

# Greymouth Petroleum Ltd

## Northern sites

Monitoring Programme

Annual Report

2022-2023

Technical Report 2023-80



Working with people | caring for Taranaki



Taranaki Regional Council  
Private Bag 713  
Stratford

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## Executive summary

Greymouth Petroleum Ltd (the Company) operates the Turangi Production Station located on Turangi Road at Motunui, in the Parahaki catchment. The Turangi Production Station processes oil and gas from the Company's northern Taranaki operations, including the Ohanga, Onaero and Turangi group of wellsites. The Company also operate the Kowhai-A Production Station, located on Ngatimaru Road at Tikorangi. The Kowhai-A Production Station processes product from the Kowhai-A, B, C and D wellsites.

This report for the period July 2022 to June 2023 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.

**During the monitoring period, Greymouth Petroleum Ltd demonstrated a good level of environmental performance and high level of administrative performance.**

The Company holds four resource consents in relation to the Turangi and Kowhai-A production stations, which include a total of 69 conditions setting out the requirements that the Company must satisfy. The Company holds two consents to discharge stormwater and two consents to discharge emissions related to production activities into the air.

The Council's monitoring programme for the year under review included four inspections of the Turangi and Kowhai-A production stations, and an annual inspection of wellsites associated with the production stations. Seven water samples were collected for physicochemical analysis, two biomonitoring surveys of receiving waters were conducted, and one ambient air quality survey was undertaken in relation to the Turangi Production Station.

The monitoring showed that the production station sites were generally well managed. There were some issues noted at the Turangi Production Station with regards to best practice to prevent and minimise adverse effects on the environment. Sampling of discharges and receiving waters in relation to Turangi Production Station did not find any significant adverse effects at the time of sampling, while biomonitoring in the receiving waters did not show any effect from discharges on the communities in the stream.

There were no adverse effects on the environment resulting from the exercise of the air discharge consent. Ambient air quality monitoring at the Turangi Production Station showed that levels of nitrogen oxides were below levels of concern at the time of sampling. No offensive or objectionable odours were detected beyond the boundary during inspections.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (<1%) achieved a rating of poor.

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 remains at a good level.

This report includes recommendations for the 2023-2024 year.

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# 1 Introduction

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

### 1.1.1 Introduction

This report is for the period July 2022 to June 2023 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Greymouth Petroleum Limited (the Company). The Company operates the Turangi Production Station situated on Turangi Road at Motunui, in the Parahaki Catchment. The Company also operate the Kowhai-A Production Station situated on Ngatimaru Road at Tikorangi, in the Waiau catchment.

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 Parahaki and Waiau catchments, and the air discharge permits held by the Company to cover emissions to air from the sites. This report is the 15<sup>th</sup> annual report to be prepared by the Council for the Turangi and Kowhai-A Production Station and associated sites.

### 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 *Resource Management Act 1991* (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 Parahaki and Waiau Catchments;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the Turangi and Kowhai-A Production Stations and associated sites.

**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 2023-2024 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' in as much 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 performance

Besides discussing the various details of the performance and extent of compliance by the consent holders, this report also assigns a rating as to each Company's environmental and administrative performance during the period under review. The rating categories are high, good, improvement required and poor for both environmental and administrative performance. The interpretations for these ratings are found in Appendix II.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (<1%) achieved a rating of poor.<sup>1</sup>

## 1.2 Process description

### 1.2.1 Turangi Production Station

The Turangi-A wellsite production facilities were commissioned in late 2006 following the successful drilling and testing of the Turangi-1 well. Two further production wells were drilled on the wellsite in 2008. The site was expanded to the south during the 2013-2014 year. The production facilities currently treat condensate and gas from the Company's northern Taranaki operations, including the Ohanga, Onaero and Turangi group of wellsites.

The primary facilities at the Turangi Production Station consist of:

- Wellhead shutdown systems.
- Sand catcher and heating systems.
- Inlet separator and low temperature separator.
- Methanol storage and dosing system.
- A low pressure gas compressor.
- Flare system and flare pit.
- Storage tanks (condensate, methanol, and produced water) and a condensate load-out facility.

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<sup>1</sup> The Council has used these compliance grading criteria for more than 19 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

Gas is compressed, metered and exported to the national gas network. Condensate storage is located on the wellsite and currently consists of six above ground tanks and a truck load-out facility. Condensate is pumped via pipeline to the Omata tank farm, along with up to two truckloads going to the Waihapa Production Station per day. Produced formation water is stored on the site in banded tanks prior to being pumped down the Turangi-5 well into the Mt Messenger formation for disposal.

All chemical storage is contained within bunds and isolated from the stormwater system. The stormwater drain system consists of open culverts which capture and drain general surface water run-off from the site and some surrounding farmland. Stormwater from the site passes through three sets of lined skimmer pits before discharging to land and into a tributary of the Parahaki Stream at points north and south of the access road. The separate oily water drainage system consists of a buried pipe which gathers oily water from spill containment areas (i.e. kerbed foundations and tank bunds) and directs these flows into a triple interceptor pit located near the truck loading bay. Oily water drains from the compressor house are collected in a buried fibreglass tank and are routinely pumped out into the storage tanks.



Photo 1 Turangi Production Station

### 1.2.2 Kowhai-A Production Station

The Kowhai-A Production Station (Photo 2) is located on Ngatimaru Road at Tikorangi. The site was originally developed and drilled by Swift Energy NZ Ltd in 2006. The Kowhai-A Production Station processes (separates) product from the Kowhai A, B, C and D wellsites.



Photo 2 Kowhai-A Production Station

### 1.3 Resource consents

The Company holds four resource consents the details of which are summarised in the table below. Summaries of the conditions attached to each permit are set out in Section 3 of this report.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by the Company during the period under review.

Table 1 Consents held by the Company in relation to Turangi and Kowhai-A Production Stations

Site	Consent number	Purpose	Granted	Review	Expires
Turangi Production Station	6497-2	To discharge emissions to air during flaring from well workovers and in emergency situations, and to discharge miscellaneous emissions associated with wellsite production activities at the Tūrangi-A Production Station	March 2023	June 2027	June 2039
	10703-1	To discharge treated stormwater from hydrocarbon exploration and production operations at the Turangi-A Production Station, onto land and into an unnamed tributary of the Parahaki Stream and into the Parahaki Stream	Jan 2019	June 2027	June 2033
Kowhai-A Production Station	6719-1	To discharge emissions to air during flaring from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the Kowhai-A wellsite	Nov 2005	-	June 2021*

Site	Consent number	Purpose	Granted	Review	Expires
	10169-1	To discharge treated stormwater from hydrocarbon exploration and production operations at the Kowhai-A wellsite onto land and into an unnamed tributary of the Waiau Stream	Jan 2016	June 2027	June 2033

\* Consent renewal underway, S124 protection

### 1.3.1 Wellsite consents

The Company also holds consents for production activities at wellsites associated with the Turangi and Kowhai-A production stations. A summary of these consents is provided in Table 2.

Table 2 Consents for production activities at wellsites associated with Turangi and Kowhai-A production stations

Wellsite	Consent number	Purpose	Issue date	Expiry
Epiha	7722-1	To discharge treated stormwater, produced water and surplus drilling water from hydrocarbon exploration and production operations at the Epiha wellsite onto and into land	Nov 2010	June 2027
	7725-1	To discharge emissions to air associated with production activities at the Epiha wellsite, including flaring from well workovers, and in emergency situations, and other miscellaneous activities	Nov 2010	June 2027
Kowhai-B	9203-1	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations at the Kowhai-B wellsite onto and into land	Feb 2012	June 2027
Kowhai-B	9204-1	To discharge emissions to air associated with production activities at the Kowhai-B wellsite, including: flaring associated with emergencies and maintenance; and minor emissions from other miscellaneous activities	Feb 2012	June 2027
Kowhai-C	9474-1	To discharge emissions to air associated with hydrocarbon producing wells at the Kowhai-C wellsite	Feb 2013	June 2027
	9478-1	To discharge treated stormwater, treated produced water and surplus drilling water from hydrocarbon exploration and production operations at the Kowhai-C wellsite onto and into land where it may enter an unnamed tributary of the Waiau Stream	Feb 2013	June 2027
Kowhai-D	10293-1	To discharge emissions to air associated with hydrocarbon producing wells at the Kowhai-D wellsite	Mar 2017	June 2033
	10294-1	To discharge treated stormwater from hydrocarbon exploration and production operations at the Kowhai-D wellsite onto land and into an unnamed tributary of the Waitara River	May 2016	June 2033
Main-1	7712-1	To discharge treated stormwater from hydrocarbon exploration and production operations at the Main-1 wellsite onto and into land	Jul 2015	June 2033
	7714-1	To discharge emissions to air associated with hydrocarbon producing wells at the Main-1 wellsite	Jul 2015	June 2033



Wellsite	Consent number	Purpose	Issue date	Expiry
Ohanga-A	7024-1	To discharge treated stormwater and treated produced water from hydrocarbon exploration and production operations at the Ohanga-A wellsite onto and into land and into an unnamed tributary of the Onaero River	Nov 2006	June 2021*
	7025-1	To discharge emissions to air from: flaring of hydrocarbons; and miscellaneous activities associated with well clean-up, well testing, and production testing, associated with up to eight wells at the Ohanga-A wellsite	Nov 2006	June 2021*
Onaero	7555-1	To discharge treated stormwater, treated produced water and treated surplus drilling water from hydrocarbon exploration and production operations onto and into land in circumstances where the discharge may enter an unnamed tributary of the Onaero River at the Onaero wellsite	Dec 2009	June 2027
	7558-1	To discharge emissions to air during flaring from well workovers and in emergency situations associated with production activities at the Onaero wellsite	Dec 2009	June 2027
Turangi-B	7853-1	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations at the Turangi-B wellsite onto and into land	Jun 2011	June <sup>^</sup> 2027
	7854-1	To discharge emissions to air associated with production activities at the Turangi-B wellsite, including: flaring from well workovers; flaring in emergency situations; and emissions from other miscellaneous activities	Dec 2011	June 2027
	11085-1	To discharge stormwater from hydrocarbon exploration and production operations at the Tūrangi-B wellsite onto and into land in circumstances where it may enter water	July 2023	June 2039
Turangi-C	9415-1	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations at the Turangi-C wellsite onto land	Feb 2013	June 2027
	9420-1	To discharge emissions to air associated with hydrocarbon producing wells at the Turangi-C wellsite	Feb 2013	June 2027
Turangi Metering Station	6807-1	To discharge emissions into the air from flaring of petroleum products in emergency situations, commissioning, and plant shutdowns, together with miscellaneous emissions at the Turangi Metering Station	Sep 2006	June 2021*
	6808-1	To discharge treated stormwater from the Turangi Metering Station onto and into land in the vicinity of the Waiau Stream	Mar 2006	June 2021*
Urenui-1	7532-1	To discharge treated stormwater, treated surplus drilling water and treated produced water from hydrocarbon exploration and production operations at the Urenui-1 wellsite, onto land where it may enter an unnamed tributary of the Onaero River	Aug 2013	June 2027
	9631-1	To discharge emissions to air associated with hydrocarbon producing wells at the Urenui-1 wellsite	Aug 2013	June 2027

\* consent renewal underway, S124 protection

<sup>^</sup> consent surrendered, replaced by 11085-1 as of July 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 Turangi and Kowhai-A production stations and associated wellsites 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;
- 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

Four inspections were carried out at the Turangi and Kowhai-A production stations, along with an annual inspection of the other wellsites associated with the production stations. With regard to consents for the 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

Samples of the northern, southern and western discharges from Turangi Production Station were collected once during the monitoring year. These samples were analysed for chloride, conductivity, hydrocarbons, suspended solids, pH and turbidity. In conjunction, the unnamed tributary of the Parahaki Stream was sampled upstream and downstream of the northern and southern discharges, while the Parahaki Stream was sampled upstream and downstream of the western discharge. The samples were analysed for the same constituents.

