

Shell Todd Oil Services
KA 8/12/15 Wellsites (Exploration)
Monitoring Programme Report

Technical Report 2010–109

ISSN: 0114-8184 (Print)
ISSN: 1178-1467 (Online)
Document: 780809

Taranaki Regional Council
Private Bag 713
STRATFORD

October 2011

Executive summary

Shell Todd Oil Services operates wellsites located on Eltham Road, Kapuni, in the Inaha catchment. This report for the period February 2010 -August 2010 describes the monitoring programme implemented by the Taranaki Regional Council to assess the Company's environmental performance during the period under review, and the results and environmental effects of the Company's activities.

This report describes the monitoring programme implemented by the Taranaki Regional Council to assess the Company's environmental performance in relation to drilling operations at the KA 8/12/15 site during the period under review, and the results and environmental effects of the Company's activities. This site has been established for many years as part of the Kapuni field initially developed in the 1970s.

The Company holds a total of 3 resource consents, for the activities relating to exploration at the KA 8/12/15 site, which include a total of 43 conditions setting out the requirements that the Company must satisfy. The Company holds consent 3265-2 to discharge treated stormwater into the an unnamed tributary of the Inaha Stream; consent 6828-1 to discharge emissions to air from flaring at the site and consent 7113-1 to discharge liquid onto and into land from a purpose built blow down pit.

The Council's monitoring programme for the period under review included six compliance inspections. No water samples were collected for physicochemical analysis, because no discharges to water were observed.

Inspections showed that the site was well managed. There were no silt control issues at the site. The skimmer pits were clear and not discharging during inspections. The site is generally very tidy.

There was one unauthorised incident recorded in relation to operations at the KA 8/12/15 site during the period under review. This incident on 12 June 2010 was as a result of significant rainfall, the well head cellar overflowed through to the skimmer pits and then discharged to an unnamed tributary of the Inaha Stream. The Company invoked the contingency plan and took all actions necessary to prevent any effect to the waterbody. No water samples were taken as this company had cleaned up prior to inspection.

Drilling fluids and cuttings were disposed of off-site by a contractor to a licensed disposal area. Solid drilling wastes were also disposed of off-site by mix-bury-cover.

During the period under review, the Company demonstrated a good level of environmental performance and compliance with the resource consents.

Flaring was carried out on-site during exploration activities.

This report includes recommendations for any future operations at the site.

Production testing at the site was undertaken to evaluate the viability of the wells.

Table of contents

	Page
1. Introduction	1
1.1 Compliance monitoring programme reports and the Resource Management Act 1991	1
1.1.1 Introduction	1
1.1.2 Structure of this report	1
1.1.3 The Resource Management Act (1991) and monitoring	1
1.1.4 Evaluation of environmental performance	2
1.2 Site description	3
1.3 Resource consents	3
1.3.1 Background	3
1.3.2 Water discharge permit (treated stormwater)	4
1.3.3 Air discharge permit	4
1.3.4 Discharge permit	6
1.4 Monitoring programme	7
1.4.1 Introduction	7
1.4.2 Programme liaison and management	7
1.4.3 Site inspections	7
1.4.4 Chemical sampling	8
1.4.5 Solid wastes	8
1.4.6 Air quality monitoring	8
2. Results	9
2.1 Water	9
2.1.1 Inspections	9
2.1.2 Results of discharge monitoring	10
2.1.3 Results of receiving environment monitoring	10
2.2 Air	10
2.2.1 Inspections	10
2.2.2 Results of discharge monitoring	11
2.2.3 Results of receiving environment monitoring	11
2.3 Land	11
2.3.1 Land status	11
2.4 Contingency plan	11
2.5 Register of incidents	11
3. Discussion	12
3.1 Discussion of plant performance	12
3.2 Environmental effects of exercise of consents	12
3.3 Evaluation of performance	12
4. Recommendations	15
Glossary of common terms and abbreviations	16
Appendix I Resource consents held by Shell Todd Oil Services for the KA 8/12/15 wellsites	

List of tables

Table 1	Summary of performance for Consent 6828-1 to discharge emissions to air from flaring	12
Table 2	Summary of performance for Consent 3265-2 to discharge treated stormwater	13
Table 3	Summary of performance for Consent 7113-1 to discharge liquid onto land	14

List of figures

Figure 1	Approximate location of KA 8/12/15 site (access from Eltham Road) and proximity to Eltham	3
----------	-------------------------------------------------------------------------------------------	---

1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is the report for the period February 2010- August 2010 by the Taranaki Regional Council on the monitoring programme associated with resource consents held by Shell Todd Oil Services in relation to exploration activities at the KA 8/12/15 (multi-well) wellsite. The wellsite is located on Eltham Road at Kapuni, in the Inaha catchment. The land surrounding the site is flat to rolling dairy country. Petroleum infrastructure has been a feature of the surrounding landscape since the 1970's.

This report covers the results and findings of the monitoring programme implemented by the Council in respect of the consents held by Shell Todd Oil Services relating to exploration activities at the KA 8/12/15 site.

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

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the Resource Management Act and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by Shell Todd Oil Services in relation to exploration activities at the KA 8/12/15 site, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted on the KA 8/12/15 sites during exploration activities.

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

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

Section 4 presents recommendations to be implemented.

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

1.1.3 The Resource Management Act (1991) and monitoring

The Resource Management Act 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 a discharger, and may include cultural and socio-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 (e.g. recreational, cultural, or aesthetic);
- (e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Taranaki Regional Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each discharge source. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the Resource Management Act to assess the effects of the exercise of consents. In accordance with section 35 of the Resource Management Act 1991, the Council undertakes compliance monitoring for consents and rules in regional plans; and maintains an overview of performance of resource users against regional plans and consents.

