

Shell Exploration NZ Ltd
Pohokura Production Station
Monitoring Programme
Annual Report
2017-2018

Technical Report 2018-54

The results of boundary ambient air quality monitoring for benzene provided by the Company for the period under review were later found to be erratic to an unknown degree due to malfunctioning detection instruments. The Council was advised of this accordingly and this report has since been amended to remove these results. Further information will be provided in the 2018-2019 compliance monitoring report.

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Executive summary

Shell Exploration NZ Ltd (SENZL) operates a petrochemical production station and associated wellsites, located on Lower Otaraoa Road at Motunui in the Waipapa and Manu catchments. This report for the period July 2017 to June 2018 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the Company's activities.

The Company holds 17 resource consents, which include a total of 249 conditions setting out the requirements that the Company must satisfy. The Company holds one consent to allow it to take and use water, three consents to discharge stormwater, three consents to discharge emissions into the air, six consents for various structures, two consents relating to deep well injection, and one consent each to disturb and occupy the coastal marine area.

During the monitoring period, Shell Exploration NZ Limited demonstrated an overall high level of environmental performance.

The Council's monitoring programme for the year under review included seven inspections, one water sample collected for physicochemical analysis and two ambient air quality analyses. The consent holder also collected various data as required by consent conditions and for self-monitoring purposes.

The monitoring showed that the stormwater sample complied with the limits prescribed by the consents. No adverse effects were noted on the receiving environment as a result of the discharge.

There were no adverse effects on the environment resulting from the exercise of the air discharge consent. Ambient air quality monitoring at the site showed that levels of carbon monoxide, combustible gases, PM₁₀ particulates and nitrogen oxides were all below levels of concern at the time of sampling. No offensive or objectionable odours were detected beyond the boundary during inspections and there were no complaints in relation to air emissions from the site.

Ecological assessments voluntarily commissioned by SENZL of the intertidal coastal area surrounding the Pohokura site found high species diversity and abundance across two of the three studied reefs, indicating a stable and healthy reef environment with high water quality. Sand inundation across the third reef had resulted in a decrease in both species diversity and abundance. Sand inundation is a common occurrence around the Taranaki coastline, with the reef usually recovering fairly quickly once the sand moves on. The ongoing ecological surveys have shown that the health of the reefs in the vicinity is comparable to other reefs around the Taranaki coastline that are subjected to sand inundation. SENZL activities in the area do not appear to have had any adverse effect on the coastal environment.

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

For reference, in the 2017-2018 year, consent holders were found to achieve a high level of environmental performance and compliance for 76% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 20% of the consents, a good level of environmental performance and compliance was achieved.

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

This report includes recommendations for the 2018-2019 year.

Table of contents

	Page	
1	Introduction	1
1.1	Compliance monitoring programme reports and the Resource Management Act 1991	1
1.1.1	Introduction	1
1.1.2	Structure of this report	1
1.1.3	The Resource Management Act 1991 and monitoring	1
1.1.4	Evaluation of environmental and administrative performance	2
1.2	Process description	3
1.3	Resource consents	5
1.3.1	Water discharge permits	6
1.3.2	Air discharge permits	8
1.3.3	Coastal permits	9
1.3.4	Related consents	11
1.4	Monitoring programme	12
1.4.1	Introduction	12
1.4.2	Programme liaison and management	12
1.4.3	Site inspections	12
1.4.4	Chemical sampling	13
1.4.5	Data Review	13
2	Results	14
2.1	Water	14
2.1.1	Inspections	14
2.1.2	Results of discharge monitoring	16
2.1.3	Results of consent holder monitoring	17
2.1.3.1	Stormwater monitoring by SENZL	17
2.1.3.2	Produced water monitoring and deep well injection by SENZL	18
2.2	Air	19
2.2.1	Inspections	19
2.2.2	Results of receiving environment monitoring	19
2.2.2.1	Carbon monoxide and combustible gases	19
2.2.2.2	PM ₁₀ particulates	21
2.2.2.3	Nitrogen oxides	22
2.2.3	Flaring and fuel gas use reported by SENZL	23

2.2.4	Results of receiving environment monitoring by SENZL	24
2.3	Offshore	25
2.3.1	Marine and coastal monitoring by SENZL	25
2.4	Investigations, interventions, and incidents	25
3	Discussion	27
3.1	Discussion of site performance	27
3.2	Environmental effects of exercise of consents	27
3.3	Evaluation of performance	27
3.4	Recommendations from the 2016-2017 Annual Report	38
3.5	Alterations to monitoring programmes for 2018-2019	38
4	Recommendations	40
	Glossary of common terms and abbreviations	41
	Bibliography and references	43
	Appendix I Resource consents held by Shell Exploration NZ Ltd	
	Appendix II Air report	

List of tables

Table 1	Resource consents related to the Pohokura Production Station that were actively monitored during the 2017-2018 period	5
Table 2	Additional consents relating to the Pohokura facilities	11
Table 3	Results from samples of the combined stormwater discharge (STW002075)	16
Table 4	Results of stormwater samples collected by SENZL during the 2017-2018 year	17
Table 5	Pohokura produced water analyses for 2017-2018	18
Table 6	Results of carbon monoxide and LEL monitoring at Pohokura Production Station	20
Table 7	Daily averages of PM ₁₀ results from monitoring at Pohokura Production Station	22
Table 8	Summary of performance for consent 5991-1	27
Table 9	Summary of performance for consent 5992-1	28
Table 10	Summary of performance for consent 5993-1	28
Table 11	Summary of performance for consent 5994-1	29
Table 12	Summary of performance for consent 5997-1	31
Table 13	Summary of performance for consent 6002-1	32
Table 14	Summary of performance for consent 6003-1	33
Table 15	Summary of performance for consent 6176-1	35
Table 16	Summary of performance for consent 6269-1	35

Table 17	Summary of performance for consent 10096-1	36
Table 18	Summary of performance for consent 10450-1	37
Table 19	Summary of performance for consent 10477-1	37
Table 20	Evaluation of environmental performance over time	38

List of figures

Figure 1	Pohokura onshore facilities and the combined discharge sampling site STW002075	16
Figure 2	Monthly summary of deepwell injection volumes under consent 6176-1	19
Figure 3	Air monitoring sites at Pohokura Production Station for 2017-2018	20
Figure 4	Ambient CO levels in the vicinity of Pohokura Production Station 2017-2018	21
Figure 5	PM ₁₀ concentrations ($\mu\text{g}/\text{m}^3$) at Pohokura Production Station	22
Figure 6	Monthly flare volumes and fuel gas consumption for July 2017 to June 2018	24

List of photos

Photo 1	Pohokura Production Station	4
Photo 2	Upgraded stormwater system at the Lower Otaraoa Road wellsite	5
Photo 3	Pohokura Production Station	15

1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2017 to June 2018 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Shell Exploration NZ Ltd (SENZL). The Company operates a petrochemical production station and associated wellsites situated on Lower Otaraoa Road at Motunui, in the Waipapa and Manu catchments.

The report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by the Company that relate to discharges of water within the Waipapa and Manu catchments and the discharge of wastes to land; consents for the occupation of the coastal marine area and maintenance of offshore structures; and the air discharge permits to cover emissions to air from the sites.

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

1.1.2 Structure of this report

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

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by the Company in the Waipapa and Manu catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the Pohokura Production Station and associated facilities.

Section 2 presents the results of monitoring during the period under review, including scientific and technical data.

Section 3 discusses the results, their interpretations, and their significance for the environment.

Section 4 presents recommendations to be implemented in the 2018-2019 monitoring year.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

- a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
- b. physical effects on the locality, including landscape, amenity and visual effects;

- c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
- d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
- e. risks to the neighbourhood or environment.

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

1.1.4 Evaluation of environmental and administrative performance

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

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

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

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

Environmental Performance

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

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

For example:

- High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;

- Strong odour beyond boundary but no residential properties or other recipient nearby.

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

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

Administrative performance

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

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

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

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

For reference, in the 2017-2018 year, consent holders were found to achieve a high level of environmental performance and compliance for 76% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 20% of the consents, a good level of environmental performance and compliance was achieved.

1.2 Process description

In 2000, Fletcher Challenge Energy drilled the Pohokura-1 exploration well 4.5 kilometres off the coast of Waitara and two additional appraisal wells – one a further four kilometres out to sea and the other on land adjacent to the coastline at Motunui.

The Pohokura field is a low relief anticline at a depth of 3,600 metres, approximately 16 kilometres long and five kilometres wide, extending offshore in a northwest direction. In January 2001, 400 square kilometres of 3D marine seismic data helped SENZL define the structural configuration of the field, with a detailed bathymetry survey enabling marine data acquisition to come within two kilometres of the shoreline in water depths of 10 metres. The survey was followed up with 70 square kilometres of transitional 3D seismic that overlapped and linked with existing onshore seismic data.



Photo 1 Pohokura Production Station

In 2002, detailed design and planning of the field, including the resource consenting process began, with construction commencing in 2005. In 2006, the major milestone of commercial gas to market was achieved from the three onshore wells.

Development of the field involved the drilling of four wells from a land-based site at Motunui, and five from an offshore platform located eight kilometres off the coast. A sub-sea pipeline transfers up to 13 million cubic metres of gas per day to the onshore production station at Motunui. The well-stream comprises a mixture of gas, condensate (light crude) and produced water.

The onshore production station situated on Lower Otaraoa Road, Motunui, processes the high-pressure gas flow from the off and onshore wells. Here the hydrocarbons are separated into natural gas and condensate. The natural gas is fed into the North Island gas network and the condensate is piped to storage tanks at Omata near New Plymouth for shipping to refineries. Produced water separated out from the well-stream is disposed of by deepwell injection at the Lower Otaraoa Road wellsite. In 2012, a gas reinjection (GRI) facility was constructed adjacent to the wellsite to allow for increased production of condensate while the associated gas could be reinjected into the Pohokura formation.

All treated stormwater from the Pohokura site is discharged to the 'Duck Pond', a small lake within the Manu catchment. In the 2014-2015 year, the lined stormwater collection pits at the Lower Otaraoa Road wellsite were upgraded to three enclosed in-ground concrete vessels (Photo 2).



Photo 2 Upgraded stormwater system at the Lower Otaraoa Road wellsite

1.3 Resource consents

The Company holds 17 resource consents the details of which are summarised in Table 1 and Table 2 below and outlined in sections 1.3.1 to 1.3.4.

Table 1 Resource consents related to the Pohokura Production Station that were actively monitored during the 2017-2018 period

Consent number	Purpose	Granted	Review	Expires
5991-1	To occupy the CMA for a radius of 50 metres around up to three offshore wellhead platforms situated at least four kilometres offshore, and also for a distance of 50 metres either side of the associated pipelines connecting the three offshore wellhead platforms to the foreshore at mean high water spring	June 2003	June 2021	June 2033
5992-1	To take produced water and associated heat from aquifers in the coastal marine area associated with hydrocarbon exploration and production activities	June 2003	June 2021	June 2033
5993-1	To erect, place, use, reconstruct, alter, extend and maintain within the CMA up to three offshore wellhead platforms, 24 structures (being well casings) situated at least four kilometres offshore, and the associated pipelines connecting the three offshore wellhead platforms by horizontal directional drilling to the shore above mean high water spring, and the related occupation of the seabed	June 2003	June 2021	June 2033

Consent number	Purpose	Granted	Review	Expires
5994-1	To disturb the seabed and foreshore of the CMA by the process of erection, placement, use alteration, extension, maintenance, or removal of up to three offshore wellhead platforms situated at least four kilometres offshore, and the associated pipelines connecting up to three offshore wellhead platforms to the foreshore above mean high water spring by the use of horizontal directional drilling	July 2003	June 2021	June 2033
5997-1	To cover the discharge of treated stormwater from an Onshore Production Station to an existing stormwater control system, being a body of water commonly known as 'the Duck Pond' within the Manu Stream catchment	June 2003	June 2021	June 2033
6002-1	To discharge contaminants to air as products of combustion from the Pohokura Production Station involving equipment burning natural gas as fuel where the maximum heat release is in excess of 10 megawatts, together with miscellaneous emissions	June 2003	June 2021	June 2033
6003-1	To discharge emissions to air from combustion involving the flaring of petroleum products incidental to the treatment of gas at the Pohokura Production Station	June 2003	June 2021	June 2033
6176-1	To discharge waste drilling fluids, produced water and stormwater from hydrocarbon exploration and production operations by deepwell injection at the Lower Otaraoa Road Wellsite	May 2003	June 2021	June 2033
6269-1	To discharge treated stormwater from hydrocarbon exploration and production operations at the Lower Otaraoa Road Wellsite to an existing stormwater control system, being a body of water commonly known as 'The Duck Pond' within the Manu Stream	Nov 2004	June 2021	June 2033
10096-1	To occupy the CMA with four pipelines (well casings) extending from the Lower Otaraoa Road wellsite for hydrocarbon production purposes	March 2015	June 2021	June 2033
10450-1	To discharge heat and contaminants into land at depth in the coastal marine area, associated with the development, operation/production, maintenance and treatment of wells within the Pohokura Field	Sept 2017	June 2021	June 2033
10477-1	To discharge natural gas into land at depth in the coastal marine area, for the purpose of storage or other hydrocarbon recovery operations	Sept 2017	June 2021	June 2033

1.3.1 Water discharge permits

SENZL holds water discharge permit **5997-1** to cover the discharge of treated stormwater from an Onshore Production Station to an existing stormwater control system, being a body of water commonly known as 'the Duck Pond' within the Manu Stream catchment. This permit was issued by the Council on 16 June 2003 under Section 87(e) of the RMA. It was transferred to SENZL on 14 March 2006. A change to special condition 3 was requested by SENZL and made in May 2011 to allow for the addition of a gas reinjection facility adjacent to the Lower Otaraoa Road wellsite. A further change was made in November 2014 to increase the permitted chloride concentration in the discharge. A change was also made in February 2017 to

extend the allowable pH range of the discharge in line with permitted levels described in the RFWP. The consent is due to expire on 1 June 2033.

There are ten special conditions attached to the consent.

Conditions 1 and 2 require provision of details relating to contingency and stormwater management planning to the Council.

Conditions 3 and 4 require adherence to the consent conditions and the information submitted in the applications, and adoption of the best practicable option at all times.

Condition 5 requires that hazardous substances storage areas be bunded with drainage to appropriate recovery systems, not to the stormwater catchment.

Conditions 6, 7 and 8 impose limits on contaminants in the discharge, and stipulate effects that the discharge shall not give rise to in the Manu Stream.

Conditions 9 and 10 are lapse and review provisions.

SENZL also holds water discharge permit **6269-1** to cover the discharge of treated stormwater from hydrocarbon exploration and production operations at the Lower Otaraoa Road Wellsite to an existing stormwater control system, being a body of water commonly known as 'The Duck Pond' within the Manu Stream. This permit was issued by the Council on 10 November 2004 under Section 87(e) of the RMA. It was transferred to SENZL on 14 March 2006. A change to the conditions was made in November 2014 to increase the permitted chloride concentration in the discharge. A further change was made in February 2017 to increase the allowable pH range of the discharge in line with permitted levels described in the RFWP. It is due to expire on 1 June 2033.

There are twelve special conditions attached to the consent.

Conditions 1 and 2 require adherence to the consent conditions and the information submitted in the application, and adoption of the best practicable option at all times.

Condition 3 requires the provision of contingency planning details for the wellsite to the Council.

Condition 4 requires the consent holder to notify the Council prior to the commencement of site works and drilling operations.

Conditions 5 and 6 restrict the size of the stormwater catchment area, and require all site stormwater to be directed through the treatment system prior to discharge.

Condition 7 requires that hazardous substances storage areas be bunded with drainage to appropriate recovery systems, not to the stormwater catchment.

Conditions 8, 9 and 10 impose limits on contaminants in the discharge, and stipulate effects that the discharge shall not give rise to in the Manu Stream.

Conditions 11 and 12 are lapse and review provisions.

SENZL also holds water discharge permit **6176-1** to cover the discharge of waste drilling fluids, produced water and stormwater from hydrocarbon exploration and production operations by deepwell injection at the Lower Otaraoa Road Wellsite. This permit was issued by the Council on 23 May 2003 under Section 87(e) of the RMA. Changes were made to the conditions of the permit on 10 January 2005 and 9 June 2005. It was transferred to SENZL on 14 March 2006. A change to special condition 5 was requested by SENZL and made on 9 August 2013 to move the due date for annual reporting from May to August. It is due to expire on 1 June 2033.

There are seven special conditions attached to the consent.

Condition 1 requires the submission of the injection well log and an injection management plan to the Council prior to the exercise of the consent.

Condition 2 stipulates that the activity must not contaminate or endanger any actual or potentially useable freshwater aquifers.

Conditions 3, 4 and 5 stipulate monitoring and reporting requirements relating to injection parameters and the composition of injected wastes.

Conditions 6 and 7 are lapse and review provisions.

The permit is attached to this report in Appendix I.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consents which are appended to this report.

1.3.2 Air discharge permits

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

SENZL holds air discharge permit **6002-1** to cover the discharge of contaminants to air as products of combustion from the Pohokura Production Station involving equipment burning natural gas as fuel where the maximum heat release is in excess of 10 megawatts, together with miscellaneous emissions. This permit was issued by the Council on 16 June 2003 under Section 87(e) of the RMA. Changes were made to the conditions of the permit on 11 April 2005. It was transferred to SENZL on 14 March 2006. A change to special condition 4 was requested by SENZL and made on 9 August 2013 to move the due date for annual reporting from May to August. The consent is due to expire on 1 June 2033.

Eighteen special conditions are attached to the consent regarding: information and notification (incident reporting, site planning, consultation prior to alteration of plant equipment or processes, BTEX emission reduction strategies); emissions from the site (best practicable option, appropriate equipment and processes, plant maintenance, noxious and offensive airborne contaminants, oxides of carbon and nitrogen); recording and reporting (gas stream analysis, annual air discharge report, visible smoke log); and lapse and review provisions.

SENZL also holds air discharge permit **6003-1** to cover the discharge of emissions to air from combustion involving the flaring of petroleum products incidental to the treatment of gas at the Pohokura Production Station. This permit was issued by the Taranaki Regional Council on 16 June 2003 under Section 87(e) of the RMA. Changes were made to the conditions of the permit on 11 April 2005. It was transferred to SENZL on 14 March 2006. A change to special condition 4 was requested by SENZL and made on 9 August 2013 to move the due date for annual reporting from May to August. The consent is due to expire on 1 June 2033.

The twenty one special conditions attached to the consent are the same as those for consent 6002-1 above, but also include requirements for: notification of neighbouring residents prior to commissioning of the plant; maintenance of a flaring log; minimisation of flaring; prevention of black smoke during depressurisation; and notification to the Council when flaring of more than five minutes duration is expected.

The permits are attached to this report in Appendix I.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consents which are appended to this report.

1.3.3 Coastal permits

Sections 12(2)(a) of the RMA stipulates that no person may occupy any part of the coastal marine area (CMA) unless expressly allowed by a rule in a regional coastal plan and in any relevant proposed regional coastal plan or by a resource consent.

