duck Pond. With the resumption of activity on the site all stormwater from process and tankage areas is again required to be controlled and treated before discharge via the marine outfall. The Motunui 'Meth I' plant was brought online and began to produce Methanol in July 2012. Weekly monitoring of the two waterways continued through the course of the monitoring period.

#### **Methanol manufacture**

Natural gas from various Taranaki fields is used as the feed gas for the methanol manufacture process. This natural gas is desulphurised and preheated together with steam (processed from water taken from the Waitara River) in the "saturator". It is then passed to the "reformer" to be reacted over a nickel catalyst, which produces synthesis gas, containing hydrogen, carbon dioxide, carbon monoxide, methane and nitrogen.

The reformer reaction occurs at a temperature above 900° Celsius. 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° Celsius.

The synthesis gas mixture is then compressed and reacted over a second catalyst to form crude methanol. Crude methanol is distilled to form chemical grade methanol.

#### **Process performance**

The Motunui site was commissioned in 1986, as a facility intended for the synthesis of gasoline from natural gas and water.

Control of the plant was integrated, so that a central control room was the primary site for operational supervision. The processes involved high pressures, high temperatures, flammable gases and fluids. Proper control of the processes was essential for the safety of both staff and plant, and for optimal production. The volume of gas that may be accessed as raw feedstock by the Company was fixed by the capacity of the feedstock systems, so that increased productivity and profitability were determined by in-house efficiency and loss control. More specifically, as in-plant efficiency increased, then the amount of carbon dioxide emitted as an exhaust gas per unit of product decreased.



**Photo 1** Methanex Motunui site

### 2.1.1 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, sewage, process effluents and stormwater.

- Sludge removed from the clarifiers was allowed to settle in the sludge lagoons. The water from this process was either allowed to evaporate or was discharged via the outfall.
- Naturally occurring dissolved salts in the abstracted river water were removed using ion exchange resins. Process boiler condensates for reuse also went through ion exchangers to remove trace minerals. The resins were regenerated using sulphuric acid and sodium hydroxide. The waste flow was neutralised prior to discharge via the outfall.
- The on-site boilers were 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 was continuously removed (blowdown) and replaced with fresh treated water. This waste water went to the blowdown pond and was discharged via the outfall.
- The cooling towers functioned 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) was blown down. The cooling water blowdown could contain corrosion inhibitors, dispersants, surfactants, biocides and antifoams. This waste water also went to the blowdown pond and was 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 required treatment were diluted with other cleaner waste streams and were passed through a trickling filter and activated sludge system before being discharged via the ocean outfall.

Domestic effluent was pumped to a New Plymouth District Council sewer line for treatment at the Waitara Wastewater Treatment Plant.

Stormwater from the processing areas of the site that had the potential to be contaminated drained into the stormwater pond under gravity and was then pumped to the effluent treatment plant and discharge via the marine outfall. Stormwater from the tankage area was pumped over into the process sewers which flow to the stormpond. The stormwater falling on the non-process areas of the western side of E Road (Figure 1) is directed by "v" ditches running alongside the roads to the "Duck Pond" and then out to the Tasman Sea via the Manu Stream. Stormwater falling on the site to the east of E Road 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.

With the plant again up and running two 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 two sludge ponds will be used to keep more contaminated waste streams separate.

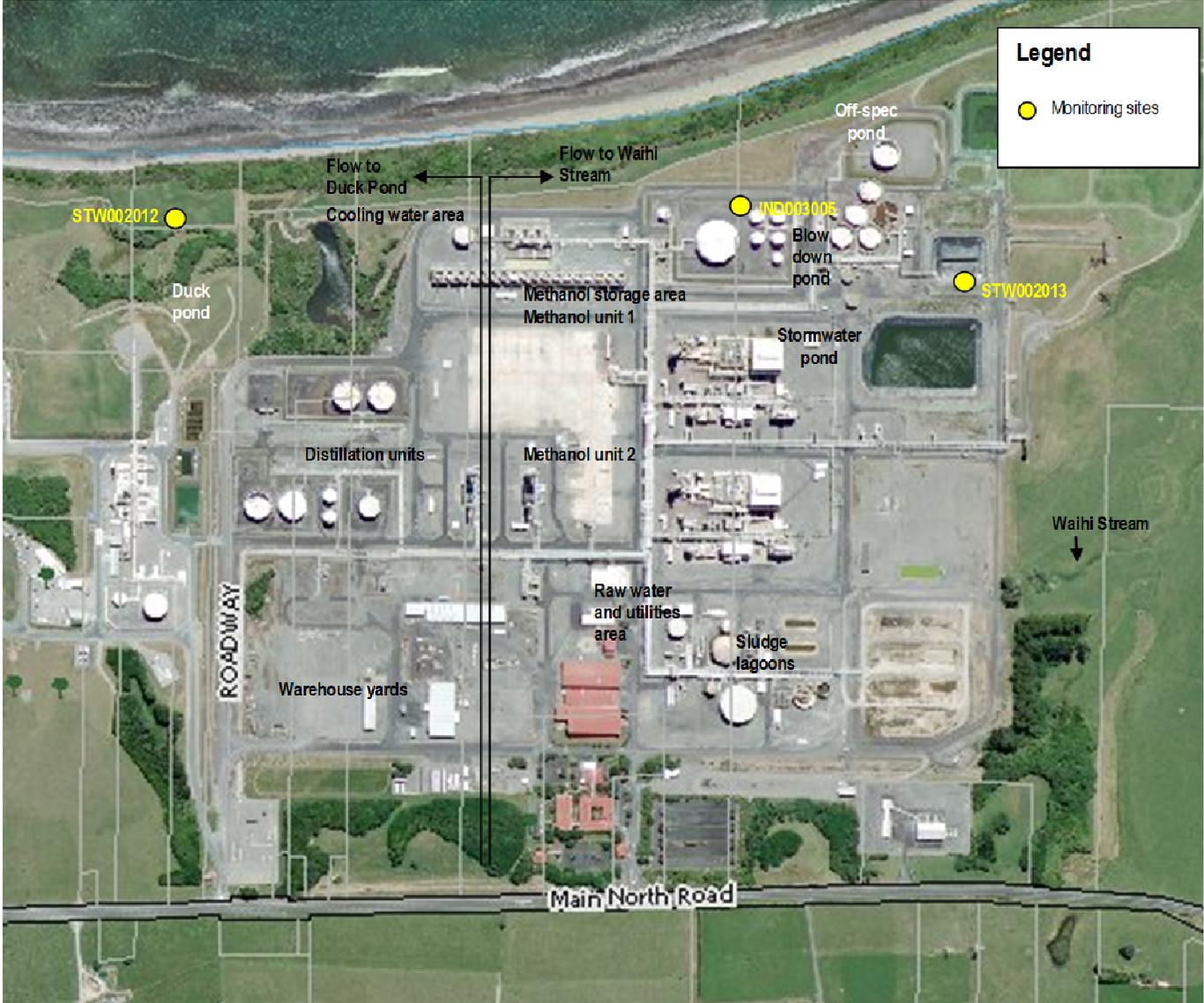


Figure 1

Motunui site layout and water sampling site locations

## 2.1.2 Emissions to air

The major sources are shown in Figure 2. The greatest quantities of air discharges from the Methanex complex were emitted from the 'Meth II' reformer stack when it recommenced production. The flue gases were the products of combustion reactions within the steam reformers. They comprised 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 were also traces of nitrogen oxides due to atmospheric nitrogen oxidising in the heat of the reformer.

### Energy efficiency and usage

The integrated nature of the plant allowed energy recovery and utilisation. At the same time, large amounts of energy were required to drive some of the reactions and refining stages.

The feedstock gas was 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. Recovering heat from it to raise steam, to heat boiler feed water, and to drive the distillation columns then cooled the synthesis gas mixture. The exhaust flue gases also had 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 released heat, which was captured via heat exchanges for use elsewhere. Unreacted synthesis gases were bled off to avoid accumulation, and were burnt in the reformer as fuel. Distillation of the methanol to a chemical-grade (high purity) standard required heat energy, partly supplied from the reformer process. Purge gases and liquids from the distillation process were recovered for further distillation, with any residues ("fusel oil") being burnt as fuel. Initiatives to improve energy efficiency undertaken by Methanex 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 site process areas e.g. the clarifiers, storm pond, blowdown pond, cooling tower sump and off-spec pond have been removed from time to time. These wastes were placed in the sludge lagoons at the south eastern corner of the site and were 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 on land owned by Methanex just outside the site boundary fence, northwest of the plant 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 the Motunui plant it is intended to use two of the four sludge lagoons to dewater river silt from the clarifiers. This sludge will be kept separate from other more contaminated material (for example the solid waste cleaned from the other effluent ponds and spent ion exchange resins) so it can be disposed of more easily. The lagoons have a large storage capacity and Methanex does not anticipate that they will need to be cleared of dewatered sludge for several years.



**Figure 2**

Major process air emission sources at the Motunui plant

## 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 and one which has expired during the monitoring period in relation to the Motunui plant is given in **Table 1**.

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.

Consents 3400, 0820, 0825, 0827 and 4042 were due to expire during 2008 and 2009. These consents were renewed in 2008. Consents 1244 and 1245 related to taking ground water and discharging ground water to the Waihi Stream and other streams for the purpose of ground stabilisation and protecting the plant against seismic hazards. These consents expired in 2009 and will not be renewed as dewatering has been deemed unnecessary. 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. Consent 0822-1 expired in June 2012, a renewal 0822-2, was granted on 29 November 2012.

**Table 1** Consents held in relation to the Motunui plant, January 2010 - June 2013

Consent	Granted	Review date	Expiry date	Purpose	Volume (m <sup>3</sup> /day)
0820-2	29/04/08	30/06/15	1/06/21	Water take from Waitara River	33,600
0822-1*	12/03/82	30/06/09	1/06/12	Discharge uncontaminated stormwater to Waihi and other streams	-
0822-2	29/11/12	1/06/15	1/06/27	Discharge uncontaminated stormwater to Waihi and other streams	-
0825-3	31/03/08	1/06/15	1/06/21	As above	-
0827-3	31/03/08	30/06/15	1/06/21	As above	-
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	-

\* Consent expired during the monitoring period.

### 2.2.1 Water abstraction permits

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

A consent for the abstraction of groundwater (consent 1244) which provided for the abstraction of groundwater up to a maximum of 5,184 cubic metres per day (60 litres per second) expired on 1 June 2009. The purpose of the site de-watering was to

minimise the risk of substrate liquefaction in the event of seismic activity. 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 plant during seismic activity.

Methanex holds one resource consent to abstract water for the Motunui petrochemical plant, as described below:

**Consent 0820-2: Abstraction from Waitara River**

Consent 0820-1 was granted in October 1981, originally for an abstraction rate of 370 litres per second. A variation to the consent was granted in December 1986, permitting an additional 130 litres per second. Consent 0820-1 was due to expire on 12 March 2009 and was superseded by renewed consent 0820-2.

This consent provides for the abstraction of water from the Waitara River. The point of abstraction is on the eastern bank, 10 kilometres from the sea. The maximum permitted rates of abstraction allowed by consent 0820-1 varied according to the river flow volumes, as measured at the Bertrand Road gauging site 2 kilometres downstream, and were as follows:

- Maximum abstraction rate of 500 litres per second when the Waitara River flow rate is greater than 6,000 litres per second.
- Maximum abstraction rate of 370 litres per second when the Waitara River flow rate is less than 6,000 litres per second.

There were 10 special conditions which related to measuring the river flow and rates of abstraction, the intake structure, river channel stability, environmental impact monitoring, studies of water use requirements and water storage facilities. The additional requirements imposed by the conditions of the variation related mainly to monitoring and provision of information. Of particular note are conditions 1, 2, and 4 of the variation which stated that:

- The clauses of the original consent (National Development Order) shall continue to apply except as specified in the variation,
- There shall be a review of the consent by the grantee and Regional Water Board every five years, and
- 24 hr prior notification is required for the variation to be exercised when the flow in the Waitara River is less than 8,000 L/s.

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 to read:

*“To take from the Waitara River a maximum quantity of 130 litres/second (in addition to the 370 litres/second permitted by the National Development (New Zealand Synthetic Fuels Corporation Limited) Order 1982) at times when the river flow at the Bertrand Road gauging station is greater than 6,000 litres/second, for the purpose of water supply to the Methanex site and the adjacent Pohokura Horizontal Directional Drilling site”.*

The conditions of the consent were unchanged.

On 29 April 2008, consent 0820-1 was superseded by consent 0820-2. Special conditions 1 and 2 of this renewed consent set out a maximum rate of abstraction of 1,400m<sup>3</sup> per hour when the flow rate of the Waitara River measured at Bertrand Road is greater than 4,600 litres per second. No water is to be taken when the river falls below this level. Other special conditions relate to metering flow rates and volumes, efficient use of water, and the prevention of fish entrainment at the intake structure.

These permits are attached to this report in Appendix I.

## 2.2.2 Water discharge permits

Section 15(1)(a) of the Resource Management Act stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations. Methanex currently holds three consents to discharge water and has had one consent to discharge water expire during the monitoring period, from the Motunui site, as described below.

### **Consent 0822: Discharge of uncontaminated stormwater to the Waihi and other stream catchments**

Consent 0822 provides for the discharge of stormwater from the plant site. Before the application for a change of condition there were 13 general conditions and 7 special conditions relating to retention of contaminated stormwater, stream channel capacity and erosion, sampling, plans of stormwater system design, and a contingency plan in case of spillage.

As special condition 1 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, there were no specific limits on stormwater composition. However a set of stormwater quality criteria was derived from monitoring data gathered during the construction and operation periods of the plant. The criteria are listed in **Table 2**. Exceeding the set criteria, in any way, sets in motion investigation into potential contamination of stormwater.

**Table 2** Uncontaminated stormwater discharge criteria 0822-1 and 0822-2

Parameter	Limit Value
Conductivity @ 25°C	Maximum 300 µS/cm
pH (range)	Allowable range 6.5 - 9.3
<i>pH (range)*</i>	<i>Allowable range 6 - 9.5</i>
Suspended solids	Maximum 100 g/m <sup>3</sup>
Hydrocarbons	<5 g/m <sup>3</sup>

\* pH range changed after consent 0822 was renewed in November 2012.

Methanol production at the plant ceased in November 2004 and the site was in a laid-up state until 2008 when Methanex restarted 'Meth II', one of the two production units on site. The second production unit 'Meth I' was restarted in July 2012. In 2005 Methanex sought a change in special condition 1 of consent 0822 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 waste water treatment plant.

An application to change condition 1 was therefore made by Methanex on the basis that while the plant was not producing, the process and tankage areas would have their potential for contamination of the stormwater significantly reduced. These areas would not therefore be defined as areas where "*contamination or likely contamination of stormwater is significant*", and hence the stormwater from these areas would not be required to be treated and discharged via the marine outfall. The requested change of wording to the condition would enable stormwater from these areas to be discharged into the Waihi and other streams but would ensure that when the plant is operating again, and the contamination or likely contamination of the stormwater from the process and tankage areas is significant, then the stormwater will be treated and discharged via the marine outfall.

The varied consent was granted on 30 March 2005, and expired on 12 March 2012. Conditions 1 to 3 require the consent holder to adopt the best practicable option to prevent or minimise effects, to undertake the activity in accordance with the information submitted in the application to vary the consent, and to notify Council prior to exercising the variation.

With the exception of updated cross referencing and the dates for optional reviews of consent conditions, the 13 general conditions (previously a-m, now conditions 4 to 16) were essentially unchanged.

Condition 17 (previously special condition 1) was varied as requested in the application and required that any stormwater originating from areas where, in the opinion of the Chief Executive, Taranaki Regional Council, 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.

Again with the exception of updated cross referencing conditions, 18 to 22 (previously special conditions 2 to 6) were essentially unchanged. Condition 23 required the consent holder to prepare and maintain a contingency plan. Conditions 24 to 26 limited the contaminants that may be present in the discharge and the effects that the discharge may have on the receiving waters of the Manu and Waihi Streams.

With the renewed activity at the plant all stormwater from the processing and tankage areas are again controlled in holding ponds and discharged via the marine outfall at Waitara.

Consent 0822-1 expired in March 2012 and a renewal, Consent 0822-2, was granted on 29 November 2012. The number of special conditions was reduced from twenty six 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: 240,000m<sup>2</sup> for the Waihi Stream Tributary and 294,000m<sup>2</sup> for the Duck Pond. A plan (number g10637) was supplied with the application.

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

Consent 0825-1 provided for the discharge of up to 2,000 cubic metres per day (500 litres per second) 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. The original consent was granted in 1982; a new consent was issued on 8 September 1993 for a period until 12 March 2009. That consent was again renewed in March 2008 (0825-3) and is to be reviewed 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. It also requires that the consent-holder adopt the best practicable option to prevent or minimise adverse effects on the environment.

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

Consent 0827-2 provided for the discharge of up to 1,000 cubic metres per day (100 litres per second) 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. The original consent was granted in 1982; a new consent was issued on 8 September 1993 for a period until 12 March 2009. The consent was again renewed as 0827-3 on 31 March 2008 with the intention of a review in 2015 and expiry in 2021.

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, 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.

**Consent 3400-2: Discharge of plant effluent to Tasman Sea**

Coastal consent 3400-2 provided for the discharge of up to 12,096 cubic metres per 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 litres per second. The previous consent **3400-1** also provided for inclusion of up to 1,000 cubic metres per 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 maintaining levels of the bacterium *Legionella* at safe numbers. The variation included a new condition to allow the maximum daily limit of the water treatment chemical 'Spectrus CT1300' to be increased to 40kg/day if a spike in the numbers of the bacteria *Legionella* is detected. A summary of the varied conditions is shown in Table 3.

**Table 3** Summary of the variation to consent 3400-2 granted 18 July 2012

Previous Condition No[s]	New Condition No[s]	Comment
1-8		Unchanged
-	9	New condition to allow the maximum daily limit of the water treatment chemical 'Spectrus CT1300' to be increased to 40kg/day if a spike in the numbers of the bacteria <i>Legionella</i> are detected. The Council must be notified immediately if this increased dose is utilized.
9-21	10-22	Unchanged apart from condition cross-referencing, to account for addition of new condition 9

There were 22 special conditions relating to cancellation and termination, plans of work, monitoring, the marine outfall, effluent composition and receiving water effects, a contingency plan, annual reports, and responsibility for unauthorised discharges. The effluent component concentration limits under normal plant operation are set out in Table 4. The general limits are on the basis of 24-hour flow proportional composite samples. The limit on water treatment chemicals and their decomposition products are based on calculation. There is a limit on mass discharge of suspended solids of 500 kilograms per day.

**Table 4** Effluent component concentration limits for Motunui – consent 3400-2

Parameter	Limit	Parameter	Limit
<b>General</b>	<b>Maximum concentration</b>	<b>Water treatment chemicals</b>	<b>Maximum Daily Discharge</b>
pH	6 - 9	Betz Dearborn AE115	60
Chemical Oxygen Demand	200 g/m <sup>3</sup>	Continuum AEC3109	300
Methanol	15 g/m <sup>3</sup>	Cortrol OS 7780	400
Hydrocarbons	10 g/m <sup>3</sup>	Flogard MS6207	40
Nickel	1.0 g/m <sup>3</sup>	Foamrol AF2290	40
Copper	0.5 g/m <sup>3</sup>	Inhibitor AZ8104	300
Zinc	1.0 g/m <sup>3</sup>	Klaraid PC 1190P	600
		Optisperse HTP 73301 & 73611	120
		Optisperse PO5211A	20
		Spectrus BD1500	200
		Spectrus CT1300	20*
		Spectrus NX1100	50
		Steamate NA0880	40

\* Consent varied 18 July 2012 to allow the maximum daily limit of the water treatment chemical 'Spectrus CT1300' to be increased to 40kg/day if a spike in the numbers of the bacteria *Legionella* is detected. The Council must be notified immediately if this increased dose is utilized.

Special conditions 9 to 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 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 be put into operation in the event of spillage, accidental discharge, or pipeline failure, to be prepared by Methanex.

Special condition 17 states discharge of domestic sewage is not a permitted activity under this consent. However, Methanex has applied for a separate consent to enable them to deal with the sewage produced at the Waitara Valley Plant. This is discussed with the Waitara Valley consents.

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 5 years, and an annual report on the performance of the effluent disposal system and on compliance with conditions of the consent.

Special conditions 21 and 22 deal with the lapse of the consent, and the review, amend and deletion of the consent.

### **Other consents to discharge from the Waitara Outfall**

Consent 3400 is one of four resource consents that provide for the discharge of wastes from the Waitara outfall. The four consents are summarised in Table 5.

**Table 5** Consents for discharges from the Waitara Outfall

Consent	Consent holder	Effluent source	Volume m <sup>3</sup> /day
3397	New Plymouth District Council ①	Domestic/minor industrial and stormwater	7,258
3398	Anzco Foods Waitara Limited ②	Meatworks	12,960
3399	Methanex Motunui Limited ①	Methanol plant (Waitara Valley)	5,000
3400	Methanex Motunui Limited	Methanol and synthetic gasoline plant	12,096

1) The two consent holders together have formed the Waitara Outfall Management Board [WOMB] to administer, operate and maintain the outfall.

2) As of July 2009, Anzco Foods Waitara Ltd is no longer a part of WOMB, and instead discharges under a trade waste agreement with New Plymouth District Council (NPDC).

Separate but contemporaneous consents were granted in October 1989 for a period until 2008. The consents have identical conditions in respect of the outfall itself, contingency plans, annual reports, and investigation and remedy of unauthorised discharges. The conditions on effluent composition differ, except for those relating to the municipal and meatworks effluents, which pass through the same effluent plant.

New Plymouth District Council [NPDC] owns the outfall structure. WOMB has contracted NPDC to operate the outfall. The Council reports separately on the results of the compliance monitoring programmes implemented in respect of the outfall.

These permits are attached to this report in Appendix I.

### 2.2.3 Air discharge permits

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

Methanex holds one discharge consent, to cover the emissions to air from activities associated with its petrochemical plants at the Motunui site.

#### **Consent 4042-3: Discharges to air from petrochemical plant**

Methanex holds air consent 4042, to cover the discharge of emissions to air from activities associated with the production of methanol and gasoline at the Motunui site. The Council issued this permit on 23 March 1994 as a resource consent under Section 87(e) of the Resource Management Act 1991. 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) commencing on 12 February 2008.

There are 17 special conditions, which include requirements to keep emissions to a practical minimum and which place maximum ambient concentration limits on various gases. There is a requirement for a report to be provided to the Council every two years discussing technology options and energy efficiency, providing an emissions inventory, and addressing any other issues that are relevant to the minimisation or mitigation of emissions from the site.

There is a further requirement for a report to be provided to the Council within 12 months of the consent being issued and then every five years discussing technology that could minimise the adverse effects of the water vapour plume from the cooling tower.

The consents outlined in this section are attached to this report in Appendix I.

### 2.2.4 Discharge of wastes to land

Sections 15(1)(b) and (d) of the Resource Management Act 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 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 disposal as appropriate.

## 2.3 Results

### 2.3.1 Water

#### 2.3.1.1 Site inspections

Site inspections are an important part of the monitoring programme, allowing discussion of the Company's resource consents and relevant environmental issues including HSNO to be had with the Council (The Council's role in monitoring HSNO compliance has subsequently terminated). A Council report is written following each site inspection. Details of each site inspections undertaken during the monitoring period from January 2010 to June 2013 and a summary of the main issues in relation to these inspections are outlined below in Table 6.

Council officers carried out four compliance monitoring inspections which included the collection of one split sample from discharges of the Methanex Motunui plant during the 2010 year, a second split sample was collected during a separate visit on 19 May 2010. An additional inspection of the fish mitigation equipment at the intake facility was carried out on 30 September 2010. In 2011 Council officers carried out four compliance monitoring inspections and collected two split samples on two other separate occasions. In 2012, due to the Meth I plant restart and thus the elevated potential for contaminants to be in the discharge, the number of compliance monitoring inspections was increased during the start-up period between April and July. A total of eight additional inspections were undertaken during this time. In addition to these visits, there were three regular compliance inspections that year and two split samples were taken. During 2013, up to the end of June, there were four site visits to the plant, one was an NES inspection of the flow meter on site, two were advice and information inspections and one was an incident investigation. There was one split sample taken in 2013. Table 6 summarises details of each of these site visits.