Compliance monitoring, including impact monitoring, also enables the Council to continuously assess its own performance in resource management as well as that of resource users particularly consent holders. It further enables the Council to continually re-evaluate its approach and that of consent holders to resource management, and, ultimately, through the refinement of methods, 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 Company during the period under review, this report also assigns an overall rating. The categories used by the Council, and their interpretation, are as follows:

- a **high** level of environmental performance and compliance indicates that essentially there were no adverse environmental effects to be concerned about, and no, or trivial (such as data supplied after a deadline) non-compliance with conditions.
- a **good** level of environmental performance and compliance indicates that adverse environmental effects of activities during the year were negligible or minor at most, items of concern were resolved positively, co-operatively, and quickly, the Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices, there were perhaps some items noted on inspection notices for attention but these items were not urgent nor critical, and follow-up inspections showed they have been dealt with.
- **improvement desirable** indicates that the Council may have been obliged to record a verified unauthorised incident involving significant environmental impacts against the company, and/or abatement notices may have been issued; there were adverse environmental effects arising from activities and intervention by Council staff was required, and there were matters that required urgent intervention, took some time to resolve, or remained unresolved at end of the period under review.

- **poor** performance is used when there were grounds for prosecution or infringement notice.

1.2 Site description

The KA 8/12/15 site is located in an area of gently rolling to flat dairy country, where petroleum infrastructure (wellsites, pipelines, etc) have been a feature of the landscape since the 1970s. This drilling operation was covered by the consents granted for the KA 8/12/15 wells and no additional consents were necessary. Preparation for the new well began in September 2009 and was contained within the original boundary site. Notification of drilling was received in early February 2010.

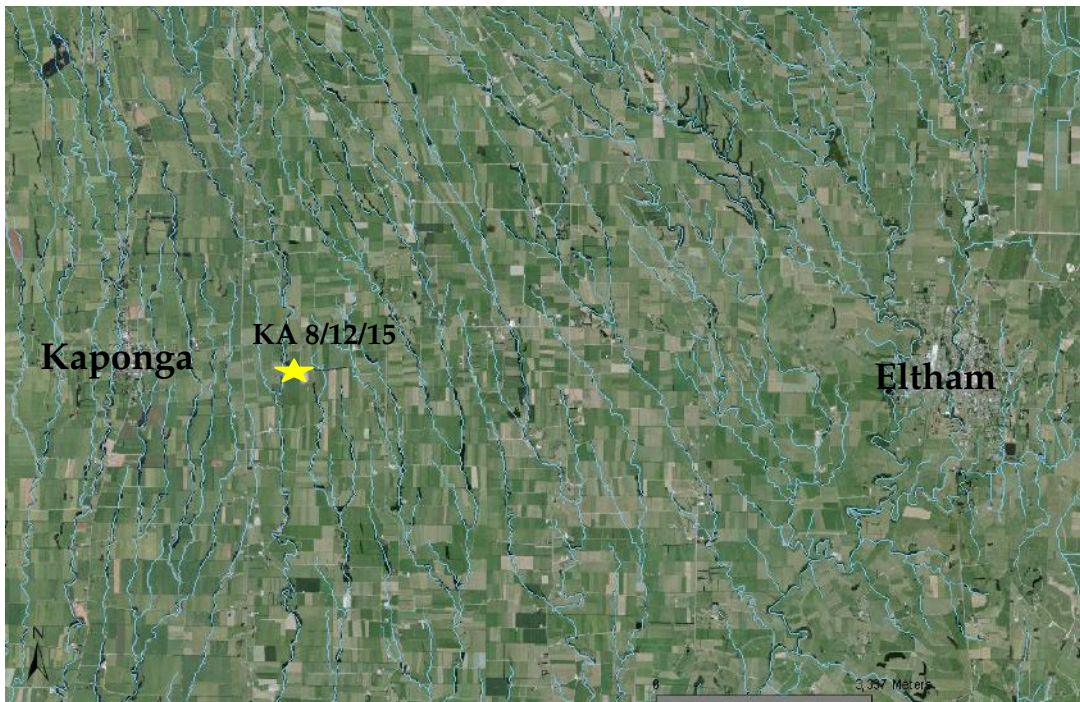


Figure 1 Approximate location of KA 8/12/15 site (access from Eltham Road) and proximity to Eltham

1.3 Resource consents

1.3.1 Background

Shell Todd Oil Services hold three resource consents related to exploration activities at the KA 8/12/15 site. The consent applications were processed on a non-notified basis as Shell Todd Oil Services had obtained the landowners approval as an affected party, and the Council was satisfied that the environmental effects of the activity would be minor.

The consents are discussed below.

Copies of the consents and the Council reports describing the associated activities are contained in Appendix I to this report.

Site construction was permitted under Rule 25 of the Regional Fresh Water Plan for Taranaki.

1.3.2 Water discharge permit (treated stormwater)

Section 15(1)(a) of the Resource Management Act 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.

Shell Todd Oil Services holds water discharge permit **3265-2** to cover the discharge of up to 250 litres/second of treated stormwater from the KA-8, KA-12, and KA15 wellsites into an unnamed tributary of the Inaha Stream. This permit was issued by the Taranaki Regional Council on 5 May 1993 under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2011. A new consent was granted on 22 August 2011.