SENZL holds coastal permit **5991-1** to occupy the CMA for a radius of 50 metres around up to three offshore wellhead platforms situated at least four kilometres offshore, and also for a distance of 50 metres either side of the associated pipelines connecting the three offshore wellhead platforms to the foreshore at mean high water spring. This permit was issued by the Council on 16 June 2003 under Section 87(e) of the RMA and granted by the Minister of Conservation pursuant to the provisions of Section 119 of the RMA on 12 July 2003. It is due to expire on 1 June 2033.

There are seven special conditions attached to the permit.

Condition 1 requires the consent holder to map the position of the platform(s) and provide a copy to the relevant authorities.

Conditions 2, 3 and 5 relate to public access.

Condition 4 requires the consent holder to adopt best practicable option to minimise effects on the environment.

Conditions 6 and 7 are lapse and review provisions.

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

SENZL also holds coastal permit **5992-1** to take produced water and associated heat from aquifers in the coastal marine area associated with hydrocarbon exploration and production activities. This permit was issued by the Council on 16 June 2003 under Section 87(c) of the RMA. It is due to expire on 1 June 2033.

There are three special conditions attached to the consent.

Condition 1 requires that the activity be carried out in accordance with the application.

Conditions 2 and 3 are lapse and review provisions.

Section 12(1)(b) of the RMA stipulates that no person may erect, reconstruct, place, alter, extend, remove, or demolish any structure that is fixed in, on, under, or over any foreshore or seabed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

SENZL also holds coastal permit **5993-1** to erect, place, use, reconstruct, alter, extend and maintain within the CMA up to three offshore wellhead platforms, 24 structures (being well casings) situated at least four kilometres offshore, and the associated pipelines connecting the three offshore wellhead platforms by horizontal directional drilling to the shore above mean high water spring, and the related occupation of the seabed. This permit was issued in July 2003 by the Minister of Conservation under Section 87(c) of the RMA. Changes to conditions of the permit were made in March 2005 and August 2005. It is due to expire on 1 June 2033.

There are 13 special conditions attached to the permit.

Conditions 1, 2 and 3 require the consent holder to provide detailed plans of the activity, a programme for the installation of the platform(s) and pipeline(s), and a contingency plan (the latter two also to be provided to Ngati Rahiri Hapu).

Condition 4 requires that the structures are maintained in accordance with information submitted in the application.

Conditions 5, 6 and 7 relate to burial of the pipelines, possible exposure of the pipelines and the provision of a map showing the position of the pipeline(s) and platform(s).

Condition 8 deals with notification of maintenance works.

Condition 9 requires the consent holder to adopt the best practicable option to avoid or minimise the discharge of contaminants.

Condition 10 requires that all activity comply with the noise standards of the Regional Coastal Plan (RCP).

Condition 11 deals with re-instatement of the site.

Conditions 12 and 13 are lapse and review provisions.

SENZL also holds coastal permit **5994-1** to disturb the seabed and foreshore of the CMA by the process of erection, placement, use alteration, extension, maintenance, or removal of up to three offshore wellhead platforms situated at least four kilometres offshore, and the associated pipelines connecting up to three offshore wellhead platforms to the foreshore above mean high water spring by the use of horizontal directional drilling. This permit was issued in July 2003 by the Minister of Conservation under Section 87(c) of the RMA. Changes to conditions of the permit were made in March 2005. It is due to expire on 1 June 2033.

There are 20 special conditions attached to the permit.

Condition 1 requires the consent holder to provide detailed plans of the activity at least one month prior to the exercise of the consent.

Condition 2 requires that the consent holder, in conjunction with Council and tangata whenua, relocate, as far as practicable, kaimoana from the area to be disturbed.

Conditions 3 and 4 require the preparation of a contingency plan and a wildlife management plan.

Condition 5 requires the consent holder to establish artificial substrate to assist with kelp relocation and reinstatement.

Condition 6 requires the consent holder to provide Council and the Ngati Rahiri Hapu with a programme for the disturbance prior to commencement of works.

Condition 7 states that there shall be no re-fuelling of land based machinery in the CMA.

Condition 8 requires the consent holder to notify the Council and the Ngati Rahiri Hapu prior to any maintenance involving disturbance, deposition or discharge to the CMA.

Condition 9 requires that work is carried out as proposed in the application.

Conditions 10, 11 and 12 deal with the best practicable option to avoid or minimise adverse effects on the environment and limiting disturbance.

Condition 13 requires that disturbance complies with noise standards as outlined in the RCP.

Conditions 14, 15, 16 and 17 stipulate requirements upon the discovery of archaeological remains.

Condition 18 relates to re-instatement of the site, while conditions 19 and 20 are lapse and review provisions.

SENZL also holds coastal permit **10096-1** to occupy the CMA with four pipelines (well casings) extending from the Lower Otaraoa Road wellsite for hydrocarbon production purposes. This permit was issued by the Council on 20 March 2015 under Section 87(c) of the RMA. It is due to expire on 1 June 2033.

There are two special conditions attached to the consent.

Condition 1 requires that the activity be carried out in accordance with the application.

Condition 2 is a review provision.

SENZL also holds coastal permit **10450-1** discharge heat and contaminants into land at depth in the coastal marine area, associated with the development, operation/production, maintenance and treatment of wells within the Pohokura Field. This permit was issued by the Council on 27 September 2017 under Section 87(c) of the RMA. It is due to expire on 1 June 2033.

There are three special conditions attached to the consent.

Condition 1 requires the consent holder to adopt best practicable option to minimise effects on the environment.

Conditions 2 and 3 are lapse and review provisions.

SENZL also holds coastal permit **10477-1** to discharge natural gas into land at depth in the coastal marine area, for the purpose of storage or other hydrocarbon recovery operations. This permit was issued by the Council on 27 September 2017 under Section 87(c) of the RMA. It is due to expire on 1 June 2033.

There are five special conditions attached to the consent.

Condition 1 requires the consent holder to adopt best practicable option to minimise effects on the environment.

Conditions 2 and 3 place a limit on the reservoir pressure and require the consent holder to continuously monitor the injection pressure.

Conditions 4 and 5 are lapse and review provisions.

The permits are attached to this report in Appendix I.

This summary of consent conditions may not reflect the full requirements of each condition. The consent conditions in full can be found in the resource consents which are appended to this report.

1.3.4 Related consents

SENZL also holds seven consents in relation to the Pohokura facilities which did not require active monitoring during the period under review. A summary of these consents is provided in Table 2. Deepwell injection consent 6175-1 has not yet been exercised.

The permits are attached to this report in Appendix I.

Table 2 Additional consents relating to the Pohokura facilities

Consent number	Purpose	Issue date	Expiry
5210-2	To discharge uncontaminated stormwater and treated stormwater from hydrocarbon exploration and production operations onto and into land [Pohokura-A wellsite]	22/03/2017	2033
5485-2	To occupy the coastal marine area with a pipeline (well casing) from the Pohokura-A wellsite for hydrocarbon exploration and production purposes	22/03/2017	2033
6000-1	To erect, place, use and maintain a bridge over the bed of an unnamed tributary of the Waipapa Stream for vehicle access purposes	16/06/2006	2033

Consent number	Purpose	Issue date	Expiry
6005-1	To discharge emissions into the air from the flaring of hydrocarbons, together with miscellaneous emissions, arising from hydrocarbon exploration and production testing operations involving up to 48 zones at the Lower Otaraoa Road wellsite	16/06/2003	2033
6175-1	To discharge waste drilling fluids, produced water and stormwater from hydrocarbon exploration and production operations by deepwell injection at the Pohokura-A wellsite	23/05/2003	2033
6254-1	To erect, place and maintain a culvert in an unnamed tributary of the Waipapa Stream for State Highway 3 road widening purposes	18/12/2003	2033
6577-1	To install, construct and maintain a water bore for horizontal directional drilling purposes	13/04/2005	2023

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

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

The monitoring programme for the Pohokura Production Station consisted of four primary components.

1.4.2 Programme liaison and management

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

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

1.4.3 Site inspections

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

1.4.4 Chemical sampling

The Council undertook sampling of the stormwater discharges from the site. The combined discharge was scheduled to be sampled on four occasions, however this was sampled once. The sample was analysed for chloride, conductivity, hydrocarbons, pH, suspended solids and turbidity.

The Council undertook sampling of the ambient air quality outside the boundary of the site. A multi-gas meter was deployed on one occasion in the vicinity of the plant, with monitoring consisting of continuous measurements of gas concentrations for the gases of interest (carbon monoxide and combustible gases). A PM₁₀ particulate monitor was deployed concurrently with the multi-gas meter. Two nitrogen oxide measuring devices were also deployed in the vicinity of the plant on one occasion during the year under review. The Company supplied data on flaring causes and flare volumes throughout the period.

1.4.5 Data Review

The conditions on various consents require the consent holder to provide information and data to Council, including the results of sampling, flaring logs, produced water records and various reports.

2 Results

2.1 Water

2.1.1 Inspections

Seven inspections were undertaken in relation to the Pohokura Production Station (Photo 3) and surrounding environment during the 2017-2018 monitoring year. The following was found during the inspections:

6 October 2017

An inspection of the foreshore was undertaken. There was no evidence of any effects to the environment from stormwater discharging from Lake Manu. No adverse effects were observed in relation to structures installed along and below the foreshore area.

Minimal flaring was observed from outside the site perimeter and the flare was clean, with no smoke or odours noted.

11 January 2018

The site was observed to be neat and tidy. There was no stormwater discharge occurring at the time of the inspection.

Minimal flaring was observed and no odours or smoke were noted.

21 March 2018

There was no evidence of any previous discharge from the duck pond (Lake Manu). The foreshore area was inspected and no effects of any activity associated with the recent marine survey of the Pohokura pipeline were noted. Since the previous foreshore inspection it appeared that tidal activities and recent weather events had contributed to a change in the coastal marine area, with some erosion resulting in a rockier foreshore, this had not caused any problems with any of the SENZL infrastructure.

10 May 2018

An inspection was undertaken during fine weather. The site was observed to be neat and tidy. The stormwater system and wetland area were clear of contamination, with all bunds and interceptors clean. No discharge was occurring at the time of the inspection.

No flaring or odours were noted.

28 May 2018

An inspection was undertaken with SENZL staff in order to review procedures regarding "pigging" the pipeline from the offshore module. This was required to test the integrity of the pipeline in relation to possible gas leaks, as detected by SENZL monitoring of pipeline by ROV. All contingencies and equipment were in place at the production station to flare or capture residual product.

7 June 2018

On 7 June 2018 a Council officer accompanied Shell representatives on the MV Reef Spirit. Council's role on the vessel was as an observer during a period when works were being undertaken to ascertain if a pipeline between the Pohokura Platform and the shore was leaking. The pipeline had been pressurized to 70 Bar and an ROV was deployed to monitor a specific section of the pipeline, however the visibility underwater was very poor and the pipeline could not be monitored. The pipeline had been "pigged" to remove hydrocarbons and the pipeline was full of water containing a dye. No dye or hydrocarbon sheens were observed on the surface during the monitoring time spent on board the MV Reef Spirit.

29 June 2018

The deep well injection area at the production station was neat and tidy and there was no evidence of any spillage or contamination of stormwater systems in the area.

The Otaraoa Road wellsite was inspected following recent very heavy rainfall. The stormwater system had coped well with the deluge. However, onsite crew informed the inspecting officer that torrential rainfall had not all been diverted through the onsite stormwater system as required, with excess water flowing out of the site via the gateway on the southern side and into the Waipapa stream. The wetland area, fire water pond, all separators and bunds was clear of any contaminants. In general the site was observed to be neat and tidy. It was noted that extra equipment was on site for integrity testing and flushing of the pipeline from the offshore platform. No flaring was taking place at the time of the inspection and no odours or smoke were evident.



Photo 3 Pohokura Production Station

2.1.2 Results of discharge monitoring



Figure 1 Pohokura onshore facilities and the combined discharge sampling site STW002075

A sample was collected of the combined discharge from the wellsite and production station at the wetland outlet (site STW002075, Figure 1). There was no discharge from the pond and the sample was collected in wetland reed area as near to the discharge point into culvert as possible. Table 3 presents the results.

Table 3 Results from samples of the combined stormwater discharge (STW002075)

Parameter		10 May 2018	Consent limits
Chloride	g/m ³	29.1	300
Conductivity	mS/m	12.3	-
Hydrocarbons	g/m ³	<0.5	15
pH	pH	6.3	6.0 – 9.0
Suspended solids	g/m ³	23	100
Turbidity	NTU	13	-

Levels of suspended solids, hydrocarbons, and chloride complied with the limits prescribed by consents 5997-1 and 6269-1.

2.1.3 Results of consent holder monitoring

2.1.3.1 Stormwater monitoring by SENZL

SENZL monitors the combined stormwater discharge from the site, with sampling triggered by rainfall events. Table 4 shows the results obtained during the 2017-2018 monitoring year. In all samples hydrocarbons, suspended solids and chloride levels were all below the limits set by consents 5997-1 and 6269-1, and were indicative of a consistently clean discharge. The pH was slightly below the allowable range in one sample at 5.9.

Table 4 Results of stormwater samples collected by SENZL during the 2017-2018 year

Date	pH	Hydrocarbons g/m ³	Chloride g/m ³	Suspended solids g/m ³
11-Jul-17	5.9	0	23	10
25-Jul-17	6.3	0	54	40
2-Aug-17	6.7	0	0	9
8-Aug-17	6.8	0	0	5
14-Aug-17	6.5	0	25	4
22-Aug-17	7.1	0	22	6
18-Sep-17	6.8	0	22	7
26-Sep-17	6.9	0	27	5
16-Oct-17	6.4	0	44	3
7-Nov-17	8.2	2.9	17	2
15-Nov-17	6.5	2.4	33	4
23-Jan-18	7.2	0	23	11
7-Feb-18	6.8	0	38	3
13-Feb-18	6.5	0	30	6
27-Feb-18	6.5	0	40	2
27-Mar-18	6.6	0	29	19
9-Apr-18	6.1	0	34	15
16-Apr-18	7.3	0	23	9
30-Apr-18	6.4	3.3	34	49
14-May-18	6.6	0	17	0
21-May-18	7.5	0	25	15
28-May-18	6.2	0	28	0
6-Jun-18	6.3	0	28	4
12-Jun-18	6.5	0	28	5
19-Jun-18	6.3	0	20	4
26-Jun-18	7.2	0	21	4
Consent limit	6.0 - 9.0	15	300	<100

2.1.3.2 Produced water monitoring and deep well injection by SENZL

Produced water is saline water which is inherent in well-stream fluids along with gas and liquid hydrocarbons. It is separated at the production station, stored in a dedicated tank and then pumped intermittently, as volume requires, down the injection well located at the Lower Otaraoa Road wellsite under consent 6176-1.

Deep well injection (DWI) is often utilised as liquid waste disposal technology and provides an alternative to the surface disposal of such material. The DWI process utilises specially designed injection wells to pump liquid waste into deep geological formations, hydrocarbon reservoirs or confined saline aquifers. The receiving formations generally contain water that is too saline to be of any potential use. Impermeable geological seals overlying the injection intervals restrict any potential vertical migration of injected wastes into shallow freshwater aquifers.

Condition 4 of consent 6176-1 requires the consent holder to monitor the injected wastes monthly for a variety of parameters (without setting any limits for these). Table 5 shows the results obtained over the 2017-2018 monitoring year.

Table 5 Pohokura produced water analyses for 2017-2018

Date	Suspended solids g/m ³	Hydrocarbons g/m ³	Dissolved solids g/m ³	pH	Chloride g/m ³
4-Jul-17	7	35	13,560	6.5	7,015
18-Jul-17	6	51	-	6.5	7,079
14-Aug-17	6	52	13,996	6.8	7,326
18-Sep-17	4	38	14,090	6.8	7,234
16-Oct-17	9	46	14,333	6.5	7,475
15-Nov-17	9	109	14,187	6.6	7,234
11-Dec-17	16	80	13,970	6.8	7,323
17-Jan-18	10	55	13,760	7.1	7,263
20-Feb-18	10	38	7,335	6.7	3,538
19-Mar-18	8	50	20,000	6.8	4,991
16-Apr-18	8	29	8,845	6.7	5,389
19-Jun-18	11	182	9,024	4.5	4,754

Condition 3 of consent 6176-1 requires the consent holder to also record the amount of material injected. This data is provided to the Council by SENZL and is summarised in Figure 2.

The total volume of produced water disposed of by DWI in the period July 2017 to June 2018 was 68,504 m³.

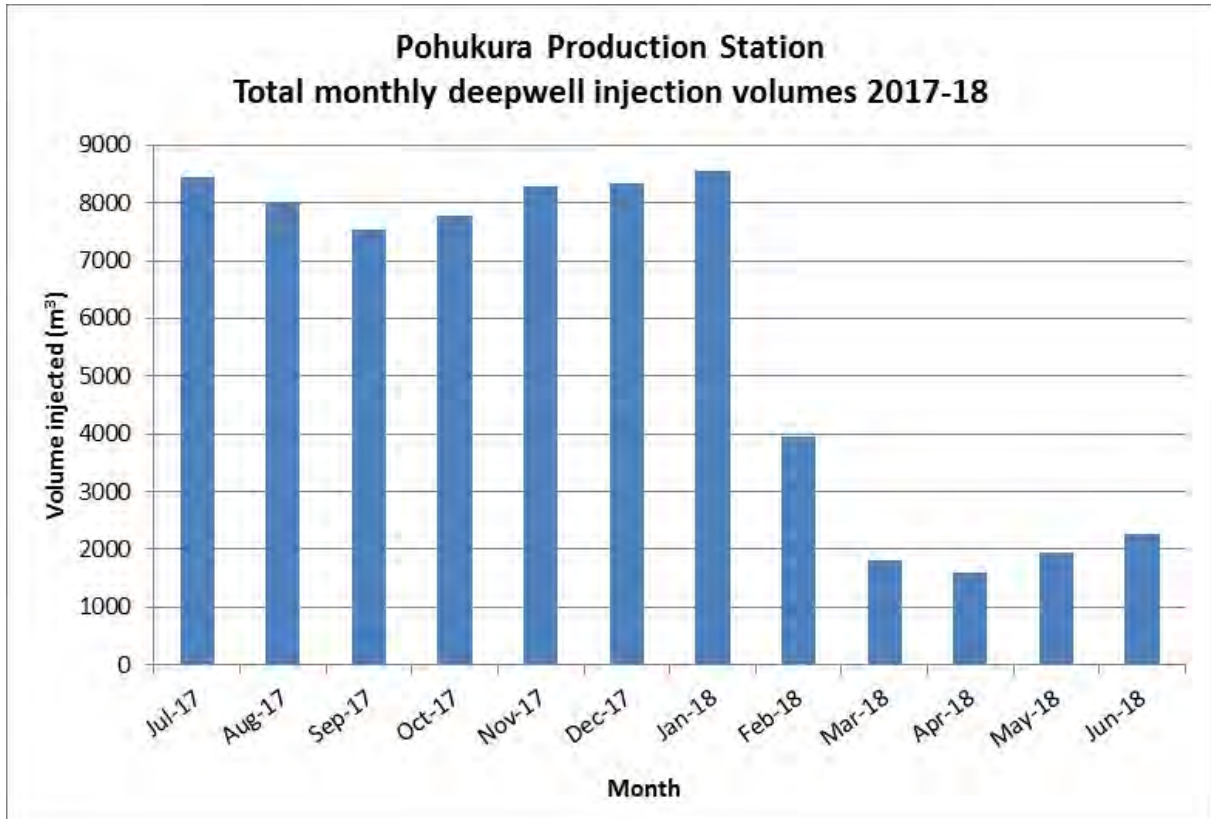


Figure 2 Monthly summary of deepwell injection volumes under consent 6176-1

2.2 Air

2.2.1 Inspections

Inspection notes are included in section 2.1.1 above. No issues regarding air quality were recorded during the monitoring period.