The Council undertook sampling of the ambient air quality outside the boundary of the Turangi Production Station. Two nitrogen oxide measuring devices were also deployed in the vicinity of the plant on one occasion during the year under review.

### 1.4.5 Biomonitoring surveys

A biological survey was performed on two occasions in an unnamed tributary of the Parahaki Stream to determine whether or not the discharge of treated stormwater has had a detrimental effect upon the communities of the stream.

## 2 Results

### 2.1 Water

#### 2.1.1 Inspections

During the 2022-2023 year four inspections each were carried out at the Turangi and Kowhai-A Production Stations, along with an annual inspection of wellsites associated with the production stations was also carried out. The following was found during the inspections:

##### 6 July 2022

**Turangi Production Station:** The level in the skimmer pits were above the discharge pipe after heavy rainfall overnight. The valves had been shut to prevent discharge and to allow for sediment to settle out. The discharge point looked good with no adverse effects observed in the area or downstream. It was noted that a pump was located alongside the stream for the taking of water. A drip tray was located under the pump, however the bung was missing allowing rainwater and possibly contaminants to discharge onto the ground. One solution would be to place an oliophillic mat below the pump to capture any hydrocarbon while allowing rainwater to drain, this was discussed with staff at the time of the inspection. Also discussed was the purposed and use of plastic matting under the rig. For some areas plastic matting is suitable, however for others the matting needs to be used to capture solid/liquid that falls from the rig and associated equipment. These areas are not usually cleaned daily and if not bunded then contaminants can flow to the rest of the site. The site was full of equipment with various operations occurring and in general good bunding was noted.

**Kowhai-A Production Station:** The site was tidy with no changes noted since the previous inspection.

**Annual wellsite inspection:** an annual inspection of the well sites associated with the Turangi and Kowhai-A Production Stations was carried out. Well sites inspected were Turangi-A, B, C; Kowhai-A, B, C and D; Onaero; Ohanga; Epiha; and Urenui. Heavy and persistent rain had fallen the previous night. In general, the sites were tidy and clean with minimal activity occurring. The majority of ring drains were vegetated with grasses that helped with controlling and treating sediment laden stormwater. Other sediment controls were in place and including rock weirs and silt fences within the ring drain. Hydrocarbon sheens were not observed within the skimmer pits or in puddles on any of the sites. The skimmer pits were all in good order with goose neck pipes functioning as required. The majority of the discharges were onto land before flowing to surface water. No effects were noted in the grass (such as burnt patches or dead grass) or within the streams. Flaring was not occurring at any of the sites at the time of the inspection. No visual effects were noted as a result of previous flaring on the sites.

Specific points to note and if applicable, action, were:

**Turangi-B wellsite:** Further works had been undertaken to enlarge the soakage pit following feedback from iwi that they would not support a discharge to water in the event that the soakage pit overflowed.

**Ohanga:** The skimmer pit liner was to be replaced during the summer.

**Kowhai-D:** The northern skimmer pit was to be emptied during summer to determine if the liner was leaking. It was noted that the sediment traps on the access track needed cleaning, this could potentially be included on the maintenance schedule for more frequent inspection.

##### 25 October 2022

**Turangi Production Station:** The drill rig and associated equipment that had been located at the site had been removed. Significant staining was observed in multiple areas where the rig and equipment had been positioned. It was noted that portable bunding units were on site, but these were not functioning as

designed because hose pipes were flattening the side walls. Drip trays were noted to be full of stormwater with staining observed around the base on the ground. Staff advised that the site was to be scraped to remove the staining. The valves on the skimmer pits were closed to prevent discharge to water. A rig camp had been set up in one corner of the site to house staff working at Turangi-B wellsite.

The inspecting officer noted that the site was close to being rated as non-compliant due to multiple issues observed in relation to not undertaking the best practicable option to prevent and/or minimise adverse effects on the environment. The issues noted above all relate to best practice and maintaining standards. The inspecting officer noted that these issues appear to come up year after year, relate specifically to drilling operations and are rectified by the Company, only for staff to re-lapse into poor habits or the solution is removed and not re-instated at the next site. The Company was asked to ensure that staff are aware of these issues and that policies and procedures are updated and/or adhered to in order to ensure that minimal discharges to site occur, that physical barriers are in place to capture drips and spills in line with best practice, and that any spills are removed at the time they occur.

A pilot flare was in operation with a clean burning flame and no offsite odours or smoke noted.

**Kowhai-A Production Station:** No issues were noted.

#### 16 February 2023

**Kowhai-A Production Station:** The site was tidy and clean as usual. A new storage tank was observed onsite, this would be used to store produced water. The current produced water tank had a small leak that was dripping into the bund. The bund discharge valve was closed and the operator advised that the contents of the bund was being pumped out to avoid discharging produced water onto the site. A small bund next to the methanol bund was in need of a clean as it contained old hydrocarbon cloths and debris. A sampling point at the compressor shed was leaking onto the site and this required fixing. The skimmer pits were not discharging at the time of inspection, these pits appeared clear with no sheens noted. There was no evidence of any effects from the site downstream of the discharge point. No flare was noted.

#### 18 February 2023

**Turangi Production Station:** It was noted that a rig had been onsite prior to the visit and had been removed, with some additional parts and units being stored onsite. Drilling of a well was due to commence at the Turangi-B wellsite. Turangi Production Station was being used to house accommodation, for security and induction, servicing of equipment and some other functions that were required to support the drilling operation. A new cellar and conductor had been installed onsite.

The inspecting officer noted a few issues onsite that needed to be addressed. Significant staining was noted on the ground in the area where the rig had been located, this staining had been noted by staff and actions to remove the stained metal had been put in place. A pile of metal on the western boundary smelled of diesel, this material needed to be removed. A very small leak was detected in a bulk fuel tank and, possibly due to wind, some of the fuel had run down the outside of the bund. It was noted that all staff should be reminded that spills and stains onto site need to be cleaned up, but that sometimes simple preparation can avoid the need for unnecessary cleaning of spills. The inspecting officer recommended that a review be undertaken by the Company to identify the key activities that contribute to discharges onto the site, and to put in place practices and processes that will prevent these discharges from occurring.

No flare, smoke or odour was noted at the time of the inspection.

#### 9 May 2023

**Turangi Production Station:** Work was being carried out to remove metal from around the area where drilling and post drilling activities had occurred. Sediment was flowing from this area to the skimmer pit, as stormwater was brown in colour. It appeared that the discharge pipes from the skimmer pits were in the closed position as no discharges were occurring. A pile of metal at the rear of the site, noted as smelling of

hydrocarbon during a previous inspection, had not been removed. Staff were unaware of where this pile had originated from, but confirmed that it would be removed from the site and disposed of. Minor hydrocarbon sheens were noted about the site due to the rain at the time of the inspection. It was noted that a couple of depressions had appeared in the ring drain behind where drilling equipment was being stored. It was unclear whether these had been formed by digging, from water pressure, or from stormwater flowing through a fissure beneath the ring drain. Staff were advised of this and requested to investigate the cause of the depression and take action if stormwater was flowing offsite. No flare, smoke, heat haze, or odour was noted.

**Kowhai-A Production Station:** Two issues were identified and may be related. The first was that an un-bunded IBC containing waste oil was located onsite, next to the compressor unit. Staff advised that the sump beneath the compressor unit was full and needed to be emptied quickly. Action had been taken to organise the removal of oil from site. Staff acknowledged that best practice would have been to place the IBC within the footprint of the compressor bund in the absence of an IBC bund. It was also noted that oil was flowing towards the ring drain at the rear of the compressor and staff were advised that this spill needed to be cleaned up and the source of the spill identified to avoid further spills. The compressor unit has progressively become covered in oil from spills, leaks and maintenance work. The inspecting officer recommended that the unit was given a good clean to remove the excess oil so that leaks or spills can be identified quickly. No flaring was occurring at the time of the inspection.

### 2.1.2 Results of discharge monitoring



Figure 1 Turangi Production Station and associated sampling sites

Chemical water quality sampling of the discharges from the Turangi Production Station was scheduled to be undertaken twice during the 2022-2023 period. However, despite the site being visited during rain, sampling was only undertaken on one occasion due to the lack of discharge. The locations of the sampling sites are shown in Figure 1, while Table 3 presents the results.

The suspended solids result of 131 g/m<sup>3</sup> exceeded the limit of 100 g/m<sup>3</sup> in the sample collected from the northern discharge. This is an infrequent controlled discharge, with staff manually opening the valves from the skimmer pit when they are full. The discharge stopped shortly after the sample was collected and it was noted that the ponds were almost empty at the time so the higher suspended solid level was possibly due to the resuspension of solids from the bottom of the pond. The discharge occurs to land via a pipe located in the paddock above the stream which allows for some pre-treatment before it reaches the stream. No significant effects were observed in the stream, with suspended solids in the receiving waters higher at the upstream site (Table 4). It is noted that hydrocarbons in the western discharge were slightly elevated, although well below the consented limit. Levels for all other parameters well within the consent limits.

