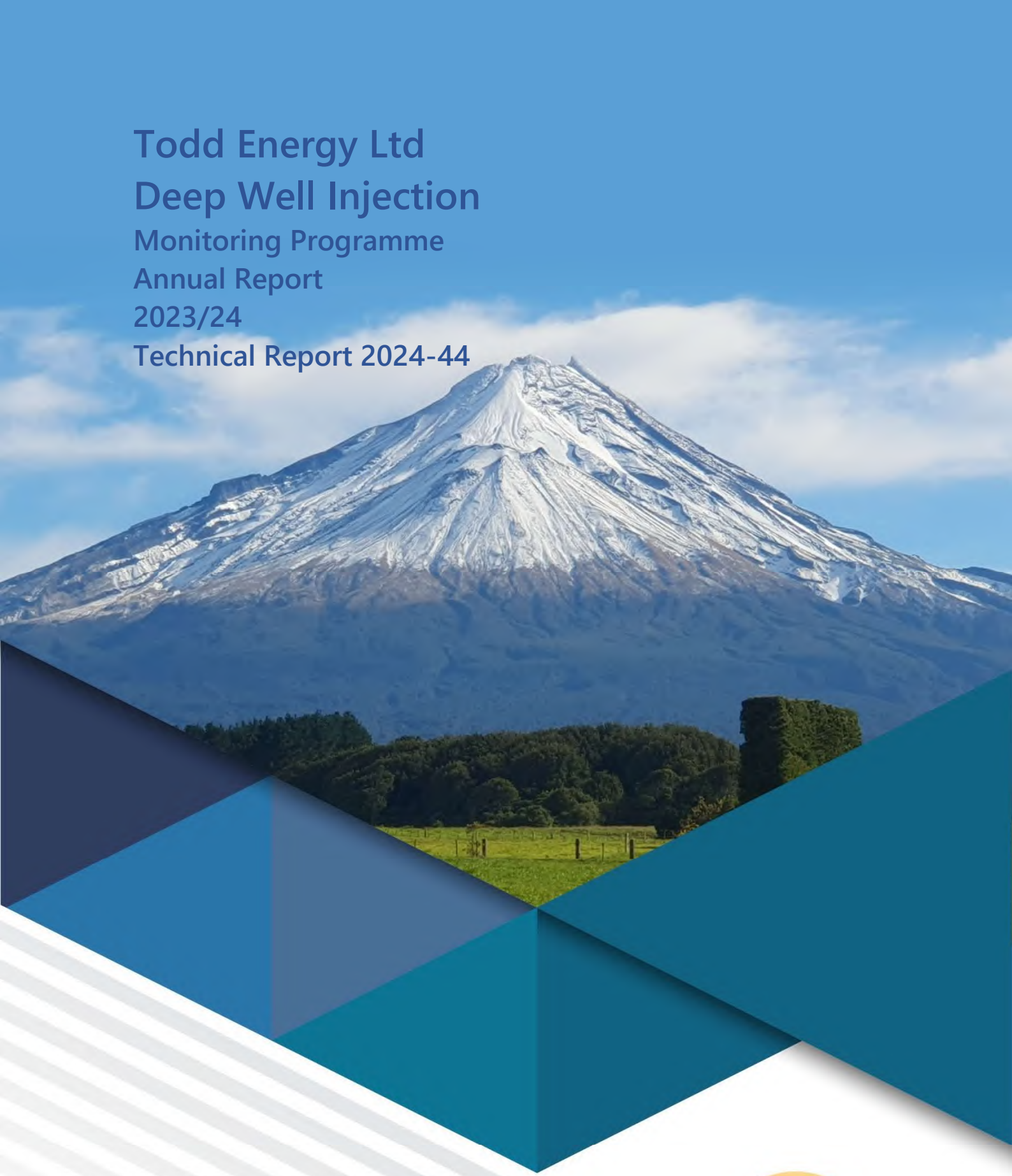
Todd Energy Ltd
Deep Well Injection
Monitoring Programme
Annual Report
2023/24
Technical Report 2024-44



Taranaki
Regional Council

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Taranaki Regional Council
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Executive summary

Todd Energy Limited and its subsidiary (the Company) operate a number of wellsites across Taranaki region including the Tuhua, Pouri, Mangahewa and McKee wellsites, located east of New Plymouth and the Kapuni wellsites, located south of Stratford. Each wellsite contains varying numbers of producing wells and associated production infrastructure.

This report for the period July 2023 to June 2024 describes the monitoring programme implemented by Taranaki Regional Council (the Council) in relation to the Company's deep well injection (DWI) activities. The report details the results of the monitoring undertaken, assesses the Company's environmental and consent compliance performance during the period under review and the environmental effects of their DWI activities.

During the monitoring period, the Company demonstrated an overall high level of environmental performance and high level of administrative performance.

The Company held ten resource consents for DWI activities, which included a total of 189 conditions setting out the requirements that the Company must satisfy. Four of the ten consents were exercised during the period being reported.

The Council's monitoring programme for the year under review included eight annual site inspections, four injectate samples and 22 groundwater samples collected for physicochemical analysis. The monitoring programme also included a significant data review component, with all injection data submitted by the Company assessed for compliance on receipt.

The monitoring showed that the Company's DWI activities were carried out in compliance with the conditions of the applicable resource consents. There is no evidence of any issues with any injection well currently in use, or the ability of the receiving formations to accept injected fluids. The results of groundwater quality monitoring undertaken show no adverse effects of the activity on local groundwater resources. Inspections undertaken during the monitoring year found sites being operated in a professional manner.

For reference, in the 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<1%) achieved a rating of poor.

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

This report includes recommendations for the 2024/25 year, including a recommendation relating to an optional review of all consents held by the Company, due June 2025.

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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 2023 to June 2024 by Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by Todd Energy Limited and its subsidiary[1] (the Company) for deep well injection (DWI) activities. During the period under review, the Company held ten resource consents for the subsurface injection of fluids by DWI. The consents authorise discharges from nine separate wellsites. Seven are located within the Company's McKee and Mangahewa oil and gas fields, east of New Plymouth, and two are located within the Kapuni oil and gas field located south of Stratford. The resource consents held by the Company permit the discharge of a range of fluids by DWI, including produced water, contaminated stormwater, well drilling fluids, hydraulic fracturing (HF) fluids, production sludges and any other fluids approved by the Council in writing. The consents include a number of special conditions which set out specific requirements the Company must satisfy.

Four of the ten consents held were exercised during the monitoring period.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the DWI consents held by the Company. This is the 13th report to be prepared by the Council to cover the Company's DWI 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 though annual programmes;
- the resource consents held by the Company for DWI activities;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted in the Company.

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 2024/25 monitoring year.

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

[1] Todd Petroleum Mining Company Ltd hold consents 9970-1.2 and 10862-1.

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 2023/24 year, consent holders were found to achieve a high level of environmental performance and compliance for 864 (89%) of a total of 967 consents monitored through the Taranaki tailored monitoring programmes, while for another 75 (8%) of the consents a good level of environmental performance and compliance was achieved. A further 26 (3%) of consents monitored required improvement in their performance, while the remaining two (<1%) achieved a rating of poor. [2]

1.2 Process description

The process of DWI involves injecting fluids deep underground into geological formations which are confined from overlying groundwater aquifers by low permeability strata. Injection wells are also designed and constructed to provide multi barrier protection against contaminant migration to groundwater systems.

The subsurface injection of fluids by DWI is often used as a method for disposing of waste fluids generated during oil and gas exploration and production activities. The greatest volume of waste fluids generated

[2] The Council has used these compliance grading criteria for more than 20 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

through these activities is saline water (brine) that is drawn to the surface with hydrocarbons through producing wells ('produced water').

The DWI consents currently held by the Company also authorise the injection of fluid types other than produced water. The range of fluid types authorised for injection varies by consent, but includes contaminated stormwater, production sludges, well workover fluids, well drilling fluids, HF fluids and HF return fluids. In addition to providing a means to dispose of waste fluids, the subsurface injection of fluids by DWI is also an established oilfield technique for regulating reservoir pressure as a means of enhancing the rate of hydrocarbon recovery from a reservoir. This process, commonly referred to as water flooding, is often implemented when natural reservoir pressures become reduced due to ongoing production. Fluids can also be heated prior to injection to reduce the viscosity of the oil being produced, improving its flow toward a producing well and upward through the wellbore itself.

A schematic representation of injection wells for both waste discharge and enhanced oil recovery is presented in Figure 1.

Further details regarding hydrocarbon exploration and production in Taranaki, the DWI process and its history within region can be found in previous compliance reports published by the Council (see Bibliography).

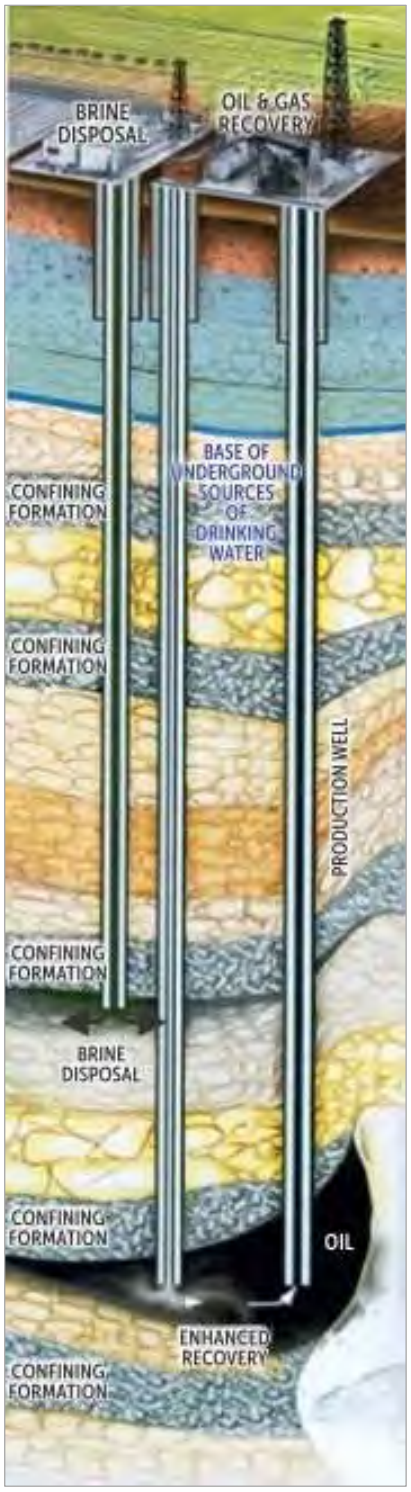

Figure 1 DWI schematic (www.epa.gov/uic)

1.3 Resource consents

The Company held ten consents during the year being reported. A summary of each consent is included in Table 1 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.

Figure 2 shows the location of the DWI consents held by the Company during the period under review.

Table 1 Resource consents held by the Company during the 2023/24 monitoring year

Consent number	Purpose	Granted	Review	Expires
Discharges of waste to land				
1315-2	To discharge fluid waste generated by oil and gas exploration and production activities into the Mount Messenger and McKee Formations by deep well injection at the Tuhua-B wellsite	31 May 2019	June annually	01 Jun 2033
4182-2	To discharge fluid waste generated by oil and gas exploration and production activities to the McKee Formation by deep well injection at the McKee-A wellsite	24 June 2003	June annually	01 Jun 2033
5037-2.2	To discharge waste drilling fluids, water, produced water and stormwater from hydrocarbon exploration and production operations by deep well injection at the Pouri-A wellsite	20 Nov 2018	June annually	01 Jun 2033
5052-2	To discharge fluid waste generated by oil and gas exploration and production activities to the Mount Messenger Formation by deep well injection at the McKee-B wellsite	27 May 2014	June annually	01 Jun 2033
10661-1	To discharge produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids from hydrocarbon exploration and production operations into the McKee Formation by deep well injection at the Tuhua-D wellsite	13 Jun 2018	June annually	01 Jun 2033
10950-1	To discharge produced water, well drilling fluids and wastewater into the McKee Formation by deep well injection at the McKee-C wellsite	16 Sep 2021	June annually	01 Jun 2039
9970-1.2	To discharge waste fluids, associated with hydrocarbon exploration and production by deep well injection, into the Matemateaonga Formation via the KW2 and KW16 wells, or into the Mangahewa Formation via the KA1 and/or KA7 wells or Moki and Matemateaonga Formations via the KA20A well as a contingency	07 Oct 2014	June annually	01 Jun 2029
10764-1	To discharge fluids from hydrocarbon exploration and production operations, including produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids, into the Matemateaonga Formation by deep well injection at the KA1/7/19/20 wellsite	18 Sep 2019	June annually	01 Jun 2035
10862-1	To discharge produced water and wastewater into the Matemateaonga 60 Formation, through deep well injection via a new purpose built well bore within the KA9/16 wellsite	14 Oct 2020	June annually	01 Jun 2039
11052-1	To discharge produced water, well drilling fluids, and well workover fluids into the McKee Formation, through deep well injection via the McKee-D wellsite at depths below 2,059m TVDSS	05 Oct 2022	June annually	01 Jun 2039

Figure 2 The Company's DWI wellsite locations during the period under review

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 Company's DWI sites consisted of five 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 Company's active wellsites were visited once during the monitoring period. The main points of interest with regard to DWI consents are general housekeeping and any processes with potential or actual discharges, including any surface water runoff, and their receiving environments.

In addition to the programmed DWI inspections, Council Officers also visited the Company's McKee and Kapuni production stations on two occasions for injectate sampling purposes and a further eight occasions as part of the Company's production station monitoring programme.

1.4.4 Injectate sampling

Injectate samples were obtained for analysis on two occasions from the McKee and Kapuni production stations. The sampling of injectate is carried out in order to characterise the general chemical nature of the discharge and also the variation in its chemical composition across the monitoring period.

There are 16 wells available for the injection of fluids at the Company's DWI wellsites. A summary of the details for each injection well is included in Table 2 and locations are displayed in Figure 3 and Figure 4.

Injectate samples were collected from the bulk storage tank at the McKee Production Station tank T-100 (Figure 3) and the bulk storage tank T604 at the Kapuni Production Station (Figure 4). The injectate samples taken by the Council were sent on behalf of the Company to Hill Laboratories Ltd (Hills) and analysed for the following parameters:

- pH;
- conductivity;
- chlorides; and
- total petroleum hydrocarbons.

Table 2 Injection well and associated injectate collection points

Wellsite	Consent	Injection well	Site code	Formation	Sample point
Tuhua-B	1315-2	McKee-1 Disposal	GND1749	Mount Messenger	McKee Production Station (MPS) Tank T100
		Tuhua-9	GND1621	McKee	
		Tuhua-6	GND3024	McKee	
McKee-A	4182-2	McKee-1	GND0443	McKee	
Pouri-A	5037-2.2	Pouri-1A	GND1508	McKee	
McKee-B	5052-2	McKee-4	GND1455	Mount Messenger	
Tuhua-D	10661-1	Tuhua-4	GND2828	McKee	
McKee-C	10950-1	McKee-5A	GND1456	McKee	
		McKee-14	GND1449		
McKee-D	11052-1	McKee-12	GND3184	McKee	
KA9/16	9970-1.2	KW2	GND1412	Matemateaonga	Kapuni Production Station (KPS) Tank T604
		KA16	GND2669		
KA1/7/19/20		KA20A	GND2594	Moki	
		KA1	GND1683	Mangahewa	
		KA7	GND1684	Moki	
KA9/16	10862-1	KW3	GND3022	Matemateaonga	

1.4.5 Groundwater sampling

Groundwater samples were obtained on two occasions in the vicinity of the active wellsites during the monitoring period. This sampling is a continuation of the groundwater monitoring component of this programme which was initiated during the 2013-2014 monitoring period.

Seven monitoring sites were sampled in relation to the DWI activities at the Company's McKee, Tuhua and Pouri wellsites, and five monitoring sites were sampled in relation to the Company's DWI activities at the Kapuni wellsites.

Details of the groundwater monitoring sites are listed below in Table 3. The location of each site in relation to the injection well being monitored is illustrated in Figure 3 and Figure 4.

Table 3 Groundwater monitoring sites

Site code	Wellsite	Type	Distance from	Interval	Depth	Aquifer
GND2455	McKee-A	Bore	38	28.5-35.5	35.5	Volcanics
GND3005	Pouri-A	Bore	<50	30.6-33.6	33.6	Marine Terraces
GND2748	McKee-B	Bore	<50	18-30	30	Volcanics
GND3018	Tuhua-D	Bore	<50	38-50	50	Volcanics
GND3023	Tuhua-B	Bore	<50	35-47	47	Volcanics
GND3151	McKee-C	Bore	<50	14.5-23.5	23.5	Volcanics
GND3184	McKee-D	Bore	101	4-10	10.1	Matemateaonga
GND1701	KA9/16	Bore	2,971	92	337	Matemateaonga
GND2369	KA9/16	Bore	4,643	280-448	448	Matemateaonga
GND1659	KA9/16	Bore	4,020	123-432	432	Matemateaonga
GND2357	KA9/16	Bore	<50	35*	unknown	Volcanics

** The pump was pushed down to 35m during remediation of the bore. However, the total depth of bore is unknown.*

Site code	Wellsite	Type	Distance from	Interval	Depth	Aquifer
GND0093	KA1/7/19/20	Bore	<10	unknown	42.6	Volcanics

Groundwater samples taken by the Council were sent on behalf of the Company to Hills and analysed for a range of parameters including the following which are required under the conditions of each consent:

- pH;
- conductivity;
- chlorides; and
- total petroleum hydrocarbons.

The parameters above are deemed sufficient to enable identification of any significant changes in groundwater quality related to DWI activities.

In addition, baseline samples have been collected from all monitored sites and analysed by Hills for general ion chemistry, BTEX and dissolved gas concentrations. These more detailed analyses will allow a more in depth assessment of variations in groundwater composition should the need arise in the future.

Groundwater samples are collected following standard groundwater sampling methodologies and generally in accordance with the National Environmental Monitoring Standards (NEMS) for discrete groundwater quality sampling (2019).

1.4.6 Assessment of data submitted by the Company

A significant component of the monitoring programme is the assessment of consent holder submitted data. The Company is required to submit a wide range of data under the conditions of their DWI consents.

As required by the conditions of their consents, the Company has submitted an Injection Operation Management Plan for each active injection well. The plans are required to include the operational details of the injection activities and to identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plans are also required to detail the action(s) to be taken by the consent holder if trigger conditions are reached. The Company was also required to submit well construction details, an assessment of the local geological environment, results of well integrity testing and details of the proposed monitoring plan for the injection well.

The Company is also required to maintain continuous records of injection volumes, and average and maximum injection pressures, and to characterise the chemical characteristics of all waste types being discharged. This data is submitted to the Council on a monthly basis where it is assessed for compliance against the relevant consent conditions.

Figure 3 Location of monitoring sites in relation to the Company's McKee DWI wellsites

Figure 4 Locations of monitoring sites in relation to the Company's Kapuni DWI wellsites

2. Results

2.1 Inspections

The routine inspections undertaken at each wellsite during the monitoring year included a general visual assessment of the operational equipment, storage facilities and associated equipment.

The inspecting officer concluded that the wellsites were generally in good condition and being well managed. There were no issues noted specific to any of the DWI consents.

Additional inspections were also undertaken at the McKee and Kapuni production stations during the monitoring year for the purpose of injectate sampling and as part of the Company's production station monitoring programme. No issues were noted by staff during these visits.

2.2 Injectate monitoring

Samples of injectate were obtained from the Company's McKee Production Station on 1 December 2023 and 5 June 2024 and at the Kapuni Production Station on 23 November 2023 and 5 June 2024. The samples were sent to Hills on the same day for physicochemical analysis.

During the 2023/24 monitoring period all fluids for disposal were handled and controlled through the production stations. Injectate samples are generally a composite of wastewater from the Company's wellsites and other production facilities.

The results of the sample analyses undertaken by the Council are included in Table 4 and Table 5. The range of results for each analyte since 2004 are also presented for comparison.

The Company is also required by consent conditions to undertake additional injectate sampling on each waste stream arriving on-site for discharge. A summary of the results from the Company's sampling programme are presented in Table 6. The concentrations of each analyte measured over the 2023/24 period are within the typical range for injectate samples at these sites.