2.2.2 Results of receiving environment monitoring

2.2.2.1 Carbon monoxide and combustible gases

During the monitoring year, a multi-gas meter was deployed on one occasion in the vicinity of the plant. The deployment lasted approximately 42 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continuous measurements of gas concentrations for the gases of interest (carbon monoxide and combustible gases). The monitoring sites used in the year under review are shown in Figure 3.

Because of the nature of the activities on the site, it was considered that the primary information of interest in respect of gases potentially emitted from the site was the average downwind concentration, rather than any instantaneous peak value. That is, the long-term exposure levels, rather than short-term maxima, are of most interest. The gas meter was therefore set up to create a data set based on recording the average concentration measured during each minute as raw data.

The details of the sample run are summarised in Table 6 and the data from the sample run are presented graphically in Figure 4.



Figure 3 Air monitoring sites at Pohokura Production Station for 2017-2018

The consents covering air discharges from the Pohokura production station have specific limits related to particular gases. Special condition 14 of consent 6002-1 and special condition 17 of consent 6003-1 set limit on the carbon monoxide concentration at or beyond the production station's boundary. The limit is expressed as 10 mg/m³ for an eight hour average or 30 mg/m³ for a one hour average exposure. The maximum concentration of carbon monoxide found during the monitoring run was 19.5 mg/m³ with an average concentration for the entire dataset of 0.34 mg/m³ which comply with consent conditions.

Lower Explosive Limit (LEL) gives the percentage of the lower explosive limit, expressed as methane that is detected in the air sampled. The sensor on the instrument reacts to gases and vapours such as acetone, benzene, butane, methane, propane, carbon monoxide, ethanol, and higher alkanes and alkenes, with varying degrees of sensitivity. The Council's Regional Air Quality Plan has a typical requirement that no discharge shall result in dangerous levels of airborne contaminants, including any risk of explosion. At no time did the level of explosive gases downwind of the Pohokura Production Station reach any more than a trivial level.

Table 6 Results of carbon monoxide and LEL monitoring at Pohokura Production Station

Period		26 to 28 March 2018 (45 hours)
Max	CO(ppm)	17.0
	LEL(%)	0.20
Mean	CO(ppm)	0.30
	LEL(%)	0.00
Min	CO(ppm)	0.00
	LEL(%)	0.00

Notes: (1) the instrument records in units of ppm. At 25°C and 1 atm, 1ppm CO = 1.145 mg/m³
 (2) because the LEL of methane is equivalent to a mixture of approximately 5% methane in air, then the actual concentration of methane in air can be obtained by dividing the percentage LEL by 20.

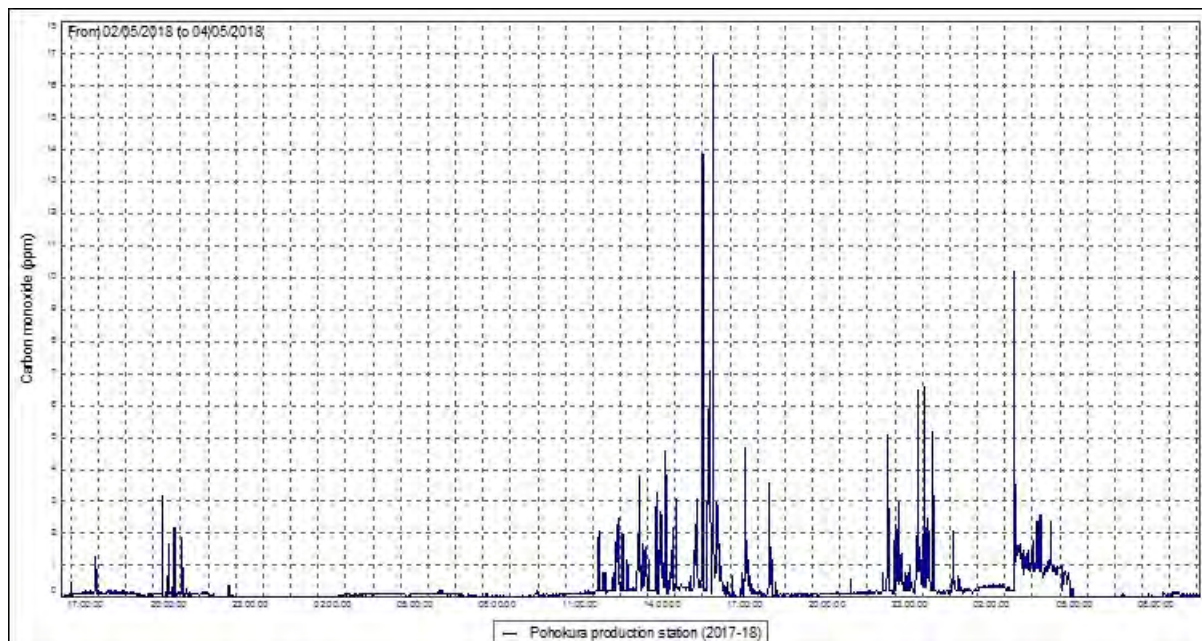


Figure 4 Ambient CO levels in the vicinity of Pohokura Production Station 2017-2018

2.2.2.2 PM₁₀ particulates

In September 2004 the Ministry for the Environment enacted National Environmental Standards (NESs) relating to certain air pollutants. The NES for PM₁₀ particulates is 50 $\mu\text{g}/\text{m}^3$ (24 hour average).

Particulates can be derived from many sources, including motor vehicles (particularly diesel), solid and oil-burning processes for industry and power generation, incineration and waste burning, photochemical processes, and natural sources such as pollen, abrasion, and sea spray.

PM₁₀ particles are linked to adverse health effects that arise primarily from the ability of particles of this size to penetrate the defences of the human body and enter deep into the lungs, significantly reducing the exchange of gases across the lung walls. Health effects from inhaling PM₁₀ include increased mortality and the aggravation of existing respiratory and cardiovascular conditions such as asthma and chronic pulmonary diseases.

During the reporting period, a DustTrak PM₁₀ monitor was deployed on one occasion in the vicinity of the Pohokura Production Station. The deployment lasted approximately 42 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continual measurements of PM₁₀ concentrations. The location of the DustTrak monitor during the sampling run is shown in Figure 3. The results of the sample run are presented in Figure 5 and Table 7.

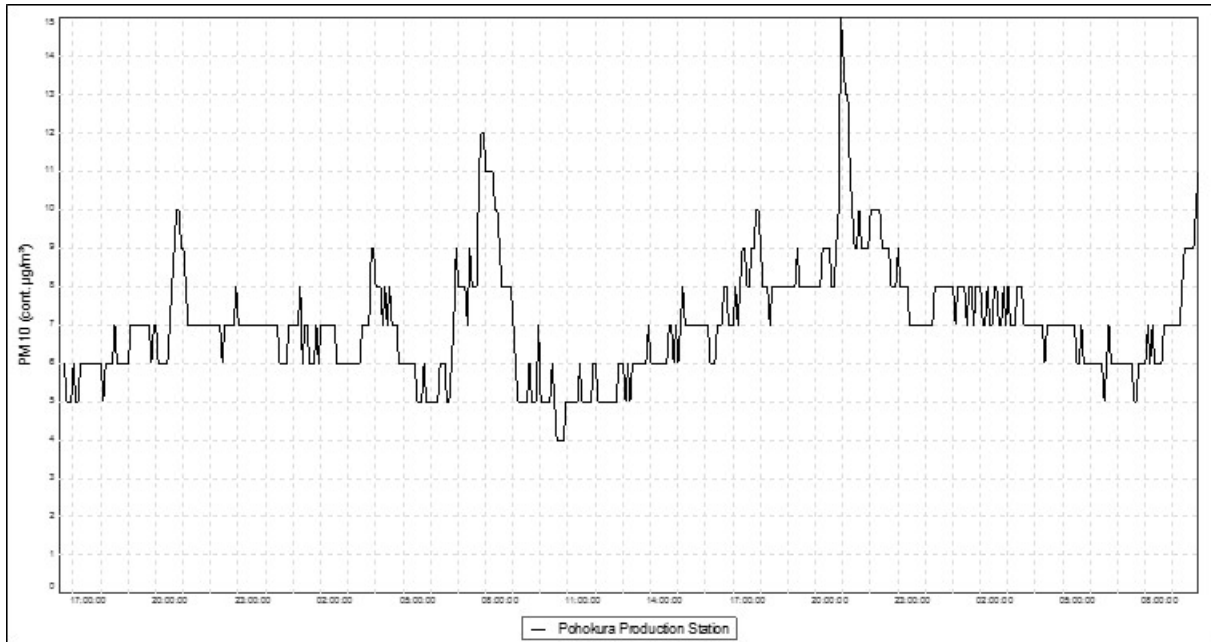


Figure 5 PM₁₀ concentrations (µg/m³) at Pohokura Production Station

Table 7 Daily averages of PM₁₀ results from monitoring at Pohokura Production Station

	2 to 4 May 2018 (42 hours)	
24 hr. set	Day 1 (start to 24 hours)	Day 2 (24 hours to end)
Daily average	6.6 µg/m ³	7.2 µg/m ³
NES	50µg/m ³	

During the 42 hour run, from 2 to 4 May 2018, the average recorded PM₁₀ concentration was 6.6 µg/m³ for the first 24 hour period and 7.2 µg/m³ for the second 24 hour period. These daily means equate to 13% and 14%, respectively, of the 50 µg/m³ value that is set by the NES. Background levels of PM₁₀ in the region have been found to be typically around 11 µg/m³.

2.2.2.3 Nitrogen oxides

From 2014 onwards, the Council implemented a coordinated region-wide compliance monitoring programme to measure nitrogen oxides (NO_x). The programme involves deploying measuring devices at 30 NO_x monitoring sites (including two sites in the vicinity of Pohokura Production Station) on the same day, with retrieval three weeks later. This approach assists the Council in further evaluating the effects of local and regional emission sources and ambient air quality in the region.

The consents covering air discharges from the Pohokura Production Station have specific limits related to particular gases. Special condition 15 of consent 6002-1 and special condition 18 of consent 6003-1 set limits on the nitrogen dioxide concentration at or beyond the production station's boundary. The limits are expressed as 200 µg/m³ for a one hour average or 100 µg/m³ for a 24 hour average exposure.

NO_x passive adsorption discs were placed at two locations in the vicinity of the Pohokura Production Station on one occasion during the year under review. The discs were left in place for a period of 21 days. The calculated one hour and 24 hour theoretical maximum NO_x concentrations found at the Pohokura Production Station during the year under review equate to 5.8 µg/m³ and 3.1 µg/m³, respectively. The results show that the ambient ground level concentration of NO_x is well below the limits set out by consents 6002-1 and 6003-1.

The air monitoring report is attached in Appendix II.

2.2.3 Flaring and fuel gas use reported by SENZL

In December 2004 the New Zealand Parliament passed the Resource Management (Energy and Climate Change) Amendment Act, which relieved regional councils from the obligation to consider the effects on climate change of discharges into air of greenhouse gases. Holders of resource consents to discharge emissions to air were no longer required to provide any information on greenhouse gas emissions, and consents were amended accordingly. However, some consent holders, including SENZL, are still required to provide reports on emissions from gas combustion, as indicative of any potential for local concern over such emissions.

There are a number of products of flaring that are of interest because of their potential effects upon local air quality. Combustion processes that are well controlled release nitrogen oxides, while incomplete combustion will emit carbon monoxide and volatile or semi-volatile organic compounds that cause smoke and odour, and these can be highly injurious to health in concentrated form. Information on volumes of gas combusted in the Taranaki region assists the Council and consent holders in determining whether this is a significant issue in the region.

Condition 4 of consents 6002-1 and 6003-1 requires SENZL to submit a report in August each year regarding emissions and flaring, while condition 11 of consent 6003-1 requires SENZL to keep a log of all flaring incidents. Emission data for the Pohokura Production Station were provided to the Council by SENZL on a monthly basis, expressed as total gas flared and total fuel gas used over a one day period. A summary of these datasets is graphically presented in Figure 6.

The total volume flared during the monitoring period was 959,400 m³, a large increase compared with the 121,600 m³ flared in the previous year. This was attributed to well service programmes undertaken in October 2017 and June 2018, as shown in Figure 6.

Shell has an internal requirement to reduce flaring and it is no longer permitted to have continuous flaring in new installations. As natural gas is one of the products sold by SENZL from the Pohokura Production Station it is commercially sensible to recover as much gas as possible. The flare has been installed in case the plant needs to be shut down or depressurised in an emergency situation. The gas reinjection facility also allows SENZL to increase condensate production without necessitating increased flaring of surplus gas.

Shell maintains a Greenhouse Gas Management Plan for the site in order to forecast, monitor and improve emissions. Opportunities to reduce emissions are identified during this process, and feasible opportunities implemented. One such example includes investigating the potential for automated switchover between the duty and standby stabiliser gas compressors.

There were no complaints received by SENZL or the Council relating to air emissions at Pohokura Production Station during the period under review.

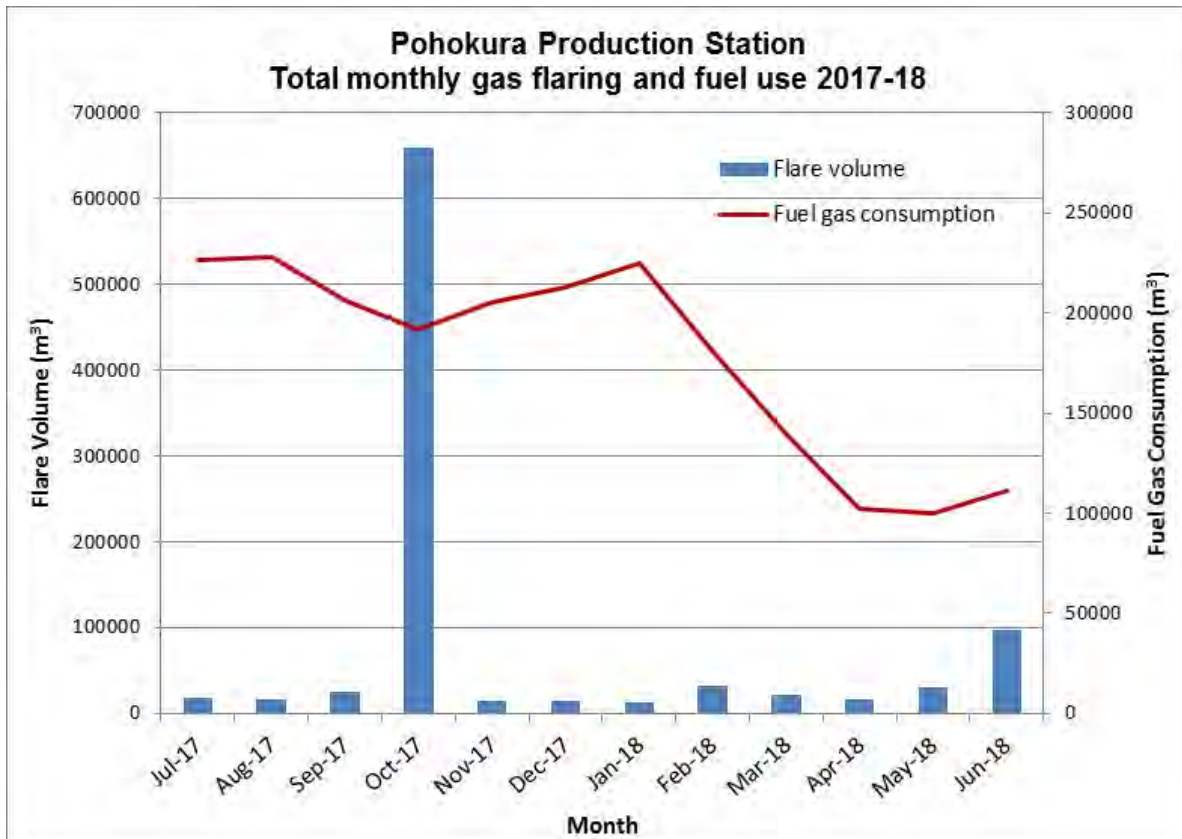


Figure 6 Monthly flare volumes and fuel gas consumption for July 2017 to June 2018

2.2.4 Results of receiving environment monitoring by SENZL

Ambient air quality monitoring at a number of sites around the boundary of the Pohokura Production Station has been undertaken by SENZL since June 2012 to assess offsite BTEX (benzene, toluene, ethylbenzene and xylenes) levels.

In 2013, AECOM was contracted to carry out continuous real-time monitoring for BTEX at four sites around the production station. The results of this work showed that there were no exceedances of the relevant New Zealand Workplace Exposure Standards for BTEX constituents at any of the monitored locations.

Minor exceedances of the 2016 Workplace Exposure Standard (8-hour average) have been found in previous monitoring periods and the elevated results were considered to reflect a combination of the predominantly westerly winds and the proximity of the monitoring locations to the two principle benzene sources on site, which are the condensate and produced water storage tanks. Areas where there are elevated benzene levels are limited to unoccupied industrial land, inaccessible to the public.

Monitoring has indicated that the presence of ambient benzene is mainly due to periodic emissions from the condensate tank, as well as tank filling operations. A tank pressure control system was implemented in September 2016 to reduce emissions from the condensate tank (T-6001), limiting the volume of vapours exiting the tank vents by adjusting the volume of liquid in the tank. Since this tank pressure control system was implemented, and over the current monitoring period, the results of benzene monitoring have been below the 2016 Workplace Exposure Standards.

The results of boundary ambient air quality monitoring for benzene provided by the Company for the period under review were later found to be erratic to an unknown degree due to malfunctioning detection instruments. The Council was advised of this accordingly and this report has since been amended to remove these results. Further information will be provided in the 2018-2019 compliance monitoring report.

2.3 Offshore

2.3.1 Marine and coastal monitoring by SENZL

SENZL has committed to undertaking ongoing ecological assessments of the coastal area surrounding the Pohokura site to monitor the natural health of surrounding reefs as a means of operator and environmental best practise. These surveys will establish a data history and knowledge of the reefs as well as gaining an insight into how the reefs are affected by sand inundation.

During November 2017, a qualitative intertidal ecological survey was undertaken by SLR Consulting at three reefs during low tide. The reefs were: Nikorima Reef at the end of Otaraoa Road on the western boundary of the Pohokura gas field consented area; Epiha Reef on the eastern boundary of the consented area; and Turangi Reef, which is 1.5 kilometres east of Epiha Reef and is used as a control site for routine monitoring. This section of the north Taranaki coastline is of cultural importance to a number of hapū. Two representatives of the Ngāti Rahiri hapū were present during the surveys which allowed discussions regarding the reasoning behind the ecological surveys, the methodology used, and a summary of what was found. These reef sites are also used by the Council as part of the resource consent compliance monitoring programme and they have also been used by North Taranaki iwi as kaimoana monitoring sites, a programme established by iwi and Shell in 2001.

