

South Taranaki District Council
Central Landfill
Baseline Monitoring Programme
Biennial Report
2009-2011

Technical Report 2011-45

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Executive summary

In 1996 the South Taranaki District Council instigated plans to establish a large landfill in the Eltham area. The purpose of this site was to ultimately accept waste from the South Taranaki and Stratford Districts. The plan was changed to allow for a regionalised approach to waste disposal and the site is now currently proposed to an option to be the replacement regional landfill once the facility at Colson Rd, New Plymouth has reached capacity. The final decision is subject to review of all alternatives to undertaken by the district councils of the region. The (proposed) Eltham Central landfill site is situated in the Waingongoro catchment on Rotokare Rd approximately two kilometres south of Eltham township.

The STDC holds a total of five consents which contain 77 special conditions. These consents cover all aspects of the construction and operation of the landfill. At present none of the consents held by STDC in relation to landfill construction and operation have been exercised. The consents have extended lapse periods to allow for an interim period prior to exercise.

Consent conditions specify that baseline monitoring of the ground and surface receiving waters are to be undertaken to obtain data for comparison to that gathered from compliance monitoring surveys when the landfill has commenced operations.

During the 2009-2011 period, Council took 38 groundwater level readings, 11 groundwater samples, and 12 surface water samples.

This report outlines all of the consents held by the STDC, reports on the baseline monitoring activities carried out in 2009-2011 period, and discusses the results.

This report includes recommendations for the 2011-2013 monitoring period.

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	2
1.1.4 Evaluation of environmental performance	2
1.2 Process description	3
1.3 Resource consents	6
1.3.1 Water abstraction permit	6
1.3.2 Water discharge permit	7
1.3.3 Air discharge permit	8
1.3.4 Discharges of wastes to land	9
1.3.5 Land use permit	10
1.4 Monitoring programme	11
1.4.1 Introduction	11
1.4.2 Programme liaison and management	12
1.4.3 Site inspections	12
1.4.4 Chemical sampling	12
1.4.5 Biomonitoring surveys	12
2. Results	14
2.1 Water	14
2.1.1 Inspections	14
2.1.2 Results of surface water monitoring	14
2.1.3 Groundwater monitoring	17
2.1.4 Biomonitoring results	26
2.2 Air monitoring	26
3. Discussion and conclusions	27
3.1 Alterations to monitoring programmes	27
3.2 Exercise of optional review of consents	27
3.3 Evaluation of performance	27
4. Recommendations	28
Glossary of common terms and abbreviations	29
Bibliography and references	31
Appendix I Resource consents held by STDC	

List of tables

Table 1	Summary of resource consents held by the STDC for the Eltham Central landfill	6
Table 2	Summary of chemical sampling for 2009-2011	12
Table 3	Results of surface water sampling at Eltham Central Landfill, 31 March 2010	14
Table 4	Results of surface water sampling at Eltham Central Landfill, 25 May 2010	14
Table 5	Results of surface water sampling at Eltham Central Landfill, 26 August 2010	15
Table 6	Results of surface water sampling at Eltham Central Landfill, 2 December 2010	15
Table 7	Depths and water levels of bores at Eltham Central landfill	18
Table 8	Data sets used to generate groundwater flow vector model	18
Table 9	Results of groundwater analysis for 31 May 2010	20
Table 10	Results of groundwater analysis for 10 May 2011	20
Table 11	Current status of groundwater bores on the Central Landfill site at Eltham	25

List of figures

Figure 1	Regional map of the site showing the position of the proposed landfill site	4
Figure 2	Aerial view of Eltham Central landfill site and sampling points	13
Figure 3	Ammoniacal nitrogen levels found in surface water at the Central landfill site, 2004-2011	16
Figure 4	Suspended solids levels found in surface water at the Central landfill site, 2004-2011	16
Figure 5	Conductivity levels found in surface water at the Central landfill site, 2004-2011	17
Figure 6	Groundwater levels found at Eltham Central landfill, 2005-2009	18
Figure 7	Simplified groundwater flow direction models and the Eltham Central Landfill site	19
Figure 8	Conductivity found in the groundwater at Eltham Central landfill, 2005-2010	21
Figure 9	Nitrate/nitrite levels found in the groundwater at Eltham Central landfill, 2005-2011	21
Figure 10	pH found in the groundwater at Eltham Central landfill, 2005-2009	22
Figure 11	Chloride levels found in the groundwater at Eltham Central landfill, 2005-2011	23
Figure 12	Hardness levels found in the groundwater at Eltham Central landfill, 2005-2011	23
Figure 13	Acid soluble iron levels found in the groundwater at Eltham Central landfill, 2005-2009	24

