

TWN Limited Partnership
Waihapa Production Station
Monitoring Programme
Annual Report
2019-2020

Technical Report 2020-60

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Executive summary

TWN Limited Partnership (the Company) operates a hydrocarbon production station located on Bird Road at Stratford, in the Patea catchment. The Waihapa Production Station processes oil and gas from numerous associated wellsites. This report for the period July 2019 to June 2020 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess the Company's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of the Company's activities.

The Company holds 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.

During the monitoring period, TWN Limited Partnership demonstrated an overall high level of environmental performance.

The Council's monitoring programme for the year under review included five 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 and abstraction volumes.

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, PM₁₀ particulates, and nitrogen oxides were all below levels of concern at the time of sampling. No offensive or objectionable odours were detected beyond the boundary during inspections and there were no complaints in relation to air emissions from the site.

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 2019-2020 year, consent holders were found to achieve a high level of environmental performance and compliance for 81% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 17% 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 2020-2021 year.

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Photo 1 Waihapa Production Station

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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 2019 to June 2020 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by TWN Limited Partnership (the Company). The Company operates the Waihapa Production Station situated on Bird Road at 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.

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

1.1.2 Structure of this report

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

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by the Company in the 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 2020-2021 monitoring year.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

- a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
- b. physical effects on the locality, including landscape, amenity and visual effects;
- c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;

- d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
- e. risks to the neighbourhood or environment.

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

1.1.4 Evaluation of environmental and administrative performance

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

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

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

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

Environmental Performance

High: No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment. The Council did not record any verified unauthorised incidents involving 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.

For reference, in the 2019-2020 year, consent holders were found to achieve a high level of environmental performance and compliance for 81% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 17% of the consents, a good level of environmental performance and compliance was achieved.¹

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

¹ The Council has used these compliance grading criteria for 15 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

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.



Photo 1 Waihapa Production Station

1.3 Resource consents

1.3.1 Waihapa Production Station

The Company holds three resource consents, the purpose and terms 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 the permits in Table 1.

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>				
3457-2	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 2022	June 2028
<i>Water abstraction permit</i>				
3767-3	To take water from the Ngaere Stream for utility and firewater purposes at the Waihapa Production Station	March 2016	June 2022	June 2034

Consent number	Purpose	Granted	Review	Expires
<i>Air discharge permit</i>				
4049-3	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 2022	June 2028

1.3.2 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	6561-1	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
	6562-1	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	4162-2	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	3679-2	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	3680-2	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)	5273-2	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
	5456-3	To discharge emissions into the air from the flaring of gas together with miscellaneous emissions arising from hydrocarbon production operations from the Tariki-2C well on the Kupara North wellsite	August 2007	2021

Wellsite	Consent number	Purpose	Issue date	Expiry
Tariki-D	6202-1	To discharge emissions to air during flaring from well workovers and in emergency situations associated with production activities from the Tariki-D wellsite	September 2003	2021
Tariki-D	6203-1	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 Rataipiko in the Waitara catchment	September 2003	2021
Toko-B	4201-2	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	4470-2	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
Toko-E	4474-2	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	3683-2	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	3684-2	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	3685-2	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	3686-2	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	3687-2	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

Wellsite	Consent number	Purpose	Issue date	Expiry
Waihapa-F	4093-2	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	6848-1	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
	7846-1	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
	7850-1	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
Waihapa-H	6854-1	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
	6855-1	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
	6859-1	To take water from from the Ngaere Stream in the Patea catchment for hydrocarbon exploration purposes associated with the Waihapa-H wellsite	April 2006	2022
Various	7518-1	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

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

1.4.4 Chemical sampling

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 PM₁₀ particulate monitor was deployed concurrently with the multi-gas meter. Two nitrogen oxide measuring devices were also deployed in the vicinity of the plant on one occasion during the year under review.

1.4.5 Biomonitoring surveys

A biological survey was 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 September 2019

The site was shut in while an upgrade of the electricity line was undertaken. The ring drains were being maintained with evidence that debris was being removed. The separator was clean with no hydrocarbons noted. A pilot flare was operating with a clean burn and no visible smoke.