Table 4 Results of injectate sampling undertaken by the Council at the McKee Production Station

Parameter	Unit	Minimum	Maximum	TRC2315078	TRC2418230
Date	-	01-Jul-04 to 30-Jun-24		01-Dec-23	22-May-24
Time	NZST	-	-	11:45	13:11
pH	pH units	6.6	9.0	6.8	6.7
Electrical conductivity	mS/m	188	3,590	2,500	2,450
Chloride	g/m^3	5,000	14,600	7,700	7,900
Total petroleum hydrocarbons	g/m^3	0.8	1,110	230	1,100

Table 5 Results of injectate sampling undertaken by the Council at the Kapuni Production Station

Parameter	Unit	Minimum	Maximum	TRC2315071	TRC23418235
Date	-	01-Jul-04 to 30-Jun-24		23-Nov-23	5-Jun-24
Time	NZST	-	-	9:00	11:00
pH	pH units	6.7	9.0	7.2	7.2
Electrical conductivity	mS/m	1,400	3,600	,3150	3,480
Chloride	g/m^3	6,070	12,000	7,700	8,800
Total petroleum hydrocarbons	g/m^3	29	1,300	172	1,030

Table 6 Results of the Company's injectate sampling (2023/24)

Parameter	Unit	Kapuni Production Station (Sample Point T604)		McKee Production Station (Sample Point T100)	
Date	-	23-Nov-23	5-Jun-24	1-Dec-23	22-May-24
pH	pH	7.2	7.2	6.8	6.7
Electrical conductivity	mS/m	3,150	3,480	2,500	2,450
Suspended solids	g/m^3	14	17	<3	5
Chlorides	g/m^3	7,700	8,800	7,700	7,900
Total petroleum hydrocarbons	g/m^3	172	1,030	230	1,100

2.3 Groundwater sampling

Groundwater samples were obtained from one site located in the vicinity of the Tuhua-B (GND3018), Tuhua-D (GND3023), McKee-A (GND2455), McKee-B (GND2748), McKee-C (GND3151), McKee-D (GND3184) and Pouri-A (GND3005) wellsites and four sites (GND1659, GND1701, GND2357 and GND2369) in the vicinity of the Kapuni wellsites. GND0093 was unable to be sampled during this reporting period due to a decline in well quality.

Routine groundwater sampling was undertaken over several days during November/December 2023 and May 2024.

The results of analyses carried out during the period are set out below in Table 7 to Table 17. Historical data has also been provided for comparison where available.

The pH and the range of electrical conductivity concentrations recorded in the samples collected from GND3018, GND2455, GND2748 and GND 3023 increased during the monitoring period, whereas all other bore samples remained the same or showed a slight decrease between sampling periods.

All other results show there have been no significant changes in groundwater composition in the vicinity of any monitored wellsites. This is demonstrated by the relatively narrow ranges between minimum and maximum analyte concentrations recorded since monitoring commenced. The subtle variation in analyte concentrations at each site are a result of natural seasonal fluctuation and sampling variability.

Table 7 Results of groundwater sampling Tuhua-B consent 1315-2: GND3018

Parameter	Unit	Minimum	Maximum	TRC2315073	TRC2418598
Date	-	July 2018 to date		14-Dec-23	23-May-24
Time	NZST	-	-	10:50	11:15
pH	pH unit	6.1	6.9	6.3	6.8
Temperature	°C	15	18.4	-	-
Electrical conductivity	µS/cm @25°C	87	208	121	87
Chloride	g/m^3	7.6	19.5	13.4	7.6
Total petroleum hydrocarbons	g/m^3	<0.7	<0.7	<0.7	<0.7

Table 8 Results of groundwater sampling McKee-A wellsite consent 4182-2: GND2455

Parameter	Unit	Minimum	Maximum	TRC2315075	TRC2418233
Date	-	July 2013 to date		01-Dec-23	07-May-24
Time	NZST	-	-	9:25	10:40
pH	pH unit	7.3	9.7	7.7	8.1
Temperature	°C	12.9	17.9	-	-
Electrical conductivity	µS/cm @25°C	357	440	405	407

Parameter	Unit	Minimum	Maximum	TRC2315075	TRC2418233
Chloride	g/m^3	11.2	15.2	11.3	12.7
Total petroleum hydrocarbons	g/m^3	<0.5	<0.7	<0.7	<0.7

Table 9 Results of groundwater sampling Pouri-A wellsite consent 5037-2.2: GND3005

Parameter	Unit	Minimum	Maximum	TRC2315074	TRC2418231
Date	-	July 2015 to date		6-Dec-23	23-May-24
Time	NZST	-	-	10:55	12:05
pH	pH unit	8.0	8.2	8.1	8.2
Temperature	°C	14.5	25.6	-	-
Electrical conductivity	µS/cm @25°	242	284	254	248
Chloride	g/m^3	8.6	11.1	9.2	9.1
Total petroleum hydrocarbons	g/m^3	<0.5	<0.7	<0.7	<0.7

Table 10 Results of groundwater sampling McKee-B wellsite consent 5052-2: GND2748

Parameter	Unit	Minimum	Maximum	TRC2315076	TRC2418233
Date	-	July 2017 to date		01-Dec-23	07-May-24
Time	NZST	-	-	10:45	12:30
pH	pH unit	6.9	7.5	7.1	7.5
Electrical conductivity	µS/cm @25°C	198	231	204	208
Chloride	g/m^3	9.5	12.0	9.9	10.2
Total petroleum hydrocarbons	g/m^3	<0.5	<0.7	<0.7	<0.7

Table 11 Results of groundwater sampling Tuhua-D wellsite consent 10661-1: GND3023

Parameter	Unit	Minimum	Maximum	TRC2315072	TRC2418229
Date	-	July 2018 to date		12-Dec-23	24-May-24
Time	NZST	-	-	11:55	11:50
pH	pH unit	6.8	7.3	6.8	7.2
Temperature	°C	14.7	17.1	-	-
Electrical conductivity	µS/cm @25°C	211	246	220	212
Chloride	g/m^3	14.7	21	21	21
Total petroleum hydrocarbons	g/m^3	<0.7	<0.7	<0.7	<0.7

Table 12 Results of groundwater sampling McKee-C wellsite consent 10950-1: GND3151

Parameter	Unit	Minimum	Maximum	TRC2235077	TRC2418234
Date	-	July 2021 to date		6-Dec-23	22-May-24
Time	NZST	-	-	12:50	12:43
pH	pH unit	7.3	7.9	7.9	7.9
Electrical conductivity	µS/cm @25°C	354	393	354	358
Chloride	g/m3	9.4	10.5	9.5	9.8
Total petroleum hydrocarbons	g/m3	<0.7	<0.7	<0.7	<0.7

Table 13 Results of groundwater sampling McKee-D wellsite consent 11052-1: GND3184

Parameter	Unit	Minimum	Maximum	TRC2315066	TRC2418223
Date	-	July 2012 to date		6-Dec-23	28-May-24

Parameter	Unit	Minimum	Maximum	TRC2315066	TRC2418223
Time	NZST	-	-	8:55	13:05
pH	pH unit	6.4	6.7	6.7	6.4
Electrical conductivity	µS/cm @25°C	225	240	240	225
Chloride	g/m^3	14.5	15.8	15.8	14.5
Total petroleum hydrocarbons	g/m^3	<0.7	<0.7	<0.7	<0.7

Table 14 Results of groundwater sampling Kapuni wellsites consent 9970-1.2 and 10862-1: GND1701

Parameter	Unit	Minimum	Maximum	TRC2315068	TRC2418225
Date	-	July 2012 to date		23-Nov-23	1-May-24
Time	NZST	-	-	13:20	13:02
pH	pH unit	8.2	8.8	8.4	8.4
Electrical conductivity	µS/cm @25°C	301	341	329	324
Chloride	g/m^3	10.4	12.0	10.7	11.1
Total petroleum hydrocarbons	g/m^3	<0.7	<0.7	<0.7	<0.7

Table 15 Results of groundwater sampling Kapuni wellsites consent 9970-1.2 and 10862-1: GND2357

Parameter	Unit	Minimum	Maximum	TRC2315070	TRC2418227
Date	-	July 2014 to date		23-Nov-23	05-Jun-24
Time	NZST	-	-	10:25	11:20
pH	pH unit	6.8	8.5	6.9	7.1
Electrical conductivity	µS/cm @25°C	515	974	929	857
Chloride	g/m^3	23	36	33	33
Total petroleum hydrocarbons	g/m^3	<0.7	<0.7	<0.7	<0.7

Table 16 Results of groundwater sampling Kapuni wellsites consent 9970-1.2 and 10862-1: GND1659

Parameter	Units	Minimum	Maximum	TRC2315067	TRC2418224
Date	-	July 2012 to date		23-Nov-23	1-May-24
Time	NZST	-	-	11:55	11:45
pH	pH unit	7.8	8.9	8.3	8.1
Electrical conductivity	µS/cm @25°C	132	378	367	364
Chloride	g/m^3	10.4	14.3	11.2	11.8
Total petroleum hydrocarbons	g/m^3	<0.7	<0.7	<0.7	<0.7

Table 17 Results of groundwater sampling Kapuni wellsites consent 9970-1.2 and 10862-1: GND2369

Parameter	Units	Minimum	Maximum	TRC2315069	TRC2418226
Date	-	July 2012 to date		23-Nov-23	1-May-24
Time	NZST	-	-	10:25	14:05
pH	pH unit	7.5	8.9	7.8	7.5
Electrical conductivity	µS/cm @25°C	111	378	112	111
Chloride	g/m^3	10.3	14.3	10.3	10.6
Total petroleum hydrocarbons	g/m^3	<0.7	<0.7	<0.7	<0.7

2.4 Provision of consent holder data

The Company provided records of their injection activities during the 2023/24 monitoring period, including daily injection volumes, pumping duration and maximum and average injection pressures. All data was provided within the consented timeframes. Table 18 provides an overview of the Company's injection activities across all consents during the monitoring period.

A total of 305,926.6m^3 was injected during the monitoring period. The injection volumes are significantly less than the previous reporting period. The majority of discharge (38%) was undertaken at the Tuhua-B wellsite via the Tuhua-9 well, with McKee-05A and McKee-14 utilised as secondary water injectors. There was no injection undertaken at the Pouri-A, McKee-B, Tuhua-D McKee-A and KA-01/07/19/20 wellsites. The total annual injection volumes across all sites since 2009 are presented in Table 19.

Table 18 Summary of injection activity during the 2023/24 monitoring year

Wellsite	Consent	Injection wells	Total volume discharged (m^3)	Discharge period		TRC well ID
				From	To	
Tuhua-B	1315-2	McKee-1 Disposal	301.02	1/07/2023	07/03/2024	GND1749
		Tuhua-6	-	No injection		GND3024
		Tuhua-9	110,999.08	14/08/2023	30/06/24	GND1621
McKee-A	4182-2	McKee-1	-	No injection		GND0443
Pouri-A	5037-2.2	Pouri-1A	-	No injection		GND1508
McKee-B	5052-2	McKee-4	-	No injection		GND1455
Tuhua-D	10661-1	Tuhua-4		No injection		GND2828
McKee-C	10950-1	McKee-5A	88,238.3	1/07/2023	05/03/2024	GND1456
		McKee-14	19,797.9	1/07/2023	18/03/2024	GND1449
KA1/7/19/20	9970-1.2	KA1	-	No injection		GND1683
		KA20A	-	No injection		GND2594
		KA7	-	No injection		GND1684
KA9/16		KW2	-	No injection		GND1412
		KA16	37,741.76	1/07/2023	30/06/2024	GND2669
KA1/7/19/20	10764-1	-	-	No injection		-
KA9/16	10862-1	KW3	48,207.68	1/07/2023	30/06/2024	GND3022
McKee D	11052-1	McKee-12	640.61	11/09/2023	20/06/2024	GND3184
Total			305,926.6	-	-	-

Table 19 Summary of the Company's historical injection activity since 2009

Period	Total volume discharged (m^3)	Period	Total volume discharged (m^3)
2023/24	305,926.6	2015/2016	240,298
2022/23	406,448	2014/2015	239,428
2021/2022	263,502	2013/2014	41,105
2020/2021	273,900	2012/2013	91,919
2019/2020	318,244	2011/012	91,325*
2018/2019	253,063	2010/2011	91,325*
2017/2018	313,075	2009/2010	91,324*

Period	Total volume discharged (m^3)	Period	Total volume discharged (m^3)
2016/2017	279,670		

Note volumes are reported from the 2009-2012 period (273,974m^3) so total has been averaged over three years*

2.4.1 Summary of injection activities at the Tuhua-B wellsite (consent 1315-2)

Table 20 provides a summary of the historical activities undertaken at the Tuhua-B wellsite since 2009. The majority of injection was undertaken via Tuhua-9, with minimal injection into McKee-1 Disposal well during the monitoring period. The injection volumes and pressures for the monitoring period is presented graphically in Figure 5 and Figure 7. Historical injection data for McKee-1 Disposal well and Tuhua-9 is shown in Figure 6 and Figure 8. A review of the data indicates that increases in pressure generally corresponded with increased volumes in the McKee-1 disposal well. No injection has been undertaken via the Tuhua-6 well since injectivity testing was undertaken during the 2018-2019 monitoring period.

Injection into Tuhua-9 occurs under vacuum so there was no pressure differential observed, implying ongoing well integrity.

Table 20 Summary of injection occurring under consent 1315 (2011-2024)

Deep well injection undertaken at Tuhua-B wellsite via the McKee-1 Disposal injection well					
Year	**Annual volume (m^3)**	**Max. injection volume (m^3/day)**	**Maximum injection rate (m^3/hr)**	**Max. injection pressure (bar)**	**Avg. injection pressure (bar)**
2023/24	301.02	87.41	25.7	110	0 (vacuum)
2022/23	19,027	559.38	27	110	2.3
2021/2022	43,754	711	30.1	33	4.7
2020/2021	62,732	409	17.7	32	5.4
2019/2020	61,065	767	66.3	110	5.0
2018/2019	16,697	322	22.0	86	7.3
2017/2018	68,014	1,100	45.8	65	10.4
2016/2017	82,784	1,015	42.3	63	19.6
2015/2016	95,406	642	28.5	58	33.4
2014/2015	60,720	1,142	48.0	82	15.0
2013/2014	30,239	759	41.0	70	29.0
2009-2012*	90,390	450	-	44	28.0
Deep well injection undertaken at Tuhua-B wellsite via the Tuhua-6 injection well					
2023/24	No injection	-	-	-	-
2022/23	No injection	-	-	-	-
2021/2022	No injection	-	-	-	-
2020/2021	No injection	-	-	-	-
2019/2020	No injection	-	-	-	-
2018/2019	133	85.2	8.9	No pressure required-vacuum	
Deep well injection undertaken at Tuhua-B wellsite via the Tuhua-9 injection well					
2023/24	110,999.08	806	24	71	2.2
2022/23	48,669.2	809	33	69	1
2021/2022	293	Injectivity testing only			

*Note *volume was reported from 2009-2012 (271,172m^3) so total is an average for each year over the three year period.*

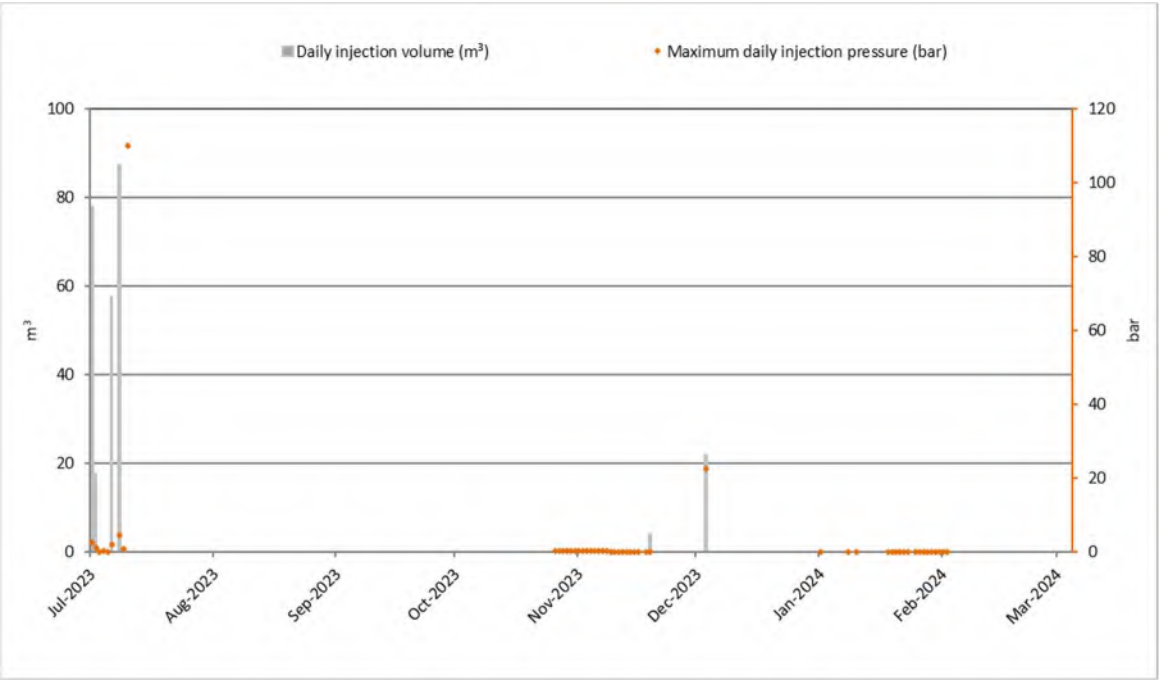

Figure 5 Tuhua-B wellsite: McKee-1 Disposal well daily injection volume and pressure (2023/24)

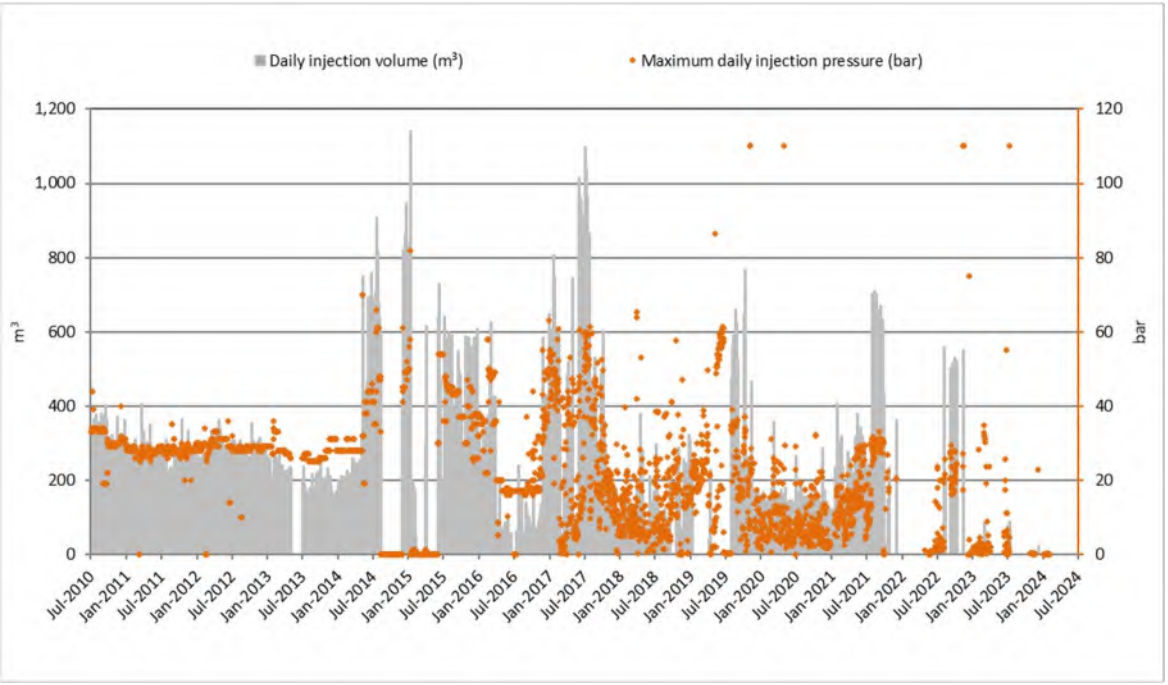

Figure 6 Tuhua-B wellsite: McKee-1 Disposal well historical daily injection volume and pressure (2010-2024)