Table 3 Results of discharge monitoring from the Turangi Production Station, 19 August 2022

Parameter	Units	Northern discharge IND002035	Southern discharge IND002052	Western discharge STW002101	Consent limits (10703-1)
Chloride	g/m <sup>3</sup>	3	4	3.6	230
Conductivity	mS/m @25°C	2.6	2.9	3.2	-
Hydrocarbons	g/m <sup>3</sup>	<0.7	<0.7	3.0	15
Suspended solids	g/m <sup>3</sup>	<b>131</b>	37	7	100
Temperature	Deg. C	17.1	15.1	15.7	-
pH		6.8	6.7	6.6	6.0 – 9.0
Turbidity	FNU	57	32	10	-

## 2.1.3 Results of receiving environment monitoring

### 2.1.3.1 Chemical

Chemical water quality sampling of the receiving environment was undertaken in conjunction with discharge monitoring.

Table 4 Results of receiving environment monitoring in relation to the northern and southern discharges and the western discharge, 19 August 2022

Parameter	Units	Consent limits 10703-1	Northern and Southern		Western discharge	
			Upstream PRH000020	Downstream PRH000022	Upstream PRH000026	Downstream PRH000027
Chloride	g/m <sup>3</sup>	50	15	14	18	18
Conductivity	mS/m@25°C	-	13.3	12.5	12.9	12.9
Hydrocarbons	g/m <sup>3</sup>	-	<0.7	<0.7	<0.7	<0.7
pH		-	6.5	6.7	6.6	6.7
Suspended solids	g/m <sup>3</sup>	-	62	49	19	16
Temperature	Deg. C	<2°C increase	15.5	15.4	15.3	15.3
Turbidity	FNU	-	22	20	9	10

The results of receiving environment monitoring in relation to the northern (IND002035), southern (IND002052) and western (STW0002101) discharges are presented in Table 4 above. The results complied with consent conditions and indicate that the discharge was having minimal effect on the water quality of the Parahaki Stream at the time of sampling.

### 2.1.3.2 Biomonitoring

The Council's 'vegetation sweep' and 'kick-sampling' techniques were used at three sites (Table 5, Figure 2) to collect macroinvertebrates from an unnamed tributary of the Parahaki Stream on 27 October 2022 and 20 February 2023. This provided data to assess whether discharges to nearby land had had any effect on the macroinvertebrate communities of the unnamed tributary. Samples were processed to provide number of taxa (richness), Macroinvertebrate Community Index (MCI), and a semi-quantitative MCI (SQMCI) scores for each site.

Table 5 Biomonitoring sites in relation to the Turangi Production Station

Site number	Site code	Location
1	PRH000020	Upstream of Turangi Production Station discharge
2	PRH000022	25 m downstream of Turangi Production Station discharge
3	PRH000024	100 m downstream of Turangi Production Station discharge

Taxa richness is the most robust index when determining whether a macroinvertebrate community has been exposed to toxic discharges. When exposed to toxic discharges, macroinvertebrates may die and be swept downstream or may deliberately drift downstream as an avoidance mechanism (catastrophic drift). The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of organic pollution in stony streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to environmental conditions. The SQMCI takes into account taxa abundances as well as sensitivity to pollution. It may indicate subtle changes in communities, and therefore be the more relevant index if non-organic impacts are occurring. However, it is also influenced by the 'patchiness' of macroinvertebrates on the streambed, and as such must be considered in the context of all three metrics. Significant differences in either the MCI or the SQMCI scores between sites may indicate the degree of adverse effects (if any) of the discharge being monitored.

#### Spring survey - October 2022

Taxa richness was moderate at the three sites surveyed in the unnamed tributary of the Parahaki Stream. Macroinvertebrate communities had higher proportions of 'tolerant' than 'sensitive' taxa, which was typical for these sites. There was no evidence of any acute toxic discharges, which could dramatically lower taxa richness. Two 'tolerant' taxa were dominant at all three sites, Oligochaete worms and the *Austrosimulium* sandfly.

MCI scores indicated 'poor' macroinvertebrate community health at all three sites. MCI scores showed a gradual decrease in a downstream direction, with site 3 being significantly lower than the 'control' site 1, which recorded the highest MCI score for the site to date. There was an overall increase in health from the previous survey, with sites 1 and 2 recording significantly higher than that previously recorded. Sites 2 and 3 recorded MCI values lower than their site medians, although not significantly, while site 1 recorded significantly higher.

SQMCI scores indicated 'very poor' macroinvertebrate health at sites 1 and 3 and 'poor' health at site 2. Site 1 and 3 recorded similar SQMCI values to each other as well as their site medians. In contrast, site 2 recorded significantly higher than both sites 1 and 3 as well as its respective site median.



This shift is likely due to subtle habitat differences between the sites, including changes to the quantity and distribution of macrophytes at each site, substrate and to the 'patchiness' of macroinvertebrates on the streambed.

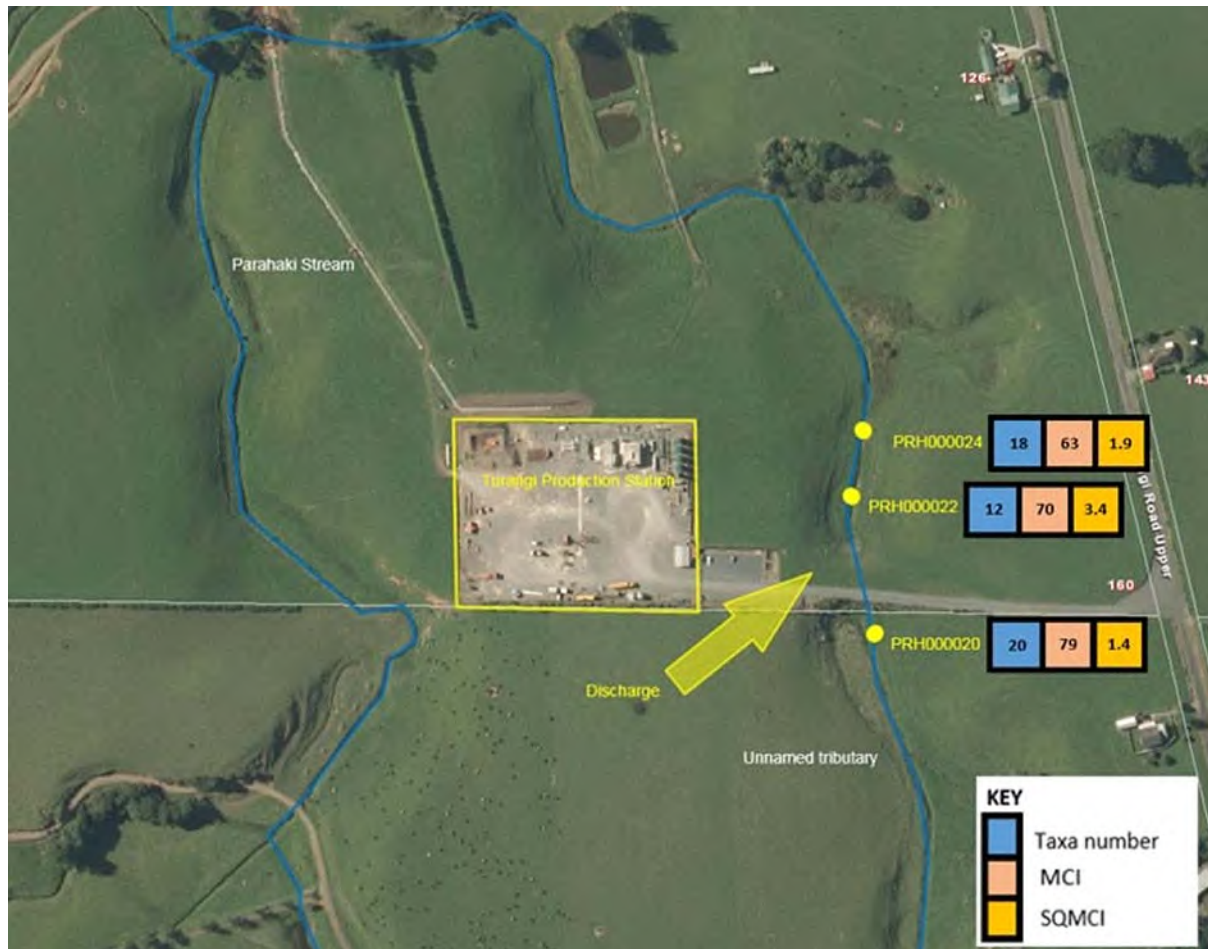


Figure 2 Biomonitoring sites in an unnamed tributary of the Parahaki Stream with taxa number, MCI scores and SQMCI scores for each site, spring 2022

#### Summer survey – February 2023

Taxa richness was moderate at the three sites surveyed in the unnamed tributary of the Parahaki Stream. Macroinvertebrate communities had higher proportions of 'tolerant' than 'sensitive' taxa, which was typical for these sites. There was no evidence of any acute toxic discharges, which could dramatically lower taxa richness. Of the dominant taxa recorded in this survey, one was recorded at all three sites, the 'tolerant' seed shrimp (*Ostracoda*).

MCI scores indicated 'poor' macroinvertebrate community health at all three sites. These scores were within normal range for what has been previously surveyed and were also similar to their respective site medians. There were no significant differences in MCI scores between the 'control' site 1 and the downstream sites.

SQMCI scores indicated 'very poor' macroinvertebrate community health at all three sites. Site 2 recorded a SQMCI score significantly lower than both the 'control' site 1 and site 3 downstream. Site 1 and 3 were not significantly different to each other and were significantly higher than that previously recorded as well as their respective site medians.

Overall, when considered in the context of all three metrics, the results of the surveys indicated that the discharges from the Turangi Production Station had not caused any recent significant detrimental impacts on the macroinvertebrate communities of the unnamed tributary of the Parahaki Stream.



Copies of biomonitoring reports for this site are available from the Council upon request.