List of photographs

Photograph 1	Eltham Central landfill site (north westerly view from east side of site)	5
Photograph 2	Eltham Central landfill site (westerly view from east side of site)	5
Photograph 3	Eltham Central landfill site (south westerly view from east side of site)	6

1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is the Biennial Report for the period July 2009-June 2011 by the Taranaki Regional Council on the monitoring programme associated with resource consents held by the South Taranaki District Council (STDC). STDC has consents to establish and operate a landfill situated on Rotokare Road at Eltham, in the Waingongoro catchment. None of the consents associated with the landfill have yet been exercised. This report is for baseline environmental monitoring at the site for the period 2009-2011.

This report covers the results and findings of the baseline monitoring programme implemented by the Council for the 2009-2011 period. The purpose of this monitoring is to gather environmental data before STDC exercises the resource consents for the proposed landfill. These consents are as follows:

- 5347-1 to discharge contaminants onto and into land;
- 5348-1 to discharge emissions into the air;
- 5349-1 to discharge treated and untreated stormwater to an unnamed tributary of the Waingongoro River;
- 5350-1 to dam and divert water around the South Taranaki District Council Central landfill, Eltham, in the headwaters of an unnamed tributary of the Waingongoro River;
- 5351-1 to install culverts on two unnamed tributaries of the Waingongoro River.

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 Eltham Central landfill's use of water and land, and is the 2nd report by the Taranaki Regional Council for the consent holder.

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 the South Taranaki District Council for the Eltham Central landfill, the nature of the monitoring programme in place for the period

under review, and a description of the activities and operations conducted in the Waingongoro catchment.

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 in the 2011-2013 monitoring period.

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 (eg, 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 STDC Eltham Central landfill 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 Process description

STDC has established a proposed landfill site in Eltham at Rotokare Road, on the east side of State Highway 3 and approximately two kilometres south of Eltham Township. The site of the proposed landfill is a 92 ha farm that is owned by STDC and will continue to be farmed until the construction of the landfill commences. The landfilling operation will utilise approximately 5 ha of the site at any one time and the site has a capacity of 2,200,000 m³. Access to the site is proposed to be from Rotokare Road. The proposed landfill will be a fully engineered facility with a 1.5 mm High Density Poly Ethylene liner laid over a 600mm layer of compacted clay. Leachate will be collected by leachate lines and transferred to the sewer pipeline that runs between the Eltham Oxidation Ponds and the Hawera WWTP.

Consents 5347, 5348, 5349, 5350, and 5351 were granted on 15 March 2000 with the expectation that within three years landfill space available to STDC at other landfill sites in the district would be full and that the Eltham site would commence operation [exercise of consent] within the five year lapse period set in the consents for the site.

However, during this intervening period a plan was developed and agreed on by the three district councils in the region which may see a regionalised approach to waste management by the district councils. Part of this plan is to route all municipal waste in the region to Colson Road landfill in New Plymouth, with the eventual closure of all other municipal landfills in the region. When the Colson Rd landfill approaches its projected capacity, the plan calls for Eltham Central landfill to be commissioned and take over as the regional landfill for Taranaki. This plan, whilst presenting the region

with the best option for future waste disposal, is subject to a final review of other alternative sites (whether within or outside the region).

In July 2005 the STDC was granted changes to consent conditions to increase the consent lapse periods from 5 years to 20 years. These changes allow for the extended timeframes resulting from the change of designation from proposed district to proposed regional landfill.

The site consists of a large bowl shape valley which makes it well suited as a landfill site. The proposed land fill foot print contains the headwaters of an unnamed tributary which eventually feeds into the Waingongoro River approximately two kilometres to the northwest. Several groundwater bores and freshwater sampling sites have been established for the purposes of baseline monitoring.

