

**TWN Ltd Partnership**  
**Waihapa Production Station**  
Monitoring Programme  
Annual Report  
2021-2022

Technical Report 2022-43



Working with people | caring for Taranaki



Taranaki Regional Council  
Private Bag 713  
Stratford

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## Executive summary

TWN Ltd Partnership (the Company) operates a hydrocarbon production station located on Bird Road, Stratford, in the Patea catchment. The Waihapa Production Station processes oil and gas from numerous associated wellsites. This report for the period July 2021 to June 2022 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, TWN Ltd Partnership demonstrated a high level of environmental performance and high level of administrative performance.**

The Company holds three resource consents in relation to the Waihapa Production Station, which include a total of 41 conditions setting out the requirements that the Company must satisfy. The Company holds one consent to discharge treated impounded stormwater from the Waihapa Production Station into the Ngaere Stream and to discharge treated stormwater from perimeter drains to land where it may enter the Ngaere Stream, one consent to abstract water from the Ngaere Stream, and one consent to discharge emissions related to production activities into the air at the site.

The Council's monitoring programme for the year under review included four inspections, 12 water samples collected for physicochemical analysis, two biomonitoring surveys of receiving waters, and two ambient air quality surveys. The Company provided the results of monitoring of impounded stormwater, abstraction volumes, and flaring data.

Stormwater system and receiving water inspections and monitoring of discharges and receiving waters showed that discharges from the site at the time complied with consent conditions. Biological surveys of the receiving water showed that the discharges were not causing any adverse effects on the Ngaere Stream at the time of monitoring.

There were no adverse effects on the environment resulting from the exercise of the air discharge consent. Ambient air quality monitoring at the site showed that levels of carbon monoxide, combustible gases, PM<sub>10</sub> particulates, and nitrogen oxides were all below levels of concern at the time of sampling. No offensive or objectionable odours were detected beyond the boundary during inspections and there were no complaints in relation to air emissions from the site.

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

For reference, in the 2021-2022 year, consent holders were found to achieve a high level of environmental performance and compliance for 88% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 10% of the consents, a good level of environmental performance and compliance was achieved.

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

This report includes recommendations for the 2022-2023 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 2021 to June 2022 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by TWN Ltd Partnership (the Company). The Company operates the Waihapa Production Station situated on Bird Road Stratford, in the Patea 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 abstractions and discharges of water within the Patea catchment, and the air discharge permit to cover emissions to air from the site. This report is the ninth annual report to be prepared by the Council to cover the Company's air, land and water discharges and their effects.

### 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 Patea catchment;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the Waihapa Production Station.

**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 2022-2023 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 2021-2022 year, consent holders were found to achieve a high level of environmental performance and compliance for 88% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 10% of the consents, a good level of environmental performance and compliance was achieved.<sup>1</sup>

## 1.2 Process description

The Waihapa Production Station (Photo 1) is located on Bird Road approximately 7.5 km east of Stratford in a rural area which is predominantly used for dairying. The production station processes oil and gas from wells in the surrounding Tariki, Waihapa, and Ngaere (TWN) fields by separating the oil, gas, condensate and water components of each wellsite's production. The produced oil is temporarily stored on site prior to being piped to the Omata tank farm in New Plymouth. The gas is processed, compressed and piped to end users. The produced water is disposed of by deep well injection.

Stormwater from the production station is collected and discharged at three separate points. The water level in the firewater pond in the north western corner of the site is maintained by an abstraction from the Ngaere Stream. Overflow due to rainfall entering this pond is discharged to land and to the Ngaere Stream to the north of the pond. Stormwater from the process areas is directed to a large separator system to the north east of the site. The effluent from this separator is discharged to a small unnamed tributary to the east which joins the Ngaere Stream approximately 40 m above its confluence with the Patea River. Stormwater from other areas is directed to retention ponds at the northern perimeter. Overflow from these ponds is discharged to the Ngaere Stream to the north. Figure 1 in Section 2.1.2 shows the location of these systems and the related sampling sites.

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<sup>1</sup> The Council has used these compliance grading criteria for more than 18 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018



Photo 1 Waihapa Production Station

### 1.3 Resource consents

The Company holds three 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 Resource consents held by TWN Ltd Partnership in relation to Waihapa Production Station

Consent number	Purpose	Granted	Review	Expires
<i>Water discharge permit</i>				
<b>3457-2</b>	To discharge treated impounded stormwater (including washdown water and minor quantities of process water subject to potential contamination by hydrocarbons) from the Waihapa Production Station into the Ngaere Stream and to discharge treated stormwater from perimeter drains to land where it may enter the Ngaere Stream	September 2009	-	June 2028
<i>Water abstraction permit</i>				
<b>3767-3</b>	To take water from the Ngaere Stream for utility and firewater purposes at the Waihapa Production Station	March 2016	June 2025	June 2034
<i>Air discharge permit</i>				
<b>4049-3</b>	To discharge emissions into the air from the flaring of hydrocarbons at the Waihapa Production Station in association with production, processing and maintenance activities and in emergency situations, together with miscellaneous emissions	October 2009	-	June 2028

### 1.3.1 Wellsite consents

The Company, in conjunction with a number of related companies, also holds consents for production activities at wellsites associated with the Waihapa Production Station. A summary of these consents is provided in Table 2. Copies of these permits are available on request.

Table 2 Consents for production activities at wellsites associated with Waihapa Production Station

Wellsite	Consent number	Purpose	Issue date	Expiry
Goss-A	<b>6561-1</b>	To discharge emissions to air during flaring from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the Goss-A wellsite	March 2005	2022
	<b>6562-1</b>	To discharge treated stormwater and treated produced water from hydrocarbon exploration and production operations at the Goss-A wellsite onto and into land in the vicinity of an unnamed tributary of the Ngaere Stream in the Patea catchment	March 2005	2022
Ngaere-F	<b>4162-2</b>	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations onto and into land in the vicinity of the Patea River	September 2010	2028
Tariki-A	<b>3679-2</b>	To discharge treated stormwater, uncontaminated treated site water and uncontaminated treated production water from hydrocarbon exploration and production operations at the Tariki-A wellsite onto and into land and into and unnamed tributary of the Mako Stream in the Waitara catchment	June 2003	2033
Tariki-B	<b>3680-2</b>	To discharge treated stormwater, uncontaminated treated site water and uncontaminated treated production water from hydrocarbon exploration and production operations at the Tariki-B wellsite onto and into land and into and unnamed tributary of the Mako Stream in the Waitara catchment	June 2003	2033
Kupara North (Tariki-C)	<b>5273-2</b>	To discharge treated stormwater from hydrocarbon exploration and production operations at the Kurapa North wellsite onto land and into an unnamed tributary of Lake Ratapiko	February 1998	2033
Tariki-D	<b>6203-1</b>	To discharge treated stormwater and treated produced water from hydrocarbon exploration and production operations at the Tariki-D wellsite onto and into land and into an unnamed tributary of Lake Ratapiko in the Waitara catchment	September 2003	2021*
Toko-B	<b>4201-2</b>	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations into an unnamed tributary of the Patea River	September 2010	2028
Toko-D	<b>4470-2</b>	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations onto and into land in the vicinity of an unnamed tributary of the Patea River	September 2010	2028

Wellsite	Consent number	Purpose	Issue date	Expiry
Toko-E	<b>4474-2</b>	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations into an unnamed tributary of the Manawawiri Stream in the Patea catchment	September 2010	2028
Waihapa-A	<b>3683-2</b>	To discharge treated stormwater, uncontaminated treated site water and uncontaminated treated production water from hydrocarbon exploration and production operations at the Waihapa-A wellsite onto and into land and into an unnamed tributary of the Waihapa Stream in the Patea catchment	June 2003	2034
Waihapa-B	<b>3684-2</b>	To discharge treated stormwater, uncontaminated treated site water and uncontaminated treated production water from hydrocarbon exploration and production operations at the Waihapa-B wellsite onto and into land and into an unnamed tributary of the Ngaere Stream in the Patea catchment	June 2003	2034
Waihapa-C	<b>3685-2</b>	To discharge treated stormwater, uncontaminated treated site water and uncontaminated treated production water from hydrocarbon exploration and production operations at the Waihapa-C wellsite onto and into land and into an unnamed tributary in the Patea catchment	June 2003	2034
Waihapa-D	<b>3686-2</b>	To discharge treated stormwater, uncontaminated treated site water and uncontaminated treated production water from hydrocarbon exploration and production operations at the Waihapa-D wellsite onto and into land and into an unnamed tributary of the Ngaere Stream in the Patea catchment	June 2003	2034
Waihapa-E	<b>3687-2</b>	To discharge treated stormwater, uncontaminated treated site water and uncontaminated treated production water from hydrocarbon exploration and production operations at the Waihapa-E wellsite onto and into land and into an unnamed tributary of the Ngaere Stream in the Patea catchment	June 2003	2034
Waihapa-F	<b>4093-2</b>	To discharge treated stormwater and produced water from hydrocarbon exploration and production operations onto and into land in the vicinity of the Ngaere Stream	September 2010	2028
Waihapa-G	<b>6848-1</b>	To discharge emissions to air during flaring from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the Waihapa-G wellsite	April 2006	2022
	<b>7846-1</b>	To discharge treated stormwater and production water from hydrocarbon exploration and production operations at the Waihapa-G wellsite onto and into land in the vicinity of an unnamed tributary of the Ngaere Stream	June 2011	2028
	<b>7850-1</b>	To take water from the Ngaere Stream for wellsite and well drilling activities during hydrocarbon exploration and production activities at the Waihapa-G wellsite	June 2011	2022