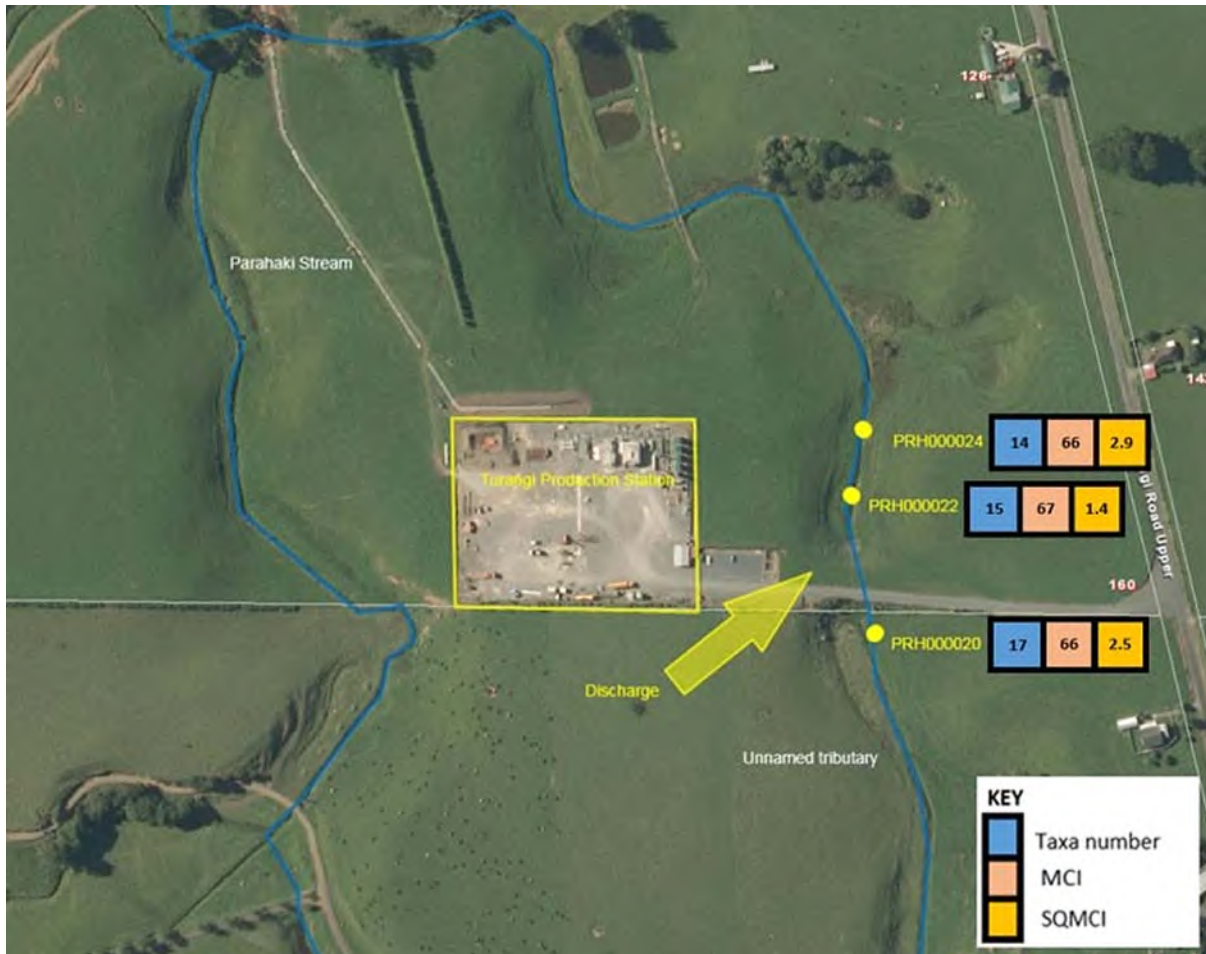


Figure 3 Biomonitoring sites in an unnamed tributary of the Parahaki Stream with taxa number, MCI scores and SQMCI scores for each site, summer 2023

## 2.2 Air

### 2.2.1 Inspections

Air inspections were carried out in conjunction with site inspections as discussed in Section 2.1.1 above. No issues regarding air quality were noted during the monitoring year.

### 2.2.2 Results of discharge monitoring

During the 2022-2023 monitoring year the only monitoring conducted was of nitrogen oxides (NO<sub>x</sub>). Due to equipment malfunctions monitoring of fine particulate (PM<sub>10</sub>), carbon monoxide and the lower explosive limit (LEL) for gases was unable to be undertaken. Instead, qualitative assessments of the likely off-site concentrations and potential effects of these hazardous air pollutants (HAPs) are presented below.

Monitoring of carbon monoxide and LEL is usually undertaken using a MultiRae gas monitor which continuously measures gas levels for approximately 50 hours. The monitor is located at the south east corner of the site (Figure 4) and records maximum, mean, and minimum carbon monoxide levels, and the percentage of the LEL.



Figure 4 Air monitoring sites at Turangi Production Station

The concentration of  $PM_{10}$  in ambient air is usually measured using a DustTrak aerosol monitor which can simultaneously measure particle mass and size fraction. It is co-located with the MultiRae.

The MultiRae meter and DustTrak monitor were unable to be deployed during the 2022-2023 monitoring period because of malfunctions. Instead, qualitative assessments of the likely off-site concentrations of carbon monoxide, LEL and  $PM_{10}$  are presented below. The results are compared against the Ambient Air Quality Standards (AAQS, MfE, 2004), the Ambient Air Quality Guidelines (AAQG, MfE, 2002) and the limits set out in air discharge consent 6497-1.

Passive sampling devices were deployed at both monitoring locations (Figure 3) from 13 January to 3 February 2023 to measure  $NO_x$ . The samplers absorb  $NO_x$  over the duration of the deployment and are then sent for laboratory analysis. The laboratory results are used to calculate 1-hour and 24-hour time weighted averages (TWA).

### 2.2.2.1 Carbon monoxide and Lower Explosive Limit

Exposure to low level carbon monoxide can cause nausea, dizziness, and disorientation. Higher levels of carbon monoxide can cause coma, collapse and loss of consciousness. The AAQS for exposure to carbon monoxide is  $10 \text{ mg/m}^3$  averaged over an 8-hour period.

Since monitoring began in 2015 the concentration of carbon monoxide measured at the monitoring locations has never exceeded or even approached the AAQS limit. Monitoring in the 2021-2022 period found that the maximum carbon monoxide concentration was  $1.7 \text{ mg/m}^3$ , significantly lower than the AAQS limit of  $10 \text{ mg/m}^3$ .

Lower Explosive Limit (LEL) is the concentration of flammable gas, vapour, or mist in ambient air, below which an explosive gas atmosphere will not be formed. In past years methane has been used as a proxy for LEL and is measured using the MultiRae. During 2021-2022, the instrument recorded methane at 0.1% of the LEL. This low result is to be expected given that methane will likely readily disperse over the distance between the source and the instrument.

Given that there have not been any significant changes to activities on-site or scale of production it is unlikely that the concentration of carbon monoxide and percentage LEL at the monitoring site during the 2022-2023 monitoring year would be significantly different than during the previous year.

### 2.2.2.2 PM<sub>10</sub> particulates

Fine particulate less than 10 µm in diameter (PM<sub>10</sub>) can enter deep into the lungs significantly reducing the exchange of gases across the lung walls. Inhalation of PM<sub>10</sub> at high concentrations can cause cardiovascular conditions such as asthma and chronic pulmonary diseases.

PM<sub>10</sub> comes from multiple natural and anthropogenic sources including vehicle emissions, crustal matter and the combustion of fossil fuels. During the two-day monitoring undertaken during 2021-2022, the 24-hour average PM<sub>10</sub> concentrations was reported to be 17 µg/m<sup>3</sup> (day one) and 6.1 µg/m<sup>3</sup> (day two).

The Turangi Production Station is located in a rural area and the level of background PM<sub>10</sub> is likely to be a result of vehicle emissions from the Turangi Road Upper to the east, dust from unsealed roads, and other rural activities such as fertiliser application. On this basis the background concentration of PM<sub>10</sub> in the area is likely to be low and therefore discharges from the combustion of natural gas at the Turangi Production Station site are not likely to cause ambient concentrations to approach the AAQS limit of 50 µg/m<sup>3</sup> (24-hour average).

### 2.2.2.3 Nitrogen oxides

A portion of total NO<sub>x</sub> includes nitrogen dioxide (NO<sub>2</sub>) which can cause adverse health impacts as a result of short and long-term exposure durations. Short-term exposure to high concentrations can result in the inflammation of airways which may exacerbate asthma and other pre-existing respiratory problems. Long-term exposure to NO<sub>2</sub> may adversely impact lung development in children, and may lead to the development of asthma. The risk of developing certain forms of cancer and premature death also increases with long-term exposure to NO<sub>2</sub>.

The NO<sub>x</sub> data are used as a proxy for NO<sub>2</sub> and the calculated TWAs are compared to the relevant health-based assessment criteria for NO<sub>2</sub> in Table 6 below.

Table 6 Raw data and calculated TWAs

Monitoring site	NO <sub>x</sub> result (µg)	NO <sub>x</sub> 1-hour average (µg/m <sup>3</sup> )	NO <sub>x</sub> 24-hour average (µg/m <sup>3</sup> )
AIR007822	2.0	6.94	3.68
AIR007824	0.3	1.04	0.55
<b>NO<sub>2</sub> Assessment criteria</b>		<b>200 (AAQS)</b>	<b>100 (AAQG)</b>

The calculated 1-hour average concentration of NO<sub>x</sub> at the monitoring locations were 6.94 µg/m<sup>3</sup> and 1.04 µg/m<sup>3</sup>. These results are substantially lower than the NO<sub>2</sub> AAQS limit of 200 µg/m<sup>3</sup>. The results are the lowest and third lowest since monitoring began in 2015.

Similarly, the 24-hour average concentrations at the monitoring locations were comparatively low with the concentrations calculated to be 3.68 µg/m<sup>3</sup> and 0.55 µg/m<sup>3</sup>. These results were significantly lower than the AAQG of 100 µg/m<sup>3</sup>.

Only a portion of NO<sub>x</sub> is NO<sub>2</sub> and therefore the actual concentration of NO<sub>2</sub> at the monitoring locations will be less than reported. The 1-hour and 24-hour results are likely to be largely representative of background concentrations in rural areas.

A copy of the full air report is available from the Council upon request.

## 2.2.3 Summary of flaring volumes reported by the Company

At Turangi Production Station flaring occurred every month (Figure 5), with the quantities of gas flared at the production station relating to things like plant shutdown, gas compressor issues, and plant or well restarts. The total volume flared during the monitoring period was approximately 372,800 m<sup>3</sup>, a significant

increase compared to the volume flared during the 2021-2022 year of 235,800 m<sup>3</sup>. The large volume flared during November 2022 was due to major annual compressor maintenance.

The Turangi-B wellsite is connected to Turangi Production Station however flaring was undertaken at the wellsite in relation to well testing. There was no flaring at any of the other wellsites associated with the Turangi Production Station as these are all connected to the production station.