**Table 6** Summary of the site inspections undertaken for the Motunui plant from January 2010 to June 2013

Date	Inspection type	Outcome
9 February 2010	Compliance monitoring	Discussions regarding new reports required in 2010 by consents granted in 2008. Concern regarding fish passage at the water take. Population control undertaken on black back gulls on site.
19 May 2010	Split sample collection	All but one result showed good agreement i.e. interlaboratory samples were within 10% of each other. The exception was for TSS (12 g/m <sup>3</sup> Vs 4 g/m <sup>3</sup> ). The difference in results was noted but concluded that it was not significant at the low concentrations measured.
16 June 2010	Compliance monitoring	Methanex undertaken a voluntary 'Responsible Care Certification' and completed the an environmental audit section. The audit recommended changes to the acid and caustic load out area, suggesting that the asphalt should be changed to concrete.
15 September 2010	Compliance monitoring and split sample collection	All but two results showed good agreement i.e. interlaboratory samples were within 10% of each other. TSS and COD were the exceptions, however due to time elapsed these samples were not available for retest. Site maintained in good condition.

Date	Inspection type	Outcome
30 September 2010	Fish mitigation inspection	Council to review alternatives for fish mitigation measures for the water intake.
13 December 2010	Compliance monitoring	The stormwater outlet to the Waihi Stream was blocked by weed, however there was no stormwater flow at the time, the weed was to be sprayed immediately.
21 January 2011	Compliance monitoring	Work on the caustic/acid tanks had begun. One methanol storage tank (24-11) in use, was new and well maintained.
1 February 2011	Split sample collection	All but one result showed good agreement. The pH measured by Methanex at the Duckpond (STW002012) was higher than that measured by the Council (7.7 Vs 6.9), this was investigated at the time but no conclusions were found. All results were within consent limits.
16 June 2011	Compliance monitoring	Work on the caustic/acid tanks complete. Site well maintained.
30 August 2011	Split sample collection	All results showed good agreement and were within consent limits.
13 September 2011	Compliance monitoring	The domestic sewage on site had a very slight odour at the sump. Site well maintained.
9 December 2011	Compliance monitoring	On-going work with ground water bores. The off spec pond was drained and being dried to repair the liner. No odour from the domestic sewage onsite.
15 March 2012	Compliance monitoring	Cooling towers shut down for maintenance as part of Meth I restart. The offspec pond was drained and no longer in use due to questionable integrity. A recent breach of biocide consent limits in response to the discovery of <i>Legionella</i> was discussed. Methanex was informed that they would be issued with a 14 day letter. They indicated they would likely apply for a change of consent to account for temporary/reactionary increases in biocide levels.
26 April 2012	Meth I restart	Primarily mechanical maintenance being undertaken. Discussion regarding the upcoming catalyst loading and unloading operations and procedures for asbestos removal.
3 May 2012	Compliance monitoring and Meth I restart	There had been a spill the day before near one of the perimeter drains. A small quantity of caustic was spilt from a contractor's truck and some of this material ran into the drain. Methanex's environmental staff had acted quickly, implementing their spill contingency plan effectively.
10 May 2012	Meth I restart and split sample collection	Catalyst being loaded by crane into vessels. The catalyst was in dust form, was transported in bulk bags by crane into a mixing hopper on top of the vessel. The hopper was covered to minimise mobilisation of dust. There had been no incidents with the loading/unloading to date. All results showed good agreement and were within consent limits.
17 May 2012	Meth I restart	A stormwater pond sample collected for analysis for heavy metals. Methanex had changed the proposed method of reformer tube loading that was outlined to the Council. Council expressed concern for the increased spill potential of having uncovered buckets. No incidents were recorded in relation to this.

Date	Inspection type	Outcome
29 May 2012	Meth I restart	Stormwater sample collected for heavy metal analysis. The catalyst loading operation had been completed without incident. The frequency of inspections reduced from weekly to fortnightly for the remainder of the Meth I start up programme.
1 June 2012	Meth I restart	All catalyst loading, lube oil loading, and chemical cleaning operations were completed successfully without incident.
14 June 2012	Meth I restart	Maintenance was almost complete and scaffolding was being removed. Two small incidents involving blocked pipes from the effluent treatment system, this was quickly cleaned up by staff. No issues from the start-up recorded to date.
5 July 2012	Meth I restart	Meth I plant brought online and operational. Methanex now using the Meth I plant as the primary producing facility. There was a small spill of seal oil in the process area as the result of a pump being attached incorrectly. The spill had been quickly identified and cleaned up with a sucker truck. <i>Legionella</i> numbers in the cooling towers have been normal.
19 July 2012	Meth I restart	No issues, start-up of Meth I plant gone to plan. Effluent system working without issue. No further <i>Legionella</i> issues had been detected, sampling frequency reduced from weekly to fortnightly and no extra biocide dosing has been required. Meth I plant inspection frequency reduced from fortnightly to monthly.
12 October 2012	Compliance monitoring	Resource consents 3400 and 0822 were discussed. Sludge ponds reaching capacity and requiring emptying. One flare pilot operational, the second flare pilot may be removed as not required.
11 November 2012	Split sample collection	All results showed good agreement and were within consent limits.
16 January 2013	NES Inspection	Flow meter non-compliant with NES. It was thought the reduction in pipe size directly before and the increase in pipe size directly after may introduce turbulence and therefore errors into the flow meter readings. Also, the flow meter is some distance from the point of abstraction, the NES requires it to be located at the point of take.
26 February 2013	Advice and Information	Flows in Waitara River approaching the limit for abstraction, other options for water use/reduction discussed including recycling of effluent water, renewal of groundwater abstraction consents and sourcing water from NPDC freshwater reserves.
5 March 2013	Incident Investigation	Methanex notified Council following an incident whereby boiler water leaked to the untreated stormwater system. Council observed no effects on stream quality or aquatic life. Methanex to supply further details of the incident following investigations.
29 April 2013	Advice and Information	A meeting was held with regard to the outcomes of recent incidents recorded at the site. A brief report to be compiled by TRC and supplied to Methanex. Engineering solutions to prevent further problems were discussed. The upcoming pipeline integrity testing requirements were also discussed.
29 May 2013	Split sample collection	All results showed good agreement.

The regular compliance monitoring inspections focused on chemical dosing systems and effluent treatment and monitoring systems. The condition of any detectable emissions to air were also noted at each inspection, with particular reference to the cooling tower and the reformer. The methanol storage tank area and oil storage were also inspected during each visit. Methanex no longer has a large waste oil container, instead small waste oil drums and empty drums are stored in the waste oil storage area. Minor spills occurring during operational activities on 3 May 2012, 5 July 2012, and 5 March 2013 were efficiently and effectively cleaned up with no environmental incidents.

Site housekeeping has continued to be of a high standard for the monitoring period 2010 to 2013. During the Meth I restart inspections no major events or incidents had occurred. Methanex staff were cooperative and the site was well managed even with all of the extra contractors on site. Chemicals were bunded and there was no evidence of any spills from these areas.

During the monitoring period two major events occurred, one was an outbreak of *Legionella* bacteria and the other was the restart of the Meth I plant. Below is an outline of events which occurred in relation to these events.

#### **2.3.1.1.1 *Legionella* bacteria**

In February 2012 *Legionella* bacteria counts were recorded in the 100's from routine monitoring of the cooling towers. The acceptable level for the bacteria is <10 cfu/100mL. Methanex reacted by instigating an emergency dosing regime to control the serious health hazard. The biocide 'Spectrus CT 1300' was increased from the consented 20kg/day to 27kg/day; this had the desired result of controlling the bacteria. Spectrus CT 1300 is a secondary biocide used in the Motunui plant cooling tower, the biocide causes less damage to the structure than the primary biocide, chlorine gas. The purpose of the biocide is twofold:

- a) routine (monthly) sterilising of the tower; and
- b) respond to positive *Legionella* bacteria results.

On 14 March 2012 Methanex requested an increase to the consented limit of 20kg/day to 40kg/day for consent 3400-2. This was to ensure that future outbreaks of *Legionella* could be effectively controlled and also allowed for increased dosing when the Meth I plant was brought online. The variation was granted on 18 July 2012.

#### **2.3.1.1.2 Meth I restart programme**

On 26 April 2012 a site visit was carried out which focused entirely on the Meth I area, regular visits at weekly, fortnightly and monthly intervals then followed up until 19 July 2012 when site inspections resumed routine compliance inspection schedule.

During the site inspection on 26 April 2012 work was primarily focussed on mechanical maintenance. The chemical cleaning of the heat exchangers the previous week had been successfully completed without incident. The site was generally tidy with no evidence of any spills. There was some loading of lube oil occurring around the time of inspection, measures were in place to minimise spill risk associated with this. Maintenance of the small outlet pond and surrounding slopes was carried out, vegetation had been removed and a digger was scheduled to remove sludge from the pond. The boom had been temporarily removed for the cleaning. The upcoming

catalyst loading and unloading operations and asbestos removal procedures were discussed. The procedures for asbestos removal are mainly used for the removal of refractory material as there are not many areas within the plant where asbestos is used.

On 3 May 2012 a Meth I inspection was combined with a regular compliance inspection of the Motunui plant. Overall the site was tidy and there were no noticeable spills. The upcoming catalyst unloading and loading operations, which was scheduled to commence the following week and would take place for three weeks, was discussed. Council also discussed the possibility of Methanex conducting stormwater pond sampling every second day during the catalyst loading operation. Some of the new catalyst had arrived onsite and was securely stored in containers. There had been a spill the day before near one of the perimeter drains at the Waihi Stream stormwater outlet. A small quantity of caustic was spilt from a contractor's truck and some of this material ran into the drain. One of the operators had used the spill kit to cover the drain and collect the remaining runoff. The runoff had been tested and found to have a pH of 12. Methanex had traced the drainage path to the drain outlet which was found to be not discharging at all. As a precaution the bottom of the drain outlet was sandbagged and the drain flushed out using a suction truck. There had been no evidence of any of the runoff entering the stream, and Methanex's environmental staff had acted quickly, implementing their spill contingency plan effectively.

On 10 May 2012 a Meth I inspection was combined with a regular compliance monitoring inspection of the Waitara Valley site. At the time of the Meth I inspection contractors were loading catalyst by crane into a vessel. The catalyst, in dust form, was transported in bulk bags by crane into a mixing hopper on top of the vessel. The hopper was covered to minimise the mobilisation of dust. There had been no incidents with the loading/unloading to date. All practices looked well implemented at the time of inspection. A storm water pond sample to test for metals from the catalyst loading and unloading was not taken as planned due to time constraints. A sample was taken from the Waihi Stream site as the catalyst is stored in the area that drains to the Waihi. Overall the facility was well managed despite the large volume of contract workers on site.

The catalyst loading and unloading operation was in progress at the time of the inspection on 17 May 2012. Samples were taken from the stormwater pond and from the sampling point near the pond inlet/outlet piping system and analysed for heavy metals. The samples were taken in relation to the catalyst loading and unloading operations occurring on site. Methanex had changed the proposed method of reformer tube loading that was outlined to the Council. Instead of using 'socks' full of catalyst, labourers were physically moving individual buckets of catalyst by elevator and pouring them into the reformer tubes. Council expressed concern for the increased spill potential of having uncovered buckets in use rather than the sock system. However Methanex felt that there was a greater individual health risk rather than an environmental risk and because of this, workers had full PPE gear; to minimise the environmental risk, all barrel to bucket transfers were conducted in an enclosed area. No incidents were recorded in relation to this. Catalyst loading into other vessels was underway at the time of inspection. A crane was used to lift the catalyst in bulk bags to the top of the vessels, and the contents were then released into a mixing hopper and subsequently into the vessels. The process was completed in a very controlled manner, with only small amounts of dust visible at the hopper at the time of loading. Effects

were minimal and localised. Transpacific were contracted for the removal of existing catalyst and storage bags and boxes off site for disposal.

On 29 May 2012 another stormwater sample from the sampling point near the outlet/inlet was collected to test for heavy metals relating to the catalyst loading/unloading operation. The stormwater pond appeared normal, the level was low (<1m) and the water was yellowish-brown and clear. The catalyst loading operation had been completed without incident, and the work underway at the time of inspection was mostly mechanical maintenance with minimal spill/emission risk involved. Maintenance on one of the distillation towers had been scheduled next. Discussion was had on reducing the frequency of the inspections from weekly to fortnightly for the remainder of the Meth I start up programme.

During the site inspection on 1 June 2012 all catalyst loading, lube oil loading, and chemical cleaning operations had been completed successfully without incident. Many of the contractors had moved off site. Vessels were beginning to be closed up, with some mechanical work still taking place, but on a lesser scale. The site was tidy, and chemical storage was sound. There was no evidence of any spills. It was decided that the frequency of the Meth I inspections would be reduced to fortnightly from this inspection onwards for the remainder of the programme. The planned maintenance of the distillation column had been scaled down to the cleaning of two heat exchangers by abrasive blasting for the following week.

During the site visit on 14 June 2012 scaffolding was being removed as maintenance of the site was almost complete. The site was tidy and well managed. Work had been successfully completed on distillation column D4 without incident. Since the last inspection, there had been two small incidents involving blocked pipes from the effluent treatment system. In the first instance, a small quantity of liquid sewage waste had leaked into the stormwater system that drains to 'the duckpond'. This problem had been quickly identified by Methanex staff. The drain was immediately sandbagged and the cause of the blockage was found. It appeared that paper from several domestic sewer pipes which flow into the sump had caused the blockage. The blockage was cleared and the system became operational again. The drain to the pond was sucked dry and then cleaned and sucked dry again. The pond level was low and not discharging around the time of the spill and therefore it was unlikely that the spill had any appreciable environmental effect. There was a secondary pipe blockage a few days later, but material was all contained on site, nothing entered the stormwater systems and the pipe had since been repaired. Otherwise, no issues from the start-up had been recorded. The plant was scheduled to be brought online within two weeks.

The Meth I plant was brought online the 5 July 2012 and was now the primary producing facility. The restart had to this point been without any major incidents. There was a short period of intensified flaring as the plant was brought online, but no issues were identified with this. Any other issues with the start-up were minor. There had been a small spill of seal oil in the process area as the result of a pump being attached incorrectly. The spill had been quickly identified and cleaned up with a sucker truck. There was evidence of 3-4 small (1-5 litres) spills on site at the time of the inspection. Three of these were well controlled by spill control measures and were restricted to small areas of the concrete pad in the process area. The fourth spill had had measures put in place but these were questionable as it seemed the material was still reaching the drain. The quantity was small however, and the drain was under the process area where water is impounded and treated.

Some of the water treatment chemicals had had their bunds re-lined as minor leaks had been detected. Otherwise, the site was tidy and generally well managed.

A final Meth I site inspection on 19 July 2012 confirmed no incidents had occurred between inspections and the start-up had gone to plan since initiated in April. No further *Legionella* issues had been detected by Methanex and the effluent treatment system had been working without issue. The site was tidy and well managed. As the maintenance had been completed and operations had returned to normal, it was decided that inspection frequency could be reduced from fortnightly to monthly until the end of the monitoring programme in October.

### 2.3.1.2 Surface water abstraction monitoring by the Company

Consent 0820-2 to take water from the Waitara River requires abstraction rates of less than 1,400 m<sup>3</sup> per hour. All but one record provided by Methanex for the Motunui abstraction, show rates below the allowable maximum level. The hourly flow rate was exceeded on 18 December 2012 when a maximum flow rate of 1,468m<sup>3</sup> was recorded. Flow in the Waitara River on this occasion was 11,500 litres per second. Consent 0802-2 specifies that no water must be taken when the flow of the Waitara River at the Bertrand Road gauging station falls below 4,600 litres per second. Waitara River flow did not fall below this level during the 2010 – 2013 monitoring period. Appendix III shows the hydrographs for the Waitara River at Bertrand Road for the monitoring period.

### 2.3.1.3 Surface water

#### Effluent discharges

During the period January 2010 – July 2012 the Motunui plant operated at half its production capacity, with just one of its two reformer units operating. In July 2012 the second reformer unit was re-commissioned, with the site being at full production levels since then. Bringing the second unit on-line increases the average flows of waste-water only by approximately 30% from just one unit operating, due to storm-water being combined in the discharge and the common utilities such as cooling water systems that are used. Table 7 to Table 10 summarise the effluent discharge data for the monitoring period from January 2010 to June 2013.

**Table 7** Summary of Motunui effluent discharge data for 2010

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	9,582	12,096	0
pH	-	6.36	9.03 <sup>†</sup>	6-9	0
<b>Daily measurement</b>					
Chemical oxygen demand	g/m <sup>3</sup>	10	70	200	0
Methanol	g/m <sup>3</sup>	<2	<2	15	0
Suspended solids	kg/day	3	97	500	0
Petroleum hydrocarbons*	g/m <sup>3</sup>	<1	<1	10	0
<b>Monthly measurements</b>					
Copper	g/m <sup>3</sup>	<0.02	0.02	0.5	0

	Unit	Minimum	Maximum	Consent limit	Number of breaches
Nickel	g/m <sup>3</sup>	<0.10	<0.10	1.0	0
Zinc	g/m <sup>3</sup>	<0.10	0.11	1.0	0
<b>Water treatment chemicals (calculated)</b>					
Betz Dearborn AE1115	Kg/day	7	23	60	0
Continuum AEC3109	Kg/day	20	65	300	0
Cortrol OS 7780	Kg/day	21	86	400	0
Flogard MS6207	Kg/day	1	11	40	0
Foamtrol AF2290	Kg/day	0	0	40	0
Inhibitor AZ8104	Kg/day	27	54	300	0
Klairaid PC 1190P	Kg/day	13	94	600	0
Optisperse HTP 7330	Kg/day	8	21	120	0
Optisperse HTP 73611	Kg/day	2	19	120	0
Optisperse PO5211A	Kg/day	0	0	20	0
Spectrus BD1500	Kg/day	3	9	200	0
Spectrus CT1300	Kg/day	4	20	20	0
Spectrus NX1100	Kg/day	0	0	50	0
Steamate NA0880	Kg/day	7	14	40	0

¥ Rounding to the nearest decimal place gives a result of 9.0, therefore the result is deemed compliant with the consent limit

\* The sample is first given a visual hydrocarbon check, if the sample fails the visual hydrocarbon check (i.e. a visible sheen is present) a it is put through a petroleum hydrocarbon test to see if it is within the consent limit. All of the petroleum hydrocarbon tests were within the consent limits.

**Table 8** Summary of Motunui effluent discharge data for 2011

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	4,656	12,096	0
pH	-	5.96 ¥	8.93	6-9	0
<b>Daily measurement</b>					
Chemical oxygen demand	g/m <sup>3</sup>	12	60	200	0
Methanol	g/m <sup>3</sup>	<2	<2	15	0
Suspended solids	kg/day	<25	58	500	0
Petroleum hydrocarbons	g/m <sup>3</sup>	<1	<1	10	0
<b>Monthly measurements</b>					
Copper	g/m <sup>3</sup>	<0.02	0.02	0.5	0
Nickel	g/m <sup>3</sup>	<0.1	<0.1	1.0	0
Zinc	g/m <sup>3</sup>	<0.1	0.11	1.0	0
<b>Water treatment chemicals (calculated)</b>					
Betz Dearborn AE1115	Kg/day	8	13	60	0
Continuum AEC3109	Kg/day	42	61	300	0
Cortrol OS 7780	Kg/day	20	43	400	0

	Unit	Minimum	Maximum	Consent limit	Number of breaches
Flogard MS6207	Kg/day	6	9	40	0
Foamtrol AF2290	Kg/day	0	0	40	0
Inhibitor AZ8104	Kg/day	30	45	300	0
Klairaid PC 1190P	Kg/day	14	57	600	0
Optisperse HTP 7330	Kg/day	5.5	12	120	0
Optisperse HTP 73611	Kg/day	3	9	120	0
Optisperse PO5211A	Kg/day	5	5	20	0
Spectrus BD1500	Kg/day	3	5	200	0
Spectrus CT1300	Kg/day	0.16	12	20	0
Spectrus NX1100	Kg/day	0	0	50	0
Steamate NA0880	Kg/day	10	16	40	0

¥ Rounding to the nearest decimal place gives a result of 6.0, therefore the result is deemed compliant with the consent limit

**Table 9** Summary of Motunui effluent discharge data for 2012

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	7,101	12,096	0
pH	-	6	9	6-9	0
<b>Daily measurement</b>					
Chemical oxygen demand	g/m <sup>3</sup>	12	68	200	0
Methanol	g/m <sup>3</sup>	<2	9	15	0
Suspended solids	kg/day	<30	93	500	0
Petroleum hydrocarbons*	g/m <sup>3</sup>	<1	3	10	0
<b>Monthly measurements</b>					
Copper	g/m <sup>3</sup>	<0.02	0.03	0.5	0
Nickel	g/m <sup>3</sup>	<0.1	<0.1	1	0
Zinc	g/m <sup>3</sup>	<0.1	0.23	1	0
<b>Water treatment chemicals (calculated)</b>					
Betz Dearborn AE1115	Kg/day	7	18	60	0
Continuum AEC3109	Kg/day	31	114	300	0
Cortrol OS 7780	Kg/day	27	70	400	0
Flogard MS6207	Kg/day	3	14	40	0
Foamtrol AF2290	Kg/day	0	0	40	0
Gengard GN8020	Kg/day	59	59	300	0
Inhibitor AZ8104	Kg/day	9	71	300	0
Klairaid PC 1190P	Kg/day	21	74.5	600	0

	Unit	Minimum	Maximum	Consent limit	Number of breaches
Optisperse HTP 7330	Kg/day	10	81	120	0
Optisperse HTP 73611	Kg/day	5	61	120	0
Optisperse PO5211A	Kg/day	0	0	20	0
Spectrus BD1500	Kg/day	1	45	200	0
Spectrus CT1300 <sup>¥</sup>	Kg/day	7	27 <sup>¥</sup>	20	0 <sup>¥</sup>
Spectrus NX1100	Kg/day	0	0	50	0
Steamate NA0880	Kg/day	0	23	40	0

\* The sample is first given a visual hydrocarbon check, if the sample fails the visual hydrocarbon check (i.e. a visible sheen is present) it is put through a petroleum hydrocarbon test to see if it is within the consent limit. All of the petroleum hydrocarbon tests were within the consent limits.

<sup>¥</sup> 27 kg/day was used in February 2012 in response to increased numbers of the *Legionella* bacteria. In July 2012 the consent was varied to allow for 40kg/day to be used in response to increased levels of the bacteria *Legionella* if detected by the consent holder.

**Table 10** Summary of Motunui effluent discharge data for 2013 (January to June)

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	5,707	12,096	0
pH	-	6.27	8.92	6-9	0
<b>Daily measurement</b>					
Chemical oxygen demand	g/m <sup>3</sup>	13	59	200	0
Methanol	g/m <sup>3</sup>	<2	<2	15	0
Suspended solids	kg/day	<33	186	500	0
Petroleum hydrocarbons*	g/m <sup>3</sup>	<1	2	10	0
<b>Monthly measurements</b>					
Copper	g/m <sup>3</sup>	<0.03	0.03	0.5	0
Nickel	g/m <sup>3</sup>	<0.1	<0.1	1	0
Zinc	g/m <sup>3</sup>	0.12	0.14	1	0
<b>Water treatment chemicals (calculated)</b>					
Betz Dearborn AE1115	Kg/day	15	21	60	0
Continuum AEC3109	Kg/day	0	0	300	0
Cortrol OS 7780	Kg/day	21	50	400	0
Flogard MS6209	Kg/day	8	34	40	0
Foamtrol AF2290	Kg/day	0	0	40	0
Gengard GN8020	Kg/day	43	110	300	0
Inhibitor AZ8104	Kg/day	45	76	300	0
Klairaid PC 1190P	Kg/day	29	69	600	0
Optisperse HTP 73301	Kg/day	22	33	120	0
Optisperse HTP 73611	Kg/day	16	22	120	0
Optisperse PO5211A	Kg/day	0	0	20	0

	Unit	Minimum	Maximum	Consent limit	Number of breaches
Spectrus BD1500	Kg/day	4	10	200	0
Spectrus CT1300 <sup>¥</sup>	Kg/day	5	22 <sup>¥</sup>	20	0 <sup>¥</sup>
Spectrus NX1100	Kg/day	0	0	50	0
Steamate NA0880	Kg/day	18	26	40	0

\* The sample is first given a visual hydrocarbon test, if the sample fails the visual hydrocarbon test it is put through a petroleum hydrocarbon test to see if it is within the consent limit.