Wellsite	Consent number	Purpose	Issue date	Expiry
Waihapa-H	<b>6854-1</b>	To discharge emissions to air during flaring from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the Waihapa-H wellsite	April 2006	2022
	<b>6855-1</b>	To discharge treated stormwater and treated produced water from hydrocarbon exploration and production operations at the Waihapa-H wellsite onto and into land	April 2006	2022
	<b>6859-1</b>	To take water from the Ngaere Stream in the Patea catchment for hydrocarbon exploration purposes associated with the Waihapa-H wellsite	April 2006	2022
Various	<b>7518-1</b>	To discharge emissions to air during flaring from well workovers and in emergency situations associated with production activities at established wellsites (Waihapa-A, B, C, D, E and F; Toko-B, D and E, Tariki-A and Ahuroa-B), together with miscellaneous emissions	October 2009	2028

\* consent currently in renewal process

## 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 Waihapa Production Station consisted of four primary components.

### 1.4.2 Programme liaison and management

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

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- 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

The Waihapa Production Station was visited four times during the monitoring period. With regard to consents for the abstraction of or discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving land and 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

Sampling of both the discharges from the site and the water quality upstream and downstream of the discharge point and mixing zone was undertaken twice during the monitoring period. The Company undertook sampling of impounded stormwater prior to release into the Ngaere Stream and these results were provided to Council.

The Council also undertook sampling of the ambient air quality outside the boundary of the site. A multi-gas meter was deployed on one occasion in the vicinity of the plant, with monitoring consisting of continuous measurements of gas concentrations for the gases of interest (carbon monoxide and combustible gases). A PM<sub>10</sub> particulate monitor was deployed concurrently with the multi-gas meter. Two nitrogen oxide measuring devices were also deployed in the vicinity of the plant on one occasion during the year under review.

#### 1.4.5 Biomonitoring surveys

Biological surveys were performed on two occasions in the Ngaere Stream to determine whether or not the discharge of stormwater from the Waihapa Production Station was having a detrimental effect upon the communities of the stream.

## 2 Results

### 2.1 Water

#### 2.1.1 Inspections

Four inspections were undertaken at the Waihapa Production Station during the period under review, plus an annual inspection at the associated wellsites. The following was found during the inspections:

##### 9 August 2021

An annual inspection of the well sites associated with Waihapa Production Station was carried out to check for compliance with resource consent conditions. Well sites inspected were: Waihapa (A, B, C, D, E, H), Ngaere F, Toko (B, D, E), Goss A, Copper Moki, Waitapu, Wairere, and Arukamu. In general the sites were tidy and clean with minimal activity occurring. The sites were being maintained, with weed spraying evident on the site and in some places within the ring drains. The majority of ring drains were un-vegetated as they had been weed sprayed so did not have grasses that helped with controlling and treating sediment laden stormwater. Hydrocarbon sheen was not observed in skimmer pits or puddles on any of the sites. The skimmer pits were all in good order, with goose neck pipes functioning as required. Most of the pits were unlined and full of both stormwater and groundwater. The majority of the discharges were to land before flowing to surface water. No effects were noted in the vegetation (such as burnt patches or dead grass) or in the receiving waters. No flaring was occurring at any of the wellsites.

The Waihapa Production Station was also visited. No issues were noted on site. Flaring was occurring at the time of the inspection.

##### 30 November 2021

No issues were noted during the inspection. A new lined bund had been installed to house equipment associated with the pumping of drilling mud for DWI. Flaring was occurring, the flame was clean burning and no odours were noted.

##### 22 April 2022

The site was generally tidy and well managed. There was evidence to suggest that stormwater was flowing offsite, over the access road that leads to the Waihapa-F wellsite. This had occurred previously and steps were taken to prevent this by improving the management of the ring drains and removing vegetation debris. The issue was discussed onsite with staff with a potential solution the installation of a nib across the roadway which would direct stormwater back to the ring drain while still allowing vehicle access.

##### 9 June 2022

The site was tidy and processes appeared to be well managed with drip trays and chemical bunding in use and no spills or stains evident on the ground. The inspection was undertaken after heavy rain and the stormwater system was coping well, with all stormwater being collected and directed appropriately prior to discharge. The stream was visually the same upstream and downstream of the site. It was noted that the API separator used to be clear and now has a murky appearance. Staff advised that the new bund that captures stormwater and contaminants from the drilling mud processing is drained to the API separator. Discussion was had about sampling the bund water prior to discharge to identify any contaminants that may be causing the discolouration. Staff advised that recent discharge samples collected by the Company were compliant with resource consent conditions. A pilot flare was operating with a clean burning flame and no smoke or odours noted.

## 2.1.2 Results of discharge monitoring

Water quality sampling of the discharges to the Ngaere Stream was undertaken on two occasions during the 2021-2022 period. The sampling sites are shown in Figure 1 while Table 3 presents the results of this sampling.

The results are indicative of very clean discharges at the time of sampling, with the majority of parameters compliant with the limits imposed by consent 3457-2. One of the pH values in samples collected on 20 May 2022 was slightly low (5.8), while another was slightly high (9.1). These were minor excursions and no significant adverse effects would be expected in the receiving waters.