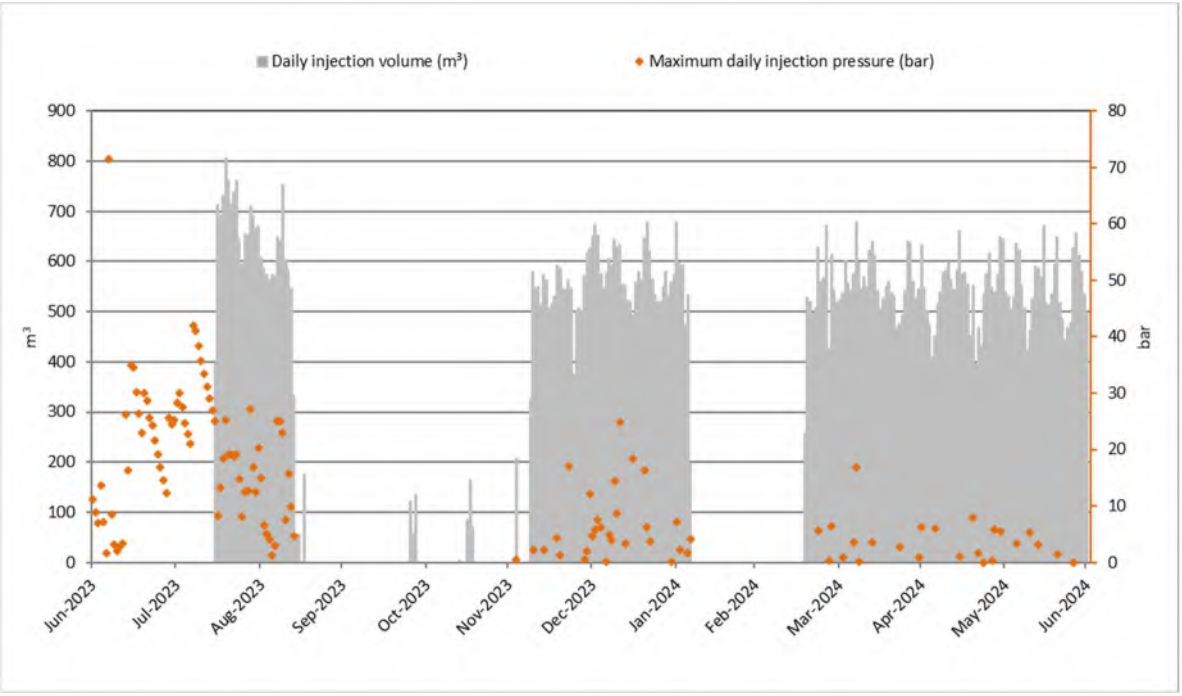

Figure 7 Tuhua-B wellsite: Tuhua-9 well daily injection volume and pressure (2023/24)

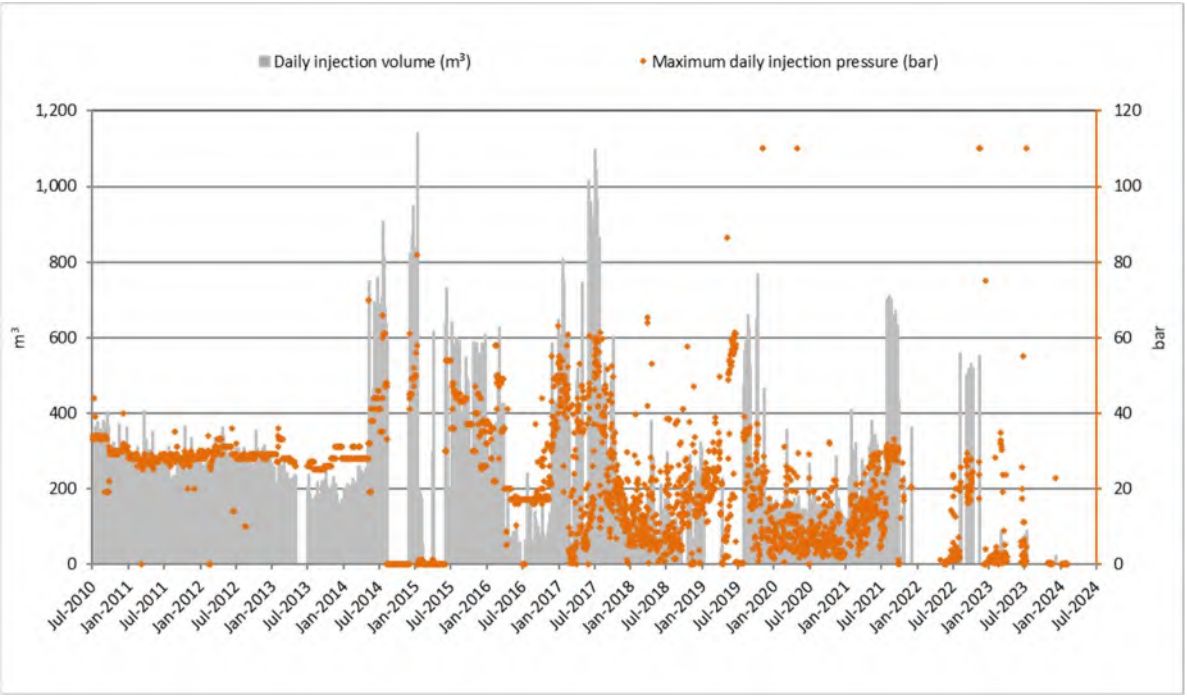

Figure 8 Tuhua-B wellsite: Tuhua-9 well historical daily injection volume and pressure (2022-2024)

2.4.2 Summary of injection activities at the McKee-A wellsite (consent 4182-2)

Table 21 provides a summary of the historical activities undertaken at the McKee-A wellsite since 2009. There was no injection undertaken at the McKee-A wellsite during the monitoring period. No injection has been undertaken at the site since the 2019-2020 monitoring period.

Table 21 Summary of injection occurring under consent 4182-2 (2009-2024)

Deep well injection undertaken at McKee-A wellsite via the McKee-1 injection well					
Year	Annual volume (m^3)	Max. injection volume (m^3/day)	Maximum injection rate (m^3/hr)	Max. injection pressure (bar)	Avg. injection pressure (bar)
2023/24	No Injection	-	-	-	-
2022/23	No injection	-	-	-	-
2021/2022	No injection	-	-	-	-
2020/2021	No injection	-	-	-	-
2019/2020	44,596	795	38.1	38.9	0 (vacuum)[3]
2018/2019	89,676	835	34.8	89.3	12.1
2017/2018	224,955	1,134	47.3	91.8	9.7
2016/2017	191,534	907	52.4	76.0	11.4
2015/2016*	125,876	1,203	166.0	38.0	9.1
2014/2015	178,708	1,064	83.0	17.0	5.0
2013/2014	10,866	336	97.0	No pressure required - vacuum	
2009-2012	2,802	462	-	No pressure required - vacuum	

2.4.3 Summary of injection activities at the Pouri-A wellsite (consent 5037-2.2)

Table 22 provides a summary of the historical activities undertaken at the Pouri-A wellsite.

There was no injection undertaken at the Pouri-A wellsite via the Pouri-1A injection well during the reporting period. No injection has been undertaken at the site since the 2018-2019 monitoring period.

Table 22 Summary of injection occurring under consent 5037-2.2 (2015-2024)

Deep well injection undertaken at Pouri-A wellsite via the Pouri-1A injection well					
Year	Annual volume (m^3)	Max. injection volume (m^3/day)	Maximum injection rate (m^3/hr)	Max. injection pressure (bar)	Avg. injection pressure (bar)
Consent limit	-	-	-	276	-
2023/24	No injection				
2022/23	No injection				
2021/2022	No injection				
2020/2021	No injection				
2019/2020	No injection				
2018/2019	No injection	-	-	27.2	7.4
2017/2018	542	197.29	8.2	98.3	13.8
2016/2017	5,381	163.10	6.8	99.6	5.7
2015/2016*	19,016	311.98	45.9	48.0	15.8

[3] A vacuum occurs when a deep formation has been depressurised by production to a degree that fluid can flow via the well into the formation without the need to apply continuous pressure from above (Injection pressure).

2.4.4 Summary of injection activities at the McKee-B wellsite (consent 5052-2)

Table 23 provides a summary of the activities undertaken at the McKee-B wellsite via the McKee-4 well which commenced 18 October 2018.

A review of the data shows that no injection occurred at the wellsite during the monitoring period. All injection data to date for the McKee-4 well has been provided in Figure 9.

The Company now limit injection into McKee-4 injection well in favour of wells more recently added to the DWI programme at the McKee-C wellsite.

Table 23 Summary of injection occurring under consent 5052-2 (2018-2024)

Deep well injection undertaken at McKee-B wellsite via the McKee-4 injection well					
Year	Annual volume (m^3)	Max. injection volume (m^3/day)	Maximum injection rate (m^3/hr)	Max. injection pressure (bar)	Avg. injection pressure (bar)
2023/24	No injection				
2022/23	No injection				
2021/2022	749	224	20.1	59	5.2
2020/2021	18,811	924	38.7	100	16.1
2019/2020	4,986	702	30.6	100	12.0
2018/2019	15,917	440	29.4	78	2.6

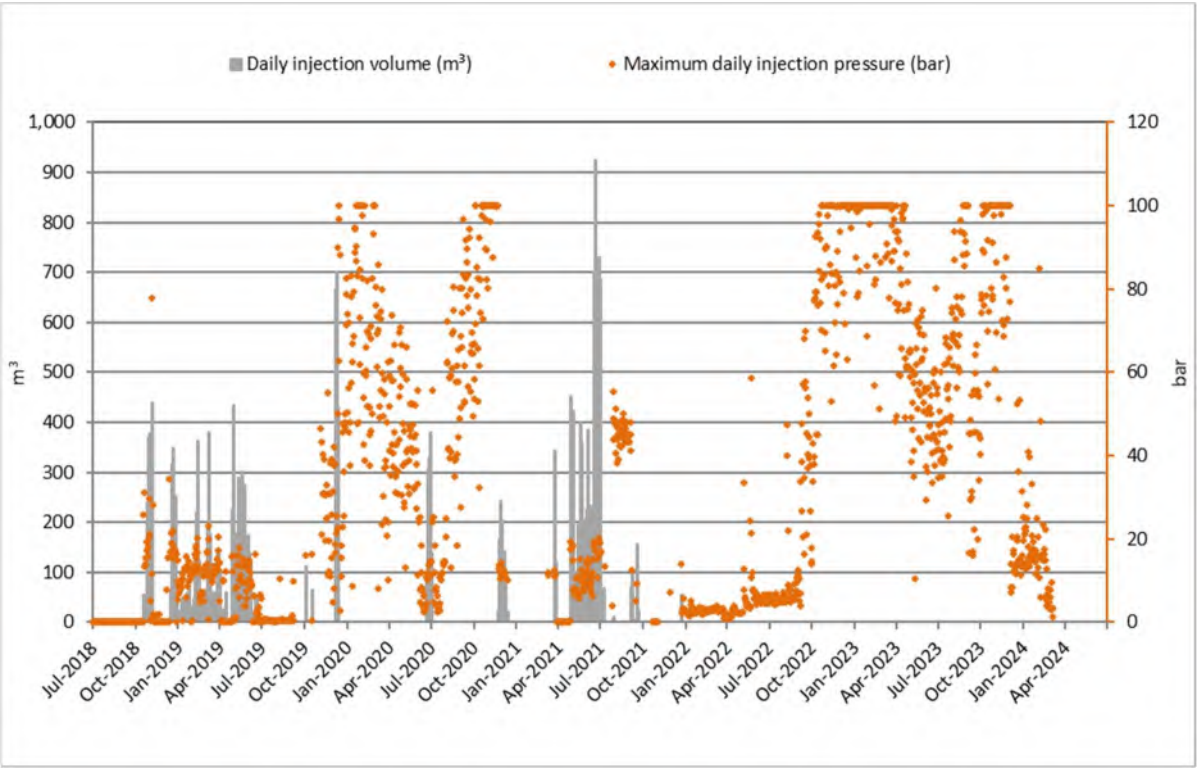

Figure 9 McKee-B wellsite: McKee-4 well daily historical injection volume and pressure (2018-2024)

2.4.5 Summary of injection activities at the Tuhua-D wellsite (consent 10661-1)

Table 24 provides a summary of the activities undertaken at the Tuhua-D wellsite via the Tuhua-4 well which commenced 1 October 2018. All injection data to date has been provided in Figure 10.

The Tuhua-4 well generally operates in vacuum. During the reporting period no injection was undertaken at the well. The reduction in injection volumes at the site is a direct result of the commencement of the McKee-C DWI injection programme. The McKee-C wellsite is in closer proximity to the Company's production station therefore its use reduces the requirement to transport waste fluids offsite for injection.

Table 24 Summary of injection occurring under consent 10661-1 (2018-2024)

Deep well injection undertaken at Tuhua-D wellsite via the Tuhua-4 injection well					
Year	Annual volume ($m^{3)}$	Max. injection volume (m^3/day)	Maximum injection rate (m^3/hr)	Max. injection pressure (bar)	Avg. injection pressure (bar)
2023/24	No injection				
2022/23	No injection				
2021/2022	15,881	712	33.7	40.4	0 (vacuum)
2020/2021*	141,019	695	30.2	99.7	0 (vacuum)
2019/2020	155,045	773	32.2	58.3	0 (vacuum)
2018/2019	93,705	684	28.5	No pressure required -vacuum	

** Note –these injected volumes were mistakenly allocated to the Tuhua 6 at Tuhua-B wellsite in 2020/2021 report*

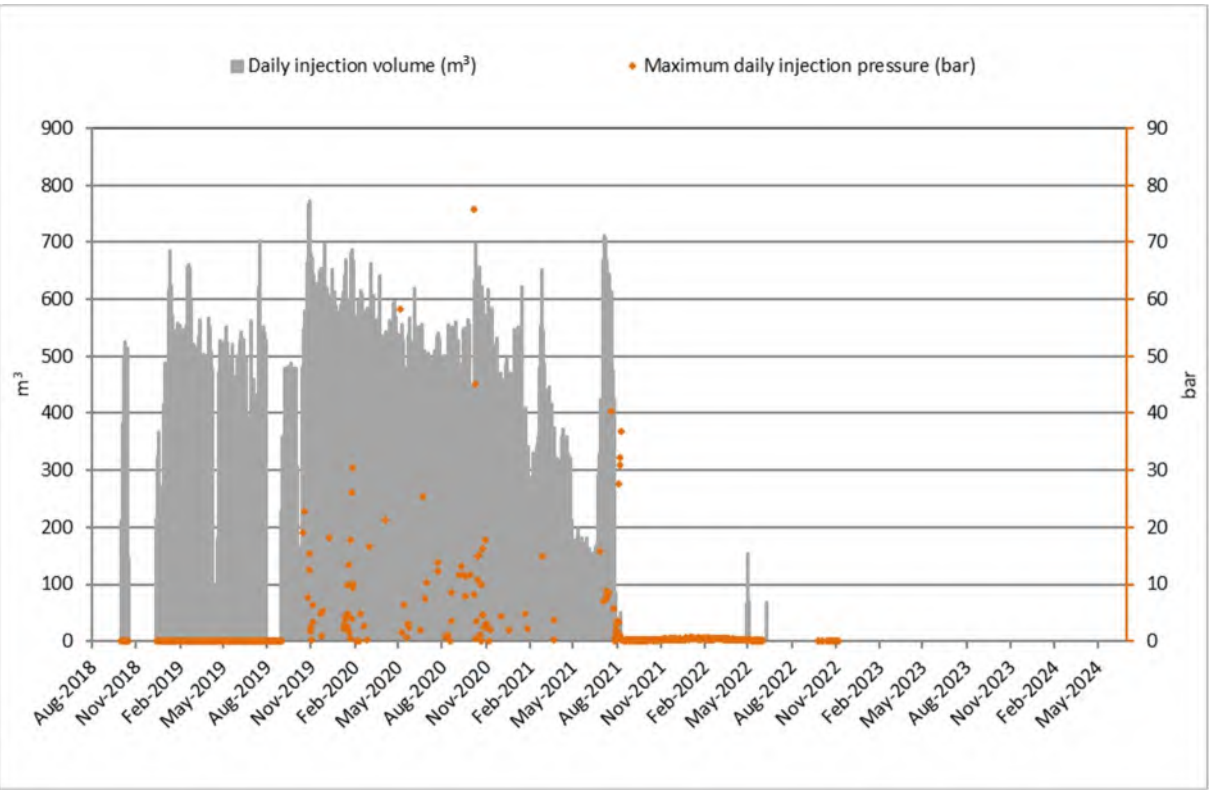

Figure 10 Tuhua-D wellsite: Tuhua-4 well daily injection volume and pressure (2018-2024)

2.4.6 Summary of injection activities at the McKee-C wellsite (consent 10950-1)

Table 25 provides a summary of the activities undertaken at the McKee-C wellsite via the McKee-5A and McKee-14 wells. Figure 11 and Figure 13 present the results graphically for the monitoring period. Historical injection volumes and pressures are graphically presented in Figure 12 and Figure 14 for each well. Injectivity testing was undertaken on 10 November 2020 (McKee-5A) and 11 November 2020 (McKee-14) to confirm the viability of the wells for injection. Injection commenced in both wells during October 2021. Both wells currently operate in a vacuum due to the depletion of the reservoir.

The McKee-5A and McKee-14 wells are now the primary injection wells for the Companies McKee and Mangahewa production facilities.