Flaring occurred at Kowhai-A Production Station during most months of the 2022-2023 monitoring period (Figure 6). The total volume of gas flared at the Kowhai-A Production Station during the period was approximately 153,628 m<sup>3</sup>, a significant increase compared with the volume of 32,750 m<sup>3</sup> flared during the 2021-2022 year. No complaints were received from the public in relation to flaring at this site. Kowhai-B, C and D wellsites are all connected to Kowhai-A Production Station and no additional flaring occurred at any of these sites during the year.

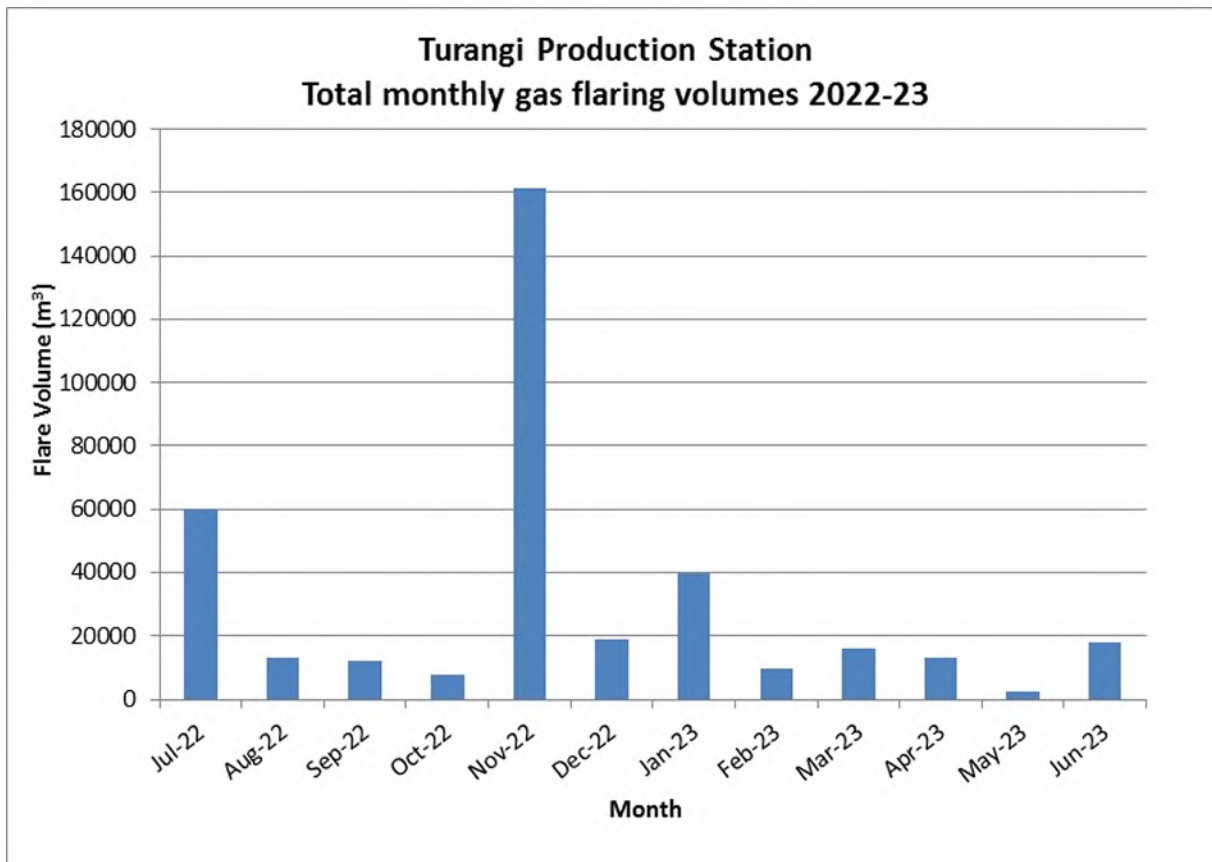


Figure 5 Summary of monthly gas flaring volumes at Turangi Production Station

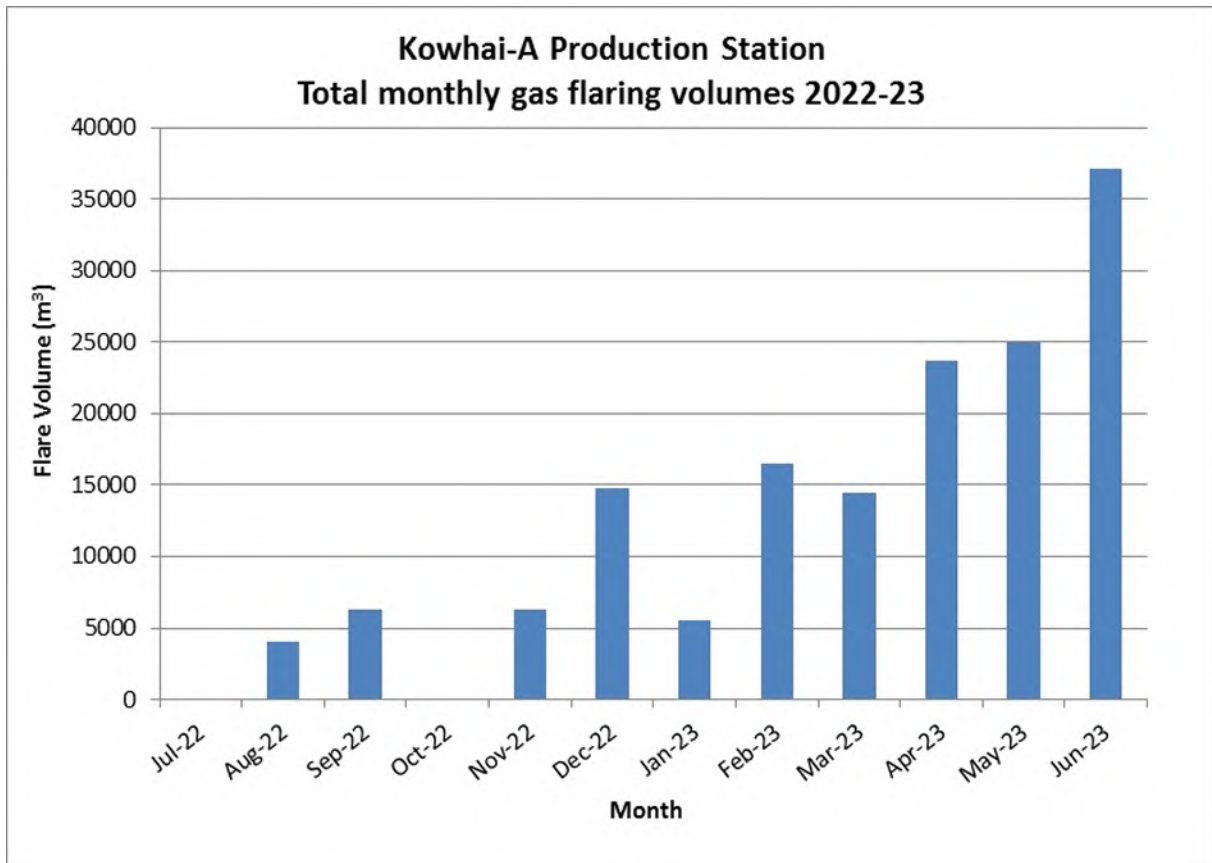


Figure 6 Summary of monthly gas flaring volumes at Kowhai-A Production Station

## 2.3 Incidents, investigations, and interventions

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.

For all significant compliance issues, as well as complaints from the public, the Council maintains a database record. The record includes events where the individual/organisation concerned has itself notified the Council. Details of any investigation and corrective action taken are recorded for non-compliant events.

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 individual/organisation is indeed the source of the incident (or that the allegation cannot be proven).

In the 2022-2023 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

#### Turangi Production Station

There were several issues noted in regards to the Turangi Production Station throughout the 2022-2023 monitoring period. Most of these issues were a result of the Company not undertaking the best practicable option to prevent and/or minimise adverse effects on the environment.

#### Kowhai-A Production Station

Inspections found the site was generally tidy and well managed.

### 3.2 Environmental effects of exercise of consents

#### Turangi Production Station

Sampling of discharges and receiving waters did not find any significant adverse effects at the time of sampling. Biomonitoring in the receiving waters did not show any effect from discharges on the communities in the stream.

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 nitrogen oxides were 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.

#### Kowhai-A Production Station

Site inspections found that the stormwater systems were constructed and maintained in accordance with consent conditions. No issues were noted in relation to air discharges from the site.

### 3.3 Evaluation of performance

A tabular summary of the consent holder's compliance record for the year under review is set out in Tables 7-10.

Table 7 Summary of performance for consent 6497-1

<b>Purpose: To discharge emissions to air during flaring from well workovers and in emergency situations, and to discharge miscellaneous emissions associated with wellsite production activities at the Tūrangi-A Production Station</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Definitions of flaring, incineration and combustion		N/A
2. Incineration to occur in device with appropriate chimney height	Inspection	Yes
3. Flaring to occur in appropriate flare pit	Inspection	Yes
4. Specific location of flaring	Inspection	Yes
5. Notification to Council prior to flaring	Liaison with consent holder	Yes



<b>Purpose: To discharge emissions to air during flaring from well workovers and in emergency situations, and to discharge miscellaneous emissions associated with wellsite production activities at the Tūrangi-A Production Station</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
6. Notification to neighbours prior to flaring	Liaison with consent holder	Yes
7. Material from well stream only to be flared or incinerated	Inspection and liaison with consent holder	Yes
8. Material flared to be treated by liquid and solid removal by separation	Inspection	Yes
9. Adoption of best practicable option to prevent or minimise environmental effects	Inspection and liaison with consent holder	Yes
10. No offensive odour or smoke beyond boundary	Inspection	Yes
11. Control of carbon monoxide, nitrogen dioxide, PM <sub>10</sub> and sulphur dioxide emissions	Not monitored during period under review	N/A
12. No hazardous/toxic/noxious contaminants 100m beyond emission source	Inspection	Yes
13. Analysis of typical gas and condensate stream	Analysis not requested	N/A
14. Provision of a combustion log	Report received	Yes
15. Lapse provision	Consent exercised	N/A
16. Optional review provision	Option for review in June 2027	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>
Overall assessment of administrative performance in respect of this consent		<b>High</b>

N/A = not applicable

Table 8 Summary of performance for consent 6719-1

<b>Purpose: To discharge emissions to air during flaring from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the Kowhai-A wellsite</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Notification to Council one month prior to production operations	Production operations commenced early 2006	N/A
2. Notification to neighbours 24 hrs prior to flaring & record of complaints	Liaison with consent holder	Yes
3. Notification to Council 24 hrs prior to flaring	Notifications received	Yes