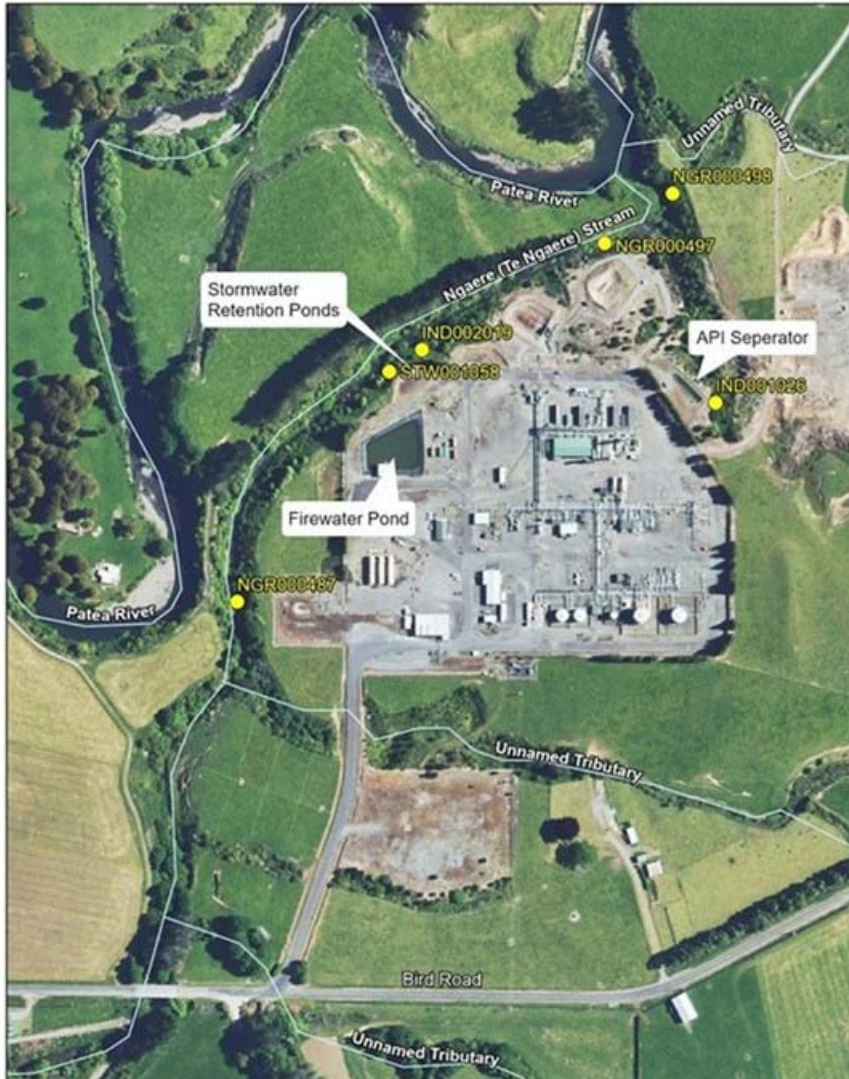


Figure 1 Waihapa Production Station stormwater systems and monitoring sites

Table 3 Monitoring results for discharges from the Waihapa Production Station

Parameter (consent limit)	Units	20 May 2022			1 June 2022		
		Firewater pond STW001058	Stormwater IND002019	API separator IND001026	Firewater pond STW001058	Stormwater IND002019	API separator IND001026
Chloride (50)	g/m <sup>3</sup>	14	6	9	10	7	8

Parameter (consent limit)	Units	20 May 2022			1 June 2022		
		Firewater pond STW001058	Stormwater IND002019	API separator IND001026	Firewater pond STW001058	Stormwater IND002019	API separator IND001026
Conductivity	mS/m @25°C	10.3	2.4	6.6	11.3	3.2	4.8
Hydrocarbons (15)	g/m <sup>3</sup>	< 0.7	< 0.7	< 0.7	< 0.7	<0.7	1.1
pH (6.0-9.0)		7.0	<b>5.8</b>	<b>9.1</b>	6.8	6.4	7.0
Suspended solids (100)	g/m <sup>3</sup>	18	7	16	5	<3	15
Turbidity	FNU	7.4	6.9	7.8	3.1	2.0	11
Temperature	Deg.C	14.4	13.6	14.0	14.0	14.0	13.3

The Company undertook sampling of impounded stormwater prior to release into the Ngaere Stream to ensure compliance with consent conditions. Monthly samples were collected during the 2021-2022 year. Results of this monitoring are summarised in Table 4.

The Company's results show consistently clean stormwater, with results for all parameters within the consent limits.

Table 4 Monitoring results for impounded stormwater tested by TWNLP in 2021-2022 (n=12)

Parameter	Units	Min	Max	Median	Consent 3457-1 limits	Number of exceedances
Chloride	g/m <sup>3</sup>	5	17	9	50	0
Hydrocarbons	g/m <sup>3</sup>	< 1	2	< 1	15	0
pH		6.5	8.2	6.9	6.0 – 9.0	0
Suspended solids	g/m <sup>3</sup>	7	33	14	100	0

## 2.1.3 Results of receiving environment monitoring

### 2.1.3.1 Chemical

Water quality sampling of the Ngaere Stream was undertaken in conjunction with stormwater discharge sampling. The results are presented in Table 5. The sampling sites are shown in Figure 1 and include upstream, intermediate, and downstream points. The intermediate site is situated below the firewater and general site discharges and above the confluence with the tributary carrying the API separator discharge.

Table 5 Receiving environment results for Ngaere Stream

Parameter	Units	20 May 2022			1 June 2022		
		Upstream NGR000487	Intermediate NGR000497	Downstream NGR000498	Upstream NGR000487	Intermediate NGR000497	Downstream NGR000498
Chloride	g/m <sup>3</sup>	19	18	19	16	16	16
Conductivity	mS/m@ 25°C	19.0	19.1	19.1	17.0	17.4	17.1
Hydrocarbons	g/m <sup>3</sup>	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
pH		7.5	7.2	7.2	6.6	6.7	6.7

Parameter	Units	20 May 2022			1 June 2022		
		Upstream NGR000487	Intermediate NGR000497	Downstream NGR000498	Upstream NGR000487	Intermediate NGR000497	Downstream NGR000498
Suspended solids	g/m <sup>3</sup>	13	13	10	39	39	39
Turbidity	FNU	8.2	7.3	9.0	20	21	20
Temperature	Deg.C	13.3	13.3	13.3	14.2	14.1	14.1

There was very little change between the upstream and downstream results indicating that the discharges from the Waihapa Production Station were not having a negative impact on the water quality of the Ngaere Stream. Results were in compliance with the conditions of consent 3457-2 at the time of sampling.

### 2.1.3.2 Biomonitoring

The Council's 'kick-sampling' technique was used at three sites (Figure 2) to collect streambed macroinvertebrates from the Ngaere Stream on 8 November 2021 and 28 February 2022, in relation to the Waihapa Production Station. This has provided data to assess any potential impacts the discharges from the Production Station have had on the macroinvertebrate communities of the stream. Samples were processed to provide number of taxa (richness), MCI, and SQMCI scores for each site.

The MCI is a measure of the overall sensitivity of the macroinvertebrate community to the effects of nutrient pollution in streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to pollution. The SQMCI takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in communities. Significant differences in either the MCI or the SQMCI between sites indicate the degree of adverse effects (if any) of the discharges being monitored and enable the overall health of the macroinvertebrate communities to be determined.

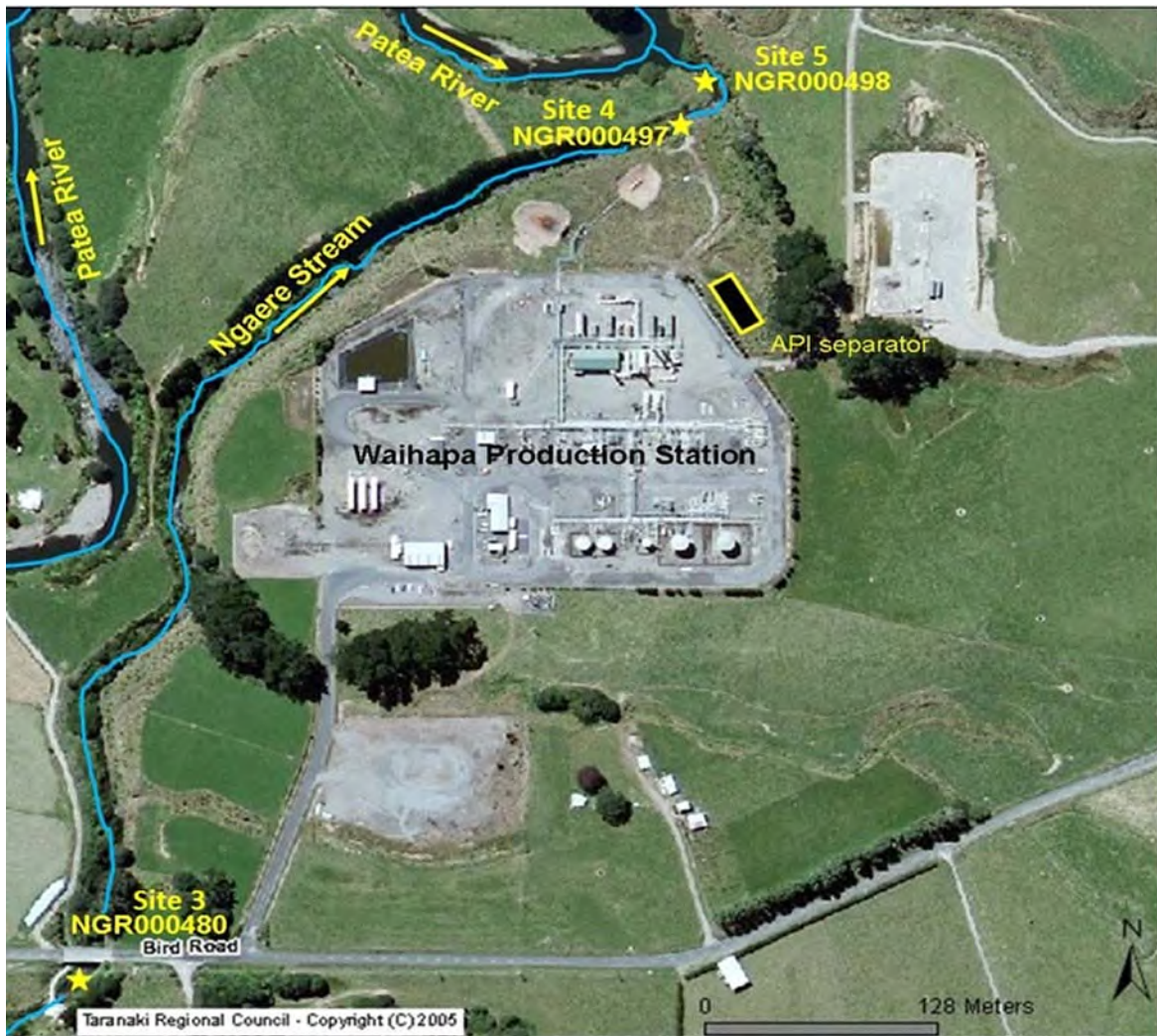


Figure 2 Biomonitoring sites in the Ngaere Stream sampled in relation to the Waihapa Production Station November 2021