11 October 2019

An inspection was carried out following heavy rainfall. It was noted that some of the culverts were blocked and it appeared that as a result of this that stormwater had bypassed the system by overflowing the ring drain and flowing offsite in two locations, the eastern corner and the access road to the wellsite. Stormwater was not observed overflowing the ring drains at the time of inspection. The consent holder was asked to ensure that stormwater can be directed back into the ring drain system should a culvert become blocked during a rainfall event.

A pilot flare was operating with a clean burn and no visible smoke.

4 November 2019

An annual inspection of the well sites associated with the Waihapa Production Station was carried out. Well sites inspected were Waihapa-A, B, C, D, E, F, H; Ngaere 1; Goss; Waitapu; Copper Moki; Arakamu; Wairere; Toko-B, D and E; and Tariki-A, B and D.

In general, the sites were tidy and clean with minimal activity occurring. The sites were being maintained, with weed spraying evident. The majority of the ring drains were vegetated with grasses that helped with controlling and treating sediment laden stormwater. 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 turbidity of the pits varied from clear to slightly turbid, however most of the skimmer pits were empty. No discharges were observed and no effects of any previous discharges were noted in the grass (such as burnt patches or dead grass) or in the receiving waters.

No flaring was being undertaken at any of the sites at the time of the inspection.

11 May 2020

The site was neat and tidy and no issues were noted in relation to the stormwater system.

A pilot flare was operating with a clean burn and no visible smoke.

23 June 2020

The site was found to be tidy with good bunding practices observed. The ring drain was being maintained by removal of tree litter. Stormwater ponds were free of stormwater. No erosion was noted on the bank and no downstream effects were observed.

Flaring was occurring at the time of inspection and there was a small amount of smoke that quickly dissipated.

2.1.2 Results of discharge monitoring

Water quality sampling of the discharges to the Ngaere Stream was undertaken on two occasions during the 2019-2020 period. The sampling sites are shown in Figure 1 while Table 3 presents the results of this sampling.