The November 2017 survey concluded:

Over the last eight years of qualitative ecological surveys along the three north Taranaki reefs, it is apparent that sand inundation influences intertidal species diversity and abundance of intertidal fauna and flora. The north Taranaki coastline is a high wave energy environment due to the prevailing onshore winds; transportation of sand along the coast from the natural littoral drift is a common occurrence and pockets of sand can settle for a short duration (i.e. days to weeks) before continuing up the coast. The intertidal species which inhabit this coastline are tolerant of, or have adapted to living with, sand inundation and can quickly recolonise an area once the sand recedes, with the reefs quickly recovering (i.e. within six months). The underlying purpose of these qualitative surveys is to gain an understanding of how these reefs respond to natural events (i.e. sand inundation), how quickly they can recover over time and to collect a qualitative data set for species diversity and abundance.

The qualitative intertidal ecological survey undertaken in 2017 indicated that species diversity and species abundance across the Epiha and Turangi reefs in north Taranaki was high, indicating healthy reef environments along this section of Taranaki coastline. However, at Nikorima Reef sand inundation had resulted in a decrease in both species diversity and abundance, and despite the reef still being healthy, marine communities here had obviously been influenced by the increased sand levels. Sand levels at Epiha Reef and Turangi Reef were similar to levels observed in 2016.

Overall, based on the authors experience working on the intertidal reefs around the Taranaki coastline, Nikorima, Epiha and Turangi reefs are comparable in terms of species diversity and species abundance with other intertidal reefs around the Taranaki coastline, especially those that are exposed to sand inundation events. The overall health of these reefs demonstrates that even though the Pohokura platform has been in operation since 2005, a healthy reef environment still remains along the north Taranaki coastline.

2.4 Investigations, interventions, and incidents

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

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

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

In the 2017-2018 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans.

3 Discussion

3.1 Discussion of site performance

Monitoring of the Pohokura Production Station during the period under review found that the site was well managed. A highly proactive approach to environmental stewardship and best practice continues to be demonstrated by SENZL.

3.2 Environmental effects of exercise of consents

The stormwater sample complied with the limits prescribed by the consents, and no adverse effects were noted on the receiving environment as a result of the discharge.

There were no adverse effects on the environment resulting from the exercise of the air discharge consent. The ambient air quality monitoring at the site showed that levels of carbon monoxide, combustible gases, PM₁₀ particulates and nitrogen oxides were all below levels of concern at the time of sampling. No offensive or objectionable odours were detected beyond the boundary during inspections and there were no complaints in relation to air emissions from the site.

Ecological assessment of the intertidal coastal area surrounding the Pohokura site found high species diversity and abundance across two of the three studied reefs, indicating a stable and healthy reef environment with high water quality. Sand inundation across the third reef had resulted in a decrease in both species diversity and abundance. Sand inundation is a common occurrence around the Taranaki coastline, with the reef usually recovering fairly quickly once the sand moves on. The ongoing ecological surveys have shown that the health of the reefs in the vicinity is comparable to other reefs around the Taranaki coastline that are subjected to sand inundation. SENZL activities in the area do not appear to have had any adverse effect on the coastal environment.

3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Table 8 to Table 17.

Table 8 Summary of performance for consent 5991-1

Purpose: To occupy the CMA for a radius of 50 metres around up to three offshore wellhead platforms situated at least four kilometres offshore, and also for a distance of 50 metres either side of the associated pipelines connecting the three offshore wellhead platforms to the foreshore at mean high water spring		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Survey and map position of completed platforms and pipeline within 90 days of completion of construction	Information supplied	Yes
2. Exercise of consent shall not limit public access to the CMA	Inspections and liaison with consent holder	Yes
3. Restriction of public access to Motunui foreshore during construction or maintenance kept to a minimum	Inspections and liaison with consent holder	Yes
4. BPO to prevent or minimise adverse environmental effects	Inspections and liaison with consent holder	Yes

Purpose: To occupy the CMA for a radius of 50 metres around up to three offshore wellhead platforms situated at least four kilometres offshore, and also for a distance of 50 metres either side of the associated pipelines connecting the three offshore wellhead platforms to the foreshore at mean high water spring		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
5. Notification to Council and hapu of maintenance works	No maintenance undertaken	Yes
6. Lapse of consent	Consent exercised within lapse period	N/A
7. Optional review provision re environmental effects	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 9 Summary of performance for consent 5992-1

Purpose: To take produced water and associated heat from aquifers in the CMA associated with hydrocarbon exploration and production activities		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Activity undertaken in accordance with application	Inspections and liaison with consent holder	Yes
2. Consent lapse	Consent exercised within lapse period	N/A
3. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 10 Summary of performance for consent 5993-1

Purpose: To erect, place, use, reconstruct, alter, extend and maintain within the CMA up to three offshore wellhead platforms, 24 structures (being well casings) situated at least four kilometres offshore, and the associated pipelines connecting the three offshore wellhead platforms by horizontal directional drilling to the shore above mean high water spring, and the related occupation of the seabed		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Written plans required at least one month prior to exercise of consent	Plans received	Yes
2. Schedule of proposed works provided to Council and hapu	Schedule received	Yes
3. Contingency plan provided	Plan received	Yes

Purpose: To erect, place, use, reconstruct, alter, extend and maintain within the CMA up to three offshore wellhead platforms, 24 structures (being well casings) situated at least four kilometres offshore, and the associated pipelines connecting the three offshore wellhead platforms by horizontal directional drilling to the shore above mean high water spring, and the related occupation of the seabed		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
4. Structures constructed and maintained in accordance with application	Inspections and liaison with consent holder	Yes
5. Plans of proposed burial depth of pipelines	Plans received	Yes
6. Re-burial of pipelines if exposed	Pipeline surveys	N/A
7. Survey and map of location of platforms and pipelines	Provided to relevant parties	Yes
8. Notification to Council and hapu of maintenance works	Notifications received	Yes
9. BPO to avoid or minimise adverse environmental effects	Inspections and liaison with consent holder	Yes
10. Compliance with noise standards	Inspections	Yes
11. Removal of structures and reinstatement of site	Structures still operational	N/A
12. Lapse of consent	Consent exercised within lapse period	N/A
13. Optional review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 11 Summary of performance for consent 5994-1

Purpose: To disturb the seabed and foreshore of the CMA by the process of erection, placement, use, alteration, extension, maintenance, or removal of up to three offshore wellhead platforms situated at least four kilometres offshore, and the associated pipelines connecting up to three offshore wellhead platforms to the foreshore above mean high water spring by the use of horizontal directional drilling		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Written plans required at least one month prior to exercise of consent	Plans received	Yes
2. Recover and relocate kaimoana	No excavation work required along shoreline	N/A
3. Contingency plan provided	Plan received	Yes

Purpose: To disturb the seabed and foreshore of the CMA by the process of erection, placement, use, alteration, extension, maintenance, or removal of up to three offshore wellhead platforms situated at least four kilometres offshore, and the associated pipelines connecting up to three offshore wellhead platforms to the foreshore above mean high water spring by the use of horizontal directional drilling		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
4. Preparation of wildlife management plan	Plan received	Yes
5. Artificial substrate for kelp re-seeding	Use of HDD under foreshore did not result in large area of kelp disturbance	N/A
6. Plan of proposed works to Council and hapu	Plan received	Yes
7. No refuelling of land based machinery within the CMA	No excavation work required along shoreline	N/A
8. Notification to Council and hapu of maintenance works	Notifications received	Yes
9. Disturbance undertaken in accordance with application	Inspections and liaison with consent holder	Yes
10. BPO to avoid or minimise adverse environmental effects	Inspections, contingency plans, wildlife plan, intertidal and subtidal surveys	Yes
11. Foreshore and seabed disturbance kept to a minimum	Inspections, intertidal and subtidal surveys	Yes
12. No adverse ecological effects outside of disturbance corridor	Intertidal and subtidal surveys	Yes
13. Compliance with noise standards	Inspections	Yes
14. Works to cease if archaeological remains discovered	Works not undertaken in the coastal area during the period under review	N/A
15. Hapu to have access in event of a significant archaeological find	Works not undertaken in the coastal area during the period under review	N/A
16. Time limits for archaeological requirements	Works not undertaken in the coastal area during the period under review	N/A
17. Works to recommence when advised by Council	Works not undertaken in the coastal area during the period under review	N/A
18. Temporary structures removed and area reinstated when no longer required	Works not undertaken in the coastal area during the period under review	N/A
19. Lapse of consent	Consent exercised within lapse period	N/A

Purpose: To disturb the seabed and foreshore of the CMA by the process of erection, placement, use, alteration, extension, maintenance, or removal of up to three offshore wellhead platforms situated at least four kilometres offshore, and the associated pipelines connecting up to three offshore wellhead platforms to the foreshore above mean high water spring by the use of horizontal directional drilling		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
20. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 12 Summary of performance for consent 5997-1

Purpose: To discharge treated stormwater from an Onshore Production Station to an existing stormwater control system, being a body of water commonly known as 'The Duck Pond' within the Manu Stream catchment		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Contingency plan submitted prior to exercise of consent	Received and approved 15 April 2005	Yes
2. Details of stormwater planning submitted within one month of completion of site	Received and approved 27 January 2006	Yes
3. Exercised in accordance with application information, special condition 2, and to ensure consent conditions met at all times	Inspection, sampling and provision of information	Yes
4. Best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
5. Above ground hazardous substance storage areas drained to recovery systems not stormwater	Inspection and liaison with consent holder	Yes
6. Limits on contaminants in discharge	Sampling and results of self-monitoring	Mostly
7. Limits on temperature and BOD increase below the mixing zone	Not sampled during period under review	N/A
8. Effects on receiving water below the mixing zone	Inspection	Yes
9. Lapse of consent	Consent exercised within lapse period	N/A
10. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A

Purpose: To discharge treated stormwater from an Onshore Production Station to an existing stormwater control system, being a body of water commonly known as 'The Duck Pond' within the Manu Stream catchment		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 13 Summary of performance for consent 6002-1

Purpose: To discharge contaminants to air as products of combustion from an Onshore Production Station involving equipment burning natural gas as fuel where the maximum heat release is in excess of 10 megawatts, together with miscellaneous emissions		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Inspections and liaison with consent holder	Yes
2. Selection, operation and maintenance of equipment and processes to minimise emissions and impacts	Inspections and liaison with consent holder	Yes
3. Analysis of gas/condensate/crude stream	Analysis not requested	N/A
4. Annual reporting during August of each year	Report received	Yes
5. Emission abatement equipment operated appropriately and well maintained at all times	Inspection and self-monitoring	Yes
6. Consultation on alterations	Inspection and liaison with consent holder	Yes
7. Provision of final site lay-out plan	Received	Yes
8. Provision of report on BTEX abatement within six months of granting consent	Included in design documents and annual reports	Yes
9. Notification and reporting on incidents or potential incidents	No incidents during monitoring period	N/A
10. Records kept of smoke, relief valve and complaints and made available to TRC	Records viewed at inspection and in annual reports	Yes
11. Dangerous levels of airborne contaminants not permitted	Inspection, Council monitoring and self-monitoring	Yes
12. No objectionable odour, dust or smoke	Inspection and received complaints	Yes

Purpose: To discharge contaminants to air as products of combustion from an Onshore Production Station involving equipment burning natural gas as fuel where the maximum heat release is in excess of 10 megawatts, together with miscellaneous emissions		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
13. No toxic contaminants beyond boundary	Inspection, Council monitoring and self-monitoring	Yes
14. Ground level carbon monoxide limit	Air quality monitoring by Council	Yes
15. Ground level nitrogen oxides limit	Air quality monitoring by Council	Yes
16. Ground level limit for any other contaminant	Results of self-monitoring for BTEX compounds received but later found to be erroneous due to malfunctioning instruments	N/A
17. Lapse of consent	Consent exercised within lapse period	N/A
18. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 14 Summary of performance for consent 6003-1

Purpose: To discharge emissions to air from combustion involving the flaring of petroleum products incidental to the treatment of gas at an Onshore Production Station		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
2. Selection, operation and maintenance of equipment and processes to minimise emissions and impacts	Inspection and liaison with consent holder	Yes
3. Analysis of gas/condensate/crude stream	Analysis not requested	N/A
4. Annual reporting during August of each year	Report received	Yes
5. Emission abatement equipment operated appropriately and well maintained at all times	Inspection and liaison with consent holder	Yes
6. Consultation on alterations	Inspection and liaison with consent holder	Yes
7. Provision of final site lay-out plan	Received	Yes

<i>Purpose: To discharge emissions to air from combustion involving the flaring of petroleum products incidental to the treatment of gas at an Onshore Production Station</i>		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
8. Notification of neighbours prior to commissioning	Plant commissioned	Yes
9. Notification and reporting on incidents or potential incidents	No incidents during monitoring period	N/A
10. Records kept of smoke, relief valve and complaints and made available to TRC	Records viewed at inspection and in annual reports	Yes
11. Maintenance of a flaring log	Monthly electronic log emailed to Council	Yes
12. Practicable steps to minimise flaring	Inspection and liaison with consent holder	Yes
13. Prevention of dense black smoke	Inspection and received complaints	Yes
14. Notification to TRC of extended flaring	Notifications received	Yes
15. No objectionable odour, dust or smoke	Inspection and received complaints	Yes
16. No toxic contaminants beyond boundary	Inspection and monitoring	Yes
17. Ground level carbon monoxide limit	Air quality sampling	Yes
18. Ground level nitrogen oxides limit	Air quality sampling	Yes
19. Ground level limit for any other contaminant	Results of self-monitoring for BTEX compounds received but later found to be erroneous due to malfunctioning instruments	N/A
20. Lapse of consent	Consent exercised within lapse period	N/A
21. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 15 Summary of performance for consent 6176-1

Purpose: To discharge waste drilling fluids, produced water and stormwater from hydrocarbon exploration and production operations by deepwell injection at the Lower Otaraoa Road Wellsite		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Provision of well log and management plan prior to commencement	Received June 2005	Yes
2. Activity not to contaminate actual or potential freshwater aquifers	Inspection and sampling	Yes
3. Record keeping and reporting	Records received	Yes
4. Reporting of chemical analysis of wastes	Results for 2017-2018 received	Yes
5. Annual reporting during August of each year	Report received	Yes
6. Lapse of consent	Consent exercised within lapse period	N/A
7. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 16 Summary of performance for consent 6269-1

Purpose: To discharge treated stormwater from hydrocarbon exploration and production operations at the Lower Otaraoa Road Wellsite to an existing stormwater control system, being a body of water commonly known as 'The Duck Pond' within the Manu Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Inspection and liaison with consent holder	Yes
2. Exercised in line with application information	Inspection, monitoring and reporting	Yes
3. Contingency plan submitted prior to exercise of consent	Received	Yes
4. Seven days' notice prior to commencement of work and of drilling	Notifications received	Yes
5. Limit on stormwater catchment area	Inspection	Yes

Purpose: To discharge treated stormwater from hydrocarbon exploration and production operations at the Lower Otaraoa Road Wellsite to an existing stormwater control system, being a body of water commonly known as 'The Duck Pond' within the Manu Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
6. Treatment of all stormwater prior to discharge	Inspection and monitoring	No. Torrential rain caused overland discharge with no adverse effects.
7. Above ground hazardous substance storage areas drained to recovery systems not stormwater	Inspection and liaison with consent holder	Yes
8. Limits on contaminants in discharge	Sampling and results of self-monitoring	Yes
9. Limits on temperature and BOD increase below the mixing zone	Not investigated during period under review	N/A
10. Effects on receiving water below the mixing zone	Inspection	Yes
11. Lapse of consent	Consent exercised within lapse period	N/A
12. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		Good
Overall assessment of administrative performance in respect of this consent		High

Table 17 Summary of performance for consent 10096-1

Purpose: To occupy the CMA with four pipelines (well casings) extending from the Lower Otaraoa Road wellsite for hydrocarbon production purposes		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Activity undertaken in accordance with application	Inspections and liaison with consent holder	Yes
2. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 18 Summary of performance for consent 10450-1

Purpose: To discharge heat and contaminants into land at depth in the coastal marine area, associated with the development, operation/production, maintenance and treatment of wells within the Pohokura Field		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Inspections and liaison with consent holder	Yes
2. Lapse of consent	Consent exercised within lapse period	N/A
3. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 19 Summary of performance for consent 10477-1

Purpose: To discharge natural gas into land at depth in the coastal marine area, for the purpose of storage or other hydrocarbon recovery operations		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Inspections and liaison with consent holder	Yes
2. Post-injection pressure not to exceed original reservoir pressure	Liaison with consent holder	Yes
3. Injection pressure to be continuously recorded	Liaison with consent holder	Yes
4. Lapse of consent	Consent exercised within lapse period	N/A
5. Review of consent	Not scheduled for consideration during year under review. Next consideration June 2021	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 20 Evaluation of environmental performance over time

Year	Consent number	High	Good	Improvement required	Poor
2006-10	6002-1, 6003-1, 6176-1, 6364-1	4			
	5997-1, 6269-1		2		
2010-12	5991-1, 5992-1, 5993-1, 5994-1, 5997-1, 6002-1, 6003-1, 6176-1, 6269-1, 6364-1	10			
2012-13	5991-1, 5992-1, 5993-1, 5994-1, 5997-1, 6002-1, 6003-1, 6176-1, 6269-1, 6364-1	10			
2013-14	5991-1, 5992-1, 5993-1, 5994-1, 5997-1, 6002-1, 6003-1, 6176-1, 6269-1, 6364-1	10			
2014-15	5991-1, 5992-1, 5993-1, 5994-1, 5997-1, 6002-1, 6003-1, 6176-1, 6269-1, 6364-1	10			
2015-16	5991-1, 5992-1, 5993-1, 5994-1, 5997-1, 6002-1, 6003-1, 6176-1, 6269-1, 10096-1	10			
2016-17	5991-1, 5992-1, 5993-1, 5994-1, 5997-1, 6002-1, 6003-1, 6176-1, 6269-1, 10096-1	10			
Totals		64	2		

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

3.4 Recommendations from the 2016-2017 Annual Report

In the 2016-2017 Annual Report, it was recommended:

1. THAT monitoring of consented activities at the Pohokura Production Station and associated facilities in the 2017-2018 year is altered from 2016-2017 by including NO_x, multigas, and inhalable particulates air monitoring.

This recommendation was implemented.

3.5 Alterations to monitoring programmes for 2018-2019

In designing and implementing the monitoring programmes for air/water discharges in the region, the Council has taken into account:

- the extent of information already made available through monitoring or other means to date;
- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- reporting to the regional community.

The Council also takes into account the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki exercising resource consents.

It is proposed that for 2018-2019 the programme remains similar to that of 2017-2018, with the addition of a one-off round of BTEX (benzene toluene, ethylbenzene and total xylenes) monitoring. This is in response

to public concerns regarding benzene emissions from petroleum facilities, and this monitoring will be added to all Petroleum industry compliance programmes in the 2018-2019 year.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2018-2019.