Conditions 1 and 2 relate to the mixing zone and concentration limits.

Condition 3 relates to levels of total recoverable hydrocarbons.

Condition 4 requires discharge does not alter the natural colour and clarity of the water.

Condition 5 states the discharge is not cause any significant adverse effect on freshwater biological communities.

Condition 6 relates to contingency planning.

Condition 7 requires notification to Council prior to drilling.

Condition 8 requires notification prior to site reinstatement.

A copy of the permit is attached to this report in Appendix I.

1.3.3 Air discharge permit

Section 15(1)(c) of the Resource Management Act 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.

Shell Todd Oil Services holds air discharge permit **6828-1** to cover the discharge of emissions to air from well workovers. This permit was issued by the Taranaki Regional Council on 21 March 2006 (change to conditions: 11 March 2010) under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2023.

Conditions of consent (prior to change of conditions 10 March 2010):

Condition 1 requires notifications to residents prior to flaring.

Condition 2 requires notification to Council prior to flaring.

Condition 3 states there is to be no alteration to plant or equipment without prior consultation.

Condition 4 relates to predicted and prevailing wind at time of flaring.

Condition 5 relates to treatment of gas prior to flaring.

Condition 6 relates to separation failure.

Conditions 7 and 8 relate to treatment of gas and flaring.

Condition 9 requires consent holder to adopt best practicable option.

Conditions 10 and 11 relate to smoke, odour, noxious and toxic limits for air emissions.

Condition 12 requires vapour recovery systems be fitted to storage vessels.

Condition 13 relates to opacity of smoke emissions.

Conditions 14, 15, and 16 relates to emissions to air of nitrogen oxides, carbon monoxide and other emissions from flaring.

Condition 17 relates to smoke emitting incidents.

Condition 18 requires a log of all continuous flaring be kept.

Condition 19 requires a report detailing emissions and measures to reduce emission be provided to Council.

Condition 20 requires an analysis of gas and crude oil stream be provided to Council.

Condition 21 relates to consent lapse.

Condition 22 allows Council to review, amend, delete or add to conditions.

Conditions of consent (following change of conditions 11 March 2010):

Condition 1 requires notification to residents.

Condition 2 required notification to Council when flaring.

Condition 3 states there are to be no alterations to plant or equipment without prior consultation.

Condition 4 relates to predicted and prevailing wind when flaring.

Condition 5 relates to treatment of gas prior to flaring.

Condition 6 relates to separation failure.

Conditions 7 and 8 relate to treatment of gas prior to flaring.

Condition 9 states conditions 5, 6, 7 and 8 do not apply when fracking and workovers occur.

Condition 10 requires adoption of best practicable option.

Conditions 11 and 12 relate to smoke, odour, noxious and toxic limits for air emissions.

Condition 13 requires vapour recovery systems be fitted to storage vessels.

Condition 14 relates to the opacity of smoke emissions.

Conditions 15, 16, and 17 relate to emissions to air of nitrogen oxides, carbon monoxide and other emissions from flaring.

Condition 18 relates to smoke emitting incidents.

Condition 19 requires a log of all continuous flaring be kept.

Condition 20 requires a report detailing emissions and measures to reduce emissions be provided to Council.

Condition 21 requires an analysis of gas and crude oil stream.

Condition 22 relates to consent lapse.

Condition 23 allows Council to review, amend, delete or add to conditions.

A copy of the permit is attached to this report in Appendix I.

1.3.4 Discharge permit

Sections 15(1)(b) and (d) of the Resource Management Act 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.

Shell Todd Oil Services holds discharge permit **7113-1** to cover the discharge of liquid onto and into land from a purpose built blow down pit. This permit was issued by the Taranaki Regional Council on 19 June 2007 under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2023.

Condition 1 requires adoption of best practicable option.

Condition 2 requires exercise of consent to be in accordance with submitted documentation.

Condition 3 states there is to be no adverse impacts on groundwater.

Condition 4 relates to removal of fluid of blow down pit.

Condition 5 requires notification to Council when pit is used.

Condition 6 requires consent holder to maintain six groundwater bores.

Condition 7 relates to sampling of groundwater.

Condition 8 relates to keeping records of discharges.

Condition 9 relates to levels of hydrocarbons in the soil surface layer.

Condition 10 relates to hydrocarbon levels in groundwater.

Condition 11 relates to consent lapse.

Condition 12 allows Council to review, amend, delete or add to conditions.

A copy of the permit is attached to this report in Appendix I.

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the Resource Management Act sets out an obligation for the Taranaki Regional Council to: gather information, monitor, and conduct research on the exercise of resource consents, and the effects arising, within the Taranaki region.

The Taranaki Regional 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 KA 8/12/15 site consisted of three primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Taranaki Regional Council in ongoing liaison with resource consent holders over consent conditions and their interpretation and application, in discussion over monitoring requirements, preparation for any reviews, renewals, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

1.4.3 Site inspections

The KA 8/12/15 site was visited six times through the site construction and drilling phases, to ensure that good environmental practices were adhered to and resource consent special conditions were complied with. An important requirement of site establishment is to ensure that the site is contoured so that all stormwater and any runoff is diverted via ring drains through a series of skimmer pits for treatment prior to discharge to a water body. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal

monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Chemical sampling

No chemical sampling was undertaken at the KA 8/12/15 wellsite as there was no discharge from skimmer pits observed during inspections of the site.