<sup>¥</sup> In July 2012 the consent was varied to allow for 40kg/day to be used in response to increased levels of the bacteria Legionella if detected by the consent holder.

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

### Contingency plan

In accordance with special condition 15 on consent 3400-2, 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. The Company 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 Plant 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. The Company provided a revision of their contingency plan on 21 June 2010. The contingency plan was found to be satisfactory. The outfall itself is the responsibility of NPDC, as both owner and operator of the facility.

### 'Equivalent Chemical'

On 18 October 2012 Methanex applied for approval to replace chemicals under condition 11 of consent 3400-2 for 'equivalent chemicals'. Two chemicals, Continuum AEC3109 and Flogard MS6207, were to be replaced with Gengard GN8020 and Flogard MS6209. The chemicals are used as dispersants to eliminate build-up of calcium phosphate and calcium carbonate scale to reduce steel corrosion. Permission was granted on 1 November 2012, no consent variation was required.

### Uncontaminated stormwater

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

Weekly grab samples of the stormwater discharges were taken and analysed for four water quality characteristics by Methanex staff. The values of these four parameters provide an indicator as to whether or not the discharge was contaminated. The results of the Methanex stormwater monitoring for 2010, 2011, 2012 and 2013 are summarised in Table 11, Table 12, Table 13 and Table 14 respectively.

**Table 11** Summary of Motunui stormwater monitoring data for 2010

Parameter	Unit	Minimum	Maximum	Average*	Consent limit Guideline
<b>Duck Pond</b>					
pH	-	6.60	7.60	6.90	6.5 - 9.3
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	52.00	156.00	98.69	300 max
Total suspended solids	g/m3	<6	11.00	5.56	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 40	Tests failed: 0	----	PASS
<b>Waihi Stream</b>					
pH	-	6.50	7.40	6.75	6.5 - 9.3
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	24.00	232.00	146.48	300 max
Total suspended solids	g/m3	<6	13.00	3.92	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 40	Tests failed: 0	----	PASS

\* Numbers presented as less than a number are divided in half for averages.

**Table 12** Summary of Motunui stormwater monitoring data for 2011

Parameter	Unit	Minimum	Maximum	Average*	Consent limit Guideline
<b>Duck Pond</b>					
pH	-	6.5	7.7	7	6.5 - 9.3
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	44	139	92.08	300 max
Total suspended solids	g/m3	<6	11	4.61	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 39	Tests failed: 0	----	PASS
<b>Waihi Stream</b>					
pH	-	6.5	7.9	6.87	6.5 - 9.3
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	36	349	201.23	300 max
Total suspended solids	g/m3	<6	10	3.42	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 39	Tests failed: 0	----	PASS

\* Numbers presented as less than a number are divided in half for averages.

**Table 13** Summary of Motunui stormwater monitoring data for 2012

Parameter	Unit	Minimum	Maximum	Average*	Consent limit Guideline
<b>Duck Pond</b>					
pH	-	6.6	7.7	7.09	6.5 - 9.3
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	5	192	97.96	300 max
Total suspended solids	g/m3	<6	18	6.46	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 44	Tests failed: 0	----	PASS
<b>Waihi Stream</b>					
pH	-	6.3	8.3	6.87	6.5 - 9.3
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	63	619	238.21	300 max
Total suspended solids	g/m3	<6	16	4.02	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 44	Tests failed: 0	----	PASS

\* Numbers presented as less than a number are divided in half for averages.

**Table 14** Summary of Motunui stormwater monitoring data for 2013 (January to June)

Parameter	Unit	Minimum	Maximum	Average*	Consent limit Guideline
<b>Duck Pond</b>					
pH	-	6.5	7.8	6.96	6 - 9.5
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	57	106	87.88	300 max
Total suspended solids	g/m3	<6	250	22.82	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 17	Tests failed: 0	----	PASS
<b>Waihi Stream</b>					
pH	-	6.3	9.5	7.18	6 - 9.5
Petroleum hydrocarbons	g/m3	<1	<1	<1	<5
Conductivity at 25°C	µs/cm	41	398	135.69	300 max
Total suspended solids	g/m3	<6	16	5.88	100 max
Visual hydrocarbons	# Pass / # Fail	Tests passed: 17	Tests failed: 2	----	PASS

\* Numbers presented as less than a number are divided in half for averages.

### Duck Pond discharge

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

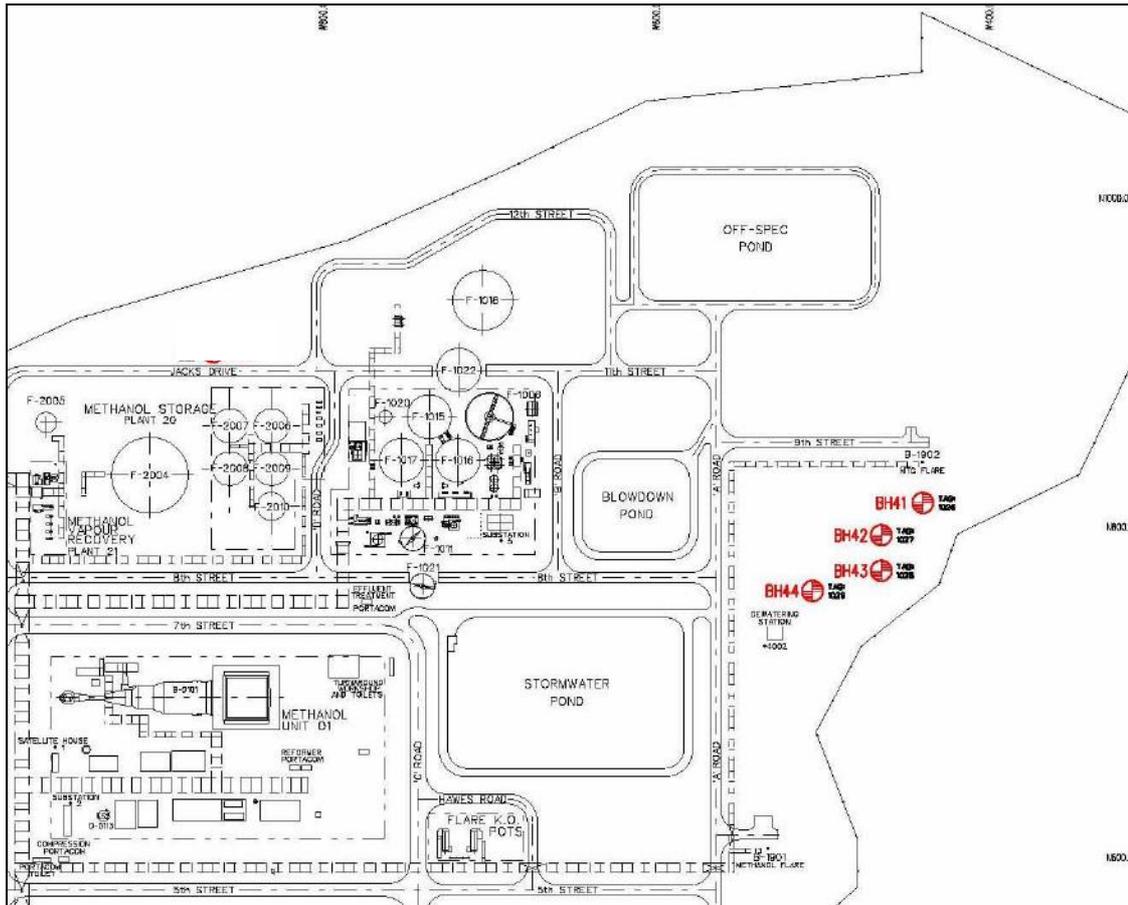
**Waihi Stream**

The majority of water samples analysed from the Waihi Stream monitoring site were well within agreed limits required by the consent. The exception was pH which was in breach of the consent limits (pH range 6.5 – 9.3) on the following dates:

4 April 2012	pH = 6.4
11 April 2012	pH = 6.3
18 April 2012	pH = 6.4
12 July 2012	pH = 6.3
19 July 2012	pH = 6.4

A renewal of consent 0822 was issued on 29 November 2012. The pH range was changed from 6.5-9.3 to 6-9.5. The change in the pH range followed discussions with Council regarding the natural fluctuations of pH within the system. Council agreed that the large range in pH was a result of natural fluctuations and not due to contaminants entering the stormwater and therefore agreed to the change in the pH range on renewal of the consent. The above exceedances identified are therefore considered natural fluctuations in the pH of rainfall/stormwater and are not of concern.

High conductivity readings (exceeding the limit value of 300 $\mu$ S/cm) for the Waihi Stream in February 2011 led to Methanex carrying out investigations in the catchment to determine the source of the high conductivity readings. Consent 0822-1 does not set a limit for conductivity and thus there was no breach of the consent, nonetheless Methanex initiated an investigation programme which included setting up four monitoring boreholes around underground sumps to monitor groundwater quality. The locations of these boreholes are shown in Figure 3.



**Figure 3** Locations of the investigative boreholes installed to monitor high conductivity readings at the uncontaminated stormwater outlets.

The results of the investigative monitoring of the borehole sites are shown in Table 15.

**Table 15** Results from the investigative borehole monitoring within the uncontaminated stormwater catchment at Motunui

	BH4 1			BH4 2			BH4 3			BH4 4		
	Conductivity (uS/cm)	Ammonia (g/m3)	Zinc - total (g/m3)	Conductivity (uS/cm)	Ammonia (g/m3)	Zinc - total (g/m3)	Conductivity (uS/cm)	Ammonia (g/m3)	Zinc - total (g/m3)	Conductivity (uS/cm)	Ammonia (g/m3)	Zinc - total (g/m3)
22/09/2011	175	0.1		351	15		236	0.1		224	0.1	
6/10/2011	155	0.1		452	20		229	0.1		224	0.1	
19/10/2011	115	0.2		496	26		234	0.1		238	0.1	
2/11/2011	156	0.1		307	8		243	0.1		223	0.1	
17/11/2011	222	0.1		496	31		238	0.1		220	0.1	
30/11/2011					34							
24/10/2012	237	0.1	0.1				225	0.1	0.1	213	0.1	0.1
25/10/2012				230	2.3							
15/01/2013		0.3		415		0.14	207	0.1	0.1			
16/04/2013						0.1	235	0.1	0.1			

High conductivity and ammonia levels were recorded for monitoring borehole number 2. The high readings in 2011 had decreased by 2012. No conclusions were drawn as to the source of the high conductivity readings.

### 2.3.1.4 Inter-laboratory comparisons

The Council carried out inter-laboratory comparisons on both the composite outfall sample and the plant stormwater on seven occasions during the monitoring period. The results of the inter-laboratory comparisons, which also serve the purpose of compliance monitoring checks, are shown in Table 16 to Table 23.

**Table 16** Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2010

Parameter	Unit	Consent Limits	Motunui Outfall			
			19 May 2010		15 Sept 2010	
			Methanex	TRC	Methanex	TRC
Chemical oxygen demand	g/m <sup>3</sup>	200	52	47	30	14
Conductivity @ 25°C	µS/cm		2540	2625	1010	1014
Copper	g/m <sup>3</sup>	0.5	0.02	0.02	<0.02	0.02
Methanol	g/m <sup>3</sup>	15	<2	<1	<2	<1
Nickel	g/m <sup>3</sup>	1	<0.1	<0.02	<0.1	<0.02
pH		6.0-9.0	8.2	8.0	7.8	7.7
Total hydrocarbons	g/m <sup>3</sup>	10	<1	<0.5	<1	<0.5
Total suspended solids	g/m <sup>3</sup>	daily discharge <500kg	12	4	15	10
Zinc	g/m <sup>3</sup>	1	<0.1	0.074	0.11	0.121

**Table 17** Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2011

Parameter	Unit	Consent Limits	Motunui Outfall			
			1 February 2011		30 August 2011	
			Methanex	TRC	Methanex	TRC
Chemical oxygen demand	g/m <sup>3</sup>	200	21	22	42	49
Conductivity @ 25°C	µS/cm		1570	1650	1280	1240
Copper	g/m <sup>3</sup>	0.5	0.02	0.01	<0.02	0.02
Methanol	g/m <sup>3</sup>	15	<2		<2	<1
Nickel	g/m <sup>3</sup>	1	<0.1	<0.02	<0.1	<0.02
pH		6.0-9.0	8	7.8	7.8	7.5
Total hydrocarbons	g/m <sup>3</sup>	10	<1	<0.05	<1	<0.5
Total suspended solids	g/m <sup>3</sup>	daily discharge <500kg	7	3	7	5
Zinc	g/m <sup>3</sup>	1	<0.1	0.007	0.11	0.116

**Table 18** Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2012

Parameter	Unit	Consent Limits	Motunui Outfall			
			10 May 2012		27 November 2012	
			Methanex	TRC	Methanex	TRC
Chemical oxygen demand	g/m <sup>3</sup>	200	28	21	33	33
Conductivity @ 25°C	µS/cm		1630	1661	1420	1419
Copper	g/m <sup>3</sup>	0.5	<0.02	0.018	<0.03	0.01
Methanol	g/m <sup>3</sup>	15	<2	<1	<2	
Nickel	g/m <sup>3</sup>	1	<0.1	<0.02	<0.1	<0.02
pH		6.0-9.0	7.9	8	7.6	7.6
Total hydrocarbons	g/m <sup>3</sup>	10	<1	<0.5	<1	<0.5
Total suspended solids	g/m <sup>3</sup>	daily discharge <500kg	<6	<2	8	4
Zinc	g/m <sup>3</sup>	1	0.1	0.055	0.05	0.05

**Table 19** Results of inter-laboratory comparison between Methanex and the Council on Motunui outfall composite samples 2013

Parameter	Unit	Consent Limits	Motunui Outfall	
			29 May 2013	
			Methanex	TRC
Chemical oxygen demand	g/m <sup>3</sup>	200	24	23
Conductivity @ 25°C	µS/cm		1240	1236
Copper	g/m <sup>3</sup>	0.5	<0.03	0.01
Methanol	g/m <sup>3</sup>	15	<2	<1
Nickel	g/m <sup>3</sup>	1	<0.1	<0.02
pH		6.0-9.0	7.5	7.5
Total hydrocarbons	g/m <sup>3</sup>	10	<1	<0.5
Total suspended solids	g/m <sup>3</sup>	daily discharge <500kg	<6	3
Zinc	g/m <sup>3</sup>	1	0.11	0.115

**Table 20** Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2010

Parameter	Unit	Guideline value/ Consent limit	19 May 2010				15 September 2010			
			Duck Pond		Waihi stream		Duck Pond		Waihi stream	
			Methanex	TRC	Methanex	TRC	Methanex	TRC	Methanex	TRC
pH	-	6.5 - 9.3	7	6.7	6.9	6.6	7	7	6.6	6.5
Conductivity @ 25°C	µS/cm	300	69	67	90	88	97	89	115	111

Parameter	Unit	Guideline value/ Consent limit	19 May 2010				15 September 2010			
			Duck Pond		Waihi stream		Duck Pond		Waihi stream	
			Methanex	TRC	Methanex	TRC	Methanex	TRC	Methanex	TRC
Suspended solids	g/m <sup>3</sup>	100	<6	4	<6	<2	<6	5	<6	<2
Hydrocarbon	g/m <sup>3</sup>	5	<1	<0.5	<1	<0.5	<1	0.5	<1	<0.5

**Table 21** Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2011

Parameter	Unit	Guideline value/ Consent limit	1 February 2011				30 August 2011			
			Duck Pond		Waihi stream		Duck Pond		Waihi stream	
			Methanex	TRC	Methanex	TRC	Methanex	TRC	Methanex	TRC
pH	-	6.5 - 9.3	7.7	6.9	6.7	6.6	7.3	7	6.8	6.6
Conductivity @ 25°C	µS/cm	300	58	58	307	314	115	111	233	235
Suspended solids	g/m <sup>3</sup>	100	<6	2	<6	<2	<6	5	<6	3
Hydrocarbon	g/m <sup>3</sup>	5	<1	<0.5	<1	<0.5	<1	<0.5	<1	<0.5

**Table 22** Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2012

Parameter	Unit	Guideline value/ Consent limit	10 May 2012				21 November 2012			
			Duck Pond		Waihi stream		Duck Pond		Waihi stream	
			Methanex	TRC	Methanex	TRC	Methanex	TRC	Methanex	TRC
pH	-	6.5 - 9.3	7.3	7.4	7.8	8	7.4	7.4	7.1	7.1
Conductivity @ 25°C	µS/cm	300	79	78.1	91	90.2	89	86.9	412	414
Suspended solids	g/m <sup>3</sup>	100	8	8	<6	2	<6	3	<6	4
Hydrocarbon	g/m <sup>3</sup>	5	<1	<0.5	<1	<0.5	<1	<0.5	<1	<0.5

**Table 23** Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater 2013

Parameter	Unit	Guideline value/ Consent limit	29 May 2013			
			Duck Pond		Waihi stream	
			Methanex	TRC	Methanex	TRC
pH	-	6.5 - 9.3	6.8	6.7	6.5	6.4
Conductivity @ 25°C	µS/cm	300	78	70.1	220	214
Suspended solids	g/m <sup>3</sup>	100	6	5	<6	<2
Hydrocarbon	g/m <sup>3</sup>	5	<1	<0.5	<1	<0.5

Results from each laboratory for the Motunui effluent samples on each occasion all met the consent limits. A comparison of the laboratory results showed there was some discrepancy in the suspended solids and COD values in 2010. In May 2010, suspended solids measured by Methanex at Motunui outfall were nearly 3 times higher than that measured by the Council. In September 2010 suspended solids measured by Methanex at Motunui outfall were approximately 50% higher than that measured by the Council and COD measured by Methanex was approximately twice that measured by the Council. A review of the COD test and total suspended solids test was carried out prior to the next split sampling exercise which occurred in February 2011. Results for these two analyses were a lot closer on this and subsequent occasions.

Results from each laboratory for uncontaminated stormwater on all but one occasion met the water quality criteria. The pH measured for the Waihi Stream by the Council on 29 May 2013 was 6.4 whilst the pH measured by Methanex was 6.5; therefore the sample taken by the Council was in breach of the consent limits of 6.5-9.3. As noted earlier, it is considered that this breach was of no environmental consequence. Overall there was good agreement between the interlab samples with most samples being within approximately 10% of each other. The exception was pH measured on 1 February 2011 at the Duckpond. Methanex measured a significantly higher pH than that measured by the Council (7.7 Vs 6.9); this was investigated at the time but no conclusions were found.

#### **2.3.1.5 Methanex Motunui annual report**

Condition 19 of consent **3400-2** 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.

Annual reports for 2010 to 2013 were received by Council via monthly reports, and fulfil the consent requirements.

#### **2.3.2 Meth I restart monitoring**

During the Meth I restart in 2012 there was an increase in the number of site visits and also an increase in the monitoring carried out at the site to ensure the start-up went as smoothly as possible. Section 2.3.1.1.2 details each of the site visits. Increased monitoring comprised of:

- Stormwater monitoring
- Marine ecological assessments

Monitoring showed no adverse effects from the restart.

#### **2.3.3 Air**

##### **2.3.3.1 Inspections**

During the monitoring period under review the plant was running at its usual capacity up until April 2012, after which production increased following the Meth I restart. During this time the Council did not receive any complaints regarding odour from neighbours. No effects on the receiving environment beyond the plant perimeter could be determined during any of the site inspections. During the site visit on 13 September 2011 a very slight odour was detected from the domestic sewage at the

sump. No further odours were detected from the sump until the site visit on 3 May 2012 when a noticeable odour was detected at the sump. It was thought that the system was having problems keeping up with the temporarily expanded workforce during the Meth I restart. No subsequent problems with odour were detected for the remaining monitoring period.

### **2.3.3.2 Consent requirements**

Condition 5 of resource consent 4042-3 required a report due in February 2010 outlining options for the abatement of the cooling tower plume. This report was received by the Council and was subsequently reviewed and discussed with Methanex.

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 minimization or mitigation of emissions.

The biennial report for February 2008 to February 2010 was received in March 2010 and a second biennial report covering the period 2010 to 2011 was received in August 2012.

### **2.3.4 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. Methanex do not intend to dispose of further sludge to the area still owned by the Company. In November 2007 the Council received an application for surrender of the consent as the remaining area affected by sludge disposal that was still owned by Methanex has had the contaminated material removed. Soil samples have been analysed from the area to confirm that no sludge is remaining. The area has been reinstated with topsoil and grass. The Council granted the surrender of consent on 3 December 2007.

## **2.4 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 eg provision of advice and information, or investigation of potential or actual courses of non-compliance or failure to maintain good practices. A pro-active approach that in the first instance avoids issues occurring is favoured.

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

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

During the monitoring period, there were two incidents recorded by the Council that were associated with the Motunui Plant.

The first was the 'Spectrus CT1300' dosing to treat elevated legionella bacteria, as detailed in Section 2.3.1.1. 1. There were no observable adverse environmental effects associated with this incident, a 14 day letter was issued to the Company, the Company responded and the Council accepted their explanation. The consent was varied to account for any potential future elevated legionella levels.

Methanex notified the Council following an incident at their site where approximately 55m<sup>3</sup> of boiler water was routinely drained from one of the boilers following an unsuccessful restart attempt of one of the plants. This water was intentionally drained, but a proportion of this had likely overflowed during the draining process and flowed to the untreated stormwater system and ultimately into the Waihi Stream that borders the Motunui site. The potential effects of such an incident would likely be a short term change in temperature, water discoloration (from iron oxide related to the iron dispersant polymer contained in the boiler water) and a temporary reduction in oxygen levels from the presence of hydroquinone which is an oxygen scavenger used in the treatment of the boiler water. All these possible effects have the potential to have adverse impacts on both water quality and aquatic life in receiving surface water bodies.

An investigation by Council staff was conducted as part of the incident response, and Methanex conducted their own internal investigation into the incident. The Council investigation involved the collection of surface water samples and a biological inspection of the receiving waters of the Waihi Stream. Sampling locations are identified in Figure 4. There were no signs of any effect on aquatic organisms in the receiving waters of the stream or the small tributary. The physicochemical water sample results are presented in Table 24.

**Table 24** Waihi Stream stormwater boiler water incident results

Parameter	Unit	Guideline value/ Consent limit	5 March 2013				
			P1	P2	US	DS1	DS2
pH	-	6.5 - 9.3	7.4	9.2	7.3	7.1	7.4
Temperature	°C	-	-	20.8	16.8	17.6	17.2
Conductivity @ 20°C	mS/m	300	41.8	16.2	19.4	18.3	19.3
Dissolved oxygen	g/m <sup>3</sup>	12	-	8.2	8.6	8.0	8.9
Hydrocarbon	g/m <sup>3</sup>	5	<0.5	<0.5	-	-	-



**Figure 4** Motunui sampling sites in relation to boiler water incident with site overview map (insert)

The samples taken from the holding pond (P1 and P2) show some fluctuations in pH and conductivity related to the boiler water. The receiving water samples did not indicate any significant impacts from the boiler water discharge for these variables, and there was good agreement between the upstream and downstream samples.

Because of potential concerns regarding the oxygen scavenger, dissolved oxygen readings were taken from both the pond (P2) and the stream samples. These were all found to be within range of normal surface water in Taranaki (8-12 g/m<sup>3</sup>, Duncan, 1999), and showed minimal variation between samples.

The pond samples were also tested for hydrocarbons, none were detected.

Overall, no obvious signs of any effects on stream quality or aquatic life were noted. On the basis of the results, no further enforcement action was undertaken regarding this incident. However, the Company have since initiated several mitigation measures (both engineering and educational based) as part of a review of processes at this part of the plant.

## 2.5 Discussion

### 2.5.1 Discussion of plant performance

Previous high standards of housekeeping were apparent at all inspections undertaken on site at the Motunui Plant. The Motunui plant is fully functional now and running at full capacity for the site. Maintenance and improvements of the site have been undertaken during the period under review, including planned changes after an environmental audit conducted internally at Methanex and the restart of the Meth I plant.

