

Methanex Motunui and Methanex
Waitara Valley Combined
Monitoring Programme
Annual Report
January – December 2005

Technical Report 2006–02

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Executive summary

Methanex Motunui (NZ) Ltd operated a methanol production facility located at Motunui, close to Waitara, in the Waitara River catchment. This production facility ceased operation at the end of November 2004. Methanex Waitara Valley (NZ) Ltd operates a methanol plant located in the Waitara Valley, also in the Waitara catchment. The companies hold resource consents to allow them to abstract surface water, to abstract groundwater, to discharge water, to discharge emissions into the air and to discharge sludge waste to land. This report for the period January - December 2005 describes the monitoring programmes implemented by the Taranaki Regional Council to assess the companies' environmental performances during the period under review, and the results and effects of the companies' activities. This is the fifth time that all activities covered by these consents have been reported in a single document.

At the start of the year under review Methanex Motunui (NZ) Ltd held a total of eleven resource consents relating to the operation of the Motunui plant, which included a total of 123 conditions setting out the requirements that the Company must satisfy. The Company held two consents to allow it to take and use water, one consent to discharge plant effluent into the Tasman Sea, two consents to discharge wastewater and stormwater into a Waitara River tributary, one consent to discharge stormwater into the Waihi and other streams, three consents to discharge emissions into the air, and one to discharge sludge onto land.

At the start of the year under review Methanex Waitara Valley (NZ) Ltd held a total of six resource consents for the operation of the Waitara Valley methanol plant, which included a total of 67 conditions setting out the requirements that the Company must satisfy. The Company held one consent to allow it to take and use water, one consent to divert tributaries of the Waitara River, one consent for a groyne in the Waitara River, one consent to discharge plant effluent into the Tasman Sea, one consent to discharge stormwater into the Waitara River, and one consent to discharge emissions into the air.

Early in 2005 all of the Waitara Valley consents were transferred into the name of Methanex Motunui (NZ) Limited.

The Council's monitoring programme included four site inspections, inter-laboratory comparisons of split stormwater and plant effluent samples, regular monitoring of groundwater levels within a 2 km radius of the Motunui site, and six odour surveys. Methanex provided the Council with monitoring data associated with the Motunui and Waitara Valley surface water abstractions, effluent and stormwater discharges each month.

Officers of the Taranaki Regional Council have noted that, as in previous years, the facilities are well managed, and in general a high standard of housekeeping was maintained at both sites.

Methanex complied in full with the conditions of the Company's consents and demonstrated a high level of environmental performance in relation to the Waitara Valley and Motunui plants.

This report includes recommendations for the 2006 year, including recommendations not to exercise the options to review consents 0822, 4042, 4045, 4543, and 4640, and to liaise with Methanex regarding a review of the conditions, prohibitions and restriction of consent 0820 in December 2006.

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1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is the Annual Report for the period January-December 2005 by the Taranaki Regional Council on the monitoring programmes associated with resource consents held by Methanex Motunui Limited [Motunui] and Methanex Waitara Valley Limited [Waitara Valley]. Methanex Motunui Limited operated a petrochemical plant situated at Motunui, (State Highway 3 north of Waitara), in the Waitara River catchment, and Methanex Waitara Valley Limited operated a methanol production plant situated at Mamaku Road, Waitara Valley, also in the Waitara catchment. In January 2005, all consents for these methanol plants were brought together under the name of Methanex Motunui Limited.

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, discharges to air from both sites, and the abstraction of groundwater and disposal of sludge to land at the Motunui site.

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 Taranaki Regional 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 both water, land and air, and is the sixth combined annual report by the Taranaki Regional Council for both sites, and the fifth to include groundwater abstraction¹.

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 the companies permits.

¹ Previously, separate reports were written for the Motunui and Waitara Valley plants and for the groundwater abstraction at the Motunui site.

Subsection 2 presents the results of monitoring of the Company'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 2006 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 (eg, recreational, cultural, or aesthetic);
- (e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Taranaki Regional Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each 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 1991, 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 Register of incidents

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 register ('unauthorised incident register') includes events where the company concerned has

itself notified the Council. The register contains details of any investigation and corrective action taken.

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

1.1.5 Evaluation of environmental performance

Besides discussing the various details of the performance and extent of compliance by Methanex Motunui and Methanex Waitara Valley 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 trivial (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 year were negligible or minor at most, items of concern were resolved positively, co-operatively, and quickly, the Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices, 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.
- **improvement desirable** indicates that the Council may have been obliged to record a verified unauthorised incident involving significant environmental impacts against the company, and/or abatement notices may have been issued; there were adverse environmental effects arising from activities and intervention by Council staff was required, and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at end of the period under review.
- **poor** performance is used when there were grounds for prosecution or infringement notice

1.2 Resource consents

A list of the consents held by Methanex in relation to the Motunui and Waitara Valey plants are given in Table 1 and Table 2 respectively.

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 three abstraction consents and one consent to divert tributaries of the Waitara River.

Table 1 Consents held in relation to the Motunui plant

Consent	Review date	Expiry date	Purpose	Volume (m ³ /day)
0820	Dec 2006	12 Mar 2009	take from Waitara River	43200
0822	Mar 2007	1 Jun 2012	discharge uncontaminated stormwater to Waihi and other streams	-
0825	-	12 Mar 2009	discharge stormwater from water supply headworks to Waitara River tributary	2000
0827	-	12 Mar 2009	discharge wastewater from water supply headworks to Waitara River tributary	1000
1244	Jul 2005	1 Jun 2009	take groundwater for dewatering of plant site and supply of rural water scheme	5184
1245	Jul 2005	1 Jun 2009	discharge groundwater to Waihi and other streams	5184
3400	-	12 Mar 2008	discharge treated plant effluent and contaminated stormwater to Tasman Sea	12096
4042	-	1 Jun 2009	discharge to air from methanol and gasoline manufacture	-
4543	-	1 Jun 2009	discharge to air from the distillation of Methanol(DIII)	-
4640	-	1 Jun 2009	discharge to air from the distillation of Methanol (DIV)	-
4907	Jun 2009	1 Jun 2015	discharge sludge waste onto and into land	-

Table 2 Consents held in relation to the Waitara Valley plant

Consent	Review date	Expiry date	Purpose	Volume (m ³ /day)
0801	-	25 May 2008	take from Waitara River	8640
0802	Jun 2005	1 June 2008	discharge uncontaminated stormwater from general area to Waitara River	8640
0805	-	1 June 2008	diversion of unnamed tributaries of Waitara River	129600
3399	-	28 May 2008	discharge treated plant effluent and contaminated stormwater to Tasman Sea	5000
3960	Jun 2009	1 June 2021	construct rock groyne in Waitara River	-
4045	-	1 June 2008	discharge to air from methanol plant	-

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 seven water discharge consents.

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 four 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 currently holds one consent for the discharge of contaminants onto land.

1.3 Monitoring programme

1.3.1 Introduction

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

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

The monitoring programme for the Methanex sites consisted of six primary components.

1.3.2 Programme liaison and management

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

1.3.3 Site inspections

The Motunui and Waitara Valley sites were visited four times during the monitoring period for routine compliance monitoring inspections. An additional inspection was undertaken at the Motunui site during the decommissioning phase to observe how the pumping of sludge from the off-spec pond to the sludge lagoons was being managed. With regard to consents for the abstraction of or discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.3.4 Groundwater monitoring

The two automatic monitoring bores were inspected up to twelve times and the eight manual monitoring bores were inspected four times during the monitoring period. During each inspection groundwater levels were recorded and any necessary site maintenance was performed. Sources of data being collected by the resource consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council.

During the monitoring period 1 January 2005 to 31 December 2005 the monitoring programme consisted of collecting data from:

- two continuous groundwater level recorders [M35 and M39];
- eight manual groundwater level sites; and
- one rainfall recorder site [M39];

In the event of low stream flows the monitoring programme also provided for the Taranaki Regional Council to undertake flow gaugings of waterways within the monitoring area to fully assess the level of impact, if any. During 2005, flows were visually assessed and no gaugings were carried out.

1.3.5 Data review

Methanex undertakes a significant amount of self-monitoring, which is reported to Council on a monthly basis. The abstraction rates from the Waitara River for both plants were measured continuously. The methanol plant effluents were monitored for a number of parameters with frequencies ranging from continuously (flow and pH) to monthly (trace metals).

Methanex is required to supply Council with a report every two years addressing air emission issues.

1.3.6 Inter-laboratory comparisons

Once during the monitoring year, samples of the Waitara Valley methanol plant effluent and at the Motunui plant uncontaminated stormwater from the "Duck Pond" and from the discharge to the tributary of the Waihi Stream were taken simultaneously by the Council and Methanex. Both laboratories analysed the samples for parameters relevant to the consents and the results were compared. The second run scheduled for 2005 was delayed until January 2006 due to the temporary shutdown of the Waitara Valley plant for a few months at end of 2005. The results of this monitoring will be reported on in the 2006 report.

1.3.7 Ambient air monitoring

The Taranaki Regional Council conducted six odour surveys at a number of sites in the immediate area around the Methanex Motunui site during the monitoring period. Estimations of odour strengths and characteristics, as well as wind speed and direction, were made at each location.

2. Motunui

2.1 Process description

Until the end of November 2004, methanol was manufactured at the site by the process described below. During the year under review, the main activities at the site were decommissioning the plant, removing hazardous goods and any other potential contaminants.

Methanol manufacture

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

The reformer reaction occurred at a temperature above 900°Celsius. The heat was achieved by burning fuelgas, a mixture of natural gas and waste gases from within the process. Waste heat was recovered for steam generation before the flue gases were discharged to the atmosphere at about 110°Celsius.

The synthesis gas mixture was then compressed and reacted over a second catalyst to form crude methanol. Crude methanol was 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 inplant efficiency increased, then the amount of carbon dioxide emitted as an exhaust gas per unit of product decreased.

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 going out of 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 for treatment 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) are directed by "v" ditches running along side 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.

During the year under review, most hazardous goods were removed from the site and sludge was removed from all the ponds, clarifiers etc into the sludge lagoons. The hazardous goods or potential contaminants that remain on the site are:

- a) Sulphur guard catalyst (zinc oxide);
- b) Reformer catalyst (nickel);
- c) Ion exchange resin in a 12% brine solution;
- d) Transformer oil and small quantities of preservative oil in selected equipment suitable for preservation;
- e) Sludge from the storm pond, off spec pond and blow down pond in the sludge lagoon. It is the intention of Methanex to remove all contaminated silt/sludge from the sludge lagoons to an authorised off site disposal facility. A significant proportion of dried sludge was removed during the year under review. It is estimated that the complete removal of this material is likely to be finished by mid 2006. Therefore some silt/sludge is in the lagoon and it is being removed periodically as it dries sufficiently. On occasion some of the sludge has been placed on the former MTG pad for short duration (1 -2 months) to dry further before being trucked off site.

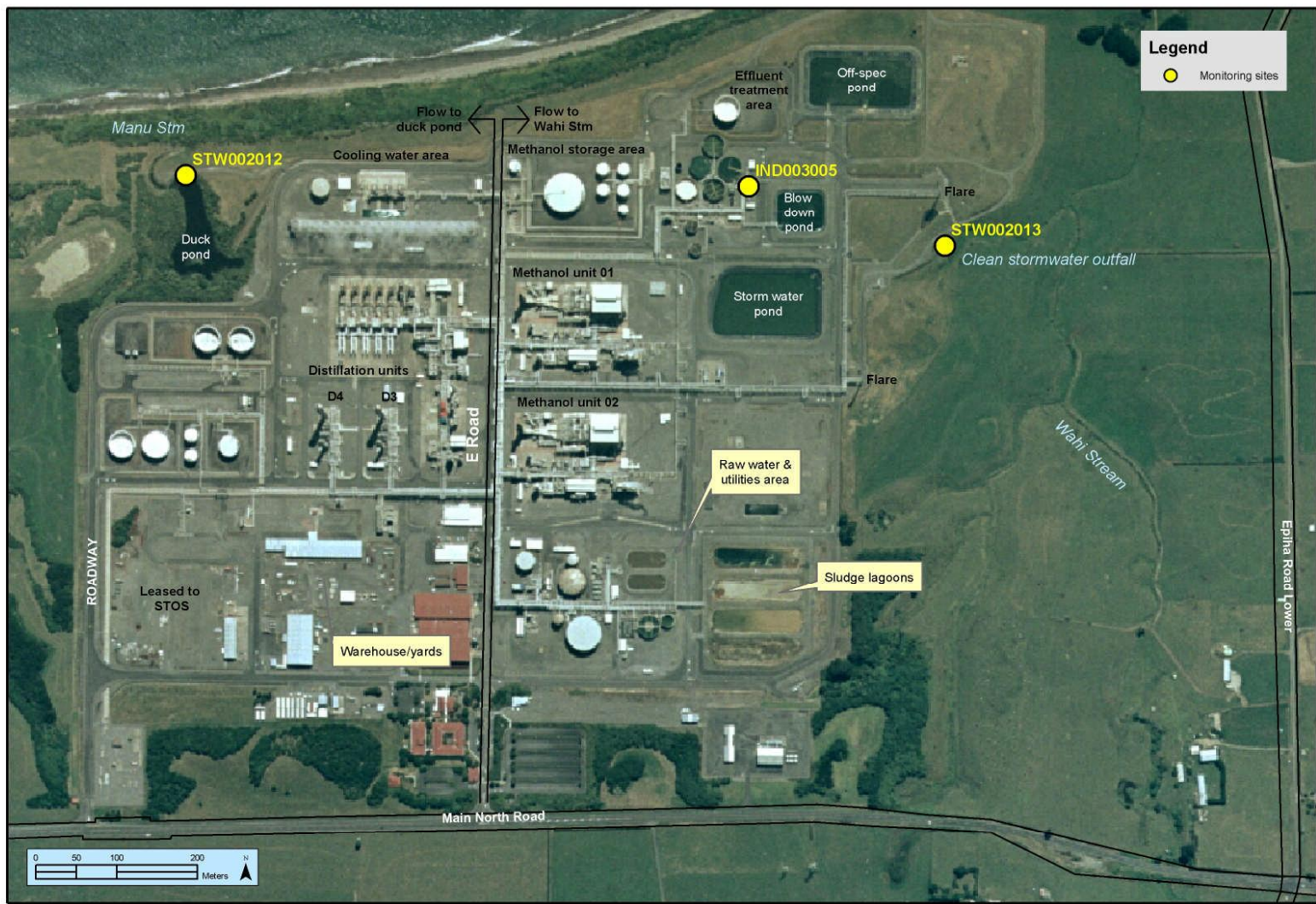


Figure 1 Motunui site layout and water sampling site locations

Once the lay-up of the site was completed and power from the site disconnected uncontaminated stormwater from all developed areas of the site was allowed to drain to the Manu and Waihi Streams. The former processing areas continue to drain into the stormpond, which can overflow into an adjacent clean stormwater “v” ditch and on to the tributary of the Waihi Stream. The walls of the blowdown pond and offspec pond were breached to allow uncontaminated stormwater falling into these ponds to drain to the Waihi Stream catchment.

2.1.2 Emissions to air

The major sources are shown in Figure 2.

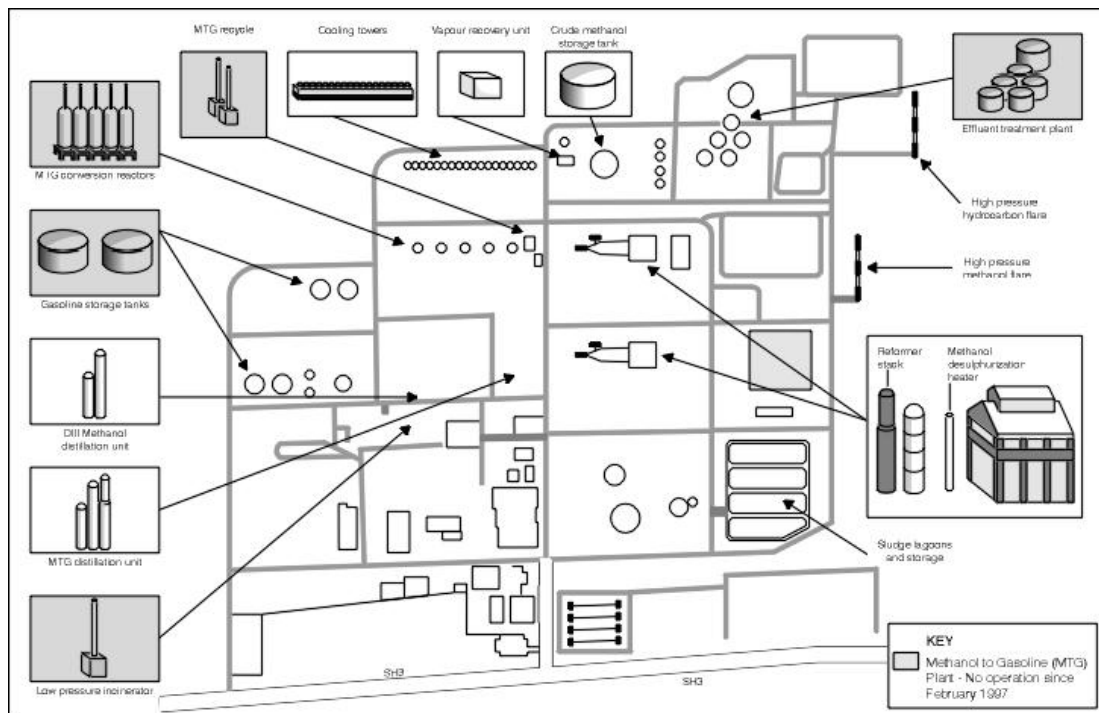


Figure 2 Major process air emission sources at the Motunui plant

The greatest quantities of air discharges from the Methanex complex were emitted from the two reformer stacks. 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, formation of a Production Optimisation group to identify energy savings ideas and oversee their implementation, and continuous monitoring of plant efficiency and energy usage to maintain optimal operation of the plant.