1.4.5 Solid wastes

During exploration activities on the site SBM/WBM drill cuttings, were removed from the site by a contractor and disposed of by land farming at a licensed disposal area. At the time of completion of exploration activities on the site, some solid drilling wastes remained on-site to be disposed of.

1.4.6 Air quality monitoring

Air quality monitoring is usually carried out in association with the well clean-up phase, where flaring can cause smoke emissions, as well as observing any miscellaneous emissions. Special conditions relating to the air discharge permit were complied with. These conditions and provision of specialist separation equipment ensured that no effects occurred. Flaring was carried out on-site.

2. Results

2.1 Water

2.1.1 Inspections

Inspections paid special attention to the ring drains, mud sumps, treatment by skimmer pits and the final discharge point from the skimmer pit on to land and then into water. At each visit to the site, an inspection was also made of the water take to ensure that the Council's conditions for abstraction as a permitted activity were adhered to.

During each inspection the following were checked and noted:

- weather;
- flow rate of surface waters in the general vicinity;
- flow rate of water take;
- whether pumping of water was occurring;
- general tidiness of site;
- ring drains;
- hazardous substance bunds;
- treatment by skimmerpits;
- drilling muds;
- drill cuttings;
- mud pit capacity and quantity contained in pit;
- sewage treatment and disposal;
- cementing waste disposal;
- surface works;
- whether flaring was in progress, and if there was a potential for flaring, whether the Council had been advised;
- discharges and surface waters in the vicinity for effects on colour and clarity, aquatic life and odour;
- site records; and
- general observations

Inspections of the wellsite were undertaken on the following dates (main points noted during each visit are also indicated):

12 February 2010

The well was spudded-in at the time of inspection. The site was very secure with all stormwater directed to large skimmer pits near the ringdrain, no discharge was occurring. The flare pit was sited to minimise off-site effects. All storage areas of bulk materials were bunded, covered or double skinned. A good secure site.

17 February 2010

Compliance monitoring inspection was undertaken following recent showery weather. All run-off was directed, via ringdrains to the skimmer pits. There was no discharge from skimmer pits at the time of inspection. The site was neat and tidy. No flaring was anticipated. The storage areas for drilling materials and bulk fuels were secure.

1 March 2010

Drilling was going ahead at the time of monitoring inspection. There were no odours noted at the site and no flaring was being carried out. The skimmer pits were clear and not discharging. The site was neat and tidy with all bunds and ringdrains secure. There were no obvious signs of any leakage about the mud pumping machinery or the bulk mud tanks. A minor exhaust discharge of oily residue to the ground from the air compressor shed was to be addressed.

13 April 2010

There was some additional heavy equipment, cranes etc and personnel on-site at the time of inspection. The rig was being mobilised for a shift to Wingrove 2 wellsite. The inspection was carried out from the perimeter only. The site was secure. The final inspection was to be carried out after all exploration equipment had been removed.

4 May 2010

A perimeter inspection and familiarisation of the wellsite was undertaken with Bruce Colgan (Environmental Officer – STOS). The site was all secure and site stormwater was being directed to the skimmer pits. The inspection was carried out during exploration drilling.

6 August 2010

Monitoring inspection was undertaken with Bruce Colgan (Environmental Officer - STOS). All stormwater and groundwater treatment and separation systems were clean; the discharge to the Kapuni Stream from an API separator did not give rise to any effects. No odours or untoward emissions were occurring. The storage area near the workshop, for lubricating and hydraulic oils requires a low nib wall or bund for containment. Storage of empty 200 litre drums needs to be addressed - ideally they should be stored on their sides with screw-on lids firmly done up to prevent ingress of water. The portable tank and refuelling area near the fire water pumps shows signs of spillage during refuelling operations. The Company were asked to ensure that this spillage is minimised.

A perimeter inspection of both producing and reinjection wells also was undertaken.

2.1.2 Results of discharge monitoring

No discharge monitoring was carried out as there were no discharges observed during monitoring inspections.

2.1.3 Results of receiving environment monitoring

No monitoring of the receiving environment was carried out in the vicinity of the KA 8/12/15 site.

2.2 Air**2.2.1 Inspections**

Air inspections were carried out in conjunction the standard compliance monitoring inspections. No odours, dust or smoke were noted during site inspections. Flaring was carried out.

2.2.2 Results of discharge monitoring

No air discharge monitoring was carried out at the STOS KA 8/12/15 site as no discharges to air were observed during compliance monitoring inspections, however no effects were noted and no complaints were received regarding discharges to air from the site.

2.2.3 Results of receiving environment monitoring

No monitoring of receiving environment was carried out.

2.2.3.1 Other ambient monitoring

No other ambient monitoring was carried out at the KA 8/12/15 site.

2.3 Land

2.3.1 Land status

The site has not been reinstated.

2.4 Contingency plan

No site specific contingency plan was received for the site. Shell Todd Oil Services do however; have a general 'onshore sites' contingency plan.

2.5 Register of incidents

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

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

In the period under review, there was one incident recorded by the Council that was associated with the KA 8/12/15 sites. Self notification was received regarding an unauthorised discharge of an oily substance to an unnamed tributary of the Inaha Stream. Inspection by Taranaki Regional Council and Shell Todd Oil Service staff found that the well-head cellar had filled up with stormwater faster than the pump could remove it, and oily stormwater discharged across the site and into the interceptor pits. The bund was also washed out. A small amount of hydrocarbons discharged to the stream via the elbow discharge pipe. Inspection of the stream showed a small sheen below the discharge point. Absorbent pads had been placed in the stream to soak up any hydrocarbons. No visual effect could be seen below the mixing zone. Transpacific was on-site with a sucker truck and a digger was also on-site reinstating the bund.