During the spring survey taxa richness was moderate at all sites, and were fairly typical for the three sites. MCI scores were reflective of 'fair' macroinvertebrate health at all three sites. There was a five MCI unit decrease between sites 3 and 4, however this was not significant. MCI scores were not significantly different to historical site medians or previous survey scores, with the exception being site 5, which recorded an MCI score significantly higher than that recorded previously. Overall, there was no evidence of significant detrimental effects from the Waihapa Production Station discharges on the macroinvertebrate communities of the Ngaere Stream.

SQMCI scores increased in a downstream direction and were reflective of 'poor', 'fair' and 'good' macroinvertebrate community health at sites 3-5 respectively. There were no significant differences in SQMCI score between sites 3 and 4, while the SQMCI score recorded at site 5 was significantly higher than those recorded at the upstream sites. In comparison to both the previous survey results and historical site medians, site 3 recorded a significantly lower score, site 4 a similar score, and site 5 a significantly higher score.

When considered in the context of all three metrics, the results of the survey indicated that the discharges from the Waihapa Production Station had not caused any recent significant detrimental impacts on the macroinvertebrate communities of the Ngaere Stream.

## February 2022

The late summer survey recorded moderate low taxa richness ranging from 10-14 taxa. All three sites recorded taxa richness lower than site medians and the previous survey results, with site 4 recording the lowest taxa richness for the site to date, and site 5 recording a taxa richness equal to the lowest recorded for the site to date.

MCI scores were reflective of 'fair' macroinvertebrate health at all three sites. There were no significant differences in MCI score between the three sites surveyed. The SQMCI scores recorded at the downstream sites, 4 and 5, were reflective of 'poor' health, while the SQMCI score recorded upstream at site 3, was reflective of 'good' health. There were no significant differences in SQMCI score between sites 4 and 5, while the SQMCI score recorded at site 3 was significantly higher than those recorded at the two downstream sites. It is likely an increase in nuisance periphyton has contributed to the lowered SQMCI scores recorded at the two downstream sites.

When considered in the context of all three metrics, the results of this survey indicate that the discharges from the Waihapa Production Station (both consented and unauthorised) have not caused any recent significant detrimental impacts on the macroinvertebrate communities of the Ngaere Stream. Due to subtle habitat changes that have occurred over time, the sampling riffles at sites 4 and 5 have become closer together. Due to their close proximity, it is recommended that site 4 be omitted from upcoming surveys and that site 5 is kept as a single impacted downstream site. Due to the potential for inflows from the unnamed tributaries to affect water quality and ecological health between the 'control' and downstream sites, it is also recommended that investigation be undertaken to seek a more proximate 'control' site, ideally downstream of any unnamed tributaries, and upstream of any discharges from the Waihapa Production Station.

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

### 2.1.4 Summary of water abstractions reported by TWNLP

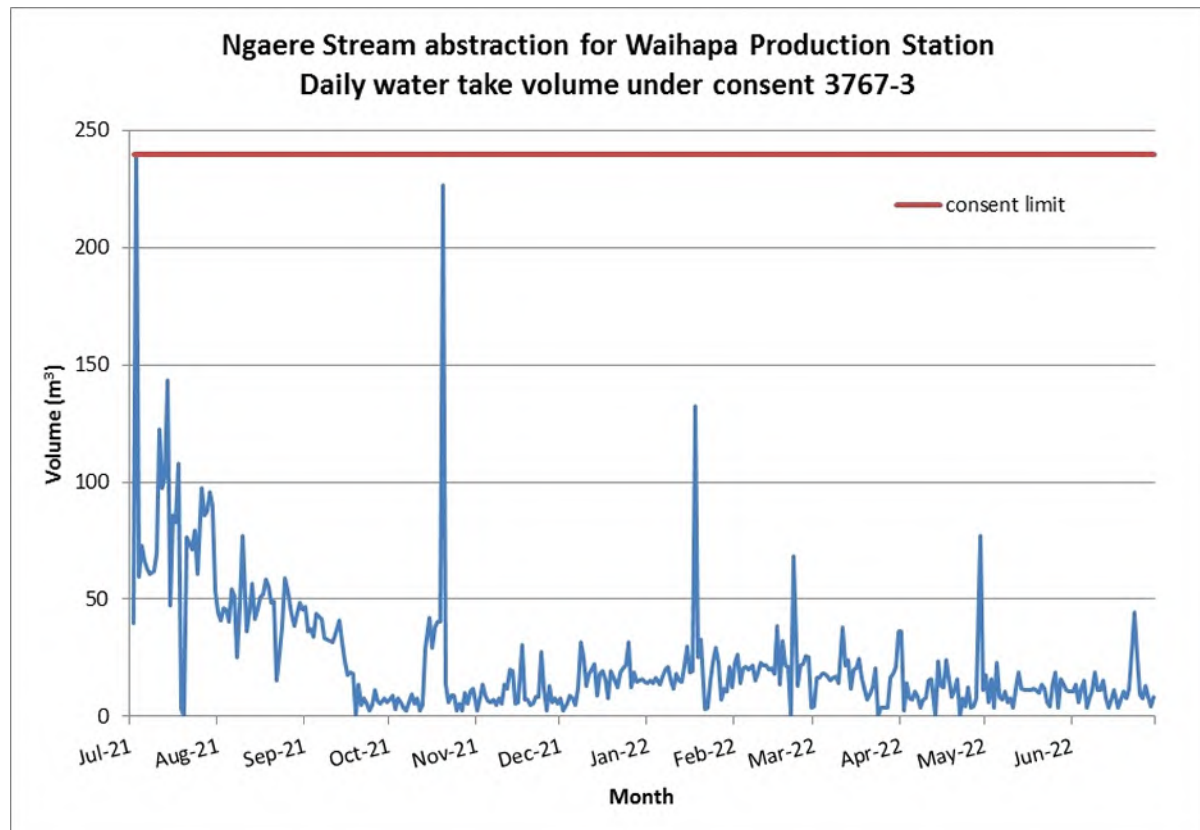


Figure 3 Daily water abstraction volumes for Waihapa Production Station under consent 3767-3

Figure 3 provides a summary of the abstraction volumes for the consented water take from the Ngaere Stream for utility and firewater purposes at the Waihapa Production Station. The total abstraction during the monitoring period was 8,716 m<sup>3</sup>, with all abstraction volumes and rates within the limits stipulated by consent 3767-3.

No water was abstracted under the water take consents for the Waihapa-H (consent 6859-1) or Waihapa-G (7850-1) sites during the period under review.

## 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 receiving environment monitoring

#### 2.2.2.1 Carbon monoxide and combustible gases

During the monitoring year, a multi-gas meter was deployed on one occasion in the vicinity of the plant. The deployment lasted approximately 27 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continuous measurements of gas concentrations for the gases of interest (carbon monoxide and combustible gases). The monitoring sites used in the year under review are shown in Figure 4.



Figure 4 Air monitoring sites at Waihapa Production Station for 2021-2022

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

The details of the sample run are summarised in Table 6 and the data from the sample run are presented graphically in Figure 5.

The consent covering air discharges from the Waihapa Production Station has specific limits related to particular gases. Special condition 15 of consent 4049-3 sets a limit on the carbon monoxide concentration at or beyond the production station's boundary. The limit is expressed as 10 mg/m<sup>3</sup> for an eight hour



average or 30 mg/m<sup>3</sup> for a one hour average exposure. The maximum concentration of carbon monoxide found during the monitoring run was 1.4 mg/m<sup>3</sup>, while the average concentration for the entire dataset was 0.03 mg/m<sup>3</sup> which comply with consent conditions. This is consistent with the pattern found in previous years.