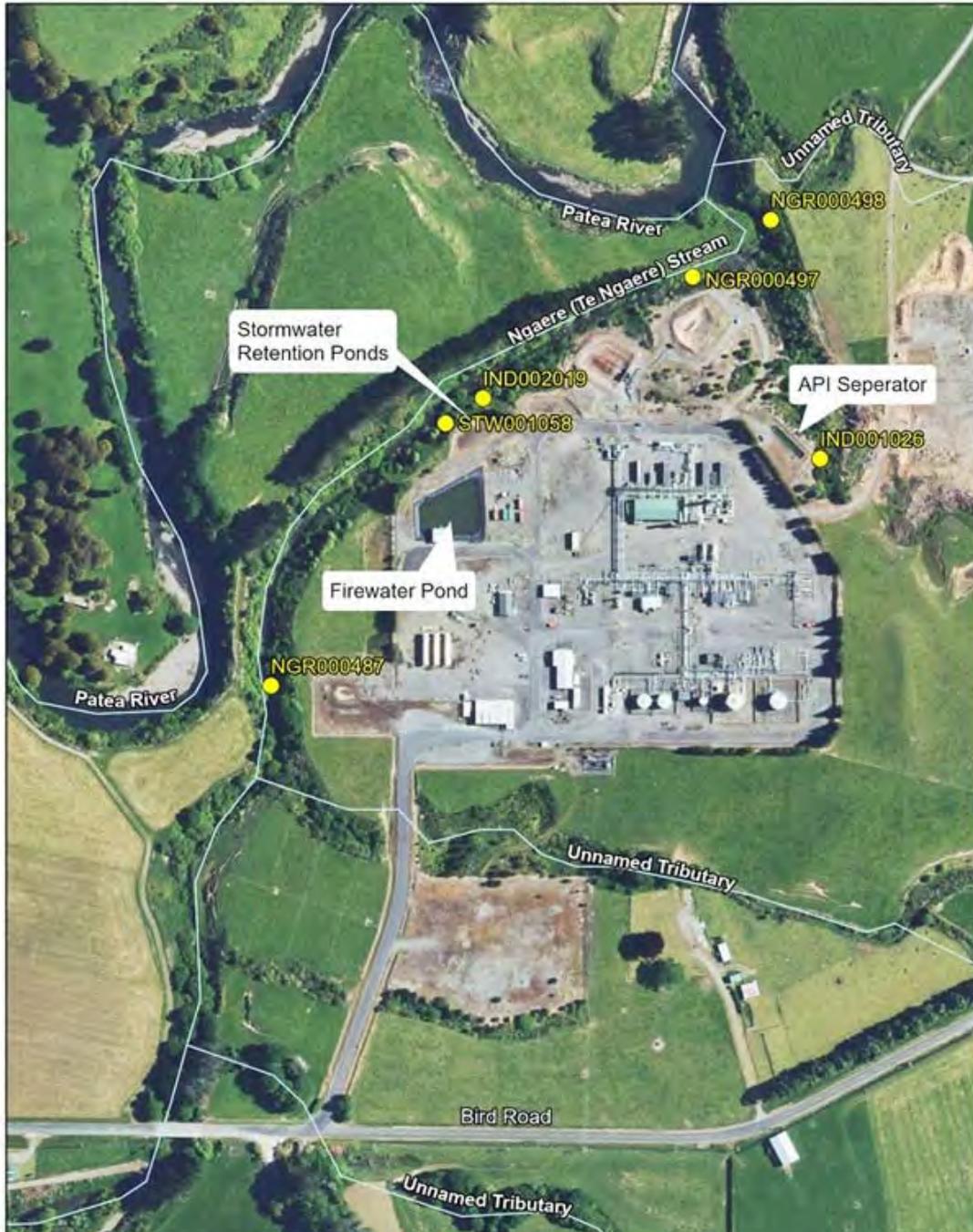


Figure 1 Waihapa Production Station stormwater systems and monitoring sites

Table 3 Monitoring results for discharges from the Waihapa Production Station

Parameter (consent limit)	Units	18 June 2020			29 June 2020		
		Firewater pond STW001058	Stormwater IND002019	API separator IND001026	Firewater pond STW001058	Stormwater IND002019	API separator IND001026
Chloride (50)	g/m ³	17	0.8	3	16	5	2
Conductivity	mS/m @25°C	21.6	0.9	3.6	18.9	2.1	3.3
Hydrocarbons (15)	g/m ³	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
pH (6.0-9.0)		6.9	7.0	6.9	7.0	7.2	7.7
Suspended solids (100)	g/m ³	< 3	3	< 19	< 3	< 3	< 15
Turbidity	FNU	0.25	2.6	5	0.58	1.6	3.8
Temperature	Deg.C	13.1	11.7	11.1	12.5	8.9	10.6

The results are indicative of very clean discharges at the time of sampling, with parameters compliant with the limits imposed by consent 3457-2.

The Company undertook sampling of impounded stormwater prior to release into the Ngaere Stream to ensure compliance with consent conditions. With the exception of October 2019 and March 2020 (due to Covid-19 lockdown restrictions) monthly samples were collected during the 2019-2020 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 2019-2020 (n=10)

Parameter	Units	Min	Max	Median	Consent 3457-1 limits	Number of exceedances
Chloride	g/m ³	9	34	20	50	0
Hydrocarbons	g/m ³	< 1	2	1	15	0
pH		6.7	7.5	7.1	6.0 – 9.0	0
Suspended solids	g/m ³	7	56	15	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.

The results indicate that the discharges from the Waihapa Production Station were not having a negative impact on the water quality of the Ngaere Stream and were in compliance with the conditions of consent 3457-2 at the time of sampling.