3. Discussion

3.1 Discussion of plant performance

Shell Todd Oil Services provided the following plans and information in compliance with the consents:

- a contingency plan (not site specific);
- site layout information; and
- notification of the various stages of activity

Careful management on site ensured that no effects to the environment occurred. Any minor works requested were promptly carried out.

There was one incident at the KA 8/12/15 site, a small amount of hydrocarbon was discharged and no adverse environmental effects were noted. The Company notified the Council of the spill and clean up was in progress when the Council Investigating Officer arrived at the site.

3.2 Environmental effects of exercise of consents

All stormwater was directed to the well constructed skimmer pits, where contaminants were separated before discharge.

There were no environmental effects to water as a result of the drilling.

Flaring was carried out during operations at the KA 8/12/15 site. No adverse effects were noted during compliance monitoring inspections.

3.3 Evaluation of performance

A tabular summary of the Company's compliance record for the period under review is set out in Tables 1-3.

Table 1 Summary of performance for Consent 6828-1 to discharge emissions to air from flaring

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Notify residents prior to flaring	Undertook to notify	Yes
2. Notify Council prior to flaring	Notification received	Yes
3. No alteration to plant processes or equipments	No alterations	Yes
4. Regard for predicted and prevailing wind conditions	Inspections of site and records	Yes
5. Liquid and solid separation to minimise smoke emissions	Inspections of records	Yes
6. Separation failure	N/A	N/A

Condition requirement	Means of monitoring during period under review	Compliance achieved?
7. No liquid or solid hydrocarbons to be combusted	Inspections of records	Yes
8. Only substances originating from the well stream to be combusted	Inspections of records	Yes
9. Flaring conditions do not apply when fracing or during workovers	Inspections of records	Yes
10. Adopt best practicable option	Inspections of site and records	Yes
11. No discharge of contaminants to air at or beyond the boundary	Inspections of site and records	Yes
12. No offensive odour or smoke beyond the boundary	Inspections of site and records	Yes
13. Vapour recovery systems to be fitted to storage vessels	Inspections of site and records	Yes
14. Opacity of smoke emissions	Inspections of site and records	Yes
15. Control carbon monoxide emissions	Inspections of site and records	Yes
16. Control nitrogen oxide emissions	Inspections of site and records	Yes
17. Control other emissions	Inspections of site and records	Yes
18. Smoke emitting incidents	Inspections of site and records	Yes
19. Maintain log of all continuous flaring	Inspections of records	Yes
20. Report to Council in May	No report received	No
21. Analysis of typical gas and crude oil	No analysis received	No
22. Consent lapse	N/A	N/A
23. Review, amend, delete or add to conditions	Change to conditions 11 March 2010 at consent holders request	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		Good

N/A = not applicable

Table 2 Summary of performance for Consent 3265-2 to discharge treated stormwater

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Mixing zone effects	Inspections of site and records	Yes
2. Mixing zone limits	Inspections of site and records	Yes
3. Limit for total recoverable hydrocarbons	Inspections of records	Yes
4. Discharge not to effect colour or clarity	Inspections of site and records	Yes

Condition requirement	Means of monitoring during period under review	Compliance achieved?
5. No adverse effect on biological communities	Inspections of site and records – no discharge observed during inspections	Yes
6. Contingency planning	Plan received – not site specific	Yes
7. Notification prior to works commencing	Notification received	Yes
8. Notification prior to reinstatement	Site not reinstated	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High

Table 3 Summary of performance for Consent 7113-1 to discharge liquid onto land

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option	Inspections of site and records	Yes
2. Exercise of consent to be in accordance with documentation	Inspections of records	Yes
3. No adverse effects on groundwater	Inspections of records	Yes
4. Remove fluid from blow down pit within 24 hours	Inspections of site and records	Yes
5. Notify Council when blow down pit is used	No notifications received	Yes
6. Maintain 4 monitoring bores	Inspections of records	Yes
7. Consent holder to sample bores after each use of pit	Inspections of records	Yes
8. Keep detailed records of all discharges	Inspections of records	Yes
9. Level of hydrocarbons on surface layer at surrender	N/A	N/A
10. Level of hydrocarbons in groundwater at surrender	N/A	N/A
11. Consent lapse	N/A	N/A
12. Review, amend, delete or add	Next review date: June 2011	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		Good

The Company demonstrated a good level of environmental performance and compliance with the resource consents. During the period under review there was one incident, which was reported to Council and cleaned up quickly, with no visible effect on the environment. The site was generally tidy. Run-off was directed to the perimeter drains and skimmer pits.

4. Recommendations

1. THAT this report be forwarded to the Company, and to any interested parties upon request.
2. THAT the Company be asked to inform the Council of the intention to either drill, test or undertake reinstatement.
3. THAT the current level of monitoring undertaken during exploratory drilling be continued for any future operations at the site.