Interlaboratory comparisons between the Council and Methanex laboratories generally showed good agreement of results; however on occasion there were discrepancies between the total suspended solids concentrations and chemical oxygen demand concentrations where Methanex measurements were considerably higher than those recorded by the Council. This issue was investigated, and the degree of agreement improved.

Methanex continued to manage activities allowed by the consents it holds for the site well within consent limits for the majority of the time, however Methanex has had issues with managing pH levels and visual hydrocarbons in the effluent of the Motunui plant. 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 complaints were received regarding flaring or the cooling tower plumes.

The Motunui consent allows for a water take of 1,400 m<sup>3</sup>/hr, but typically the water take is much lower, in the range of 500 – 600 m<sup>3</sup>/hr. This is due to the water reduction initiatives instigated by Methanex and the fact that only one of the two reforming units was being run. The following are the specific water reduction initiatives instigated by Methanex:

- Steam saving initiatives (distillation efficiency, main & utilities dearator trimming) have reduced the requirement for demineralised water by approximately 3 m<sup>3</sup>/hr
- Improved boiler control with an associated lowering of blow-down rate, creating a saving of approximately 0.5 m<sup>3</sup>/hr
- Minimising number of cooling tower fans in use with an associated reduction in make-up requirement. Fan blades have also been replaced with the best available globally, thereby increasing the energy efficiency.
- Extending de-mineraliser unit run lengths, with an associated reduced number of regenerations with a water saving of approximately 0.5 m<sup>3</sup>/hr for each regeneration cycle.
- Installing new ion-exchange resins in all three of the de-mineraliser units in use, which has increased the run times on each unit from 6,500 to 8,000 cubic metres between regeneration cycles, thereby reducing the amount of water required for regenerating the units.

## **2.5.2 Environmental effects of exercise of consents**

### **2.5.2.1 Environmental effects of exercise of water discharge permits**

Methanex staff continued to provide the Council with monthly monitoring data which when compared, agreed well with the Council's own independent sample analysis. Most of the parameters measured were within allowable limits for the water discharge consents held, the exception being pH levels which measured above or below the consent limits on four separate occasions over the three and a half year period of monitoring. Methanex were asked for an explanation of the pH results and, following a review of their continuous data, have advised that the results are a function of pump restarts and are not true readings of discharge pH. In the event of an actual non-complying pH reading, the effluent pumps are set to trip, suspending discharge. The Council are satisfied with this explanation and have not recorded these as non-compliances.

### **2.5.2.2 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 plant 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 even though there was an odour from the effluent sumps noted on two occasions in 2012 by Council staff undertaking site inspections. Furthermore the Council has not received any specific complaints regarding the cooling tower plume through the monitoring period under review.

#### **Ecological effects**

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

### **2.5.2.3 Environmental effects of exercise of permit allowing discharge of wastes to land**

Methanex no longer holds a permit to discharge sludge waste to land. No sludge was disposed of to land during the monitoring period, and all residual wastes from historical disposal activity have now been removed. No adverse environmental effects have been observed in the vicinity of the historic disposal site.

## **2.5.3 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 25 to Table 31.

**Table 25** Summary of performance for Consent 0820-2 to take water from Waitara River

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. The volume taken shall not exceed 1,400m <sup>3</sup> per hour	Daily maximum flow rates provided monthly	Yes*
2. The taking of water is managed to ensure that river flow no less than 4,600 litres per second.	Continuous gauging	Yes
3. Installation and maintenance of a water meter	Monthly data reports provided	Yes
4. Five-yearly testing of pipeline integrity and two-yearly report on water conservation	Water conservation reports received 2010 and 2012	Yes
5. Appropriate screening of intake structure to prevent fish entrainment	Ongoing review	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

\* One non-compliance during the monitoring period: 18 December 2012, max flow rate = 1,468m<sup>3</sup>

**Table 26** Summary of performance for Consent 0822-1 Discharge of stormwater 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. Consent to be exercised in line with application information	Inspection and liaison with consent holder	Yes
3. Notification seven days prior to exercising consent	Notification on file	Yes
4. Record keeping and provision to Council	Monthly reports received	Yes
5. Council access for inspection and measurements	Suitable access arrangements in place	Yes
6. Provision for cancellation if consent not exercised	Consent exercised	N/A
7. Provision for termination of consent	Not required	Yes
8. Provision and approval of plans and specifications	Plans provided (on file) and approved	Yes
9. Works to be of standard adequate to meet conditions of consent	Observation at inspection	Yes
10. Processing costs to be met by consent holder	Invoices paid	Yes
11. Agreement on monitoring except in emergencies	Consultation with consent holder regarding monitoring programme	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
12. Monitoring costs of Council to be met by consent holder	Invoices paid	Yes
13. Monitoring costs of Company to be met by consent holder	N/A	N/A
14. Approval of all methods used for monitoring	Methods previously approved. No changes during period under review	N/A
15. General conditions not to detract from special conditions	N/A	N/A
16. Provision for 5 yearly review	Review not available in reporting period	N/A
17. Stormwater from potentially contaminated areas to be discharged from marine outfall	Drainage plan, inspection and ongoing liaison with consent holder	Yes
18. Capability of natural stream channels in dealing with increased flow	No adverse effects noted at inspection	Yes
19. Mitigation of any resulting erosion	No erosion found on inspection	N/A
20. Any corrective measures to satisfaction of Council	No corrective measures required	N/A
21. Installation of a sampling chamber	Adequate access for sampling	Yes
22. Approval of stormwater design layout plans	Plans provided and approved	Yes
23. Provide and maintain a contingency plan for action to be taken in the event of a spillage	Contingency plans received 2010, 2011	Yes
24. Limits chemical composition of layout discharges	Self-monitoring, sampling and inter-laboratory comparison	Yes*
25. Discharge cannot cause specified adverse effects in Manu Stream beyond mixing zone	Observation at inspection	Yes
26. Discharge cannot cause specified adverse effects in Waihi Stream tributaries beyond mixing zone	Observation at inspection	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

\* Five non-compliance results during the monitoring period for pH, however discussions with Council concluded these were natural fluctuations

**Table 27** Summary of performance for Consent 0822-2 Discharge of stormwater 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

Condition requirement	Means of monitoring during period under review	Compliance achieved?
2. Stormwater shall be from the area specified in drawing g10637	Inspection and liaison with consent holder	Yes
3. Provide and maintain a contingency plan for action to be taken in the event of a spillage	Inspection and liaison with consent holder	Yes
4. Maintain a stormwater management plan	Monthly reports received	Yes
5. Limits chemical composition of layout discharges	Self-monitoring, sampling and inter-laboratory comparison	Yes
6. Discharge cannot cause specified adverse effects in the Manu Stream beyond mixing zone	Observation at inspection	Yes
7. Discharge cannot cause specified adverse effects in the tributaries of the Manu Stream beyond mixing zone	Observation at inspection	Yes
8. Notification of Council prior to any changes to processes or operations on site	Notifications received by Council	N/A
9. Review of consent	Next scheduled June 2015	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

**Table 28** Summary of performance for Consent 0825-3 Discharge of stormwater 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. Discharge cannot cause specified adverse effects in Waitara river beyond the mixing zone	Inspection	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

N/A = not applicable

**Table 29** Summary of performance for Consent 0827-3 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 1,000m <sup>3</sup> per day	Inspection and discussion with consent holder	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
2. Adoption of best practicable option	Ongoing liaison with consent-holder	Yes
3. Activity undertaken in accordance with application documentation	Inspection and liaison	Yes
4. Discharge cannot cause specified adverse effects on turbidity in Waitara river beyond the mixing zone	Inspection	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

N/A = not applicable

**Table 30** Summary of performance for Consent 3400-2 Discharge of effluent and stormwater into Tasman Sea

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to adopt BPO to prevent or minimise adverse effects	Inspections liaison and review of reported data	Yes
2. Consent holder to maintain a record of the volume of effluent discharged each day	Monthly reports provided	Yes
3. Maximum daily discharge 12,096m <sup>3</sup> day, 140L/sec	Monthly reports received	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	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. Four occasions in 2012 when pH was outside consented range. Explanations received from consent holder and accepted by Council.	Yes
7. Limits on concentration of COD, hydrocarbons, methanol, ammonia, 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. Variation granted July 2012 for increase in 'Spectrus CT1300' chemical	Yes
9. Approval from TRC required to discharge 'equivalent' chemical	Permission for approval to replace two chemicals applied for 18 October 2012 and granted 1 November 2012.	Yes
10. Definition of 'equivalent'	N/A	N/A
11. Discharge of equivalent chemical requires written request	Not required	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
12. Conditions 5,6,7 and 8 apply to effluent prior to entry into outfall line		N/A
13. Limits in conditions 7 and 8 apply unless TRC has given approval for a short term change	Not required	N/A
14. Effects on receiving waters	Marine ecological surveys	Yes
15. Consent holder to maintain contingency plan	Contingency plans provided June 2010, June 2011, June 2012 and reviewed as satisfactory	Yes
16. No domestic sewage in discharge	Liaison with consent-holder domestic sewage is routed to the Waitara Wastewater Treatment Plant, not directly to the outfall	Yes
17. Consent holder to notify TRC at least seven days before consent is first exercised	Notification on file	Yes
18. Consent holder to certify the structural integrity and dilution performance of outfall at least every five years	A commercial diver survey was undertaken to inspect the integrity of the outfall in July 2006. Further discussions regarding the outfall were carried out in April 2013 between Methanex and Council management.	Yes
19. Consent holder to supply an annual effluent report by 31 March each year	Reports received monthly and reviewed as satisfactory	Yes
20. Lapse of consent		N/A
21. Review of consent	Next scheduled in 2015 if required	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

**Table 31** Summary of performance for Consent 4042-3 Discharge of 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 (plant not operating)	Yes
4. Provision of a report on cooling tower plume abatement	Report received April 2009	Yes
5. Biennial written air discharge emission and mitigation reports	Received March 2010, August 2012	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
6. Maximum ground-level concentrations of methanol beyond site boundary	Plant operating at 50% capacity. Previous modelling has shown compliance when plant in full operation	Yes
7. Maximum ground-level concentrations of carbon monoxide beyond boundary	Plant operating at 50% capacity. Previous modelling has shown compliance when plant in full operation	Yes
8. Maximum ground-level concentrations of nitrogen dioxide beyond boundary	Plant operating at 50% capacity. Previous modelling has shown compliance when plant in full operation	Yes
9. Maximum ground-level concentrations of other contaminants beyond boundary	Plant operating at 50% capacity. Previous modelling has shown compliance when plant in full operation	Yes
10. Inventory of emissions to be provided with biennial emission mitigation report	Received March 2010, August 2012	Yes
11. No offensive or objectionable odour at the plant 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		<b>High</b>

N/A = not applicable

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

#### 2.5.4 Recommendations from the 2009 Annual Report

In the 2009 Annual Report it was recommended:

1. THAT Methanex provides a written report on the results of water use reduction programmes as per special condition 4. b. of consent 0820-2.
2. THAT inspections for the purposes of the monitoring of compliance with consents remain at quarterly intervals.
3. THAT Methanex continues to provide the Council with a biennial air emission report for the Motunui plant as required by condition 6 of consent 4042-3.
4. THAT monitoring of air emissions from the Motunui site in 2010 remain at the same level as 2009.
5. THAT Methanex continue to annually review and update any changes to the specific and comprehensive contingency plan to prevent and respond to any unauthorised effluent discharges that may arise from spillages, accidental discharges or pipeline failure as required by special condition 15 of consents 3400-2 and 3399-2.

All of these recommendations were implemented in the monitoring period.

### 2.5.5 Alterations to monitoring programmes for 2013-14

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

The Motunui site was in the process of restarting and increasing production throughout 2008 to 50% of its original full capacity. Production further increased to 100% following the restart of the Meth I plant in July 2012. Monitoring of air emissions from the Methanex Motunui plant was reviewed during 2009, and the self-monitoring conducted by Methanex satisfies requirements of the consent. Monitoring of groundwater and surface water abstraction were also suspended pending recommencement of processing and abstraction at the site; these will remain suspended as abstraction will not be recommenced. Monitoring of discharges at the Methanex Motunui plant has been increased to and is proposed to remain at four inspections and two stormwater sampling and inter-laboratory comparison surveys annually.

### 2.5.6 Exercise of review of consent

Condition 17 of consent 4042-3 allows for an option to review the consent to discharge contaminants into the air from the Motunui methanol plant and ancillary facilities in June 2013. The consent was not reviewed as the conditions are adequate to deal with the environmental risk posed by the air discharge at this time. No other consents had the option of review during the monitoring period and thus no review of consents were undertaken during the monitoring period January 2010 to June 2013.

## 2.6 Recommendations

1. THAT the Council discusses the feasibility of certifying the integrity and dilution performance of the marine outfall pipe with Methanex to ensure compliance with condition 19 of consent **3400-2**.
2. THAT Methanex continue with plans to carry out testing to establish water intake pipe integrity at intervals of at least every five years and continue to provide a written report to the Council every two years outlining the results of water use reduction initiatives. This report is a requirement of consent **0820-2** (condition 4).
3. THAT inspections for the purposes of the monitoring of compliance with consents remain at quarterly intervals.
4. THAT monitoring of air emissions from the Motunui site in 2013-14 remain at the same level as previous years.
5. THAT Methanex continue to annually review and update any changes to the specific and comprehensive contingency plan to prevent and respond to any

unauthorised effluent discharges that may arise from spillages, accidental discharges or pipeline failure as required by special condition 15 of consent 3400-2.

6. THAT Methanex supply information confirming that the flow meter on the water intake has been installed as per manufacturer's specifications and that the flow meter and record keeping meets the National Environmental Standard for measuring and reporting of water takes and/or an exemption from the water meter location requirements is obtained from the Council.
7. THAT the Council notes there was no need to review consent 4042-3 in June 2013.

### 3. Waitara Valley

#### 3.1 Process description

##### Methanol manufacture

The methanol plant was originally owned and operated by Petralgas Chemicals NZ Ltd, a 50:50 New Zealand government and Alberta Gas partnership. Subsequently it passed to Petrocorp and then to Fletcher Challenge Methanol. In 1994, Fletcher Challenge Methanol sold its interest to Methanex.

The facility began operating in 1983. In 1989 the Company added a second distillation tower so that crude methanol could be supplied from the synthetic petrol plant at Motunui, for further processing to high purity chemical grade product. The construction of two methanol distillation towers at the Methanex Motunui site in 1994 and 1995 led to modifications of the Waitara Valley plant, to allow transfer of crude and refined methanol between the two sites and the port.

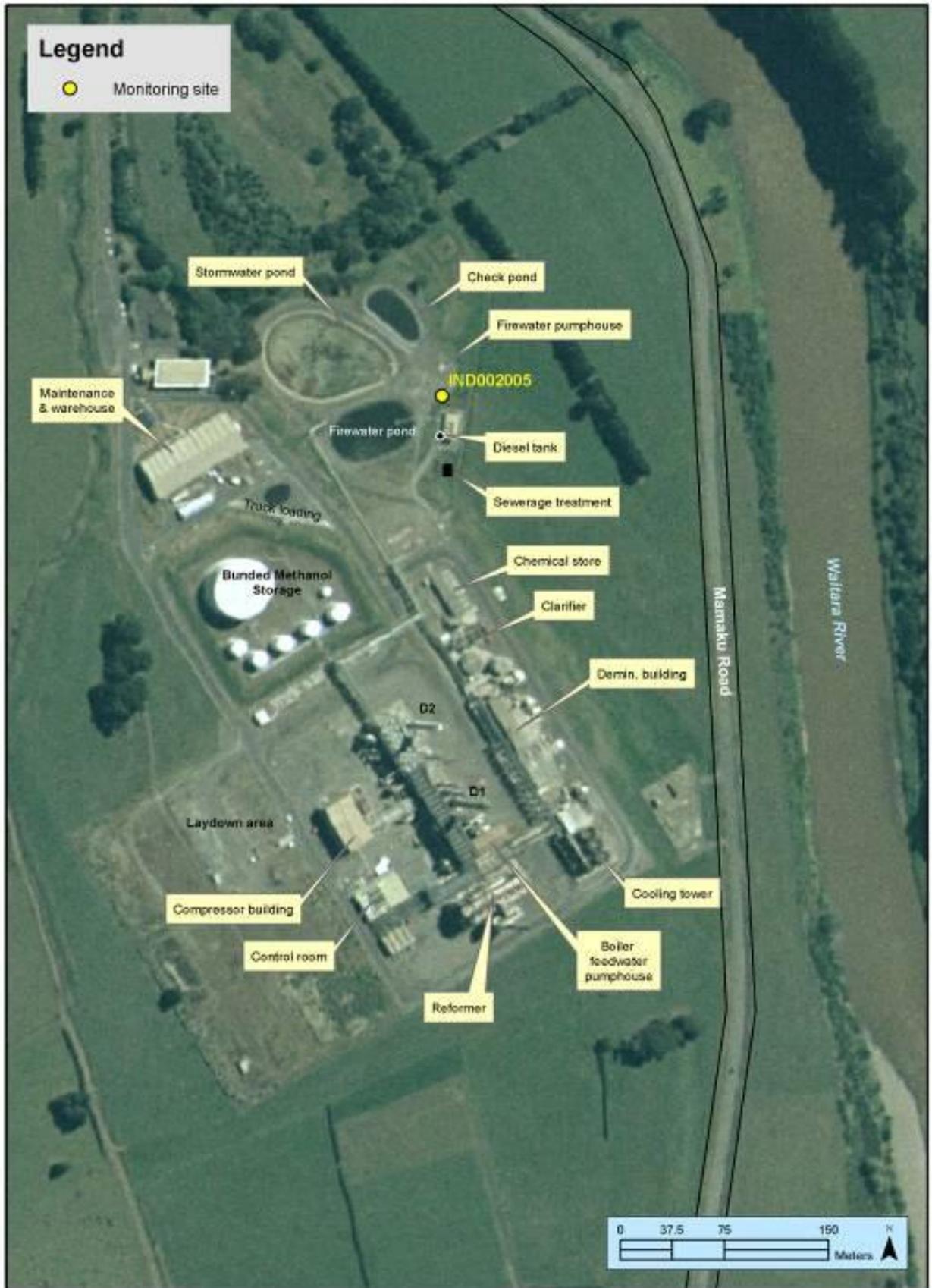
The Waitara Valley plant was a 1,500 tonne per day methanol production facility, which could produce 900,000 tonnes per year of chemical grade methanol. This also included 400,000 tonnes per year produced from crude methanol generated at the Methanex Motunui plant.

This methanol was produced via a three-stage process. Feedgas sourced from various Taranaki fields was desulphurised before the reforming process which produces synthesis gas. Synthesis gas is then converted to crude methanol. The crude methanol was refined by distillation.

Methanol production ceased on the site, on 13 October 2008. Production is due to restart in July/August 2013. During the monitoring period in question (January 2010 to June 2013), the site remained in use as a methanol storage and loadout facility.



**Photo 2** Methanex Waitara Valley site



**Figure 5** 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 5.

However, methanol was not being produced at the Waitara Valley site during the monitoring period January 2010 to June 2013, and therefore stormwater and very small amounts of domestic sewage were the only water discharged from the site. There was no further treatment of the water prior to discharge from the site. The effluent exported from the site joined into the NPDC municipal system after the Waitara wastewater treatment plant. Some pre-treatment of the domestic effluent (primarily aeration) occurs on-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 waste water 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.

However the site was in care and maintenance during the period under review, and therefore there were no emissions to air, apart from the breathing losses from the product tank.

### 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.

However the site was in care and maintenance during the period under review, and therefore there were no solid wastes generated onsite.

## 3.2 Resource consents

Methanex holds five active resource consents (excluding renewals) for the operation of the Waitara Valley plant. 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 list of the consents held by Methanex in relation to the Waitara Valley plant is given in Table 32.

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 under the name of Methanex Motunui Limited in 2005.

Consents 0802, 0805, 3399 and 4045 were due to expire on 1 June 2008. Council received applications for the renewal of consents 0802 (granted 31 March 2008), 3399, 4045, and 3400 (all granted 29 April 2008). Consent 0801 to allow water to be taken from Waitara River was due to expire on 25 May 2008 and a renewal was granted on 29 April 2008.

**Table 32** Consents held in relation to the Waitara Valley plant, January 2010 – June 2013

Consent	Purpose	Volume (m <sup>3</sup> /day)	Review date	Expiry date
0801-2	Take from Waitara River	8,640	1/06/15	1/06/21
0802-2	Discharge uncontaminated stormwater from general area to Waitara River	8,640	1/06/15	1/06/21
3399-2	Discharge treated plant effluent and contaminated stormwater to Tasman Sea	5,000	1/06/15	1/06/21
3960-2	Construct rock groyne in Waitara River	-	Jun 2009	1/06/21
4045-3	Discharge to air from methanol plant	-	1/06/15	1/06/21

### 3.2.1 Water abstraction permits

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

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

#### **Consent 0801-2: Abstraction from the Waitara River**

Waitara Valley held water consent 0801 to cover the abstraction at two points upstream of the methanol plant. Renewed consent 0801-2 restricts the volume of water allowed to be taken per hour to no more than 300m<sup>3</sup>. The consent holder must maximise the water take from the Motunui intake structure and minimise that taken from the old Waitara Valley intake. The water take is required to be managed to

ensure that the flow of water at the Bertrand Road gauging station is no less than 4,600 L/s. No water is to be taken if the river falls below this level.

A condition requires that the rate of abstraction be monitored continuously and that the results of monitoring be forwarded to the Council monthly.

There are eight special conditions for consent 0801, which relate to the nature of the abstraction, monitoring, water conservation measures, and reporting.

This permit is attached to this report in Appendix II.

### **3.2.2 Land use permit**

Section 13(1)(a) of the Resource Management Act 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.

#### **3960-2: Groyne in Waitara River**

Consent 3960 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 (now complete). The consent was renewed on 14 May 2003 and is due to expire on 1 June 2021. The renewed consent provides for the construction and maintenance of a rock groyne in the Waitara River to control against further river bed degradation. There are three special conditions attached to the consent.

Condition 1 requires that the consent holder notify the Taranaki Regional Council prior to undertaking maintenance that may impact on the bed of the river.

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

Condition 3 provides for a review of the consent to be undertaken in June 2009 and/or June 2015. The consent is due to expire on 1 June 2021.

This permit is attached to this report in Appendix II.

### **3.2.3 Water discharge permits**

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

Methanex holds two consents to discharge water, from the Waitara Valley site, as described below. Both of these consents were renewed on 29 April 2008.

#### **Consent 0802-2: Discharge of uncontaminated stormwater to the Waitara River**

Consent 0802-2 provides for the discharge of uncontaminated stormwater to the Waitara River from the plant site. There are seven special conditions which set out

requirements for the quality of the stormwater, the nature of the discharges, prohibited effects on the receiving environment as well as standard lapse and review conditions.

### Consent 3399-2: Discharge of plant effluent to Tasman Sea

Methanex holds water 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 plant into the Tasman Sea via the Waitara Marine Outfall which discharges approximately 1,250 metres offshore from the Waitara river mouth. This consent provides for the discharge of up to 5,000 cubic metres per day, with a maximum discharge rate of 60 litres per second.

There are 20 special conditions relating to volume and rate of discharge, monitoring, the marine outfall, effluent composition and receiving water effects, allowable water treatment chemicals and their use and replacement, contingency plans and monthly and annual reporting of analytical data.

The effluent limits for the Waitara Valley Plant under normal plant operation are listed in **Table 33**. The general limits are on the basis of 24-hour flow proportional composite samples. The limit on water treatment chemicals and their decomposition products are based on calculation.

### Consent 3399-2: Discharge of plant effluent to Tasman Sea

Methanex lodged a separate application [4967] for the domestic sewage component of their Waitara Valley discharge. Subsequently, in 2011, Methanex implemented an onsite sewage treatment system, which discharges as treated water to grass on site. Accordingly, from January 2010 until September 2011 Methanex had the ability to discharge their treated sewage through the outfall under consent 3399-1 [in accordance with section 124 of the Act].