4 Recommendations

1. THAT in the first instance, monitoring of consented activities at the Pohokura Production Station and associated facilities in the 2018-2019 year continue at a similar level as in 2017-2018, with the addition of a one-off round of BTEX monitoring.
2. THAT should there be issues with environmental or administrative performance in 2017-2018, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

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

Bund	A wall around a tank to contain its contents in the case of a leak.
BTEX	Benzene toluene, ethylbenzene and total xylenes
CMA	Coastal Marine Area
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m.
DWI	Deep Well Injection
g/m ³	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
GRI	Gas Reinjection
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident Register	The Incident Register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
m ²	Square Metres.
mS/m	Millisiemens per metre.
Mixing zone	The zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
O&G	Oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons).
pH	A numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	Measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment.
Pipeline pigging	Using devices known as "pigs" to perform various maintenance operations (such as cleaning and inspecting the pipeline). This is done without stopping the flow of the product in the pipeline.

RCP	Regional Coastal Plan
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	<i>Resource Management Act 1991</i> and including all subsequent amendments.
ROV	Remotely operated underwater vehicle. An ROV is a tethered underwater mobile device. ROV's are unoccupied, highly manoeuvrable, and operated by crew aboard a vessel/floating platform or on proximate land.
SS	Suspended solids.
SQMCI	Semi quantitative macroinvertebrate community index.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU.
WES	Workplace Exposure Standards

For further information on analytical methods, contact a Science Services Manager.

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- Taranaki Regional Council (2009): *Shell Pohokura Offshore Annual Report 2007-2009*. Technical Report 2009-23.
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Appendix I

Resource consents held by Shell Exploration NZ Ltd

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

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

Name of
Consent Holder: Shell Exploration NZ Limited
Private Bag 2035
New Plymouth 4342

Decision Date: 22 March 2017

Commencement Date: 22 March 2017

Conditions of Consent

Consent Granted: To discharge uncontaminated stormwater and treated stormwater from hydrocarbon exploration and production operations onto and into land

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027 and in accordance with special condition 14

Site Location: Pohokura-A wellsite, Epiha Road, Motunui
(Property owner: Honeyfield Farms Limited)

Grid Reference (NZTM) 1712875E-5683954N

Catchment: Parahaki

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

General condition

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

Special conditions

1. That the stormwater discharge point will be located on Ngatirahiri 4J Block at a location which is no closer than 300 metres to the legal boundary of part Ngatirahiri 3E Block, at approximate grid reference (NZTM) 1712875E-5683954N, and the discharge pipe shall face away from Puketuakura Urupa.
2. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.
3. Stormwater discharged shall be collected from a catchment area of no more than 2.2 Ha.
4. At least 5 working days prior, the consent holder shall notify the Chief Executive, Taranaki Regional Council, of the date of each of the following events:
 - a) Re-commencement of any site works (site works include the introduction of a drilling rig, drilling equipment or any other associated equipment for the purpose of drilling, production testing, well simulation or well workover that may introduce contaminants to the site); or
 - b) Re-commencement of any well drilling operation; and/or
 - c) Re-commencement of any site works or drilling operations following a period of inactivity exceeding 30 days.

If any of these events is re-scheduled or delayed, the consent holder shall immediately provide further notice advising of the new date.

Notification shall include the consent number and the wellsite name and be emailed to worknotification@trc.govt.nz.

5. Prior to the commencement of any activity described in 4 above, the consent holder shall provide to the Chief Executive, Taranaki Regional Council, and implement a '*Stormwater Design Report*' that details the necessary upgrades to the existing skimmer pit system that is appropriate for the 2.2 ha wellsite area. Specifically, the skimmer pit:
 - a) design shall specify the required minimum capacity including a 'freeboard' which is to be designed to retain any hydrocarbons that enter them;
 - b) shall be lined with an impervious material to prevent seepage through the bed and sidewalls (including any other stormwater retention areas); and
 - c) shall have a valve that can be shut off to prevent any discharge from the site.

Consent 5210-2.0

6. From the date of the commencement of any activity described in condition 4 above, the consent holder shall maintain and regularly update a 'Contingency Plan' that details measures and procedures that will be undertaken to prevent and to avoid environmental effects from, a spillage or discharge of contaminants not authorised by this consent. The plan and any amended version shall be provided to the Chief Executive, Taranaki Regional Council.
7. That the exercise of this consent, including the design and management of the treatment system, shall not lead or be liable to lead to contaminants entering a surface water body.
8. The discharge shall be applied at such a rate and over such an area of land that it infiltrates the soil and does not pond or run off to water.
9. From the date of the commencement of any activity described in condition 4 above, all discharges from the site, including from any containment pit or hydrocarbon combustion facility (e.g. flare pit, thermal oxidiser), shall flow to a perimeter drain and skimmer pit. Perimeter drains shall be designed, including by having a positive grade and low permeability, to ensure that runoff flows directly to a skimmer pit without ponding.
10. The constituents in the discharge shall meet the standards shown in the following table.

Constituent	Standard
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm ⁻³
total recoverable hydrocarbons	Concentration not greater than 15 gm ⁻³ [as determined by infrared spectroscopic technique]
chloride	Concentration not greater than 230 gm ⁻³

This condition shall apply before the entry of the treated stormwater into the receiving environment at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

11. The exercise of this consent shall not give rise to any discharge to the Puketuaakura Urupa.
12. If activities such as well maintenance or intervention operations are undertaken, stormwater shall be pumped and removed from the wellsite (by truck or otherwise) for disposal elsewhere whenever the skimmer pits approach full or at intervals of no more than 7 days. In circumstances where the rainfall causes the storage capacity of the skimmer pits to be exceeded during the period between pumped removal, the stormwater is allowed to drain to the stormwater discharge point located on Ngatirahiri 4J Block.
13. The consent holder shall advise the Chief Executive, Taranaki Regional Council, in writing at least 48 hours prior to the reinstatement of the site and the reinstatement shall be carried out so as to minimise adverse effects on stormwater quality. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz.

Consent 5210-2.0

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

- a) within 60 days of commencement of any activity described in condition 4 above;
and
- b) during the month of June 2021 and/or June 2027,

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

Signed at Stratford on 22 March 2017

For and on behalf of
Taranaki Regional Council

B G Chamberlain
Chief Executive

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

Name of
Consent Holder: Shell Exploration NZ Limited
Private Bag 2035
New Plymouth 4342

Decision Date: 22 March 2017

Commencement Date: 22 March 2017

Conditions of Consent

Consent Granted: To occupy the coastal marine area with a pipeline (well casing) from the Pohokura-A wellsite for hydrocarbon exploration and production purposes

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Pohokura-A wellsite, Epiha Road, Motunui
(Property owner: Gillingham Downs Trustee Company Limited)

Grid Reference (NZTM) 1712939E-5684332N & 1712791E-5684653N to
1711703E-5686688N

Catchment: Tasman Sea

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

General condition

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

Special conditions

1. The consent holder shall maintain the structure in a safe and sound state so that it continues to function effectively for its intended purpose.
2. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 22 March 2017

For and on behalf of
Taranaki Regional Council

B G Chamberlain
Chief Executive

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
P O Box 1873
WELLINGTON

Consent Granted
Date: 16 June 2003

Conditions of Consent

Consent Granted: To occupy the coastal marine area within a corridor defined by the co-ordinates as WGS84 degrees, minutes, and seconds: 38 50 49.38 - 174 15 2175; 38 51 45.50 - 174 12 59.67; 38 56 54.42 - 174 19 32.96; 38 56 57.28 - 174 16 32.98; 38 59 1.19 - 174 17 47.02; 38 59 12.30 - 174 16 15.30; for a radius of 50 metres around up to three offshore wellhead platforms situated at least 4 kilometres offshore, and also for a distance of 50 metres either side of the associated pipelines connecting the three offshore wellhead platforms to the foreshore at mean high water spring at or about GR: Q19:210-457

Expiry Date: 1 June 2033

Review Date(s): June 2004, June 2009, June 2015, June 2021, June 2027

Site Location: Offshore platforms, Coastal marine area from mean high water spring between Otaraoa Road, Waipapa, and Epiha Road, Motunui, Waitara, and extending up to 15 km offshore within a corridor defined by co-ordinates as above.

Legal Description: n/a

Catchment: Tasman Sea

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The consent holder shall survey and map the position of the platform[s] and the pipeline[s], within 90 days of the completion of their construction, and shall provide a copy of the plan showing the precise location [to within plus or minus 5 metres] of the structure[s] on the seabed, and the location of the occupied areas to the Taranaki Regional Council, the Hydrographic Office, Royal New Zealand Navy, and the Maritime Safety Authority.
2. With the exception a 50 metre radius of any platform, or as required for safety purposes during: construction, inspection, maintenance or removal, of the structure[s] licensed by coastal permit 5993; construction, use, inspection, maintenance or removal of the structure[s] licensed by coastal permit 6052; or the disturbance licensed by coastal permit 5994, the exercise of this consent shall not prevent the free passage of any member of the public through the coastal marine area.
3. The restriction of public access to the foreshore at Motunui shall be limited in time and space to the minimum required for the purpose of safety requirements related to: construction, inspection, maintenance or removal, of the structure[s] licensed by coastal permit 5993; construction, use, inspection, maintenance or removal of the structure[s] licensed by coastal permit 6052; or the disturbance licensed by coastal permit 5994. In any case the restriction shall be limited to a distance of 100 metres from the pipeline route and/or construction zone. When practicable provision will be made for public access through/past the construction zone with respect to the foreshore.
4. The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or potential effect on the environment arising from the occupation of the coastal marine area.

Consent 5991-1

5. The consent holder shall notify the Chief Executive and the Ngati Rahiri Hapu in writing at least 48 hours prior to commencement and upon completion of any subsequent maintenance works which would involve restriction of public access within the coastal marine area.
6. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2004 and/or June 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 14 March 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
P O Box 1873
WELLINGTON

Consent Granted
Date: 16 June 2003

Conditions of Consent

Consent Granted: To take produced water and associated heat from aquifers in the coastal marine area associated with hydrocarbon exploration and production activities at or about GR: Q19:210-457

Expiry Date: 1 June 2033

Review Date(s): June 2003, June 2009, June 2015, June 2021, June 2027

Site Location: Offshore platforms, Coastal marine area from mean high water spring between Otaraoa Road, Waipapa, and Epiha Road, Motunui, Waitara, and extending up to 15 km offshore within a corridor defined by the co-ordinates as WGS84 degrees, minutes and seconds:
38 50 49.38 – 174 15 21.75; 38 51 45.50 – 174 12 59.67;
38 56 54.42 – 174 19 32.96; 38 56 57.28 – 174 16 32.98;
38 59 1.19 – 174 17 47.02; 38 59 12.30 – 174 16 15.30

Legal Description: n/a

Catchment: Tasman Sea

Tributary: Tasman Sea

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

- 1. The activity authorised by this consent shall be undertaken in general accordance with the documentation submitted in support of application 1782.
- 2. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
- 3. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2003 and/or June 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 14 March 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
P O Box 1873
WELLINGTON

Change To
Conditions Date: 8 August 2005 [Granted: 12 July 2003]
[by the Minister of Conservation]

Conditions of Consent

Consent Granted: To erect, place, use, reconstruct, alter, extend and maintain within the coastal marine area up to three offshore wellhead platforms, 24 structures (being well casings) situated at least 4 kilometres offshore, and the associated pipelines connecting the three offshore wellhead platforms by horizontal directional drilling to the shore above mean high water spring, and the related occupation of the seabed at or about GR: Q19:210-457

Expiry Date: 1 June 2033

Review Date(s): June 2004, June 2009, June 2015, June 2021, June 2027

Site Location: Coastal marine area from mean high water spring between Otaraoa Road, Waipapa, and Epiha Road, Motunui, Waitara, and extending up to 15 kilometres offshore within a corridor defined by the co-ordinates as WGS84 degrees, minutes and seconds:
38 50 49.38 – 174 15 21.75; 38 51 45.50 – 174 12 59.67;
38 56 54.42 – 174 19 32.96; 38 56 57.28 – 174 16 32.98;
38 59 1.19 – 174 17 47.02; 38 59 12.30 – 174 16 15.30

Legal Description: n/a

Catchment: Tasman Sea

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

Condition 1 - changed

1. At least one month prior to the exercise of this consent the consent holder shall provide, to the written satisfaction of the Chief Executive, detailed plans of the activity to confirm that the proposal is generally in accordance with the application and supporting documentation and will comply with all of the conditions of this consent. In addition (in the event of open trenching, but not for Horizontal Directional Drilling) the route of the pipeline bundle shall lie between 10 to 15 degrees east of true north from the position that it crosses Mean High Water Spring to the 5 metre depth contour. If Horizontal Directional Drilling is used the route of the pipeline shall lie between 28 to 36 degrees east of true north from the position that it crosses Mean High Water Spring to about the 10 metre depth contour.

Conditions 2 to 13 – unchanged

2. At least 10 working days prior to the commencement of works the consent holder shall provide the Taranaki Regional Council and the Ngati Rahiri Hapu with a programme for the installation/construction of the platform[s] and pipeline[s] including: a schedule of proposed start dates and an estimation of the duration of the works, and details of the contractor including contact information for the project manager.
3. Prior to the exercise of this consent the consent holder shall provide, to the satisfaction of the Chief Executive, a written construction contingency plan, outlining measures to be undertaken in the event of a spill as a result of works authorised by this consent. Further, prior to the exercise of this consent the consent holder shall provide to the Chief Executive, written confirmation of the acceptance by the Maritime Safety Authority of a New Zealand Offshore Installation Site Marine Oil Spill Contingency Plan. A copy of the approved written contingency plan shall be provided to the Ngati Rahiri Hapu within 5 working days.

Consent 5993-1

4. The structures licensed by this consent shall be constructed and maintained in general accordance with the information submitted in support of the application, special condition 1 above, and to ensure that the conditions of this consent are met at all times.
5. At least one month prior to the exercise of this consent, the consent holder shall provide, to the written satisfaction of the Chief Executive, detailed plans of the proposed burial depth of the pipelines between Mean High Water Spring and the 5 metre depth contour, including any other sufficient technical information to demonstrate that the buried pipelines will not be exposed by erosion of the seabed.
6. If the pipeline[s] become exposed between Mean High Water Spring and the 5 metre depth contour, the consent holder shall immediately notify the Chief Executive and the Maritime Safety Authority. The consent holder shall rebury the pipeline[s] in accordance with the information supplied under special condition 5 above as soon as is practicable, and in any case within 30 days, unless this requirement is waived in writing by the Chief Executive.
7. The consent holder shall survey and map the position of the platform[s] and the pipeline[s], [including details of the pipeline[s] position in relation to the seabed], within 90 days of the completion of their construction, and shall provide a copy of the plan showing the precise location [to within plus or minus 5 metres] of the structure[s] on/in the seabed, to the Taranaki Regional Council, the Hydrographic Office, Royal New Zealand Navy, and the Maritime Safety Authority.
8. The consent holder shall notify the Chief Executive and the Ngati Rahiri Hapu in writing at least 48 hours prior to commencement and upon completion of any subsequent maintenance works which would involve significant disturbance of, or deposition, or discharge to, the coastal marine area.
9. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to avoid or minimise the discharge of any contaminants into coastal water or onto the foreshore or seabed and to avoid or minimise any adverse effects on coastal water quality or ecosystems.
10. The construction, use, maintenance and removal of the structure[s] authorised by this consent shall comply with the noise standards as outlined within section 4.4.3 of the Regional Coastal Plan for Taranaki.
11. Except with the written agreement of the Chief Executive, all structures [with the exception of well casings within the seabed], authorised by this consent shall be removed and the area[s] reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Chief Executive and the Ngati Rahiri Hapu in writing at least 1 month prior to any structure[s] removal. Reinstatement shall be to the satisfaction of the Chief Executive.
12. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 5993-1

13. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete, or add to the conditions of this resource consent by giving notice of review during the month of June 2004 and/or June 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 14 March 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
P O Box 1873
WELLINGTON

Change To Conditions Date: 18 March 2005 [Granted: 12 July 2003]
[by the Minister of Conservation]

Conditions of Consent

Consent Granted: To disturb the seabed and foreshore of the coastal marine area by the process of erection, placement, use, alteration, extension, maintenance, or removal of up to three offshore wellhead platforms situated at least 4 kilometres offshore, and the associated pipelines connecting up to three offshore wellhead platforms to the foreshore above mean high water spring by the use of horizontal directional drilling at or about GR: Q19:210-457

Expiry Date: 1 June 2033

Review Date(s): June 2004, June 2009, June 2015, June 2021, June 2027

Site Location: Coastal marine area from mean high water spring between Otaraoa Road, Waipapa, and Epiha Road, Motunui, Waitara, and extending up to 15 kilometres offshore within a corridor defined by the co-ordinates as WGS84 degrees, minutes and seconds:
38 50 49.38 – 174 15 21.75; 38 51 45.50 – 174 12 59.67;
38 56 54.42 – 174 19 32.96; 38 56 57.28 – 174 16 32.98;
38 59 1.19 – 174 17 47.02; 38 59 12.30 – 174 16 15.30

Legal Description: n/a

Catchment: Tasman Sea

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. At least one month prior to the exercise of this consent the consent holder shall provide, to the written satisfaction of the Chief Executive, detailed plans of the activity to confirm that the proposal is generally in accordance with the application and supporting documentation and will comply with all of the conditions of this consent.
2. Prior to the exercise of this consent the consent holder in conjunction with the Taranaki Regional Council and tangata whenua shall endeavour as far as is practicable to recover and relocate all paua, kina, and other kaimoana from the area to be disturbed.
3. Prior to the exercise of this consent the consent holder shall provide to the satisfaction of the Chief Executive a written disturbance contingency plan outlining measures to be undertaken in the event of a spill as a result of works authorised by this consent. A copy of the approved written contingency plan shall be provided to the Ngati Rahiri Hapu within 5 working days.
4. Prior to the exercise of this consent the consent holder shall prepare, in consultation with the Department of Conservation and tangata whenua a wildlife management plan to the satisfaction of the Chief Executive setting out the mitigation and restoration methods proposed to minimise adverse effects on wildlife and blue penguin in particular.
5. Prior to the exercise of this consent the consent holder shall establish artificial substrate, so as to encourage the seeding of kelp onto the said substrate, to assist with kelp relocation and reinstatement.
6. At least 10 working days prior to the commencement of works the consent holder shall provide the Taranaki Regional Council and the Ngati Rahiri Hapu with a programme for the disturbance associated with installation/construction, [or removal], of the platform[s] and pipeline[s] including: a schedule of proposed start dates and an estimation of the duration of the works, and details of the contractor including contact information for the project manager.