<b>Purpose: To discharge emissions to air during flaring from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the Kowhai-A wellsite</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
4. No alterations without approval	Inspection and liaison with consent holder	Yes
5. Take into account wind speed & direction when flaring	Inspection and Company records	Yes
6. Effective separation to minimise smoke	Inspection and Company records	Yes
7. Notification to Council of ineffective separation	No incidents during year under review	N/A
8. No liquid or solid hydrocarbons flared	Inspection and liaison with consent holder	Yes
9. Only substances from well stream to be flared	Inspection and liaison with consent holder	Yes
10. Adoption of the best practicable option	Inspection and liaison with consent holder	Yes
11. No hazardous/toxic/noxious contaminants beyond boundary	Inspection	Yes
12. No offensive odour or smoke beyond boundary	Inspection	Yes
13. Hydrocarbon storage vessels to have vapour recovery systems	Inspection	Yes
14. Specified opacity for smoke emissions	Not assessed	N/A
15. Control of carbon monoxide emissions	Not assessed	N/A
16. Control of nitrogen oxide emissions	Not assessed	N/A
17. Control of emissions to achieve specified contaminant concentrations	Not assessed	N/A
18. Keep & maintain record of smoke emitting incidents	Inspection and annual flaring report	Yes
19. Keep & maintain flaring log	Inspection and annual flaring report	Yes
20. Provision of annual flaring & air emissions report during May	Received	Yes
21. Analysis of typical gas and crude oil stream	Analysis not requested	N/A
22. Lapse provision	Consent exercised	N/A
23. Optional review provision	Consent expired June 2021, renewal underway	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>
Overall assessment of administrative performance in respect of this consent		<b>High</b>

N/A = not applicable



Table 9 Summary of performance for consent 10169-1

<b>Purpose: To discharge treated stormwater from hydrocarbon exploration and production operations at the Kowhai-A wellsite onto land and into an unnamed tributary of the Waiau Stream</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Adoption of the best practicable option	Inspection and liaison with consent holder	Yes
2. Maximum stormwater catchment area	Inspection and company records	Yes
3. Notification to Council five days prior to site works and well drilling	No site works or well drilling during the monitoring period	Yes
4. Approved contingency plan	Plan up-to-date as of February 2023	Yes
5. Design, management and maintenance of stormwater system in accordance with application	Inspection	Yes
6. All stormwater discharged through treatment system without ponding	Inspection	Yes
7. Minimum skimmer pit capacity and ability to retain hydrocarbons	Inspection and company records	Yes
8. Stormwater retention areas to be lined with a shut off valve	Inspection and company records	Yes
9. Stormwater system to be installed prior to commencing any site works	System installed	Yes
10. Concentrations not to be exceeded in the discharge	Not assessed in year under review	N/A
11. Discharge not to cause an increase of more than 0.5 pH units beyond the mixing zone	Not assessed in year under review	N/A
12. Limitation on effects beyond the mixing zone	Not assessed in year under review	N/A
13. Effects not to be caused in receiving waters	Inspections	Yes
14. 48 hrs notice prior to reinstatement	Site still active	N/A
15. Lapse provision	Consent exercised	N/A
16. Optional review provision	Next option for review in 2027	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>High</b>
Overall assessment of administrative performance in respect of this consent		<b>High</b>

N/A = not applicable

Table 10 Summary of performance for consent 10703-1

<b>Purpose: To discharge treated stormwater from hydrocarbon exploration and production operations at the Turangi-A Production Station, onto land and into an unnamed tributary of the Parahaki Stream and into the Parahaki Stream</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Adoption of the best practicable option	Inspection and liaison with consent holder	Mostly
2. Stormwater to be collected and discharged through skimmer pits	Inspection	Yes
3. Notification to Council 5 days prior to site works and well drilling	No site works or well drilling during the monitoring period	Yes
4. Approved contingency plan	Plan up-to-date as of February 2023	Yes
5. Design, management and maintenance of stormwater system in accordance with application documentation	Inspection and liaison with consent holder	Yes
6. All discharges to flow to perimeter drain and skimmer pit	Inspection	Yes
7. Skimmer pits to be lined and have a shut off valve	Inspection	Yes
8. Concentrations not to be exceeded in the discharge	Water sampling	Mostly. One suspended solid result exceeded limit.
9. Limits on pH of receiving waters if pH is increased in skimmer pits due to photosynthetic activity	Water sampling	Yes
10. Concentrations not to be exceeded in the receiving waters	Water sampling	Yes
11. No effects upon surface water bodies	Inspection and biomonitoring	Yes
12. 48 hrs notice prior to reinstatement	Site still active	N/A
13. Lapse provision	Consent exercised	N/A
14. Optional review provision	Next option for review in June 2027	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		<b>Good</b>
Overall assessment of administrative performance in respect of this consent		<b>High</b>

N/A = not applicable

Table 11 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
2009-10	6497-1	1		-	-
	6498-1	-	1	-	-
2010-11	6497-1, 6498-1	2	-	-	-
2011-12	6497-1	1	-	-	-
	6498-1	-	1	-	-
2012-14	6497-1	1	-	-	-
	6498-1	-	1	-	-
2014-15	6497-1	1	-	-	-
	6498-1, 9674-1	-	2	-	-
2015-16	6497-1, 6498-1, 9674-1	3	-	-	-
2016-17	6497-1, 6498-1, 9674-1	3	-	-	-
2017-18	6497-1, 6498-1, 9674-1	3	-	-	-
2018-19	6497-1, 6498-1, 6719-1, 9674-1, 10169-1, 10703-1	6	-	-	-
2019-20	6497-1, 6719-1, 10169-1, 10703-1	4	-	-	-
2021-22	6497-1, 6719-1, 10169-1, 10703-1	4	-	-	-
	7853-1	-	-	1	-
2022-23	6497-1, 6719-1, 10169-1	3	-	-	-
	10703-1	-	1	-	-
Totals		29	5	1	-

During the year, the Company on the whole demonstrated a good level of environmental and a high level of administrative performance with the resource consents as defined in Appendix II.

### 3.4 Recommendations from the 2021-2022 Annual Report

In the 2021-2022 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at Turangi and Kowhai-A production stations and associated wellsites in the 2022-2023 year continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Recommendation one was implemented, while it was not considered necessary to undertake additional investigation or monitoring as per recommendation two.

### 3.5 Alterations to monitoring programmes for 2023-2024

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.

No planned changes have been made to the 2023-2024 monitoring programme.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the sites 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 2023-2024.

## 4 Recommendations

1. THAT in the first instance, monitoring of consented activities at Turangi and Kowhai-A production stations and associated wellsites in the 2023-2024 year continue at the same level as in 2022-2023.
2. THAT should there be issues with environmental or administrative performance in 2023-2024, 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:

AAQG	Ambient Air Quality Guidelines (MfE, 2002).
AAQS	Ambient Air Quality Standards (MfE, 2004).
Biomonitoring	Assessing the health of the environment using aquatic organisms.
Bund	A wall around a tank to contain its contents in the case of a leak.
CO	Carbon monoxide.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in mS/m.
g/m <sup>2</sup> /day	grams/metre <sup>2</sup> /day.
g/m <sup>3</sup>	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
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.
LEL	Lower Explosive Limit (LEL) gives the percentage of the lower explosive limit, expressed as methane that is detected in the air sampled.
m <sup>2</sup>	Square metres.
MCI	Macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats.
MfE	Ministry for the Environment.
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.
mS/m	Millisiemens per metre.
NES	National Environmental Standard
NO <sub>x</sub>	Nitrogen oxides
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.
PM <sub>10</sub>	Relatively fine airborne particles (less than 10 micrometre diameter, respectively).
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.
SS	Suspended solids.
SQMCI	Semi quantitative macroinvertebrate community index.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU.
TWA	Time weighted average.
UI	Unauthorised Incident.

For further information on analytical methods, contact an Environmental Quality Manager.

## Bibliography and references

- Ministry for the Environment. 2018. Best Practice Guidelines for Compliance, Monitoring and Enforcement under the Resource Management Act 1991. Wellington: Ministry for the Environment.
- Taranaki Regional Council (2023): *Biomonitoring of an unnamed tributary of the Parahaki Stream in relation to the Turangi Production Station, Greymouth Petroleum Ltd, February 2023*. Internal memorandum FK018.
- Taranaki Regional Council (2023): *Biomonitoring of an unnamed tributary of the Parahaki Stream in relation to the Turangi Production Station, Greymouth Petroleum Ltd, October 2022*. Internal memorandum FK017.
- Taranaki Regional Council (2023): *Ambient Air Quality Monitoring at Turangi Production Station 2022-2023*. Internal Memorandum. #3191468.
- Taranaki Regional Council (2023): *Greymouth Petroleum Limited Northern sites Monitoring Programme Annual Report 2021-2022*. Technical Report 2022-81.
- Taranaki Regional Council (2022): *Greymouth Petroleum Limited Northern sites Monitoring Programme Annual Report 2020-2021*. Technical Report 2021-39.
- Taranaki Regional Council (2020): *Greymouth Petroleum Limited Northern sites Monitoring Programme Annual Report 2019-2020*. Technical Report 2020-40.
- Taranaki Regional Council (2020): *Greymouth Petroleum Limited Northern sites Monitoring Programme Annual Report 2018-2019*. Technical Report 2019-55.
- Taranaki Regional Council (2019): *Greymouth Petroleum Limited Northern Sites Monitoring Programme Annual Report 2017-2018*. Technical Report 2018-55.
- Taranaki Regional Council (2018): *Greymouth Petroleum Limited Turangi Production Station Monitoring Programme Annual Report 2016-2017*. Technical Report 2017-55.
- Taranaki Regional Council (2017): *Greymouth Petroleum Limited Turangi Production Station Monitoring Programme Annual Report 2015-2016*. Technical Report 2016-19.
- Taranaki Regional Council (2016): *Greymouth Petroleum Limited Turangi Production Station Monitoring Programme Annual Report 2014-2015*. Technical Report 2015-91.
- Taranaki Regional Council (2014): *Greymouth Petroleum Limited Turangi Production Station Monitoring Programme Biennial Report 2012-2014*. Technical Report 2014-33.
- Taranaki Regional Council (2013): *Greymouth Petroleum Limited Turangi-A Wellsite Monitoring Programme Annual Report 2011-2012*. Technical Report 2012-73.
- Taranaki Regional Council (2011): *Greymouth Petroleum Limited Turangi-A Wellsite Monitoring Programme Annual Report 2010-2011*. Technical Report 2011-20.
- Taranaki Regional Council (2010): *Greymouth Petroleum Limited Turangi-A Wellsite Monitoring Programme Annual Report 2009-2010*. Technical Report 2010-47.
- Taranaki Regional Council (2009): *Greymouth Petroleum Limited Turangi-A Wellsite Monitoring Programme Annual Report 2008-2009*. Technical Report 2009-37.
- Taranaki Regional Council (2008): *Greymouth Petroleum Limited Turangi-A Wellsite Monitoring Programme Annual Report 2007-2008*. Technical Report 2008-91.