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

Parameter		18 to 19 August 2021 (27 hours)
Max	CO (ppm) <sup>(1)</sup>	1.20
	LEL(%)	0.00
Mean	CO (ppm) <sup>(1)</sup>	0.03
	LEL(%)	0.00
Min	CO (ppm) <sup>(1)</sup>	0.00
	LEL(%)	0.00

Notes: (1) the instrument records in units of ppm. At 25°C and 1 atm, 1ppm CO = 1.145 mg/m<sup>3</sup>  
 (2) because the LEL of methane is equivalent to a mixture of approximately 5% methane in air, then the equivalent actual concentration of methane in air can be obtained by dividing the percentage LEL by 20.

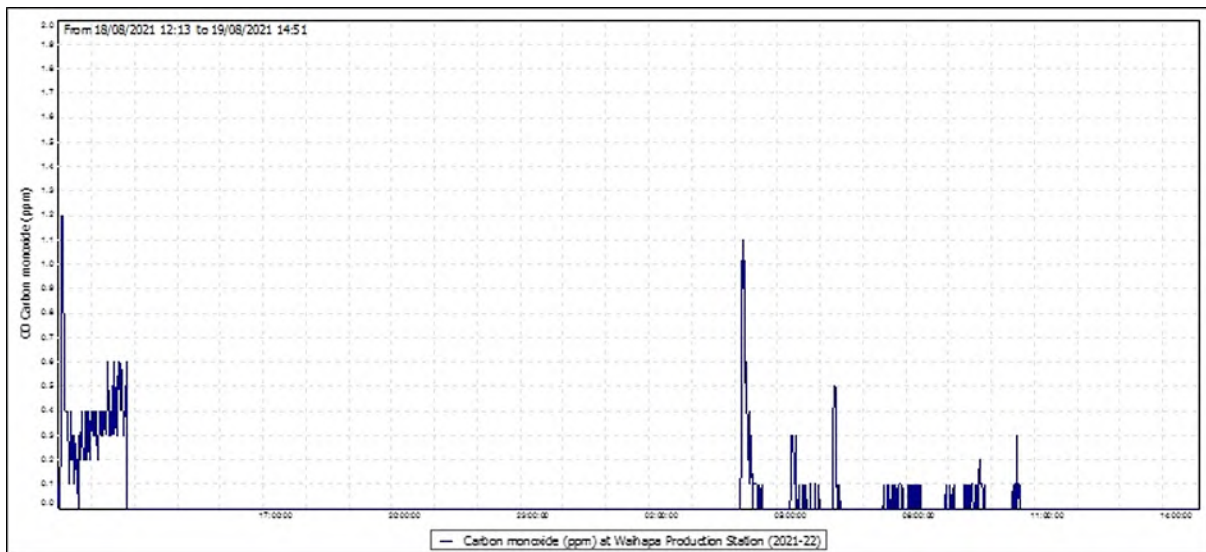


Figure 5 Ambient CO levels in the vicinity of Waihapa Production Station

For comparison, environmental monitoring of ambient carbon monoxide levels in Stratford township has shown average levels of less than 1 mg/m<sup>3</sup>, while the peak eight hour average carbon monoxide concentration recorded at the Northgate-Mangorei Rd intersection in New Plymouth during a 2015 survey was 2.7 mg/m<sup>3</sup>.

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

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

In September 2004 the Ministry for the Environment enacted National Environmental Standards (NES) relating to certain air pollutants. The NES for PM<sub>10</sub> particulates is 50 µg/m<sup>3</sup> (24-hour average).

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

PM<sub>10</sub> particles are linked to adverse health effects that arise primarily from the ability of particles of this size to penetrate the defences of the human body and enter deep into the lungs, significantly reducing the exchange of gases across the lung walls. Health effects from inhaling PM<sub>10</sub> include increased mortality and the aggravation of existing respiratory and cardiovascular conditions such as asthma and chronic pulmonary diseases.

During the reporting period a “DustTrak” PM<sub>10</sub> monitor was deployed on one occasion in the vicinity of Waihapa Production Station. The deployment lasted approximately 27 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continual measurements of PM<sub>10</sub> concentrations. The location of the “DustTrak” monitor during the sampling run is shown in Figure 3. The results of the sample run are presented in Figure 6 and Table 7.

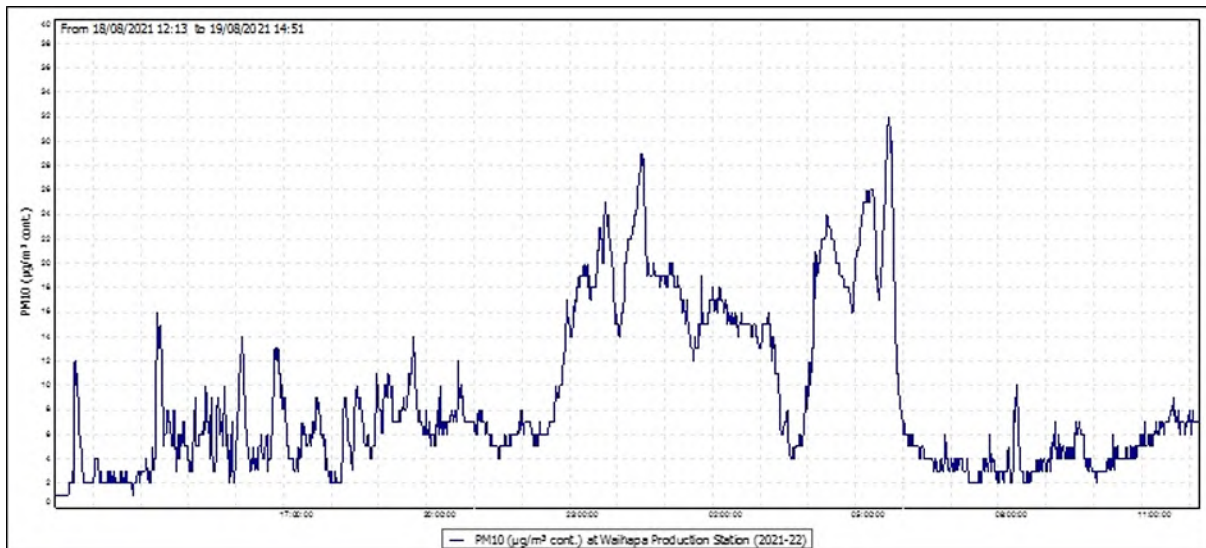


Figure 6 PM<sub>10</sub> concentrations (µg/m<sup>3</sup>) at the Waihapa production station 2021-2022

Table 7 Daily averages of PM<sub>10</sub> results from monitoring at Waihapa Production Station

	18 to 19 August 2021 (27 hours)	
24 hr. set	Day 1	Day 2
Daily average	8.9 µg/m <sup>3</sup>	N/A
NES	50µg/m <sup>3</sup>	

During the 27-hour run, from 18 to 19 of August 2021, the average recorded PM<sub>10</sub> concentration was 8.9 µg/m<sup>3</sup>. This daily mean equates to 18% of the 50 µg/m<sup>3</sup> value that is set by the National Environmental Standard and consent 4049-3. Background levels of PM<sub>10</sub> in the region have been found to be typically around 11 µg/m<sup>3</sup>.

### 2.2.2.3 Nitrogen oxides

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

The consent covering air discharges from the Waihapa Production Station has specific limits related to particular gases. Special condition 16 of consent 4049-3 sets a limit on the nitrogen dioxide concentration at or beyond the production station's boundary. The limit is expressed as 200  $\mu\text{g}/\text{m}^3$  for a 1-hour average or 100  $\mu\text{g}/\text{m}^3$  for a 24-hour average exposure.

NOx passive adsorption discs were placed at two locations in the vicinity of the Waihapa Production Station on one occasion during the year under review. The discs were left in place for a period of 21 days. The calculated 1-hour and 24-hour theoretical maximum NOx concentrations found at Waihapa Production Station during the year under review equates to 6.4  $\mu\text{g}/\text{m}^3$  and 3.4  $\mu\text{g}/\text{m}^3$ , respectively. The results show that the ambient ground level concentration of NOx is well below the limits set out by consent 4049-3.