Consent 5994-1

7. There shall be no refuelling of land based machinery within the coastal marine area.
8. The consent holder shall notify the Chief Executive and the Ngati Rahiri Hapu in writing at least 48 hours prior to commencement and upon completion of any subsequent maintenance works which would involve disturbance of, or deposition, or discharge to, the coastal marine area.
9. The disturbance licensed by this consent shall be undertaken in general accordance with the information submitted in support of the application, special condition 1 above, and to ensure that the conditions of this consent are met at all times.
10. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to avoid or minimise the discharge of silt, sediments or any other contaminants into coastal water or onto the foreshore or seabed and to avoid or minimise the disturbance of the foreshore or seabed and any adverse effects on coastal water quality or ecosystems.
11. The consent holder shall ensure that the duration, area and volume of foreshore and seabed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated to the satisfaction of the Chief Executive.
12. Outside of the disturbance corridor extending 50 metres either side of the pipeline the exercise of this consent shall not give rise to any significant adverse ecological effects including effects to kaimoana.
13. The disturbance authorised by this consent shall comply with the noise standards as outlined within section 4.4.3 of the Regional Coastal Plan for Taranaki.
14. In the event that any archaeological remains are discovered as a result of the exercise of this consent, the works shall cease immediately at the affected site. The on-site Ngati Rahiri Hapu representative, the on-site archaeologist and the Chief Executive of the Taranaki Regional Council shall be notified immediately, and be invited to inspect the site. The consent holder shall ensure that access is provided to the Ngati Rahiri Hapu representative and the archaeologist to carry out field work.
15. In the event of any find of significance, the Ngati Rahiri Hapu shall have all reasonable access to the site to carry out their specific requirements in terms of that find.
16. Unless otherwise agreed with the consent holder, the Ngati Rahiri Hapu shall complete their activities within the following times:
 - i) In areas where the seabed and foreshore has previously been disturbed as a result of previous works, the Ngati Rahiri Hapu shall have a maximum of two days to undertake their specific requirements in terms of the find;
 - ii) In areas where the seabed and foreshore has not previously been disturbed as a result of previous works, and there is a find of koiwi, the Ngati Rahiri Hapu shall have a maximum of 10 days to undertake their specific requirements in terms of that find; and

- iii) In areas where the seabed and foreshore has not previously been disturbed as a result of previous works, and where there is a find of taonga other than koiwi, the Ngati Rahiri Hapu shall have a maximum of five days to carry out their specific requirements in terms of that find.
17. Works may recommence at the affected area when advised to do by the Chief Executive. Such advice shall be given after the Chief Executive has considered: tangata whenua interest and values, the consent holder's interests, the interests of the public generally, and any archaeological or scientific evidence. The New Zealand Police, Coroner, and Historic Places Trust shall also be contacted as appropriate, and the work shall not recommence in the affected area until any necessary statutory authorisations or consents have been granted.
18. All temporary structure[s] including sheet piling and the like associated with the disturbance authorised by this consent shall be removed and the area[s] reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Chief Executive and the Ngati Rahiri Hapu in writing at least 48 hours prior to any structure[s] removal. Reinstatement shall be to the satisfaction of the Chief Executive.
19. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
20. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2004 and/or June 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 14 March 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Private Bag 2035
New Plymouth 4342

Decision Date
(Change): 16 February 2017

Commencement Date
(Change): 16 February 2017 (Granted Date: 16 June 2003)

Conditions of Consent

Consent Granted: To discharge treated stormwater from an Onshore
Production Station to an existing stormwater control system,
being a body of water commonly known as 'The Duck Pond'
within the Manu Stream catchment

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Pohokura Production Station, Lower Otaraoa Road,
Motunui, Waitara

Grid Reference (NZTM) 1710824E-5683712N

Catchment: Manu

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

General condition

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

Special conditions

1. Prior to the exercise of this consent, the consent holder shall provide for the written approval of the Chief Executive, Taranaki Regional Council, site specific details relating to contingency planning for the site.
2. Within one month of the completion of the development of the site the consent holder shall provide, to the satisfaction of the Chief Executive, Taranaki Regional Council, detailed plans of stormwater catchment and drainage pathways, including clean areas, potentially contaminated areas, and bunded areas, and the containment, treatment and discharge systems put into place.
3. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of the original application and any subsequent applications to change conditions. In the case of any contradiction between the documentation submitted in support of previous applications and the conditions of this consent, the conditions of this consent shall prevail.
4. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects of the discharge on any water body.
5. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or other appropriate recovery systems, and not to the stormwater catchment.
6. The following concentrations shall not be exceeded in the discharge:

Component	Concentration
pH (range)	6.0-9.0
suspended solids	100 gm ⁻³
total recoverable hydrocarbons (infrared spectroscopic technique)	15 gm ⁻³
chloride	300 gm ⁻³

This condition shall apply prior to the entry of the treated stormwater into the body of water known as 'The Duck Pond' at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

7. After allowing for reasonable mixing, within a mixing zone extending to the downstream end of the body of water known as 'The Duck Pond' the discharge shall not give rise to any of the following effects in the receiving waters of the Manu Stream:
 - a) an increase in temperature of more than 2 degrees Celsius;
 - b) an increase in biochemical oxygen demand of more than 2.00 gm⁻³.

Consent 5997-1.3

8. After allowing for reasonable mixing, within a mixing zone extending to the downstream end of the body of water known as 'The Duck Pond' the discharge point the discharge shall not give rise to any of the following effects in the receiving waters of the Manu Stream:
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of fresh water unsuitable for consumption by farm animals;
 - e) any significant adverse effects on aquatic life.
9. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
10. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 16 February 2017

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
P O Box 1873
WELLINGTON

Consent Granted
Date: 16 June 2003

Conditions of Consent

Consent Granted: To erect, place, use and maintain a bridge over the bed of an unnamed tributary of the Waipapa Stream for vehicle access purposes at or about GR: Q19:205-450

Expiry Date: 1 June 2033

Review Date(s): June 2009, June 2015, June 2021, June 2027

Site Location: Onshore Production Station, Lower Otaraoa Road,
Motunui, Waitara

Legal Description: Pt Ngatirahiri 2A1 Block, 2A2 Block, 2B 3B1 Block, 2B 3A1 Block, 2B 3A2 Block, Lot 2 DP 9747, Ngatirahiri 2B 3A 3B Block, Ngati Rahiri 2B 3A 3A Block, Lot 1 DP 9747 Pt Ngati Rahiri 2B3A Block

Catchment: Waipapa 3 (Waipapa)

Consent 6000-1

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. At least one month prior to the exercise of this consent the consent holder shall provide, to the written satisfaction of the Chief Executive, detailed plans of a single span bridge to confirm that the proposal is generally in accordance with the application and supporting documentation and will comply with all of the conditions of this consent
2. The Chief Executive and the Ngati Rahiri Hapu O Te Atiawa (Taranaki) Society (Inc) shall be notified in writing at least 7 days prior to commencement of works, and again at least 48 hours prior to any maintenance that would involve any discharge to or disturbance of the unnamed tributary.
3. Prior to the exercise of this consent the consent holder shall provide, to the satisfaction of the Chief Executive a written contingency plan, outlining measures to be undertaken in the event of a spill as a result of works authorised by this consent. A copy of the approved written contingency plan shall be provided to the Ngati Rahiri Hapu O Te Atiawa (Taranaki) Society (Inc) within 5 working days.
4. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise the disturbance of the stream bed and to prevent or minimise any adverse effects on the unnamed tributary.
5. The structure[s] licensed by this consent shall be constructed and maintained in general accordance with the information submitted in support of the application, special condition 1 above, and to ensure the conditions of this consent are met at all times.
6. During the construction and any subsequent maintenance, the consent holder shall observe every practical measure to prevent the discharge or placement of silt and/or organics and/or any other contaminants into any waterway and to minimise the disturbance of the bed of the unnamed tributary.

Consent 6000-1

7. The consent holder shall ensure that disturbance of the bed of the unnamed tributary will be restricted to a practicable minimum and that areas disturbed from the exercise of this consent are to be reinstated to the satisfaction of the Chief Executive.
8. The exercise of this consent shall not restrict the passage of fish.
9. In the event that any archaeological remains are discovered as a result of works authorised by this consent, the works shall cease immediately at the affected site. The on-site Ngati Rahiri representative, the on-site archaeologist and the Chief Executive of the Taranaki Regional Council shall be notified immediately, and be invited to inspect the site. The consent holder shall ensure that access is provided to the Ngati Rahiri representative and the archaeologist to carry out field work.
10. In the event of any find of significance, particularly to the Ngati Rahiri Hapu O Te Atiawa (Taranaki) Society (Inc) shall have all reasonable access to the site to carry out their specific requirements in terms of that find.
11. Unless otherwise agreed with the consent holder, the Ngati Rahiri Hapu O Te Atiawa (Taranaki) Society (Inc) shall complete their activities with in the following times:
 - i) In areas where the earth has previously been disturbed as a result of previous earthworks (as defined on the Site Disturbance Plan attached ref Fig TRC1), the Ngati Rahiri Hapu O Te Atiawa (Taranaki) Society (Inc) shall have a maximum of two days to undertake their specific requirements in terms of the find;
 - ii) In areas where the earth has previously not been disturbed as a result of previous earthworks (as defined on the Site Disturbance Plan attached ref Fig TRC1), and there is a find of koiwi, the Ngati Rahiri Hapu O Te Atiawa (Taranaki) Society (Inc) shall have a maximum of 10 days to undertake their specific requirements in term of that find; and
 - iii) In areas where the earth has not previously been disturbed as a result of previous earthworks (as defined on the Site Disturbance Plan attached ref Fig TRC1), and where there is a find of taonga other than koiwi, the Ngati Rahiri Hapu O Te Atiawa (Taranaki) Society (Inc) shall have a maximum of five days to carry out their specific requirements in terms of that find.
12. Works may recommence at the affected areas when advised to do so by the Chief Executive. Such advice shall be given after the Chief Executive has considered: tangata whenua interest and values, the consent holder's interests, the interests of the public generally, and any archaeological or scientific evidence. The New Zealand Police, Coroner, and Historic Places Trust shall also be contacted as appropriate, and the work shall not recommence in the affected area until any necessary statutory authorisations or consents have been obtained.
13. The structure[s] authorised by this consent shall be removed and the area[s] reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Chief Executive in writing at least 48 hours prior to the removal of any structure[s]. Reinstatement shall be to the satisfaction of the Chief Executive.

Consent 6000-1

14. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
15. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 14 March 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
Pohokura Operations
Private Bag 2035
NEW PLYMOUTH 4342

Decision Date 9 August 2013
[change]:

Commencement Date 9 August 2013 [Granted: 16 June 2003]
[change]:

Conditions of Consent

Consent Granted: To discharge contaminants to air as products of combustion from an Onshore Production Station involving equipment burning natural gas as fuel where the maximum heat release is in excess of 10 megawatts, together with miscellaneous emissions

Expiry Date: 1 June 2033

Review Date(s): June 2015, June 2021, June 2027

Site Location: Onshore Production Station, Lower Otaraoa Road, Motunui, Waitara

Legal Description: Pt Ngatirahiri 2A1 Block, 2A2 Block, 2B 3B1 Block, 2B 3A1 Block, 2B 3A2 Block, Lot 2 DP 9747, Ngatirahiri 2B 3A 3B Block, Ngati Rahiri 2B 3A 3A Block, Lot 1 DP 9747 Pt Ngati Rahiri 2B3A Block

Grid Reference (NZTM) 1710605E-5683459N

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

Consent 6002-1

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The consent holder shall at all times adopt the best practicable option [as defined in Section 2 of the Resource Management Act 1991] to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants into the environment arising from the emissions to air from the site.
2. The consent holder shall minimise the emissions and impacts of air contaminants discharged from the site by the selection of the most appropriate process equipment, process control equipment, emission control equipment, methods of control, supervision and operation, and the proper and effective operation, supervision, control and maintenance of all equipment and processes.
3. The consent holder shall make available to the Chief Executive upon request an analysis of a typical gas and/or condensate and/or crude oil stream from the Pohokura field, covering sulphur compound content and the content of carbon compounds of structure C₆ or higher number of compounds
4. The consent holder shall provide to the Taranaki Regional Council during August of each year, for the duration of this consent, a report:
 - a) detailing gas combustion at the production station;
 - b) detailing any measures that have been undertaken by the consent holder to improve the energy efficiency of the production station;
 - c) detailing any measures to reduce smoke emissions;
 - d) detailing any measures to reduce flaring,
 - e) addressing any other issue relevant to the minimisation or mitigation of emissions from the production station; and
 - f) detailing any complaints received and any measures undertaken to address complaints.
5. All equipment used to avoid, remedy or mitigate any effect on the environment from the discharge of emissions into the air shall be maintained in good condition and shall be operated within design parameters at all times that the plant is in operation.

Consent 6002-1

6. Prior to undertaking any alterations to the plant, processes or operations, which may significantly change the nature or quantity of contaminants emitted to air from the site, the consent holder shall first consult with the Chief Executive and shall obtain any necessary approvals under the Resource Management Act 1991.
7. Prior to the commencement of production, the consent holder shall supply to the Chief Executive, a final site lay-out plan, demonstrating configuration of the facilities and equipment so as to avoid or mitigate the potential effects of air emissions.
8. The consent holder shall within 6 months of the granting of this consent provide to the Chief Executive a report on options for the treatment and/or reduction of BTEX emissions from the production station.
9. Any incident having an environmental impact or potential environmental impact which has caused or is liable to cause substantiated complaint or a hazardous situation beyond the boundary of the property on which the production station is located, shall be notified to the Taranaki Regional Council, as soon as possible, followed by a written report to the Chief Executive within one week of the incident, with comment about the measures taken to minimise the impact of the incident and to prevent re-occurrence.
10. The consent holder shall keep and make available to the Chief Executive, upon request, a record of all smoke emitting incidents and all relief valve releases, noting time, duration and cause. The consent holder shall also keep, and make available to the Chief Executive, upon request, a record of all complaints received as a result of the exercise of this consent.
11. The discharges authorised by this consent shall not, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, give rise to any dangerous levels of airborne contaminants at or beyond the boundary of the property including but not limited to any risk of fire or explosion.
12. The discharges authorised by this consent shall not, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, give rise to any levels of odour or dust or smoke that are offensive or obnoxious or objectionable at or beyond the boundary of the property on which the production station is located in the opinion of an enforcement officer of the Taranaki Regional Council.
13. The consent holder shall not discharge any contaminant to air from the site at a rate or a quantity such that the contaminant, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, is or is liable to be hazardous or toxic or noxious at or beyond the boundary of the property where the production station is located, or at any dwellinghouse.

Consent 6002-1

14. The consent holder shall control all emissions of carbon monoxide to the atmosphere from the production station, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of carbon monoxide arising from the exercise of this consent measured under ambient conditions does not exceed 10 mg m^{-3} [eight-hour average exposure], or 30 mg m^{-3} [one-hour average exposure] at or beyond the boundary of the property on which the production station is located.
15. The consent holder shall control all emissions of nitrogen oxides to the atmosphere from the production station, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of nitrogen dioxide arising from the exercise of this consent measured under ambient conditions does not exceed $200 \text{ } \mu\text{g m}^{-3}$ [one-hour average exposure] or $100 \text{ } \mu\text{g m}^{-3}$ [24-hour average exposure] or $30 \text{ } \mu\text{g m}^{-3}$ [annual average exposure] at or beyond the boundary of the property on which the production station is located.
16. The consent holder shall control emissions to the atmosphere from the production station of contaminants other than carbon dioxide, carbon monoxide, and nitrogen oxides, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent, measured under ambient conditions at or beyond the boundary of the property on which the production station is located, is not increased above background levels:
 - a) by more than 1/30th of the relevant Occupational Threshold Value-Time Weighted Average, or by more than the Short Term Exposure Limit at any time [all terms as defined in Workplace Exposure Standards and Biological Exposure Indices for New Zealand, 1992, Department of Labour]; or
 - b) if no Short Term Exposure Limit is set, by more than three times the Time Weighted Average at any time [all terms as defined in Workplace Exposure Standards and Biological Exposure Indices for New Zealand, 1992 Department of Labour].
17. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
18. Subject to the provisions of this condition, the Council may within six months of receiving a report prepared by the consent holder pursuant to condition 4 of this consent, or in June 2009 and/or June 2015 and/or June 2021 and/or June 2027 serve notice that it intends to review the conditions of this resource consent in accordance with section 128(1)(a) of the Resource Management Act 1991 for the purposes of:
 - a) dealing with any significant adverse effect on the environment arising from the exercise of the consent which was not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or

Consent 6002-1

- b) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment caused by the discharge; and/or
- c) to alter, add or delete limits on mass discharge quantities or discharge or ambient concentrations of any contaminant or contaminants; and/or
- d) taking into account any Act of Parliament, regulation, national policy statement or national environmental standard which relates to limiting, recording, or mitigating emissions of carbon dioxide and/or nitrogen dioxide, and which is relevant to the air discharge from the Pohokura Production Station.

Signed at Stratford on 09 August 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
Pohokura Operations
Private Bag 2035
NEW PLYMOUTH 4342

Decision Date 9 August 2013
[change]:

Commencement Date 9 August 2013 [Granted: 16 June 2003]
[change]:

Conditions of Consent

Consent Granted: To discharge emissions to air from combustion involving the flaring of petroleum products incidental to the treatment of gas at an Onshore Production Station

Expiry Date: 1 June 2033

Review Date(s): June 2015, June 2021, June 2027

Site Location: Onshore Production Station, Lower Otaraoa Road, Motunui, Waitara

Legal Description: Pt Ngatirahiri 2A1 Block, 2A2 Block, 2B 3B1 Block, 2B 3A1 Block, 2B 3A2 Block, Lot 2 DP 9747, Ngatirahiri 2B 3A 3B Block, Ngati Rahiri 2B 3A 3A Block, Lot 1 DP 9747 Pt Ngati Rahiri 2B3A Block

Grid Reference (NZTM) 1710605E-5683459N

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

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The consent holder shall at all times adopt the best practicable option [as defined in section 2 of the Resource Management Act 1991] to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants into the environment arising from the emissions to air from the flare.
2. The consent holder shall minimise the emissions and impacts of air contaminants discharged from the flare by the selection of the most appropriate process equipment, process control equipment, emission control equipment, methods of control, supervision and operation, and the proper and effective operation, supervision, control and maintenance of all equipment and processes.
3. The consent holder shall make available to the Chief Executive upon request an analysis of a typical gas and/or condensate and/or crude oil stream from the Pohokura field, covering sulphur compound content and the content of carbon compounds of structure C₆ or higher number of compounds
4. The consent holder shall provide to the Taranaki Regional Council during August of each year, for the duration of this consent, a report:
 - a) detailing gas combustion at the production station flare;
 - b) detailing any measures that have been undertaken by the consent holder to improve the energy efficiency of the production station;
 - c) detailing any measures to reduce smoke emissions;
 - d) detailing any measures to reduce flaring,
 - e) addressing any other issue relevant to the minimisation or mitigation of emissions from the production station flare; and
 - f) detailing any complaints received and any measures undertaken to address complaints.