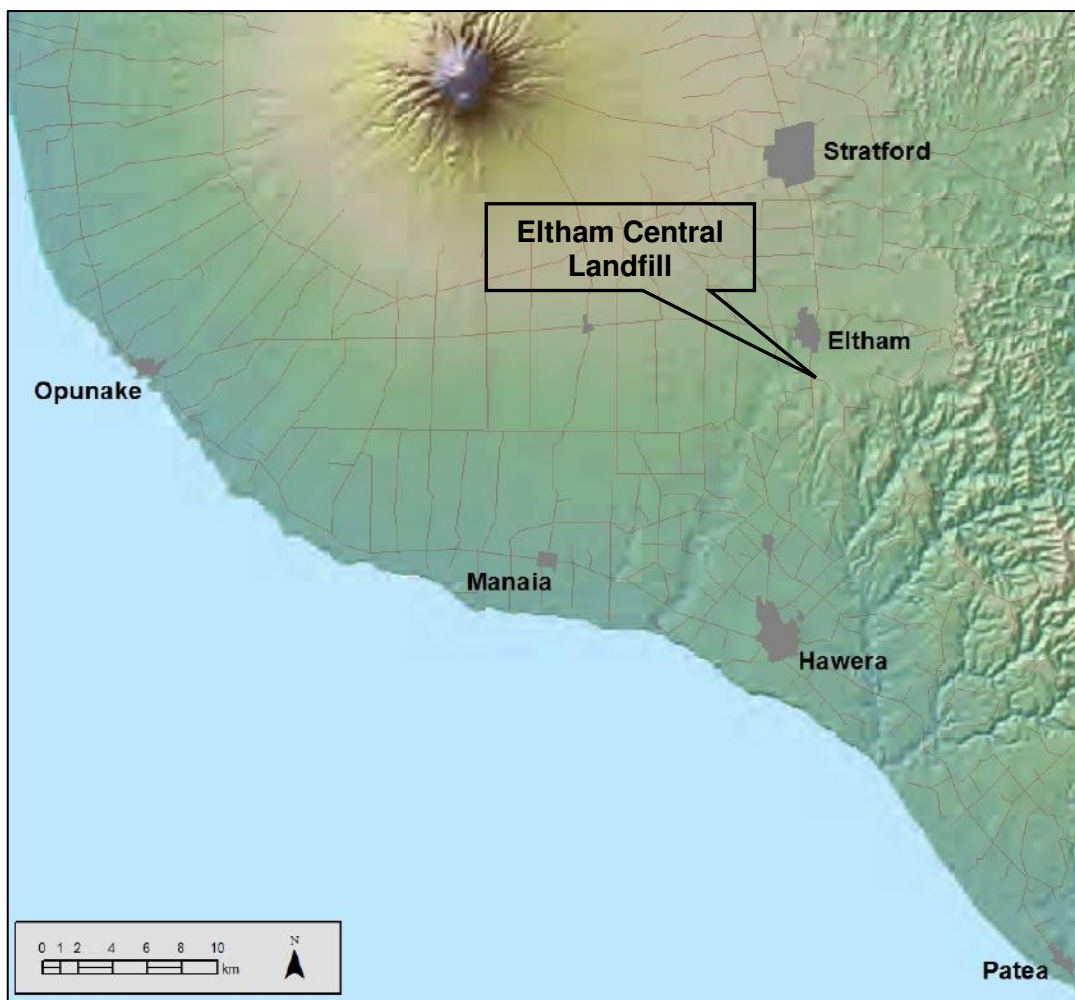


Figure 1 Regional map of the site showing the position of the location landfill site



Photograph 1 Eltham Central landfill site (north westerly view from east side of site)



Photograph 2 Eltham Central landfill site (westerly view from east side of site)



Photograph 3 Eltham Central landfill site (south westerly view from east side of site)

1.3 Resource consents

Table 1 Summary of resource consents held by the STDC for the Eltham Central landfill

Resource Consent	Description	Number of Special Conditions
1. Discharges of wastes to land permit 5347-1	To discharge contaminants onto and into land	26
2. Air discharge permit 5348-1	To discharge emissions into the air	18
3. Water discharge permit 5349-1	To discharge stormwater	19
4. Water abstraction permit 5350-1	To dam and divert water	10
5. Land use permit 5351-1	To erect, place and maintain structures in the beds of unnamed tributaries	10

1.3.1 Water abstraction permit

Section 14 of the Resource Management Act 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.