### 2.2.3 Summary of flaring volumes reported by TWNLP

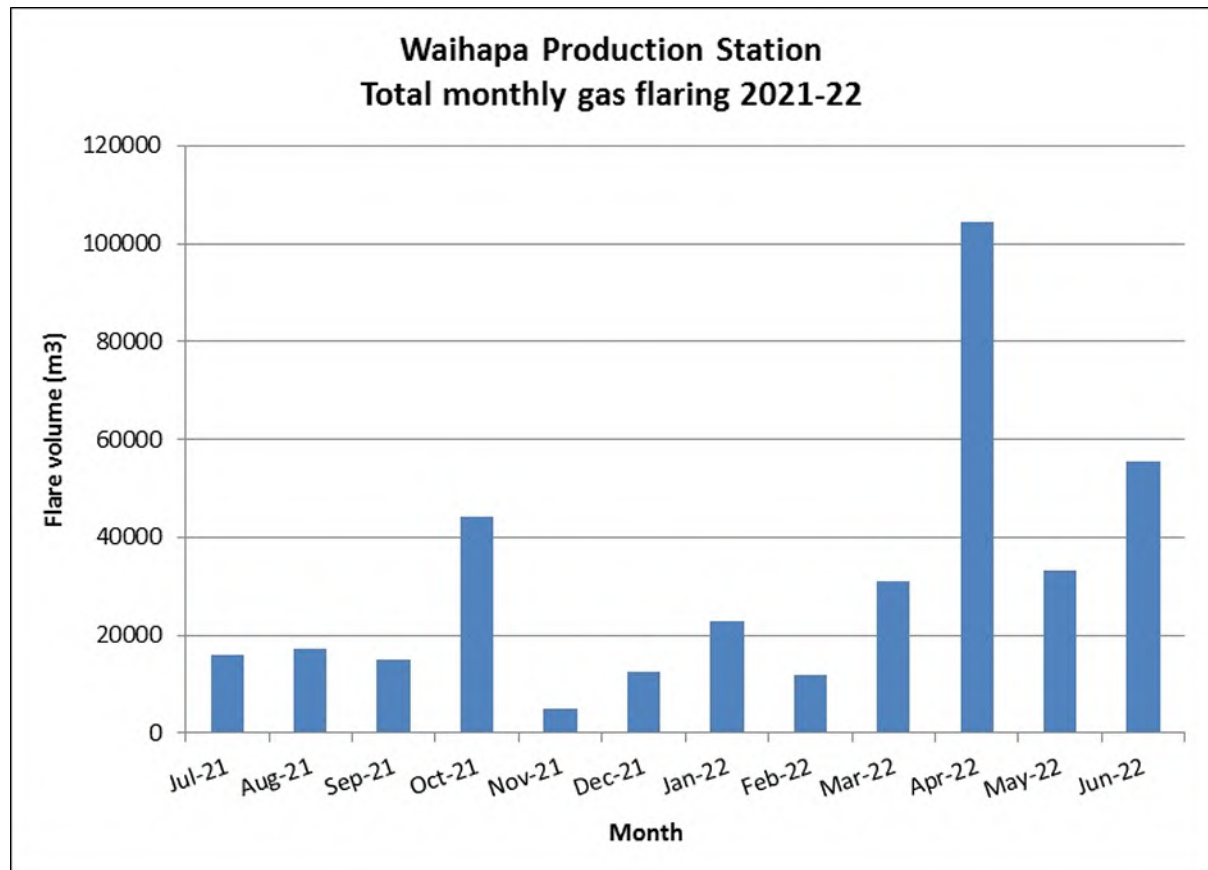


Figure 7 Monthly gas flaring for Waihapa Production Station under consent 4049-3

A summary of flaring volumes at Waihapa Production Station is provided in Figure 7. The total amount of gas flared during the period under review was approximately 368,944  $\text{m}^3$ . Routine operational flaring of process gas at Waihapa Production Station is continuous and occurs under normal conditions in a low pressure flare. Non-routine flaring occurred due to plant or well restarts, power cuts and compressor shutdowns due to planned or unplanned maintenance. The higher amount of flaring in April 2022 was due to gas lift compressor commissioning. In the long term the new compressor should improve efficiency and

reduce flaring. No complaints concerning smoke were received by the Company or the Council during the 2021-2022 period.

### 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 2021-2022 period, the Council was not required to undertake significant additional investigations and interventions, or record incidents, in association with the Company's conditions in resource consents or provisions in Regional Plans.

## 3 Discussion

### 3.1 Discussion of site performance

Monitoring of the Waihapa Production Station during the 2021-2022 year found that the site was generally well managed.

### 3.2 Environmental effects of exercise of consents

Stormwater system and receiving water inspections and monitoring of discharges and receiving waters showed that discharges from the site at the time complied with consent conditions. Biological surveys of the receiving water showed that the discharges were not causing any adverse effects on the Ngaere Stream at the time of monitoring.

There were no adverse effects on the environment resulting from the exercise of the air discharge consent. The ambient air quality monitoring at the site showed that levels of carbon monoxide, combustible gases, PM<sub>10</sub> particulates, and nitrogen oxides were all below levels of concern at the time of sampling. No offensive or objectionable odours were detected beyond the boundary during inspections and there were no complaints in relation to air emissions from the site.

### 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 8-10.

Table 8 Summary of performance for consent 3457-2

<b>Purpose: To discharge treated impounded stormwater [including washdown water and minor quantities of process water subject to potential contamination by hydrocarbons] from the Waihapa Production Station into the Ngaere Stream and to discharge treated stormwater from perimeter drains to land where it may enter the Ngaere Stream</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Adoption of best practicable option	Site inspection	Yes
2. Catchment area not to exceed 5 ha	Site inspection and liaison with consent holder	Yes
3. Maintenance of a contingency plan	Plan up to date as of July 2020	Yes
4. Maintenance and management of the stormwater system in accordance with application documentation	Site inspection and liaison with consent holder	Yes
5. All stormwater and produced water to be treated	Site inspection	Yes
6. Bunding of hazardous substances	Site inspection	Yes
7. Limits on contaminants in the discharge	Sampling by Council and consent holder	Mostly – minor pH excursions
8. Limit on temperature increase in receiving water	Sampling	Yes

<b>Purpose: To discharge treated impounded stormwater [including washdown water and minor quantities of process water subject to potential contamination by hydrocarbons] from the Waihapa Production Station into the Ngaere Stream and to discharge treated stormwater from perimeter drains to land where it may enter the Ngaere Stream</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
9. Discharge shall not have certain effects on the receiving water	Inspection	Yes
10. Monitoring data to be made available upon request	Data received	Yes
11. Consent holder to remedy any erosion	Site inspections - no erosion noted	Yes
12. Optional review provision re environmental effects	No further option for review prior to expiry	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 3767-3**

<b>Purpose: To take water from the Ngaere Stream for utility and firewater purposes at the Waihapa Production Station</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Limit on abstraction rate and volume	Review of abstraction data	Yes
2. Water meter to be installed and maintained	Inspections and liaison with consent holder	Yes
3. Provision of water meter certification within 30 days and then every 5 years	Verified March 2020, next due 2025	Yes
4. Notify Council of recording equipment failure	Liaison with consent holder, no issues during monitoring period	Yes
5. Consent holder to provide access to water meter	Site inspections	Yes
6. Abstraction records to be provided to Council by 31 July annually	Records received	Yes
7. Take to cease when Ngaere Stream flow is below 20 l/s	Ratings curve to be established	N/A
8. Intake to be screened	Site inspections	Yes
9. Installation of staff gauge to determine flow	Installed in November 2016	Yes
10. Lapse of consent	Consent exercised	N/A
11. Review of consent	Next option for review in June 2025	N/A

<b>Purpose: To take water from the Ngaere Stream for utility and firewater purposes at the Waihapa Production Station</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
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>

Table 10 Summary of performance for consent 4049-3

<b>Purpose: To discharge emissions into the air from the flaring of hydrocarbons at the Waihapa Production Station in association with production, processing and maintenance activities and in emergency situations, together with miscellaneous emissions</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
1. Adoption of best practicable option	Site inspection	Yes
2. Provision of monthly flaring information	Information received	Yes
3. Annual report on flaring and emissions	Report received	Yes
4. Maintenance of a flaring log	Site inspection	Yes
5. Record of smoke emitting incidents and complaints	Site inspection and liaison with consent holder	Yes
6. Analysis of typical gas/condensate stream to be made available	Not requested	N/A
7. Consultation prior to plant alterations	Liaison with consent holder	Yes
8. Notification of hazardous situations beyond the site boundary	Liaison with consent holder	Yes
9. Notification prior to flaring	Notifications received	Yes
10. Minimise emissions	Site inspection and liaison with consent holder	Yes
11. Minimise flaring	Site inspection and liaison with consent holder	Yes
12. Control of plant depressurisation rate	Site inspection and liaison with consent holder	Yes
13. No offensive/ objectionable/obnoxious odour/dust/smoke at or beyond the site boundary	Site inspection and air monitoring	Yes
14. Discharged contaminants shall not be hazardous/ toxic/noxious at or beyond the site boundary	Site inspections and air monitoring	Yes
15. Limit on carbon monoxide at or beyond the site boundary	Air monitoring	Yes