The main potential for air quality issues during the year under review would have been related to odours and dust from sludge transfers and storage.

2.1.3 Solid waste

Sludge from site processes areas e.g. the clarifiers, storm pond, blowdown pond, cooling tower sump and off-spec pond were 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 were disposed of to land in a consented area on land owned by Methanex just outside the 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 developed as part of the Pohukura Production Station. Methanex continue to monitor and manage the disposal area still under their control.

2.2 Resource consents

Methanex holds eleven 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.

The early consents 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.

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.

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

Consent 0820 - Abstraction from Waitara River

Consent 0820 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 expires on 12 March 2009.

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 vary according to the river flow volumes, as measured at the Bertrand Road gauging site 2 kilometres downstream, and are as follows:

- Maximum abstraction rate of 500 litres per second when the Waitara River flow rate is greater than 6000 litres per second.
- Maximum abstraction rate of 370 litres per second when the Waitara River flow rate is less than 6000 litres per second.

Due to the impact of abstractions made by another consent holder further upstream, a 6000 litre per second flow rate in the Waitara River at Bertrand road was set by the Council as the mean daily flow rate.

A variation to consent was granted in December 1986.

There were 13 general conditions for consent 0820 which relate to cancellation, design of work, monitoring and review, and 10 special conditions which relate 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 state 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 8000 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.

Consent 1244 - Abstraction of groundwater

This consent provides for the abstraction of groundwater up to a maximum of 5,184 cubic metres per day (60 litres per second). The purpose of the site de-watering was to minimise the risk of substrate liquefaction in the event of seismic activity.

There are 16 special conditions for consent 1244, which include requirements relating to the design, construction, and maintenance of all works, monitoring and reporting in relation to the exercise of the consent, use of the abstracted water and the situations in which Council can require Methanex to cease abstracting.

In relation to the monitoring undertaken by Council, of particular note are special conditions 9 and 10, which state:

- The Grantee shall record abstraction rates and groundwater levels at the plant site and make the results available as required by the Manager, Regional Water Board.
- The Regional Water Board may monitor the effect of the abstraction of groundwater within two kilometres of the plant and if the Manager, Regional Water Board, considers it reasonable, may monitor it at any greater distance.

Special condition 14 requires that the abstracted water is made available for a domestic and rural supply scheme for local users that may be affected by the abstraction. Some of the abstracted water has in the past been used to supplement the Tikorangi Rural Water Supply Scheme, and has been used to supply a local resident.

Consent 1244 was granted on 1 June 1986, and expires on 1 June 2009.

The Company ceased exercising this consent on 5 December 2004.

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 holds five consents to discharge water, 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. 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 3. Exceeding the set criteria, in any way, sets in motion investigation into potential contamination of stormwater.

Table 3 Uncontaminated stormwater discharge criteria

Parameter	Value
Conductivity @ 25°C	30 mS/m
pH (range)	6.5 - 9.3
Suspended solids	100 g/m ³
Hydrocarbons	5 g/m ³

Methanol production at the plant ceased in November 2004, and during the year under review the Company laid up the site for an undefined period. 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 is not producing, the process and tankage areas will 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 will 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 is due to expire on 1 June 2012.

Conditions 1 to 3 are new and 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 now requires 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 limit 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.

Consent 0825 discharge of stormwater from water supply headworks to Waitara River tributary

Consent 0825 provides for the discharge of up to 2000 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.

There are no special conditions attached to this consent

Consent 0827 discharge of wastewater from water supply headworks to Waitara River tributary

Consent 0827 provides for the discharge of up to 1000 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.

There is one special condition requiring that the timing of scouring or cleaning operations coincide with periods of high turbidity in the river.

Consent 1245 discharge ground water to Waihi and other streams

Consent 1245 provides for the discharge of up to 60 litres per second of groundwater abstracted from beneath the Motunui site to the Waihi and other streams. The consent was granted on 1 January 1986 and is due to expire on 1 June 2009.

There are 16 conditions relating to the circumstances under which Council can limit the exercise of the consent, stream channel capacity and erosion, sampling testing and record keeping, contaminant limits, plans of system design, provision of a contingency plan in case of spillage and review of the consent.

Consent 3400 discharge of plant effluent to Tasman Sea

Coastal consent 3400 provides for the discharge of up to 12096 cubic metres per day of treated wastes from the manufacture of methanol and synthetic gasoline and contaminated stormwater. The discharge is into the Tasman Sea via a pipeline extending about 1250 metres off shore from the Waitara River mouth. The maximum rate of discharge is 140 litres per second. The consent also provides for inclusion of up to 1000 cubic metres per year of treated water draw-off from gasoline storage tanks at the Omata Tank Farm.

There are 14 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

Parameter	Limit	Parameter	Limit
General	Maximum concentration	Water treatment chemicals	Mass discharge
pH	6 - 9	Betz 30K-1251 or equivalent	130 kg/day
Chemical Oxygen Demand	200 g/m ³	Betz 40K-2351 or equivalent	240 kg/day
Hydrocarbons	10 g/m ³	Betz 445 (biodispersant) or equivalent	85 kg/day
Methanol	15 g/m ³	Betz Inhibitor TC or equivalent	110 kg/day
Free residual chlorine	0.2 g/m ³	Betz Slimicide C-74 or equivalent	120 kg/day
Copper	0.5 g/m ³	Betz Foam-trol 229 or equivalent	10 kg/day
Nickel	1.0 g/m ³		
Zinc	1.0 g/m ³		

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.

Special condition 12 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 13 requires an annual report to be received from the Company on the performance of the effluent disposal system and on compliance with conditions 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 ³ /day
3397	New Plymouth District Council	Domestic/minor industrial and stormwater	11578
3398	Anzco Foods Waitara Limited	Meatworks	12960
3399	Methanex Motunui Limited	Methanol plant (Waitara Valley)	5000
3400	Methanex Motunui Limited	Methanol and synthetic gasoline plant	12096

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.

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

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 three discharge consents, to cover the emissions to air from activities associated with its petrochemical plants at the Motunui site.

Consent 4042 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 Taranaki Regional 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 is due to expire on 1 June 2009.

There are 13 special conditions, which include requirements to keep emissions to a practical minimum and place maximum ambient concentration limits on various gases. There is also 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.

Consent 4543 discharge to air from methanol distillation (DIII)

Methanex holds air consent 4543, to cover the discharge of contaminants into the air from a methanol distillation tower and ancillary facilities at the Motunui site. The

Taranaki Regional Council issued this permit on 26 May 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 is due to expire on 1 June 2009. The consent is due to expire on 1 June 2009.

Consent 4543 was issued as a stand alone consent to cover the addition to the Motunui plant of distillation tower (DIII) to enable the production of chemical grade methanol at the site. There are 10 special conditions, which closely follow those of consent 4042.

Consent 4640 discharge to air from methanol distillation (DIV)

Methanex holds air consent 4640 to cover the discharge of contaminants into the air from a methanol distillation tower (DIV) and ancillary facilities at the Motunui site. The Taranaki Regional Council issued this permit on 22 September 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 is due to expire on 1 June 2009.

Methanex applied to the Council in August 1994 for an air discharge consent for a second distillation tower of the same size and type as that covered by consent 4543. The Council had particular regard to the overall effects of the proposed distillation tower (known as DIV) when operated in conjunction with the activities at the Motunui site controlled by consent 4042, those at the Waitara Valley site controlled by consent 4045 and the DIII tower permitted by consent 4543. Consent 4640 was assessed as a non-notified consent, as no significant adverse effects from the tower's operation on the neighbourhood or environment could be demonstrated. The Council also considered that neighbours would not be affected by emissions to air from the distillation tower.

The consent conditions reflect the level of environmental performance required for consent 4042. The conditions are written to ensure that discharges from the distillation tower, along with similar discharges elsewhere on site, will not give rise to loss of amenity value or harmful ecological effects.

The Resource Management Act has adopted an air quality management approach as a means of promoting the sustainability of natural resources. The approach is concerned with protecting air quality in a given locality, and may achieve this aim by a number of means. These include setting emission standards for contaminants, requiring a certain level of control technology, limiting the siting of particular permissible industries, defining the maximum ground level concentrations of contaminants, and or other means. The primary emphasis is upon controlling off site effects, rather than initially controlling an emission source itself directly.

These permits are attached to this report in Appendix I.

2.2.4 Discharges 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.

Consent 4907 discharge sludge waste onto and into land

Methanex holds discharge permit 4907 to cover the discharge of sludge waste from stormwater, raw water and wastewater treatment plants onto or into 3.8 hectares of land owned by Methanex in the vicinity of the Waipapa Stream, adjacent to the western boundary of the petrochemical plant. This permit was issued by the Taranaki Regional Council on 1 February 1996 as a resource consent under Section 87(e) of the Resource Management Act. A partial transfer of this consent took place on 2 April 2005. It is due to expire on 1 June 2015.

Up to 5000 cubic metres per year was allowed to be discharged during the first three years, and 2000 cubic metres per year thereafter. There are eight special conditions on the consent which address preparation of a management plan, notification of intent to exercise the consent, minimum distance to property boundaries, analysis of dewatered sludge and soil, limits on heavy metals and hydrocarbons, prohibition of adverse effects on water, and review conditions.

The conditions of consent 4907 were changed on 24 October 1997 to allow for the disposal of two additional solid wastes with the sludge. These were spent demineralisation resin and spent zeolite catalyst. The change was not notified as both new components are relatively inert and would comprise less than 5% of the total waste volume. The special conditions on the consent were not changed.

A further change was granted to the conditions of consent 4907 on 28 August 2002. The 'heavy metal' concentrations permitted in the soil for copper, nickel and zinc were changed from the limits specified in the 'Public Health Guidelines for Safe Use of Sewage Effluent on Land' [Department of Health 1992] to those stated in the guidelines for industrial sites developed by the Australian National Environmental Protection Council's (Assessment of Site Contamination) Schedule B (7) a Guideline on Health Based Investigation. During the processing of the application for change to consent, it was identified that the legal descriptions did not accurately describe all the plots of land that were within the boundary of the sludge disposal area and additional legal descriptions were also included in the changes to the consent conditions. In all three special conditions were amended and four additional special conditions were added, with the option to review the conditions of the consent in June 2003. In December 2003 Methanex notified Council that, with the exception of Lot 2 Pt 2B2B2 and Pt 2B3A2, the sludge disposal area had been sold to Shell Todd Oil Services. A partial transfer of the consent to STOS (consent number 6364) took place on 2 April 2005.

The permit is attached to this report in Appendix I.

2.3 Results

2.3.1 Water

2.3.1.1 Site inspections

The Methanex Motunui site was visited five times during the monitoring period. The main points of interest were plant processes with potential or actual discharges to

receiving watercourses, including contaminated stormwater and process wastewaters. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

During the 2005 year routine monitoring inspections were undertaken on 29 March, 28 June, 12 September and 21 December. These inspections are an important part of the monitoring programme, allowing discussion of the Company's resource consents and relevant issues. An additional inspection was undertaken on 13 January 2005 in order to monitor the management of the transfer of potentially contaminated sludge from the off-spec pond, across an area of site that drains directly to the Waihi Stream, to the sludge lagoons.

Routine site inspections covered all aspects of plant operation, including waste treatment and disposal systems, stormwater systems, the effluent monitoring system and chemical dosing systems. A report is written on each inspection.

In general, during each inspection a high standard of housekeeping was observed and all areas were found to be within compliance of the Company's resource consents.

The inspection on 13 January 2005 was undertaken in fine weather with a moderate to strong westerly wind. Sludge pumping was occurring at the time of inspection at a rate of about 30 m³/hr (8 L/s). The sludge was turbid and black at the point of discharge into the lagoon. The water in the lagoon was dark brown/black. Methanex had been pumping on and off for the previous month resolving issues as they arose. The sludge pumping had only got underway properly during the week of the inspection, with the operation being undertaken for 10 hours per day 6 days per week by two men from a contracting company. One man was in the off-spec pond using a front end loader to push the sludge into the pump sump. The other was spraying water recirculated from the lagoon onto the sludge to get it to the right consistency for pumping. This person was also responsible for driving along side the transfer line through the clean stormwater catchment to check for leaks. The inspecting officer was informed that the full length of the line, the two pumps and the out flow at the lagoon were being checked. It was observed that up to approximately 1/20th of the off-spec pond (in the south west corner) had been cleared of sludge and from the crust at the outer edge it could be seen that the depth of the sludge was about 400mm. It was estimated by Methanex staff that the sludge was about 500mm deep in the central area of the pond.

It was noted that there were sandbags available in close proximity to the pipeline, and they had also been placed in areas above the clean storm "v" ditches where the kerbing was missing as a proactive measure.

Evidence of a leak at the small pump about half way down the pipeline was observed. The pump had blown a gasket the day before the inspection. The inspecting officer was informed that the pump had been switched off and the gasket replaced. The area had been sandbagged and a small ponded area (approximately 1m³) of drying sludge could be seen within the sandbagged area. There was sludge residue observed down the bank of the clean stormwater "v" ditch, and in the drain

itself. This extended for approximately 3-5 m in a northerly direction. It was reported that only a small amount of sludge had entered the drain and it was considered that this would have had little, if any, adverse effects during the next rainfall event.

It was considered that the sludge transfer activity was being well managed.

On 29 March it was found that there were no processing activities being undertaken at the site. The inspecting officer was informed that the semi bulk containers in the dangerous goods shed were to be moved to Waitara Valley soon. It was reported that most of the work associated with the site lay-up had been completed. All chemicals/materials (except the above and those identified in the AEE for application 3660 as remaining on site) had been removed from the site and chemical cleans of the storage vessels had been undertaken by the Company's chemical supplier where necessary. It was observed that the ponds and cooling tower had all been de-sludged, with sludge transferred to the sludge lagoons. Management of the sludge was discussed. 160 tonnes of dried sludge from the MTG pad had gone to a licensed offsite location. The rest was to be brought back and placed on the banks of the lagoons when transport became available. This was to be carried out prior to the exercise of the variation to the uncontaminated stormwater consent. The material would then be removed to the offsite disposal facility at a later date. At the time of inspection pond 4 was full of wet sludge from the stormpond, plant 10 aeration basins and clarifiers. Pond 3 contained dry sludge over grown with reed type plants. Pond 2 sludge was dry and cracked. The inspecting officer was informed that this was to be re-piled along the inside banks of the lagoon and that it would be taken to the offsite disposal facility when transport was available. Pond 1 was found to be full to within 500mm of the top with very wet dark sludge. This material included sludge from the off spec pond, blowdown pond and cooling tower basin. The inspecting officer was informed that once pond 2 had been re-piled, the liquid layer from pond 1 was to be decanted over to pond 2 to enhance drying. Once dry, the sludge from pond 1 would also go to the offsite disposal facility. It was found that the water levels at the duck pond and Waihi Stream outlet settlement pond were low. No discharge was occurring to either catchment and it was reported that the Manu Stream was dry. The inspecting officer was informed that the off-spec pond wall was to be breached to allow stormwater falling in the pond to drain freely to the Waihi Stream clean stormwater outfall. It was found that export of waste water to the outfall had not taken place much recently. However as there were intermittent discharges of wastewater from the site, the fridge was still on, the composite sampler was in place and both were found to be in good working order. It was noted that the waste oil area had been cleared except for three drums, which were to be removed soon. The pad was clean and Methanex was to check if the interceptor on the drain from this area had been cleaned. It was found that the crude methanol tank had been emptied and the build-up of waxy material in the base of the tank had been disposed of to a licensed facility.

On 28 June 2005 it was found that consents 0802 (abstraction from Waitara River), 1244 (groundwater abstraction), 1245 (discharge of groundwater), 4543 (DIII air discharge), and 4640 (DIV air discharge) were not being exercised due to plant mothballing and site lay-up. It was reported that the sludge removal from lagoons was an on-going activity. The inspecting officer was informed that a decision had been made not to pursue the option of trying to identify and isolate clean sludge for disposal to land as a permitted activity on site, and that all sludge would now be

disposed of to the offsite disposal facility. It was observed that the sludge in ponds 1 and 4 was still quite wet. At pond 3 the sludge was being dragged up onto the sides to dry although it was estimated that the material would probably not be moved offsite until next summer. It was observed that the depth of sludge in lagoon 3 was approximately 500mm in places and it was therefore considered that some of the elevated metals concentrations found in the Tonkin and Taylor study may have been in samples taken from the clay base. The inspecting officer was informed that at this stage the clay base is likely to remain on-site in the longer term. It was reported that Methanex would be continuing to monitor the quality of the ground water and the amount of stormwater in the lagoons. The Company anticipated that there would be no need to discharge stormwater from within the sludge lagoons. However if the stormwater was found not to be evaporating/soaking away, then it would be tested prior to deciding on appropriate disposal method. It was found that the resin in brine vessels were secure, that the Meth 2 reformer catalyst was secure and that the Meth 1 Sulphur guard under nitrogen pressure was also secure. It was observed that the water level in the stormpond was still more than approx 700mm from the overflow pipe to the clean stormwater drains to the Waihi Stream despite the recent wet weather. The water in the stormpond was clean and clear with no odour, scum, sheen or foam. At the Waihi Stream discharge point it was found that the settling pond and the flow to the tributary was clean and clear with no odour, scum, sheen or foam visible. It was noted that the Waihi Stream tributary was also flowing clean and clear. The boom was found to be in good condition. It was observed that the wall of the off-spec pond had been breached about half way up the bank to allow outflow of rainwater falling in the pond. At the time of inspection the water level was well below this breach and the contents of the pond were clean and clear with no odour scum, sheen or foam. It was observed that the duck pond was clean and clear. The Manu Stream was flowing clean and clear. It was observed that some vegetation had collected in screens, and some silt was observed in the bed of Manu Stream. It was found that a small amount of Waitara Valley sludge had been placed in the waste oil bunded area. The inspecting officer was informed that the Company was using the weigh bridge at Motunui for trucks taking sludge from Waitara Valley to an offsite disposal facility. Over weight material was being off-loaded and this would be going on the last truck load. It was noted that a small amount of sludge had inadvertently been placed on the gravelled area adjacent to the pad. The Company stated that all of the sludge from Waitara Valley would be removed that day. It reported that general housekeeping at the site was excellent. However, the small amount of mud/sludge that had been deposited on roadways from trucks needed to be addressed.