Glossary of common terms and abbreviations

The following abbreviations and terms that may have been used within this report:

Al*	aluminium
As*	arsenic
Biomonitoring	assessing the health of the environment using aquatic organisms
BOD	biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate
BODF	biochemical oxygen demand of a filtered sample
bund	a wall around a tank to contain its contents in the case of a leak
CBOD	carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate
cfu	colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample
COD	chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction.
Condy	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
Cu*	copper
DO	dissolved oxygen
DRP	dissolved reactive phosphorus
<i>E.coli</i>	<i>Escherichia coli</i> , an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
Ent	Enterococci, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre of sample
F	Fluoride
FC	Faecal coliforms, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
fresh	elevated flow in a stream, such as after heavy rainfall
g/m ³	grammes per cubic metre, and equivalent to milligrammes per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
l/s	litres per second
MCI	macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats
mS/m	millisiemens per metre
mixing zone	the zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point.
NH ₄	ammonium, normally expressed in terms of the mass of nitrogen (N)

NH ₃	unionised ammonia, normally expressed in terms of the mass of nitrogen (N)
NO ₃	nitrate, normally expressed in terms of the mass of nitrogen (N)
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water
O&G	oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons)
Pb*	lead
pH	a numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5.
Physicochemical	measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment
PM ₁₀	relatively fine airborne particles (less than 10 micrometre diameter)
resource consent	refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
RMA	Resource Management Act 1991 and subsequent amendments
SS	suspended solids,
Temp	temperature, measured in °C (degrees Celsius)
Turb	turbidity, expressed in NTU
UI	Unauthorised Incident
UIR	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
Zn*	zinc

*an abbreviation for a metal or other analyte may be followed by the letters 'As', to denote the amount of metal recoverable in acidic conditions. This is taken as indicating the total amount of metal that might be solubilised under extreme environmental conditions. The abbreviation may alternatively be followed by the letter 'D', denoting the amount of the metal present in dissolved form rather than in particulate or solid form.

For further information on analytical methods, contact the Council's laboratory

Appendix I

**Resource consents held by
Shell Todd Oil Services for the
KA 8/12/15 wellsites**

TRK933265

COPY



DISCHARGE PERMIT

Pursuant to the RESOURCE MANAGEMENT ACT 1991
a resource consent is hereby granted by the
Taranaki Regional Council

PRIVATE BAG
STRATFORD
NEW ZEALAND
PHONE (0663) 7127
FAX (0663) 5097

Name of
Consent Holder: SHELL TODD OIL SERVICES LIMITED
PRIVATE BAG NEW PLYMOUTH

Renewal
Granted Date: 5 May 1993

CONDITIONS OF CONSENT

Consent Granted: TO DISCHARGE UP TO 250 LITRES/SECOND OF TREATED
STORMWATER FROM THE KA-8, KA-12, AND KA-15 WELLSITES
INTO AN UNNAMED TRIBUTARY OF THE INAHA STREAM AT
OR ABOUT GR: Q20:115-964

Expiry Date: 1 June 2011

Review Date(s): 1 June 1999 and 1 June 2005

Site Location: KA-8, KA-12, KA-15 WELLSITES ELTHAM ROAD KAPONGA

Legal Description: LOT 1 DP11292 PT SEC 23 BLK XII KAUPOKONUI SD

Catchment: INAHA 351.000

Tributary: UNNAMED TRIBUTARY

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

COPY

GENERAL CONDITIONS

- (a) The consent holder shall provide on request by the General Manager, Taranaki Regional Council, plans, specifications and maintenance programmes of works associated with the exercise of the consent, showing that the conditions of the consent are able to be met.
- (b) The standards, techniques and frequency of monitoring of the consent shall be to the specific approval of the General Manager, Taranaki Regional Council.
- (c) The consent holder shall pay all charges required by the General Manager, Taranaki Regional Council, to enable recovery of the actual and reasonable costs incurred in administration, monitoring and supervision of the consent.

SPECIAL CONDITIONS

- 1) THAT the consent holder, in conjunction with the Taranaki Regional Council, shall establish a permanent mixing zone for the discharge, which is 25 metres below the point of discharge into the receiving waters.
- 2) THAT the discharge shall not cause the receiving waters to exceed the following limits outside of the mixing zone established in special condition 1 above at any time:

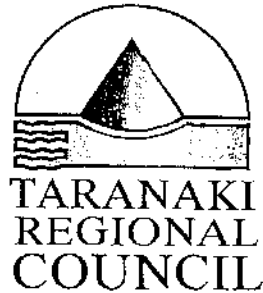
chloride	50	mg/L
un-ionised ammonia	0.02	mg/L
total zinc	0.05	mg/L
total vanadium	0.10	mg/L
total chromium 6+	0.01	mg/L
total chromium 3+	0.10	mg/L
total copper	0.01	mg/L
pH range	6.5 - 8.5	
temperature increase	2 deg C	
biochemical oxygen demand increase	2	mg/L

Further, should the concentration or level of any of the above parameters in the receiving water above the discharge point exceed the limits specified above, the Grantee shall apply to the General Manager, Taranaki Regional Council, for approval to discharge in possible contravention of those limits.

- 3) THAT the discharge shall not contain total recoverable hydrocarbons in excess of 15 mg/L at any time [Infra red spectroscopic technique].
- 4) THAT the discharge of suspended solids or other constituents shall not markedly alter the natural colour and clarity of the receiving water outside of the mixing zone established in special condition 1 above.

TRK933265

COPY



PRIVATE BAG
STRATFORD
NEW ZEALAND
PHONE (0663) 7127
FAX (0663) 5097

- 5) THAT the discharge shall not cause any significant adverse effect on freshwater biological communities of the receiving water.
- 6) THAT the consent holder shall provide for the written approval of the General Manager, Taranaki Regional Council, a contingency plan and map outlining measures and procedures undertaken to prevent a spillage, or accidental discharge of materials and/or waters not licensed by this consent and procedures to be carried out should such a spillage or discharge occur.
- 7) THAT at least one month prior to the commencement of any site works and/or drilling operations, the consent holder shall provide written notification to the General Manager, Taranaki Regional Council.
- 8) THAT the General Manager, Taranaki Regional Council, shall be advised prior to the reinstatement of the site and it shall be carried out to his satisfaction.