Table 25 Summary of injection occurring under consent 10950-1 (2021-2024)

Deep well injection undertaken at McKee-C wellsite via McKee-5A well					
Year.	**Total volume (m^3)**	**Maximum volume (m^3/day)**	**Maximum injection rate (m^3/hr)**	**Max. injection pressure (bar)**	**Avg. injection pressure (bar)**
2023/24	88,8238.8	828.4	34	25	0 (vacuum)
2022/23	72,555	506	21	102	0 (vacuum)
2021/2022	61,606	639	27.9	11.8	0 (vacuum)
2020/2021	231	10	23	No pressure required - vacuum	
Deep well injection undertaken at McKee-C wellsite via McKee-14 well					
2023/24	19,767.9	690	28.7	2.2	0 (vacuum)
2022/23	83,192	615	32	4.1	0 (vacuum)
2021/2022	77,445	709	29.6	31.3	0 (vacuum)
2020/2021	184	7	28	19.9	19.9

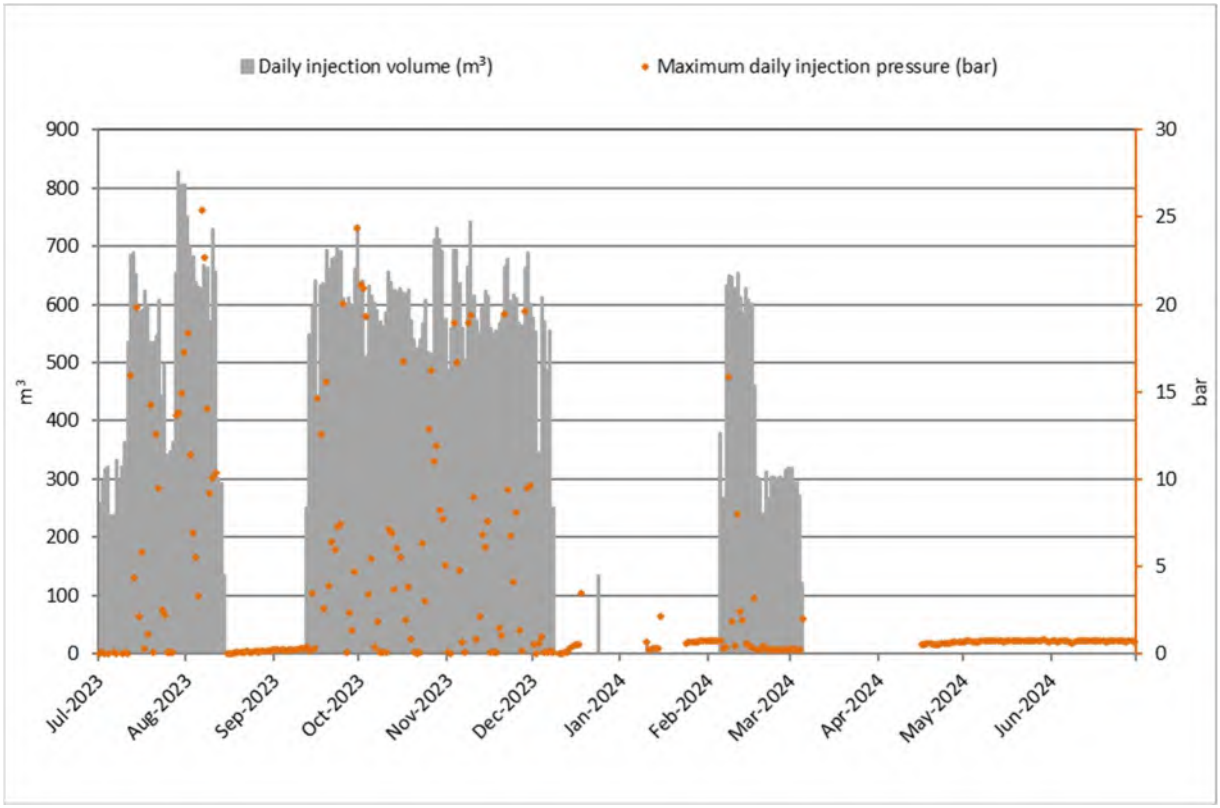

Figure 11 McKee-C wellsite: McKee-5A well daily injection volume and pressure (2023/24)

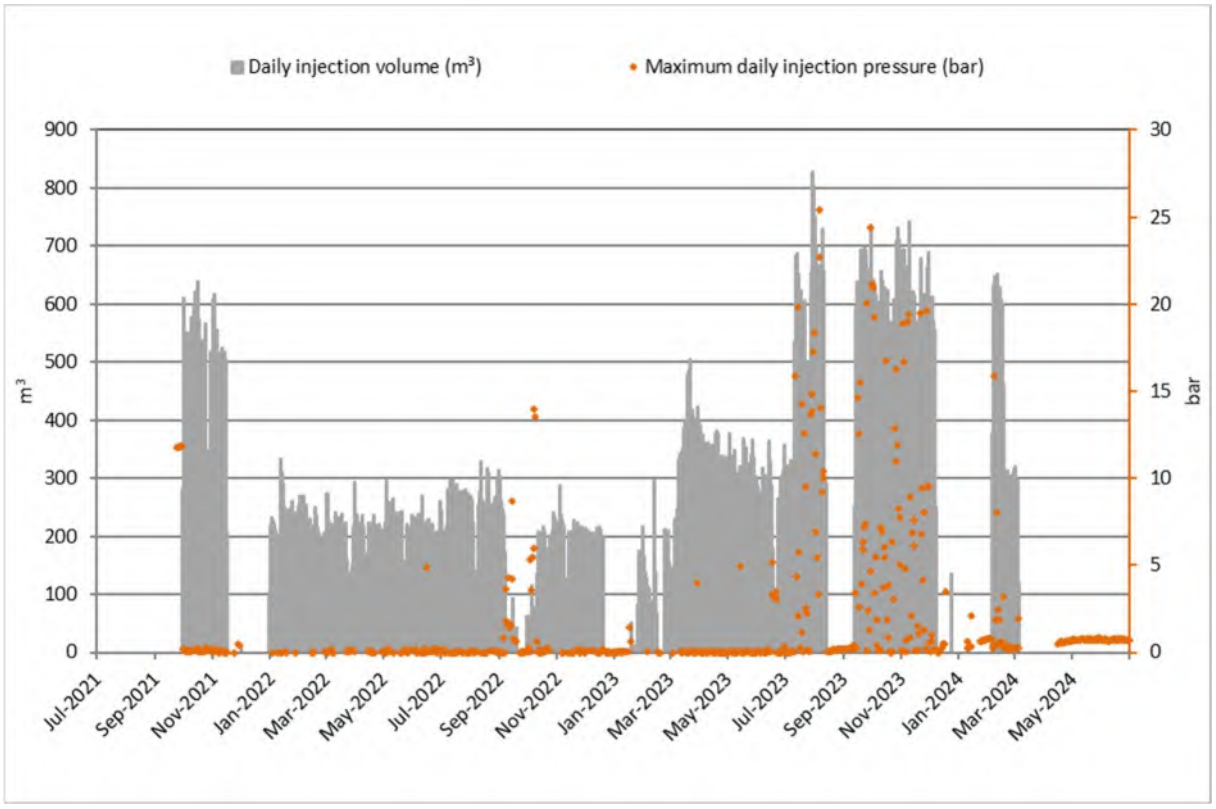

Figure 12 McKee-C wellsite: McKee-5A well historical daily injection volume and pressure (2021-2024)

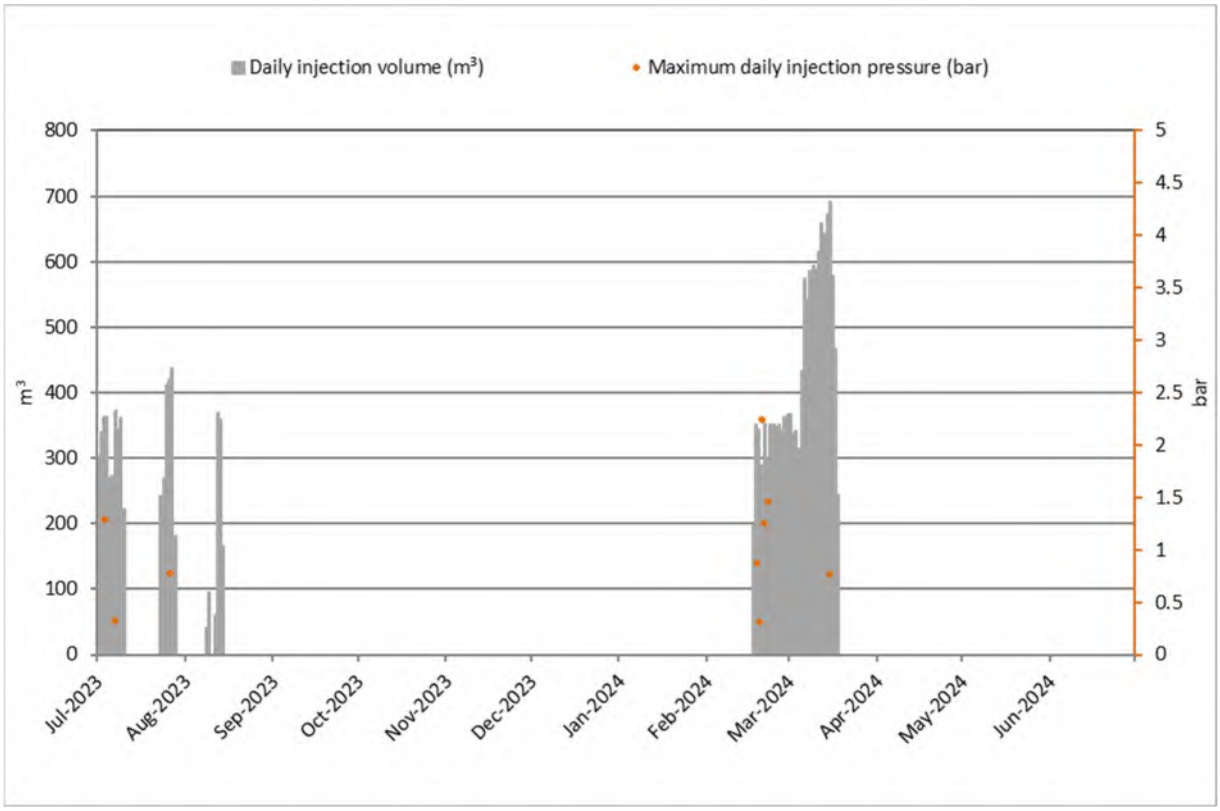

Figure 13 McKee-C wellsite: McKee-14 well daily injection volume and pressure (2023/24)

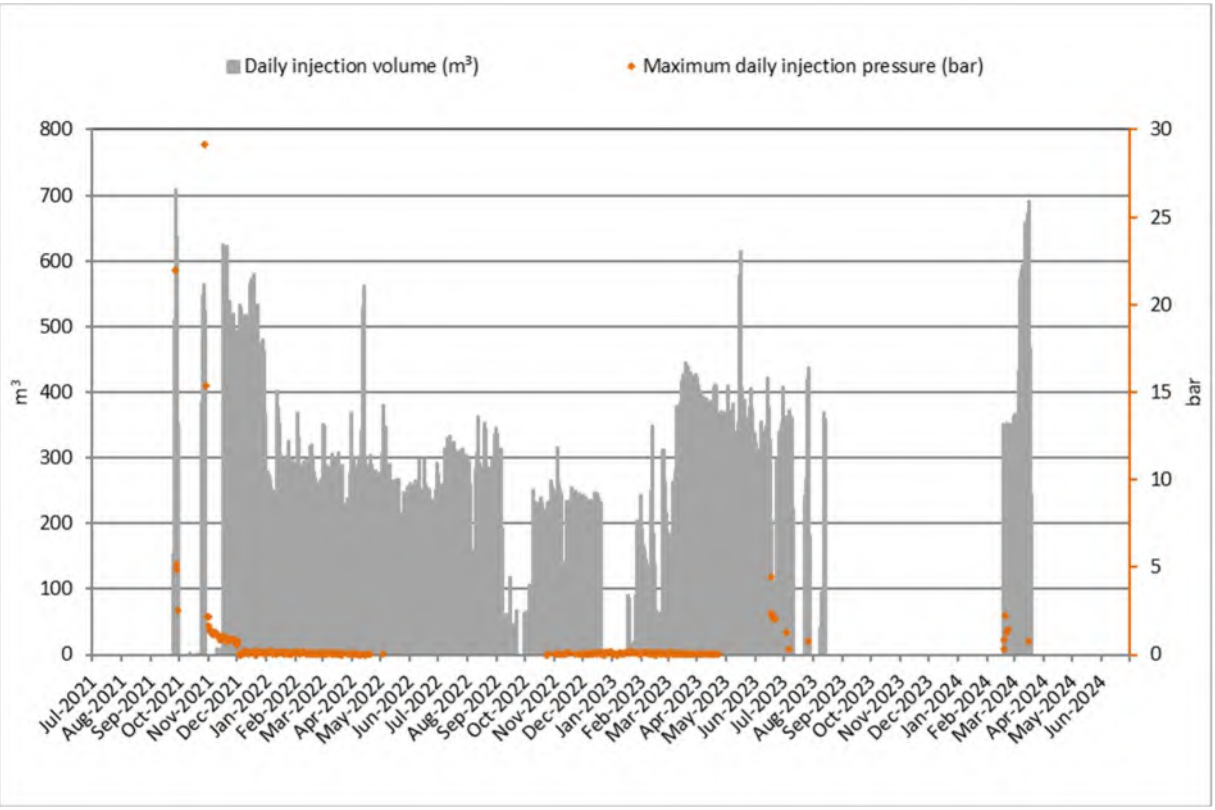

Figure 14 McKee-C wellsite: McKee-14 well historical daily injection volume and pressure (2021-2024)

2.4.7 Summary of injection activities at the Kapuni wellsites (consent 9970-1.2)

Table 26 provides a summary of the activities undertaken at the KA9/16 wellsite and KA1/7/19/20 wellsite under Consent 9970-2.1. A review of the data shows that injection was lower than previous monitoring periods. During the period under review only the KA-16 was utilised. The injection data for the monitoring period for the KA-16 well is presented graphically in Figure 15. Historical injection volumes and pressures are presented graphically in Figure 16.

An increase in volume injected resulted in an increase in pressure in the KA16 well during the monitoring period. There was no injection undertaken via the KW2, KA20A, KA1 or KA7 wells during this monitoring period.

Table 26 Summary of injection occurring under consent 9970 (2012-2024)

Deep well injection undertaken at the KA9 wellsites via the KW2 and KA16 wells and the KA1/7/19/20 wellsite via the KA1, KA7 and KA20A wells					
Year	**Annual volume (m^3)**	**Max. injection volume (m^3/day)**	**Maximum injection rate (m^3/hr)***	**Max. injection pressure (bar)**	**Avg. injection pressure (bar)****
Consent limit	-	2,000	-	-	-
2023/24	37,741.7	545.9	27.7	55.6	22.8
2022/23	56,447	529	22	56	26
2021/2022	13,244	467	32	84	-
2020/2021	50,912	547	39	97	-
2019/2020	52,552	269	180	104	-
2018/2019	24,594	478	29	100	-
2017/2018	19,563	565	72	100	32

Deep well injection undertaken at the KA9 wellsites via the KW2 and KA16 wells and the KA1/7/19/20 wellsite via the KA1, KA7 and KA20A wells					
Year	Annual volume (m^3)	Max. injection volume (m^3/day)	Maximum injection rate (m^3/hr)*	Max. injection pressure (bar)	Avg. injection pressure (bar)**
Consent limit	-	2,000	-	-	-
2016/2017	32,500	584	35	63	42
2015/2016	35,830	489	73	61	44
2014/2015	43,014	617	-	60	45
2013/2014	62,648	890	164	66	38
2012/2013	62,228	790	147	65	47

*Note *not measured values are calculated using daily volume and injection hours.*

*Note **not included since 2018 as multiple wells injecting.*

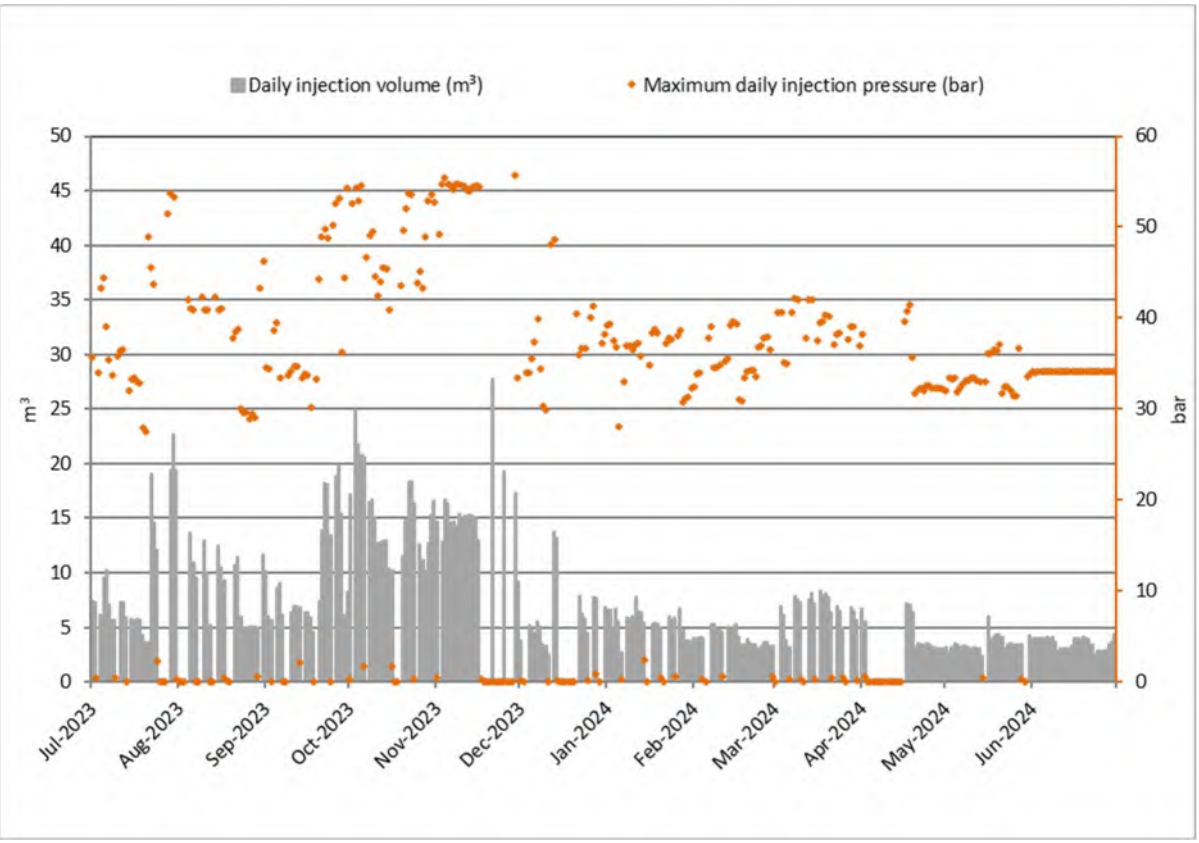

Figure 15 KA9 wellsite: KA16 well daily injection volume and pressure (2023/24)

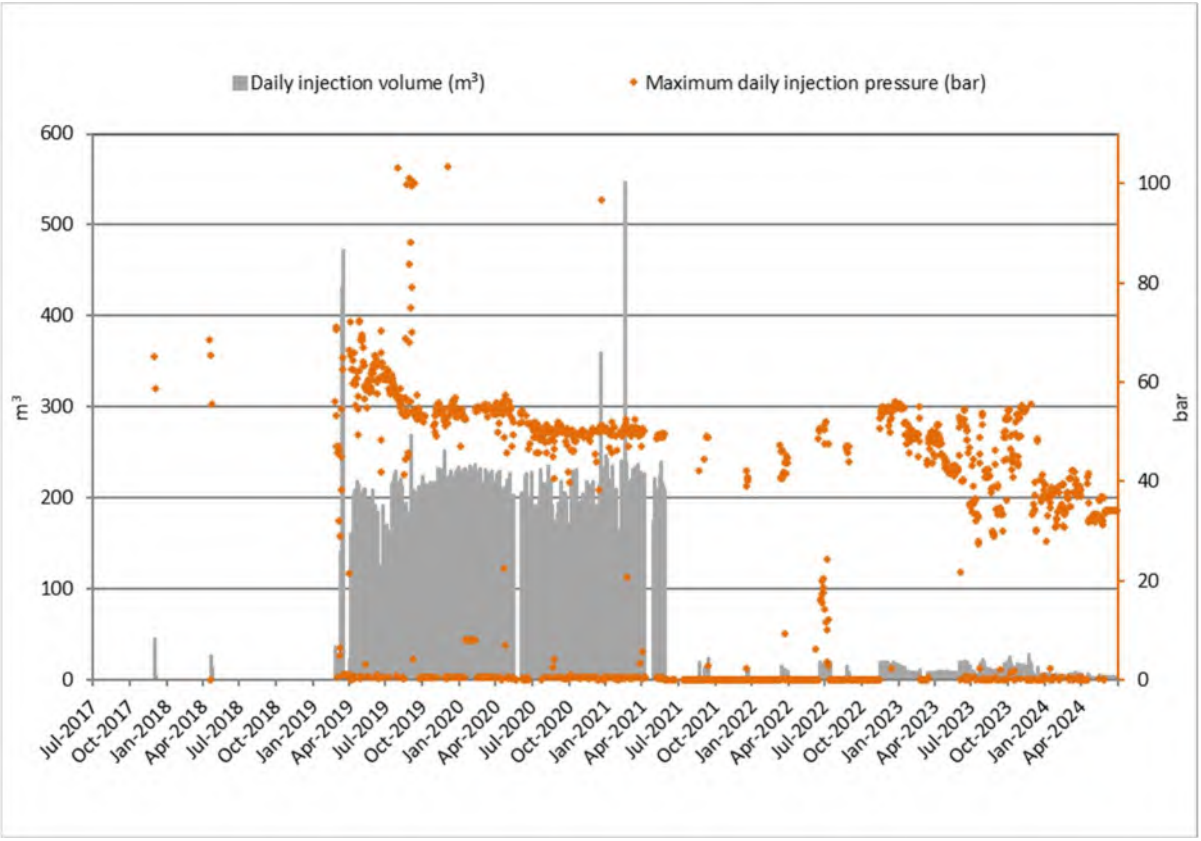

Figure 16 KA9 wellsite: KA16 well historical daily injection volume and pressure (2017-2024)

2.4.8 Summary of injection activities at the KA9/16 wellsite (consent 10862-1)

KW3 is purpose built water injector at the KA9/16 wellsite. The well was drilled in June 2021 and injection commenced during August 2021. Table 27 provides a summary of injection activities at the wellsite and Figure 13 presents a summary of activities graphically. The data illustrates that pressures respond to injection within the formation with increases in pressure responding to increased injection volumes. Once injection commenced in the KW3 it became one of the primary injection wells for the Company's Kapuni oil and gas production facilities.