Table 5 Receiving environment results for Ngaere Stream

Parameter	Units	18 June 2020			29 June 2020		
		Upstream NGR000487	Intermediate NGR000497	Downstream NGR000498	Upstream NGR000487	Intermediate NGR000497	Downstream NGR000498
Chloride	g/m ³	18	18	18	19	19	19
Conductivity	mS/m@ 25°C	19.5	19.5	19.3	19.8	20.0	19.9
Hydrocarbons	g/m ³	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
pH		7.6	6.7	7.0	7.2	7.1	7.4
Suspended solids	g/m ³	38	32	29	23	20	22
Turbidity	FNU	14.9	15.9	16.4	12.1	10.9	11.6
Temperature	Deg.C	12.3	12.2	12.2	11.1	11.0	11.0

2.1.3.2 Biomonitoring

The Council's 'kick-sampling' technique was used at three sites to collect streambed macroinvertebrates from the Ngaere Stream on 29 October 2019 and 2 March 2020, in relation to the Waihapa Production Station. This has provided data to assess any potential impacts the discharges from the Production Station (either consented discharges or the unauthorised discharge of produced water) 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.

Taxa richness was moderate and did not vary substantially between the three sites surveyed. There was no evidence of any recent acute toxic discharges, which would dramatically lower taxa richness.

MCI scores were reflective of 'poor' or 'fair' macroinvertebrate community health. MCI scores were within the range of what has previously been recorded at all three sites and there were no significant differences between the survey scores during the current monitoring period and historic medians.

The SQMCI score was significantly higher at site 3 during both surveys, compared with those scores recorded downstream at sites 4 and 5. The SQMCI at site 3 indicated 'good' macroinvertebrate community health while the SQMCI scores at sites 4 and 5 were both reflective of 'fair' or 'poor' macroinvertebrate community health. Differences in MCI and SQMCI score was likely a reflection of habitat differences, rather than from any effects from the Waihapa Production Station.

The results of the surveys indicated that the macroinvertebrate communities of the Ngaere Stream were in typical health at all three sites. Overall, there was no evidence that any discharges from the Waihapa Production Station had caused any recent significant detrimental impacts on the macroinvertebrate communities of the Ngaere Stream