Signed at Stratford on 5 May 1993

For and on behalf of
TARANAKI REGIONAL COUNCIL


GENERAL MANAGER



CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE: 06-765 7127
FAX: 06-765 5097
www.trc.govt.nz

Please quote our file number
on all correspondence

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

Name of
Consent Holder: Shell Todd Oil Services Limited
Private Bag 2035
NEW PLYMOUTH 4342



Change To
Conditions Date: 11 March 2010 [Granted: 21 March 2006]

Conditions of Consent

Consent Granted: To discharge emissions into the air from well workovers and in emergency situations and miscellaneous emissions associated with production activities at the KA-8/12/15 wellsite at or about (NZTM) 1701666E-5634598N

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: KA-8/12/15 wellsite, 939 Eltham Road, Kapuni

Legal Description: Lot 1 DP 11292

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

General conditions

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



Special conditions

Information and notification

1. At least 24 hours prior to any flaring, other than in emergencies, the consent holder shall undertake all practicable measures to notify residents within 1000 metres of the site of the commencement of flaring. The consent holder shall include in the notification a 24-hour contact telephone number for a representative of the consent holder, and shall keep and make available to the Chief Executive, Taranaki Regional Council, a record of all queries and/or complaints received.
2. The consent holder shall, whenever practicable, notify the Chief Executive, Taranaki Regional Council, whenever the continuous flaring of hydrocarbons [other than purge gas] is expected to occur for more than five minutes in duration. Notification shall, as far as practicable, be no less than 24 hours prior to such flaring being commenced.
3. No alteration shall be made to plant equipment or processes which may substantially alter the nature or quantity of flare emissions or other site emissions, including but not limited to the recovery of produced gas, other than as notified in this consent application, without prior consultation with the Chief Executive, Taranaki Regional Council, and the consent holder shall obtain any necessary approvals under the Resource Management Act 1991.

Emissions from the site

4. Other than for the maintenance of a pilot flare flame, the consent holder shall have regard to the prevailing and predicted wind speed and direction at the time of initiation of any episode of flaring or other combustion of hydrocarbons.
5. All gas being flared, at any time must first be treated by effective liquid and solid separation and recovery, as far as is practicable, to ensure that smoke emission during flaring is minimised.

Consent 6828-1

6. If separation cannot be implemented and/or maintained at any time while there is a flow from the well, whether natural or induced, then the consent holder shall notify the Chief Executive, Taranaki Regional Council, and shall in any case re-establish liquid and solid separation and recovery within three hours.
7. Subject to special conditions 5 and 6, no liquid or solid hydrocarbons shall be combusted through the gas flare system other than in an emergency.
8. Only substances originating from the well stream and treated as outlined by conditions 5, 6, 7, and 10 shall be combusted within the flare pit.
9. Conditions 5, 6, 7 and 8 shall not apply to flaring occurring between 1 April and 31 July 2010, associated with work over and fracing activities, following drilling of the K 1 North well.
10. The consent holder shall adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any actual or potential effect on the environment arising from any emission to air from the flare or any other emissions to air from the Kapuni wellsites. Any adoption of the best practicable option as outlined in this special condition shall be to the satisfaction of the Chief Executive, Taranaki Regional Council.
11. The consent holder shall not discharge any contaminant to air authorised by this consent at a rate or a quantity such that the contaminant, whether alone or in combination with other contaminants, is or is liable to be hazardous or toxic or noxious at or beyond the boundary of the wellsite, or beyond 100 metres of the flare, whichever distance is greater.
12. There shall not be any offensive odour or smoke, as determined by an enforcement officer of the Taranaki Regional Council, beyond the boundary of the wellsite or beyond 100 metres of the flare, whichever distance is greater, arising from the exercise of this consent.
13. All hydrocarbon storage vessels shall be fitted with vapour recovery systems.
14. The opacity of any smoke emissions shall not exceed a level of 1 as measured on the Ringelmann Scale for more than four minutes cumulative duration in any 60-minute period.
15. The consent holder shall control all emissions of carbon monoxide to the atmosphere from the flare, whether alone or in conjunction with any other emissions from the wellsite, in order that the maximum ground level concentration of carbon monoxide arising from the exercise of this consent measured under ambient conditions does not exceed 10 mg/m³ [eight-hour average exposure], or 30 mg/m³ one-hour average exposure] at or beyond the boundary of the wellsite or beyond 100 metres from the flare, whichever distance is greater.

Consent 6828-1

16. The consent holder shall control all emissions of nitrogen oxides to the atmosphere from the flare, whether alone or in conjunction with any other emissions from the wellsite, in order that the maximum ground level concentration of nitrogen dioxide arising from the exercise of this consent measured under ambient conditions does not exceed 100 mg/m³ [24-hour average exposure], or 200 mg/m³ [1-hour average exposure] at or beyond the boundary of the wellsite, or beyond 100 metres from the flare, whichever distance is greater.
17. The consent holder shall control emissions to the atmosphere from the wellsite and flare of contaminants other than carbon dioxide, carbon monoxide, and nitrogen oxides, whether alone or in conjunction with any emissions from the flare, in order that the maximum ground level concentration for any particular contaminant arising from the exercise of this consent measured at or beyond the boundary of the wellsite or beyond 100 metres from the flare, whichever distance is greater, is not increased above background levels:
 - a) by more than 1/30th of the relevant Occupational Threshold Value-Time Weighted Average, or by more than the Short Term Exposure Limit at any time [all terms as defined in Workplace Exposure Standards, 2002, Department of Labour]; or
 - b) if no Short Term Exposure Limit is set, by more than three times the Time Weighted Average at any time [all terms as defined in Workplace Exposure Standards, 2002, Department of Labour].