**Table 33** Effluent component concentration limits for Waitara Valley

Parameter	Limit	Parameter	Limit
<b>General</b>	<b>Maximum concentration</b>	<b>Water treatment chemicals</b>	<b>Mass discharge rate kg/day</b>
pH	6 - 11	Continuum AEC3109	100
Suspended solids	500 kg/day	Cortrol OS 7780	300
Hydrocarbons	10 g/m <sup>3</sup>	Foamtrol AF2290	2
Methanol	15 g/m <sup>3</sup>	Inhibitor AZ8104	30
Ammonia	200 g/m <sup>3</sup>	Klaraid PC1192	150
Copper	0.5 g/m <sup>3</sup>	Optisperse HTP 73301	50
Nickel	1.0 g/m <sup>3</sup>	Optisperse HTP 73611	50
Zinc	2.0 g/m <sup>3</sup>	Optisperse PO5211A	15
		Spectrus BD1500	50
		Steamate NA0880	25

g/m<sup>3</sup>      grams per cubic metre  
kg/day     kilograms per day

Methanex is required to advise the Council of any proposed changes in water treatment or cleaning chemicals in order that limitations may be placed on their discharge, if necessary, for protection of the receiving waters. At least two days' notification must be given of discharge of any effluent that contains components from a chemical cleaning operation or catalyst changeout.

A contingency plan, to be put into operation in the event of spillage, accidental discharge, or pipeline failure, is to be prepared by Methanex. An annual report is required from Methanex on the performance of the effluent disposal system and on compliance with conditions on the consent.

These permits are attached to this report in Appendix II.

### 3.2.4 Air discharge permit

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

#### **Consent 4045-3: Discharges to air from methanol plant**

Methanex Motunui Limited holds air discharge consent 4045 to cover the discharge of emissions into the air from combustion and other activities associated with the production of methanol at the Waitara Valley plant. The Council issued this permit on 6 December 1995 as a resource consent under Section 87(e) of the Resource Management Act. 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.

Special condition 1 requires the consent holder to adopt the 'best practicable option' approach to minimise or prevent adverse environmental effects.

Special condition 2 requires the consent holder to operate all plant and processes to keep emissions to 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 two years, reviewing emission control technology and 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 requires the consent holder to prevent offensive or objectionable odour at or beyond the boundary of the site.

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.

This permit is attached to this report in Appendix II.

### 3.3 Results

#### 3.3.1 Water

##### 3.3.1.1 Site inspections

Since the plant was currently operational but under care and maintenance during the period under review, the main points of interest included ensuring the site was secure in respect to potential or actual discharges of contaminated stormwater to receiving watercourses. Sources of data collected by the consent holder were identified and assessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council.

Officers of the Council carried out four compliance monitoring inspections and collected one split sample from discharges of the Waitara Valley plant during the 2010 year, a second split sample was collected during a separate visit on 19 May 2010. In 2011 Council officers carried out four compliance monitoring inspections and collected two split samples on two other separate occasions. In 2012 Council officers carried out three compliance monitoring inspections and collected two split samples on one other separate occasion. During 2013, up to the end of June, there were four site visits to the plant, one was an NES inspection of the flow meter on site, two were advice and information inspections and one was an incident investigation. Table 34 summarises details of each of these site visits.

**Table 34** Summary of the site inspections undertaken for the Waitara Valley site from January 2010 to June 2013

Date	Inspection type	Outcome
9 February 2010	Compliance monitoring	The water intake was discussed and it was clarified that the water intake was only required to top up the water requirements when the Plant is operating. The cooling tower has been kept operational; the cooling water has been dosed with domestic swimming pool chlorine to stop algal growth. Overall the site was tidy and well maintained with neither dust nor odour issues during the inspection of the site.
19 May 2010	Split sample collection	Overall there was good agreement between results, where differences in concentrations were within 10% of each other. The exception was COD. COD measured by Methanex was twice that measured by the Council (18 g/m <sup>3</sup> Vs 9 g/m <sup>3</sup> ). The samples were not able to be retested the following day.

Date	Inspection type	Outcome
		whilst the difference between the two samples was large the concentrations were very low and thus not considered significant.
16 June 2010	Compliance monitoring	Planned changes to the sewage system were discussed. Overall a tidy site with no issues of concern to note.
15 September 2010	Compliance monitoring and split sample collection	The methanol tank bund was inspected and had accumulated some rainwater but all looked tidy. Overall the site was tidy and well maintained, with no odour or dust issues. The split samples showed good agreement between results, where differences in concentrations were within 10% of each other. The exception was for zinc concentrations where zinc measured by Methanex was about half that measured by the Council, however overall zinc concentrations were low. The samples were not able to be retested.
13 December 2010	Compliance monitoring	A discussion was had about the ammonia consent limit present on one of the consents as there was no source of ammonia onsite. Council to consider. Overall the site was tidy and well maintained with no odour or dust issues evident
21 January 2011	Compliance monitoring	A discussion was had about the ammonia limit on the WV plant and whether it was necessary as there was no ammonia source onsite and therefore the relevancy of this condition, whilst the plant is not operational, was questioned. The truck load out area was tidy with no spills evident. The methanol tank bund was inspected and all looked tidy. Overall the site was tidy and well maintained; there were no odour or dust issues during the inspection.
1 February 2011	Split sample collection	All of the split samples showed good agreement and all were within compliance limits.
16 June 2011	Compliance monitoring	The truck load out area was tidy with no spills evident. Overall the site was tidy and well maintained; there were no odour or dust issues during the inspection.
30 August 2011	Split sample collection	Overall there was good agreement between results, where differences in concentrations were within 10% of each other. The exception was COD. COD measured by Methanex was approximately 60% less than that measured by the Council (10 g/m <sup>3</sup> Vs 16.9 g/m <sup>3</sup> ). Whilst the difference between the two samples was large the concentrations were very low and thus not considered significant.
13 September 2011	Compliance monitoring	The new sewage system was installed and operating. Sewage from the WV site is now discharged as treated water to grass on site. Overall the site was tidy and well maintained; there were no odour or dust issues during the inspection. A discussion regarding contingency plans occurred after the inspection, Council outlined what was required from a contingency plan, including site background and description, contact details and procedures, maps and diagrams showing pipelines, possible spill and environmental entry point and access points. Methanex to provide this updated contingency plan early 2012. The renewal of the Waihi stream stormwater discharge consent was also discussed, the fact that there is no interceptor system in the ponds means the discharge cannot fall under the permitted activity rule and therefore a renewal of the consent is required.
9 December 2011	Compliance monitoring	A discussion regarding contingency plans occurred.

Date	Inspection type	Outcome
		Methanex stated that it might be necessary to extend the timeframe for providing the updated contingency plan due to staff shortages. Overall the site was tidy and well maintained; there were no odour or dust issues during the inspection.
15 March 2012	Compliance monitoring	Overall the site was tidy and well maintained; there were no odour or dust issues during the inspection.
10 May 2012	Compliance monitoring and split sample collection	The fire water pond was fairly full; the storm water pond was low, Methanex stated that it had been filled to half way following two nights of rain, the water had been checked and then pumped out. The check pond was mostly empty with some silt and water remaining in the bottom, it had recently been in use. The effluent outfall sampler had been operational. The tanker load out areas were clean with no evidence of spills. The tank bundings were all intact and everything was in order. No offsite odour was detected. Contractors were unloading diesel into the pump tanks at the time of inspection; effective procedures were in place to reduce the potential for spills. All of the split samples showed good agreement with the exception of zinc: Methanex measured a concentration of 0.22g/m <sup>3</sup> whilst Council measured 0.176g/m <sup>3</sup> . Whilst this is a difference of 25%, concentrations were low and therefore not deemed significant. All of the split samples were within compliance limits.
12 October 2012	Compliance monitoring	The site remained non-operational, but some staff had returned to the site and inspections were being conducted to assess potential future use of the site. All was normal, no issues were observed.
21 November 2012	Split sample collection	All of the split samples showed good agreement with the exception of COD, Methanex measured a concentration of 10g/m <sup>3</sup> whilst Council measured 5g/m <sup>3</sup> . Whilst this is a difference of 100%, concentrations were low and therefore not deemed significant. All of the split samples were within compliance limits.
16 January 2013	NES Inspection of flow meter	Adequate lengths of straight pipe, however a reduction in pipe size directly before and an increase in size directly after may result in turbulence and thereby introduce errors into the flow meter readings. The location of the flow meter some distance away from the point where water is taken is non-compliant with the National Environmental Standard for Measuring and Reporting of Water Takes, which requires that the flow meter must be located at the point of take. An exemption may be granted by the Council. Further discussions required.
26 February 2013	Advice and Information inspection	Low flows in the Waitara River were a cause for concern; therefore several possible courses of action were discussed to help prevent Methanex from breaching their consent; this included recycling of effluent water, renewal of groundwater abstraction consents and sourcing water from NPDC freshwater reservoirs. Methanex advised Council of water that had overflowed from the filter tank onsite, into a drain that leads into the pond at the Waihi Stream stormwater discharge point. An internal investigation was conducted to ensure the water contained no contaminants of concern. A volume of this water had entered the pond, where a small area of sheen was detected. Initial testing showed hydrocarbon concentrations to be lower than detection levels. The pond was not discharging. No effects were likely to have occurred off site.

Date	Inspection type	Outcome
5 March 2013	Incident investigation	Methanex notified the Council following an incident at their site where boiler water was routinely drained from one of the boilers following an unsuccessful restart attempt of one of the plants. This water was intentionally drained, but had likely overflowed during the draining process and flowed to the untreated stormwater system and ultimately into the Waihi Stream that borders the Motunui site. Methanex informed the Council that the collection pond before the Waihi Stream contained a significant amount of discoloured water and some debris. No signs of any effects on stream quality or aquatic life were noted.
29 April 2013	Advice and Information inspection	The impending Waitara Valley restart and start-up monitoring programme was discussed. Council to follow up and liaise with Methanex staff.
29 May 2013	Split sample collection	All of the results showed good agreement

These inspections are an important part of the monitoring programme, allowing discussion of Methanex's resource consents and relevant environmental issues including HSNO. A report is written based on each inspection. Site housekeeping has continued to be of a high standard, with no areas of particular concern on site.

### 3.3.1.2 Abstraction monitoring by the Company

Since 1992, water for operation of the Waitara Valley methanol plant has been supplied from headworks constructed for supply of the Methanex Motunui plant. 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 plant from the Waitara River are recorded and reported to the Council on a monthly basis.

Consent 0801 allows Methanex to take up to 300 m<sup>3</sup> per hour from the Waitara River when the river flow at the Bertrand Road gauging station is above 4,600 L/s (16,560 m<sup>3</sup> per hour). A hydrograph of river flows at the Bertrand Road gauging station based on data for calculated mean daily flows during the 2010 – 2013 monitoring period is attached to this report as Appendix III. The hydrographs show that the river flow did not fall below this level at any time during the monitoring period under review. Reported maximum daily abstraction rates were within allowable limits at all times.

### 3.3.1.3 Effluent monitoring

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

Effluent monitoring data gathered by Methanex is sent to the Council monthly. The data is reviewed by the Council to determine compliance with resource consent conditions. 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<sup>3</sup>/h), daily maximum (L/s) and daily volume (m<sup>3</sup>/day) for flow, and minima, maxima and daily averages for pH. A summary of this data is presented in Table 35 to Table 38.

Special condition 8 of consent 3399 states,

*“THAT the pH of the effluent shall not exceed the range pH 6 to pH 11.”*

Therefore, the minimum and maximum pH values reported 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 plant effluent. This is analysed by the Methanex laboratory, to determine compliance with their discharge consent 3399. A summary of this data is presented in Table 35 to Table 38.

### Chemical dosing rates

Consent 3399 (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 35 to Table 38.

**Table 35** Summary of the Waitara Valley plant’s monitoring results of plant effluent during 2010

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	2,292	5,000	0
pH	-	6.53	11	6-11	0
<b>Daily measurement</b>					
Petroleum hydrocarbons	g/m <sup>3</sup>	<1	<1	10	0
Methanol	g/m <sup>3</sup>	<2	<2	15	0
Suspended solids	kg/day	<11	45	500	0
<b>Monthly measurements</b>					
Ammonia	g/m <sup>3</sup>	Not measured †	Not measured	200	0
Copper	g/m <sup>3</sup>	<0.02	0.02	1.0	0
Nickel	g/m <sup>3</sup>	<0.1	<0.1	1.0	0
Zinc	g/m <sup>3</sup>	<0.1	<0.1	2.0	0
<b>Water treatment chemicals - consent 3399-2 (calculated)</b>					
Cortol OS 7780	Kg/day	0	0	300	0
Steamate NA0880	Kg/day	0	0	25	0
Optisperse HTP 73611	Kg/day	0	0	50	0
Optisperse PO 5211A	Kg/day	0	0	15	0
Continuum AEC3110	Kg/day	0	0	100	0

	Unit	Minimum	Maximum	Consent limit	Number of breaches
(Spectrus BD1500	Kg/day	0	0	50	0
Inhibitor AZ8104	Kg/day	0	0	30	0
Optisperse HTP7330	Kg/day	0	0	50	0
Klaraid PC1192	Kg/day	0	0	150	0
Foamtrol AF2290	Kg/day	0	0	2	0

¥ Agreement was reached with Council during the 2010 calendar year to discontinue ammonia measurements until the plant becomes operational, the plant was shut down during the period and thus there were no sources of ammonia on site.

**Table 36** Summary of the Waitara Valley plant's monitoring results of plant effluent during 2011

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	2633	5,000	0
pH	-	5.9	9.16	6-11	2
<b>Daily measurement</b>					
Petroleum hydrocarbons	g/m <sup>3</sup>	<1	<1	10	0
Methanol	g/m <sup>3</sup>	<2	<2	15	0
Suspended solids	kg/day	<14	21	500	0
<b>Monthly measurements</b>					
Ammonia	g/m <sup>3</sup>	Not measured ¥	Not measured	200	0
Copper	g/m <sup>3</sup>	<0.02	0.02	1.0	0
Nickel	g/m <sup>3</sup>	<0.1	<0.1	1.0	0
Zinc	g/m <sup>3</sup>	<0.1	0.13	2.0	0
<b>Water treatment chemicals - consent 3399-2 (calculated)</b>					
Cortol OS 7780	Kg/day	0	0	300	0
Steamate NA0880	Kg/day	0	0	25	0
Optisperse HTP 73611	Kg/day	0	0	50	0
Optisperse PO 5211A	Kg/day	0	0	15	0
Continuum AEC3110	Kg/day	0	0	100	0
(Spectrus BD1500	Kg/day	0	0	50	0
Inhibitor AZ8104	Kg/day	0	0	30	0
Optisperse HTP7330	Kg/day	0	0	50	0
Klaraid PC1192	Kg/day	0	0	150	0
Foamtrol AF2290	Kg/day	0	0	2	0

¥ Agreement was reached with Council during the 2010 calendar year to discontinue ammonia measurements until the plant became operational, the plant remained shut down in 2011 and thus there were no sources of ammonia on site.

**Table 37** Summary of the Waitara Valley plant's monitoring results of plant effluent during 2012

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	2,421	5,000	0

	Unit	Minimum	Maximum	Consent limit	Number of breaches
pH	-	6	9.4	6-11	0
<b>Daily measurement</b>					
Petroleum hydrocarbons	g/m <sup>3</sup>	<1	<1	10	0
Methanol	g/m <sup>3</sup>	<2	4	15	0
Suspended solids	kg/day	<11	36	500	0
<b>Monthly measurements</b>					
Ammonia	g/m <sup>3</sup>	Not measured ‡	Not measured	200	0
Copper	g/m <sup>3</sup>	<0.02	0.02	1.0	0
Nickel	g/m <sup>3</sup>	<0.1	<0.1	1.0	0
Zinc	g/m <sup>3</sup>	<0.1	0.2	2.0	0
<b>Water treatment chemicals - consent 3399-2 (calculated)</b>					
Cortol OS 7780	Kg/day	0	0	300	0
Steamate NA0880	Kg/day	0	0	25	0
Optisperse HTP 73611	Kg/day	0	0	50	0
Optisperse PO 5211A	Kg/day	0	0	15	0
Continuum AEC3110	Kg/day	0	0	100	0
(Spectrus BD1500	Kg/day	0	0	50	0
Inhibitor AZ8104	Kg/day	0	0	30	0
Optisperse HTP7330	Kg/day	0	0	50	0
Klaraid PC1192	Kg/day	0	0	150	0
Foamrol AF2290	Kg/day	0	0	2	0

‡ Agreement was reached with Council during the 2010 calendar year to discontinue ammonia measurements until the plant became operational, the plant remained shut down in 2012 and thus there were no sources of ammonia on site.

**Table 38** Summary of the Waitara Valley plant's monitoring results of plant effluent during 2013

	Unit	Minimum	Maximum	Consent limit	Number of breaches
<b>Continuous measurement</b>					
Flow (daily average)	m <sup>3</sup> /day	0	2,018	5,000	0
pH	-	6.7	9.99	6-11	0
<b>Daily measurement</b>					
Petroleum hydrocarbons	g/m <sup>3</sup>	<1	<1	10	0
Methanol	g/m <sup>3</sup>	<2	<2	15	0
Suspended solids	kg/day	<11	26	500	0
<b>Monthly measurements</b>					
Ammonia	g/m <sup>3</sup>	Not measured ‡	Not measured	200	0
Copper	g/m <sup>3</sup>	<0.03	<0.03	1.0	0
Nickel	g/m <sup>3</sup>	<0.1	<0.1	1.0	0
Zinc	g/m <sup>3</sup>	<0.1	0.16	2.0	0
<b>Water treatment chemicals - consent 3399-2 (calculated)</b>					
Cortol OS 7780	Kg/day	0	0	300	0
Steamate NA0880	Kg/day	0	0	25	0

	Unit	Minimum	Maximum	Consent limit	Number of breaches
Optisperse HTP 73611	Kg/day	0	0	50	0
Optisperse PO 5211A	Kg/day	0	0	15	0
Continuum AEC3110	Kg/day	0	0	100	0
(Spectrus BD1500	Kg/day	0	0	50	0
Inhibitor AZ8104	Kg/day	0	0	30	0
Optisperse HTP7330	Kg/day	0	0	50	0
Klaraid PC1192	Kg/day	0	0	150	0
Foamtrol AF2290	Kg/day	0	0	2	0

¥ Agreement was reached with Council during the 2010 calendar year to discontinue ammonia measurements until the plant becomes operational, The plant remained shut down in 2013 and thus there were no sources of ammonia on site.

Compliance with conditions on plant effluent composition and discharge rate was largely achieved throughout the monitoring period from January 2010 to June 2013. The exception were two breaches of the pH condition (consent limit range is 6-11) as follows: pH 5.9 recorded on 17 June 2011 and 21 June 2011.

### 3.3.1.4 Inter-laboratory comparisons

The Council carried out inter-laboratory comparisons on seven 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 39 to Table 42. The exercise also serves as a compliance monitoring check.

**Table 39** Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2010

Parameter	unit	19 May 2010		Consent limit
		Methanex	TRC	
Ammonia as N	g/m3	<0.1	0.018	200
Chemical oxygen demand	g/m3	18	9	200
Conductivity	µs/cm @ 25°C	68	66	
Copper	g/m3	<0.02	<0.01	0.5
Methanol	g/m3	<2	<1	15
Nickel	g/m3	<0.1	<0.02	1
pH	-	7.6	7.4	6.0-9.0
Total hydrocarbons	g/m3	<1	<0.5	10
Total suspended solids	g/m3	13	14	(daily discharge <500kg)
Zinc	g/m3	<0.1	0.076	1
Parameter	unit	15 September 2010		Consent limit
		Methanex	TRC	

Parameter	unit	19 May 2010		Consent limit
		Methanex	TRC	
Ammonia as N	g/m3	<0.1	0.078	200
Chemical oxygen demand	g/m3	<10	<5	200
Conductivity	µs/cm @ 25°C	55	53	
Copper	g/m3	<0.02	<0.01	0.5
Methanol	g/m3	<2	<1	15
Nickel	g/m3	<0.1	<0.02	1
pH	-	7	7.2	6.0-9.0
Total hydrocarbons	g/m3	<1	<0.5	10
Total suspended solids	g/m3	<6	4	(daily discharge <500kg)
Zinc	g/m3	<0.1	0.18	1

**Table 40** Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2011

Parameter	unit	1 February 2011		Consent limit
		Methanex	TRC	
Ammonia as N	g/m3		0.009	200
Chemical oxygen demand	g/m3	<10	8	200
Conductivity	µs/cm @ 25°C	60	59	
Copper	g/m3	0.02	<0.01	0.5
Methanol	g/m3	<2		15
Nickel	g/m3	<0.1	<0.02	1
pH	-	7.3	7.3	6.0-9.0
Total hydrocarbons	g/m3	<1	<0.5	10
Total suspended solids	g/m3	8	6	(daily discharge <500kg)
Zinc	g/m3	<0.1	0.083	1
Parameter	unit	30 August 2011		Consent limit
		Methanex	TRC	
Ammonia as N	g/m3		0.01	200
Chemical oxygen demand	g/m3	10	16	200
Conductivity	µs/cm @ 25°C	99	95.7	
Copper	g/m3	<0.02	<0.01	0.5
Methanol	g/m3	<2	<1	15
Nickel	g/m3	<0.1	<0.2	1
pH	-	7.3	7.4	6.0-9.0
Total hydrocarbons	g/m3	<1	<0.5	10
Total suspended solids	g/m3	8	9	(daily discharge <500kg)

Parameter	unit	1 February 2011		Consent limit
		Methanex	TRC	
Zinc	g/m3	<0.1	0.108	1

**Table 41** Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2012

Parameter	unit	10 May 2012		Consent limit
		Methanex	TRC	
Ammonia as N	g/m3		0.089	200
Chemical oxygen demand	g/m3	<10	7	200
Conductivity	µs/cm @ 25°C	79	75.8	
Copper	g/m3	<0.02	<0.01	0.5
Methanol	g/m3	<2	<1	15
Nickel	g/m3	<0.1	<0.02	1
pH	-	7.4	7.4	6.0-9.0
Total hydrocarbons	g/m3	<1	<0.5	10
Total suspended solids	g/m3	16	15	(daily discharge <500kg)
Zinc	g/m3	0.22	0.176	1

Parameter	unit	21 November 2012		Consent limit
		Methanex	TRC	
Ammonia as N	g/m3		0.01	200
Chemical oxygen demand	g/m3	10	5	200
Conductivity	µs/cm @ 25°C	63	62.7	
Copper	g/m3	<0.03	<0.01	0.5
Methanol	g/m3	<2		15
Nickel	g/m3	<0.1	<0.02	1
pH	-	7.4	7.5	6.0-9.0
Total hydrocarbons	g/m3	<1	<0.5	10
Total suspended solids	g/m3	<6	5	(daily discharge <500kg)
Zinc	g/m3	<0.1	0.079	1

**Table 42** Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2013

Parameter	unit	29 May 2013		Consent limit
		Methanex	TRC	
Ammonia as N	g/m3	n/a	n/a	200
Chemical oxygen demand	g/m3	11	7	200
Conductivity	µs/cm @ 25°C	58	61.7	

Parameter	unit	29 May 2013		Consent limit
		Methanex	TRC	
Copper	g/m3	<0.03	0.01	0.5
Methanol	g/m3	<2	<1	15
Nickel	g/m3	<0.1	<0.02	1
pH	-	7.1	7.3	6.0-9.0
Total hydrocarbons	g/m3	<1	<0.5	10
Total suspended solids	g/m3	16	11	(daily discharge <500kg)
Zinc	g/m3	0.16	0.192	1

Results from each laboratory for the Waitara Valley effluent samples on each occasion all met the consent limits.

On 19 May 2010 overall there was good agreement between results, where differences in concentrations were within 10% of each other. The exception was COD. COD measured by Methanex was twice that measured by the Council (18 g/m<sup>3</sup> Vs 9 g/m<sup>3</sup>). The samples were not able to be retested. Whilst the difference between the two samples was large the concentrations are very low and thus not considered significant.

On 15 September 2010 overall there was good agreement between results, where differences in concentrations were within 10% of each other. The exception was for zinc concentrations where zinc measured by Methanex was about half that measured by the Council, however overall zinc concentrations were low. The samples were not able to be retested.