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

2.1.4 Summary of water abstractions reported by TWNLP

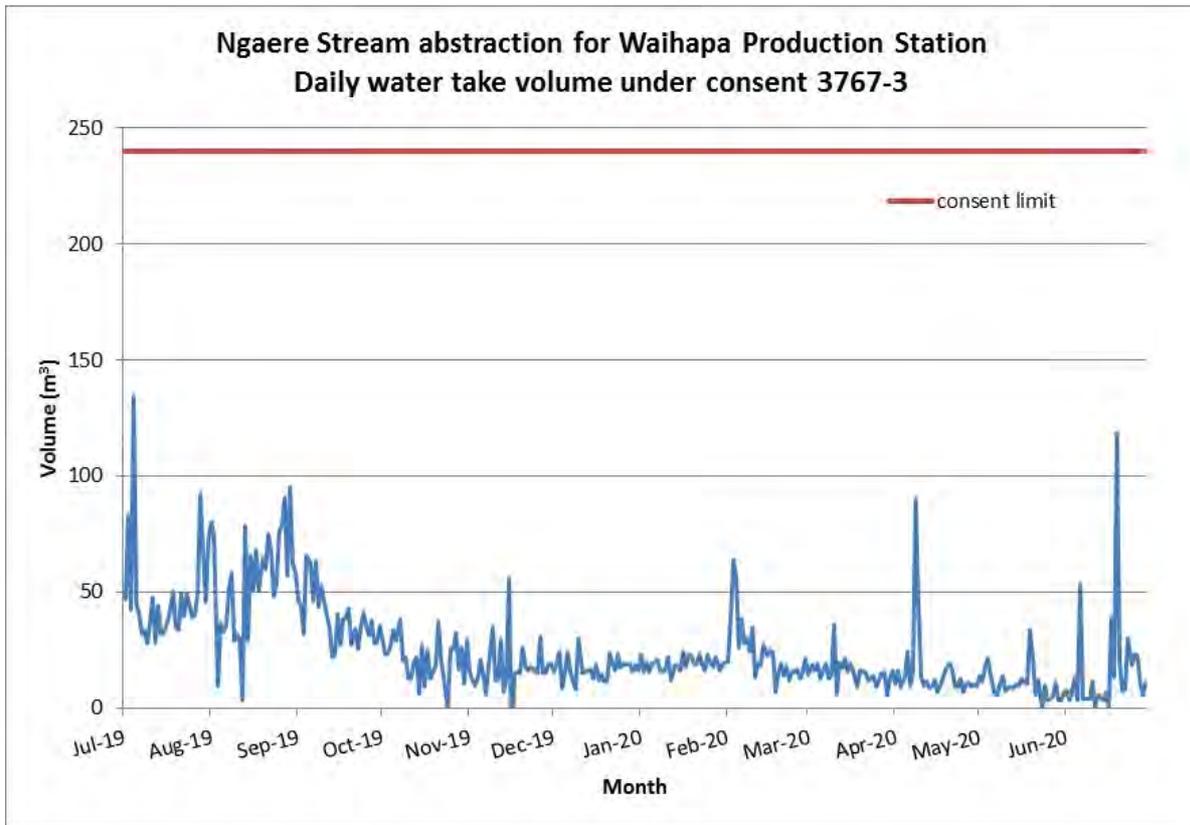


Figure 2 Daily water abstraction volumes for Waihapa Production Station under consent 3767-3

Figure 2 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 9,073 m³, 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 24 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continuous measurements of gas concentrations for the gases of interest (carbon monoxide and combustible gases). The monitoring sites used in the year under review are shown in Figure 3.



Figure 3 Air monitoring sites at Waihapa Production Station for 2019-2020

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

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

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/m³ for an eight hour average or 30 mg/m³ for a one hour average exposure. The maximum concentration of carbon monoxide found during the monitoring run was 3.8 mg/m³, while the average concentration for the entire dataset was 0.07 mg/m³ 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		20 to 21 Feb 2020 (24 hours)
Max	CO (ppm) ⁽¹⁾	3.30
	LEL(%)	0.10
Mean	CO (ppm) ⁽¹⁾	0.06
	LEL(%)	0.00
Min	CO (ppm) ⁽¹⁾	0.00
	LEL(%)	0.00