Recording and reporting information

18. The consent holder shall keep and make available to the Chief Executive, Taranaki Regional Council, upon request, a record of all smoke-emitting incidents noting time, duration and cause.
19. The consent holder shall keep and maintain a log of all continuous flaring incidents longer than five minutes, and any intermittent flaring lasting for an aggregate of ten minutes or longer in any 120-minute period. Such a log shall contain the date, the start and finish times, the quantity and type of material flared, and the reason for flaring. This log shall be made available to the Chief Executive, Taranaki Regional Council, upon request, and summarised annually in the report required under condition 20.
20. The consent holder shall provide to the Taranaki Regional Council during May of each year, for the duration of this consent, a report:
 - i) detailing any energy efficiency measures implemented on the site;
 - ii) detailing smoke emissions as required under condition 19;
 - iii) detailing any measures to reduce smoke emissions;
 - iv) detailing any measures to reduce flaring;
 - v) addressing any other issue relevant to the minimisation or mitigation of emissions from the flare;
 - vi) detailing any complaints received and any measures undertaken to address complaints; and
 - vii) reviewing all options and technological advances relevant to the reduction or mitigation of any discharge to air from the site, how these might be applicable and/or implemented at the site, and the benefits and costs of these advances.

21. The consent holder shall make available to the Chief Executive, Taranaki Regional Council, upon request, an analysis of a typical gas and crude oil stream from the field, covering sulphur compound content and the content of carbon compounds of structure C6 or higher number of compounds.

Lapse and Review

22. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
23. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2011 and/or June 2017, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 11 March 2010

For and on behalf of
Taranaki Regional Council



Director-Resource Management



CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE: 06-765 7127
FAX: 06-765 5097
www.trc.govt.nz

Please quote our file number
on all correspondence

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

Name of
Consent Holder: Shell Todd Oil Services Limited
Private Bag 2035
NEW PLYMOUTH

Consent Granted
Date: 19 June 2007

Conditions of Consent

Consent Granted: To discharge liquids onto and into land from a purpose
built, blow down pit at the KA-8/12/15 wellsite at or about
GR: Q20:117-963

Expiry Date: 1 June 2023

Review Date(s): June 2011, June 2017

Site Location: KA-8/12/15 wellsite, 939 Eltham Road, Kapuni

Legal Description: Lot 1 DP 11292

Catchment: Inaha

Consent 7113-1

General conditions

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

Special conditions

1. The consent holder shall adopt the best practicable option [as defined in section 2 of the Resource Management Act 1991] to prevent or minimise any actual or potential adverse effects on the environment arising from the discharge, including but not limited to any water body or soil.
2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of application 4632. In the case of any contradiction between the documentation submitted in support of application 4632 and the conditions of this consent, the conditions of this consent shall prevail.
3. The exercise of this consent shall not result in any adverse impacts on groundwater as a result of leaching, or on surface water including aquatic ecosystems, and/or result in a change to the suitability of use of the receiving water as determined by the Chief Executive, Taranaki Regional Council.
4. The consent holder shall ensure that the well fluids are removed from the blow down pit within 24 hours of being discharged.
5. The consent holder shall advise the Chief Executive, Taranaki Regional Council, where practicable, at least 24 hours prior and in any case, within 24 hours following each use of the pit. Notification shall include the consent number and a brief description of the activity consented and be emailed to worknotification@trc.govt.nz. Notification by fax or post is acceptable only if the consent holder does not have access to email.
6. The consent holder shall maintain the four monitoring bores set out in the documentation submitted in support of application 4632 and according to the requirements of the Chief Executive, Taranaki Regional Council.

Consent 7113-1

7. The consent holder shall sample the bores after seven days but before 28 days after each use of the pit, and analyse for Total Petroleum Hydrocarbons, Xylenes and Polycyclic Aromatic Hydrocarbons [free phase and formation water], and groundwater table elevation, and provide results to the satisfaction of the Chief Executive, Taranaki Regional Council.
8. The consent holder shall keep records of the following:
 - a) volumes of material discharged
 - b) dates and times of commencement and completion of discharge
 - c) sampling, analysis and results of monitoring

and shall provide records to the Chief Executive, Taranaki Regional Council, in July of each year for the previous July - June period and upon request.

9. Prior to the expiry, cancellation, or surrender of this consent the levels of hydrocarbons in the soil shall comply with the guideline values for sandy soil in the surface layer [less than 1 metre depth] set out in Tables 4.12 and 4.15 of the Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand [Ministry for the Environment, 1999].
10. Prior to the expiry, cancellation, or surrender of this consent the levels of hydrocarbons in the groundwater shall comply with the guideline values for potable groundwater set out in Tables 5.11 and 5.12 of the Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand [Ministry for the Environment, 1999].
11. This consent shall lapse on the expiry of five years after the date of issue of this consent, unless the consent is given effect to before the end of that period or the Taranaki Regional Council fixes a longer period pursuant to section 125(1)(b) of the Resource Management Act 1991.
12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2011 and/or June 2017, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 19 June 2007

For and on behalf of
Taranaki Regional Council


Director-Resource Management