Table 27 Summary of injection occurring under consent 10862 (2021-2024)

Deep well injection undertaken at KA9/16 wellsite via the KW3 injection well					
Year	Annual volume (m^3)	Max. injection volume (m^3/day)	Maximum injection rate (m^3/hr)	Max. injection pressure (bar)	Avg. injection pressure (bar)
2023/24	48,207.6	482.2	22	146.2	19.8
2022/23	126,423.9	912.9	38	55	32.5
2021/2022	50,530	549	32.4	73.2	16.4

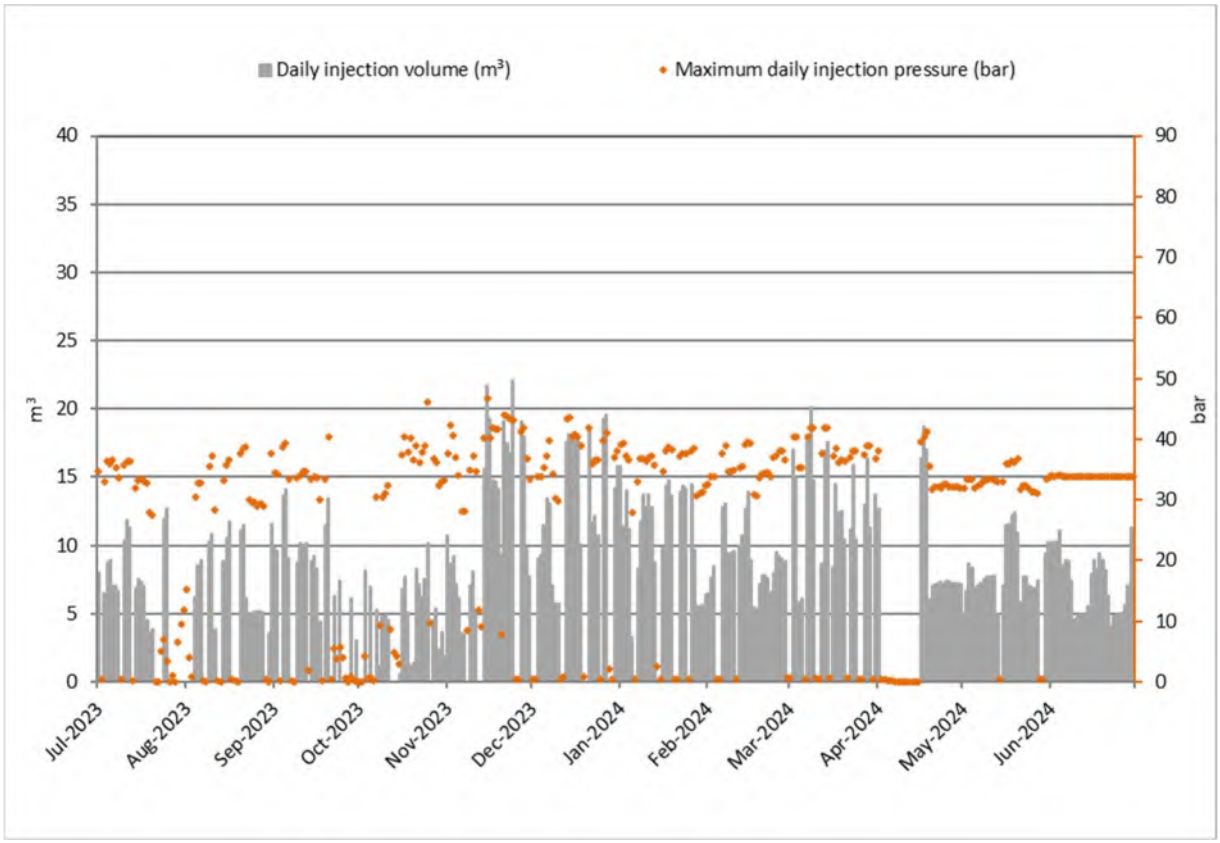

Figure 17 KA9/16 wellsite: KW3 well daily injection volume and pressure (2023/24)

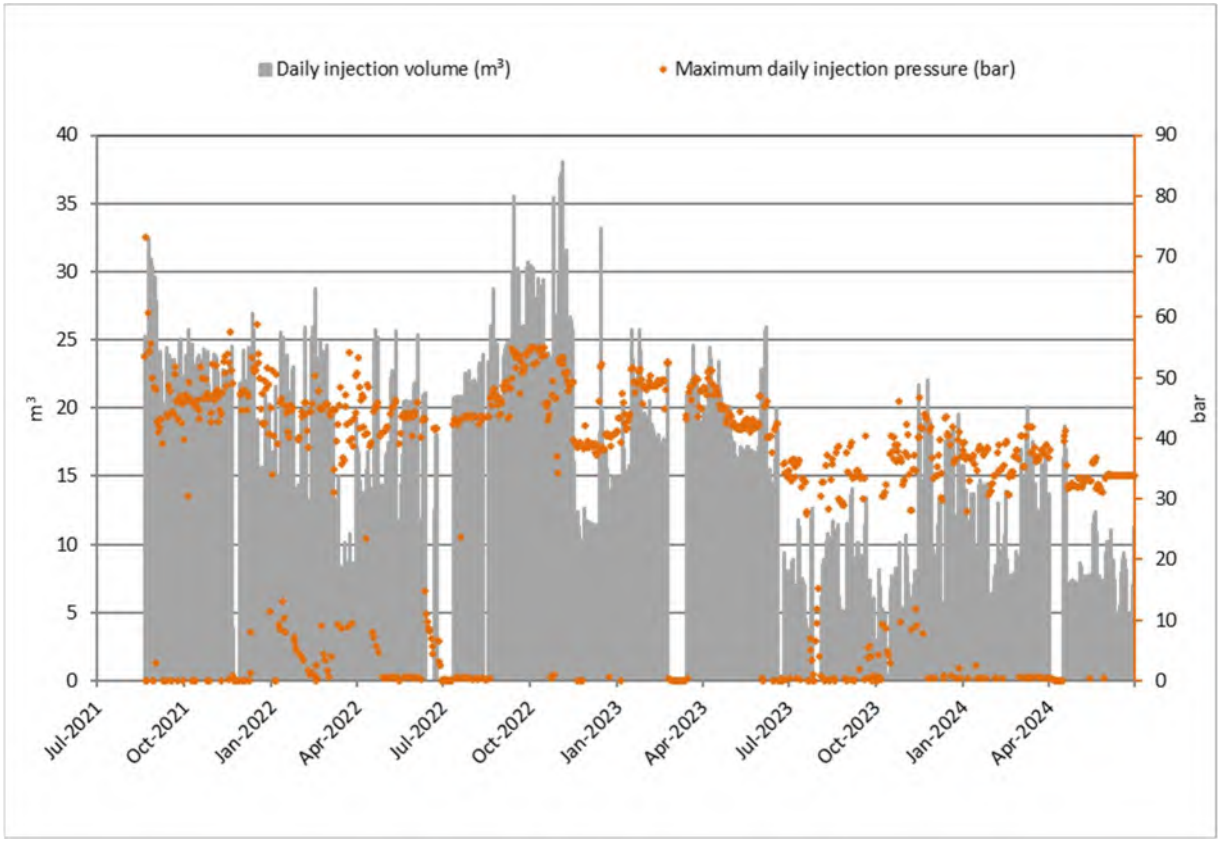

Figure 18 KA9/16 wellsite: KW3 well historical daily injection volume and pressure (2021-2024)

2.4.9 Summary of injection activities at the McKee-D wellsite (consent 11052-1)

McKee-12 was drilled as an oil producer. It was completed and shut in since 1999. It is generally not used for water injection but a short duration injection test was conducted on the McKee-12 injection well from 15 October 2022 to 16 October 2022, with a total of 135m³ injected. During this reporting period the majority of the injected volume was produced water from Pohokura, injected between 7 and 20 June 2024. Table 28 provides a summary of injection activities at the wellsite and Figure 19 presents a summary of activities graphically.

Table 28 Summary of injection occurring under consent 11052 (2022-2024)

Deep well injection undertaken at McKee D wellsite via McKee-12 well					
Year	Annual volume (m^3)	Max. injection volume (m^3/day)	Maximum injection rate (m^3/hr)	Max. injection pressure (bar)	Avg. injection pressure (bar)
2023/24	640.1	160.5	25	0.8	-4
2022/23	135	103.6	25.9	2.4	-0

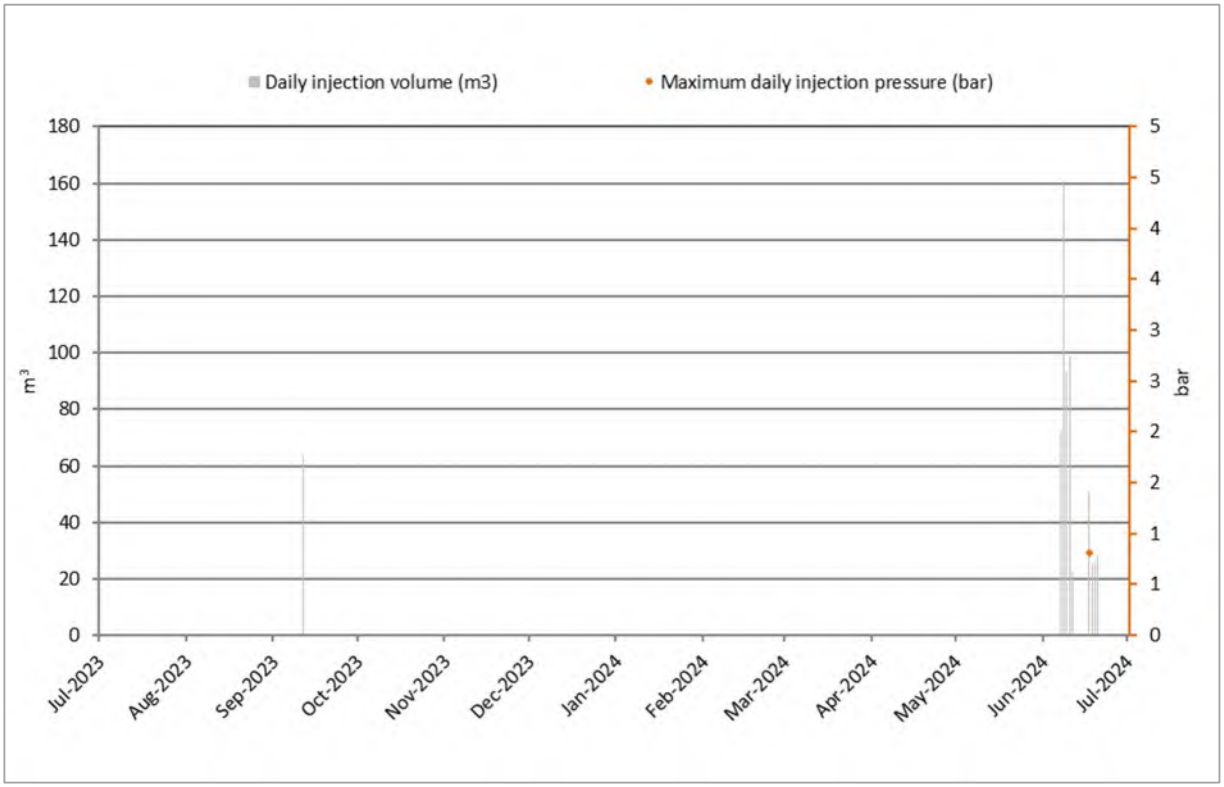

Figure 19 McKee-D wellsite: McKee-12 well daily injection volume and pressure (2023/24)

2.5 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 2023/24 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

During the period under review, the Company exercised four resource consents (1315-2, 9970-1.2, 10950-1 and 11052-1) for the injection of fluids by DWI. No injection took place at the McKee-A wellsite under consent 4182-2, the Pouri-A wellsite under consent 5037-2.2, the McKee-B wellsite under consent 5052-2, Tuhua-D wellsite under consent 10661-1, the KA9/16 wellsite under consent 10862-1, or the KA1/7/19/20 wellsite under consent 10764-1. A review of the injection data provided by the Company shows that a total of 305,927m^3 of fluid was injected over the 2023/24 monitoring period. The greatest volume of this fluid was discharged via the Tuhua-09 well at the Tuhua-B wellsite under consent 1315-2, and via the McKee-5A well at the McKee-C wellsite under consent 10950-1. The total volume of fluids injected across all sites was significantly lower to that injected over the previous monitoring period.

A visual assessment of the Company's injection data indicates that injection pressures generally fluctuate in response to injection volumes, with higher maximum pressures corresponding with higher daily injection volumes. Several of the injection wells in the McKee Mangahewa injection programme currently operate in vacuum due to the depletion of the McKee Reservoir. There is no evidence of any sustained increases in injection pressures over time at any injection site.

The operation of the injection wells is monitored by Company staff, and key injection data is recorded as required under the conditions of each consent. During the period being reported this data was submitted to the Council at the specified frequency for review and all injection was undertaken within consented limits.

Routine inspections of the Company's wellsites conducted during the period under review found the sites to be in good condition and being well managed. The Council was not required to enter any incidents in relation to the exercising of the Company's DWI consents during the review period, nor were any complaints received from the public in relation to these consents.

3.2 Environmental effects of exercise of consents

No adverse environmental effects have been recorded by the Council in relation to any DWI consent exercised by the Company.

The groundwater monitoring component of this programme continued during the period under review, with 22 samples being taken from 11 monitoring sites in the vicinity of the Company's DWI wellsites. The results of the monitoring carried out show that the groundwater composition at each site has remained stable since the commencement of monitoring. Some very minor fluctuations in analyte concentrations are attributable to seasonal variations in water composition and standard sampling variability. There is no evidence to suggest that injection activities undertaken by the Company during the review period have had any adverse effect on local groundwater quality.

Compliance with the conditions of the Company's DWI consents exercised during the 2023/24 monitoring period is summarised below in Section 3.3.

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 29 to Table 38 and an evaluation of the Company's environmental performance in relation to their DWI activities since 2009 is presented in Table 39.

Table 29 Summary of performance for consent 1315-2

Purpose: To discharge fluid waste generated by oil and gas exploration and production activities to the Mount Messenger Formation by deep well injection at the Tuhua-B wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. The consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan	Yes
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. The consent holder shall monitor the seismic network and report on any events of higher than magnitude 3 within 5km	Receipt of report	N/A No events recorded
4. Consent holder response if a higher than magnitude 3 seismic event is recorded within 5km	Notification received	N/A No events recorded
5. No injection permitted after 1 June 2028	Assessment of injection records and site inspection notices	N/A
6. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
7. The injection of fluids shall be confined to the Mount Messenger Formation, deeper than 1,200m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
8. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
9. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable freshwater (groundwater or surface water)	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
10. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
11. Maintain full records of injection data	Receipt and assessment of injection data	Yes
12. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
13. Ensure that the analysis required by 12 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory	Assessment of injection data	Yes
14. The data required by conditions 11 & 12 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt of satisfactory data by the date specified	Yes
15. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes
16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes

Purpose: To discharge fluid waste generated by oil and gas exploration and production activities to the Mount Messenger Formation by deep well injection at the Tuhua-B wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
17. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
18. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
19. Consent review provision	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 30 Summary of performance for consent 4182-2

Purpose: To discharge fluid waste generated by oil and gas exploration and production activities to the McKee Formation by deep well injection at the McKee-A wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	Yes
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. No injection permitted after 1 June 2028	Assessment of injection records and site inspection notices	N/A
4. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
5. The injection of fluids shall be confined to the Mount Messenger Formation, deeper than 1200m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
6. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
7. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable freshwater (groundwater or surface water)	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
8. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
9. Maintain full records of injection data	Receipt and assessment of injection data	Yes
10. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
11. Ensure that the analysis required by 10 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory	Assessment of injection data	Yes

Purpose: To discharge fluid waste generated by oil and gas exploration and production activities to the McKee Formation by deep well injection at the McKee-A wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
12. The data required by conditions 9 & 10 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt of satisfactory data by the date specified	Yes
13. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes
14. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes
15. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
16. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
17. Consent review provision	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**Not exercised**
Overall assessment of administrative performance in respect of this consent		**Not exercised**

N/A = not applicable

Table 31 Summary of performance for consent 5037-2.2

Purpose: To discharge waste drilling fluids, water, produced water and stormwater from hydrocarbon exploration and production operations by deep well injection at the Pouri-A wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	Yes
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. No injection permitted after 1 June 2028	Assessment of injection records and site inspection notices	N/A
4. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes

Purpose: To discharge waste drilling fluids, water, produced water and stormwater from hydrocarbon exploration and production operations by deep well injection at the Pouri-A wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
5. The injection of fluids shall be confined to the McKee Formation, deeper than 2149m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
6. The injection of fluids does not exceed 276 bar	Assessment of injection records	Yes
7. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
8. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable freshwater (groundwater or surface water)	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
9. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
10. These are the only other fluids that may be injected apart from those listed in condition 9	Assessment of consent holder records and injectate sample analysis	Yes
11. Maintain full records of injection data	Receipt and assessment of injection data	Yes
12. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
13. Ensure that the analysis required by 12 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory	Assessment of injection data	Yes
14. The data required by conditions 11 & 12 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt of satisfactory data by the date specified	Yes
15. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes
16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes
17. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
18. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes

Purpose: To discharge waste drilling fluids, water, produced water and stormwater from hydrocarbon exploration and production operations by deep well injection at the Pouri-A wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
19. Consent review provision	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**Not exercised**
Overall assessment of administrative performance in respect of this consent		**Not exercised**

N/A = not applicable

Table 32 Summary of performance for consent 5052-2

Purpose: To discharge waste generated by oil and gas exploration and production activities to the Mount Messenger Formation by deep well injection via the McKee-B wellsite at depths below 945m TVD		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	Yes
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. No injection permitted after 1 June 2028	Assessment of injection records and site inspection notices.	N/A
4. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
5. The injection of fluids shall be confined to the Mount Messenger Formation, deeper than 945m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
6. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
7. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable freshwater (groundwater or surface water)	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
8. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
9. Maintain full records of injection data	Receipt and assessment of injection data	Yes
10. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
11. Ensure that the analysis required by 10 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory	Assessment of injection data	Yes
12. The data required by conditions 9 & 10 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt of satisfactory data by the date specified	Yes
13. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes

Purpose: To discharge waste generated by oil and gas exploration and production activities to the Mount Messenger Formation by deep well injection via the McKee-B wellsite at depths below 945m TVD		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
14. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes
15. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
16. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
17. Lapse clause	Receive notice of exercise of consent	Yes
18. Consent review provision	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Not exercised** **Not exercised**

N/A = not applicable

Table 33 Summary of performance for consent 10661-1

Purpose: To discharge produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids from hydrocarbon exploration and production operations into the McKee Formation by deep well injection at the Tuhua-D wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	Yes
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. No injection permitted after 1 June 2028	Assessment of injection records and site inspection notices	N/A
4. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
5. The injection of fluids shall be confined to the McKee Formation, deeper than 2,319m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
6. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes

Purpose: To discharge produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids from hydrocarbon exploration and production operations into the McKee Formation by deep well injection at the Tuhua-D wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
7. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable freshwater (groundwater or surface water)	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
8. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
9. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
10. Maintain full records of injection data	Receipt and assessment of injection data	Yes
11. Ensure that the analysis required by 9 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory	Assessment of injection data	Yes
12. The data required by conditions 9 & 10 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt of satisfactory data by the date specified	Yes
13. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes
14. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes
15. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
16. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
17. Consent review provision	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Not exercised** **Not exercised**