On 12 September 2005 it was reported that the only materials now on site were those given in the AEE for the consent variation. All were found to be secure at the time of inspection. The sludge lagoons were well managed, with no odours in the vicinity. The mud/sludge noted on the roadways at the last inspection had been addressed. The sludge from Waitara Valley was removed and the area that had been used was clean. All ponds were about 1-2 metres below discharge level and in satisfactory condition, however a lot of bird life and droppings were noted particularly at blowdown pond and stormpond.

The booms and screens were satisfactory at the Waihi Stream discharge point and the duck pond. There was a low flow discharging to the Waihi Stream. The pond was clean and clear but there was slight localised foaming in the tributary at the discharge point. The Manu Stream was dry and the duck pond at a very low level.

The water in the duck pond was brown and turbid but there were no odours in the vicinity of the pond.

General housekeeping was excellent and the site was clear of potential contaminants, although the Company was advised that the amount of fouling from birds at the ponds and in the stormwater catchment in the plant areas should be monitored.

On 21 December 2005 it was found that general housekeeping at the site was excellent. All residual hazardous substances were secure. There was only minimal carry over of solids onto the road from the recent removal of sludge to an offsite disposal facility. Approximately 1500 tonnes were removed in the last batch. The exercise was wrapped up due to the onset of wet weather. At the time of inspection the remaining sludge from ponds 2, 3, and 4 was piled on the banks of each pond to aid drying. Pond 1 sludge was still in place and was beginning to dry. No odours were detected down wind of the sludge lagoons. It was noted that the wall of the blowdown pond had been breached to allow this to drain to the adjacent stormwater "v" ditch. The ponds in the Waihi catchment were all approx 1m below overflow depth despite the recent high rainfall. The contents of the ponds were clean and clear with no scums, foams or sheens. There was a discharge to the Waihi tributary. Both the discharge and the tributary were clean and clear. The boom and screens were in good condition. The Manu Stream was flowing. The duck Pond and Manu Stream were both clear but discoloured a dark brown. There was no obvious source of anything that would result in this discolouration on the Methanex controlled site. It may have been due to the low level and lack of flow through the pond for a number of months. Methanex had undertaken their routine sampling that morning and were to forward the results to Council as soon as they were available. No effects were observed at the coast as they would have been masked by the effects of the turbid plume from the Waitara River. The boom and screens at the bottom end of the Duck Pond were in good condition. The inspecting officer was informed that the abstraction of water for the STOS horizontal directional drilling project had finished and that the transfer hoses were to be removed any day. There was a methanol tank on site containing water, and the Company intended to leave it there for the time being.

2.3.1.2 Surface water abstraction monitoring by the Company

The rate of water abstraction from the Waitara River was measured continuously prior to the disconnection of power at the site. Records were kept of daily average and maximum values during this period. Table 6 presents the average and maximum rates for 2005. It is noted that due to the plant shutdown, exercise of this consent occurred on an intermittent basis. The average daily abstraction rates reported in the table only considers the days on which abstraction actually occurred.

Table 6 Summary of Motunui abstraction data for 2005

Month	Abstraction for 2005		
	Number of abstraction days	Average daily L/s	Maximum L/s
January	3	10	75
February	6	15	Not reported*
March	10	6	11

* The data reported is representative of 2000 m³ of raw water taken over 6 days at an average of 6 hours per day. The maximum could not be reported as the flow rate was calculated manually, however the maximum possible of the pumps delivering this water is less than the limit of 500 L/s.

In November and December 2005 water was provided to Shell Todd Oil Services for directional drilling. Between 15 November (17:00) and 17 November (01:30) 8880m³ of water was supplied at an average rate of 58 litres per second. During December 4236m³ was provided.

The maximum allowable rate of abstraction is 500 litres per second for river flows above 6000 litres per second, and 370 litres per second for flows below 6000 litres per second.

During 2005 the abstraction rate did not exceed 500 litres per second, and during the periods that abstraction was occurring, the flow in the Waitara River was above 6000 litres per second.

2.3.1.3 Groundwater abstraction monitoring

Monitoring by Methanex

Resource consent 1244 authorises the abstraction of up to 60 litres per second of groundwater from beneath the Methanex synthetic fuel plant for site dewatering purposes. Special condition 9 of this consent requires the consent holder to keep a record of dewatering bore abstraction rates at the Motunui site.

As part of the plant moth-balling operation, dewatering of the Methanex site ceased on 5 December 2004 and is not expected to recommence in the foreseeable future. As a result, consent 1244 was not exercised during the monitoring period and consequently there were no abstraction records for 2005. The consent holder did, however, monitor the groundwater levels in the on site bores until June 2005.

Monitoring by the Taranaki Regional Council

Groundwater monitoring 2005

During 2005, the Council monitored groundwater levels in the area around the Methanex Motunui plant at ten sites, including two automated continuous recorder sites and eight manually read sites. These sites are described in Table 7 and their locations are shown in Figure 3 and 4. Groundwater levels have been recorded at these sites since the early 1980's and there is now a significant amount of data.

Shallow groundwater in the Motunui area occurs in the Marine Terraces Formation, and is largely unconfined.

Table 7 Methanex Motunui groundwater monitoring site descriptions

Sites	Site code	Well depth (m)	Casing depth (m)	Screened interval (m)
Winter	GND0193	32.8	24.4	-
Rowe B	GND0201	27.4	19.5	-
Hume	GND0202	24.3	19.5	-
Jonas	GND0206	22.6	?	-
Dobson	GND0207	23.6	?	-
Pa	GND0209	28.0	?	-
Hall	GND0210	25.9	?	-
Weston W1 (M35)	GND0211	27.8	-	19.5-22.5
Weston W2	GND0212	26.6	-	21.5-24.5
Weston W3 (M39)	GND0213	21.7	-	17.6-20.6

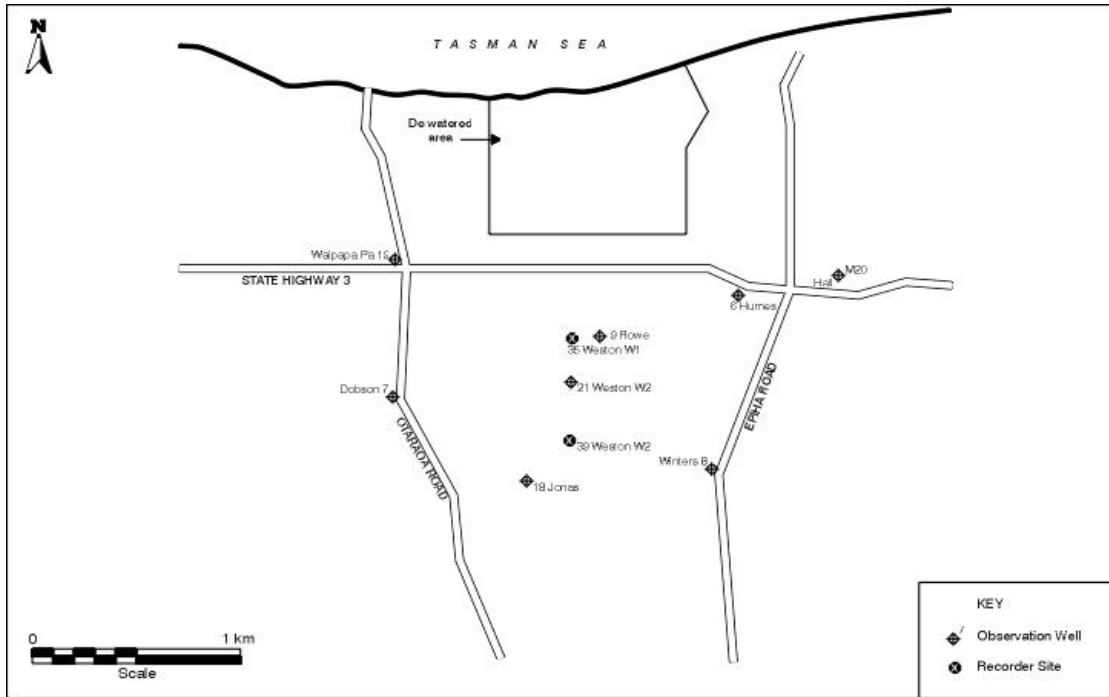


Figure 3 Motunui area groundwater monitoring sites



Figure 4 Aerial photograph of Methanex plant and Motunui area groundwater monitoring sites

During the monitoring period (January-December 2005), inspections and groundwater level measurements were carried out at the eight manually read monitoring sites in February, May, August and November (4 readings per site). The two automated monitoring sites (M35 and M39) were also inspected during the

period. Site M39 was inspected during each month of the year (12 readings), while M35 was inspected during each month from January to August 2005 (8 readings).

On each inspection, groundwater levels were recorded and any necessary site maintenance carried out. Apart from rainfall data not being recorded for July at M39, no problems were noted with any of the monitoring sites in 2005.

In the event of low stream flows, the monitoring programme also provided for the stream flow gaugings to be undertaken within the monitoring area to fully assess the level of impact of, if any, of dewatering of the shallow aquifer in the site area. However, during 2005, stream flows were visually assessed to be normal, and no gaugings were carried out.

Rainfall

At Motunui there is a strong correlation between the amount of rainfall and the level of shallow groundwater (Figure 4). Rainfall infiltration is regarded as the main source of recharge to shallow aquifers in the Motunui area. Higher rates of recharge to these aquifers generally occur during winter and spring when there is higher rainfall and lower rates of evaporation from the land surface due to cooler temperatures.

Consequently, when assessing variations in groundwater levels it is necessary to also consider the effects of rainfall. As dewatering of the Methanex site ceased in December 2004, the residual effects of this activity on groundwater levels was expected to decrease to nil during the 2005 calendar year (section 3.2.2).

Rainfall was measured at an automated recorder (tipping bucket) site located approximately 1 km south of the Methanex plant. The rainfall data are summarised below in Table 8

Table 8 Monthly rainfall figures (mm) for Motunui at M39 - Weston W3

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1998-2005 average	71	100	86	91	166	146	138	87	129	164	94	118	1290
2005 monthly totals	69	86	147	35	311	100	188	50	122	176	34	135	1453
% 2005 monthly totals of historical average	97	86	171	38	187	68	136	57	95	107	36	114	113

Table 8 shows that during 2005, the Motunui area received less than average rainfall for the months of February, April, June, August and November, with 36-86 % of the respective average monthly totals. The area received above average rainfall in March, May, July and December (114-187 %), and near average rainfall in January, September and October. Overall, 2005 was wetter than average by 13 %. A rainfall hydrograph for 2005 is presented in Figure 3.

The two automated groundwater level recorders at Motunui (M35 and M39) were upgraded in January 1997 to provide data telemetry direct to the Council's hydrology unit. Site M35 was decommissioned on 22 August 2005 as a result of a rationalisation of the automated hydro recording network. It was considered that data from this site was adequately represented by site M39.

Figure 5 shows groundwater level data for 2004 at the M39 recorder site. The data from the M35 recorder site are similar and not shown in Figure 5.

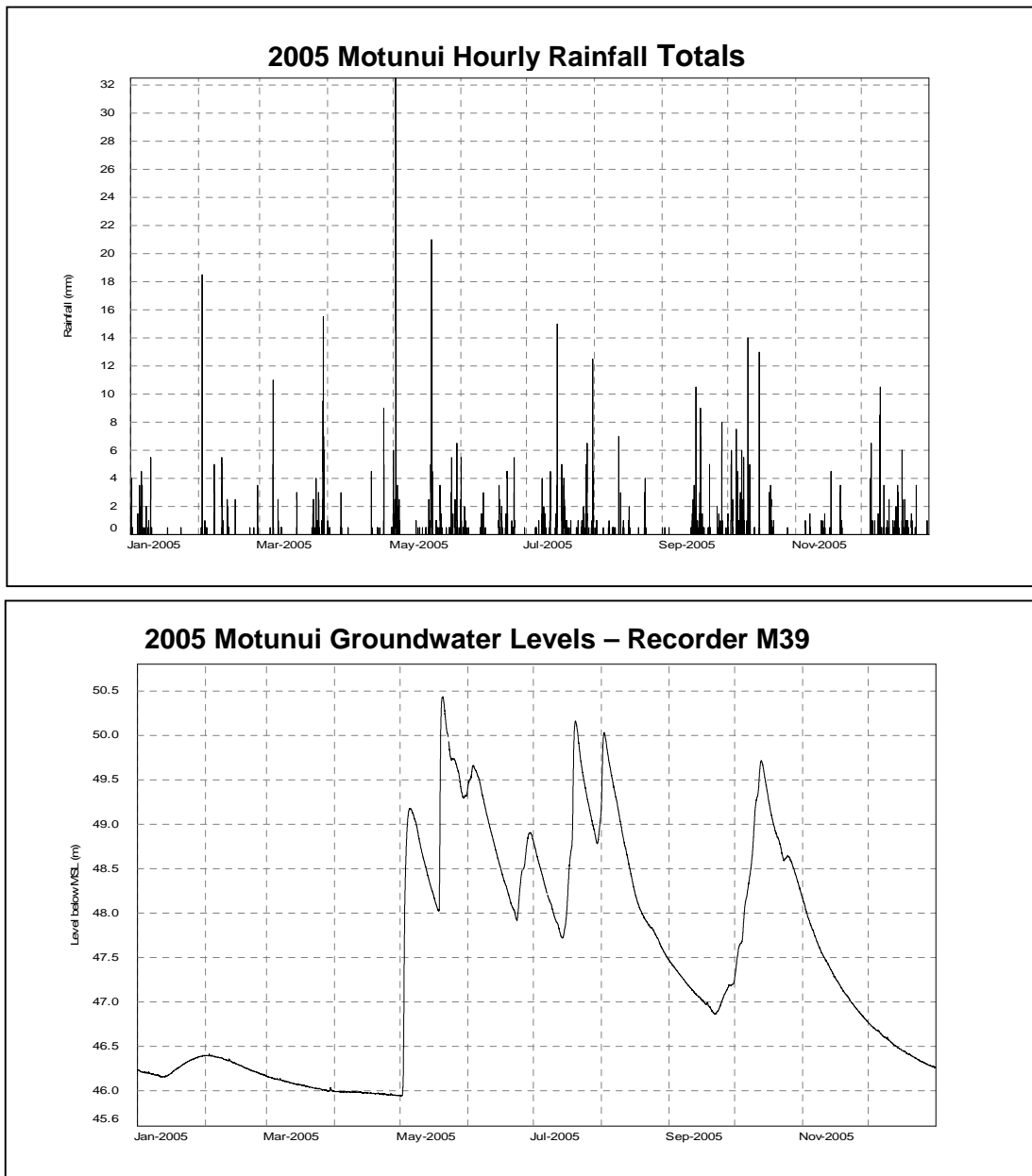


Figure 5 Motunui rainfall totals and groundwater levels (M39).

Groundwater level data for all eight manually monitored sites broadly coincided with the trends shown in the automated recorder site M39.

2.3.1.4 Surface water

Effluent discharges

Wastewater from the Motunui plant was treated and discharged to the Tasman Sea via the Waitara Outfall.

Effluent monitoring data gathered by Methanex was sent to the Council monthly. The data was reviewed by the Council to determine compliance with resource consent conditions. The monitoring data was 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.

Export of effluent from the Motunui site occurred intermittently during January, February and March. The averages and ranges for the analytical parameters reported in Table 9 are the calculated based on the reported results for the days on which export was occurring. Export occurred on only 32 days during the year under review.

Continuous measurement

Flow, pH, chlorine (free residual) and temperature were measured continuously at the effluent monitoring station located at the entry point of the effluent transfer line to the Waitara Outfall. Records of daily maximum, minimum and average values were forwarded to Council and a summary of this data is presented in Table 9. (More detailed records are kept by Methanex, which are accessible to the Council upon request). Although daily minimum and maximum pH's are reported to Council, special condition 9 of consent 3400 states that

“That on the basis of 24-hour flow proportioned composite samples, components of the discharge shall not exceed the following concentrations: pH[range] 6-9...”,

therefore the average daily pH is used for assessing compliance.

There were no average daily pH's reported as being outside the allowed range in 2005.

It is noted that the effluent pumps in use cannot exceed the 140 litres/second limit.

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 3400. A summary of this data is presented in Table 9.