<b>Purpose: To discharge emissions into the air from the flaring of hydrocarbons at the Waihapa Production Station in association with production, processing and maintenance activities and in emergency situations, together with miscellaneous emissions</b>		
<b>Condition requirement</b>	<b>Means of monitoring during period under review</b>	<b>Compliance achieved?</b>
16. Limit on nitrogen dioxide at or beyond the site boundary	Air monitoring	Yes
17. Limit on contaminants at or beyond the site boundary	Air monitoring	Yes
18. Optional review of consent	No further option for review prior to expiry	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>

Table 11 Evaluation of environmental performance over time

<b>Year</b>	<b>Consent no</b>	<b>High</b>	<b>Good</b>	<b>Improvement req</b>	<b>Poor</b>
2013-14	3457-2, 3767-2, 4049-3	3	-	-	-
2014-15	3457-2, 3767-2, 4049-3	3	-	-	-
2015-16	3457-2, 3767-2/ 3767-3, 4049-3	3	-	-	-
2016-17	3457-2, 3767-3, 4049-3	3	-	-	-
2017-18	3457-2, 3767-3, 4049-3	3	-	-	-
2018-19	3457-2, 3767-3, 4049-3	3	-	-	-
2019-20	3457-2, 3767-3, 4049-3	3	-	-	-
2020-21	3457-2, 3767-3, 4049-3	3	-	-	-
Totals		24	0	0	0

During the year, the Company demonstrated an overall high level of both environmental performance and administrative compliance with the resource consents as defined in Appendix II.

### 3.4 Recommendations from the 2020-2021 Annual Report

In the 2020-2021 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at Waihapa Production Station and associated facilities in the 2021-2022 year continue at the same level as in 2020-2021.



2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the option for a review of resource consents 3457-2, 3767-3 and 4049-3 in June 2022, as set out in conditions of the consents, not be exercised, on the grounds that the current conditions are adequate.

Recommendations one and three were implemented, while it was not considered necessary to carry out additional monitoring as per recommendation two.

### 3.5 Alterations to monitoring programmes for 2022-2023

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 changes have been made to the 2022-2023 monitoring programme.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2022-2023.

## 4 Recommendations

1. That in the first instance, monitoring of consented activities at Waihapa Production Station and associated facilities 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.

## Glossary of common terms and abbreviations

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

Biomonitoring	Assessing the health of the environment using aquatic organisms.
Bund	A wall around a tank to contain its contents in the case of a leak.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in mS/m.
DWI	Deep well injection.
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.
L/s	Litres per second.
LEL	Lower Explosive Limit. The percentage of the lower explosive limit, expressed as methane, that is detected in the air sampled
m <sup>2</sup>	Square metres.
mg/m <sup>3</sup>	Milligrams per cubic metre
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 Standards
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).
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.
UI	Unauthorised Incident.

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

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# Appendix I

## Resource consents held by TWN Ltd Partnership

(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: TWN Limited Partnership  
P O Box 8440  
NEW PLYMOUTH 4342

Decision Date: 27 July 2009

Commencement Date: 27 July 2009

**Conditions of Consent**

Consent Granted: To discharge treated impounded stormwater [including washdown water and minor quantities of process water subject to potential contamination by hydrocarbons] from the Waihapa Production Station into the Ngaere Stream and to discharge treated stormwater from perimeter drains to land where it may enter the Ngaere Stream at or about (NZTM) 1717334E-5642168N

Expiry Date: 1 June 2028

Review Date(s): June 2016, June 2022

Site Location: Waihapa Production Station, Bird Road, Stratford

Legal Description: Sec 10 Blk III Ngaere SD

Catchment: Patea

Tributary: Ngaere

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

## Consent 3457-2

### General conditions

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

### Special conditions

1. Notwithstanding any other condition of this consent, 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 5 hectares.
3. The consent holder shall maintain a contingency plan outlining measures and procedures to be undertaken to prevent spillage or accidental discharge of contaminants not licensed by this consent and measures to avoid, remedy or mitigate the environmental effects of such a spillage or discharge. No changes shall be made to the contingency plan without the prior approval of the Chief Executive, Taranaki Regional Council.
4. The management and maintenance of the stormwater treatment system shall be undertaken in general accordance with the information submitted in support of consent application 5217.
5. All stormwater and produced water shall be directed for treatment through the stormwater treatment system, identified under condition 4 of this consent, before being discharged.
6. Any above ground hazardous substances storage areas shall be bunded with drainage to an appropriate treatment system.

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

<u>Constituent</u>	<u>Standard</u>
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>
chloride	Concentration not greater than 50 gm <sup>-3</sup>

This condition shall apply before entry of the treated stormwater into the receiving waters of the Ngaere Stream, or onto/into land, at a designated sampling point(s) approved by the Chief Executive, Taranaki Regional Council.

8. After allowing for a mixing zone of 25 metres, the discharge shall not give rise to an increase in temperature of more than 2 degrees Celsius within the Ngaere Stream.
9. After allowing for a mixing zone of 25 metres, the discharge shall not give rise to any of the following effects in the Ngaere Stream:
- a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
  - b) any conspicuous change in the colour or visual clarity;
  - c) any emission of objectionable odour;
  - d) the rendering of fresh water unsuitable for consumption by farm animals;
  - e) any significant adverse effects on aquatic life.
10. Results of the water samples taken from the firewater pond [undertaken prior to the release of stormwater from the facility] shall be made available to the Chief Executive, Taranaki Regional Council, on request.
11. Any erosion, scour or instability of the bed or banks of the Ngaere Stream that is attributable to the discharges authorised by this consent shall be remedied by the consent holder.
12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2016 and/or June 2022, 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 1 November 2013

For and on behalf of  
Taranaki Regional Council

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



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

Name of  
Consent Holder: TWN Limited Partnership  
PO Box 8440  
New Plymouth 4342

Decision Date: 17 March 2016

Commencement Date: 17 March 2016

**Conditions of Consent**

Consent Granted: To take water from the Ngaere Stream for utility and firewater purposes at the Waihapa Production Station

Expiry Date: 1 June 2034

Review Date(s): June 2019 and 3 yearly thereafter

Site Location: Waihapa Production Station, 593 Bird Road, Stratford

Grid Reference (NZTM) 1717395E-5642260N

Catchment: Patea

Tributary: Ngaere

*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 rate of taking shall not exceed 2.8 litres per second, and the volume taken in any 24 hour period ending at midnight (New Zealand Standard Time) shall not exceed 240 cubic metres.
2. Before exercising this consent the consent holder shall install, and thereafter maintain a water meter at the site of taking (or a nearby site in accordance with Regulation 10 of the *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*. The water meter shall be tamper-proof and shall measure and record the rate and volume of water taken to an accuracy of  $\pm 5\%$ .

*Note: Water meters must be installed, and regularly maintained, in accordance with manufacturer's specifications in order to ensure that they meet the required accuracy. Even with proper maintenance water meters have a limited lifespan.*

3. The consent holder shall provide the Chief Executive, Taranaki Regional Council with a document from a suitably qualified person certifying that water measuring and recording equipment required by the conditions of this consent ('the equipment'):
  - (a) has been installed and/or maintained in accordance with the manufacturer's specifications; and/or
  - (b) has been tested and shown to be operating to an accuracy of  $\pm 5\%$ .

The documentation shall be provided:

- (i) within 30 days of the installation of a water meter;
  - (ii) at other times when reasonable notice is given and the Chief Executive, Taranaki Regional Council has reasonable evidence that the equipment may not be functioning as required by this consent; and
  - (iii) no less frequently than once every five years.
4. If any measuring or recording equipment breaks down, or for any reason is not operational, the consent holder shall advise the Chief Executive, Taranaki Regional Council immediately. Any repairs or maintenance to this equipment must be undertaken by a suitably qualified person and a maintenance report provided to the Chief Executive, Taranaki Regional Council within 30 days of the work occurring.