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

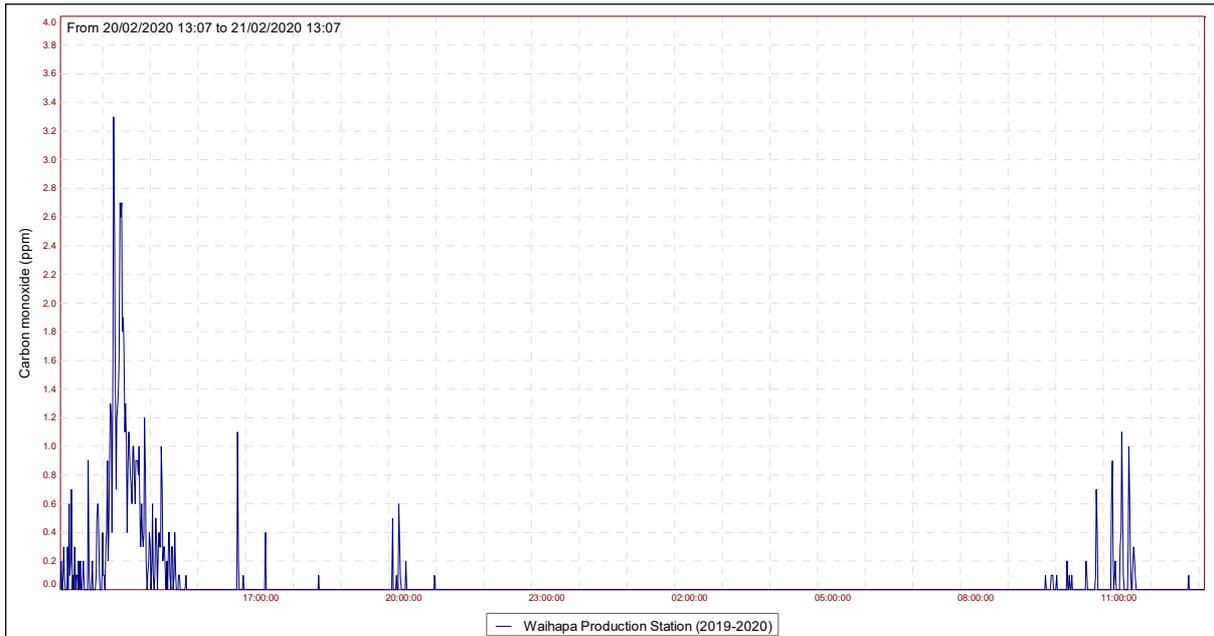


Figure 4 Ambient CO levels in the vicinity of Waihapa Production Station

For comparison, environmental monitoring of ambient carbon monoxide levels in Stratford township has shown average levels of less than 1 mg/m^3 , 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^3 .

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 PM₁₀ particulates

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

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

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

During the reporting period a "DustTrak" PM₁₀ monitor was deployed on one occasion in the vicinity of Waihapa Production Station. The deployment lasted approximately 103 hours, with the instrument placed in a down-wind position at the start of the deployment. Monitoring consisted of continual measurements of PM₁₀ concentrations. The location of the "DustTrak" monitor during the sampling run is shown in Figure 3. The results of the sample run are presented in Figure 5 and Table 7.

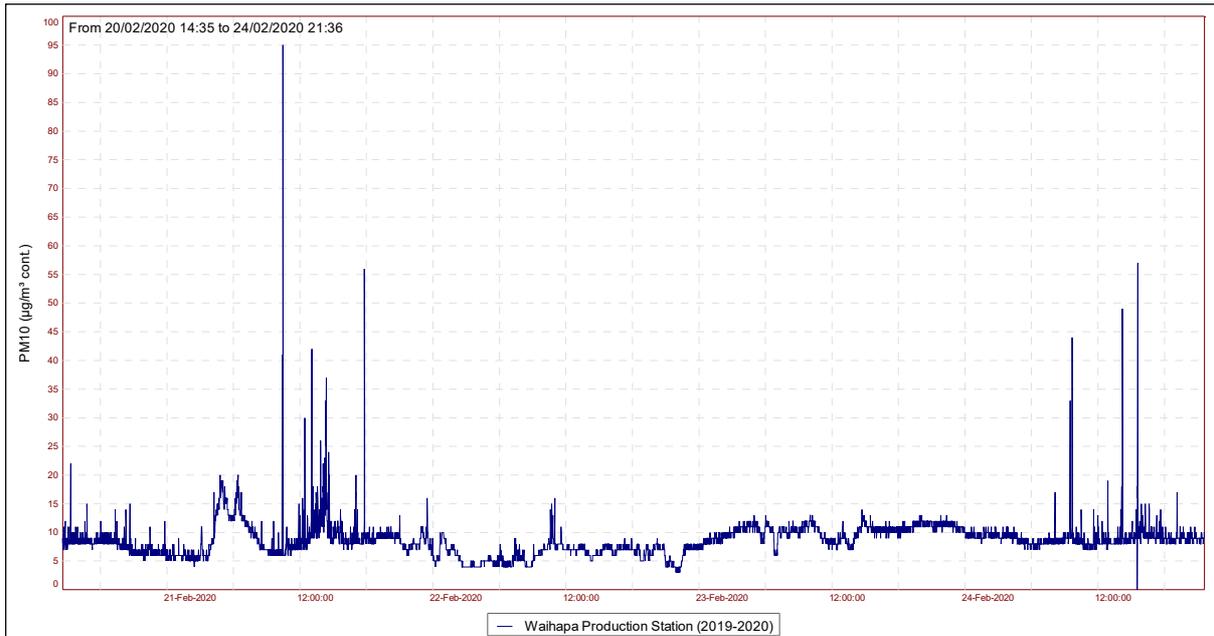


Figure 5 PM₁₀ concentrations (µg/m³) at the Waihapa production station 2019-2020

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

	20 to 24 Nov 2020 (103 hours)			
24 hr. set	Day 1 (start to 24 hours)	Day 2	Day 3	Day 4 (24 hours to end)
Daily average	8.9 µg/m ³	7.2 µg/m ³	8.4 µg/m ³	9.3 µg/m ³
NES	50µg/m ³			