Table 9 Summary of monitoring results from the Motunui plant effluent for 2005

	Unit	Average	Range	Discharge limit	No of exceedances
Continuous measurement					
Flow (maximum daily)	L/ s	56	13 - 95	140	0
pH	-	7.2	6.0 - 7.8	6 - 9	0
Chlorine (free residual)	g/m ³	<0.1	<0.1 - <0.1	-	-
Temperature (daily average)	°C	22.0	18.1 – 27.5	-	-
Daily composite sample					
Chemical Oxygen Demand	g/m ³	2.46	<10 - 140	200	0
Methanol	g/m ³	<2	<2 - <2	15	0
Suspended solids	g/m ³	14.2	<6 - 100	-	-
Monthly analysis of composite sample					
Hydrocarbons	g/m ³	<1	<1 - 1	10	0
Copper	g/m ³	0.05	<0.02 – 0.12	0.5	0

	Unit	Average	Range	Discharge limit	No of exceedances
Nickel	g/m ³	<0.1	<0.1 - <0.1	1.0	0
Zinc	g/m ³	0.14	<0.1 – 0.26	1.0	0
Water treatment chemicals (calculated)					
Betz 30K or equivalent (Floguard POT6101)	kg/day	None used		160	0
Betz 40K or equivalent (Continuum AEC3110)	kg/day			240	0
Betz 445 or equivalent (Spectrus BD1500)	kg/day			85	0
Betz Inhibitor TC or equivalent (Inhibitor AZ8104)	kg/day			110	0
Betz Foamtrol 229 or equivalent (Foamtrol AF2290)	kg/day			10	0
Betz Slimicide C74 or equivalent (Slimicide Spectrus CT1300)	kg/day			120	0

Compliance with conditions on plant effluent composition was achieved throughout 2005.

Contingency plan

In accordance with special condition 12 on Consent 3400, Methanex is required to maintain a comprehensive contingency plan, which would be put into operation in the event of spillage's, accidental discharges or pipeline failure. The Company has in place plans covering both the site and the effluent transfer line received by Council in 1999. The outfall itself is the responsibility of New Plymouth District Council, which is the operator. The Council is implementing a policy of requesting that contingency plans are reviewed on an annual basis. Methanex Motunui were contacted during 2003 and asked for their contingency plan to be reviewed, and a draft contingency plan was received. As production at the site ceased at the end of November 2004, and the pumping of effluent to the outfall was likely to continue on an intermittent basis for only about 4 months the contingency plan for this site was not pursued. This will be addressed if the site becomes operational again.

Uncontaminated stormwater

Uncontaminated stormwater outlets 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'). Groundwater from the plant dewatering was discharged at both outlets.

Weekly grab samples of the 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 pH, suspended solids and hydrocarbon guidelines were incorporated as contaminant limits in the conditions of the varied consent granted on 30 March 2005. The results of the stormwater monitoring for 2005 are summarised in Table 10.

Duck Pond discharge

The quality of the discharge from the Duck Pond was within the agreed guideline/consent limit for uncontaminated stormwater on all monitoring occasions during the year under review.

Table 10 Summary of Motunui stormwater monitoring data for 2005

Parameter	Unit	Range	Guideline value/consent limit
Duck Pond			
Conductivity @ 25°C	mS/m	4.9 – 15.6	30
pH	-	6.6 – 7.6	6.5 - 9.3
Suspended solids	g/m ³	<6 – 48	100
Hydrocarbons	g/m ³	<1 - 1	5
Waihi Stream			
Conductivity @ 25°C	mS/m	4.0 – 19.6	30
pH	-	6.6 – 8.3	6.5 - 9.3
Suspended solids	g/m ³	<6 – 87	100
Hydrocarbons	g/m ³	<1 - <1	5

Waihi Stream

The quality of the Waihi Stream was within the guideline values on all occasions during the year under review.

2.3.1.5 Inter-laboratory comparisons

The Council carried out inter-laboratory comparisons on one occasions during the year under review. The sampling was undertaken on 23 June 2005. The second sampling survey programmed for the 2005 year was delayed until January 2006 due to the temporary shutdown of the Waitara Valley plant at the end of 2005². Split samples were collected from the Duck Pond and the Waihi Stream. These were analysed by Methanex and the Taranaki Regional Council. The results of the inter-laboratory comparisons, which also serve the purpose of compliance monitoring checks, are shown in Table 11.

Table 11 Results of inter-laboratory comparison between Methanex and the Council on Motunui plant stormwater in 2005

Parameter	Unit	23 June 2005				Guideline value/Consent limit
		Duck Pond		Waihi stream		
		Methanex	TRC	Methanex	TRC	
pH	-	7.2	7.1	7.1	7.0	6.5 - 9.3
Conductivity @ 25°C	mS/m	9.6	8.8	14.4	15.1	30
Suspended solids	g/m ³	<6	3	<6	<2	100
Hydrocarbon	g/m ³	<1	<0.5	<1	<0.5	5

² These results will be reported in the Annual Report for 2006.

The water quality criteria for uncontaminated stormwater were met on this monitoring occasion. The inter-laboratory comparisons for Motunui stormwater generally showed good agreement.

2.3.1.6 Methanex Motunui annual report

Condition 13 of consent 3400 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.

The annual report for 2005 was received by Council on 20 March 2006, and fulfils the consent requirements.

The report is attached as Appendix III.

2.3.2 Air

2.3.2.1 Inspections

During the 2005 monitoring year, four scheduled inspections of the Motunui site were completed on 29 March, 28 June, 12 September and 21 December, by an Officer of the Council. Inspections are integrated for air and water related monitoring.

During the year under review the plant was not operating and the main potential air discharge issues would have related to dust and odour from the sludge movement and storage. No effects on the receiving environment beyond the plant perimeter could be determined during any of the inspections from discharges to air.

The inspection on 13 January 2005 was undertaken in fine weather with a moderate to strong westerly wind. Sludge pumping was occurring at the time of inspection at a rate of about 30 m³/hr (8 L/s). There was a strong localised hydrocarbon odour down wind of the lagoon. Methanex odour survey sites 5 and 6 plus an area of Epiha Rd directly down wind of the lagoons were checked. No odours relating to Methanex's activities were detected.

2.3.2.2 Odour monitoring

The Council undertook six odour surveys in the neighbourhood surrounding the Motunui plant, during the 2005 monitoring year. No objectionable or offensive odours associated with the Motunui site were observed during any of the six surveys.

2.3.2.3 Consent requirements

Condition 5 of resource consent 4042, condition 5 of resource consent 4546 and condition 4 of resource consent 4640 require that, every two 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 Motunui site.
- Any other relevant matters.

The report covering 2004 and 2005 was received in March 2006. In summary the report noted the following:

- Carbon dioxide and methanol emissions from the Motunui plant were significantly lower than in recent years as the plant was shutdown for all of 2005.
- Methanol emissions from distillation vents were calculated according to API 2000. There were no methanol emissions from the Motunui plant in 2005 as no production took place at this site. The annual methanol emissions reported by Methanex are displayed in Figure 6.
- No new technologies for reducing the plume from the cooling tower have been developed that are commercially viable, however the cooling tower odour problem has now been virtually eliminated.

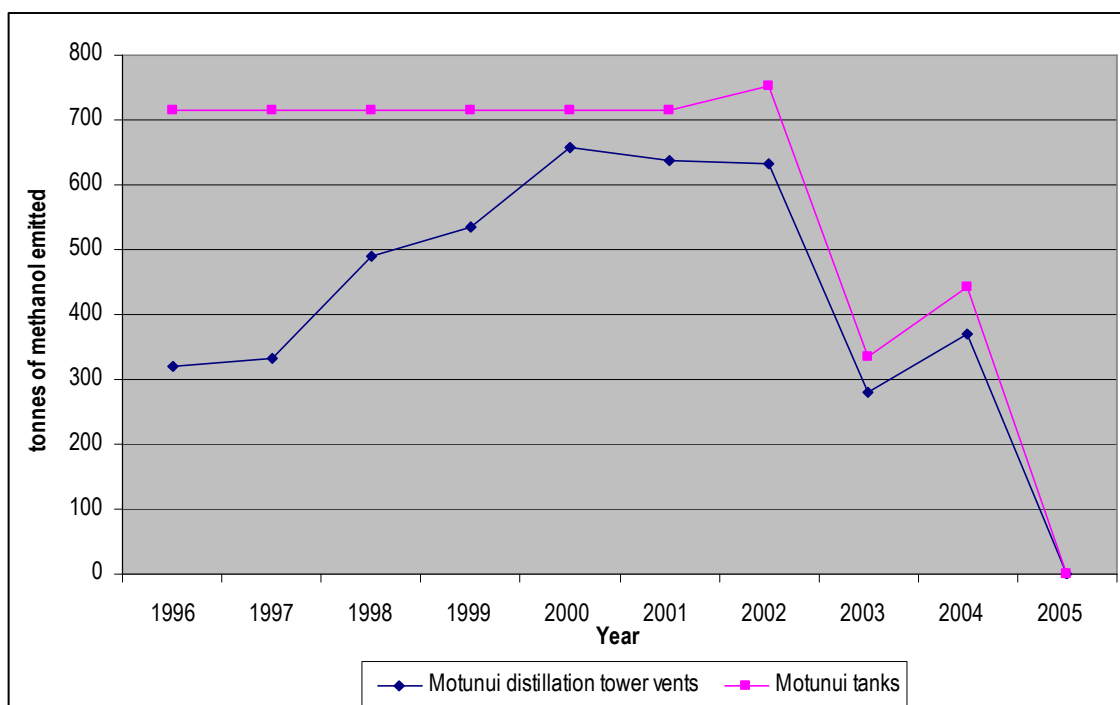


Figure 6 Motunui methanol emissions

2.3.3 Soil

Methanex hold a consent to dispose of approximately 2000 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. Soil sampling has indicated that the soil contains metals at levels above the natural background level of the area and therefore the Company will be required to continue to hold the consent to ensure proper management of the site.

2.3.3.1 Consent reporting requirements

The varied consent granted on 28 August 2002 contained conditions relating to various reporting requirements.

Special condition 1 required that

“Within 3 months of the variation to the consent being granted, the consent holder shall prepare to the satisfaction of the Chief Executive, Taranaki Regional Council, an updated management plan for sludge application showing how the conditions of this consent will be met and the site managed to prevent any use of the disposal area, which may result in the release of contaminants to the environment.”

A satisfactory management plan was received in May 2004.

Special condition 4 requires that

“The consent holder shall provide an analysis of a representative sample of dewatered sludge annually to the satisfaction of the Chief Executive, Taranaki Regional Council.”

No sludge was disposed of to the consented area during the year under review therefore no analysis was required.

Special condition 5 requires that

“The consent holder shall provide annually, analyses of one or more representative samples of soil from the application site and quarterly samples of groundwater to the satisfaction of the Chief Executive, Taranaki Regional Council.”

No soil sampling was undertaken by Methanex during 2005 due to the earthworks being carried in this area by Shell Todd Oil Services (STOS) in the construction of the footprint for the Pohukura Production Station. STOS submitted a management plan, which was accepted by Council and monitored as part of the production station construction programme. The bore tends to run dry during the summer months. Groundwater sampling was undertaken in May, July and September 2005.

2.3.4 Register of incidents

In 2005, there were no incidents recorded by Council that were associated with Methanex’s Motunui plant.

2.4 Discussion

2.4.1 Discussion of plant performance

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

The Company continued to consult with Council on matters associated with the site lay-up where activities were likely to be undertaken that were outside the normal operating activities. The planning and consultation ensured that the lay-up of the site

was very well managed with all potential risks to the environment considered with appropriate monitoring and contingency plans put in place.

The limited surface water abstraction was well managed during the year under review.

The Company achieved a high level of compliance with the conditions on the effluent discharges to the Waitara outfall.

Discharges of uncontaminated stormwater to the Waihi and Manu streams complied with consent conditions during the year under review.

Methanex has a current contingency plan with respect to the operation of the wastewater consent at the Motunui site and the Council received an updated version during 1999. An updated draft contingency plan for the stormwater at the site was received during the year under review. Methanex maintains comprehensive spill contingency equipment on site, and personnel are trained with respect to spill contingency.

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

2.4.2 Environmental effects of exercise of consents

2.4.2.1 Environmental effects of exercise of groundwater abstraction permit

Dewatering of the Methanex site ceased on 5 December 2004 and is not expected to be restarted in the foreseeable future. Consent 1244, which authorises the taking of groundwater from under the Methanex plant for site dewatering purposes, was therefore not exercised during the year under review.

The consent holder did, however, continue to monitor groundwater levels within the plant area until June 2005 to show that levels were recovering. Recovery data were provided for twenty monitoring wells within the plant area, and covered the period January to June 2005. The data showed that groundwater levels in individual wells had recovered between 4.15 m to 9.73 m. At June 2005, the average water level under the site was 9.54 m, which represented 91 % of full recovery. Potentially, the rate of recovery may have been more rapid with higher rainfall in the first few months of 2005 (Table 8 and Figure 5).

Overall, the hydrographs comparing for rainfall and groundwater levels (Figure 5) show that groundwater levels fluctuated in response to rainfall. The groundwater level hydrograph suggests there was a residual effect from site dewatering on levels outside of the Methanex site until May 2005.

It is therefore concluded that the effect of dewatering activities on groundwater levels outside of the Methanex site were insignificant after May 2005.

2.4.2.2 Environmental effects of exercise of water discharge permits

Methanex continued to show good control of the activities permitted by the resource consents associated with the Motunui site.

2.4.2.3 Environmental effects of exercise of air discharge permits

The nature of the activities at the sites now results in little, if any, significant potential for the discharge of contaminants and odours to the air. The controls in place also ensure that there is a low likelihood of adverse effects occurring as a result of the exercise of the Company's air discharge permits, the only one of which that was exercised during the year under review was 4042.

No adverse environmental effects were observed during the year under review.

Neighbourhood effects

Issues associated with odours and loss of visual amenity due to the cooling tower plume were raised during the consent renewal process in 1994. Methanex changed the inhibitor used in the cooling water to a halogen resistant azole in 1998, thereby minimising the odours released in the cooling tower plume. The cooling tower has now not been in operation since the end of November 2004.

During 2005, Methanex continued to show good control of the activities permitted by the air discharge resource consents associated with the Motunui site. No complaints have been received by the Council, nor were any offensive or objectionable odours associated with the Motunui site observed, during the year under review.

Ecological effects

No adverse environmental effects were observed during the year under review.

2.4.2.4 Environmental effects of exercise of permit allowing discharge of wastes to land

No sludge was disposed of to land during the 2005 monitoring period.

No adverse environmental effects were observed in the vicinity of the disposal site during the year under review.

2.4.3 Evaluation of performance

A tabular summary of the Company's compliance record for the year under review is set out in Tables 12-24.

Table 12 Summary of performance for Consent 0820-1 To take water from Waitara River

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Reference to Schedule III of National Development Order which also applies to this consent except as below	refer Table 13 for conditions	
2. Review every 5yrs	Compulsory review due 1 December 2006.	N/A
3. Monitoring and provision of water chloride levels	Data provided until Council deemed it was no longer necessary. Not required during year under review	N/A
4. Prior notification of exercising variation when river flow <8000 L/s	No abstraction at >370 L/s during the year under review	N/A
5. Monthly reporting of abstraction information	Monthly reports received and reviewed	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
6. Monitoring of intake structure to assess impact on fisheries	Monitoring undertaken previously. No further monitoring required during year under review	N/A
7. Modifications to structure if significant impact on fisheries found	No modifications required during year under review	N/A
8. Study to be undertaken to find most suitable method for condition 6	Study and subsequent monitoring carried out previously	N/A
9. Provision of plans/specifications for works for the variation	Submitted previously. Plans on file	N/A
10. Agreement on all methods for conditions requiring monitoring	Methods agreed	Yes
11. Costs of processing to be met before variation exercised	Invoice was paid	N/A

N/A = not applicable

Table 13 Summary of performance for Consent 0820-1 To take water from river National Development (New Zealand Synthetic Fuels Limited) Order 1982

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Install meter and keep and provide records to Council	Monthly reports provided containing daily abstraction rates and volumes	Yes
2.-12. General conditions.	N/A	N/A
13. Review condition - Superseded	N/A	N/A
14. Continuously record abstraction rate (<5% error). Supply data monthly or on demand	Only minor abstraction Jan-March. Monthly reports received and reviewed. Accuracy of meter not confirmed during year under review. Calibration to be undertaken on re-start-	Yes
15. Procedure in place to ensure abstraction rate decreased when necessary.	Liaison with consent holder. Satisfactory procedure in place	Yes
16. Contribution to operating cost of Bertrand Road gauging station	Contribution received	Yes
17. Plans to be approved three months before construction	Plans approved previously. On file	N/A
18. Intake structure to be designed to minimise effects	No significant adverse effects noted	Yes
19. Remedial work required as a result of this consent will be responsibility of consent holder	No works required	N/A
20. Any work required by condition 19 to be to the satisfaction of Council	No works required	N/A
21. Co-operation in long term study	Undertaken previously	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
22. Provision of plants water needs and utilisation	Provided previously	N/A
23. Study into practicability of storing water onsite	Undertaken previously	N/A

N/A = not applicable

Table 14 Summary of performance for Consent 0822-1 Discharge of stormwater into Waihi and Manu Streams (to 29 March 2005)