## Consent 3767-3.0

5. Any water meter shall be accessible to Taranaki Regional Council officers at all reasonable times for inspection and/or data retrieval.
6. The records of water taken shall:
  - (a) be in a format that, in the opinion of the Chief Executive, Taranaki Regional Council, is suitable for auditing;
  - (b) be maintained by the consent holder by recording the meter reading and the date of the reading at daily intervals.
  - (c) specifically record the water taken as 'zero' when no water is taken; and
  - (d) for each 12-month period ending on 30 June, be provided to the Chief Executive, Taranaki Regional Council within one month after end of that period.
7. No taking shall occur when the flow in the Ngaere Stream/River immediately downstream of the intake point is less than 20 litres per second.

*Note: Taking water required for fire fighting purposes is not restricted by this condition.*

8. The consent holder shall ensure that the intake is screened to avoid fish (in all stages of their life-cycle) entering the intake or being trapped against the screen.
9. A staff gauge shall be installed and a low flow rating curve established and maintained that determines the flow in the Ngaere Stream immediately downstream of the take site. The cost of the installation, and the establishment and maintenance of the rating shall be met by the consent holder.

*Note: The installation of the staff gauge and establishment of the rating will be undertaken by the Council and included in the monitoring programme.*

10. 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.

## Consent 3767-3.0

11. 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 2019 and at 3 yearly intervals thereafter for the purposes of:
- (a) ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or
  - (b) requiring continuous measuring and recording of the flow immediately downstream of the take site; and/or
  - (c) requiring any data collected in accordance with the conditions of this consent to be transmitted directly to the Taranaki Regional Council's computer system, in a format suitable for providing a 'real time' record over the internet.

Signed at Stratford on 17 March 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: TWN Limited Partnership  
P O Box 8440  
NEW PLYMOUTH 4342

Decision Date: 6 October 2009

Commencement Date: 6 October 2009

**Conditions of Consent**

Consent Granted: To discharge emissions into the air from the flaring of hydrocarbons at the Waihapa Production Station in association with production, processing and maintenance activities and in emergency situations, together with miscellaneous emissions at or about (NZTM) 1717334E-5642168N

Expiry Date: 1 June 2028

Review Date(s): June 2011, June 2016, June 2022

Site Location: Waihapa Production Station, Bird Road, Stratford

Legal Description: Sec 10 Blk III Ngaere SD

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

### **General conditions**

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

### **Special conditions**

#### **Exercise of consent**

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 effects on the environment associated with the discharge of contaminants into the environment arising from the emissions to air from the flare.

#### **Recording and submitting information**

2. The consent holder shall supply to the Taranaki Regional Council each month a copy of flaring information comprising: the type and amount of material flared [including any gas used to maintain a pilot flame], the date this was flared, the reason why flaring was undertaken, and an indication of whether smoke was produced from such flaring events.
3. The consent holder shall provide to the Taranaki Regional Council during May of each year, for the duration of this consent, a report:
  - a) detailing gas combustion at the production station flare, including but not restricted to routine operational flaring and flaring logged in accordance with condition 4;
  - b) detailing any measures that have been undertaken by the consent holder to improve the energy efficiency of the production station;
  - c) detailing any measures to reduce smoke emissions;
  - d) detailing any measures to reduce flaring,
  - e) addressing any other issue relevant to the minimisation or mitigation of emissions from the production station flare; and
  - f) detailing any complaints received and any measures undertaken to address complaints.

## Consent 4049-3

4. The consent holder shall keep and maintain a log of all continuous flaring incidents lasting longer than 5 minutes and any intermittent flaring lasting for an aggregate of 10 minutes or longer in any 60-minute period. The log shall contain the date, the start and finish times, the quantity and type of material flared, and the reason for flaring. The log shall be made available to the Chief Executive, Taranaki Regional Council, upon request, and summarised annually in the report required under condition 3. Flaring, under normal operation in the low pressure flare, of rich mono-ethylene glycol degasser vapour, condensate tank vapours, non-condensibles from tri-ethylene glycol/mono-ethylene glycol regeneration and purge gas shall be excluded from this requirement.
5. 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. The consent holder shall also keep, and make available to the Chief Executive, upon request, a record of all complaints received as a result of the exercise of this consent.

### **Information and notification**

6. The consent holder shall make available to the Chief Executive, Taranaki Regional Council upon request, an analysis of a typical gas and/or condensate stream from the Waihapa field, covering sulphur compound content and the content of compounds containing six or more carbon atoms in their molecular structure.
7. Prior to undertaking any alterations to the plant equipment, processes or operations, which may substantially alter the nature or quantity of flare emissions other than as described in the consent application, the consent holder shall first consult with the Chief Executive, Taranaki Regional Council, and shall obtain any necessary approvals under the Resource Management Act 1991.
8. Any incident whereby the discharge of emissions to air has potential or actual adverse environmental effects which has caused or is liable to cause a substantiated complaint, or a hazardous situation beyond the boundary of the property on which the production station flare is located, shall be notified to the Taranaki Regional Council, as soon as possible, followed by a written report to the Chief Executive, Taranaki Regional Council, within one week of the incident, with comment about the measures taken to minimise the impact of the incident and to prevent re-occurrence.
9. The consent holder shall notify the Chief Executive, Taranaki Regional Council, as soon as practicable, whenever the continuous flaring of hydrocarbons [other than the flaring of rich mono-ethylene glycol degasser vapour, condensate tank vapours, non-condensibles from tri-ethylene glycol/mono-ethylene glycol regeneration and purge gas] is expected to occur for more than five minutes in duration.

### **Preventing and minimising emissions**

10. The consent holder shall minimise the emissions and impacts of air contaminants discharged from the flare by the selection of the most appropriate process equipment, process control equipment, emission control equipment, methods of control, supervision and operation, and the proper and effective operation, supervision, control and maintenance of all equipment and processes.
11. All practicable steps shall be taken to minimise flaring.
12. Other than in emergencies, the rate of depressurisation of the plant, or sections of the plant, shall be managed to prevent dense black smoke from being discharged from the flare.
13. The discharges authorised by this consent shall not, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, give rise to any levels of odour or dust or smoke that are offensive or obnoxious or objectionable at or beyond the property boundary.
14. The consent holder shall not discharge any contaminant to air from the site at a rate or a quantity such that the contaminant, whether alone or in combination with other contaminants, is or is liable to be hazardous or toxic or noxious at or beyond the boundary of the property where the production station is located.
15. The consent holder shall control all discharges of carbon monoxide to the atmosphere from the flare, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of carbon monoxide arising from the exercise of this consent measured under ambient conditions does not exceed 10 milligrams per cubic metre [eight-hour average exposure], or 30 milligrams per cubic metre [one-hour average exposure] at or beyond the boundary of the property on which the production station flare is located.
16. The consent holder shall control all discharges of nitrogen dioxide or its precursors to the atmosphere from the flare, whether alone or in conjunction with any other discharges to the atmosphere from the site arising through the exercise of any other consent, in order that the maximum ground level concentration of nitrogen dioxide arising from the exercise of this consent measured under ambient conditions does not exceed 200 micrograms per cubic metre [one hour average exposure], or 100 micrograms per cubic metre [twenty-four hour average exposure], at or beyond the boundary of the property on which the production station flare is located.

## Consent 4049-3

17. The consent holder shall control discharges to the atmosphere from the flare of contaminants other than carbon dioxide, carbon monoxide, and nitrogen oxides, whether alone or in conjunction with any other emissions from the site arising through the exercise of any other consent, in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent, measured at or beyond the boundary of the property on which the production station flare is located, is not increased above background levels:
- a) by more than 1/30th of the relevant Workplace Exposure Standard-Time Weighted Average [exposure averaged over a duration as specified for the Workplace Exposure Standard-Time Weighted Average], or by more than 1/10th of the Workplace Exposure Standard-Short Term Exposure Limit over any short period of 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 the General Excursion Limit at any time [all terms as defined in Workplace Exposure Standards, 2002, Department of Labour].

### Review

18. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2011 and/or June 2016 and/or June 2022, for the purposes of:
- a) dealing with any significant adverse effect on the environment arising from the exercise of the consent which was not foreseen at the time the application was considered or which it was not appropriate to deal with at the time; and/or
  - b) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment caused by the discharge; and/or
  - c) to alter, add or delete limits on mass discharge quantities or discharge or ambient concentrations of any contaminant or contaminants.

Signed at Stratford on 1 November 2013

For and on behalf of  
Taranaki Regional Council



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**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.