# Appendix I

## Resource consents held by Greymouth Petroleum Ltd and Petrochem Ltd

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

### Water abstraction permits

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. Permits authorising the abstraction of water are issued by the Council under Section 87(d) of the RMA.

### Water discharge permits

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations. Permits authorising discharges to water are issued by the Council under Section 87(e) of the RMA.

### 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. Permits authorising discharges to air are issued by the Council under Section 87(e) of the RMA.

### Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising the discharge of wastes to land are issued by the Council under Section 87(e) of the RMA.

### Land use permits

Section 13(1)(a) of the RMA stipulates that no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Land use permits are issued by the Council under Section 87(a) of the RMA.

### Coastal permits

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. Coastal permits are issued by the Council under Section 87(c) of the RMA.

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

Name of  
Consent Holder: Greymouth Petroleum Turangi Limited

Decision Date: 31 March 2023

Commencement Date: 31 March 2023

**Conditions of Consent**

Consent Granted: To discharge emissions to air during flaring from well workovers and in emergency situations, and to discharge miscellaneous emissions associated with wellsite production activities at the Turangi-A Production Station

Expiry Date: 1 June 2039

Review Date(s): June 2033, June 2039

Site Location: Turangi-A Production Station, 126 Turangi Road Upper, Motunui

Grid Reference (NZTM) 1713734E-5681486N

*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

- 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. For the purposes of this consent:
  - (a) 'flaring' means the uncontrolled or partially controlled open air burning of hydrocarbons derived from or entrained in the well stream. 'Flare', as a verb, has the corresponding meaning and, as noun, means the flame produced by flaring.
  - (b) 'incineration' means the controlled, enclosed burning of formation hydrocarbons within a device designed for the purpose. 'Incinerate' has the corresponding meaning.
  - (c) 'Combustion' means burning generally and includes both flaring and incineration as well as other burning such as fuel in machinery.
2. Incineration shall only occur in a device with a minimum chimney height determined by the method detailed in Appendix VIII of the *Regional Air Quality Plan for Taranaki*.
3. Flaring shall only occur within a flare pit consisting of impermeable material that prevents any liquid from leaking through its base or sidewalls and discharging to land.
4. Flaring and incineration shall only occur within 20 metres of the location defined by:
  - 1713756E-5681440N (the existing flare pit, to be used until the new flare pit is ready); and
  - 1713734E-5681486N (the new permanent flare pit)
5. Other than in emergencies, the consent holder shall notify the Chief Executive, Taranaki Regional Council, whenever the continuous flaring or incineration of hydrocarbons (other than purge gas) is expected to occur for more than five minutes in duration. Unless the Chief Executive advises that an alternative method is required this notice shall be served by completing and submitting the 'Notification of work' form on the Council's website (<http://bit.ly/TRCWorkNotificationForm>).

## Consent 6497-2.0

6. At least 24 hours before any flaring, other than in emergencies, the consent holder shall provide notification of the commencement of flaring to the occupants of all dwellings and landowners within 1000 metres of the point of flaring. The consent holder shall include in the notification a 24-hour contact telephone number for a representative of the consent holder, and shall keep and make available to the Chief Executive, Taranaki Regional Council, a record of all queries and complaints received in respect of any combustion activity.
7. No material shall be flared or incinerated, other than those derived from or entrained in the well stream.
8. To the greatest extent practicable, any material flared is to comprise only hydrocarbons that are first treated by effective liquid and solid removal by separation.
9. The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or potential effect on the environment arising from any emission to air, including, but not limited to having regard to the prevailing and predicted wind speed and direction at the time of initiation, and throughout, any episode of combustion so as to minimise offsite effects (other than for the maintenance of a pilot flame).
10. The discharge shall not cause any objectionable or offensive odour, smoke or dust at or beyond the boundary of the property where the wellsite is located. For the purposes of this condition, 'objectionable or offensive smoke' is defined as smoke of 40% or more obscuration, occurring on more than an occasional or infrequent basis.
11. The consent holder shall control all emissions of carbon monoxide, nitrogen dioxide, fine particles (PM<sub>10</sub>) and sulphur dioxide to the atmosphere from the site, in order that the maximum ground level concentration of any of these contaminants arising from the exercise of this consent measured under ambient conditions does not exceed the relevant ambient air quality standard as set out in the Resource Management (National Environmental Standards for Air Quality Regulations, 2004) at or beyond the boundary of the property on which the wellsite is located.
12. The consent holder shall control all emissions of contaminants to the atmosphere from the site, other than those expressly provided for under special condition 11, in order that they do not individually or in combination with other contaminants cause a hazardous, noxious, dangerous, offensive or objectionable effect at a distance greater than 100 metres from the emission source.
13. The consent holder shall make available to the Chief Executive, Taranaki Regional Council, upon request, an analysis of a typical gas and condensate stream from the field, covering sulphur compound content and the content of carbon compounds of structure C6 or higher number of compounds.
14. The consent holder shall record and make available to the Chief Executive, Taranaki Regional Council, a 'combustion log' that includes:
  - (a) the date, time and duration of all flaring or incineration episodes;
  - (b) the volume of substances flared or incinerated;
  - (c) whether there was smoke at any time during the combustion episode and if there was, the time, duration and cause of each 'smoke event'.

Consent 6497-2.0

15. This consent lapses 5 years after its date of commencement, 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.
16. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2027 and/or June 2033, for any of the following purposes:
  - (a) dealing with any significant adverse effect on the environment arising from the exercise of the consent which was not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or
  - (b) requiring the consent holder to adopt specific practices in order to achieve the best practicable option to remove or reduce any adverse effect on the environment caused by the discharge; and/or
  - (c) to alter, add or delete limits on mass discharge quantities or discharge or ambient concentrations of any contaminant.

Signed at Stratford on 31 March 2023

For and on behalf of  
Taranaki Regional Council



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A D McLay  
**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: Petrochem Limited  
P O Box 1394  
Shortland Street  
AUCKLAND

Consent Granted  
Date: 1 November 2005

**Conditions of Consent**

Consent Granted: To discharge emissions to air during flaring from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the Kowhai-A wellsite at or about (NZTM)  
1710907E-5676255N

Expiry Date: 1 June 2021

Review Date(s): June 2009, June 2021

Site Location: Kowhai-A wellsite, Ngatimaru Road, Tikorangi, Waitara  
[Property owner: BJ & RN Jupp]

Legal Description: Pt Sec 44 Tikorangi Dist Blks IX & X Waitara SD

### **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**

#### **Information and notification**

1. The consent holder shall notify the Chief Executive, Taranaki Regional Council, in writing at least one month prior to the establishment of production operations at the Kowhai-A wellsite.
2. At least 24 hours prior to any flaring, other than in emergencies, the consent holder shall undertake all practicable measures to notify residents within 1000 metres of the site of the commencement of flaring. The consent holder shall include in the notification a 24-hour contact telephone number for a representative of the consent holder, and shall keep and make available to the Chief Executive, Taranaki Regional Council, a record of all queries and/or complaints received.
3. The consent holder shall, whenever practicable, notify the Chief Executive, Taranaki Regional Council, whenever the continuous flaring of hydrocarbons [other than purge gas] is expected to occur for more than five minutes in duration. Notification shall, as far as practicable, be no less than 24 hours prior to such flaring being commenced.
4. 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, Taranaki Regional Council, and the consent holder shall obtain any necessary approvals under the Resource Management Act 1991.



**Emissions from the site**

5. 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.
6. All gas being flared, at any time 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.
7. 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, Taranaki Regional Council, and shall in any case re-establish liquid and solid separation and recovery within three hours.
8. Subject to special conditions 6 and 7, no liquid or solid hydrocarbons shall be combusted through the gas flare system other than in an emergency.
9. Only substances originating from the well stream and treated as outlined by conditions 6, 7, 8, and 10 shall be combusted within the flare pit.
10. The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or potential effect on the environment arising from any emission to air from the flare or any other emissions to air from the Kowhai-A wellsite. Any adoption of the best practicable option as outlined in this special condition shall be to the satisfaction of the Chief Executive, Taranaki Regional Council.
11. The consent holder shall not discharge any contaminant to air authorised by this consent 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 wellsite, or beyond 100 metres of the flare, whichever distance is greater.
12. There shall not be any offensive odour or smoke, as determined by an enforcement officer of the Taranaki Regional Council, beyond the boundary of the wellsite or beyond 100 metres of the flare, whichever distance is greater, arising from the exercise of this consent.
13. All hydrocarbon storage vessels shall be fitted with vapour recovery systems.
14. The opacity of any smoke emissions shall not exceed a level of 1 as measured on the Ringelmann Scale for more than four minutes cumulative duration in any 60-minute period.
15. 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 wellsite, 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<sup>3</sup> [eight-hour average exposure], or 30 mg/m<sup>3</sup> one-hour average exposure] at or beyond the boundary of the wellsite or beyond 100 metres from the flare, whichever distance is greater.

## Consent 6719-1

16. 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 wellsite, 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 100 mg/m<sup>3</sup> [24-hour average exposure], or 200 mg/m<sup>3</sup> [1-hour average exposure] at or beyond the boundary of the wellsite, or beyond 100 metres from the flare, whichever distance is greater.
17. The consent holder shall control emissions to the atmosphere from the wellsite and flare 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 wellsite or beyond 100 metres from the flare, whichever distance is greater, is not increased above background levels:
  - a) by more than 1/30<sup>th</sup> 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, 2002, 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, 2002, Department of Labour].