In 2011 most samples showed good agreement. The exception was COD measured in August 2011. Methanex recorded a value of 10 g/m<sup>3</sup> whilst the Council recorded a value of 16 g/m<sup>3</sup>. Whilst the difference was large the concentrations are low and therefore not significant. A similar result was recorded in November 2012 when Methanex recorded a COD value of 10 g/m<sup>3</sup> whilst the Council recorded a value of 5 g/m<sup>3</sup>. Split sample results for 2013 showed good agreement.

### 3.3.1.5 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.

### 3.3.1.6 Uncontaminated stormwater

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

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.

In December 2003, it was found that water collected in the sump under the raised diesel tank near the effluent pump shed was being drained to a tributary of the Waitara River. During that year Methanex undertook some monitoring of this discharge from which it was found that the volumes released were relatively low, and the pH, conductivity and visual assessment of hydrocarbons indicated that the water was uncontaminated. Council followed this up during the 2007 year to ensure appropriate procedures were in place, and records kept, thereby ensuring that only uncontaminated stormwater is released.

The diesel tank bund has been rebuilt to meet HSNO compliance; this has ensured that no stormwater passes through the diesel bund. All stormwater is uncontaminated.

### **3.3.2 Air**

#### **3.3.2.1 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 discernable effects on the receiving environment beyond the plant perimeter could be found during any of the inspections.

#### **3.3.2.2 Consent requirements**

Condition 4 of resource consent 4045 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 in March 2010 and August 2012. The reports are attached as Appendix IV.

## **3.4 Investigations, interventions, and incidents**

In 2010-2013 there were no incidents recorded by Council that were associated with Methanex's Waitara Valley plant.

## 3.5 Discussion

### 3.5.1 Discussion of plant performance

During each inspection by the Council, officers have noted that the facility is well managed, with a high standard of housekeeping apparent.

Methanex's abstraction from the Waitara River was well managed and complied with consent conditions throughout the period under review. There were no exceedances of consent limits.

Methanex Waitara Valley Limited achieved a high level of compliance with the consent conditions for effluent discharges to the Waitara outfall.

There was no discharge of stormwater to the Waitara River from the stormpond.

Emissions to air from the site were found to be well managed and in compliance with Methanex's air discharge consents throughout the period under review.

Methanex submitted an updated spill contingency plan for the Waitara Valley site in 2010, 2011 and 2012 which was regarded as satisfactory in addressing the current environmental risks associated with the site.

#### 3.5.1.1 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 were observed during the period under review.

#### 3.5.1.2 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.

### 3.5.2 Evaluation of performance

A tabular summary of the Company's compliance record for the year under review is set out in Table 43 to Table 47.

**Table 43** Summary of performance for Consent 0801-2 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 300m <sup>3</sup>	Review of self-monitoring data provided monthly	Yes
2. Water take should be maximised from the Motunui intake structure	Liaison with consent holder	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
2. Water take should be maximised from the Motunui intake structure	Liaison with consent holder	Yes
3. Water take managed to ensure Waitara River flow at Bertrand Rd > 4,600L/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 TRC	Review of abstraction records provided to TRC	Yes
5. Provision of reports on the testing of pipeline integrity and water use reduction programmes	Water reduction report submitted 2010 and 2012	Yes
6. Appropriate screening of intake to prevent fish entrainment	Ongoing consultation	Yes
7. Lapse condition	N/A	N/A
8. Review provision	N/A	N/A
9. Approval of monitoring methods	Previously approved. Reviewed and agreed annually	Yes
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

**Table 44** Summary of performance for Consent 0802-2 Discharge of uncontaminated stormwater to 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	Yes
2. Activity to be undertaken generally in accordance with the consent application documentation	Inspections and liaison with consent holder	Yes
3. Any stormwater to be discharged to the Waitara River to be tested and results provided to TRC for approval before discharge	No discharge of site stormwater to Waitara River in the period under review	N/A
4. Specified chemical constituents not to be exceeded in the discharge.	Consent not exercised	N/A
5. Specified prohibited effects on the receiving water	Consent not exercised	N/A
6. Lapse condition	N/A	N/A
7. Review provision	N/A	N/A

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

**Table 45** Summary of performance for Consent 3399-2 Discharge of treated wastes into the Tasman Sea

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Consent holder to adopt BPO to prevent or minimise adverse effects	Inspections (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 5000m <sup>3</sup> day, 60L/sec	Monthly reports received.	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. Limits breached on two occasions, pH = 5.9 on 17 June 2011 and 21 June 2011.	No
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 TRC required to discharge 'equivalent' chemical	Requested 14 June 2013, granted 29 July 2013	Yes
10. Definition of 'equivalent'		N/A
11. Discharge of equivalent chemical requires written request	Requested 14 June 2013, granted 29 July 2013	Yes
12. Conditions 5,6,7 and 8 apply to effluent prior to entry into outfall line		N/A
13. Limits in conditions 7 and 8 apply unless TRC has given approval for a short term change	No approval given	N/A
14. Effects on receiving waters	Marine ecological surveys (separate programme)	Yes
15. Consent holder to maintain contingency plan	Contingency plan received 2010, 2011 and 2012	Yes
16. No domestic sewage in discharge after closure of Waitara Municipal Treatment Plan	Domestic sewage discharged to land	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
17. Consent holder to certify the structural integrity and dilution performance of outfall at least every five years	A commercial diver survey was undertaken to inspect the integrity of the outfall in July 2006, ongoing discussions with Council with regard to re-inspections.	Yes
18. Consent holder to supply an annual report by 31 March each year	Report received	Yes
19. Lapse of consent	n/a	N/A
20. Review of consent	Next scheduled in 2015 if required	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>Good</b>

N/A = not applicable

**Table 46** Summary of performance for Consent 3960-2 Construction of rock groyne

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Notification prior to maintenance works	Liaison with consent holder found 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	Next opportunity for review June 2015 if required	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

N/A = not applicable

**Table 47** Summary of performance for Consent 4045-3 Discharge of emissions into the air

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of 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 March 2010 and August 2012	N/A
5. Maximum ground-level concentrations of methanol beyond boundaries	Report received March 2010 and August 2012 but monitoring not required by council	N/A
6. Maximum ground-level concentrations of carbon monoxide beyond boundaries	Report received March 2010 and August 2012 but monitoring not required by council	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. Maximum ground-level concentrations of nitrogen dioxide beyond boundaries	Report received March 2010 and August 2012 but monitoring not required by council	N/A
8. Maximum ground-level concentrations of other contaminants beyond boundaries	Report received March 2010 and August 2012 but monitoring not required by council	N/A
9. No offensive or objectionable odour at or beyond the plant 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 CE, TRC	Annual review and ongoing liaison	Yes
13. Lapse condition	N/A	N/A
14. Review provision	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>

N/A = not applicable

During the period, Methanex demonstrated a high level of environmental performance and compliance with the resource consents for the Waitara Valley installation.

### 3.5.3 Recommendations from the 2009 Annual Report

In the 2009 Annual Report, it was recommended:

1. THAT inspections continue to remain at quarterly intervals and have a greater emphasis on activities at the Motunui site and less time is spent at the Waitara Valley site.
2. THAT monitoring of water abstractions and discharges at the Methanex Waitara Valley plant in the year 2011 continues at the same level as in 2010.
3. THAT monitoring of air emissions from the Methanex Waitara Valley plant in the year 2011 carry on at a reduced rate as appropriate for the reduced level of activity on the site.
4. THAT Methanex continue to provide an up to date, specific and comprehensive contingency plan to prevent and respond to any unauthorised effluent discharges that may arise from spillages, accidental discharges or pipeline failure as required by special condition 15 of consent 3399-2.
5. THAT Methanex continue with plans to carry out testing to establish water intake pipe integrity at intervals of at least every five years (first report

expected approximately 2011) and continue to provide a written report to the Council every two years outlining the results of water use reduction initiatives. This action is required by special condition 5 of consent 0801-2.

These recommendations were carried out in full.

### **3.5.4 Alterations to monitoring programmes for 2013-2014**

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

In the case of Methanex Waitara Valley, the programme during the monitoring period was scaled down to reflect the reduced risk for the site which is now only operating as a storage and loadout facility. A restart of the plant was planned for July/August 2013. Quarterly inspections continued but with less time spent checking risks at this facility and more time spent at the Motunui site. Monitoring of ammonia has been discontinued with agreement from the Council until the plant resumes production (planned for July/August 2013). It is proposed that for the monitoring year 2013/14 that the monitoring of ammonia be resumed. A recommendation to this effect is attached to this report.

### **3.5.5 Exercise of review of consent**

Based on the results of monitoring in the period under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are no grounds that require a review to be pursued. A recommendation to this effect is presented in Section 3.5 of this report.

## **3.6 Recommendations**

1. THAT inspections continue to remain at quarterly intervals with equivalent emphasis on activities at the Motunui site and the Waitara Valley site due to the planned restart of the Waitara Valley methanol plant in July/August 2013.
2. THAT monitoring of water abstractions and discharges at the Methanex Waitara Valley plant in the year 2013/14 continues at the same level as in previous years.
3. THAT monitoring of air emissions from the Methanex Waitara Valley plant in the year 2013/14 increase as appropriate for the restart of the plant planned for July/August 2013.
4. THAT Methanex continue to provide an up to date, specific and comprehensive contingency plan to prevent and respond to any unauthorised effluent discharges that may arise from spillages, accidental discharges or pipeline failure as required by special condition 15 of consent 3399-2.
5. THAT Methanex continue with plans to carry out testing to establish water intake pipe integrity at intervals of at least every five years and continue to provide a

written report to the Council every two years outlining the results of water use reduction initiatives. This action is required by special condition 5 of consent 0801-2.

6. THAT monitoring of ammonia in the treated wastewater and stormwater from the Waitara Valley methanol plant to the Tasman Sea via the Waitara marine outfall be resumed following the restart of production at the plant, planned for July/August 2013.

## 4. Summary of recommendations

1. THAT the Council discusses the feasibility of certifying the integrity and dilution performance of the marine outfall pipe with Methanex to ensure compliance with condition 19 of consent **3400-2**.
2. THAT Methanex continue with plans to carry out testing to establish water intake pipe integrity at intervals of at least every five years and continue to provide a written report to the Council every two years outlining the results of water use reduction initiatives. This report is a requirement of consent **0820-2** (condition 4).
3. THAT inspections for the purposes of the monitoring of compliance with consents remain at quarterly intervals.
4. THAT monitoring of air emissions from the Motunui site in 2013-2014 remain at the same level as previous years.
5. THAT Methanex continue to annually review and update any changes to the specific and comprehensive contingency plan to prevent and respond to any unauthorised effluent discharges that may arise from spillages, accidental discharges or pipeline failure as required by special condition 15 of consents 3400-2.
6. THAT Methanex supply information confirming that the flow meter on the water intake has been installed as per manufacturers specifications and that the flow meter meets the National Environmental Standard for measuring and reporting of water takes and/or an exemption from the water meter location requirements is obtained from the Council.
7. THAT inspections continue to remain at quarterly intervals with equivalent emphasis on activities at the Motunui site and the Waitara Valley site due to the planned restart of the Waitara Valley methanol plant in July/August 2013.
8. THAT monitoring of water abstractions and discharges at the Methanex Waitara Valley plant in the year 2013/2014 continues at the same level as in previous years.
9. THAT monitoring of air emissions from the Methanex Waitara Valley plant in the year 2013/14 increase as appropriate for the restart of the plant planned for July/August 2013.
10. THAT Methanex continue to provide an up to date, specific and comprehensive contingency plan to prevent and respond to any unauthorised effluent discharges that may arise from spillages, accidental discharges or pipeline failure as required by special condition 15 of consent 3399-2.
11. THAT Methanex continue with plans to carry out testing to establish water intake pipe integrity at intervals of at least every five years and continue to provide a written report to the Council every two years outlining the results of water use reduction initiatives. This action is required by special condition 5 of consent 0801-2.
12. THAT monitoring of ammonia in the treated wastewater and stormwater from the Waitara Valley methanol plant to the Tasman Sea via the Waitara marine outfall be resumed following the restart of production at the plant, planned for July/August 2013.

## Glossary of common terms and abbreviations

The following abbreviations and terms are 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
bund	a wall around a tank to contain its contents in the case of a leak
COD	chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Condy	conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
Cu*	copper
g/m <sup>3</sup>	grammes per cubic metre, and equivalent to milligrammes per litre (g/m <sup>3</sup> ). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
incident	an event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred
intervention	action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring
investigation	action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident
l/s	litres per second
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, this is conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
NES	National Environmental Standard
NH <sub>4</sub>	ammonium, normally expressed in terms of the mass of nitrogen (N)
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water
O&G	oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons)
Pb*	lead
pH	a numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic, and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants ( e.g. metals and nutrients) to characterise the state of an environment
resource consent	refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)

RMA	Resource Management Act 1991 and subsequent amendments
SS	suspended solids,
Temp	temperature, measured in °C (degrees Celsius)
Turb	turbidity, expressed in NTU
UI	Unauthorised Incident
UIR	Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan
Zn*	zinc

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

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

## Bibliography and references

- Air Quality in Taranaki State of the Environment Monitoring Annual Report 1997-98.  
Internal Report
- AgResearch "Motunui Complex Sludge Disposal Facility, February 2000"
- Duncan, M. J. (1999) Explanation of Laboratory Test Methods and Procedures Manual
- ESR Environmental " Report to Methanex Motunui (NZ) Ltd Assessment of Selected Emissions to Air, June 1999
- ESR Environmental "Ambient Air Monitoring at Methanex, Waitara Valley July 1995"
- ESR Environmental " Methanex NZ Ltd Waitara Valley Plant Assessment of Discharges to Air"
- Methanex Laboratory Project Report (1999a) "Environmental Air Emissions Monitoring, Motunui Plant"
- Methanex Laboratory Project Report (1999b) "Environmental Air Emissions Monitoring, Waitara Valley Plant"
- Taranaki Regional Council (2009): "Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2009".  
Technical Report 2010-01
- Taranaki Regional Council (2008): "Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2008".  
Technical Report 2009-02
- Taranaki Regional Council (2007): "Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2007".  
Technical Report 2007-86
- Taranaki Regional Council (2007): "Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2006".  
Technical Report 2007-33
- Taranaki Regional Council (2006): " Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2005".  
Technical Report 2006-02
- Taranaki Regional Council (2005): " Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2004".  
Technical Report 2005-11
- Taranaki Regional Council (2004): " Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2003".  
Technical Report 2004-08

- Taranaki Regional Council (2003): "Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2002". Technical Report 2003-04
- Taranaki Regional Council (2002): "Methanex Motunui and Methanex Waitara Valley Combined Monitoring Programme Annual Report for January-December 2001". Technical Report 2002-02
- Taranaki Regional Council (2001a): "Methanex Motunui and Methanex Waitara Valley Air and Water Consents Monitoring Programme Annual Report for January-December 2000". Technical Report 2001-06
- Taranaki Regional Council (2001b): "Methanex New Zealand Limited Motunui Groundwater Monitoring Programme Annual Report, January 2000 to December 2000". Technical Report 2001-57
- Taranaki Regional Council (2000a): "Methanex Waitara Valley Air and Water Resource Consents Monitoring Programme Report for January-December 1999". Technical Report 2000-02
- Taranaki Regional Council (2000b): "Methanex New Zealand Limited Motunui Groundwater Monitoring Programme Annual Report, January 1999 to December 1999". Technical Report 2000-13
- Taranaki Regional Council (2000c): "Methanex Motunui Limited Air and Water Resource Consents Monitoring Programmes Annual Report January – December 1999". Technical Report 2000-17
- Taranaki Regional Council, (1999a): "Methanex New Zealand Limited Motunui Groundwater Monitoring Report, 1 January 1998 to 31 December 1998". Technical Report 98-99
- Taranaki Regional Council (1999b): "Methanex Waitara Valley Air and Water Resource Consents Monitoring Programme Report for January-December 1998". Technical Report 99-02
- Taranaki Regional Council (1999c): "Methanex Motunui Limited Air and Water Resource Consents Monitoring Programmes Annual Report January – December 1998". Technical Report 99-05
- Taranaki Regional Council, (1998a): "Methanex New Zealand Limited Motunui Groundwater Monitoring Report, 1 January 1997 to 31 December 1997". Technical Report 97-106
- Taranaki Regional Council (1998b): "Methanex Motunui Limited Air and Water Resource Consents Monitoring Programmes Annual Report January 1997 – December 1997". Technical Report 98-02
- Taranaki Regional Council (1998): "Methanex Waitara Valley Air and Water Resource Consents Monitoring Programme Report for January-December 1997". Technical Report 98-03
- Taranaki Regional Council, (1997a): "Methanex New Zealand Limited Motunui Groundwater Monitoring Report, 1 January 1996 to 31 December 1996". Technical Report 97-3

Taranaki Regional Council (1996b): "Methanex Waitara Valley Air and Water Resource Consents Monitoring Programme Report for July 1995 – December 1996". Technical Report 97-06

Taranaki Regional Council (1997c): "Methanex Motunui Limited Air and Water Resource Consents Monitoring Programmes Annual Report July 1995 – December 1996". Technical Report 97-07

Taranaki Regional Council (1996a): "Methanex Motunui Limited Air and Water Resource Consents Monitoring Programmes Annual Report 1994-95". Technical Report 96-4.

Taranaki Regional Council (1996b): "Methanex Waitara Valley Limited Resource Consents Monitoring Programme Annual Report". Technical Report 96-2.

Taranaki Regional Council, (1996c): "Methanex New Zealand Limited Motunui Groundwater Monitoring Report, 1 January 1995 to 31 December 1995". Technical Report 96-3

Taranaki Regional Council, (1995): "Methanex New Zealand Limited Motunui Groundwater Monitoring Report, 1 January 1994 to 31 December 1994", Technical Report 95-4

Taranaki Regional Council, (1994): "Methanex New Zealand Limited Motunui Groundwater Monitoring Report 1 January 1993 to 31 December 1993". Technical Report 94-1

Taranaki Regional Council, (1993): "New Zealand Synthetic Fuels Corporation Limited Groundwater Monitoring Report, 1 January to 31 December 1992". Technical Report 93- 2

Taranaki Regional Council, (1991c): "New Zealand Synthetic Fuels Corporation Limited Groundwater Monitoring Report, 1 July to 31 December 1991". Technical Report 91- 41

Taranaki Regional Council, (1991b): "New Zealand Synthetic Fuels Corporation Limited Groundwater Monitoring Report, 1 January to 30 June 1991". Technical Report 91-10

Taranaki Regional Council, (1991a): "New Zealand Synthetic Fuels Corporation Limited Groundwater Monitoring Report, 1 July to 1 December 1990". Technical Report 91-2

Taranaki Regional Council, (1990): "New Zealand Synthetic Fuels Corporation Limited Groundwater Monitoring Report, 1 January to 30 June 1990". Technical Report 90-28

## **Appendix I**

### **Resource consents held by Methanex Motunui Limited Motunui plant**





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

CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7127  
FAX: 06-765 5097  
www.trc.govt.nz

Please quote our file number  
on all correspondence

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  $\pm 5\%$  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.

Consent 0820-2

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



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<sup>2</sup> for the Waihi Stream tributary, and 294000 m<sup>2</sup> 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.

<b>Constituent</b>	<b>Standard</b>
pH	Within the range 6.0 to 9.5
suspended solids	Concentration not greater than 100 gm <sup>-3</sup>
total recoverable hydrocarbons	Concentration not greater than 5 gm <sup>-3</sup>

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](mailto: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

---

**Director-Resource Management**



Consent 0822-1



**TARANAKI  
REGIONAL  
COUNCIL**  
CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE 06-765 7127  
FAX 06-765 5097

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

Please quote our file number  
on all correspondence

Name of  
Consent Holder: Methanex Motunui Limited  
Private Bag 2011  
NEW PLYMOUTH

Change To  
Conditions Date: 30 March 2005 [Granted: 25 May 1981]



**Conditions of Consent**

Consent Granted: To discharge uncontaminated stormwater from outfalls into the western extremities of the Waihi and other stream catchments at or about GR: Q19:210-455 and Q19:219-454

Expiry Date: 12 March 2012

Review Date(s): March 2007, June 2009

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

Catchment: Waihi  
Manu

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

[www.trc.govt.nz](http://www.trc.govt.nz)

*Working with people • Caring for our environment*

### 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 3660. In the case of any contradiction between the documentation submitted in support of application 3660 and the conditions of this consent, the conditions of this consent shall prevail.
3. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least seven days prior to the exercise of the variation to this consent.
4. That the Grantee of the right shall keep such records as may reasonably be required by the Regional Water Board and shall, if so requested, supply this information to the Regional Water Board. Further, the Grantee shall, at his own expense, if the Regional Water Board so requests, install such measuring devices as are considered reasonably necessary by the Regional Water Board for the acquisition of such records.
5. That this right is granted subject to the Regional Water Board or its servants or agents being permitted access at all reasonable times for the purpose of carrying out inspections and measurements in connection with the right.
6. That this right may be cancelled by notice in writing to the Grantee by the Regional Water Board if the Grantee has not made substantial progress towards exercising this right within three years of the date of the grant of the right.
7. That this right may be terminated by the Regional Water Board upon not less than twelve months notice in writing to the Grantee if, in the opinion of the Regional Water Board, the public interest so requires; but without prejudice to the right of the Grantee to apply for a further right in respect of the same matter.

## Consent 0822-1

8. That the Grantee shall supply to the Regional Water Board for the approval of the Manager plans and specifications of all works associated with the exercise of the right, showing that the special conditions of the right are able to be met, and prior to approval procedures, pre-consultation on techniques, and methods shall take place between the Grantee and the Regional Water Board and where there is dispute as to the techniques and/or methods of implementing an approval, the matter shall be referred for independent arbitration, the arbitration to be conducted in such a manner as the Regional Water Board and the Grantee may agree upon, or failing agreement, in accordance with the Arbitration Act 1908, provided that such arbitration procedure shall not apply to the final approval by the Regional Water Board.
9. That the design and maintenance of any works relating to the right shall be to a standard adequate to meet the conditions of the right, so that neither the works nor the exercise of the right is likely to cause damage to any property or injury to any person.
10. That the full reasonable costs incurred by the Regional Water Board when carrying out supervision, certification and approval procedures be met by the Grantee.
11. That before carrying out any of the conditions involving monitoring, and prior to the commencement of any programme, the Regional Water Board and the Grantee shall confer to enable an agreement to be reached between the Regional Water Board and the Grantee on the said programme, provided that if any dispute arises concerning the matters dealt with in this condition, the dispute shall be referred to an independent arbitrator to be mutually agreed upon, the arbitration to be conducted in such a manner as the Regional Water Board and Grantee may agree upon or, failing agreement, in accordance with the Arbitration Act 1908 subject to the Regional Water Board being able to monitor without prior agreement with the Grantee in the case of emergencies.
12. Subject to special condition 11 above the full reasonable costs incurred by the Taranaki Regional Council or its authorised agents when carrying out monitoring relating to this consent shall be met by the consent holder.
13. Subject to special condition 11 above the full reasonable costs of monitoring relating to this consent required by the Taranaki Regional Council and carried out by the consent holder shall be met by the consent holder.
14. Subject to special condition 11 above the standards, techniques, and methods of monitoring of the consent shall be to the specific approval of the Chief Executive, Taranaki Regional Council.
15. That these general conditions shall not detract in any way from the special conditions hereinafter mentioned.
16. 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 March 2007 and/or June 2009, 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.

Consent 0822-1

17. Any stormwater originating from areas where, in the opinion of the Chief Executive, Taranaki Regional Council, 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.
18. That the Grantee shall be responsible for ensuring that the natural channels of the streams below the stormwater outfall points are capable of coping with the increased volumes of water flowing from the uncontaminated stormwater catchment area.
19. That the Grantee shall be responsible for mitigating any erosion which occurs due to increased flow in the streams caused by the Grantee both in the stream channels and where those streams discharge onto the beach.
20. Any corrective measures applied as a result of special conditions 18 and 19 above shall be to the satisfaction of the Chief Executive, Taranaki Regional Council.
21. That the Grantee shall install a sampling chamber in the main stormwater discharge lines to each outfall.
22. That plans for stormwater design layout and discharge points shall be forwarded to the Manager, Regional Water Board, for his approval three months before construction begins.
23. Within three months of the granting of this consent, the consent holder shall prepare and maintain, and thereafter annually review, a contingency plan, to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining measures and procedures undertaken to prevent spillage or accidental discharge of contaminants in the stormwater catchment, and procedures to be carried out should such a spillage or discharge occur.
24. The following concentrations shall not be exceeded in the discharge:

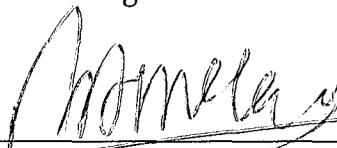
pH (range)	6.5 - 9.3
suspended solids	100 g/m <sup>3</sup>
total recoverable hydrocarbons [infrared spectroscopic technique]	5 g/m <sup>3</sup>
- This condition shall apply to the uncontaminated stormwater prior to entry into the body of water commonly known as the "Duck Pond" and the unnamed tributaries of the Waihi Stream at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.
25. 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.