N/A = not applicable

Table 34 Summary of performance for consent 10950-1

Purpose: To discharge produced water, well drilling fluids and wastewater into the McKee Formation by deep well injection at the McKee-C wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	Yes
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. Seismic monitoring requirement	Receipt of satisfactory information	N/A No events recorded
4. No injection permitted after 1 June 2034	Assessment of injection records and site inspection notices	N/A
5. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
6. The injection of fluids shall be confined to the McKee Formation, deeper than 2,097m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
7. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
8. The consent holder shall ensure that the exercise of this consent does not result in adverse effects on groundwater	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
9. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
10. Additional fluids that can be injected to those in condition 9	Assessment of consent holder records and injectate sample analysis	Yes
11. Maintain full records of injection data	Receipt and assessment of injection data	Yes
12. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
13. Ensure that the analysis required by 12 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory. 14. The data required by conditions 11 & 12 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt and assessment of satisfactory data by the date specified	Yes
15. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes
16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes

Purpose: To discharge produced water, well drilling fluids and wastewater into the McKee Formation by deep well injection at the McKee-C wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
17. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
18. Submission of annual report to Otaraua hapū before 31 August each year	Receipt of confirmation of the delivery of the report	Not assessed
19. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
20. Lapse Clause	Receive notice of exercise of consent	-
21. Consent review provision	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 35 Summary of performance for consent 9970-1.2

Purpose: To discharge waste fluids, associated with hydrocarbon exploration and production by deep well injection, into the Matemateaonga Formation via the KW2 well, or into the Mangahewa Formation via wells KA1 and/or KA7 as a contingency		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. The volume of fluid injected shall not exceed 2000m^3 per day	Review and analysis of injection data	Yes
2. The consent holder shall submit an "Injection Operation Management Plan	Receipt of "Injection Operation Management Plan"	Yes
3. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information by 1 January 2015	Yes
4. No injection permitted after 1 June 2024	Assessment of injection records and site inspection notices	N/A
5. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
6. No injection of fluids above 1,200m BGL	Review of " Injection Operation Management Plan," well construction log and injection data	Yes
7. Before Contingency wells are utilised, an "Injection Operation Management Plan" specific to the well being utilised must be provided to the Council	Receipt of satisfactory "Injection Operation Management Plan	N/A
8. The consent holder shall ensure that the exercise of this consent does not result in the fracturing of the geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes

Purpose: To discharge waste fluids, associated with hydrocarbon exploration and production by deep well injection, into the Matemateaonga Formation via the KW2 well, or into the Mangahewa Formation via wells KA1 and/or KA7 as a contingency		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
9. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water)	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
10. Only the listed fluids may be discharged	Receipt and assessment of injection data	Yes
11. These are the only other fluids that may be injected apart from those listed in condition 10	Receipt and assessment of injection data	Yes
12. Consent holder shall keep daily injection records	Receipt and assessment of injection data	Yes
13. Maintain records an undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
14. If analysis required by condition 13 is not carried out in an IANZ laboratory, it shall be undertaken in accordance with a Quality Assurance Plan certified by the Council	Receipt and assessment of injection data	Yes
15. The data required by conditions 12 & 13 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt of satisfactory data by the date specified	Yes
16. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on fresh water resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council	Yes
17. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: a. pH; b. conductivity; c. chloride; and d. total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes
18. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
19. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
20. Lapse Clause	Receive notice of exercise of consent	Yes
21. Consent review clause	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**High** **High**

N/A = not applicable

Table 36 Summary of performance for consent 10764-1

Purpose: To discharge fluids from hydrocarbon exploration and production operations including produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids into the Matemateaonga Formation by deep well injection at the KA1/7/19/20 wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	-
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	-
3. Seismic monitoring requirement	Receipt of satisfactory information	-
4. No injection permitted after 1 June 2030	Assessment of injection records and site inspection notices	-
5. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	-
6. The injection of fluids shall be confined to the Matemateaonga Formation, deeper than 1,275m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	-
7. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	-
8. The consent holder shall ensure that the exercise of this consent does not result in adverse effects on groundwater above the MAT60 formation	Assessment of injection records and results of groundwater sampling and analysis programme	-
9. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	-
10. Additional fluids that can be injected to those in condition 9	Assessment of consent holder records and injectate sample analysis	-
11. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	-
12. Maintain full records of injection data	Receipt and assessment of injection data	-
13. Ensure that the analysis required by 9 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory	Assessment of injection data	-
14. The data required by conditions 9 & 10 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt of satisfactory data by the date specified	-
15. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	-
16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	-

Purpose: To discharge fluids from hydrocarbon exploration and production operations including produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids into the Matemateaonga Formation by deep well injection at the KA1/7/19/20 wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
17. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	-
18. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	-
19. Lapse Clause	Receive notice of exercise of consent	-
20. Consent review provision	N/A	-
Overall assessment of consent compliance and environmental performance in respect of this consent Overall assessment of administrative performance in respect of this consent		**Not yet given effect to**

Table 37 Summary of performance for consent 10862-1

Purpose: To discharge produced water and wastewater into the Matemateaonga 60 Formation, through deep well injection via a new purpose built well bore within the KA9/16 wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	Yes
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. Seismic monitoring requirement	Receipt of satisfactory information	N/A No events recorded
4. No injection permitted after 1 June 2030	Assessment of injection records and site inspection notices	N/A
5. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
6. The injection of fluids shall be confined to the Matemateaonga Formation, deeper than 1,240m BGL	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
7. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
8. The consent holder shall ensure that the exercise of this consent does not result in adverse effects on groundwater	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
9. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
10. Additional fluids that can be injected to those in condition 9	Assessment of consent holder records and injectate sample analysis	Yes

Purpose: To discharge produced water and wastewater into the Matemateaonga 60 Formation, through deep well injection via a new purpose built well bore within the KA9/16 wellsite		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
11. Maintain full records of injection data	Receipt and assessment of injection data	Yes-
12. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
13. Ensure that the analysis required by 12 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory. 14. The data required by conditions 11 & 12 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt and assessment of satisfactory data by the date specified	Yes
15. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes
16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes
17. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
18. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
19. Lapse Clause	Receive notice of exercise of consent	N/A
20. Consent review provision	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		**Not exercised**
Overall assessment of administrative performance in respect of this consent		**Not exercised**

Table 38 Summary of performance for consent 11052-1

Purpose: To discharge produced water, well drilling fluids, and well workover fluids into the McKee Formation by deep well injection via the McKee-D wellsite at depths below 2,059m TVDSS		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
1. Prior to exercising the consent, the consent holder shall submit an "Injection Operation Management Plan"	Receipt of satisfactory "Injection Operation Management Plan"	Yes

Purpose: To discharge produced water, well drilling fluids, and well workover fluids into the McKee Formation by deep well injection via the McKee-D wellsite at depths below 2,059m TVDSS		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
2. Injection well, geological and operational data submission requirements. This information can be included in the "Injection Operation Management Plan"	Receipt of satisfactory information	Yes
3. Seismic monitoring requirement	Receipt of satisfactory information	N/A No events recorded
4. No injection permitted after 1 June 2034	Assessment of injection records and site inspection notices	N/A
5. The consent holder shall at all times adopt the best practicable option	Assessment of consent holder records and site inspection notices	Yes
6. The injection of fluids shall be confined to the McKee Formation, at a minimum depth of 2,059m TVDSS	Review of "Injection Operation Management Plan," well construction log and injection data	Yes
7. The injection of fluids does not result in fracturing of geological seals confining the injection zone	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
8. The consent holder shall ensure that the exercise of this consent does not result in adverse effects on groundwater	Assessment of injection records and results of groundwater sampling and analysis programme	Yes
9. Limits the range of fluids that can be discharged under the consent	Assessment of consent holder records and injectate sample analysis	Yes
10. Additional fluids that can be injected to those in condition 9	Assessment of consent holder records and injectate sample analysis	Yes
11. Maintain full records of injection data	Receipt and assessment of injection data	Yes-
12. Maintain records and undertake analysis to characterise each type of waste arriving on-site for discharge	Receipt and assessment of injection data	Yes
13. Ensure that the analysis required by 12 (c) is carried out in an International Accreditation New Zealand (IANZ) accredited laboratory. 14. The data required by conditions 11 & 12 above, for each calendar month, is required to be submitted by the 28th day of the following month	Receipt and assessment of satisfactory data by the date specified	Yes
15. The consent holder shall undertake a programme of sampling and testing (the 'Monitoring Programme') that monitors the effects of the exercise of this consent on freshwater resources	Monitoring Programme submitted to the Chief Executive, Taranaki Regional Council, for certification	Yes
16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for: • pH; • conductivity; • chloride; and • total petroleum hydrocarbons	Implementation of Groundwater Monitoring Programme and assessment of results	Yes

Purpose: To discharge produced water, well drilling fluids, and well workover fluids into the McKee Formation by deep well injection via the McKee-D wellsite at depths below 2,059m TVDSS		
Condition requirement	**Means of monitoring during period under review**	**Compliance achieved?**
17. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken	Receipt of Sampling and Analysis Plan prior to first round of sampling being undertaken	Yes
18. The consent holder shall provide to the Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period	Receipt of satisfactory report by 31 August each year	Yes
19. Lapse Clause	Receive notice of exercise of consent	N/A
20. Consent review provision	N/A	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 39 Evaluation of environmental performance over time

Year	Consent numbers	High	Good	Improvement req	Poor	Not exercised	Not given effect to
2019/2020	1315, 4182, 5037, 5052, 9970, 10661, 10764	5	-	-	-	1	1
2020/2021	1315, 4182, 5037, 5052, 9970, 10661, 10764, 10862, 10879	5	-	-	-	2	2
2021/2022	1315, 4182, 5037, 5052, 9970, 10661, 10764, 10862, 10950, 11052	6	-	-	-	2	1
2022/23	1315, 4182, 5037, 5052, 9970, 10661, 10764, 10862, 10950, 11052	5	-	-	-	4	1
2023/24	1315, 4182, 5037, 5052, 9970, 10661, 10764, 10862, 10950, 11052	4	-	-	-	5	1

During the year, the Company demonstrated a high level of environmental and high level of administrative performance with the resource consents as defined in Appendix II. This continues the high level of environmental performance by the Company in relation to DWI consents over recent years.

3.4 Recommendations from the 2022/23 Annual Report

In the 2022/23 Annual Report, it was recommended:

1. THAT in the first instance, monitoring of consented activities in the 2023/24 year continue at the same level as in 2022/23.
2. THAT GND2357 and GND0093 be remediated or replaced by purpose built monitoring bores as these bores may have collapsed and are no longer suitable for inclusion in the monitoring programme.
3. THAT should there be issues with environmental or administrative performance in 2023/24, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
4. THAT the option for a review of resource consents in June 2024, as set out in the respective consent conditions not be exercised.

The recommendations 1 and 3 above were implemented during the period under review. There was no need to exercise recommendation 2.

3.5 Alterations to monitoring programmes for 2024/25

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 2024/25 period the range of monitoring carried out during the 2023/24 period be continued.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site(s) 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 2024/25.

3.6 Exercise of optional review of consent

Resource consents 1315-2, 4182-2, 5037-2.2, 5052-2, 9970-1.2, 10661-1, 10764-1, 10862-1, 10950-1 and 11052-1 all provide for optional reviews in June 2025. The review condition allows the Council to review the consent, if there are grounds that the conditions are not adequate to deal with any adverse effects on the environment arising from the exercise of the resource consent, which were either not foreseen at the time the application was considered or which was not appropriate to deal with at the time.

Based on the results of monitoring in the year under review, and in previous years as set out in earlier annual compliance monitoring reports, it is considered that there are no grounds that require a review to be pursued or grounds to exercise the review option on any of the above consents.

4. Recommendations

1. THAT in the first instance, monitoring of consented activities in the 2024/25 year continue at the same level as in 2023/24.
2. THAT should there be issues with environmental or administrative performance in 2024/25, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.
3. THAT the option for a review of resource consents in June 2025, as set out in the respective consent conditions not be exercised.

Glossary of common terms and abbreviations

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

Aquifer (freshwater)	A formation, or group or part of a formation that contains sufficient saturated permeable media to yield exploitable quantities of fresh water.
BPO	Best practicable option.
Conductivity	A measure of the level of dissolved salts in a sample. Usually measured at 25°C and expressed as microsiemens per metre (µS/cm or as Total Dissolved Solids (g/m^3).
Confining layer	A geological layer or rock unit that is impermeable to fluids.
Deep well injection (DWI)	Injection of fluids at depth for disposal or enhanced recovery.
Fracture gradient	A measure of how the pressure required to fracture rock in the earth's crust changes with depth. It is usually measured in units of "pounds per square inch per foot" (psi/ft) and varies with the type of rock and the strain of the rock.
g/m^3	Grams per cubic metre. A measure of concentration which is equivalent to milligrams per litre (mg/L), or parts per million (ppm).
Hydraulic fracturing (HF)	The process of increasing reservoir permeability by injecting fluids at pressures sufficient to fracture rock within the reservoir ("fracking").
Injectate	Fluid disposed of by deep well injection.
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.
IR	Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
m BGL	Metres below ground level.
m BMP	Metres below measuring point.
µS/cm	Microsiemens per metre.
mS/m	Millisiemens per metre.
m TVD	Metres true vertical depth.
m TVDBGL	Metres true vertical depth below ground level.
m^3	Cubic metre.
N/A	Not applicable.

pH	Numerical system for measuring acidity in solutions, with 7 as neutral. Values lower than 7 are acidic and higher than 7 are 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.
Produced water	Water associated with oil and gas reservoirs that is produced along with the oil and gas. Typically highly saline with salt concentrations similar to seawater and containing low levels of hydrocarbons.
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).
UI	Unauthorised Incident.
Water flooding	A method of thermal recovery in which hot water is injected into a reservoir through specially distributed injection wells. Hot water flooding reduces the viscosity of the crude oil, allowing it to move more easily toward production wells.

For further information on analytical methods, contact a manager within the Environment Quality Department.

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Appendix I

Resource consents held by Todd Petroleum Limited

(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:	Todd Energy Limited PO Box 802 New Plymouth 4340
Decision Date	31 May 2019
Commencement Date	31 May 2019

Conditions of Consent

Consent Granted:	To discharge fluid waste generated by oil and gas exploration and production activities into the Mount Messenger and McKee Formations by deep well injection at the Tuhua-B wellsite
Expiry Date:	1 June 2033
Review Date(s):	June annually
Site Location:	Tuhua-B wellsite, Foreman Road, Tikorangi
Grid Reference (NZTM)	1716910E-5675270N
Catchment:	Onaero
Tributary:	Pukemai

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. Before 1 December 2019 the consent holder shall submit an "Injection Operation Management Plan" for any injection well currently being used. For future injection wells an "Injection Operation Management Plan" shall be submitted before injection commences. The plans shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached. *If an additional or replacement well is to be utilised during the lifetime of the consent a new Injection Operation Management Plan will be required.*

2. Before 1 December 2019 the consent holder shall provide to the Chief Executive, Taranaki Regional Council for each well:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity; including but not limited to:
      i. the results of pressure testing of tubing and annulus;
      ii. an engineering evaluation of tubing and casing integrity, including burst pressures; and
      iii. an assessment of the current adequacy of the cement bond in providing zonal isolation;
   (c) an overall assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the ongoing integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 9, are encountered below the site;
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well; and
   (g) maps showing any identified faults (active or inactive) within 2 km of the modelled injection plume and the potential for adverse environmental effects due to the presence of the identified faults.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. If the GeoNet seismic monitoring network records a seismic event higher than a Modified Mercalli intensity of magnitude 3 within 5 km of the downhole injection location of an injection well located at the Tuhua-B wellsite within the McKee Formation, the consent holder shall provide a report to the Chief Executive, Taranaki Regional Council on the likelihood of the seismic event being induced by the exercise of this consent within 2 working days of the event.

4. If the GeoNet seismic monitoring network records a seismic event higher than a Modified Mercalli intensity of magnitude 3 within 5 km of the downhole injection location of an injection well located at the Tuhua-B wellsite within the Mount Messenger Formation:

   (a) if deep well injection is currently being undertaken into the Mount Messenger Formation it shall cease immediately and not recommence; or
   (b) if a deep well injection has occurred into the Mount Messenger Formation within the previous 72 hours no further deep well injection shall occur into the Formation;
   (c) the consent holder shall provide a report to the Chief Executive, Taranaki Regional Council on the likelihood of the seismic event being induced by the exercise of this consent; and
   (d) deep well injection may only then continue into the Formation once the Chief Executive, Taranaki Regional Council has considered the report and concluded that the environmental risk of recommencing injection is acceptable and has advised the consent holder accordingly.

5. There shall be no injection of any fluids after 1 June 2028.

6. 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.

7. The injected fluids shall be confined to the Mount Messenger or McKee Formations, deeper than 1,200 metres below ground level.

8. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

9. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/l.

10. Only the following fluids may be discharged:

    (a) produced water;
    (b) well workover fluids, including hydraulic fracturing return fluids;
    (c) well drilling fluids;
    (d) production sludges;
    (e) contaminated stormwater; and
    (f) other fluids that if discharged will cause no greater environmental risk than those fluids listed above, and certified as such by the by the Chief Executive, Taranaki Regional Council.

11. Once the consent is exercised, the consent holder shall keep daily records of the:

    (a) injection hours;
    (b) volume of fluid discharged; and
    (c) maximum and average injection pressure.

12. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

    (a) type of fluid (as listed in condition 10);
    (b) source of fluid (site name and company);
    (c) an analysis of a representative sample of the fluid for:
        (i) pH;
        (ii) conductivity;
        (iii) suspended solids concentration;
        (iv) temperature;
        (v) salinity;
        (vi) chloride concentration; and
        (vii) total hydrocarbon concentration.

    The analysis required by condition 12(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

13. If the analysis required by condition 12(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 12. The Taranaki Regional Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

14. The information required by conditions 11 and 12 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

15. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources within an Area of Review (AoR) to assess compliance with condition 9 (the 'Monitoring Programme'). The Monitoring Programme shall be designed to characterise local groundwater quality, and be submitted to the Chief Executive, Taranaki Regional Council, for certification before exercising the consent, and shall include:

    (a) the location of sampling sites;
    (b) well/bore construction details; and
    (c) sampling frequency.

    The AoR shall extend 1,000 m from the point of injection. It is a requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons.

    Note: The samples required, under conditions 15 and 16, could be taken and analysed by the Council or other contracted party on behalf of the consent holder.

17. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 15.

18. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    a) an assessment of injection well performance;
    b) details of the injection well design and its structural integrity; including but not limited to:
        i. an assessment of the current adequacy of the cement bond in providing zonal isolation; and
        ii. the results of annual annulus pressure testing and/or continuous pressure monitoring;
    c) results of the most recent five yearly casing inspection or engineering evaluation confirming the ongoing security of the casing;
    d) an assessment of the on-going integrity and isolation of the receiving formation;
    e) an updated injection modeling report, demonstrating the ability of the receiving formation to continue to accept additional waste fluids and an estimation of remaining storage capacity;
    f) an updated map showing any identified faults (active or inactive) within 2 km of the modelled injection plume; and
    g) The results of any seismic monitoring undertaken in compliance with condition 3 of the consent.

19. 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 each year, 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 31 May 2019

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:	Todd Energy Limited P O Box 802 NEW PLYMOUTH 4340
Decision Date (Change):	1 October 2013
Commencement Date (Change):	1 October 2013 (Granted: 24 June 2003)

Conditions of Consent

Consent Granted:	To discharge fluid waste generated by oil and gas exploration and production activities to the Mckee Formation by deep well injection at the McKee-A wellsite
Expiry Date:	1 June 2033
Review Date(s):	June Annually
Site Location:	McKee-A wellsite, Otaraoa Road, Tikorangi
Legal Description:	Pt Lot 6 DP 658 Blk XIV Waitara SD (Discharge source & site)
Grid Reference (NZTM)	1715113E-5670963N
Catchment:	Waitara

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. By 1 January 2014, the consent holder shall submit an "Injection Operation Management Plan." The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. By 1 January 2014, the consent holder shall provide to the Chief Executive, Taranaki Regional Council:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity;
   (c) an assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 7, are encountered below the site; and
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1.)

3. There shall be no injection of any fluids after 1 June 2028.

4. The consent holder shall at all times adopt the best practicable option, as defined in Section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment.

5. The injected fluids shall be confined to the McKee Formation, deeper than 2,300 metres below ground level.

6. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

7. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/l.

8. Only the following fluids may be discharged:

   (a) produced water;
   (b) well workover fluids, including hydraulic fracturing return fluids;
   (c) well drilling fluids;
   (d) production sludges;
   (e) contaminated stormwater; and
   (f) other fluids, that if discharged, will cause no greater environmental risk than those fluids listed above, and certified as such by the by the Chief Executive, Taranaki Regional Council.