Maintaining sufficient volumes of water within streams and rivers to protect aquatic habitat is a primary concern of the Taranaki Regional Council with respect to water abstraction permits.

The STDC holds consent **5350-1** to dam and divert water around the Central landfill and into the headwaters of the Waingongoro River at or about GR: Q20:222-936.

This permit was issued by the Taranaki Regional Council on 15 March 2000 under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2034, and its optional review dates are June 2005, June 2011, June 2017, June 2019 and June 2029.

Special condition 1 requires the submission of, and adherence to, a Landfill Management Plan.

Special conditions 2 and 3 relate to stormwater control and diversion.

Special condition 4 requires the rehabilitation of land destabilised or eroded via earthworks and construction.

Special condition 5 relates to site monitoring requirements.

Special condition 6 stipulates that all structures and earthworks are to be certified by a registered engineer.

Special condition 7 sets out the requirements for a Neighbourhood Liaison Committee.

Special condition 8 specifies that the consent will lapse after 5 year lapse period if the consent is not exercised.

Special condition 9 deals with the right of the consent holder to apply for cancellation of, or variations to, any condition in the consent.

Special condition 10 is an optional review condition.

The permit is attached to this report in Appendix I.

Consent 5350-1 was reviewed on 20 July 2005. The reviewed conditions are as follows:

Special condition 8 was reviewed to extend the lapse period to 20 years.

Special condition 9 was reviewed to exclude any application for variation that would allow the landfill to accept waste outside the normal catchment areas of the NPDC, SDC and STDC.

1.3.2 Water discharge permit

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.

The STDC holds consent 5349-1 to discharge up to 15,000 cubic metres/day of uncontaminated stormwater and 4,000 cubic metres/day of treated stormwater onto and into land and into an unnamed tributary of the Waingongoro River at or about GR: Q20:222-936. This permit was issued by the Taranaki Regional Council on 15 March 2000 under Section 87(e) of the Resource Management Act.

It is due to expire on 1 June 2034 and its optional review dates are June 2005, June 2011, June 2017, June 2023, and June 2029.

Special condition 1 requires the submission of and adherence to, a Landfill Management Plan.

Special condition 2 prohibits the discharge of any leachate.

Special conditions 3, 4, 5, 6 and 15 deal with stormwater management and discharge.

Special conditions 7 and 8 specify the level of acceptable change to the receiving waters as a result of the landfill operation.

Special conditions 9, 10 and 11 relate to the minimisation of the disturbance of vegetation and erosion of land due to construction and stormwater runoff.

Special conditions 13 and 14 relate to site monitoring.

Special condition 16 sets out the requirements for a Neighbourhood Liaison Committee.

Special condition 17 specifies that the consent will lapse after a 5 year period if the consent is not exercised.

Special condition 18 deals with the right of the consent holder to apply for cancellation of, or variations to, any condition in the consent.

Special condition 19 is an optional review condition.

Consent 5349-1 was reviewed on 20 July 2005. The reviewed conditions are as follows:

Special condition 17 was reviewed to extend the lapse period to 20 years.

Special condition 18 was reviewed to exclude any application for variation that would allow the landfill to accept waste outside the normal catchment areas of the NPDC, SDC and STDC.

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.

The STDC holds consent 5348-1 to discharge emissions into the air from landfilling activities at or about GR: Q20:222-936. This permit was issued by the Taranaki Regional Council on 15 March 2000 under Section 87(e) of the Resource Management

Act. It is due to expire on 1 June 2034 and its optional review dates are June 2005, June 2011, June 2017, June 2023, and June 2029.

Special condition 1 requires the submission of, and adherence to, a Landfill Management Plan.

Special condition 2 requires STDC to adopt best practicable option.

Special conditions 3, 4 and 5 specify the nature of prohibited discharges to air.

Special conditions 6 and 7 prohibit burning and composting on the site.

Special condition 8 relates to gas venting and extraction.

Special condition 9 relates to exposure and compaction of waste.

Special conditions 10, 11, 12, 14 and 15 relate to monitoring and record keeping.

Special conditions 13 and 16 relate to the handling of complaints and the formation of a Neighbourhood Liaison Committee

Special condition 17 specifies a lapse period of 5 years if the consent is not exercised.

Special condition 18 deals with the right of the consent holder to apply for cancellation of, or variations to, any condition in the consent.