### Recording and reporting information

18. The consent holder shall keep and make available to the Chief Executive, Taranaki Regional Council, upon request, a record of all smoke-emitting incidents noting time, duration and cause.
19. The consent holder shall keep and maintain a log of all continuous flaring incidents longer than five minutes, and any intermittent flaring lasting for an aggregate of ten minutes or longer in any 120-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, Taranaki Regional Council, upon request, and summarised annually in the report required under condition 20.
20. The consent holder shall provide to the Taranaki Regional Council during May of each year, for the duration of this consent, a report:
  - i. detailing any energy efficiency measures implemented on the site;
  - ii. detailing smoke emissions as required under condition 18;
  - iii. detailing any measures to reduce smoke emissions;
  - iv. detailing any measures to reduce flaring;
  - v. addressing any other issue relevant to the minimisation or mitigation of emissions from the flare;
  - vi. detailing any complaints received and any measures undertaken to address complaints; and

## Consent 6719-1

- vii. reviewing all options and technological advances relevant to the reduction or mitigation of any discharge to air from the site, how these might be applicable and/or implemented at the site, and the benefits and costs of these advances.
21. The consent holder shall make available to the Chief Executive, Taranaki Regional Council, upon request, an analysis of a typical gas and crude oil stream from the field, covering sulphur compound content and the content of carbon compounds of structure C<sub>6</sub> or higher number of compounds.

### **Lapse and Review**

22. This consent shall lapse on the expiry of 16 years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
23. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2009 and/or June 2015, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Transferred at Stratford on 22 July 2008

For and on behalf of  
Taranaki Regional Council

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**Director-Resource Management**



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

Name of  
Consent Holder: Petrochem Limited  
PO Box 3394  
New Plymouth 4341

Decision Date: 15 January 2016

Commencement Date: 15 January 2016

**Conditions of Consent**

Consent Granted: To discharge treated stormwater from hydrocarbon exploration and production operations at the Kowhai-A wellsite onto land and into an unnamed tributary of the Waiau Stream

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Kowhai-A wellsite, Ngatimaru Road, Tikorangi  
(Property owner: RN & BJ Jupp)

Legal Description: Pt Sec 44 Tikorangi Dist Blks IX & X Waitara SD  
(Discharge source & site)

Grid Reference (NZTM) 1710907E-5676255N

Catchment: Waiau

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

### General condition

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

### Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.
2. Stormwater discharged shall be collected from a catchment area of no more than 1.2 Ha.
3. At least 5 working days prior, the consent holder shall advise the Chief Executive, Taranaki Regional Council of the date of each of the following events:
  - a) commencement of any site works (site works includes the introduction of a drilling rig, drilling equipment or any other associated equipment for the purpose of drilling, testing, well stimulation or well workover that may introduce contaminants to the site);
  - b) commencement of any well drilling operation; and
  - c) recommencement of any site works or drilling operations following a period of inactivity exceeding 30 days.

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

Any advice given in accordance with this condition shall include the consent number and the wellsite name and be emailed to [worknotification@trc.govt.nz](mailto:worknotification@trc.govt.nz).

4. The consent holder shall maintain and regularly update a contingency plan that details measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not authorised by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge. The plan shall be approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity prior to any discharge from the site.
5. Subject to the other conditions of this consent the design, management and maintenance of the stormwater system shall be undertaken in accordance with the information submitted in support of the application for this consent, in particular the Stormwater Management Plan.
6. 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.

## Consent 10169-1.0

7. The skimmer pit system shall have a combined capacity of no less than 280 m<sup>3</sup> including a 'freeboard' of no less than 147 m<sup>3</sup>, and be designed to retain any hydrocarbons that enter it.
8. All skimmer pits and any other stormwater retention areas shall be lined with an impervious material to prevent seepage through the bed and sidewalls, and all skimmer pits shall have a valve that can be shut off to prevent any discharge from the site.
9. Perimeter drains and skimmer pits necessary to comply with the conditions of this consent shall be installed before any site works commences. Site works includes the introduction of a drilling rig, drilling equipment or any other associated equipment or facilities to the site for any purpose other than for the construction of the site.
10. Subject to condition 11 the constituents in the discharge shall meet the standards shown in the following table before discharging to land.

<b>Constituent</b>	<b>Standard</b>
pH	Within the range 6.0 to 9.0
suspended solids	Concentration not greater than 100 gm <sup>-3</sup>
total recoverable hydrocarbons	Concentration not greater than 15 gm <sup>-3</sup> (as determined by infrared spectroscopic technique)
chloride	Concentration not greater than 230 gm <sup>-3</sup>

11. The pH may exceed 9.0 if the exceedance is a result photosynthetic activity within the skimmer pits, but in any case the discharge shall not result in the pH of the receiving water increasing by more than 0.5 pH units after allowing for a mixing zone of 20 metres from the confluence of the receiving water with the tributary of the Waiau Stream.
12. After allowing for a mixing zone of 20 metres from the confluence of the receiving water with the tributary of the Waiau Stream, the discharge shall not cause any of the following effects in the receiving water:
  - a) an increase in the temperature of more than 2 degrees Celsius;
  - b) the filtered carbonaceous biochemical oxygen demand to exceed 2 gm<sup>-3</sup>; or
  - c) the chloride concentration to exceed 50 gm<sup>-3</sup>.
13. After allowing for a mixing zone of 20 metres from the confluence of the receiving water with the tributary of the Waiau Stream, the discharge shall not give rise to any of the following effects in the receiving water:
  - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
  - b) any conspicuous change in the colour or visual clarity;
  - c) any emission of objectionable odour;
  - d) the rendering of fresh water unsuitable for consumption by farm animals;
  - e) any significant adverse effects on aquatic life.

## Consent 10169-1.0

14. 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](mailto:worknotification@trc.govt.nz).
15. This consent shall lapse on 31 March 2021, 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.
16. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of 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 15 January 2016

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**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: Greymouth Petroleum Turangi Limited  
PO Box 3394  
Fitzroy  
New Plymouth 4341

Decision Date 9 January 2019

Commencement Date 9 January 2019

**Conditions of Consent**

Consent Granted: To discharge treated stormwater from hydrocarbon exploration and production operations at the Turangi-A Production Station, onto land and into an unnamed tributary of the Parahaki Stream and into the Parahaki Stream

Expiry Date: 1 June 2033

Review Date(s): June 2021, June 2027

Site Location: Turangi-A Production Station, 126 Turangi Road, Motunui  
(Property owner: BA & JM McKenzie & Ducal Products Limited)

Grid Reference (NZTM) 1713970E-5681327N  
1713982E-5681378N  
1713728E-5681343N

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. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment associated with the discharge of contaminants from the site.
2. Stormwater discharged shall be collected and discharged through skimmer pits as detailed below:

Skimmer pit location co-ordinates	Skimmer pit reference	Catchment area	Approximate total volume	Discharge co-ordinates	Stream discharging into
1713945E-5681379N	Original dual skimmer pits installed in 2004	9665 m <sup>2</sup>	370 m <sup>3</sup>	1713970E-5681327N	Unnamed tributary of the Parahaki Stream
1713907E-5681337N	Skimmer Pits installed in 2014 as part of the site expansion	10970 m <sup>2</sup>	170 m <sup>3</sup>	1713982E-5681378N	Unnamed tributary of the Parahaki Stream
1713779E-5681357N	Proposed new skimmer pits	8745 m <sup>2</sup>	96 m <sup>3</sup>	1713728E-5681343N	Parahaki Stream

3. At least 5 working days prior, the consent holder shall advise the Chief Executive, Taranaki Regional Council of the date of each of the following events:
  - a) commencement of any site works (site works includes the introduction of a drilling rig, drilling equipment or any other associated equipment or facilities to the site for any purpose other than for the construction of the site);
  - b) commencement of any well drilling operation; and
  - c) recommencement of any site works or drilling operations following a period of inactivity exceeding 30 days.

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

Any advice given in accordance with this condition shall include the consent number and the wellsite name and be emailed to [worknotification@trc.govt.nz](mailto:worknotification@trc.govt.nz).

4. 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 any discharge of contaminants not authorised by this consent. The plan and any amended versions shall be provided to the Chief Executive of the Taranaki Regional Council.

## Consent 10703-1.0

5. Subject to the other conditions of this consent the design, management and maintenance of the stormwater system shall be undertaken in accordance with the information submitted in support of the application for this consent, in particular the:
  - a) Stormwater Design Report, Revision 2 and dated December 2013;
  - b) Drawing 12364-02, Sheet 1, Revision 2 and dated December 2013;
  - c) Drawing 12364-02, Sheet 2, Revision 3 and dated December 2013;
  - d) Drawing 12364-02, Sheet 3, Revision 2 and dated December 2013;
  - e) Drawing 12364-02, Sheet 4, Revision 3 and dated December 2013;
  - f) Drawing 12364-02, Sheet 5, Revision 3 and dated December 2013;
  - g) Drawing 12364-02, Sheet 6, Revision 3 and dated December 2013;
  - h) Stormwater Design Report, Revision B and dated May 2018;
  - i) Drawing 180768, Sheet 1, Revision A and dated September 2018 ;
  - j) Drawing 180768, Sheet 2, Revision A and dated September 2018; and
  - k) Drawing 180768, Sheet 3, Revision A and dated September 2018.
6. 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.
7. All skimmer pits and any other stormwater retention areas shall be lined with an impervious material to prevent seepage through the bed and sidewalls, and all skimmer pits shall have a valve that can be shut off to prevent any discharge from the site.
8. Constituents in the discharge shall meet the standards shown in the following table.

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

9. The pH may exceed 9.0 if the exceedance is a result of photosynthetic activity within the skimmer pits, but in any case, the discharge shall not result in the pH of the receiving water increasing by more than 0.5 pH units after allowing for a mixing zone of 20 metres from the confluence of the receiving waters with the unnamed tributary and Parahaki Stream.
10. After allowing for a mixing zone of 20 metres from the confluence of the receiving water with the unnamed tributary and the Parahaki Stream, the discharge shall not cause any of the following effects in the receiving water:
  - a) an increase in the temperature of more than 2 degrees Celsius;
  - b) the filtered carbonaceous biochemical oxygen demand to exceed 2 gm<sup>-3</sup>; or
  - c) the chloride concentration to exceed 50 gm<sup>-3</sup>.

## Consent 10703-1.0

11. After allowing for a mixing zone of 20 metres, the discharge shall not give rise to any of the following effects in the receiving water:
  - 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.
12. 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](mailto:worknotification@trc.govt.nz).
13. This consent shall lapse on 31 March 2024, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
14. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 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 9 January 2019

For and on behalf of  
Taranaki Regional Council

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A D McLay  
**Director - Resource Management**

## Appendix II

Categories used to evaluate environmental and administrative performance

## Categories used to evaluate environmental and administrative performance

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 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 during investigations of incidents reported to the Council by a third party 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 during investigations of incidents reported to the Council by a third party. 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 during investigations of incidents reported to the Council by a third party. 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.