9. Once the consent is exercised, the consent holder shall keep daily records of the:

   (a) injection hours;
   (b) volume of fluid discharged; and
   (c) maximum and average injection pressure.

10. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

   (a) type of fluid (as listed in condition 8);
   (b) source of fluid (site name and company);
   (c) an analysis of a representative sample of the fluid for:
      (i) pH;
      (ii) conductivity;
      (iii) suspended solids concentration;
      (iv) temperature;
      (v) salinity;
      (vi) chloride concentration; and
      (vii) total hydrocarbon concentration.

   The analysis required by condition 10(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

11. If the analysis required by condition 10(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 10. The Taranaki Regional Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

12. The information required by conditions 9 and 10 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

13. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources within an Area of Review (AoR) to assess compliance with condition 7 (the 'Monitoring Programme'). The Monitoring Programme shall be designed to characterise local groundwater quality, and be submitted to the Chief Executive, Taranaki Regional Council, for certification before 1 January 2014, and shall include:

    (a) the location of sampling sites;
    (b) well/bore construction details; and
    (c) sampling frequency.

    The AoR shall extend 1,000 m from the point of injection. It is a requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

14. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons.

    Note: *The samples required, under conditions 0 and 14, could be taken and analysed by the Council or other contracted party on behalf of the consent holder.*

15. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: *The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 0.*

16. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    a) an assessment of injection well performance;
    b) an assessment of the on-going integrity and isolation of the wellbore;
    c) an assessment of the on-going integrity and isolation of the receiving formation; and
    d) an updated injection modeling report, demonstrating the ability of the receiving formation to continue to accept additional waste fluids and an estimation of remaining storage capacity.

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

Signed at Stratford on 15 November 2013

For and on behalf of
Taranaki Regional Council

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Director-Resource Management

Discharge Permit

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

Name of Consent Holder:	Todd Energy Limited PO Box 802 New Plymouth 4340	
Decision Date (Change):	7 June 2018	
Commencement Date (Change):	7 June 2018	(Granted Date: 20 November 2003)

Conditions of Consent

Consent Granted:	To discharge waste drilling fluids, water, produced water and stormwater from hydrocarbon exploration and production operations by deepwell injection at the Pouri-A wellsite
Expiry Date:	1 June 2033
Review Date(s):	June annually
Site Location:	Pouri-A wellsite, Foreman Road, Tikorangi (Property owner: FD & KS Wyatt)
Grid Reference (NZTM)	1715348E-5673407N & 1715410E-5673360N
Catchment:	Onaero
Tributary:	Mangahewa

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. Before exercising this consent, the consent holder shall submit an "Injection Operation Management Plan." The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. Before exercising this consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council:

   a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   b) details of the injection well design and its structural integrity;
   c) an assessment of the suitability of the injection well for the proposed activity;
   d) details of how the integrity of the injection well will be monitored and maintained;
   e) confirmation of the depth to which fresh water resources, as defined in condition 8, are encountered below the site; and
   f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. There shall be no injection of any fluids after 1 June 2028.

4. The consent holder shall at all times adopt the best practicable option, as defined in Section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment.

5. The injection of fluids shall be confined to the McKee Formation, and be injected at a minimum depth of 2149 metres true vertical depth below ground level.

6. The injection pressure at the wellhead shall not exceed 4,000 psi (276 bars). If exceeded, the injection operation shall cease immediately and the Chief Executive, Taranaki Regional Council informed immediately.

7. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

8. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/l.

9. Only the following types of fluid may be discharged:

    a. produced water;
    b. well workover fluids, including hydraulic fracturing return fluids;
    c. well drilling fluids;
    d. production sludges;
    e. contaminated stormwater; and
    f. other fluids in accordance with condition 10 below.

10. The fluids discharged under this consent shall only be those listed in condition 9(a) to 9(e) above, and other fluids that:

    a) can reasonably be expected to be used in petrochemical well maintenance and development in accordance with industry best practice;
    b) have environmental effects that are no more adverse than those listed in 9(a) to 9(e) above;
    c) have been certified by the Chief Executive, Taranaki Regional Council as complying with 9(a) to 9(e) above; and
    d) have been the subject of a specific request for certification, in accordance with 9(a) to 9(e) above, that includes details of the proposed contaminant.

11. Once the consent is exercised, the consent holder shall keep daily records of the:

    a) injection hours;
    b) volume of fluid discharged; and
    c) maximum and average injection pressure.

12. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

    a) type of fluid (as listed in condition 9);
    b) source of fluid (site name and company);
    c) an analysis of a representative sample of the fluid for:
        i. pH;
        ii. conductivity;
        iii. suspended solids concentration;
        iv. temperature;
        v. salinity;
        vi. chloride concentration; and
        vii. total hydrocarbon concentration.

    The analysis required by condition 12(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

13. If the analysis required by condition 12(c) above is not carried out in an International Accreditation New Zealand accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 12. The Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

14. The information required by conditions 11 and 12 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

15. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources within an Area of Review (AoR) to assess compliance with condition 9 (the 'Monitoring Programme'). The Monitoring Programme shall be designed to characterise local groundwater quality, and be submitted to the Chief Executive, Taranaki Regional Council, for certification before the exercising of this consent, and shall include:

    a) the location of sampling sites;
    b) well/bore construction details; and
    c) sampling frequency.

    The AoR shall extend 1,000 metres from the point of injection. It is a requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001. The bore shall be completed no later than 6 months after granting this consent.

16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    a) pH;
    b) conductivity;
    c) chloride; and
    d) total petroleum hydrocarbons.

    Note: The samples required, under conditions 15 and 16, could be taken and analysed by the Taranaki Regional Council or other contracted party on behalf of the consent holder.

17. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 15.

18. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    a) an assessment of injection well performance;
    b) an assessment of the on-going integrity and isolation of the wellbore;
    c) an assessment of the on-going integrity and isolation of the receiving formation; and
    d) an updated injection modelling report, demonstrating the ability of the receiving formation to continue to accept additional waste fluids and an estimation of remaining storage capacity.

19. 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 each year, 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 7 June 2018

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:	Todd Energy Limited PO Box 802 NEW PLYMOUTH 4340
Decision Date:	27 May 2014
Commencement Date:	27 May 2014

Conditions of Consent

Consent Granted:	To discharge fluid waste generated by oil and gas exploration and production activities to the Mount Messenger Formation by deepwell injection
Expiry Date:	01 June 2033
Review Date(s):	June Annually
Site Location:	McKee-B wellsite, Otaraoa Road, Tikorangi
Legal Description:	Lot 1 DP 14374 Blk X Waitara SD (Discharge source & site)
Grid Reference (NZTM)	1715303E-5671934N
Catchment:	Onaero
Tributary:	Mangahewa

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. Before exercising this consent, the consent holder shall submit an "Injection Operation Management Plan." The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. Before exercising this consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity;
   (c) an assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 7, are encountered below the site; and
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. There shall be no injection of any fluids after 1 June 2028.

4. The consent holder shall at all times adopt the best practicable option, as defined in Section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment.

5. The injection of fluids shall be confined to the Mount Messenger Formation, and be injected at a minimum depth of 945 metres true vertical depth below ground level.

6. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

7. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/l.

8. Only the following types of fluid may be discharged:

   (a) produced water;
   (b) well workover fluids, including hydraulic fracturing return fluids;
   (c) well drilling fluids;
   (d) production sludges;
   (e) contaminated stormwater; and
   (f) any other fluids approved in writing by the Chief Executive, Taranaki Regional Council.

9. Once the consent is exercised, the consent holder shall keep daily records of the:

   (a) injection hours;
   (b) volume of fluid discharged; and
   (c) maximum and average injection pressure.

10. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

   (a) type of fluid (as listed in condition 8);
   (b) source of fluid (site name and company);
   (c) an analysis of a representative sample of the fluid for:
      (i) pH;
      (ii) conductivity;
      (iii) suspended solids concentration;
      (iv) temperature;
      (v) salinity;
      (vi) chloride concentration; and
      (vii) total hydrocarbon concentration.

   The analysis required by condition 10(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

11. If the analysis required by condition 10(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 10. The Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

12. The information required by conditions 9 and 10 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

13. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources within an Area of Review (AoR) to assess compliance with condition 7 (the 'Monitoring Programme'). The Monitoring Programme shall be designed to characterise local groundwater quality, and be submitted to the Chief Executive, Taranaki Regional Council, for certification before the exercising of this consent, and shall include:

    (a) the location of sampling sites;
    (b) well/bore construction details; and
    (c) sampling frequency.

    The AoR shall extend 1,000 metres from the point of injection. It is a requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

14. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons.

    Note: *The samples required, under conditions 13 and 14, could be taken and analysed by the Taranaki Regional Council or other contracted party on behalf of the consent holder.*

15. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: *The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 13.*

16. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    a) an assessment of injection well performance;
    b) an assessment of the on-going integrity and isolation of the wellbore;
    c) an assessment of the on-going integrity and isolation of the receiving formation; and
    d) an updated injection modeling report, demonstrating the ability of the receiving formation to continue to accept additional waste fluids and an estimation of remaining storage capacity.

17. This consent shall lapse on 30 June 2019, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

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

Signed at Stratford on 27 May 2014

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:	Todd Petroleum Mining Company Limited PO Box 802 New Plymouth 4340
Decision Date (Change):	23 August 2018
Commencement Date (Change):	23 August 2018 (Granted Date: 7 October 2014)

Conditions of Consent

Consent Granted:	To discharge waste fluids, associated with hydrocarbon exploration and production by deep well injection, into the Matemateaonga Formation via the KW-2 and KW-16 wells, or into the Mangahewa Formation via the KA-1 and/or KA-7 wells or Moki and Matemateaonga Formations via the KA-20A well as a contingency
Expiry Date:	1 June 2029
Review Date(s):	June annually
Site Location:	KA-09 wellsite (KW-2/KA-16), 83 Lower Duthie Road & KA-1/7/19/20 wellsite (KA-01/KA-07/KA-20A), 360 Palmer Road, Kapuni
Grid Reference (NZTM)	1702850E-5629709N 1701152E-5630141N
Catchment:	Inaha Kapuni

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 volume discharged shall not exceed 2,000 cubic metres per day.

2. The consent holder shall submit an updated "Injection Operation Management Plan" prior to any future deep well injection activities. The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of any injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

3. Before exercising this consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity;
   (c) an assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 9, are encountered below the site; and
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well.

   (Note: The information required by condition 3 may be included within the "Injection Operation Management Plan" required by condition 2).

4. There shall be no injection of any fluids after 1 June 2024.

5. 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.

6. Fluids shall be injected at a minimum depth of 1,200 mbgl.

7. Before any contingency back-up well is utilised for injection purposes, the consent holder must provide to the Chief Executive, Taranaki Regional Council an Injection Operation Management Plan specific to the well to be used, which includes all information required by condition 3.

8. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

9. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/l.

10. Only the following types of fluid may be discharged:

    (a) produced water;
    (b) hydraulic fracturing and return fluids;
    (c) well workover fluids;
    (d) well servicing and intervention fluids;
    (e) well drilling fluids;
    (f) production chemicals
    (g) production sludges;
    (h) contaminated stormwater; and
    (i) other fluids in accordance with condition 11 below.

11. The fluids discharged under this consent shall only be those listed in condition 10(a) to 10(h) above, and other fluids that:

    (a) Can reasonably be expected to be used in petrochemical well maintenance and development in accordance with industry best practice;
    (b) Have environmental effects that are no more adverse than those listed in 10(a)–10(h) above;
    (c) Have been certified by the Chief Executive, Taranaki Regional Council as complying with 11(a) and 11(b) above; and
    (d) Have been the subject of a specific request for certification, in accordance with 11(c) above, that includes details of the proposed contaminant.

12. Once the consent is exercised, the consent holder shall keep daily records of the:

    (a) injection hours;
    (b) volume of fluid discharged; and
    (c) maximum and average injection pressure.

13. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

    (a) type of fluid (as listed in condition 10);
    (b) source of fluid (site name and company);
    (c) an analysis of a representative sample of the fluid for:
        (i) pH;
        (ii) conductivity;
        (iii) suspended solids concentration;
        (iv) temperature;
        (v) salinity;
        (vi) chloride concentration; and
        (vii) total hydrocarbon concentration.

    (Note: The analysis required by condition 13 above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months).

14. If the analysis required by condition 13 above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 13. The Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

15. The information required by conditions 12 and 13 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

16. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources within an Area of Review (AoR) to assess compliance with condition 9 (the 'Monitoring Programme'). The Monitoring Programme shall be designed to characterise local groundwater quality, and be submitted to the Chief Executive, Taranaki Regional Council, for certification before the exercising of this consent, and shall include:

    (a) the location of sampling sites;
    (b) wellsite/wellbore construction details; and
    (c) sampling frequency.

    The AoR shall extend 1,000 metres from the point of injection. It is a requirement that at least one suitable monitoring bore be located within 500 metres of the injection well. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

17. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons.

    Note: The samples required, under conditions 16 and 17, could be taken and analysed by the Taranaki Regional Council or other contracted party on behalf of the consent holder.

18. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 16.

19. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    a) A summary of injection activities over the period being reported;
    b) an assessment of injection well performance;
    c) an assessment of the on-going integrity and isolation of the wellbore; and
    d) an assessment of the on-going integrity and isolation of the receiving formation.

20. This consent shall lapse on 31 December 2019, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

21. 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 each year, 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 23 August 2018

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:	Todd Energy Limited PO Box 802 New Plymouth 4340
Decision Date:	13 June 2018
Commencement Date:	13 June 2018

Conditions of Consent

Consent Granted:	To discharge produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids from hydrocarbon exploration and production operations into the McKee Formation by deep well injection at the Tuhua-D wellsite
Expiry Date:	1 June 2033
Review Date(s):	June annually
Site Location:	Tuhua-D wellsite, Foreman Road, Tikorangi (Property owner: Cheryll & Lynn Foreman)
Grid Reference (NZTM)	1716441E-5673950N
Catchment:	Onaero
Tributary:	Pouri

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. Before exercising the consent, the consent holder shall submit an "Injection Operation Management Plan." The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. Before exercising the consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity;
   (c) an assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 7, are encountered below the site; and
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. There shall be no injection of any fluids after 1 June 2028.

4. The consent holder shall at all times adopt the best practicable option, as defined in Section 2 of the Resource Management Act 1991, to prevent or minimise any actual or likely adverse effect on the environment.

5. The injection of fluids shall be confined to the McKee Formation, and be injected at a minimum depth of 2,319 metres true vertical depth below ground level.

6. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

7. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/L.

8. Only the following types of fluid may be discharged:

   (a) produced water;
   (b) well drilling fluids;
   (c) well workover fluids, including hydraulic fracturing fluids; and
   (d) contaminated stormwater/wastewater.

9. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

   (a) type of fluid (as listed in condition 8);
   (b) source of fluid (site name and company);
   (c) an analysis of a representative sample of the fluid for:
      (i) pH;
      (ii) conductivity;
      (iii) suspended solids concentration;
      (iv) temperature;
      (v) salinity;
      (vi) chloride concentration; and
      (vii) total hydrocarbon concentration.

   The analysis required by condition 9(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

10. Once the consent is exercised, the consent holder shall keep daily records of the:

    (a) injection hours;
    (b) volume of fluid discharged; and
    (c) maximum and average injection pressure.

11. If the analysis required by condition 9(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 9. The Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

12. The information required by conditions 9 and 10 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

13. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources to assess compliance with condition 7 (the 'Monitoring Programme'). The Monitoring Programme shall be submitted to the Chief Executive, Taranaki Regional Council, for certification before exercising the consent, and shall include:

    (a) the location of sampling sites;
    (b) well/bore construction details; and
    (c) sampling frequency.

    It is a minimum requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

14. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons.

    Note: The samples required, under conditions 13 and 14, could be taken and analysed by the Council or other contracted party on behalf of the consent holder.

15. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 13.

16. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    a) an assessment of injection well performance;
    b) an assessment of the on-going integrity and isolation of the wellbore;
    c) an assessment of the on-going integrity and isolation of the receiving formation; and
    d) an updated injection modeling report, demonstrating the ability of the receiving formation to continue to accept additional waste fluids and an estimation of remaining storage capacity.

17. 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 each year, 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 13 June 2018

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:	Todd Energy Limited PO Box 802 New Plymouth 4340
Decision Date	18 September 2019
Commencement Date	18 September 2019

Conditions of Consent

Consent Granted:	To discharge fluids from hydrocarbon exploration and production operations, including produced water, well drilling fluids, well work over fluids and hydraulic fracturing fluids, into the Matemateaonga Formation by deep well injection at the KA1/7/19/20 wellsite
Expiry Date:	1 June 2035
Review Date(s):	June annually
Site Location:	KA1/7/19/20 wellsite, 360 Palmer Road, Kapuni
Grid Reference (NZTM)	1701111E-5630146N
Catchment:	Kapuni

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. Before exercising the consent, the consent holder shall submit an "Injection Operation Management Plan." The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. Before exercising the consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity; including but not limited to:
      (i) the results of pressure testing of tubing and annulus;
      (ii) an engineering evaluation of tubing and casing integrity, including burst pressures; and
      (iii) an assessment of the current adequacy of the cement bond in providing zonal isolation.
   (c) an overall assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the ongoing integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 9, are encountered below the site;
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well; and
   (g) maps showing any identified faults (active or inactive) within 2 km of the modelled injection plume and the potential for adverse environmental effects due to the presence of the identified faults.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. If the GeoNet seismic monitoring network records a seismic event that exceeds a summary magnitude of 3 within 5 km of the downhole injection location of an injection well located at the KA1/7/19/20 wellsite:

   (a) if deep well injection is currently being undertaken it shall cease immediately and not recommence; or
   (b) if a deep well injection has occurred within the previous 72 hours no further deep well injection shall occur into the Formation;
   (c) the consent holder shall provide a report to the Chief Executive, Taranaki Regional Council on the likelihood of the seismic event being induced by the exercise of this consent; and
   (d) deep well injection may only then continue into the Formation once the Chief Executive, Taranaki Regional Council has considered the report and concluded that the environmental risk of recommencing injection is acceptable and has advised the consent holder accordingly.

4. There shall be no injection of any fluids after 1 June 2030.

5. 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.

6. The injection of fluids shall only be injected to the Matemateaonga Formation, at a minimum depth of 1275 metres below ground level.

7. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

8. The consent holder shall ensure that the exercise of this consent does not result in any adverse effects on groundwater resources above the Matemateaonga MAT 60 formation.

9. Only the following types of fluid may be discharged:

   (a) produced water;
   (b) well drilling fluids; and
   (c) well workover fluids, including hydraulic fracturing fluids.

10. The fluids discharged under this consent shall only be those listed in condition 9(a) to 9(c) above, and other fluids that:

    (a) can reasonably be expected to be used in petrochemical well maintenance and development in accordance with industry best practice;
    (b) have environmental effects that are no more adverse than those listed in 9(a)–9(c) above;
    (c) have been certified by the Chief Executive, Taranaki Regional Council as complying with 10(a) and 10(b) above; and
    (d) have been the subject of a specific request for certification, in accordance with 10(c) above, that includes details of the proposed contaminant.

11. Once the consent is exercised, the consent holder shall keep daily records of the:

    (a) injection hours;
    (b) volume of fluid discharged; and
    (c) maximum and average injection pressure.

12. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

    (a) type of fluid (as listed in conditions 9 and 10);
    (b) source of fluid (site name and company);
    (c) an analysis of a representative sample of the fluid for:
        (i) pH;
        (ii) conductivity;
        (iii) suspended solids concentration;
        (iv) temperature;
        (v) salinity;
        (vi) chloride concentration; and
        (vii) total hydrocarbon concentration.

    The analysis required by condition 12(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

13. If the analysis required by condition 12(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 13. The Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

14. The information required by conditions 12 and 13 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

15. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources to assess compliance with condition 8 (the 'Monitoring Programme'). The Monitoring Programme shall be submitted to the Chief Executive, Taranaki Regional Council, for certification before exercising the consent, and shall include:

    (a) the location of sampling sites;
    (b) well/bore construction details; and
    (c) sampling frequency.