Condition requirement	Means of monitoring during period under review	Compliance achieved?
a) Record keeping and provision to Council	Monthly reports received	Yes
b) Council access for inspection and measurements	Suitable access arrangements in place	Yes
c) Provision for cancellation if consent not exercised	Consent exercised	N/A
d) Provision for termination of consent	N/A	N/A
e) Provision and approval of plans and specifications	Plans provided (on file) and approved.	Yes
f) Works to be of standard adequate to meet conditions of consent	Observation at inspection and no unauthorised discharges registered	Yes
g) Costs to be met by consent holder	Invoice(s) paid	Yes
h) Agreement on monitoring except in emergencies	Consultation with consent holder	N/A
i) Monitoring costs of Council to be met by consent holder	Invoice(s) paid	Yes
j) Monitoring costs of Company to be met by consent holder	N/A	N/A
k) Approval of all methods used for monitoring	Methods previously approved. No changes during year under review.	Yes
l) General conditions not to detract from special conditions	N/A	N/A
m) Provision for 5 yearly review	Next review March 2007	N/A
1. Stormwater from specific areas and other potentially contaminated areas to be discharged from marine outfall	Drainage plan, inspection and liaison with consent holder	Yes
2. Capability of natural stream channels in dealing with increased flow	No adverse effects noted at inspection	Yes
3. Mitigation of any resulting erosion	No erosion found at inspection	N/A
4. Any corrective measures to satisfaction of Council	No corrective measures required	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
5. Installation of a sampling chamber	Adequate access for sampling	Yes
6. Approval of stormwater design layout plans	Plans provided and approved	Yes
7. Contingency plan for action to be taken in the event of a spillage	Accepted May 1999	Yes

N/A = not applicable

Table 15 Summary of performance for Consent 0822-1 Discharge of stormwater into Waihi and Manu Streams (from 30 March 2005)

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 7 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	N/A	N/A
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 and no unauthorised discharges registered	Yes
10. Processing costs to be met by consent holder	Invoice(s) paid	Yes
11. Agreement on monitoring except in emergencies	Consultation with consent holder	N/A
12. Monitoring costs of Council to be met by consent holder	Invoice(s) 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 year under review.	N/A
15. General conditions not to detract from special conditions	N/A	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
16. Provision for 5 yearly review	Next opportunity for review March 2007. Recommendation that review not required	N/A
17. Stormwater from potentially contaminated areas to be discharged from marine outfall	Drainage plan, inspection and 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 at 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	Draft contingency plan received, Council working with Methanex to refine plan	
24. Limits chemical composition of discharges	Self monitoring, sampling and Interlaboratory 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

N/A = not applicable

Table 16 Summary of performance for Consent 0825-1 Discharge of stormwater into Waitara River unnamed tributary

Condition requirement	Means of monitoring during period under review	Compliance achieved?
No special conditions		N/A

Table 17 Summary of performance for Consent 0827-2 Discharge of wastewater into Waitara River unnamed tributary

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Times scouring and cleaning operations can be performed	Discussion with consent holder	Yes

N/A = not applicable

Table 18 Summary of performance for Consent 1244-1 Abstraction of groundwater

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Compliance with statutory requirements	Consent not exercised during year under review	N/A
2. Provision for limiting exercise of consent	Consent not exercised	N/A
3. Record keeping and provision to Council	Data provided and on file	Yes
4. Approval of all methods used for monitoring	Methods previously agreed	Yes
5. Works to be of standard adequate to meet conditions of consent	Consent not exercised	N/A
6. Provision and approval of plans and specifications	Previously approved	N/A
7. Administration, monitoring and supervision costs to be met by consent holder	Invoice(s) paid	Yes
8. Provision for 5 yearly review	No further opportunities for review	N/A
9. Recording of abstraction rates and on-site water levels	Review of record provided	Yes
10. Council to monitor off-site water levels	Monthly monitoring of bores in the vicinity of site	N/A
11. Annual reporting	Consent not exercised	N/A
12. Approval for specific in-plant use of water	Consent not exercised	N/A
13. Provision of contingency plan	Accepted May 1999	Yes
14. Water to be made available to Council and affected parties	Consent not exercised	N/A
15. Provision of alternative water supply to affected parties	Documentation on file. Agreements reached with affected parties	Yes
16. Costs to be met by consent holder	Invoice(s) paid	Yes

N/A = not applicable

Table 19 Summary of performance for Consent 1245-1 Discharge of groundwater to streams

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Compliance with statutory requirements	Consent not exercised during year under review	N/A
2. Provision for limiting exercise of consent	Consent not exercised since 5 December 2004	N/A
3. Record keeping and provision to Council	N/A – consent not exercised	N/A
4. Approval of all methods used for monitoring	Monitoring methods agreed	Yes
5. Works to be of standard adequate to meet conditions of consent	Inspection	Yes
6. Provision and approval of plans and specifications	Plans received, reviewed and on file	Yes
7. Administration, monitoring and supervision costs to be met by consent holder	Invoices paid	Yes
8. Provision for 5 yearly review	No further opportunities for review	N/A
9. Limits chemical composition of discharges	N/A – consent not exercised	N/A
10. Installation of a sampling chamber	Adequate sampling facilities provided	Yes
11. Capability of natural stream channels in dealing with increased flow	N/A – consent not exercised	N/A
12. Mitigation of any resulting erosion	Inspection. No erosion found	N/A
13. Any corrective measures to satisfaction of Council	None required	N/A
14. Approval of plans/specification of disposal system	Plans received previously, reviewed and on file	N/A
15. Contingency plan to be provided	Accepted May 1999. dewatering discharge now ceased	N/A
16. Provision for monitoring by Council	Access provided on request	Yes

N/A = not applicable

Table 20 Summary of performance for Consent 3400-1 Discharge of effluent and stormwater into Tasman Sea

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Provision for cancellation of consent if not exercised	Consent has been exercised	N/A
2. Provision for termination of consent	No grounds for termination	N/A
3. Plans, specification and maintenance details to be provided on request	Plans received previously, reviewed and on file	N/A
4. Approval of monitoring	Previously approved. Reviewed and agreed annually.	Yes
5. Minimum effluent dilution	Not monitored directly during year under review. From flow rate and study (cond. 6) information provided it can be inferred that compliance was achieved.	Yes
6. Study verifying performance of outfall	On file: Physical hydraulic model done previously to demonstrate dilution would be achieved. Certification that outfall constructed as per design.	N/A
7. Inspections of the outfall	NPDC manages these. Last inspected 22 April 2004. Request to contractor Aug 2005 to conduct another survey.	Yes
8. Maximum discharge of suspended solids	Review of online monitoring data provided	Yes
9. Limits on chemical composition of discharge	Review of analytical information provided in self monitoring monthly reports and interlaboratory comparison	Yes
10. Discharge rate of water treatment chemicals	No chemicals used during year under review, no processing at the site	Yes
10. a) Notification of changes in treatment chemicals	N/A	N/A
11. Alteration of receiving water by plant effluent not permitted	Effects would be of combined discharge, quarterly inspections under separate programme ³ . No complaints received	Yes
11. a) Notification of changes in chemical cleaning agents	No chemicals used during year under review	N/A
12. Implementation of a contingency plan for action to be taken in the event of a spillage	Plan on file. Latest version accepted May 1999. To be updated if plant restarts	Yes
12. a) Provision for review after notification of changes in chemicals	Not required, no changes	N/A

³ Waitara Waste Water Treatment Plant Monitoring Programme Annual Report 2005 Technical Report 2006–03

Condition requirement	Means of monitoring during period under review	Compliance achieved?
13. Annual report on waste disposal system performance and compliance	Report reviewed March 2006	Yes
14. Consult with interested parties in the event of an unauthorised discharge, and remediate effects	No unauthorised discharges recorded	N/A
15. Notification prior to discharge	Conditions relate to a variation in force 19 December 1990 to 31 March 1992 only, therefore they are not relevant to the year under review.	N/A
16. Public warning signs during exercise of consent		N/A
17. Discharge only on outgoing tide		N/A
18. Monitoring of discharges		N/A

N/A = not applicable

Table 21 Summary of performance for Consent 4042-2 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. Multiple discharges from similar processes under consent 4098 not permitted	This consent lapsed in March 1996	N/A
5. Biennial written air discharge reports	Report received and accepted	Yes
6. Maximum ground-level concentrations of methanol beyond site boundary	Plant not operating. Previous monitoring has shown compliance when plant in full operation	Yes
7. Maximum ground-level concentrations of carbon monoxide beyond boundary	Plant not operating. Previous monitoring has shown compliance when plant in full operation	Yes
8. Maximum ground-level concentrations of nitrogen dioxide beyond boundary	Plant not operating. Previous monitoring has shown compliance when plant in full operation	Yes
9. Maximum ground-level concentrations of other contaminants beyond boundary	Plant not operating. Previous monitoring has shown compliance when plant in full operation	Yes
10. Limit on emission of particulates to the atmosphere	Incinerator not operating	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
11. Monitoring of consent	Monitoring carried out as scheduled	Yes
12. Adverse effects on ecosystems not permitted	Inspection of neighbourhood found no adverse effects	Yes
13. Optional review provision – notification within 6 months of receiving report (condition 5)	Recommendation that review not required attached to this report	Yes

N/A = not applicable

Table 22 Summary of performance for Consent 4543-1 Discharge of contaminants into the air from DIII

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption best practicable option to minimise adverse effects on the environment	Inspection showed plant not operating	Yes
2. Minimisation of emissions through control of processes	Inspection showed plant not operating	Yes
3. Consultation prior to alterations to plant or processes	Inspection showed plant not operating	Yes
4. Multiple discharges from similar processes not permitted	Inspection showed plant not operating	Yes
5. Biennial written air discharge reports	Report received and accepted	Yes
6. Maximum ground-level concentrations of methanol beyond boundary	Inspection showed plant not operating	Yes
7. Maximum ground-level concentrations of other contaminants beyond boundary	Inspection showed plant not operating	Yes
8. Monitoring of consent	Site inspections carried out as scheduled	Yes
9. Adverse effects on ecosystems not permitted	Inspection of neighbourhood found no adverse effects	Yes
10. Optional review provision – notification within 6 months of receiving report (condition 5)	Recommendation that review not required attached to this report	Yes

N/A = not applicable

Table 23 Summary of performance for Consent 4640-1 Discharge of contaminants into the air from DIV

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adoption of best practicable option to minimise adverse effects on the environment	Inspection showed plant not operating	Yes
2. Minimisation of emissions through control of processes	Inspection showed plant not operating	Yes
3. Consultation prior to alterations to plant or processes	Inspection showed plant not operating	Yes
4. Biennial written air discharge reports	Report received and accepted	Yes
5. Maximum ground-level concentrations of methanol beyond boundary	Inspection showed plant not operating	Yes
6. Maximum ground-level concentrations of other contaminants beyond boundary	Inspection showed plant not operating	Yes
7. Minimum height of discharge	Stack height acceptable. Inspection showed plant not operating	Yes
8. Monitoring of consent	Site inspections carried out as scheduled	Yes
9. Adverse effects on ecosystems not permitted	Inspection of neighbourhood found no adverse effects	Yes
10. Optional review provision – notification within 6 months of receiving report (condition 5)	Recommendation that review not required attached to this report	Yes

N/A = not applicable

Table 24 Summary of performance for Consent 4907-1 Discharge of waste sludge onto land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Formulation of a management plan for sludge application and site management	Plan received May 2004	Yes
2. Notification when sludge disposal is to take place	Inspection found no further disposal took place	N/A
3. Distance of sludge application from boundary	Inspection found no further disposal took place	N/A
4. Analysis of dewatered sample of sludge	Inspection found no further disposal took place	N/A
5. Soil and groundwater analysis	Groundwater result reviewed. No soil sampling due to earthworks in vicinity by Shell Todd Oil Services	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
6. Limits on 'heavy metal' concentrations	Previous monitoring showed compliance, no new disposal	Yes
7. Discharge cannot cause specified adverse effects in water body	No adverse effects noted at inspection	Yes
8. Optional review provision re environmental effects	Next opportunity for review June 2009	N/A
9. Consent to be exercised in accordance with application	Inspection found area managed in accordance with information submitted	Yes
10. No disposal to occur outside specified area	No disposal took place during year under review	N/A
11. Relocation of soil from the area to comply with Rule 29 Regional Freshwater Plan	No relocation of consent holders material took place	N/A
12. Prior approval required for change in land use which may result in release of contaminants	Inspection and liaison found no change in land use	N/A

N/A = not applicable

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

2.4.4 Recommendations from the 2004 Annual Report

In the 2004 Annual Report, it was recommended:

THAT monitoring of air emissions from the Methanex Motunui plant in the year 2005 continues at the same level as in 2004.

THAT monitoring of groundwater and surface water abstractions and discharges at the Methanex Motunui plant in the year 2005 continues at the same level as in 2004.

THAT the option for a review of resource consents 1244 and 1245 in July 2005, as set out in condition 8 of the consents, not be exercised on the grounds that that recent monitoring has shown that the current special conditions are adequate to control potential adverse effects from the site at this time.

These recommendations were carried out in full.

2.4.5 Alterations to monitoring programmes for 2006

In designing and implementing the monitoring programmes for air and water discharges in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the Resource Management Act, the obligations of the Act in terms of monitoring emissions, discharges and effects, and subsequently reporting to the regional community, the scope of assessments required at the time of renewal of permits, and

the need to maintain a sound understanding of industrial processes within Taranaki emitting to the atmosphere and discharging to the environment.

In the case of Methanex Motunui, the programme for 2005 was unchanged from that for 2004. It is now proposed that for 2006, due to the shutdown of the plant and the completion of the lay-up activities at the site the Council's monitoring programme be reduced to one inspection per year and two compliance monitoring/interlaboratory comparison samplings of the two clean stormwater discharges. A recommendation to this effect is attached to this report.

2.4.6 Exercise of optional review of consent

Condition 2 of resource consent 0820 states all conditions, restrictions and prohibitions on the consent shall be reviewed by the consent holder and Council every five years from the date of the granting of the variation to the consent. The next review falls due in on 1 December 2006. This review is not optional and Council will work with Methanex to review the conditions of the consent in the coming year.

Condition 16 of resource consent 0822 provides for a review during the month of March 2007 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time. Based on the results of monitoring in the year 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.

Resource consents 4024, 4543 and 4640 provide for an optional review of the consent to be notified within 6 months of receiving the biennial air discharge report required by condition 5, 5, and 4 of the respective consents. Condition 11, 10, and 10 of the consents allows the Council to review the conditions of the consent based on the report for the purpose of reviewing the best practicable option, reduce or remove any adverse effects on the environment or to deal with any significant adverse ecological effects on any ecosystems.

Based on contents of the report (received on 21 March 2006), the fact that the activities covered by these consents have ceased, and results of monitoring in the year 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 2.5 of this report.

2.5 Recommendations

THAT monitoring of air emissions from the Methanex Motunui plant in the year 2006 be suspended pending recommencement of processing at the site.

THAT monitoring of groundwater and surface water abstractions in the year 2006 be suspended pending recommencement of these abstractions at the site.

THAT monitoring of discharges at the Methanex Motunui plant in the year 2006 be reduced to one inspection and two stormwater sampling/interlaboratory comparison surveys.

THAT the review of resource consent 0820 on 1 December 2006, as set out in condition 2 of the consent, be exercised on the grounds that the wording of the condition means that the review is compulsory.

THAT the option for review of resource consent 0822 during the month of March 2007, as set out in condition 16 of the consent, not be exercised on the grounds that at the current special conditions are adequate to control potential adverse effects from the site at this time.

THAT the option for a review of resource consents 4042, 4546, and 4640 prior to 23 September 2006, as set out in condition 11, 10 and 10 of the consents, not be exercised on the grounds that the current special conditions are adequate to cover "best practicable option" and control potential adverse effects from the site at this time.

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 has passed to Petrocorp and then to Fletcher Challenge Methanol. In 1994, Fletcher Challenge Methanol sold its interest to Methanex.