During the 103-hour run, from 20 to 24 of February 2020, the average recorded PM₁₀ concentration for the first 24 hour period was 8.9 µg/m³, 7.2 µg/m³ for the second, 8.4 µg/m³ for the third and 9.3 µg/m³ for the fourth 24 hour period. These daily means equate to 18%, 14%, 17% and 19%, respectively, of the 50 µg/m³ value that is set by the National Environmental Standard. Background levels of PM₁₀ in the region have been found to be typically around 11 µg/m³.

2.2.2.3 Nitrogen oxides

From 2014 onwards, the Council implemented a coordinated region-wide compliance monitoring programme to measure nitrogen oxides (NO_x). The programme involves deploying measuring devices at 30 NO_x monitoring sites (including two sites in the vicinity of 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 µg/m³ for a 1-hour average or 100 µg/m³ for a 24-hour average exposure.

NO_x passive adsorption discs were placed at two locations in the vicinity of the 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 NO_x concentrations found at Waihapa Production Station during the year under review equate to 10.8 µg/m³ and 5.7 µg/m³, respectively. The results show that the ambient ground level concentration of NO_x is well below the limits set out by consent 4049-3.

2.2.3 Summary of flaring volumes reported by TWNLP

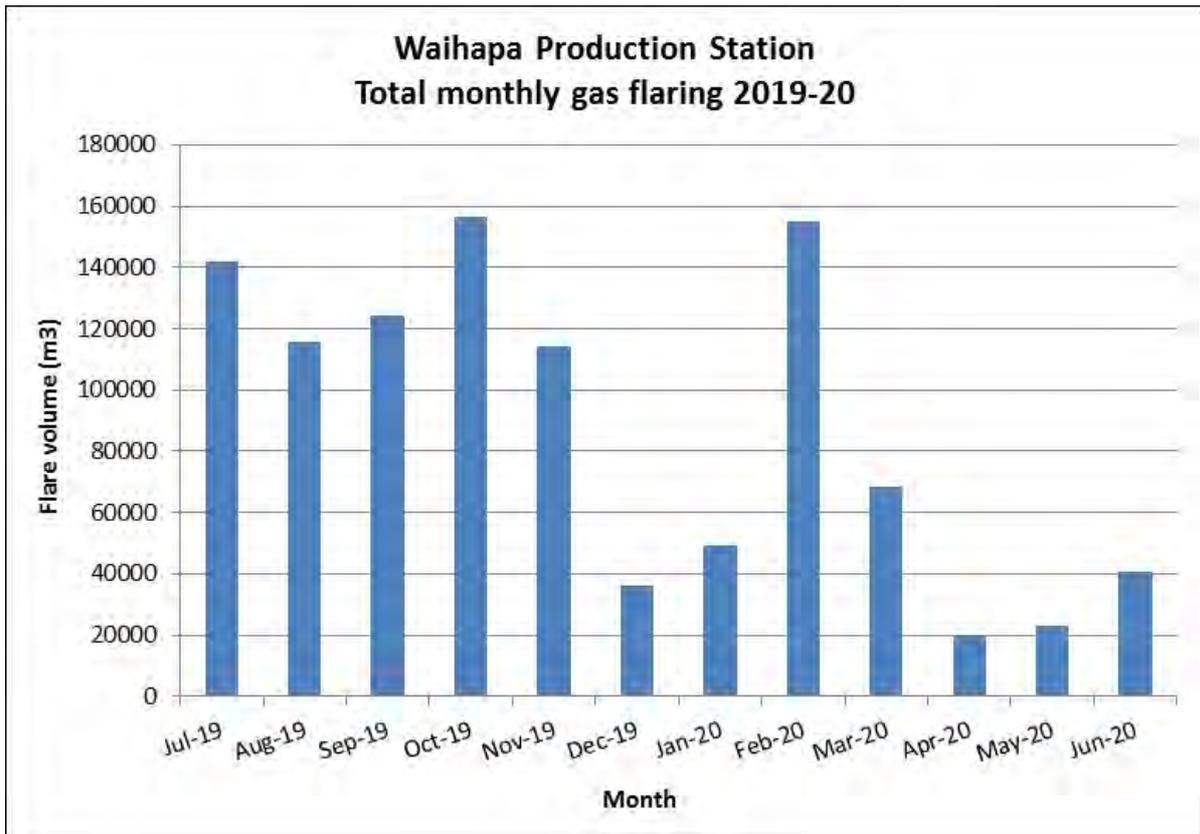


Figure 6 Monthly gas flaring for Waihapa Production Station under consent 4049-3

A summary of flaring volumes at Waihapa Production Station is provided in Figure 6. Routine operational flaring of process gas at Waihapa Production Station is continuous and occurs under normal conditions in a low pressure flare. The total amount of gas flared during the period under review was 1,045,207 m³. No complaints concerning smoke were received by the Company or the Council during the 2019-2020 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).

Table 8 below sets out details of any incidents recorded, additional investigations, or interventions required by the Council in relation to the Company's activities during the 2019-2020 period. This table presents details of all events that required further investigation or intervention regardless of whether these were found to be compliant or not.

Table 8 Incidents, investigations, and interventions summary table

Date	Details	Compliant (Y/N)	Enforcement Action Taken?	Outcome
11 July 2019	Notification was received from the Company that they had identified a leak in a pipeline	Y	No	An investigation into the source of the leak found that water ingress has caused pitting from corrosion, and eaten away a small section of pipeline under a roadway within the perimeter of the production station. The section of pipe was isolated and repaired.

3 Discussion

3.1 Discussion of site performance

Monitoring of the Waihapa Production Station during the 2019-2020 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, PM₁₀ particulates, and nitrogen oxides were all below levels of concern at the time of sampling. No offensive or objectionable odours were detected beyond the boundary during inspections and there were no complaints in relation to air emissions from the site.

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 9-11.

Table 9 Summary of performance for consent 3457-2

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		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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	Yes
8. Limit on temperature increase in receiving water	Sampling	Yes