Consent 6003-1

5. All equipment used to avoid, remedy or mitigate any effect on the environment from the discharge of emissions into the air shall be maintained in good condition and shall be operated within design parameters at all times that the flare is in operation.
6. Prior to undertaking any alterations to the plant equipment, processes or operations, which may substantially alter the nature or quantity of flare emissions other than as notified in this consent application, the consent holder shall first consult with the Chief Executive and shall obtain any necessary approvals under the Resource Management Act 1991.
7. Prior to the commencement of production, the consent holder shall supply to the Chief Executive a final site lay-out plan, demonstrating configuration of the facilities and equipment so as to avoid or mitigate the potential effects of air emissions.
8. At least 3 days before the commissioning of the plant, the consent holder shall undertake all practicable measures to notify owners or occupiers of properties within 1 kilometre of the boundary of the property on which the production station flare is located, of the possibility of flaring and smoke emissions. The consent holder shall include in the notification a 24-hour contact telephone number for a representative of the consent holder.
9. Any incident having an environment effect or potential effect which has caused or is liable to cause substantiated complaint or a hazardous situation beyond the boundary of the property on which the production station flare is located, shall be notified to the Taranaki Regional Council, as soon as possible, followed by a written report to the Chief Executive within one week of the incident, with comment about the measures taken to minimise the impact of the incident and to prevent re-occurrence.
10. The consent holder shall keep and make available to the Chief Executive, upon request, a record of all smoke emitting incidents, noting time, duration and cause. The consent holder shall also keep, and make available to the Chief Executive, upon request, a record of all complaints received as a result of the exercise of this consent.
11. The consent holder shall keep and maintain a log of all continuous flaring incidents longer than 5 minutes and any intermittent flaring lasting for an aggregate of 10 minutes or longer in any 60-minute period. Such a log shall contain the date, the start and finish times, the quantity and type of material flared, and the reason for flaring. This log shall be made available to the Chief Executive upon request, and summarised annually in the report required under condition 4.
12. All practicable steps shall be taken to minimise flaring.
13. Other than in emergencies, depressurisation of the plant, or sections of the plant, shall be carried out over a sufficient period of time to prevent dense black smoke from being discharged from the flare.
14. The consent holder shall, whenever practicable, notify the Chief Executive whenever the continuous flaring of hydrocarbons [other than purge gas] is expected to occur for more than five minutes in duration.

Consent 6003-1

15. The discharges authorised by this consent shall not, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, give rise to any levels of odour or dust or smoke that are offensive or obnoxious or objectionable at or beyond the site boundary in the opinion of an enforcement officer of the Taranaki Regional Council.
16. The consent holder shall not discharge any contaminant to air from the site at a rate or a quantity such that the contaminant, whether alone or in combination with other contaminants, is or is liable to be hazardous or toxic or noxious at or beyond the boundary of the property where the production station is located, or at any dwelling house
17. The consent holder shall control all emissions of carbon monoxide to the atmosphere from the flare, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of carbon monoxide arising from the exercise of this consent measured under ambient conditions does not exceed 10 mg/m^3 [eight-hour average exposure], or 30 mg/m^3 [one-hour average exposure] at or beyond the boundary of the property on which the production station flare is located.
18. The consent holder shall control all emissions of nitrogen oxides to the atmosphere from the flare, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of nitrogen dioxide arising from the exercise of this consent measured under ambient conditions does not exceed $200 \text{ } \mu\text{g m}^{-3}$ [one-hour average exposure] or $100 \text{ } \mu\text{g m}^{-3}$ [24-hour average exposure] or $30 \text{ } \mu\text{g m}^{-3}$ [annual average exposure] at or beyond the boundary of the property on which the production station flare is located.
19. The consent holder shall control emissions to the atmosphere from the flare of contaminants other than carbon dioxide, carbon monoxide, and nitrogen oxides from the flare, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent, measured at or beyond the boundary of the property on which the production station flare is located, is not increased above background levels:
 - a) by more than 1/30th of the relevant Occupational Threshold Value-Time Weighted Average, or by more than the Short Term Exposure Limit at any time [all terms as defined in Workplace Exposure Standards and Biological Exposure Indices for New Zealand, 1992, Department of Labour]; or
 - b) if no Short Term Exposure Limit is set, by more than three times the Time Weighted Average at any time [all terms as defined in Workplace Exposure Standards and Biological Exposure Indices for New Zealand, 1992 Department of Labour].

Consent 6003-1

20. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
21. Subject to the provisions of this condition, the Council may within six months of receiving a report prepared by the consent holder pursuant to condition 4 of this consent, or during the month of June 2009 and/or June 2015 and/or June 2021 and/or June 2027, serve notice that it intends to review the conditions of this resource consent in accordance with section 128(1)(a) of the Resource Management Act 1991 for the purposes of:
 - a) dealing with any significant adverse effect on the environment arising from the exercise of the consent which was not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or
 - b) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment caused by the discharge; and/or
 - c) to alter, add or delete limits on mass discharge quantities or discharge or ambient concentrations of any contaminant or contaminants; and/or
 - d) taking into account any Act of Parliament, regulation, national policy statement or national environmental standard which relates to limiting, recording, or mitigating emissions of carbon dioxide and/or nitrogen dioxide, and which is relevant to the air discharge from the Pohokura Production Station.

Signed at Stratford on 09 August 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
Pohokura Operations
Private Bag 2035
NEW PLYMOUTH 4342

Decision Date 9 August 2013
[change]:

Commencement Date 9 August 2013 [Granted: 16 June 2003]
[change]:

Conditions of Consent

Consent Granted: To discharge emissions into the air from the flaring of hydrocarbons, together with miscellaneous emissions, arising from hydrocarbon exploration and production testing operations involving up to 48 zones at the Lower Otaraoa Road wellsite

Expiry Date: 1 June 2033

Review Date(s): June 2015, June 2021, June 2027

Site Location: Lower Otaraoa Road wellsite, Lower Otaraoa Road, Motunui, Waitara [Property owner: Methanex New Zealand Limited] [Lessee: J & K Weston]

Legal Description: Pt Ngatirahiri 2A1 Blk, Ngatirahiri 2A2 Blk, Pt Ngatirahiri 2B 3B1 Blk, Pt Ngatirahiri 2B 3A1 Blk, Ngatirahiri 2B 3A2 Blk, Lot 2 DP 9747 (Ngatirahiri 2B 3B2A Blk), Ngatirahiri 2B 3B Blk, Ngatirahiri 2B 3A 3A Blk Lot 1 DP 9747 Pt Ngatirahiri 2B 3A Blk

Grid Reference (NZTM) 1710305E-5683659N

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

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

Duration

1. This consent shall not be exercised for more than an accumulated duration of 45 days [1080 hours] per zone, allowing up to forty-eight zones to be tested. The time interval specified in this condition refers to that period during which this consent is exercised and is not regarded as continuous elapsed time from the first exercise of this consent.

Information and notification

2. Prior to the commencement of testing, the consent holder shall supply to the Chief Executive a final site lay-out plan, demonstrating configuration of the facilities and equipment so as to avoid or mitigate the potential effects of air emissions.
3. The occupiers of any dwellinghouses within 1000 m of the wellsite and the Taranaki Regional Council shall be notified within 24 hours prior to the initial flaring of each well being commenced.
4. The consent holder shall keep and make available to the Chief Executive a record of all queries and/or complaints received.
5. No alteration shall be made to plant equipment or processes which may substantially alter the nature or quantity of flare emissions or other site emissions, including but not limited to the recovery of produced gas, other than as notified in this consent application, without prior consultation with the Chief Executive.

Flaring

6. Other than for the maintenance of a pilot flare flame, the consent holder shall have regard to the prevailing and predicted wind speed and direction at the time of initiation of any episode of flaring or other combustion of hydrocarbons.

Consent 6005-1

7. All gas being flared, at any time during well clean-up, drill stem testing, initial testing, or production testing, or at any other time during any hydrocarbon exploration or production testing activities, must first be treated by effective liquid and solid separation and recovery, as far as is practicable, to ensure that smoke emission during flaring is minimised.
8. If separation cannot be implemented and/or maintained at any time while there is a flow from the well, whether natural or induced, then the consent holder shall notify the Chief Executive and shall in any case re-establish liquid separation and recovery within three hours.
9. No liquid or solid hydrocarbons shall be combusted through the gas flare system.
10. As soon as is practicable after flow commences, the separated gas shall be combusted so that emissions of smoke are minimised.
11. The consent holder shall adopt the best practicable option to prevent or minimise any actual or potential effect on the environment arising from the flare emission, emissions from the flare pit, or any other emissions from the site [including use of a separator during well clean-up]. This requirement applies in addition to any of the specific requirements set out in conditions 1, 6, 7, 8, 9 and 10.
12. Only substances originating from the well stream and treated as outlined by conditions 7, 8, 9, 10 and 11 are to be combusted within the flare pit.
13. The consent holder shall not discharge any contaminant to air from the site at a rate or a quantity such that the contaminant, whether alone or in combination with other contaminants, is or is liable to be hazardous or toxic or noxious at or beyond the boundary of the property on which the wellsite is located, or at any dwellinghouse.
14. There shall not be any offensive odour or smoke beyond the boundary of the property on which the wellsite is located, arising from activities at the wellsite.
15. The opacity of any smoke emissions shall not exceed a level of 2 as measured on the Ringelmann Scale for more than four minutes cumulative duration in any 60-minute period.
16. The consent holder shall control all emissions of carbon monoxide to the atmosphere from the flare, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of carbon monoxide arising from the exercise of this consent measured under ambient conditions does not exceed 10 mg/m³ [eight-hour average exposure], or 30 mg/m³ [one-hour average exposure] at or beyond the boundary of the property on which the wellsite is located.

Consent 6005-1

17. The consent holder shall control all emissions of nitrogen oxides to the atmosphere from the flare, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of nitrogen dioxide arising from the exercise of this consent measured under ambient conditions does not exceed $200 \mu\text{g m}^{-3}$ [one-hour average exposure] or $100 \mu\text{g m}^{-3}$ [24-hour average exposure] or $30 \mu\text{g m}^{-3}$ [annual average exposure] at or beyond the boundary of the property on which the wellsite flare is located.
18. The consent holder shall control emissions to the atmosphere from the site of contaminants other than carbon dioxide, carbon monoxide, and nitrogen oxides, whether alone or in conjunction with any emissions from the flare, in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent, measured at or beyond the boundary of the property on which the wellsite is located, is not increased above background levels:
 - a) by more than $1/30^{\text{th}}$ of the relevant Occupational Threshold Value-Time Weighted Average, or by more than the Short Term Exposure Limit at any time [all terms as defined in Workplace Exposure Standards, 1994, Department of Labour]; or
 - b) if no Short Term Exposure Limit is set, by more than three times the Time Weighted Average at any time [all terms as defined in Workplace Exposure Standards, 1994, Department of Labour].

Recording and reporting information

19. The consent holder shall make available to the Chief Executive upon request, and in any case within four weeks of the first production test at the wellsite, an analysis of a typical gas and condensate/crude oil stream from the field, covering sulphur compound content and the content of carbon compounds of structure C_6 or higher number of compounds.
20. The consent holder shall keep and make available to the Chief Executive upon request a record of all smoke-emitting incidents noting time, duration and cause.
21. The consent holder shall keep and provide to the Chief Executive on a monthly basis, logs of all flaring [other than the maintenance of a pilot flare] including time, duration and as far as is practicable volumes of substances flared.
22. The consent holder shall provide to the Taranaki Regional Council during August of each year, for the duration of this consent, a report:
 - i) detailing gas combustion in the flare;
 - ii) detailing smoke emissions as required under condition 20;
 - iii) detailing any measures to reduce smoke emissions;
 - iv) detailing any measure to reduce flaring;
 - v) addressing any other issue relevant to the minimisation or mitigation of emissions from the flare; and
 - vi) detailing any complaints received and any measures undertaken to address complaints.

Lapse

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

Review

24. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2004 and/or 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 09 August 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
Pohokura Operations
Private Bag 2035
NEW PLYMOUTH 4342

Decision Date [change]: 9 August 2013

Commencement Date [change]: 9 August 2013 [Granted: 23 May 2003]

Conditions of Consent

Consent Granted: To discharge waste drilling fluids, produced water and stormwater from hydrocarbon exploration and production operations by deepwell injection at the Pohokura-A [Epiha Road] Wellsite

Expiry Date: 1 June 2033

Review Date(s): June 2015, June 2021, June 2027

Site Location: Pohokura-A Wellsite, Lower Epiha Road, Motunui

Legal Description: Ngatirahiri 3F1 Blk II Waitara SD

Grid Reference (NZTM) 1712904E-5684061N

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

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. Prior to the exercise of this consent for each individual well to be used for deep well injection, the consent holder shall submit, to the written satisfaction of the Chief Executive, a log of the injection well, and an injection well operation management plan, to demonstrate that special condition 2 of this consent can be met. The report shall:
 - a) identify the injection zone, including a validated bore log and geophysical log,
 - b) detail the results of fluid sampled from the injection zone, and the proposed wastes to be injected for maximum and mean concentrations for pH, suspended solids, total dissolved solids, salinity, chlorides, and total hydrocarbons;
 - c) demonstrate the integrity of well casing; and
 - d) outline design and operational procedure to isolate the zone.
2. The resource consent holder shall ensure that injection will not contaminate or endanger any actual or potential useable freshwater aquifer.
3. The consent holder shall keep monthly records of the nature and amounts of all material injected, including injection pressure and rate, and shall make the records available to the Taranaki Regional Council on a 3 monthly basis, and when there has been a significant pressure change event.
4. The consent holder shall monitor the injected wastes monthly for maximum and mean concentrations of suspended solids, total dissolved solids, salinity, chlorides, and total hydrocarbons and shall make the records available to the Taranaki Regional Council every two months.
5. The consent holder shall provide to the Taranaki Regional Council during the month of August of each year, for the duration of the consent, a written report on all matters required under special conditions 1, 2, 3 and 4 above.

Consent 6175-1

6. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(b) of the Resource Management Act 1991.
7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent, by giving notice of review during the month following receipt of information required under special condition 5 above, and the month of June 2009 and/or June 2015 and/or June 2021 and/or June 2027 required for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 09 August 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
Pohokura Operations
Private Bag 2035
NEW PLYMOUTH 4342

Decision Date 9 August 2013
[change]:

Commencement Date 9 August 2013 [Granted: 23 May 2003]
[change]:

Conditions of Consent

Consent Granted: To discharge waste drilling fluids, produced water and stormwater from hydrocarbon exploration and production operations by deepwell injection at the Lower Otaraoa Road Wellsite

Expiry Date: 1 June 2033

Review Date(s): June 2015, June 2021, June 2027

Site Location: Lower Otaraoa Road Wellsite, Lower Otaraoa Road, Motunui

Legal Description: Pt Ngatirahiri 2A1 Blk; Ngatirahiri 2A2 Blk; Pt Ngatirahiri 2B 3B1 Blk; Pt Ngatirahiri 2B 3A1 Blk; Ngatirahiri 2B 3A2 Blk; Lot 2 DP 9747 Ngatirahiri 2B 3B2A Blk; Ngatirahiri 2B 3A 3B Blk; Ngatirahiri 2B 3A 3A Blk; Lot 1 DP 9747; Pt Ng... 2B 3A Blk

Grid Reference (NZTM) 1710305E-5683659N

Catchment: Waipapa

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

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. Prior to the exercise of this consent for each individual well to be used for deep well injection, the consent holder shall submit, to the written satisfaction of the Chief Executive, a log of the injection well, and an injection well operation management plan, to demonstrate that special condition 2 of this consent can be met. The report shall:
 - a) identify the injection zone, including a validated bore log and geophysical log,
 - b) detail the results of fluid sampled from wastes to be injected for maximum and mean concentrations of pH, suspended solids, total dissolved solids, salinity, chlorides, and total hydrocarbons;
 - c) demonstrate the integrity of well casing; and
 - d) outline design and operational procedure to isolate the zone.
2. The resource consent holder shall ensure that injection will not contaminate or endanger any actual or potential useable freshwater aquifer.
3. The consent holder shall keep monthly records of the nature and amounts of all material injected, including injection pressure and rate, and shall make the records available to the Taranaki Regional Council on a 3 monthly basis, and when there has been a significant pressure change event.
4. The consent holder shall monitor the injected wastes monthly for maximum and mean concentrations of suspended solids, total dissolved solids, salinity, chlorides, and total hydrocarbons and shall make the records available to the Taranaki Regional Council every two months.
5. The consent holder shall provide to the Taranaki Regional Council during the month of August of each year, for the duration of the consent, a written report on all matters required under special conditions 1, 2, 3 and 4 above.

Consent 6176-1

6. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(b) of the Resource Management Act 1991.
7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent, by giving notice of review during the month following receipt of information required under special condition 5 above, and the month of June 2009 and/or June 2015 and/or June 2021 and/or June 2027 required for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 09 August 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
P O Box 1873
WELLINGTON

Consent Granted
Date: 18 December 2003

Conditions of Consent

Consent Granted: To erect, place and maintain a culvert in an unnamed tributary of the Waipapa Stream for State Highway 3 road widening purposes at or about GR: Q19:205-447

Expiry Date: 1 June 2033

Review Date(s): June 2009, June 2015, June 2021, June 2027

Site Location: State Highway 3 [approximately 60 metres north of Otaraoa Road intersection], Motunui, Waitara

Legal Description: Lots 1 & 2 DP 9747 Ngatirahiri 2A2 2B3A3A 2B3A3B 2B3B1 Pt 2A1 2B3A1 Blks I & II Waitara SD

Catchment: Waipapa 3 (Waipapa)

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The consent holder shall notify the Chief Executive, Taranaki Regional Council in writing at least 48 hours prior to the commencement and upon completion of the initial installation and again at least 48 hours prior to and upon completion of any subsequent maintenance works which would involve disturbance of or deposition to the river bed or discharges to water.
2. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this resource consent.
3. The structure[s] authorised by this consent shall be constructed generally in accordance with the documentation submitted in support of the application and shall be maintained to ensure the conditions of this consent are met.
4. The consent holder shall adopt the best practicable option to avoid or minimise the discharge of silt or other contaminants into water or onto the riverbed and to avoid or minimise the disturbance of the riverbed and any adverse effects on water quality.
5. The consent holder shall ensure that the area and volume of riverbed disturbance shall, so far as is practicable, be minimised and any areas which are disturbed shall, so far as is practicable, be reinstated.
6. The structure[s] authorised by this consent shall be removed and the area reinstated, if and when the structure[s] are no longer required. The consent holder shall notify the Taranaki Regional Council at least 48 hours prior to structure[s] removal and reinstatement.

Consent 6254-1

7. The exercise of this consent shall not restrict the passage of fish.
8. This resource consent shall lapse on the expiry of five years after the date of issue of this resource consent, unless the resource consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
9. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2009 and/or June 2015 and/or June 2021 and/or June 2027 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 14 March 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Private Bag 2035
New Plymouth 4342

Decision Date
(Change): 16 February 2017

Commencement Date
(Change): 16 February 2017 (Granted Date: 10 November 2004)

Conditions of Consent

Consent Granted: To discharge treated stormwater from hydrocarbon exploration and production operations at the Lower Otaraoa Road Wellsite to an existing stormwater control system, being a body of water commonly known as 'The Duck Pond' within the Manu Stream

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Lower Otaraoa Road wellsite, Lower Otaraoa Road,
Motunui, Waitara

Grid Reference (NZTM) 1710824E-5683712N

Catchment: Manu

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

General condition

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

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of the original application and any subsequent applications to change conditions. In the case of any contradiction between the documentation submitted in support of previous applications and the conditions of this consent, the conditions of this consent shall prevail.
3. Prior to the exercise of this consent, the consent holder shall provide for the written approval of the Chief Executive, Taranaki Regional Council, site specific details relating to contingency planning for the wellsite.
4. The Chief Executive, Taranaki Regional Council, shall be advised in writing at least seven days prior to any site works commencing, and again in writing at least seven days prior to any well drilling operation commencing.
5. The maximum stormwater catchment area shall be no more than 25,000 square metres.
6. All site stormwater to be discharged under this consent shall be directed for treatment through the stormwater treatment system for discharge in accordance with the special conditions of this permit.
7. Any above ground hazardous substances storage areas shall be bunded with drainage to sumps, or other appropriate recovery systems, and not to the stormwater catchment.
8. The following concentrations shall not be exceeded in the discharge:

Component	Concentration
pH (range)	6.0-9.0
suspended solids	100 gm-3
total recoverable hydrocarbons (infrared spectroscopic technique)	15 gm-3
chloride	300 gm-3

This condition shall apply prior to the entry of the treated stormwater into the body of water known as 'The Duck Pond' at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

Consent 6269-1.2

9. After allowing for reasonable mixing, within a mixing zone extending to the downstream end of the body of water known as 'The Duck Pond' the discharge shall not give rise to any of the following effects in the receiving waters of the Manu Stream:
 - a) an increase in temperature of more than 2 degrees Celsius;
 - b) an increase in biochemical oxygen demand of more than 2.00 gm⁻³.