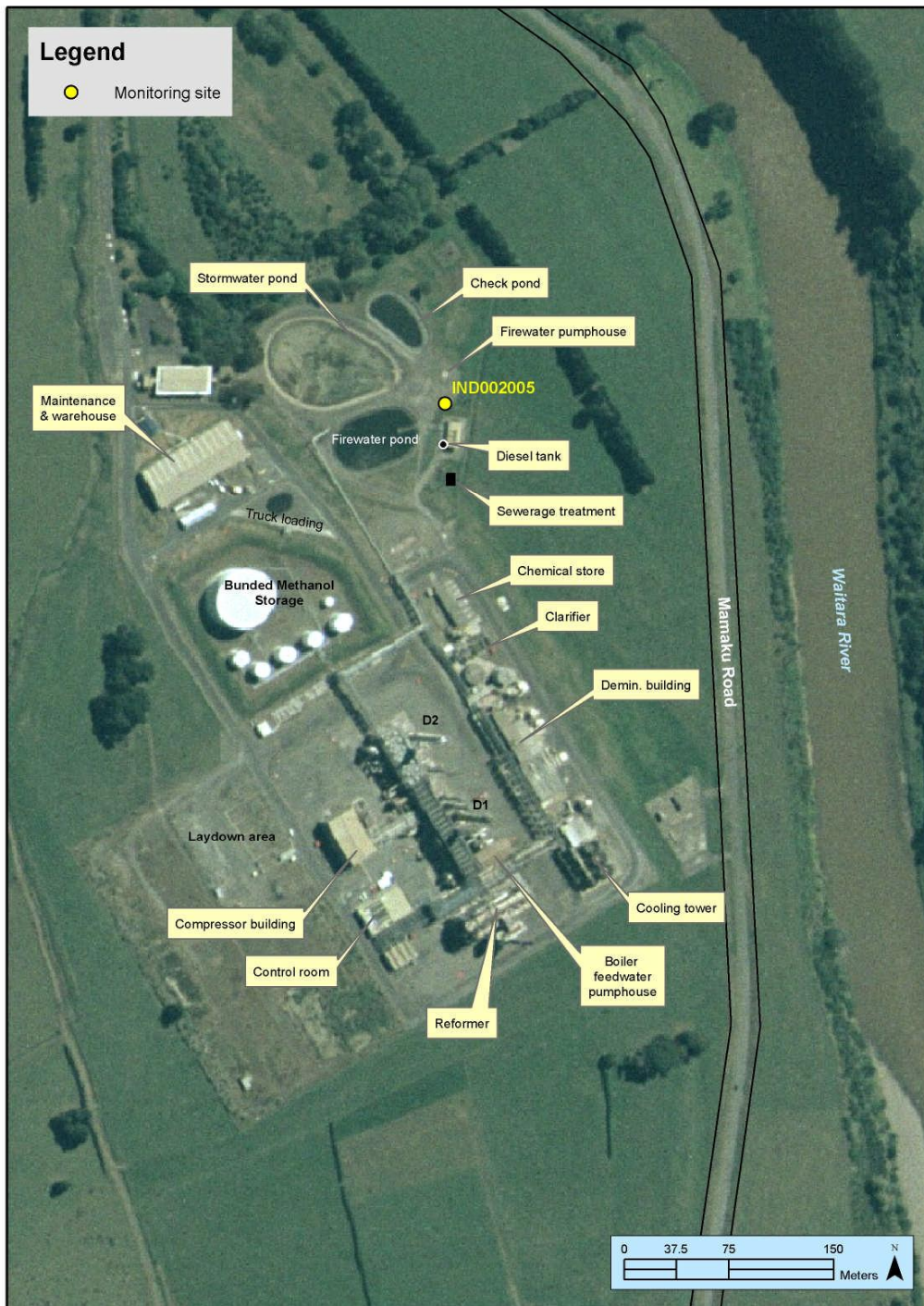


Figure 7 Waitara Valley site layout and water sampling site location

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 is now a 1500 tonne per day methanol production facility, which can 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 is produced via a three-stage process. Feedgas from the off shore Maui field and Kapuni field is desulphurised before the reforming process which produces synthesis gas. Synthesis gas is then converted to crude methanol. The crude methanol is refined by distillation.

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.

Initially the process wastes went to the check pond and were held and tested prior to discharge from the outfall. Stormwater from the site went to the stormpond and was held and tested prior to being batch discharged to the Waitara River. However, it became apparent that there was not sufficient capacity in the check pond, and that there was the potential for the stormwater from some areas of the site to become contaminated. Both the stormpond and checkpond are now used as holding ponds for stormwater and process wastewaters prior to discharge from the outfall. The system allows for wastewater and stormwater to be drained directly to either of these ponds, and for transfers between them. The ponds can also be re-circulated to aid in lowering the methanol concentration by biodegradation when necessary. Discharges to the Waitara River now occur very infrequently and only after consultation with Council.

The main wastewater sources are outlined below:

- Sludge is removed infrequently from the clarifiers and is allowed to settle in the stormpond. The water from this process is discharged via the outfall.
- Naturally occurring dissolved salts in the abstracted river water are removed using ion exchange resins. Process boiler condensates for reuse also go through ion exchangers to remove trace minerals. The resins are regenerated using sulphuric acid and sodium hydroxide. The waste flow is neutralised prior to discharge via the outfall.
- The on-site boilers are fed with demineralised water with added deposit and corrosion control agents. To prevent a build-up of contaminants in the boiler water a portion of the boiler water is continuously removed (blowdown) and replaced with fresh treated water.
- The cooling towers function by the evaporation of treated clarified river water. Dissolved river salts can build up rapidly in the water and therefore substantial

quantities (about one seventh of the volume) is blown down. The cooling water blowdown can contain corrosion inhibitors, dispersants, surfactants, biocides and antifoams.

- Process wastewaters from the methanol plant saturators and miscellaneous wastes from gauge glasses, sample connections, pump pads, vessel drains and the likes.

There is no further treatment of the water prior to discharge from the site. The effluent exported from the site joins into the New Plymouth District Council municipal system prior to the Waitara wastewater treatment plant.

Some pre-treatment of the domestic effluent (primarily aeration) occurs on-site. The domestic waste line joins up with the effluent line close to the Waitara Valley site, and so the domestic effluent is further treated in the Waitara wastewater treatment plant prior to discharge from the ocean outfall.

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 sump under the diesel tank in this area is sampled and tested prior to discharge.

3.1.2 Emissions to air

The principal emissions from the site are:

- 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;
- flue gases from the boiler stacks, which are similar to the above;
- steam emissions from various vents;
- water vapour and water droplets from the cooling tower, which may contain entrained water salts and treatment chemicals; and
- organic vapours (particularly methanol) from the distillation column vents.

There are also minor emissions from the ancillary facilities i.e. minor fugitive emissions, products of combustion from the flare, and occasional odours from the water treatment plant or elsewhere.

Under normal conditions, nitrogen and nitrogen oxides are purged from the reformer. Carbon dioxide, ethanol, acetone, and dimethyl ether are emitted from the distillation towers following their separation from the methanol.

Water droplets and condensing water vapour are emitted from the evaporative cooling towers, while a flare combusts all non-recoverable organic gases and products, emitting carbon dioxide, water vapour, and nitrogen oxides as normal products of combustion.

All pressure safety valves, with the exception of the distillation tower systems, are also routed to the flares. In the case of contingencies the distillation towers would release methanol directly into the atmosphere.

Energy efficiency and usage

The integrated nature of the plant allows for energy recovery and utilisation. At the same time, large amounts of energy are required to drive some of the reaction and refining stages.

The feedstock gas is preheated by excess heat recovered from other parts of the process, before being reformed to synthesis gas by the injection of steam and with additional heat energy generated by burning both natural gas and waste streams. Recovering heat from it to raise steam, to heat boiler feed water, and to drive one of the distillation columns then cools the synthesis gas mixture. The exhaust flue gases also have heat recovered from them, to preheat the feedstock gas and to raise steam.

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

Distillation of the methanol to a chemical grade (high purity) standard requires heat energy, partly supplied from the reformer process. Purge gases and liquids from the distillation process are recovered for further distillation, with any residues ("fusel oil") being burnt in one of the package boilers. The two package boilers on site provide supplementary steam requirements for the distillation units.

3.1.3 Solid wastes

Solid waste is generated at the site from time to time. The main source of this is sludge from the ponds. When the ponds are de-sludged, the material is allowed to dry on-site and is tested so that the appropriate method of disposal can be determined. Uncontaminated sludge has, with Council permission, been used as backfill on the adjacent farmland owned by Methanex. Material not meeting the relevant guidelines has been disposed of at off-site licensed facilities.

3.2 Resource consents

Methanex holds six resource consents for the operation of the Waitara Valley plant. A summary of the requirements imposed by each of the consent is provided in Sections 3.2.1 to 3.2.4 and copies of the resource consents are included in Appendix II.

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.

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 and one consent to divert tributaries of the Waitara River, as described below:

Consent 0801 Abstraction from Waitara River

Waitara Valley holds water consent 0801 to cover the abstraction at two points upstream of the methanol plant, of up to a total of 100 litres per second from the Waitara River, when the river flow is above 2600 litres per second. If the river flow drops below this rate, then the rate of abstraction is limited to 70 litres per second. This total volume of water can be abstracted from either one or both of the old Synfuels and Petrolgas abstraction points. The consent is due to expire on 25 May 2008.

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 13 special conditions for consent 0801, which relate to cancellation and review, design of work, monitoring, measuring the river flow and rates of abstraction and reporting.

Consent 0805 - Diversion of tributaries

Methanex holds water permit 0805 to cover the diversion of surface runoff and certain un-named tributaries of the Waitara River at up to 1500 litres/second in connection with the construction of a methanol plant. This permit was issued by the Taranaki Regional Council on 25 May 1981 under Section 87(d) of the Resource Management Act. It is due to expire on 1 June 2008.

There are 10 special conditions attached to this consent which relate to cancellation, termination, design of work, monitoring and cost recovery.

These permits are 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 - 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). This consent was due to expire in June 2003. A renewed consent was granted on 14 May 2003 and is due to expire on 1 June 2021. The renewed consent now 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.

Consent 0802 discharge of uncontaminated stormwater to the Waitara River

Consent 0802 provides for the discharge of up to 100 litres per second of uncontaminated stormwater to the Waitara River from the plant site. There are 11 special conditions which set out standard inspection, monitoring, review, prohibited effects and maintenance of works provisions. The consent is due to expire on 1 June 2008.

Consent 3399 discharge of plant effluent to Tasman Sea

Waitara Valley holds water discharge consent 3399 to cover the discharge of treated wastes, including process and water treatment wastes and domestic sewage, and contaminated stormwater into the Tasman Sea via an outfall approximately 1250 metres offshore from the Waitara river mouth. This consent provides for the discharge of up to 5000 cubic metres per day, with a maximum discharge rate of 60 litres per second. The consent is due to expire on 25 May 2008.

There are 16 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.

Special conditions 10 and 11 relate to water treatment chemicals that may be present in the discharge. Condition 10 sets limits applicable under normal plant operating conditions, whereas condition 11 relates specifically to limits applicable during cleaning and catalyst changeout.

A change of special conditions 10 and 11 on consent 3399 was granted on 11 March 1997 to allow:

- the discharge of limits for water treatment chemicals to be set on a mass discharge rate (kilograms per day) rather than a concentration (grams per cubic metre of water). This is due to reductions in plant effluent volume, a result of improvements in cooling water treatment technology.

- the discharge of a new water treatment chemical, Betz C-74, a cooling water biocide.
- the use of generic terminology for description of water treatment chemicals. This simplifies the process for approval of new chemicals, particularly where chemicals are replaced with a similar product from another manufacturer.

A further change to special condition 11 was granted on 3 March 1998, to provide for removal of solids that accumulate in the base of the cooling tower. New concentration limits were set for ammonia and suspended solids.

Table 25 Effluent component concentration limits for Waitara Valley

Parameter	Limit	Parameter	Limit
General	Maximum concentration	Water treatment chemicals	Mass discharge rate
pH	6 - 11	Betz 778P or equivalent	100 kg/day
Suspended solids	1000 g/m ³	Betz Liquamine 14 or equivalent	75 kg/day
Hydrocarbons	10 g/m ³	Betz 78000 series or equivalent	150 kg/day
Methanol	15 g/m ³	Betz 5211A or equivalent	50 kg/day
Ammonia	200 g/m ³	Betz 2023 or equivalent	150 kg/day
Copper	1.0 g/m ³	Betz 2040 or equivalent	250 kg/day
Nickel	1.0 g/m ³	Betz 445 or equivalent	150 kg/day
Zinc	2.0 g/m ³	Betz TC or equivalent	100 kg/day
		Betz C-74 or equivalent	50 kg/day

g/m³ grams per cubic metre
kg/day kilograms per day

The effluent limits for the Waitara Valley Plant under normal plant operation are listed in Table 25. 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.

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 the Company 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 discharges to air from methanol plant

Methanex Waitara Valley Limited holds air discharge consent 4045 to cover discharge of emissions into the air from combustion and other activities associated with 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 RMA. A minor variation to remove requirements relating to carbon dioxide emissions was granted on 6 April 2005. The consent is due to expire on 1 June 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 condition 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 monitor the effects of exercising the consent to the satisfaction of the Council.

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

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

This permit is attached to this report in Appendix II.

3.3 Results

3.3.1 Water

3.3.1.1 Site inspections

Officers of the Taranaki Regional Council carried out regular inspections of the Waitara Valley plant during the 2005 year. These inspections are an important part of the monitoring programme, allowing discussion of the Company's resource consents and relevant issues. A report is written on each inspection.

During the 2005 monitoring year, inspections were undertaken on 29 March, 28 June, 12 September and 21 December.

Inspections focused on chemical dosing systems and effluent treatment and monitoring systems. The condition of any visible emissions to the air were 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.

During each inspection a high standard of housekeeping was observed and all areas were found to be within compliance of the Company's resource consents.

On 29 March 2005 it was found that there were no odours in the car park and no visible emissions from the reformer or flare pilot light. Emissions from the cooling tower were barely visible and there was no droplet fall out.

All chemical storage and dosing systems were well managed. The bund valve on the Spectrus CT1300 bund was open. This was closed during the inspection. Action had been taken to repair a minor leak in the acid tank system that had occurred due to corrosion. No adverse effects had resulted from the leak. The raw water area was satisfactory. There was a slight localised chlorine odour in this area. The chemical store was tidy. There was a slight localised amine odour by the shed doorway. The ponds were all satisfactory, with no odours, scum or sheen. The check pond was almost empty and the liner appeared to be in good condition. The composite sampler was working and the pH's were in range. There was no activity in the tanker loadout at the time of inspection. The area was well managed and clear of point sources. The inspecting officer was informed that the facility was used at least once per day.

Sludge from the ponds was being stored on the gravel either side of the catalyst change out bund. This was to be tested before appropriate disposal methods could be decided upon. Methanex were awaiting a quote for the analytical work. It was reported that the results were to be forwarded to Council when they became available. Lay down area was found to be very tidy, and general housekeeping at the site was excellent.

On 28 June 2005 it was found that there were no odours in the car park, and there were no visible emissions from the reformer or flare.

Chemical storage at the boilers, cooling tower and demineralisation area was satisfactory. The cooling tower plume was light and was dispersing above the site. There was a slight intermittent acidic odour downwind of the cooling tower and a slight localised amine odour at the raw water treatment area. The Klaraid PC1192P bund drain valve was found to have been removed, and at the time of inspection this was lying on the ground. The bund was free to drain, but no evidence of leaks or spillage was found. The check pond level was only about 1 metre in depth and the liner looked to be in good condition. Some sludge was evident on the liner just above the water level. Water was discharging into the check pond, but no export to the outfall was occurring at the time of inspection. The composite sampler fridge temperature was noted to be 2.9 °C.

The raised diesel tanks were found to be secure. There was no activity at the tanker loading area, and no evidence of any spills. The mobile diesel tanks were also secure.

It was observed that the majority of sludge that had been stored on the gravel on either side of catalyst change-out area had been removed. At the time of inspection it was noted that there was a thin layer of damp sludge remaining, and that there looked to have been some mixing with the top layer of gravel. The inspecting officer was informed that this was too wet to remove effectively at the time and that Methanex were expecting to ship the remaining material to the off-site disposal facility during the summer months. It was observed that an operator was hosing sludge off the surrounding roadway back onto the gravel. Methanex stated that they would continue to monitor the groundwater quality in this vicinity and that all stormwater was going through the checking systems and was being discharged to the outfall.

It was found that there was evidence of garnet blasting having taken place in the laydown area. The Company was advised that they may need to monitor for dust effects if the deposits are still there when the weather fines up. It was found that the compressor shed and oil storage facility were well managed. General housekeeping at the site was excellent although the Company was asked to secure the Klaraid bund.

On 12 September 2005 it was found that there were no visible emissions from the reformer or flare and no odours around the site. All chemical storage and dosing facilities were satisfactory, although the Company was informed that the minor leaks inside the boiler dosing bund should be monitored. No scum, foam or sheen was observed on the ponds. The firewater and storm pond contents were clean and clear. The check pond level was low and the contents green. The Company had been exporting directly from the stormpond for the previous few weeks as repairs were being undertaken on tanks in the check pond system. There was no export occurring at the time of inspection. The pumps were on lock out while repairs were being carried out on the composite sampler. The methanol storage and tanker load out facilities were satisfactory. The laydown area was generally satisfactory, although there was one 200 litre drum labelled waste methanol and one 200 litre unlabelled drum found in this area. The drums were secure at the time of inspection, but need to be addressed. General housekeeping at the site was good.

The inspecting officer was informed that the Mamaku Road intake was not being used at present. The Tikorangi Road intake was being used to supply this plant as the pre-sedimentation basin for this intake results in less on-site treatment being required once it gets to the Waitara Valley plant.

On 21 December 2005 it was found that the plant was not operational at the time of inspection and there was no gas on-site. The maintenance work associated with a "mini turnaround" was just about complete. All chemicals on-site were secure and isolated from the processes due to the shutdown. The stormwater that had collected in the semi bulk bund for the boiler dosing chemicals was to be released after testing. The bund valve on one of the semi bulk bunds at the cooling tower was open to drain stormwater. This was closed at the time of inspection. There was a strong localised odour at the storage shed. There were no odours downwind of the ponds. The contents of the stormpond and firewater pond were clean and clear with no scums, foams, or sheens. The check pond was empty. The liner appeared to be in good condition and there was minimal sludge in the pond. No export to the outfall

had taken place since approximately mid November. The tanker loading area, methanol storage, laydown area and oil storage areas were all well managed.

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, about 1 kilometre above the Bertrand Road bridge, to 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. Monthly averages and maximum daily abstraction rates for 2005 are presented in Table 26.

Table 26 Water abstraction from the Waitara River for the Waitara Valley Plant, 2005

Month	Abstraction rate	
	Average L/s	Maximum L/s
January	58	79
February	57	71
March	54	72
April	52	97
May	30	96
June	50	100
July	52	101
August	48	85
September	53	84
October*	2	53
November*	0.7	53
December*	1	52

* No processing at the site

Consent 0801 allows the Company to take up to 100 litres per second of water from the Waitara River, reducing to 70 litres per second when the flow of the river at the Bertrand Road gauging station falls below 2600 litres per second. A hydrograph of river flows at the Bertrand Road gauging station, and calculated mean daily flows are attached to this report as Appendix III.