9. Discharge shall not have certain effects on the receiving water	Inspection	Yes

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		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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	Not scheduled for consideration during year under review. Next consideration June 2022	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 10 Summary of performance for consent 3767-3

Purpose: To take water from the Ngaere Stream for utility and firewater purposes at the Waihapa Production Station		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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	Not scheduled for consideration during year under review. Next consideration June 2022	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 11 Summary of performance for consent 4049-3

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		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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	Analysis provided	Yes
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
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	Not scheduled for consideration during year under review. Next consideration June 2022	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

Table 12 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
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	-	-	-
Totals		18	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 Section 1.1.4.

3.4 Recommendations from the 2018-2019 Annual Report

In the 2018-2019 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities at Waihapa Production Station and associated facilities in the 2019-2020 year be amended from that undertaken in 2018-2019, by reducing the number of inspections from six to four.
2. THAT should there be issues with environmental or administrative performance in 2019-2020, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

These recommendations were implemented as appropriate.

3.5 Alterations to monitoring programmes for 2020-2021

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

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

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

It is proposed that for 2020-2021 the monitoring programme remains the same as in 2019-2020.

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 2020-2021.

4 Recommendations

1. THAT in the first instance, monitoring of consented activities at Waihapa Production Station and associated facilities in the 2020-2021 year continue at the same level as in 2019-2020.
2. THAT should there be issues with environmental or administrative performance in 2020-2021, 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 ³	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
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 ²	Square metres.
mg/m ³	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 _x	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 ₁₀	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 a Science Services Manager.

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Appendix I

Resource consents held by TWN Limited 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 ⁻³
total recoverable hydrocarbons	Concentration not greater than 15 gm ⁻³
chloride	Concentration not greater than 50 gm ⁻³

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

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



Director-Resource Management