Consent 0822-1

26. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the discharge points into the unnamed tributaries 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.

Signed at Stratford on 30 March 2005

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**

CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7127  
FAX: 06-765 5097  
[www.trc.govt.nz](http://www.trc.govt.nz)

Please quote our file number  
on all correspondence

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 Motunui intake facility  
into an unnamed tributary of the Waitara River at or about  
2619942E-6238671N

Expiry Date: 1 June 2021

Review Date(s): June 2015

Site Location: Motunui intake facility, Tikorangi Road, Waitara

Legal Description: Pt Lot 2 DP 12099 Blk IX Waitara SD

Catchment: Waitara

## Consent 0825-3

### 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.

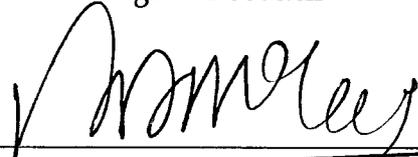
### Special conditions

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 4594. In the case of any contradiction between the documentation submitted in support of application 4594 and the conditions of this consent, the conditions of this consent shall prevail.
3. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the confluence of unnamed tributary and the Waitara River, the discharge shall not give rise to an increase in turbidity of greater than 50% [as determined using NTU (nephelometric turbidity units)], in the receiving waters.
4. 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.

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



~~Director Resource Management~~





CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7127  
FAX: 06-765 5097  
[www.trc.govt.nz](http://www.trc.govt.nz)

Please quote our file number  
on all correspondence

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

Name of  
Consent Holder: Methanex Motunui Limited  
Private Bag 2011  
NEW PLYMOUTH

Consent Granted  
Date: 31 March 2008

**Conditions of Consent**

Consent Granted: To discharge wastewater from the Motunui intake facility  
into an unnamed tributary of the Waitara River at or about  
2619942E-6238671N

Expiry Date: 1 June 2021

Review Date(s): June 2015

Site Location: Motunui Intake Station, Tikorangi Road, Waitara

Legal Description: Pt Lot 2 DP 12099 Blk IX Waitara SD

Catchment: Waitara

**General conditions**

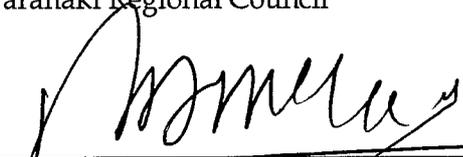
- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, 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 maximum daily discharge shall not exceed 1000 cubic metres per day.
- 2. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 3. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 4595. In the case of any contradiction between the documentation submitted in support of application 4595 and the conditions of this consent, the conditions of this consent shall prevail.
- 4. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the confluence of the unnamed tributary with the Waitara River, the discharge shall not give rise to an increase in turbidity of greater than 50% [as determined using NTU (nephelometric turbidity units)], in the receiving waters.
- 5. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 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



---

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  $\pm 5\%$  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.

<u>Constituent</u>	<u>Standard</u>
Chemical oxygen demand	concentration no greater than 200 gm <sup>-3</sup>
Hydrocarbons	concentration no greater than 10gm <sup>-3</sup>
Methanol	concentration no greater than 15 gm <sup>-3</sup>
Copper	concentration no greater than 0.5 gm <sup>-3</sup>
Nickel	concentration no greater than 1.0 gm <sup>-3</sup>
Zinc	concentration no greater than 1.0 gm <sup>-3</sup>

- 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 31<sup>st</sup> March each year and covering the previous calendar year period.

## Consent 3400-2

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**

CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7127  
FAX: 06-765 5097  
www.trc.govt.nz

Please quote our file number  
on all correspondence

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

### 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;

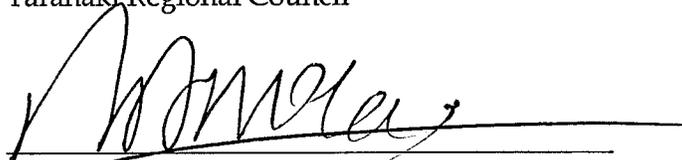
- b) be provided to the Chief Executive, Taranaki Regional within 12 months of the commencement of this consent [in accordance with Section 116 of the Resource Management Act 1991] and at intervals not exceeding 5 years thereafter;
  - c) detail the: costs; expected levels of reduction in adverse effects; 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<sup>3</sup> 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<sup>3</sup> [average exposure over any period of eight hours or longer], or 30 mg/m<sup>3</sup> [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<sup>3</sup> [one hour average], or 100 ug/m<sup>3</sup> [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



**Director-Resource Management**



## **Appendix II**

### **Resource consents held by Methanex Motunui Limited Waitara Valley Plant**





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

CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7127  
FAX: 06-765 5097  
www.trc.govt.nz

Please quote our file number  
on all correspondence

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*

## Consent 0801-2

### 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  $\pm 5\%$  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.

Consent 0801-2

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



Director Resource Management





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

CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7127  
FAX: 06-765 5097  
[www.trc.govt.nz](http://www.trc.govt.nz)

Please quote our file number  
on all correspondence

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

## Consent 0802-2

### 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:

<u>Constituent</u>	<u>Standard</u>
pH (range)	6.0-9.0
suspended solids	100 gm <sup>-3</sup>
hydrocarbons	15 gm <sup>-3</sup>
methanol	15 gm <sup>-3</sup>

Consent 0802-2

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



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  $\pm 5\%$  and make these records available to the Chief Executive, Taranaki Regional Council in a digital format compatible with Council software, no later than 20<sup>th</sup> 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:

<u>Constituent</u>	<u>Standard</u>
Chemical oxygen demand	concentration no greater than 200 gm <sup>-3</sup>
Hydrocarbons	concentration no greater than 10 gm <sup>-3</sup>
Methanol	concentration no greater than 15 gm <sup>-3</sup>
Ammonia	concentration no greater than 200 gm <sup>-3</sup>
Copper	concentration no greater than 0.5 gm <sup>-3</sup>
Nickel	concentration no greater than 1.0 gm <sup>-3</sup>
Zinc	concentration no greater than 2.0 gm <sup>-3</sup>

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	Control 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.

## Consent 3399-2

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 31<sup>st</sup> 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.

Consent 3399-2

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

---

**Director-Resource Management**





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

CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE 06-765 7127  
FAX 06-765 5097

Please quote our file number  
on all correspondence

Name of  
Consent Holder: Methanex Motunui Limited  
Private Bag 2011  
NEW PLYMOUTH

Consent Granted  
Date: 14 May 2003

**Conditions of Consent**

Consent Granted: To construct and maintain a rock groyne in the Waitara  
River to control against further river bed degradation at or  
about GR: Q19:185-405

Expiry Date: 1 June 2021

Review Date(s): June 2009, June 2015

Site Location: Pump Station, Mamaku Road, Waitara

Legal Description: River Reserve 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. That the consent holder shall notify the Consents Section of the Taranaki Regional Council at least 24 hours prior to any maintenance works which would involve disturbance of, or deposition to the riverbed, or discharges to water.
- 2. That the structures authorised by this consent shall be removed and the area reinstated, if and when the structures are no longer required. The consent holder shall notify the Consents Section of the Taranaki Regional Council at least 48 hours prior to structure removal and reinstatement.
- 3. 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 2009 and/or 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.

Transferred at Stratford on 26 April 2005

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**

CHIEF EXECUTIVE  
PRIVATE BAG 713  
47 CLOTEN ROAD  
STRATFORD  
NEW ZEALAND  
PHONE: 06-765 7127  
FAX: 06-765 5097  
www.trc.govt.nz

Please quote our file number  
on all correspondence

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<sup>3</sup> 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<sup>3</sup> [average exposure over any period of eight hours or longer], or 30 mg/m<sup>3</sup> [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<sup>3</sup> [one hour average], or 100 ug/m<sup>3</sup> [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.

Consent 4045-3

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

  
\_\_\_\_\_  
Director-Resource Management

## **Appendix III**

**Hydrograph for the Waitara River  
at Bertrand Road for the monitoring period  
January 2010 to June 2013**



Hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2010

Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2010. The consent limit of  $4.6\text{m}^3/\text{s}$  is shown as a red line. At no point during 2010 did the flow in the Waitara River at Bertrand Road fall below  $4.6\text{m}^3/\text{m}$ .

Hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2011

Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2011. The consent limit of  $4.6\text{m}^3/\text{s}$  is shown as a red line. At no point during 2011 did the flow in the Waitara River at Bertrand Road fall below  $4.6\text{m}^3/\text{m}$ .

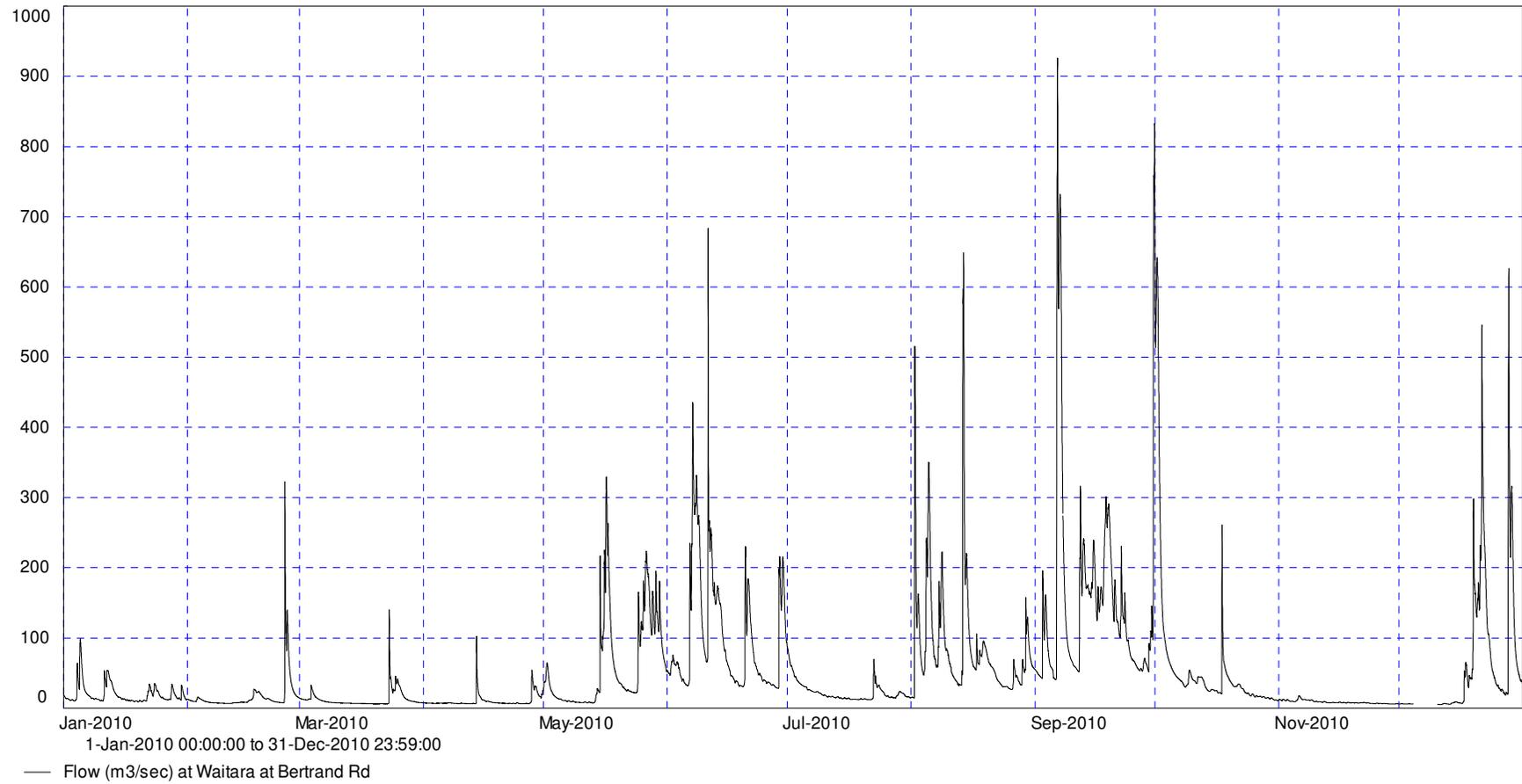
Hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2012

Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2012. The consent limit of  $4.6\text{m}^3/\text{s}$  is shown as a red line. At no point during 2012 did the flow in the Waitara River at Bertrand Road fall below  $4.6\text{m}^3/\text{m}$ .

Hydrograph showing the flow of the Waitara River at Bertrand Road January to June 2013

Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to June 2013. The consent limit of  $4.6\text{m}^3/\text{s}$  is shown as a red line. At no point during 2013 did the flow in the Waitara River at Bertrand Road fall below  $4.6\text{m}^3/\text{m}$ .

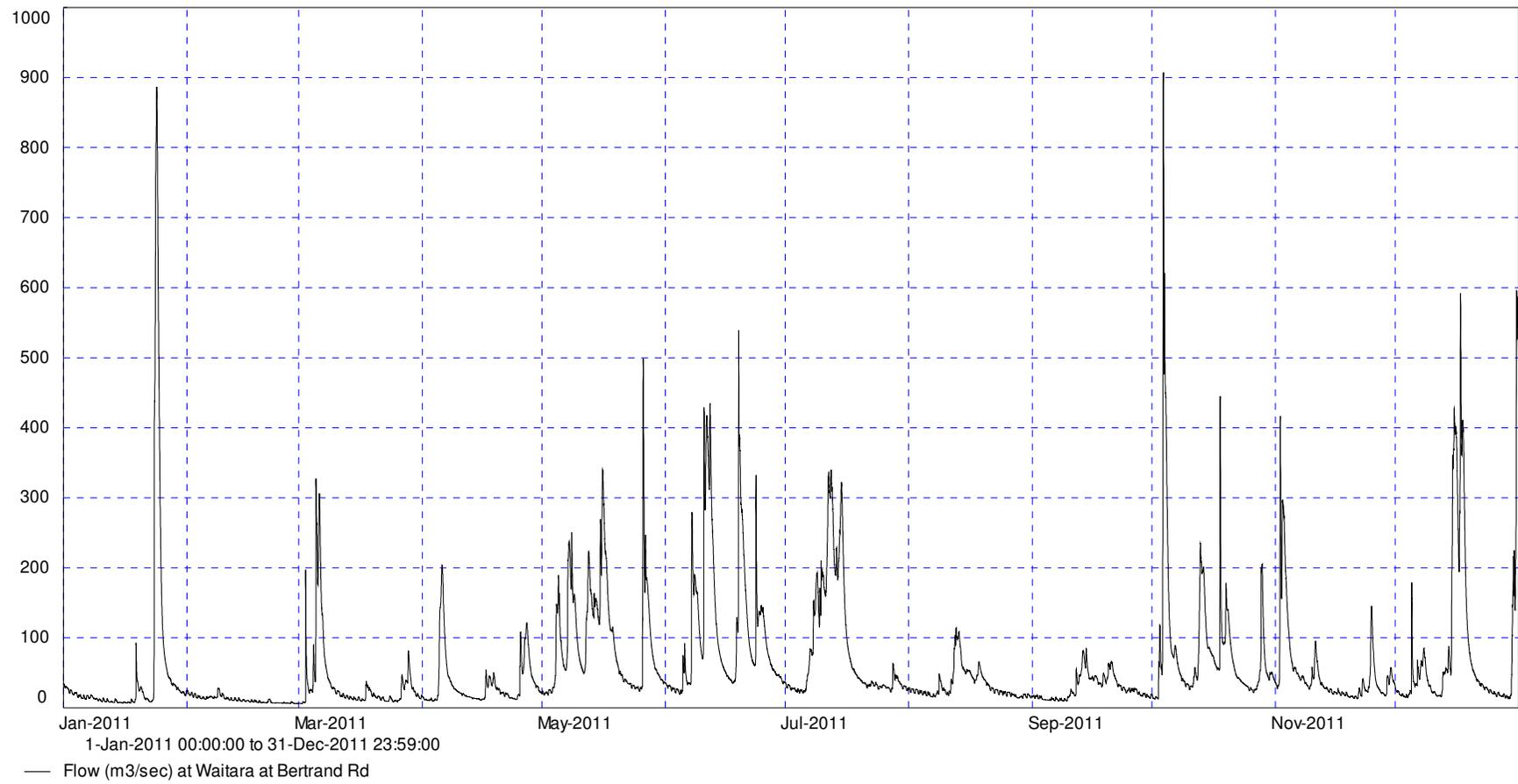




Hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2010



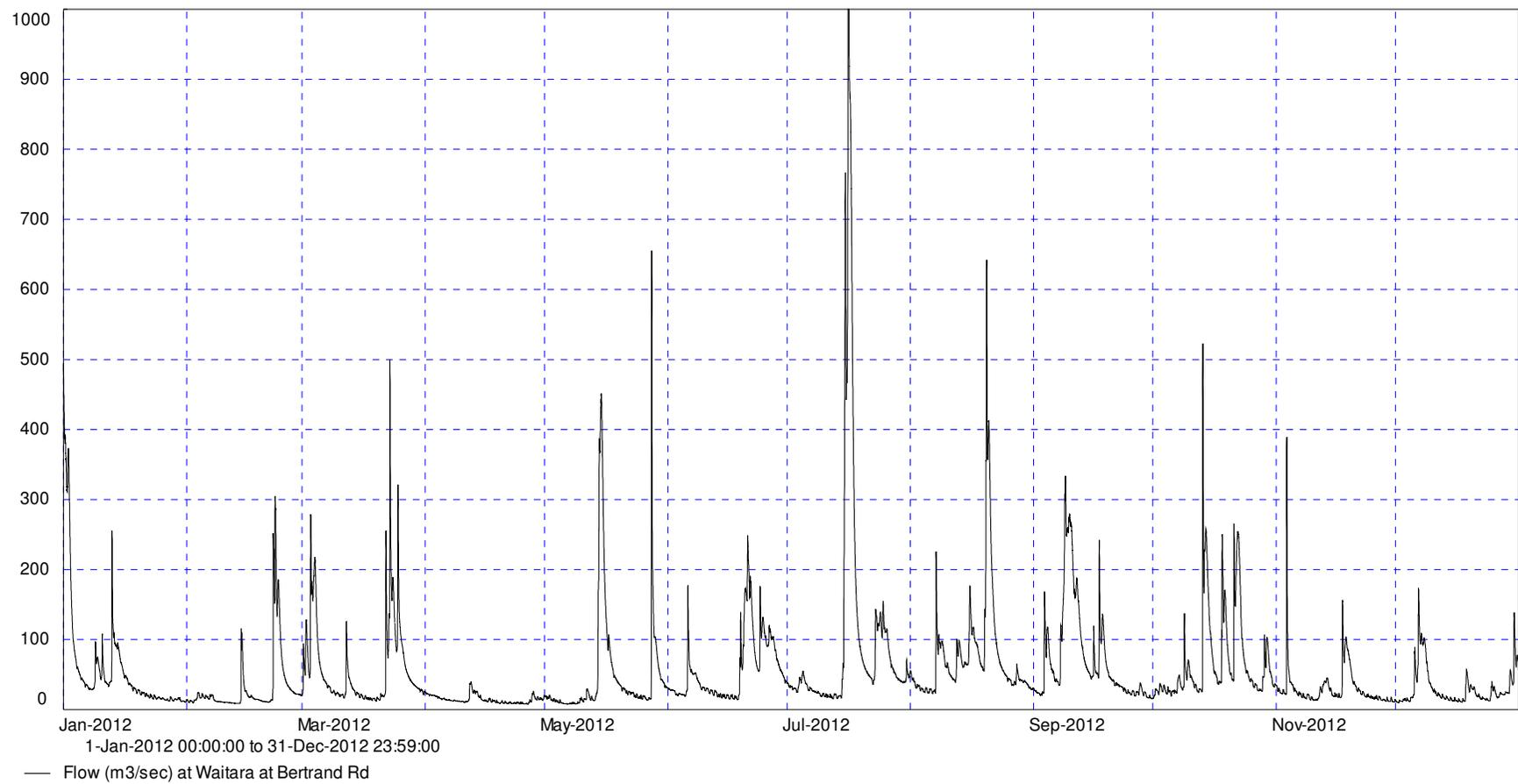
Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2010. The consent limit of 4.6m<sup>3</sup>/s is shown as a red line. At no point during 2010 did the flow in the Waitara River at Bertrand Road fall below 4.6m<sup>3</sup>/m.



Hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2011



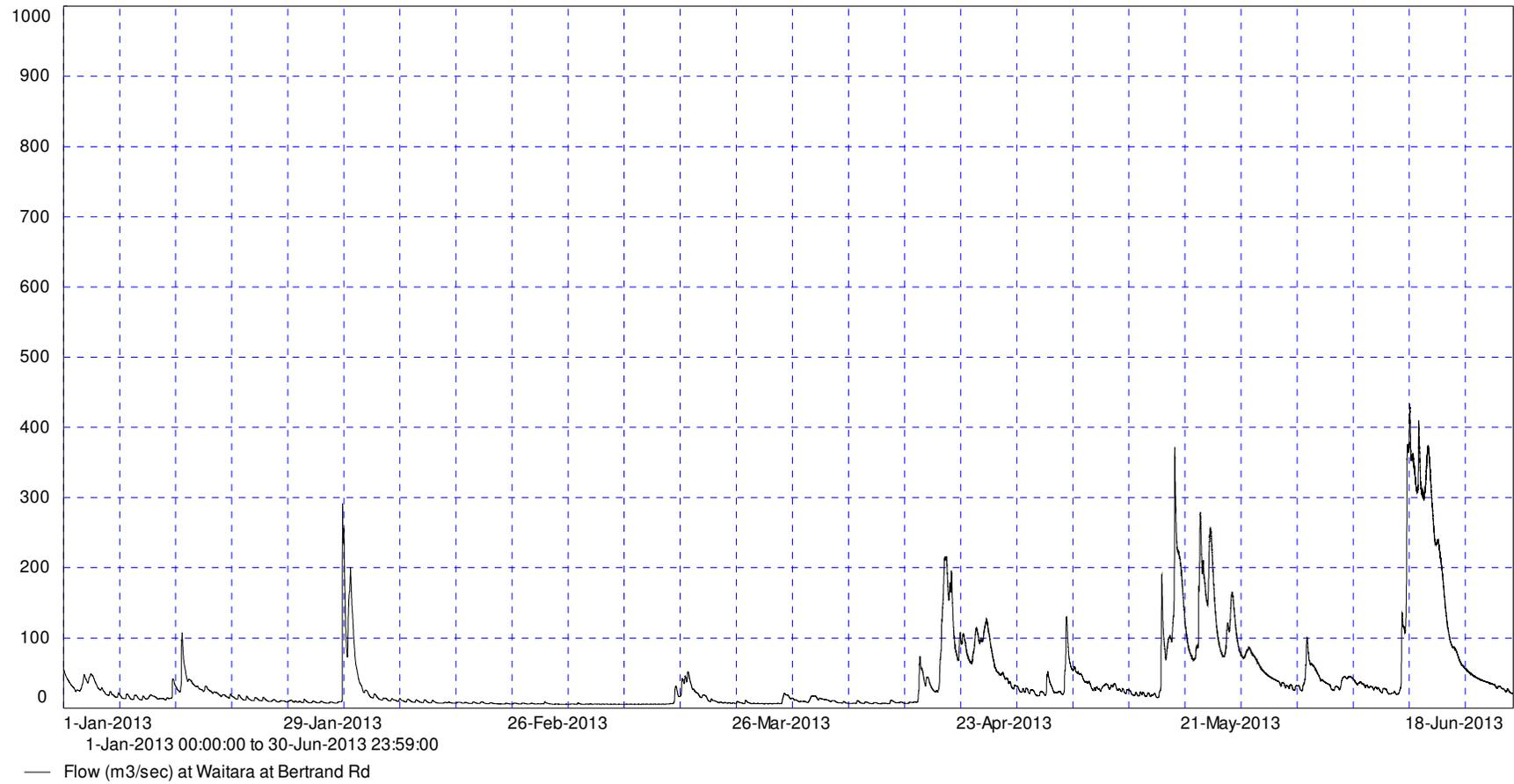
Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2011. The consent limit of 4.6m<sup>3</sup>/s is shown as a red line. At no point during 2011 did the flow in the Waitara River at Bertrand Road fall below 4.6m<sup>3</sup>/m.