The minimum flow in the Waitara River during the year under review was 6527 litres per second, allowing Methanex to abstract at a rate of up to 100 litres per second. The maximum abstraction for July was 101 L/s which occurred on 7 July 2006. This was reported by Methanex to have occurred for less than a minute to enable them to test a new flow rate alarm that had been installed. This is a marginal exceedance of the limit on the consent, but bearing in mind the reason for this exceedance and the fact that the consent allows for an error on the recording device of 2%, this can not be considered as a consent non compliance. Therefore the data recorded shows compliance with the conditions of consent 0801 throughout 2006.

3.3.1.3 Effluent monitoring

Wastewater from the Waitara Valley plant is treated and discharged to the Waitara Outfall. Treated plant effluent comprises 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 (m³/h), daily maximum (L/s) and daily volume (m³/day) for flow and minima, maxima and daily averages for pH. A summary of this data is presented in Table 27. 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 27.

Chemical dosing rates

Consent 3399 (for discharge of process waste from the Waitara Valley site) set mass discharge limits on the water treatment chemicals used on the site. The Company calculates water treatment chemical mass discharge rates using chemical consumption data. A summary of this data for the months January to September (when the plant was operational) is presented in Table 27.

Table 27 Summary of the Waitara Valley plant's monitoring results of plant effluent 2005

	Unit	Range	Average	Consent limit	Number of breaches
Continuous measurement					
Flow (daily average)	m ³ /day	0 - 3085	1307	5000	0
pH	-	2.7 - 11.4	7.8	6-11	0
Daily measurement					
Conductivity (at 25°C)	mS/ m	10.2 - 550	171.4	-	-
Hydrocarbons	g/m ³	<1 - <1	<1	10	0
Methanol	g/m ³	<2 - 2	<2	15	0
Suspended solids	g/m ³	<6 - 240	17	1000	0
Monthly measurements					
Ammonia	g/m ³	<0.10 - 12	3.6	200	0
Copper	g/m ³	0.02 - 0.02	0.02	1.0	0
Nickel	g/m ³	<0.10 - <0.10	<0.10	1.0	0
Zinc	g/m ³	<0.10 - <0.10	<0.10	2.0	0

	Unit	Range	Average	Consent limit	Number of breaches
Water treatment chemicals (calculated)					
Betz 778P or equivalent (Cortol OS 7780)	Kg/day	3 - 28	9	100	0
Betz Liquamine 14 or equivalent (Steamate NA0880)	Kg/day	11 - 49	26	75	0
Betz 78000 series or equivalent (Optisperse HTP 73611)	Kg/day	1 - 9	4	150	0
Betz 78000 series or equivalent (Optisperse HTP 7330)	Kg/day	6 - 14	11		
Betz 5211A or equivalent	Kg/day	-	-	50	0
Betz 2023 or equivalent (Continuum AEC3110)	Kg/day	8 - 39	22	150	0
Betz 2040 or equivalent (Dianodic DN2250)	Kg/day	0 - 0	0	250	0
Betz 445 or equivalent (Spectrus BD1500)	Kg/day	4 - 10	6	150	0
Betz TC or equivalent (Inhibitor AZ8104)	Kg/day	9 - 15	11	100	0
Betz C-74 or equivalent (Slimicide Spectrus CT1300)	Kg/day	0 - 0	0	50	0

Some pHs outside the consented range have been reported, values of zero occur when the pH meter is taken out of service, and values of four or less are generally as a result of calibration of the meter. Low pHs are also recorded when there is no flow across the electrode. The Council has been notified by the Company that the export pumps at the Valley plant trip off when the pH gets to 6.0 and the pumps go onto circulation ensuring that no effluent outside the permitted pH range is sent to the outfall. An agreement was reached whereby rather than reporting the erroneous pH values when there was no export occurring for the full 24 hour period, the Company would report that there was no flow on that day. However, if there is intermittent export on a given day, erroneous pH's are still reported to Council along with an explanation in the covering letter for the monthly report. Apparent exceedances occurred on 5, 7, 15, 24, 25, and 27 May. On 5, 7, 24, 25, and 27 May there was no export occurring at the time the out of range pH's were recorded. On 15 May the low pH tripped the pump preventing the export of the non-conforming effluent. On 21, 28 and 29 July the minimum daily pH's reported were 2.7, 5.0 and 4.4 respectively. Methanex reported that these were recorded as spikes lasting for less than 30 seconds, and as they coincided with spikes in the signal from the effluent flow meter it was considered that these were due to electrical interference. The Company monitored the signals so that the problem could be identified if it occurred again.

Compliance with conditions on plant effluent composition and discharge rate was achieved throughout 2005.

3.3.1.4 Inter-laboratory comparisons

The Council carried out inter-laboratory comparisons on one occasions during the year under review. The sampling was undertaken on 23 June 2005. The second sampling survey programmed for the 2005 year was delayed until January 2006 due

to the temporary shutdown of the Waitara Valley plant at the end of 2005⁴. Split samples were collected from the Waitara Valley site effluent, and analysed by Methanex and the Taranaki Regional Council. The results of the inter-laboratory comparisons are shown in Table 28. The exercise also serves the purpose of a compliance monitoring check.

Table 28 Results of inter-laboratory comparison between the Council and Methanex on Waitara Valley process effluent for 2005

Parameter	unit	23 June 2005		Consent limit
		Methanex	TRC	
Conductivity @ 25°C	mS/m	200	183	-
pH	-	7.9	7.8	6-11
Suspended solids	g/m ³	8	5	1000
Total hydrocarbons	g/m ³	<1	<0.5	10
Methanol	g/m ³	<2	<1	15
Ammoniacal nitrogen	g/m ³ -N	5.5	4.51	200
Copper	g/m ³	<0.02	0.01	1.0
Nickel	g/m ³	<0.10	0.025	1.0
Zinc	g/m ³	<0.1	<0.02	2.0

There was good agreement between the two laboratories for the sample taken during the year under review. The results show that the effluent complied with the consent limits on both occasions.

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.

The annual report for 2005 was received by Council on 20 March 2006, and fulfils the consent requirements.

The report is attached as Appendix IV.

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 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

⁴ These results will be reported in the Annual Report for 2006.

May 1994. No adverse effect on riverbed macroinvertebrate communities or algal populations, which could be attributed to the stormwater discharge, were found.

There were no discharges of stormwater from the stormpond to the Waitara River during the year under review.

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 the year under review 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 2005 year to ensure appropriate procedures were in place, and records kept, thereby ensuring that only uncontaminated stormwater is released.

From May 2005 grab samples of the stormwater collected in the diesel tank bund were taken and analysed for four water quality characteristics by Methanex staff prior to release to the Waitara River. The values of these four parameters provide an indicator as to whether or not the discharge was contaminated. The results of the stormwater monitoring for 2005 are summarised in Table 29.

Table 29 Summary of Motunui stormwater monitoring data for 2005

Parameter	Unit	Range	Guideline value
Conductivity @ 25°C	mS/m	1.6 – 8.5	30
pH	-	6.6 – 7.4	6.5 - 9.3
Suspended solids	g/m ³	<6 – 11	100
Visual Hydrocarbons (PASS/FAIL)		PASS	5

3.3.2 Air

3.3.2.1 Inspections

During the 2005 monitoring year, four scheduled inspections of the Waitara Valley site were completed on 29 March, 28 June, 12 September and 21 December, by an officer of the Council. Inspections are integrated for air and water related monitoring.

During each inspection the cooling tower, reformer, distillation towers, flare stack and storage areas were checked for emissions to air. No effects on the receiving environment beyond the plant perimeter could be determined during any of the inspections, from plant operation, or discharges to air.

3.3.2.2 Consent requirements

Condition 4 of resource consent 4045 requires that, every two 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 Motunui site.
- Any other relevant matters.

The report covering 2004 and 2005 was received in March 2006. In summary the report noted the following:

- Carbon dioxide and methanol emissions from the Waitara Valley plant were significantly lower than in recent years as the plant was shutdown for intermittent periods.
- An investigation was being carried out into modifications at the Waitara Valley plant which would include rerouting the Distillation 1 column vents to the flare system. This was in the early stages of a feasibility and cost analysis study.
- Methanol emissions from distillation vents were calculated according to API 2000. The annual methanol emissions reported by Methanex are displayed in Figure 8.
- No new technologies for reducing the plume from the cooling tower have been developed that are commercially viable.
- Because the cost of energy makes up a large proportion of the operating costs associated with the production of methanol, Methanex has significant incentive to continuously improve energy efficiency. In March 2005 adjustments were made to allow the minimum firing rate of the Waitara Valley package boiler in use to be reduced. This has improved boiler efficiency and reduced carbon dioxide emission. Efficiency measures in other parts of the plant have been identified, but do not have sufficient payback under current conditions.

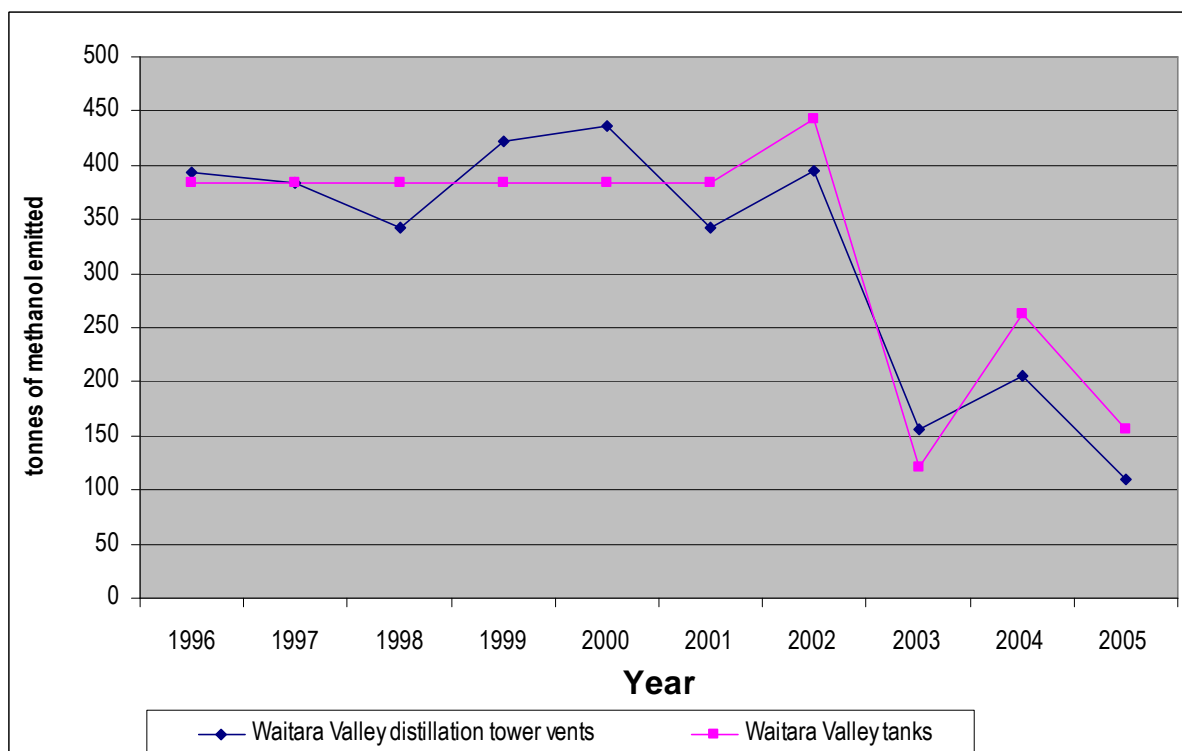


Figure 8 Waitara Valley methanol emissions

3.3.3 Register of incidents

In 2005, there were no incidents recorded by Council that were associated with Methanex's Waitara Valley plant.

3.4 Discussion

3.4.1 Discussion of plant performance

During each inspection by the Taranaki Regional Council, officers have noted that the facility is well managed, with a high standard of housekeeping apparent. Only minor matters relating to semi bulk bunds were noted during the year under review.

The Company's abstraction from the Waitara River was found to have been well managed and in compliance with consent conditions throughout the year under review.

Methanex Waitara Valley Limited achieved a good level of compliance with the conditions on the effluent discharges to the Waitara outfall.

There were no clean stormwater discharges to the Waitara River from the stormpond. The small volumes discharged periodically from the sump under a diesel tank were confirmed to be uncontaminated.

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

Methanex has a current contingency plan with respect to the Waitara Valley Methanol plant, which was last reviewed in 1994. The Council considered that this contingency plan was in need of a review, and an updated draft plan has been received and Council is to work with Methanex to refine the plan. Methanex maintains comprehensive spill contingency equipment on site, and personnel are trained with respect to spill contingency.

3.4.1.1 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 year under review.

3.4.1.2 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 year under review

Ecological effects

No adverse environmental effects were observed during the year under review.

3.4.2 Evaluation of performance

A tabular summary of the Company's compliance record for the year under review is set out in Tables 30-35.

Table 30 Summary of performance for Consent 0801-1 Take water from Waitara River

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Obligation of consent holder to comply with statutory requirements	N/A	N/A
2. Monitoring and record keeping	Monthly reports provided containing daily abstraction rates and volumes	Yes
3. Access for inspection purposes	Access arranged on request	Yes
4. Provision for cancellation	Consent exercised	N/A
5. Provision for termination	N/A	N/A
6. Approval of plans and specifications	Plans previously approved. On file	Yes
7. Costs of Board monitoring met by grantee	Invoice(s) paid	Yes
8. Costs of monitoring carried out by grantee met by grantee	N/A	N/A
9. Approval of monitoring methods	Previously approved. Reviewed and agreed annually.	Yes
10. Design and maintenance of works of adequate standard	Inspection and no complaints received	Yes
11. Recording of abstraction rate – 2% accuracy	Monthly reports received and reviewed. Calibration check every 4 years. Accuracy of meter last confirmed in June 2003.	Yes
12. Ability to modify abstraction procedure	Procedures in place. No need to limit to lower rate during year under review	Yes
13. Contribution towards operating costs of gauging station	Invoice(s) paid	Yes

N/A = not applicable

Table 31 Summary of performance for Consent 0802-1 Discharge of uncontaminated stormwater to Waitara River

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Obligation of consent holder to comply with statutory requirements	N/A	N/A
2. Monitoring and record keeping	Sampling undertaken on as required basis. Reported to Council monthly	Yes
3. Access for inspection purposes	Suitable access arrangements in place	Yes
4. Provision for cancellation	Consent has been exercised	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
5. Provision for termination	N/A	N/A
6. Approval of plans and specifications	Previously approved	Yes
7. Costs of Board monitoring met by grantee	Invoice(s) paid	Yes
8. Costs of monitoring carried out by grantee met by grantee	N/A	N/A
9. Approval of monitoring methods	Previously approved. Reviewed and agreed annually.	Yes
10. Design and maintenance of works of adequate standard	Inspection and no complaints received	Yes

N/A = not applicable

Table 32 Summary of performance for Consent 0805-1 Diversion of unnamed tributary

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Obligation of consent holder to comply with statutory requirements	N/A	N/A
2. Monitoring and record keeping	No specific monitoring requested during year under review	N/A
3. Access for inspection purposes	Suitable access arrangements in place	Yes
4. Provision for cancellation	Consent has been exercised	N/A
5. Provision for termination	N/A	N/A
6. Approval of plans and specifications	Previously approved	Yes
7. Costs of Board monitoring met by grantee	Invoice(s) paid	Yes
8. Costs of monitoring carried out by grantee met by grantee	N/A	N/A
9. Approval of monitoring methods	N/A	N/A
10. Design and maintenance of works of adequate standard	Inspection. No complaints received	Yes

N/A = not applicable

Table 33 Summary of performance for Consent 3399-1 Discharge of treated wastes into the Tasman Sea

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Provision for cancellation	Consent has been exercised	N/A
2. Provision for termination	N/A	N/A
3. Approval of plans and specifications	Previously approved. No significant changes found at inspection	Yes
4. Approval of monitoring methods	Previously approved. Reviewed and agreed annually.	Yes
5. Minimum effluent dilution	Not monitored directly during year under review. From flow rate and study (cond. 6) information provided it can be inferred that compliance was achieved.	Yes
6. Study verifying outfall performance	On file: Physical hydraulic model done previously to demonstrate dilution would be achieved. Certification that outfall constructed as per design.	N/A
7. Inspection of outfall	NPDC manages these. Last inspected 22 April 2004. Request to contractor Aug 2005 to conduct another survey.	Yes
8. pH of effluent	Review of online monitoring data provided	Yes
9. Limits on chemical composition of discharge	Review of analytical information provided in self monitoring monthly reports and interlaboratory comparison	Yes
10. Discharge rate of water treatment chemicals	Review of information provided in monthly reports	Yes
10. a) Notification of changes in treatment chemicals	Inspection and liaison with Company. No changes	N/A
11. Limit on chemical concentration in discharge during chemical clean/catalyst changeout	Inspection and liaison with Company. No chemical cleans or catalyst changeouts	N/A
11. a) Provision of programme/treatment chemicals to be used in chemical clean	N/A	N/A
12. Notification prior to discharge of effluent containing specified chemicals	N/A	N/A
12. a) Provision for review of consent based on information received as per conditions 10 and 11	N/A	N/A
13. Adverse effects from discharge of plant effluent in water course not permitted	Effects would be of combined discharge, quarterly inspections under separate programme ⁵ . No complaints received	Yes

⁵ Waitara Waste Water Treatment Plant Monitoring Programme Annual Report 2005 Technical Report 2006–03

Condition requirement	Means of monitoring during period under review	Compliance achieved?
14. Implementation of a contingency plan for action to be taken in the event of a spillage	Plan on file. Latest version accepted May 1999	Yes
15. Annual report on waste disposal system performance and compliance	Report reviewed March 2006	Yes
16. Consult with interested parties in the event of an unauthorised discharge, and remediate effects	No unauthorised discharges recorded	N/A
17. Notification prior to discharge	Conditions relate to a variation in force 19 December 1990 to 31 March 1992 only, therefore they are not relevant to the year under review.	N/A
18. Public warning signs during exercise of consent		N/A
19. Discharge only on outgoing tide		N/A
20. Monitoring of discharges		N/A

N/A = not applicable

Table 34 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 2009	N/A

N/A = not applicable

Table 35 Summary of performance for Consent 4045-2 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	Inspection and liaison with consent holder	Yes
2. Minimisation of emissions through control of processes	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, plant not operating	Yes
4. Biennial written air discharge report	Report received and accepted	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
5. Maximum ground-level concentrations of methanol beyond boundaries	Testing carried out by Watercare Air Quality Group 24 August 2005	Yes
6. Maximum ground-level concentrations of carbon monoxide beyond boundaries	Testing carried out by Watercare Air Quality Group 24 August 2005	Yes
7. Maximum ground-level concentrations of nitrogen dioxide beyond boundaries	Testing carried out by Watercare Air Quality Group 24 August 2005	Yes
8. Maximum ground-level concentrations of other contaminants beyond boundaries	Volatile organic carbons tested for by Watercare Air Quality Group 24 August 2005	Yes
9. Monitoring of consent to satisfaction of Council	Monitoring reviewed and agreed annually	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 5) re environmental effects	Recommendation that review not required attached to this report	Yes

N/A = not applicable

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

3.4.3 Recommendations from the 2004 Annual Report

In the 2004 Annual Report, it was recommended:

THAT monitoring of air emissions from the Methanex Waitara Valley plant in the year 2005 continues at the same level as in 2004.