    It is a minimum requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

16. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons.

    Note: The samples required, under conditions 15 and 16, could be taken and analysed by the Council or other contracted party on behalf of the consent holder.

17. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 15.

18. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:
    (a) an assessment of injection well performance;
    (b) details of the injection well design and its structural integrity; including but not limited to:
        (i) an assessment of the current adequacy of the cement bond in providing zonal isolation; and
        (ii) the results of annual annulus pressure testing and/or continuous pressure monitoring.
    (c) results of the most recent five yearly casing inspection or engineering evaluation confirming the ongoing security of the casing;
    (d) an assessment of the on-going integrity and isolation of the receiving formation;
    (e) an updated injection modeling report, demonstrating the ability of the receiving formation to continue to accept additional waste fluids and an estimation of remaining storage capacity;
    (f) an updated map showing any identified faults (active or inactive) within 2 km of the modelled injection plume; and
    (g) The results of any seismic monitoring undertaken in compliance with condition 3 of the consent.

19. This consent shall lapse on 30 September 2024, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.

20. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June each year, 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 18 September 2019

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:	Todd Petroleum Mining Company Limited	
Decision Date (Change):	21 October 2021	
Commencement Date (Change):	21 October 2021	(Granted Date: 14 October 2020)

Conditions of Consent

Consent Granted:	To discharge produced water and wastewater into the Matemateaonga 60 Formation, through deep well injection via the KA-03 well bore within the KA-9/16 wellsite
Expiry Date:	1 June 2035
Review Date(s):	June annually
Site Location:	KA-9/16 wellsite, 83 Lower Duthie Road, Kapuni
Grid Reference (NZTM)	1702775E-5629689N
Catchment:	Inaha

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. Before exercising the consent, the consent holder shall submit an "Injection Operation Management Plan." The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. Before exercising the consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council for each well:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity; including but not limited to:
      (i) the results of pressure testing of tubing and annulus;
      (ii) an engineering evaluation of tubing and casing integrity, including burst pressures; and
      (iii) an assessment of the current adequacy of the cement bond in providing zonal isolation.
   (c) an assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 8, are encountered below the site; and
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well.
   (g) maps showing any identified faults (active or inactive) within 2 km of the modelled injection plume and the potential for adverse environmental effects due to the presence of the identified faults.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. If the GeoNet seismic monitoring network records a seismic event within a 5 km radius of the Kapuni KA-9/16 wellsite (1702775E-5629689N) at a depth of less than 7 km below ground level that exceeds a summary magnitude of 3.0:

   (a) if deep well injection is currently being undertaken it shall cease immediately and not recommence; or
   (b) if a deep well injection has occurred within the previous 72 hours no further deep well injection shall occur into the Formation;
   (c) the consent holder shall provide a report to the Chief Executive, Taranaki Regional Council on the likelihood of the seismic event being induced by the exercise of this consent; and
   (d) deep well injection may only then continue once the Chief Executive, Taranaki Regional Council has considered the report and concluded that the environmental risk of recommencing injection is acceptable and has advised the consent holder accordingly.

4. There shall be no injection of any fluids after 1 June 2030.

5. 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.

6. The injected fluids shall be confined to the Matemateonga 60 Formation, at a minimum depth of 1240 metres true vertical depth below ground (mTVDGL) (1044 metres true vertical depth sub surface (mTVDSS)).

7. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

8. The consent holder shall ensure that the exercise of this consent does not result in any adverse effects on groundwater resources above the Matemateaonga 60 Formation.

9. Only the following types of fluids may be discharged:

   (a) produced water;
   (b) well drilling fluids; and.
   (c) well workover fluids, including hydraulic fracturing fluids.

10. The fluids discharged under this consent shall only be those listed in condition 9(a) to 9(c) above, and other fluids that:

   (a) can reasonably be expected to be used in petrochemical well maintenance and development in accordance with industry best practice;
   (b) have environmental effects that are no more adverse than those listed in 9(a)–9(c) above;
   (c) have been certified by the Chief Executive, Taranaki Regional Council as complying with 10(a) and 10(b) above; and
   (d) have been the subject of a specific request for certification, in accordance with 10(c) above, that includes details of the proposed contaminant.

11. Once the consent is exercised, the consent holder shall keep daily records of the:

    (a) injection hours;
    (b) volume of fluids discharged; and
    (c) maximum and average injection pressure.

12. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

    (a) type of fluid (as listed in conditions 9 and 10);
    (b) source of fluid (site name and company);
    (c) an analysis of a representative sample of the fluid for:
        (i) pH;
        (ii) conductivity;
        (iii) suspended solids concentration;
        (iv) temperature;
        (v) salinity;
        (vi) chloride concentration; and
        (vii) total hydrocarbon concentration.

    The analysis required by condition 12(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

13. If the analysis required by condition 12(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 14. The Taranaki Regional Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

    The information required by conditions 11 and 12 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

14. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources to assess compliance with condition 8 (the 'Monitoring Programme'). The Monitoring Programme shall be submitted to the Chief Executive, Taranaki Regional Council, for certification before exercising the consent, and shall include:

    (a) the location of sampling sites;
    (b) well/bore construction details; and
    (c) sampling frequency.

    It is a minimum requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

15. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons; .

    Note: The samples required, under conditions 12 and 15, could be taken and analysed by the Council or other contracted party on behalf of the consent holder.

16. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 14.

17. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    (a) an assessment of injection well performance;
    (b) details of the injection well design and its structural integrity; including but not limited to:
        (i) an assessment of the current adequacy of the well's zonal isolation; and
        (ii) the results of annual annulus pressure testing and/or continuous pressure monitoring.
    (c) results of the most recent five yearly casing inspection or engineering evaluation confirming the ongoing security of the casing;
    (d) an assessment of the on-going integrity and isolation of the receiving formation;
    (e) an updated injection modeling report, demonstrating the ability of the receiving formation to continue to accept additional fluid and an estimation of remaining storage capacity;
    (f) an updated map showing any identified faults (active or inactive) within 2 km of the modelled injection plume; and
    (g) the results of any seismic monitoring undertaken in compliance with condition 3 of the consent.

18. This consent shall lapse five years from the date of issue, 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.

19. 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 each year, 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 21 October 2021

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:	Todd Energy Limited
Decision Date:	16 September 2021
Commencement Date:	16 September 2021

Conditions of Consent

Consent Granted:	To discharge produced water, well drilling fluids and wastewater into the McKee Formation by deep well injection at the McKee-C wellsite
Expiry Date:	1 June 2039
Review Date(s):	June annually
Site Location:	McKee-C wellsite, 1334 Otaraoa Road, Waitara
Grid Reference (NZTM)	1715280E-5672409N
Catchment:	Onaero
Tributary:	Mangahewa

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

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Please quote our document number in your reply

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. Before exercising the consent, the consent holder shall submit an "Injection Operation Management Plan." The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. Before exercising the consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council for each well:

   (a) a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;
   (b) details of the injection well design and its structural integrity; including but not limited to:
      (i) the results of pressure testing of tubing and annulus;
      (ii) an engineering evaluation of tubing and casing integrity, including burst pressures; and
      (iii) an assessment of the current adequacy of the cement bond in providing zonal isolation.
   (c) an assessment of the suitability of the injection well for the proposed activity;
   (d) details of how the integrity of the injection well will be monitored and maintained;
   (e) confirmation of the depth to which fresh water resources, as defined in condition 8, are encountered below the site; and
   (f) a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well.
   (g) maps showing any identified faults (active or inactive) within 2 km of the modelled injection plume and the potential for adverse environmental effects due to the presence of the identified faults.

   (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. If the GeoNet seismic monitoring network records a seismic event within a 5 km radius of the McKee-C wellsite (1715280E 5672409N) at a depth of less than 7 km below ground level that exceeds a summary magnitude of 3.0:

   (a) if deep well injection is currently being undertaken it shall cease immediately and not recommence; or
   (b) if a deep well injection has occurred within the previous 72 hours no further deep well injection shall occur into the Formation;

(c) the consent holder shall provide a report to the Chief Executive, Taranaki Regional Council on the likelihood of the seismic event being induced by the exercise of this consent; and
(d) deep well injection may only then continue once the Chief Executive, Taranaki Regional Council has considered the report and concluded that the environmental risk of recommencing injection is acceptable and has advised the consent holder accordingly.

4. There shall be no injection of any fluids after 1 June 2034.

5. 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.

6. The injected fluids shall be confined to the McKee Formation, at a minimum depth of 2,097 metres true vertical depth sub surface (mTVDSS).

7. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

8. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/l.

9. Only the following types of fluids may be discharged:

(a) produced water sourced from the McKee, Mangahewa and Pohokura fields;
(b) well drilling fluids; and.
(c) well workover fluids, including hydraulic fracturing fluids.

10. The fluids discharged under this consent shall only be those listed in condition 9(a) to 9(c) above, and other fluids that:

(a) can reasonably be expected to be used in petrochemical well maintenance and development in accordance with industry best practice;
(b) have environmental effects that are no more adverse than those listed in 9(a)–9(c) above;
(c) have been certified by the Chief Executive, Taranaki Regional Council as complying with 10(a) and 10(b) above; and
(d) have been the subject of a specific request for certification, in accordance with 10(c) above, that includes details of the proposed contaminant.

11. From the date of the first discharge the consent holder shall keep a record of the:

(a) well into which the discharge occurred;
(b) hours of injection each day;
(c) volume of fluid discharged each day; and
(d) maximum and average injection pressure each day.

12. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

    (a) type of fluid (as listed in conditions 9 and 10);
    (b) source of fluid (site name and company);
    (c) an analysis of a representative sample of the fluid for:
        (i) pH;
        (ii) conductivity;
        (iii) suspended solids concentration;
        (iv) temperature;
        (v) salinity;
        (vi) chloride concentration; and
        (vii) total hydrocarbon concentration.

    The analysis required by condition 12(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

13. If the analysis required by condition 12(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 14. The Taranaki Regional Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

    The information required by conditions 11 and 12 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

14. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources to assess compliance with condition 8 (the 'Monitoring Programme'). The Monitoring Programme shall be submitted to the Chief Executive, Taranaki Regional Council, for certification before exercising the consent, and shall include:

    (a) the location of sampling sites;
    (b) well/bore construction details; and
    (c) sampling frequency.

    It is a minimum requirement that at least one suitable monitoring bore be located within 500 metres of the well head. If no suitable existing bores are available, it will be necessary for the Monitoring Programme to include installation of, and sampling from, a suitable bore. The bore would be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001.

15. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;
    (b) conductivity;
    (c) chloride; and
    (d) total petroleum hydrocarbons.

    Note: The samples required, under conditions 12 and 15, could be taken and analysed by the Council or other contracted party on behalf of the consent holder.

16. All groundwater sampling and analysis shall be undertaken in accordance with a *Sampling and Analysis Plan*, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 14.

17. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, and Otaraua hapū before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    (a) an assessment of injection well performance;
    (b) details of the injection well design and its structural integrity; including but not limited to:
        (i) an assessment of the current adequacy of the well's zonal isolation; and
        (ii) the results of annual annulus pressure testing and/or continuous pressure monitoring.
    (c) results of the most recent five yearly casing inspection or engineering evaluation confirming the ongoing security of the casing;
    (d) an assessment of the on-going integrity and isolation of the receiving formation;
    (e) an updated injection modeling report, demonstrating the ability of the receiving formation to continue to accept additional fluid and an estimation of remaining storage capacity;
    (f) an updated map showing any identified faults (active or inactive) within 2 km of the modelled injection plume; and
    (g) the results of any seismic monitoring undertaken in compliance with condition 3 of the consent.

18. This consent shall lapse five years from the date of issue, 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.

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

Signed at Stratford on 16 September 2021

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:	Todd Energy Limited
Decision Date:	5 October 2022
Commencement Date:	5 October 2022

Conditions of Consent

Consent Granted:	To discharge contaminants to land via deep well injection
Expiry Date:	1 June 2039
Review Date(s):	June annually
Site Location:	McKee-D wellsite, 1444 Otaraoa Road, Tikorangi
Grid Reference (NZTM)	1715133E-5671549N
Catchment:	Waitara

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

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www.facebook.com/TaranakiRegionalCouncil twitter.com/TaranakiRC
Please quote our document number in your reply

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. Before exercising the consent, the consent holder shall submit to the Council an "Injection Operation Management Plan" for approval. The plan shall include the operational details of the injection activities and identify the conditions that would trigger concerns about the integrity of the injection well, the receiving formation or overlying geological seals. The plan shall also detail the action(s) to be taken by the consent holder if trigger conditions are reached.

2. Before exercising the consent, the consent holder shall provide to the Chief Executive, Taranaki Regional Council for each well:

    a. a geological assessment of the environment in which the well is located, including the injection zone, the geological seals confining the injection zone and any associated faulting;

    b. details of the injection well design and its structural integrity; including but not limited to:

        i. the results of pressure testing of tubing and annulus;

        ii. an engineering evaluation of tubing and casing integrity, including burst pressures; and

        iii. an assessment of the current adequacy of the cement bond in providing zonal isolation.

    c. an assessment of the suitability of the injection well for the proposed activity;

    d. details of how the integrity of the injection well will be monitored and maintained;

    e. confirmation of the depth to which fresh water resources, as defined in condition 8, are encountered below the site;

    f. a chemical assessment of the receiving formation water which confirms its Total Dissolved Solids (TDS) concentration, and also demonstrates that the mixing of formation and injection fluids will not result in any adverse effects on the receiving formation or the injection well;and

    g. maps showing any identified faults (active or inactive) within 2 km of the modelled injection plume and the potential for adverse environmental effects due to the presence of the identified faults.

    (Note: The information required by condition 2 may be included within the "Injection Operation Management Plan" required by condition 1).

3. If the GeoNet seismic monitoring network records a seismic event within a 5 km radius of any McKee-D injection well (1715131E-567155N) at a depth of less than 7 km below ground level that exceeds a summary magnitude of 3.0:

    (a) if deep well injection is currently being undertaken it shall cease immediately and not recommence; or

(b) if a deep well injection has occurred within the previous 72 hours no further deep well injection shall occur into the Formation;

(c) the consent holder shall provide a report to the Chief Executive, Taranaki Regional Council on the likelihood of the seismic event being induced by the exercise of this consent; and

(d) deep well injection may only then continue once the Chief Executive, Taranaki Regional Council has considered the report and concluded that the environmental risk of recommencing injection is acceptable and has advised the consent holder accordingly.

4. There shall be no injection of any fluids after 1 June 2034

5. 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.

6. The injected fluids shall be confined to the McKee Formation, at a minimum depth of 2,059 metres true vertical depth sub surface (mTVDSS).

7. The consent holder shall ensure that the discharge authorised by this consent does not result in the fracturing of the geological seals confining the injection zone.

8. The consent holder shall ensure that the exercise of this consent does not result in contaminants reaching any useable fresh water (groundwater or surface water). Useable fresh groundwater is defined as any groundwater having a TDS concentration of less than 1,000 mg/l.

9. Only the following types of fluids may be discharged:

(a) produced water;

(b) wastewater;

(c) well drilling fluids; and

(d) well workover fluids, including hydraulic fracturing fluids.

10. The fluids discharged under this consent shall only be those listed in condition 9(a) to 9(c) above, and other fluids that:

(a) can reasonably be expected to be used in petrochemical well maintenance and development in accordance with industry best practice;

(b) have environmental effects that are no more adverse than those listed in 9(a)–9(c) above;

(c) have been certified by the Chief Executive, Taranaki Regional Council as complying with 10(a) and 10(b) above; and

(d) have been the subject of a specific request for certification, in accordance with 10(c) above, that includes details of the proposed contaminant.

11. Once the consent is exercised, the consent holder shall keep daily records of the:

(a) injection hours;

(b) volume of fluids discharged; and

(c) maximum and average injection pressure.

12. For each waste stream arriving on site for discharge, the consent holder shall characterise the fluids by recording the following information:

    (a) type of fluid (as listed in conditions 9 and 10);

    (b) source of fluid (site name and company);

    (c) an analysis of a representative sample of the fluid for:

        (i) pH;

        (ii) conductivity;

        (iii) suspended solids concentration;

        (iv) temperature;

        (v) salinity;

        (vi) chloride concentration; and

        (vii) total hydrocarbon concentration.

    The analysis required by condition 12(c) above is not necessary if a sample of the same type of fluid, from the same source, has been taken, analysed and provided to the Chief Executive, Taranaki Regional Council within the previous 6 months.

13. If the analysis required by condition 12(c) above is not carried out in an International Accreditation New Zealand (IANZ) accredited laboratory, it shall be undertaken in accordance with a "Quality Assurance (QA) Plan" that has been certified by the Chief Executive, Taranaki Regional Council, as meeting the requirements of condition 14. The Taranaki Regional Council may also, at its discretion, carry out an audit of the consent holder's sampling and analysis regime to assess adherence to the QA plan.

    The information required by conditions 11 and 12 above, for each calendar month, shall be provided to the Chief Executive, Taranaki Regional Council before the 28th day of the following month.

14. The consent holder shall undertake a programme of sampling and testing that monitors the effects of the exercise of this consent on fresh water resources to assess compliance with condition 8 (the 'Monitoring Programme'). The Monitoring Programme shall be submitted to the Chief Executive, Taranaki Regional Council, for certification before exercising the consent, and shall include:

    (a) the location of sampling sites;

    (b) well/bore construction details; and

    (c) sampling frequency.

    It is a minimum requirement that at least one suitable monitoring bore be locatedwithin 500 metres of the well head. The Monitoring Programme must include installation of, and sampling from, a suitable bore. The bore must be of a depth, location and design determined after consultation with the Chief Executive, Taranaki Regional Council and installed in accordance with NZS 4411:2001. This bore must be installed and functioning prior to the commencement of the deep well injection programme.

    Note: An initial injection test may be undertaken prior to the installation of the groundwater monitoring bore

15. All groundwater samples taken for monitoring purposes shall be taken in accordance with recognised field procedures and analysed for:

    (a) pH;

    (b) conductivity;

    (c) chloride; and

    (d) total petroleum hydrocarbons

    Note: The samples required, under conditions 12 and 15, could be taken and analysed by a contracted party on behalf of the consent holder.

16. All groundwater sampling and analysis shall be undertaken in accordance with a Sampling and Analysis Plan, which shall be submitted to the Chief Executive, Taranaki Regional Council for review and certification before the first sampling is undertaken. This Plan shall specify the use of standard protocols recognised to constitute good professional practice including quality control and assurance. An IANZ accredited laboratory shall be used for all sample analysis. Results shall be provided to the Chief Executive, Taranaki Regional Council within 30 days of sampling and shall include supporting quality control and assurance information.

    Note: The Sampling and Analysis Plan may be combined with the Monitoring Programme required by condition 14.

17. The consent holder shall provide to the Chief Executive, Taranaki Regional Council, before 31 August each year, a summary of all data collected and a report detailing compliance with consent conditions over the previous 1 July to 30 June period. Based on the data provided, the report shall also provide:

    (a) an assessment of injection well performance;

    (b) details of the injection well design and its structural integrity; including but not limited to:

        (i) an assessment of the current adequacy of the well's zonal isolation; and

        (ii) the results of annual annulus pressure testing and/or continuous pressure monitoring.

    (c) results of the most recent five yearly casing inspection or engineering evaluation confirming the ongoing security of the casing;

    (d) an assessment of the on-going integrity and isolation of the receiving formation;

    (e) an updated injection modelling report, demonstrating the ability of the receiving formation to continue to accept additional fluid and an estimation of remaining storage capacity;

    (f) an updated map showing any identified faults (active or inactive) within 2 km of the modelled injection plume; and

    (g) the results of any seismic monitoring undertaken in compliance with condition 3 of the consent.

18. This consent shall lapse five years from the date of issue, 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.

19. 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 each year, 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 5 October 2022

For and on behalf of
Taranaki Regional Council

A D McLay
Director - Resource Management

Appendix II

Categories used to evaluate environmental and administrative performance

Categories used to evaluate environmental and administrative performance

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

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

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

Environmental Performance

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

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

For example:

- High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
- Strong odour beyond boundary but no residential properties or other recipient nearby.

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

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

Administrative performance

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

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

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

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