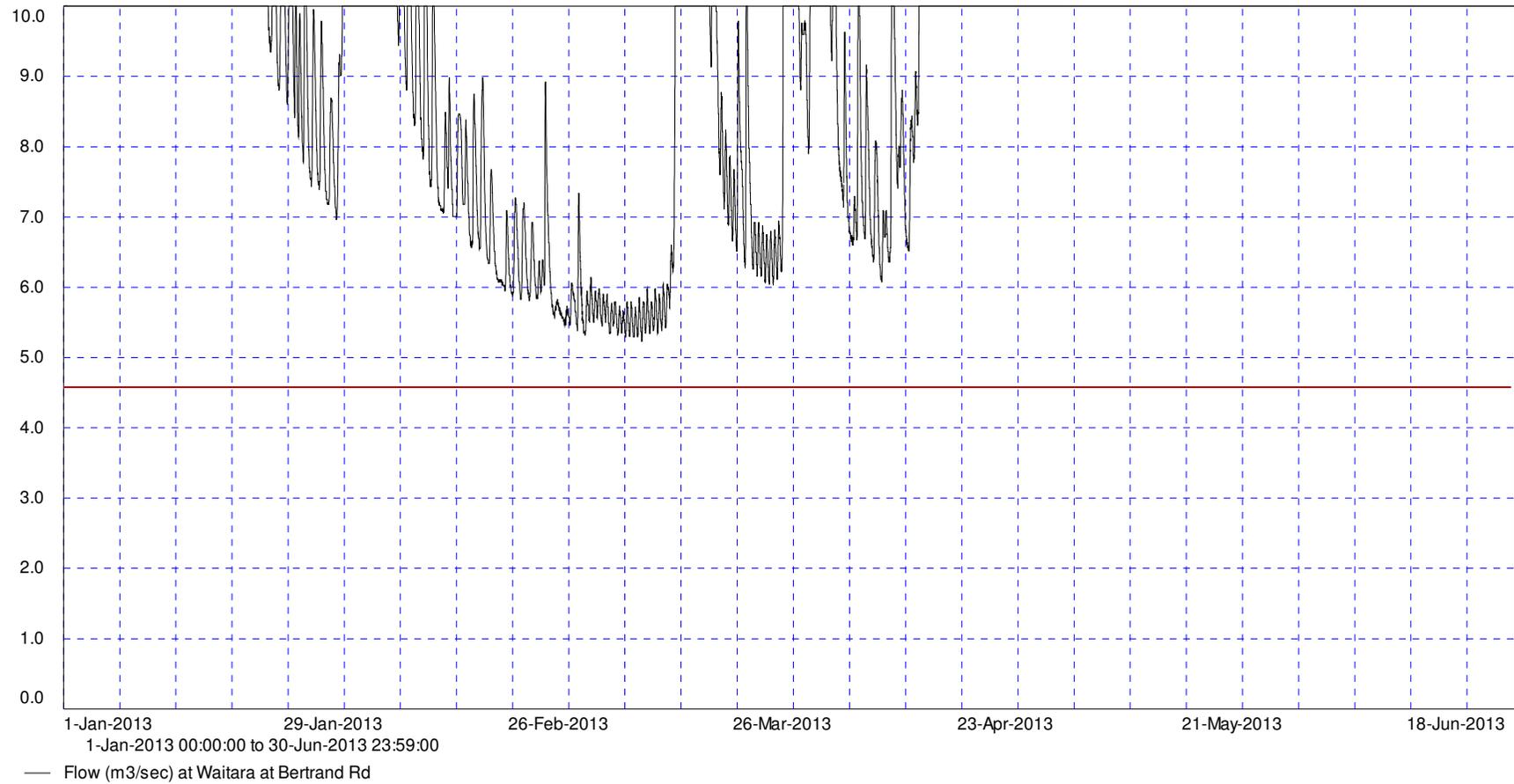
Hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2012



Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to December 2012. The consent limit of 4.6m<sup>3</sup>/s is shown as a red line. At no point during 2012 did the flow in the Waitara River at Bertrand Road fall below 4.6m<sup>3</sup>/m.



Hydrograph showing the flow of the Waitara River at Bertrand Road January to June 2013



Magnified view of the hydrograph showing the flow of the Waitara River at Bertrand Road January to June 2013. The consent limit of 4.6m<sup>3</sup>/s is shown as a red line. At no point during 2013 did the flow in the Waitara River at Bertrand Road fall below 4.6

## **Appendix IV**

### **Methanex Motunui Limited biennial air quality reports for Motunui and Waitara Valley plants 2010 and 2012**



**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

9-Jul-10  
File No: R40 0243

Taranaki Regional Council  
Private Bag 713  
Stratford

Attention: Erin Zydervelt



A Responsible Care® Company

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

### **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

Since the last air emissions report (March 2008), significant changes in Methanex's operation have taken place. The Motunui site was re-commissioned in October 2008, with the Methanol 2 production unit being brought into operation, and methanol production at the Waitara Valley site being shut-down in November 2008. The Waitara Valley methanol product storage tank is still in use, however, with all product that is produced at the Motunui site passing through this tank before being pumped to the Port and Omata storage facilities. Also the truck loading facility at Waitara Valley is still in operation.

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



ISO 9001

## Air Emissions Report

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

No new technologies for reducing emissions from the plants have been identified that are commercially viable. It should be noted that no issues have arisen regarding odorous emissions from either plant since the last report. No complaint has been received from the public, and neither has any objectionable odour been noticeable under ambient conditions within the boundaries of the plants. The cooling tower at Waitara Valley has been shut-down since production ceased, hence there is no effect from a plume from the tower, and a separate report was submitted on the Motunui Cooling Tower in 2009.

### **[B] Inventory of Emissions (excluding carbon dioxide)**

No request from the TRC was received for an inventory of any particular contaminants, however Methanex carried out monitoring and calculation of emissions as per the following tables.

Motunui Methanol 2 Reformer Stack Emissions (analysed 17/5/10)			
	SO <sub>2</sub>	CO	NO <sub>x</sub>
Analysis Result	5.8 mg/m <sup>3</sup>	<0.3 mg/m <sup>3</sup>	360 mg/m <sup>3</sup>
Emission per Tonne of Methanol	0.05kg	-	1.1 kg
Calculated Total Emissions for 2009	42.4 tonnes	-	902 tonnes

Motunui Distillation Topping Column Vent gas (analysed 4/6/10)				
	Tri-Methylamine	Methyl Formate	Di-Methyl Ether	Methanol
Emission per Tonne of Methanol	0.00032 kg	0.235 kg	0.049 kg	0.158 kg
Calculated Total Emissions for 2009	0.28 tonnes	204 tonnes	42.7 tonnes	137 tonnes

Methanol Emissions From Tanks	
Tank	Total Annual Emissions (2009)
Motunui Rundown Tank 1	20 tonnes
Motunui Rundown Tank 2	21 tonnes
Motunui Rundown Tank 3	15 tonnes
Motunui Rundown Tank 4	20 tonnes
Motunui Product Buffer Tank	74 tonnes
Motunui Crude Methanol Tank	1.3 tonnes
Waitara Valley Product Tank	80 tonnes
Road Tanker Loading (Waitara Valley)	0.2 tonnes
<b>Total</b>	<b>231.5 tonnes</b>

Emissions from distillation vents were calculated from Methanex laboratory analysis and emissions from the reformer stack were calculated from analysis carried out by Watercare Services Ltd – Air Quality group, using a Combustion Gas Analyser. These analyses were carried out while the plant was operating at >95% production under stable conditions.

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. 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.

The analysis result submitted by Watercare for SO<sub>2</sub> from the Reformer stack has raised some question. By calculation from the level of sulphur Methanex has analysed in the fuel gas burned, the results should theoretically be 2.1 tonnes for annual emissions. Methanex is in the process of purchasing a new Gas Chromatograph which is specifically designed for trace sulphur analysis and this will be used to further investigate this result, along with carrying out further stack testing.

It is also noted that there is a small utility boiler used on the Motunui site, however this does not currently have a means of safely sampling the flue gas fitted. A sampling point will be fitted during an up-coming outage, and then it is planned to carry out analysis of this emission in Q1 2011.

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

### [C] Ambient Atmospheric Monitoring

As required in the consent, perimeter monitoring for methanol, carbon monoxide and nitrogen dioxide was carried out on the four sides of the Motunui site, with the following results gained:

Ambient Atmospheric Perimeter Sample Results (17/5/10)					
	North	East	South	West	Consent Limit (1 hr average)
Carbon Monoxide	0.07 mg/m <sup>3</sup>	0.13 mg/m <sup>3</sup>	0.09 mg/m <sup>3</sup>	0.11 mg/m <sup>3</sup>	30 mg/m <sup>3</sup>
Nitrogen Dioxide	17.8 ug/m <sup>3</sup>	21.2 ug/m <sup>3</sup>	14.8ug/m <sup>3</sup>	8.4 ug/m <sup>3</sup>	200 ug/m <sup>3</sup>
Methanol	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	9 mg/m <sup>3</sup>

Sampling was carried out by Watercare Services Ltd – Air Quality group, using a PID monitor for methanol and AS/NZS 4313.3:2001 for carbon monoxide and nitrogen oxides. Samples were taken over a 30 minute period at each location and the weather conditions were as follows:

- Wind direction predominantly westerly
- Average wind speed 1.9 m/s
- Ambient pressure 1004.2 hPa
- Average temperature 9.8 °C
- Humidity 71%

No perimeter monitoring was carried out at the Waitara Valley site due to the plant not being in operation.

#### **[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. Some specific projects that have been implemented at the Motunui plant since it was re-commissioned in 2008 which have resulted in energy reduction are:

- Steam saving initiatives, with associated energy savings, in the operation of the distillation plants, boilers and dearators.
- Minimising the number of cooling tower fans in use.

Efficiency measures in other parts of the plant have been identified but do not have sufficient payback under present conditions.

Report Prepared by:



Gary Rielly  
Responsible Care, Environment and Quality Leader

Checked by:



Jayne Francis  
Corporate Resources Director

**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

22-Aug-12  
File No: R40 0243

Taranaki Regional Council  
Private Bag 713  
Stratford

Attention: David Olson

Taranaki Regional Council Document No:  28 AUG 2012  Document No of Copies
---



A Responsible Care® Company

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

**2010/2011 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.

During this reporting period, the Methanol 2 production unit at the Motunui site was Methanex's only methanol production unit in operation, along with the associated two distillation columns used to distill the crude methanol (known as Distillation 3 and 4 units).

While no methanol production was carried out at the Waitara Valley site, the methanol product storage tank was still in use, with all product that is produced at the Motunui site passing through this tank before being pumped to the Port and

Omata storage facilities. The truck loading facility at Waitara Valley was also in operation.

## 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 complaint has been received from the public, and neither has any objectionable odour been noticeable under ambient conditions within the boundaries of the plants during this period. A report which is required on a five yearly basis regarding the Motunui Cooling Tower was last submitted in 2009, and the cooling tower at Waitara Valley has been shut-down since production ceased, hence there are no emissions from it.

It is worthy of note that in the period since this reporting period, Methanex has re-commissioned its other methanol production unit at the Motunui site (Methanol 1 unit). With this increase in production and a very positive predicted future for Methanex's assets, the company is now re-assessing options for reducing or mitigating emissions to identify if they are now economically viable. The initial indications from these investigations are looking quite positive, and Methanex will continue to inform the TRC as the outcomes are known.

### **[B] Inventory of Emissions (excluding carbon dioxide)**

No request from the TRC was received for an inventory of any particular contaminants, however Methanex carried out monitoring and calculation of known emissions as per the following tables.

<b>Motunui Methanol 2 Reformer Stack Emissions (analysed 17/5/10)</b>		
	<b>CO</b>	<b>NO<sub>x</sub></b>
Analysis Result	<0.3 mg/m <sup>3</sup>	360 mg/m <sup>3</sup>
Emission per Tonne of Methanol	-	1.1 kg
Calculated Total Emissions for 2010	-	911 tonnes
Calculated Total Emissions for 2011	-	916 tonnes

<b>Motunui Distillation Topping Column Vent gas (analysed 4/6/10)</b>				
	<b>Tri-Methylamine</b>	<b>Methyl Formate</b>	<b>Di-Methyl Ether</b>	<b>Methanol</b>
Emission per Tonne of Methanol	0.00032 kg	0.235 kg	0.049 kg	0.158 kg
Calculated Total Emissions for 2010	0.26 tonnes	194 tonnes	41 tonnes	131 tonnes
Calculated Total Emissions for 2011	0.27 tonnes	195 tonnes	14 tonnes	132 tonnes

<b>Tank</b>	<b>Annual Methanol Emissions (2010)</b>	<b>Annual Methanol Emissions (2011)</b>
F2006 - Motunui Rundown Tank	20 tonnes	21 tonnes
F2007 - Motunui Rundown Tank	20 tonnes	21 tonnes
F2008 - Motunui Rundown Tank	20 tonnes	20 tonnes
F2009 - Motunui Rundown Tank	20 tonnes	21 tonnes
F2411 - Motunui Product Buffer Tank	76 tonnes	79 tonnes
F2004 - Motunui Crude Methanol Tank	34 tonnes	0 tonnes
I404 - Waitara Valley Product Tank	76 tonnes	47 tonnes
I604A – Omata Product Tank	58 tonnes	73 tonnes
I604B – Omata Product Tank	0 tonnes (Out of Service)	0 tonnes (Out of Service)
I611A – Port Product Tank	80 tonnes	82 tonnes
I611B – Port Product Tank	74 tonnes	74 tonnes
<b>Total Methanol Emissions</b>	<b>478 tonnes</b>	<b>437 tonnes</b>

<b>Loading Operation</b>	<b>Annual Methanol Emissions (2010)</b>	<b>Annual Methanol Emissions (2011)</b>
Ship Loading	109 tonnes	112 tonnes
Road Tanker Loading (Waitara Valley)	0.2 tonnes	0.2 tonnes
<b>Total Methanol Emissions</b>	<b>109 tonnes</b>	<b>112 tonnes</b>

Emissions from distillation vents were calculated from Methanex laboratory analysis and emissions from the reformer stack were calculated from analysis carried out by Watercare Services Ltd – Air Quality group, using a Combustion Gas Analyser. These analyses were carried out while the plant was operating at >95% production under stable conditions.

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 and ship 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. 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.

Methanex is in the process of developing a Gas Chromatography method to carry out in-house sulphur analysis of stack emissions and it is planned to carry out analysis sulphur in emissions from the stacks in our 2012 sampling programme.

It is also noted that there is a small utility boiler used on the Motunui site, however this did not have a means of safely sampling the flue gas fitted. A sampling point has now been fitted and it is also planned to carry out analysis of this emission in our 2012 sampling programme.

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

### [C] Ambient Atmospheric Monitoring

As required in the consent, perimeter monitoring for methanol, carbon monoxide and nitrogen dioxide was carried out annually. This was conducted on the four sides of the Motunui site, with the following results gained:

Ambient Atmospheric Perimeter Sample Results (17/5/10)					
	North	East	South	West	Consent Limit (1 hr average)
<b>Carbon Monoxide</b>	0.07 mg/m <sup>3</sup>	0.13 mg/m <sup>3</sup>	0.09 mg/m <sup>3</sup>	0.11 mg/m <sup>3</sup>	30 mg/m <sup>3</sup>
<b>Nitrogen Dioxide</b>	17.8 ug/m <sup>3</sup>	21.2 ug/m <sup>3</sup>	14.8ug/m <sup>3</sup>	8.4 ug/m <sup>3</sup>	200 ug/m <sup>3</sup>
<b>Methanol</b>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	9 mg/m <sup>3</sup>

The weather conditions were as follows:

- Wind direction predominantly westerly
- Average wind speed 1.9 m/s
- Ambient pressure 1004.2 hPa
- Average temperature 9.8 °C
- Humidity 71%

<b>Ambient Atmospheric Perimeter Sample Results (2/11/11)</b>					
	North	East	South	West	Consent Limit (1 hr average)
<b>Carbon Monoxide</b>	0.34 mg/m <sup>3</sup>	0.34 mg/m <sup>3</sup>	0.35 mg/m <sup>3</sup>	0.36 mg/m <sup>3</sup>	30 mg/m <sup>3</sup>
<b>Nitrogen Dioxide</b>	1.2 ug/m <sup>3</sup>	0.41 ug/m <sup>3</sup>	2.3 ug/m <sup>3</sup>	1.3 ug/m <sup>3</sup>	200 ug/m <sup>3</sup>
<b>Methanol</b>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	<0.35 mg/m <sup>3</sup>	9 mg/m <sup>3</sup>

The weather conditions were as follows:

- Wind gusting - Location 'N': W – NW
  - Location 'E': SSE – SW
  - Location 'S': E – SSE
  - Location 'W': SE - SSE
- Average wind speed 0 – 7.7 m/s
- Ambient pressure 994.2 hPa
- Average temperature 17.2 °C
- Humidity 85 - 93% (Overcast – Heavy Showers)

No perimeter monitoring was carried out at the Waitara Valley site during this reporting period due to the plant not being in operation.

#### **[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. Some specific projects that have been implemented at the Motunui plant since it was re-commissioned in 2008 which have resulted in energy reduction are:

- Steam saving initiatives, with associated energy savings, in the operation of the distillation plants, boilers and dearators.
- Minimising the number of cooling tower fans in use.

Efficiency measures in other parts of the plant were identified during this reporting period, but these were not practical to implement due to the prevailing economic conditions.

With the re-commissioning of the other methanol production unit at the Motunui site (Methanol 1 unit) during 2012, and a very positive predicted future for Methanex's assets, the company is currently re-assessing these options to

identify if they are now economically viable. The initial indications from these investigations are looking quite positive, and Methanex will continue to inform the TRC as the outcomes are known.

Report Prepared by:

A handwritten signature in black ink, appearing to read "Rielly", with a long horizontal stroke extending to the right.

Gary Rielly

Responsible Care, Environment and Quality Leader

## **Appendix V**

### **Methanex Motunui Limited biennial water use reduction reports 2010 and 2012**



**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

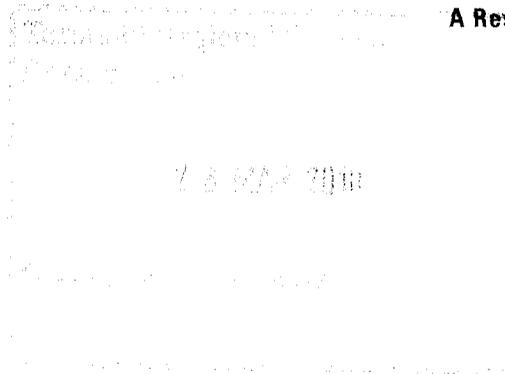


A Responsible Care® Company

March 25, 2010  
File No: R40 0243

Taranaki Regional Council  
Private Bag 713  
Stratford

Attention: Erin Zydervelt



## **2009 BIENNIAL WATER USE REDUCTION REPORT FOR METHANEX NZ LTD. MOTUNUI & WAITARA VALLEY PLANTS**

### **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:**

During this reporting period the Motunui plant produced methanol from one reforming unit from when the site was re-commissioned in October 2008 after a period of approximately three years of being shutdown. The Motunui consent allows for a water take of 1400 cubic meters per hour. Typically the water take over this period was in the range of 500 - 600 cubic meters per hour, much below the allowable rate. This was due to only one of the two reforming units being run, and also to the focus that 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.

Some specific projects that have been implemented during this period that have resulted in water use reductions are:

- Steam saving initiatives (distillation efficiency, main & utilities dearator trimming) have reduced the requirement for demineralised water by approximately 3m<sup>3</sup>/h



ISO 9001

- Improved boiler control with an associated lowering of blow-down rate, creating a saving approximately 0.5m<sup>3</sup>/h
- Minimising number of cooling tower fans in use with an associated reduction in make-up requirement
- Extending De-mineraliser unit run lengths, with an associated reduced number of regenerations with a water saving of approx 0.5m<sup>3</sup>/h for each regeneration cycle.

**- Waitara Valley Plant:**

The Waitara Valley consent allows for a water take of 300 cubic meters per hour; however Methanol production from this site was shutdown in November 2008 and since that time only a very small amount of water has been used for making up the fire-water pond and cooling tower basin due to evaporation losses. Some months this has been needed once or twice, with a quantity of up to approximately 1000 cubic meters having been taken each time, but often there has been no need at all during the month.

### **3. Conclusion**

The use of minimal amounts of water is of importance to Methanex, both from the Responsible Care commitment to ensure the efficient use of resources and from the cost benefits involved. During this reporting period Methanex demonstrated a responsible approach to the use of water and remained well within permitted levels of water extraction from the Waitara river

Report Prepared by:



Gary Rielly  
Responsible Care, Environment and Quality Leader

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



A Responsible Care® Company

August 16, 2012  
File No: R40 0243

Taranaki Regional Council  
Private Bag 713  
Stratford

Attention: David Olson

**BIENNIAL WATER USE REDUCTION REPORT FOR METHANEX NZ LTD.  
MOTUNUI & WAITARA VALLEY PLANTS  
2010/2011 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:**

During the 2010/2011 reporting period the Motunui plant produced methanol from one reforming unit ('Motunui 2'), with the other unit remaining idle. The Motunui consent allows for a water take of 1400 cubic meters per hour. Typically the water take over this period was in the range of 500 - 600 cubic meters per hour, much below the allowable rate. This was due to only one of the two reforming units being run, and also to the focus that 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.

Specific projects that have been implemented during this period that have resulted in water use reductions are:

- Minimising the number of cooling tower fans in use with an associated reduction in make-up requirement. Also the fan blades have all been



ISO 9001

replaced with the best available globally, thereby increasing the energy efficiency of these units.

- Installing new ion-exchange resins in all three of the De-mineraliser units in use, which has increased the run times on each unit from 6500 to 8,000 cubic meters between regeneration cycles, thereby reducing the amount of water required for regenerating the units.

During this period planning was undertaken to replace the dearator in the second reforming unit ('Motunui 1'), if it was re-commissioned, with a unit using the best available technology, which would have benefits in water and energy efficiency and noise reduction. This was consequently acted upon when a decision was made to re-commission the Motunui 1 unit late in 2011. This will be detailed in the next biennial report (2012-13), however it can be noted that the new dearator vents approximately 5 tonnes/hr less steam, making a significant water make up saving. Planning is now under to possibly replace the Methanol 2 dearator in 2013, with the same benefits if this goes ahead.

The potential of recycling a proportion of waste-water back into cooling water make-up is also currently being investigated, which would have significant make-up water savings as well if it is implemented.

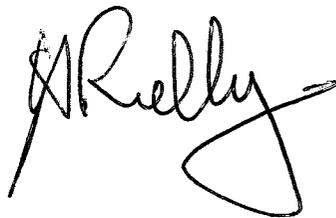
**- Waitara Valley Plant:**

The Waitara Valley consent allows for a water take of 300 cubic meters per hour; however Methanol production from this site was shut-down during the whole of this reporting period, meaning only a very small amount of water has been used for making up the fire-water pond and cooling tower basin due to evaporation losses. Some months this has been needed once or twice, with a quantity of up to approximately 1000 cubic meters having been taken each time, but often there has been no need at all during the month.

### 3. Conclusion

The use of minimal amounts of water is of importance to Methanex, both from the Responsible Care commitment to ensure the efficient use of resources and from the cost benefits involved. During this reporting period Methanex demonstrated a responsible approach to the use of water and remained well within permitted levels of water extraction from the Waitara River.

Report Prepared by:



Gary Rielly  
Responsible Care, Environment and Quality Leader