THAT monitoring of abstractions and discharges at the Methanex Waitara Valley plant in the year 2005 continues at the same level as in 2004.

THAT the option for a review of resource consent 0802 in June 2005, as set out in condition 11 of the consent, not be exercised on the grounds that that recent monitoring has shown that the current special conditions are adequate to control potential adverse effects from the site at this time.

These recommendations were carried out in full.

3.4.4 Alterations to monitoring programmes for 2006

In designing and implementing the monitoring programmes for air and water discharges in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the

Resource Management Act, the obligations of the Act in terms of monitoring emissions and discharges and their 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.

In the case of Methanex Waitara Valley, the programme for 2005 was not altered from that for 2004. It is now proposed that for 2006, the monitoring should continue at the current level.

3.4.5 Exercise of optional review of consent

Resource consent 4045 provides for an optional review of the consent to be notified within 6 months of receiving the biennial air discharge report required by condition 4 of the consent. Condition 11 allows the Council to review the conditions of the consent based on the report for the purpose of reviewing the best practicable option, reduce or remove any adverse effects on the environment or to deal with any significant adverse ecological effects on any ecosystems.

Based on contents of the report (received on 21 March 2006), results of monitoring in the year 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 3.9 of this report.

3.5 Recommendations

THAT monitoring of air emissions from the Methanex Waitara Valley plant in the year 2006 continues at the same level as in 2005.

THAT monitoring of abstractions and discharges at the Methanex Waitara Valley plant in the year 2006 continues at the same level as in 2005.

THAT the option for a review of resource consent 4045 prior to 23 September 2006, as set out in condition 11 of the consent, not be exercised on the grounds that the current special conditions are adequate to cover "best practicable option" and control potential adverse effects from the site at this time.

4. Summary of recommendations

THAT monitoring of air emissions from the Methanex Motunui plant in the year 2006 be suspended pending recommencement of processing at the site.

THAT monitoring of groundwater and surface water abstractions in the year 2006 be suspended pending recommencement of these abstractions at the site.

THAT monitoring of discharges at the Methanex Motunui plant in the year 2006 be reduced to one inspection and two stormwater sampling/interlaboratory comparison surveys.

THAT the review of resource consent 0820 on 1 December 2006, as set out in condition 2 of the consent, be exercised on the grounds that the wording of the condition means that the review is compulsory.

THAT the option for review of resource consent 0822 during the month of March 2007, as set out in condition 16 of the consent, not be exercised on the grounds that at the current special conditions are adequate to control potential adverse effects from the site at this time.

THAT the option for a review of resource consents 4042, 4546, and 4640 prior to 23 September 2006, as set out in condition 11, 10 and 10 of the consents, not be exercised on the grounds that the current special conditions are adequate to cover "best practicable option" and control potential adverse effects from the site at this time.

THAT monitoring of air emissions from the Methanex Waitara Valley plant in the year 2006 continues at the same level as in 2005.

THAT monitoring of abstractions and discharges at the Methanex Waitara Valley plant in the year 2006 continues at the same level as in 2005.

THAT the option for a review of resource consent 4045 prior to 23 September 2006, as set out in condition 11 of the consent, not be exercised on the grounds that the current special conditions are adequate to cover "best practicable option" and control potential adverse effects from the site at this time.

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 ³	grammes per cubic metre, and equivalent to milligrammes per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
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.
NH ₄	ammonium, normally expressed in terms of the mass of nitrogen (N)
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water
O&G	oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons)
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
UIR	Unauthorised Incident Register entry- an event recorded by the Council on the basis that it had 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"
- 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 (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 (199b): "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

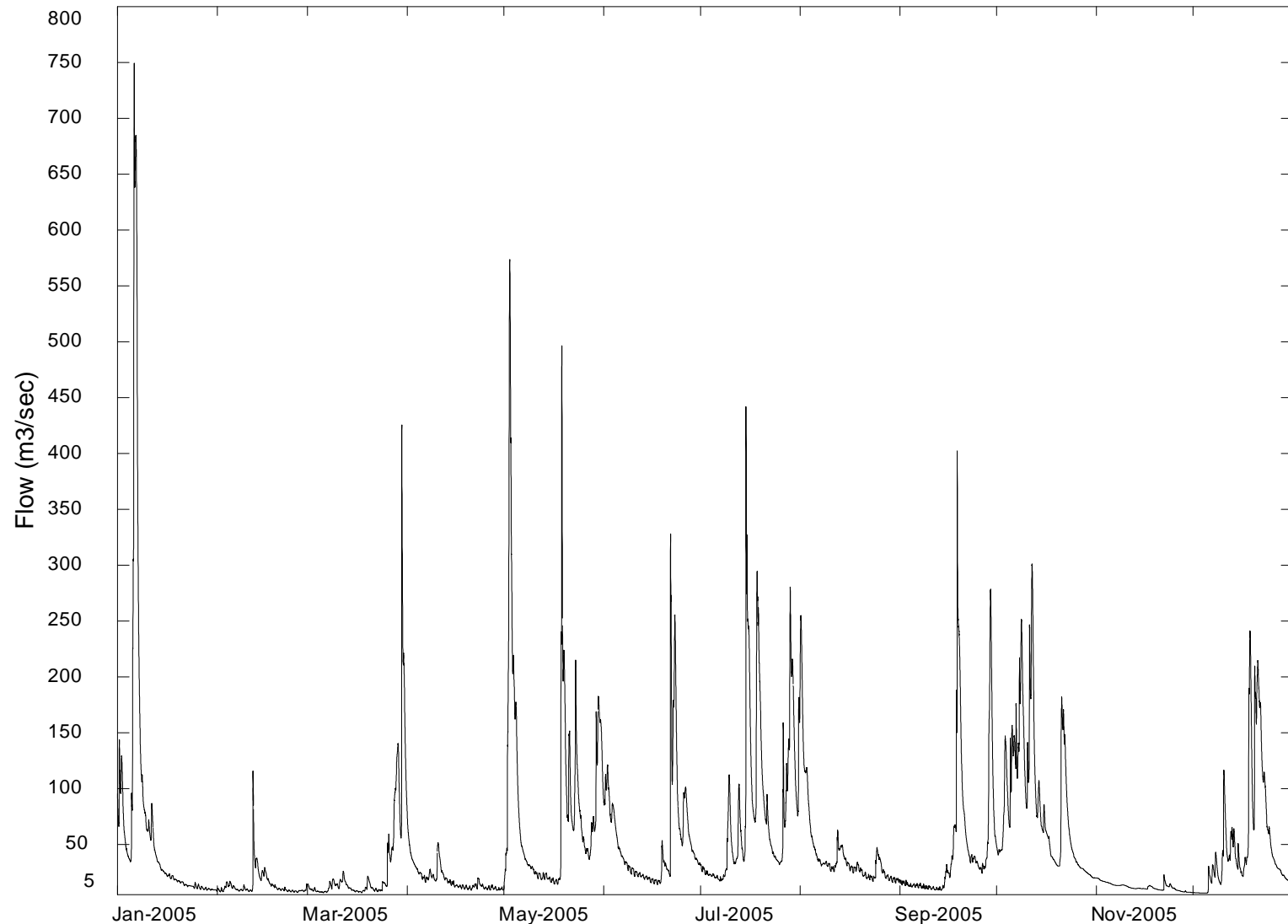
Resource consents held by Methanex Motunui Limited – Motunui plant

Appendix II

Resource consents held by Methanex Motunui Limited – Waitara Valley plant

Appendix III

Hydrograph for the Waitara River at Bertrand Road for 2005



— Waitara at Bertrand Rd from 01-Jan-2005 00:00:00 to 01-Jan-2006 00:00:00

~~~ PDAY ~~~ Source is R:\ARCHIVES\HYDRO-ARCHIVES.HTS

Flow (m3/sec) at Waitara at Bertrand Rd. From 1-Jan-2005 00:00:00 to 31-Dec-2005 24:00:00. 24 hour periods beginning at midnight each day.

| Daily means | Year 2005                              |        |         |        |         |         |         |         |         |         |        |              |         |
|-------------|----------------------------------------|--------|---------|--------|---------|---------|---------|---------|---------|---------|--------|--------------|---------|
|             | Flow(m3/sec) at Waitara at Bertrand Rd |        |         |        |         |         |         |         |         |         |        |              |         |
| Day         | Jan                                    | Feb    | Mar     | Apr    | May     | Jun     | Jul     | Aug     | Sep     | Oct     | Nov    | Dec          |         |
| 1           | 95.666                                 | 9.309  | 11.999  | 55.289 | 31.195  | 97.658  | 29.037  | 207.258 | 15.837  | 43.861  | 19.577 | 6.900        |         |
| 2           | 100.462                                | 8.967  | 9.194   | 37.485 | 323.222 | 101.061 | 25.643  | 118.599 | 15.483  | 46.650  | 17.727 | 6.712        |         |
| 3           | 51.554                                 | 12.578 | 9.227   | 30.685 | 287.376 | 78.122  | 23.575  | 94.316  | 13.963  | 110.847 | 16.792 | 6.609        |         |
| 4           | 38.217                                 | 14.465 | 7.831   | 25.350 | 175.865 | 70.442  | 22.487  | 59.121  | 13.036  | 91.066  | 15.975 | 6.543        |         |
| 5           | 134.814                                | 12.846 | 7.369   | 21.919 | 90.920  | 49.912  | 21.163  | 46.119  | 13.442  | 116.362 | 14.910 | 12.218       |         |
| 6           | 648.951                                | 10.994 | 7.682   | 19.599 | 50.230  | 40.915  | 19.857  | 37.224  | 13.051  | 135.003 | 13.752 | 20.065       |         |
| 7           | 296.768                                | 9.095  | 10.918  | 20.941 | 38.704  | 34.795  | 18.804  | 33.076  | 12.872  | 133.152 | 13.308 | 27.673       |         |
| 8           | 113.437                                | 9.309  | 15.000  | 23.252 | 32.304  | 30.626  | 23.205  | 33.071  | 12.009  | 211.744 | 13.477 | 29.616       |         |
| 9           | 77.861                                 | 10.874 | 15.352  | 19.244 | 29.609  | 27.247  | 66.792  | 32.315  | 11.376  | 145.348 | 13.602 | 17.051       |         |
| 10          | 64.580                                 | 9.032  | 12.702  | 40.071 | 25.513  | 25.208  | 67.214  | 29.143  | 11.099  | 102.851 | 12.590 | 73.636       |         |
| 11          | 67.988                                 | 9.022  | 17.858  | 29.938 | 22.557  | 23.616  | 35.200  | 28.788  | 10.659  | 205.410 | 11.367 | 48.341       |         |
| 12          | 47.709                                 | 48.539 | 20.018  | 20.741 | 20.967  | 22.528  | 52.641  | 44.602  | 10.241  | 193.793 | 10.724 | 46.371       |         |
| 13          | 35.287                                 | 32.004 | 12.658  | 17.752 | 21.843  | 20.964  | 68.229  | 47.072  | 10.135  | 84.680  | 10.665 | 57.191       |         |
| 14          | 29.039                                 | 20.922 | 10.215  | 15.686 | 20.758  | 20.317  | 42.330  | 41.794  | 13.178  | 85.683  | 10.726 | 34.805       |         |
| 15          | 25.321                                 | 25.542 | 8.554   | 14.221 | 18.243  | 18.223  | 264.639 | 34.041  | 25.733  | 70.123  | 10.564 | 33.308       |         |
| 16          | 22.570                                 | 20.468 | 8.141   | 12.916 | 17.022  | 17.193  | 165.939 | 29.606  | 25.383  | 60.817  | 10.453 | 24.958       |         |
| 17          | 21.132                                 | 14.630 | 7.543   | 12.245 | 17.002  | 16.591  | 79.503  | 27.841  | 50.015  | 48.686  | 12.837 | 36.410       |         |
| 18          | 19.840                                 | 13.134 | 8.920   | 11.934 | 118.522 | 18.239  | 191.047 | 30.179  | 153.618 | 37.494  | 11.598 | 167.287      |         |
| 19          | 17.735                                 | 10.760 | 15.245  | 11.264 | 233.685 | 39.548  | 191.368 | 27.875  | 212.204 | 32.724  | 10.225 | 98.868       |         |
| 20          | 16.498                                 | 9.944  | 14.091  | 10.705 | 98.680  | 29.654  | 99.568  | 23.706  | 97.089  | 36.223  | 9.467  | 177.197      |         |
| 21          | 15.079                                 | 9.922  | 9.894   | 12.506 | 110.707 | 105.200 | 77.026  | 21.727  | 59.077  | 161.643 | 9.810  | 189.288      |         |
| 22          | 13.509                                 | 9.018  | 9.235   | 13.967 | 69.010  | 159.995 | 57.312  | 20.796  | 39.567  | 117.159 | 15.780 | 125.650      |         |
| 23          | 13.090                                 | 8.432  | 9.156   | 15.774 | 141.454 | 170.456 | 43.251  | 19.664  | 37.925  | 64.270  | 13.134 | 94.488       |         |
| 24          | 12.213                                 | 8.265  | 14.381  | 12.247 | 83.378  | 67.322  | 37.468  | 32.342  | 36.296  | 45.118  | 11.921 | 61.958       |         |
| 25          | 12.671                                 | 7.924  | 21.429  | 10.877 | 56.586  | 65.951  | 33.827  | 38.662  | 29.996  | 36.334  | 9.988  | 43.557       |         |
| 26          | 11.696                                 | 8.483  | 43.150  | 10.840 | 44.820  | 92.567  | 66.638  | 27.908  | 28.600  | 31.241  | 8.734  | 33.685       |         |
| 27          | 11.035                                 | 8.632  | 54.076  | 11.606 | 41.140  | 59.905  | 86.864  | 22.277  | 32.241  | 28.592  | 7.958  | 28.507       |         |
| 28          | 10.284                                 | 10.872 | 111.257 | 10.596 | 66.463  | 45.464  | 160.168 | 20.033  | 116.523 | 26.264  | 7.712  | 24.415       |         |
| 29          | 9.980                                  |        | 99.692  | 9.877  | 95.893  | 38.147  | 207.628 | 19.029  | 190.926 | 23.827  | 7.241  | 20.919       |         |
| 30          | 9.645                                  |        | 228.230 | 10.179 | 163.704 | 33.428  | 115.339 | 18.082  | 62.547  | 21.347  | 7.107  | 17.879       |         |
| 31          | 9.140                                  |        | 127.018 |        | 126.213 |         | 130.257 | 18.134  |         | 20.064  |        | 15.772       |         |
| Min         | 9.140                                  | 7.924  | 7.369   | 9.877  | 17.002  | 16.591  | 18.804  | 18.082  | 10.135  | 20.064  | 7.107  | <b>6.543</b> | 6.543   |
| Mean        | 66.251                                 | 13.714 | 30.904  | 18.990 | 86.245  | 54.043  | 81.420  | 41.432  | 45.804  | 82.851  | 11.991 | 51.222       | 49.202  |
| Max         | 648.951                                | 48.539 | 228.230 | 55.289 | 323.222 | 170.456 | 264.639 | 207.258 | 212.204 | 211.744 | 19.577 | 189.288      | 648.951 |

## **Appendix IV**

**Methanex Motunui Limited annual effluent report for  
Motunui and Waitara Valley plants for 2005**