10. After allowing for reasonable mixing, within a mixing zone extending to the downstream end of the body of water known as 'The Duck Pond' the discharge shall not give rise to any of the following effects in the receiving waters of the Manu Stream:
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of fresh water unsuitable for consumption by farm animals;
 - e) any significant adverse effects on aquatic life.

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

12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2009 and/or June 2015 and/or June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 16 February 2017

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Shell (Petroleum Mining) Co Ltd
P O Box 1873
WELLINGTON

Consent Granted
Date: 13 April 2005

Conditions of Consent

Consent Granted: To install, construct and maintain a water bore for
horizontal directional drilling purposes at or about GR:
Q19:207-450

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: Lower Otaraoa Road wellsite, Lower Otaraoa Road,
Motunui

Legal Description: Lot 2 DP 324944 Ngatirahiri 2A2 Block Ngatirahiri 2B3A3B
Block Pt Ngatirahiri 2B3B1 Block Lot 2 DP 9747 Lot 1 DP
9747 Pt Ngatirahiri 2A1 Block Pt Ngatirahiri 2B3A1 Block

Catchment: Waipapa 3 (Waipapa)

Consent 6577-1

General conditions

- a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.
- c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:
 - i) the administration, monitoring and supervision of this consent; and
 - ii) charges authorised by regulations.

Special conditions

1. The exercise of this consent shall be undertaken in general accordance with the documentation submitted in support of application 3622. In the case of any contradiction between the documentation submitted in support of application 3622 and the conditions of this consent, the conditions of this consent shall prevail.
2. The consent holder shall, within 28 days of the completion of the bore, provide a bore completion log to the satisfaction of the Chief Executive, Taranaki Regional Council.
3. The bore shall be cased and sealed to prevent the potential for aquifer cross-contamination and/or leakage from the surface.
4. The consent holder shall take all reasonable steps to mitigate any adverse environmental effects that may be caused by structural failure of the bore.
5. This consent shall lapse on the expiry of five years after the date of commencement of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

Consent 6577-1

6. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2011 and/or June 2017, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 14 March 2006

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Private Bag 2035
New Plymouth 4342

Decision Date: 20 March 2015

Commencement Date: 20 March 2015

Conditions of Consent

Consent Granted: To occupy the coastal marine area with four pipelines (well casings) extending from the Lower Otaraoa Road wellsite for hydrocarbon production purposes

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Lower Otaraoa wellsite, Lower Otaraoa Road, Motunui

Legal Description: Part Ngatirahiri 2B3A1 Blk Part Ngatirahiri 2A1 Blk Lot 1 DP 9747 Lot 2 DP 9747 Pt Ngatirahiri 2B3B1 Blk Ngatirahiri 2B3A3B Blk Lot 2 DP 324944 & Ngatirahiri 2A2 Blk (Site of pipeline)

Grid Reference (NZTM) 1710410E - 5683628N

Catchment: Waipapa

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

General condition

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

Special conditions

1. The activity licensed by this consent shall be undertaken in general accordance with the documentation submitted in support of application 10096-1.0.
2. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2021 and/or June 2027, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 20 March 2015

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Private Bag 2035
New Plymouth 4342

Decision Date: 27 September 2017

Commencement Date: 27 September 2017

Conditions of Consent

Consent Granted: To discharge heat and contaminants into land at depth in the coastal marine area, associated with the development, operation/production, maintenance and treatment of wells within the Pohokura Field

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Coastal Marine Area, Tasman Sea, Pohokura

Grid Reference (NZTM) 1712197E-5689013N

Catchment: Tasman Sea

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

General condition

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

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants into the seabed.
2. This consent shall lapse on 30 September 2022, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
3. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2021 and/or June 2027 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 27 September 2017

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

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

Name of
Consent Holder: Shell Exploration NZ Limited
Private Bag 2035
New Plymouth 4342

Decision Date: 27 September 2017

Commencement Date: 27 September 2017

Conditions of Consent

Consent Granted: To discharge natural gas into land at depth in the coastal marine area, for the purpose of storage or other hydrocarbon recovery operations

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Coastal Marine Area, Tasman Sea, Pohokura

Grid Reference (NZTM) 1712197E-5689013N

Catchment: Tasman Sea

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

General condition

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

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of gas at depth.
2. The discharge shall not result in the stabilised post-injection pressure in the target reservoir exceeding the original pressure in that reservoir prior to the commencement of hydrocarbon production activities (as measured at the well).
3. The consent holder shall continuously record the injection pressure to determine compliance with condition 2. The pressure records shall be made available to the Chief Executive, Taranaki Regional Council on request.
4. This consent shall lapse on 30 September 2022, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
5. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2021 and/or June 2027 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 27 September 2017

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Appendix II

Air report

To Job Manager, Callum MacKenzie
From Environmental Scientist - Air Quality, Brian Cheyne
File 2114714
Date August 30, 2018

Ambient Gas (PM10, NO_x, CO and LEL) Monitoring at Pohokura Production Stations during 2017-2018 monitoring year

Introduction

In January and May 2018 as part of the compliance monitoring programme for the Pohokura production station, a survey of ambient air quality sampling was carried out by the Taranaki Regional Council (the Council) in the vicinity of the plant. The main objectives were to measure:

- The concentrations of PM10 using a portable data logging TSI 'DustTrak';
- To measure the concentrations of the nitrogen oxides (NO_x) using a passive sampling method, that gives a result for average exposure;
- And to measure carbon monoxide (CO) using a portable multi gas meter that provides instantaneous data throughout the monitoring period.

The findings of this study are presented in this memorandum, together with the locations of the monitoring sites which are provided in Figure 1.

Carbon monoxide (CO) and Lower explosive limit (LEL)

During the monitoring year, a multi-gas meter was deployed on one occasion in the vicinity of the plant. The deployment lasted approximately 42 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continuous measurements of gas concentrations for the gases of interest (carbon monoxide and combustible gases).

Because of the nature of the activities on the site, it was considered that the primary information of interest in respect of gases potentially emitted from the site was the average downwind concentration, rather than any instantaneous peak value. That is, the long-term exposure levels, rather than short-term maxima, are of most interest. The gas meter was therefore set up to create a data set based on recording the average concentration measured during each minute as raw data.

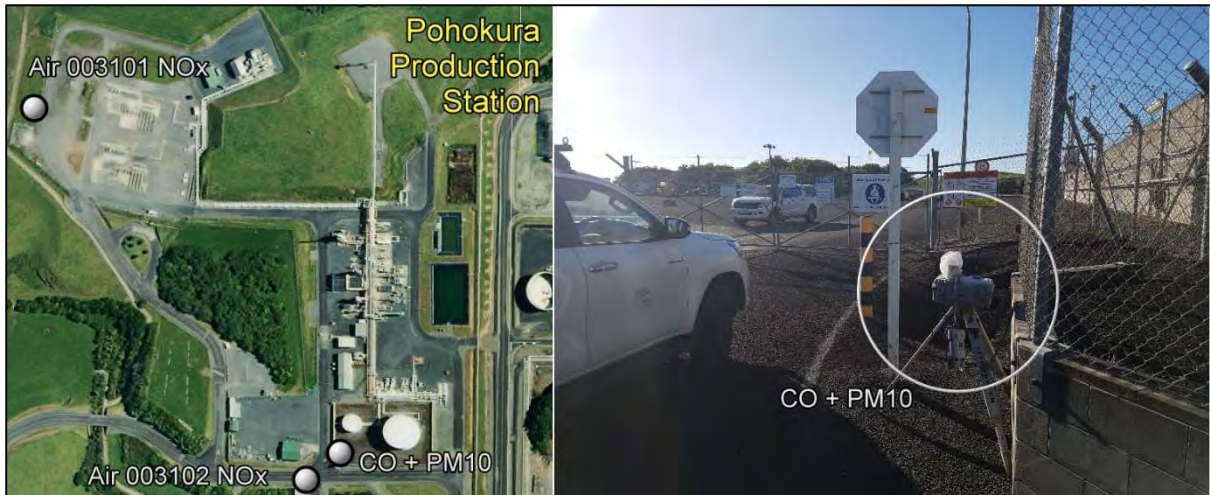


Figure 1 Air monitoring sites at Pohokura production station (2017-2018)

The details of the sample run are summarised in Table 1 and the data from the sample run are presented graphically in Figure 2.

The consents covering air discharges from the Pohokura production station have specific limits related to particular gases. Special condition 14 of consent 6002-1 and special condition 17 of consent 6003-1 set limit on the carbon monoxide concentration at or beyond the production station's boundary. The limit is expressed as 10 mg/m^3 for an eight hour average or 30 mg/m^3 for a one hour average exposure. The maximum concentration of carbon monoxide found during the monitoring run was 19.5 mg/m^3 with average concentration for the entire dataset was only 0.34 mg/m^3 which comply with consent conditions. This is in line with the pattern found in previous years.

Table 1 Results of carbon monoxide and LEL monitoring at Pohokura production station

Period (from-to)		2/05/2018 16:39 to 4/05/2018 10:07
Max	CO(ppm)	17.0
	LEL(%)	0.20
Mean	CO(ppm)	0.30
	LEL(%)	0.00
Min	CO(ppm)	0.00
	LEL(%)	0.00

Note: (1) the instrument records in units of ppm. At 25°C , 1 atm.

$$1\text{ppm CO} = 1.145 \text{ mg/m}^3$$

(2) See text for explanation of LEL. Because the LEL of methane is equivalent to a mixture of approximately 5% methane in air, then the actual concentration of methane in air can be obtained by dividing the percentage LEL by 20.

LEL gives the percentage of the lower explosive limit, expressed as methane that is detected in the air sampled. The sensor on the instrument reacts to gases and vapours such as acetone, benzene, butane, methane, propane, carbon monoxide, ethanol, and higher alkanes and alkenes, with varying degrees of

sensitivity. The Council's Regional Air Quality Plan has a typical requirement that no discharge shall result in dangerous levels of airborne contaminants, including any risk of explosion. At no time did the level of explosive gases downwind of the Pohokura production station reach any more than a trivial level.

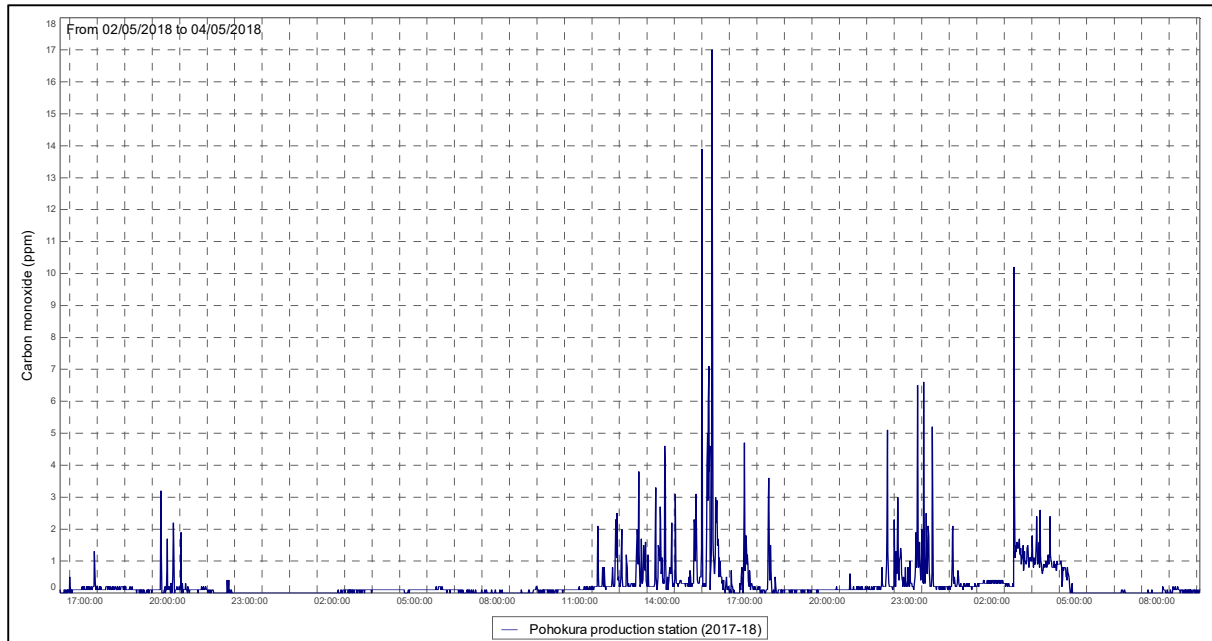


Figure 2 Graph of ambient CO levels in the vicinity of the Pohokura Production Station (2017-18)

PM10

In September 2004 the Ministry for the Environment made public National Environmental Standards (NESs) relating to certain air pollutants. The NES for PM10 is 50 $\mu\text{g}/\text{m}^3$ (24-hour average).

Particulates can be derived from many sources, including motor vehicles (particularly diesel), solid and oil-burning processes for industry and power generation, incineration and waste burning, photochemical processes, and natural sources such as pollen, abrasion, and sea spray.

PM10 particles are linked to adverse health effects that arise primarily from the ability of particles of this size to penetrate the defences of the human body and enter deep into the lungs significantly reducing the exchange of gases across the lung walls. Health effects from inhaling PM10 include increased mortality and the aggravation of existing respiratory and cardiovascular conditions such as asthma and chronic pulmonary diseases.

During the reporting period, a "DustTrak" PM10 monitor was deployed on one occasion in the vicinity of the Pohokura production station. The deployment lasted approximately 42 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continual measurements of PM10 concentrations. The location of the "DustTrak" monitor during the sampling run is shown in Figure 1.

The details of the sample run are presented in Figure 3 and Table 2.

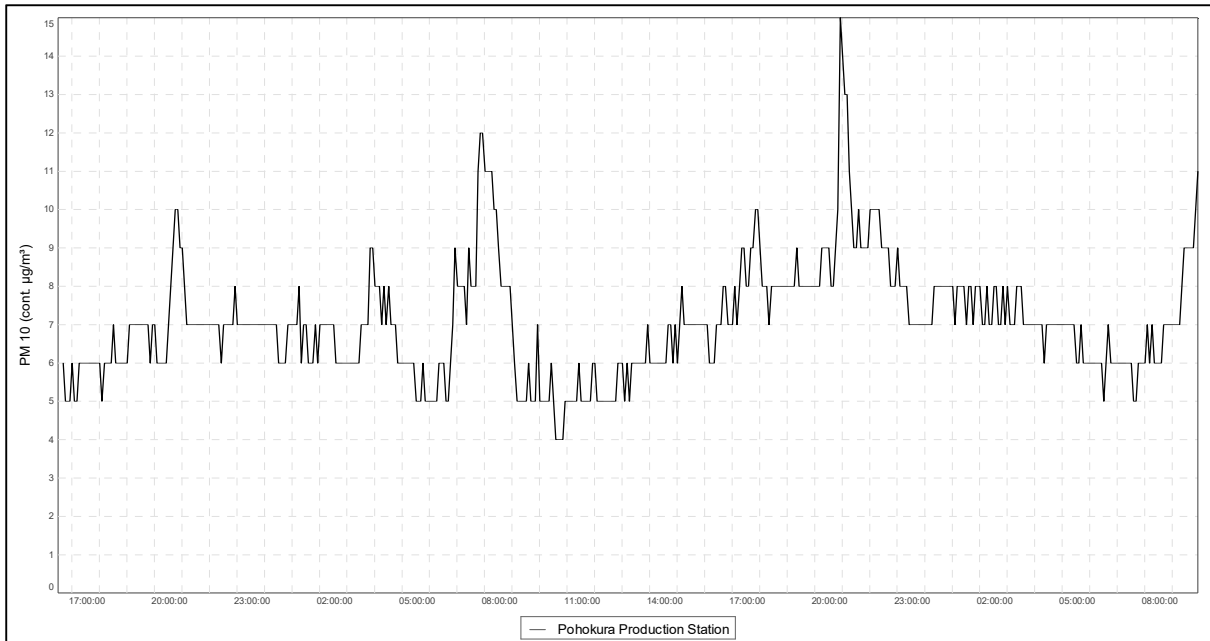


Figure 2 PM10 concentrations ($\mu\text{g}/\text{m}^3$) at the Pohokura production station (2017-18)

Table 1 Daily mean of PM10 results during two days' monitoring at Pohokura production station

	(42 hours) (02/05-4/05/2018)	
24 hr. set	Day 1 (Start to 24 hrs)	Day 2 (24 hrs to end)
Daily average	6.6 $\mu\text{g}/\text{m}^3$	7.2 $\mu\text{g}/\text{m}^3$
NES	50 $\mu\text{g}/\text{m}^3$	

During the 42-hour run, from 2nd to 4th of May 2018, the average recorded PM10 concentration for the first 24 hour period was 6.6 $\mu\text{g}/\text{m}^3$ and 7.2 $\mu\text{g}/\text{m}^3$ for the second 24 hour period. These daily means equate to 13% and 14%, respectively, of the 50 $\mu\text{g}/\text{m}^3$ value that is set by the National Environmental Standard.

Background levels of PM10 in the region have been found to be typically around 11 $\mu\text{g}/\text{m}^3$.

Nitrogen oxides (NOx)

From 2014 onwards, the Council has implemented a coordinated region-wide compliance monitoring programme to measure NOx. The programme involves deploying all measuring devices at 30 NOx monitoring sites (including two sites in the vicinity of the Pohokura production station) on the same day, with retrieval three weeks later. This approach assists the Council in further evaluating the effects of local and regional emission sources and ambient air quality in the region.

The complete report covering region-wide NOx monitoring is attached in the Appendix to this memorandum (TRC #2089257).

The consents covering air discharges from the Pohokura production station have specific limits related to particular gases. Special condition 15 of consent 6002-1 and special condition 18 of consent 6003-1 set limits on the nitrogen oxides concentration at or beyond the production station's boundary. The limits are expressed as 200 $\mu\text{g}/\text{m}^3$ for a one hour average exposure or 100 $\mu\text{g}/\text{m}^3$ for a 24 hour average exposure.

NO_x passive adsorption discs were placed at two locations in the vicinity of the Pohokura production station on one occasion during the year under review. The discs were left in place for a period of 21 days.

The calculated 1-hour and 24-hour theoretical maximum NO_x concentration found at the Pohokura production station during the year under review equates to 5.8µg/m³ and 3.1 µg/m³ respectively. The results show that the ambient ground level concentration of NO_x is well below the limits set out by consents 6002-1 and 6003-1.