Special condition 19 is a review condition.

Consent **5348-1** was reviewed on 20 July 2005. The reviewed conditions are as follows:

Special condition 17 was reviewed to extend the lapse period to 20 years.

Special condition 18 was reviewed to exclude any application for variation that would allow the landfill to accept waste outside the normal catchment areas of the NPDC, SDC and STDC.

The permit is attached to this report in Appendix I.

1.3.4 Discharges of wastes to land

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.

The STDC holds consent **5347-1** to discharge contaminants onto and into land at or about GR: Q20: 222-936. This permit was issued by the Taranaki Regional Council on 20 July 2000 under Section 87(e) of the Resource Management Act. It is due to expire

on 1 June 2034 and its optional review dates are June 2005, June 2011, June 2017, June 2023, and June 2029.

Special conditions 1 and 2 require the submission of, and adherence to, a Landfill Management Plan.

Special condition 3 requires that STDC meet the costs of a technical advice to the Council.

Special conditions 4 and 5 relate to landfill construction.

Special conditions 7, 8, 9, 10, 11, 12 and 13 specify the types of waste that may and may not be accepted.

Special conditions 14, 15 and 16 relate to the manner in which the waste is to be applied to the land.

Special conditions 17 and 18 specify monitoring requirements.

Special conditions 19, 20, and 21 deal with stormwater runoff and leachate containment.

Special conditions 22 and 23 relate to record keeping and notification.

Special condition 24 sets out the requirements for the set up of a Neighbourhood Liaison Committee.

Special condition 25 specifies that the consent will lapse after a 5 year period if the consent is not exercised.

Special condition 26 deals with the right of the consent holder to apply for cancellation of, or variations to, any condition in the consent.

Special condition 27 is an optional review condition.

Consent 5347-1 was reviewed on 20 July 2005. The reviewed conditions are as follows:

Special condition 25 was reviewed to extend the lapse period to 20 years.

Special condition 26 was reviewed to exclude any application for variation that would allow the landfill to accept waste outside the normal catchment areas of the NPDC, SDC and STDC.

The permit is attached to this report in Appendix I.

1.3.5 Land use permit

Section 13(1)(a) of the Resource Management Act 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.

The STDC holds consent **5351-1** to erect, place and maintain structures in the beds of unnamed tributaries of the Waingongoro River for construction and maintenance at or about GR: Q20:222-936. This permit was issued by the Taranaki Regional Council on 20 July 2005 under Section 87(e) of the Resource Management Act. It is due to expire on 1 June 2034 and its optional review dates are June 2005, June 2011, June 2017, June 2023, and June 2029.

Special conditions 1 and 6 require the submission of, and adherence to, a Landfill Management Plan.

Special conditions 2 sets out the environmental effects that the exercise of this consent shall not give rise to.

Special conditions 3, 4 and 5 deal with the minimisation of erosion, and rehabilitation of the site

Special condition 8 specifies that works be certified by a registered engineer.

Special condition 9 sets out the requirements for the set up of a Neighbourhood Liaison Committee.

Special condition 10 specifies a lapse period of 5 years if the consent is not exercised.

Special condition 11 deals with the right of the consent holder to apply for cancellation of, or variations to, any condition in the consent.

Special condition 12 is a review condition.

Consent **5351-1** was reviewed on 20 July 2005. The reviewed conditions are as follows:

Special condition 10 was reviewed to extend the lapse period to 20 years.

Special condition 11 was reviewed to exclude any application for variation that would allow the landfill to accept waste outside the normal catchment areas of the NPDC, SDC and STDC.

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 Eltham site currently consists of sampling of the surface and ground waters and biomonitoring surveys

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

Site inspections were only scheduled to be carried out to monitor landfill construction and operation. As these have been delayed all sites visits were only made to undertake sampling for baseline monitoring.

1.4.4 Chemical sampling

The Taranaki Regional Council undertook baseline sampling of both the groundwater and receiving waters.

Table 2 Summary of chemical sampling for 2009-2011

Medium	Sampling occasions 2009-2011	Number of samples 2009-2011
Surface water physicochemical	4	12
Groundwater physicochemical	2	11
Groundwater depth	4	37

1.4.5 Biomonitoring surveys

No biomonitoring surveys were programmed for this period

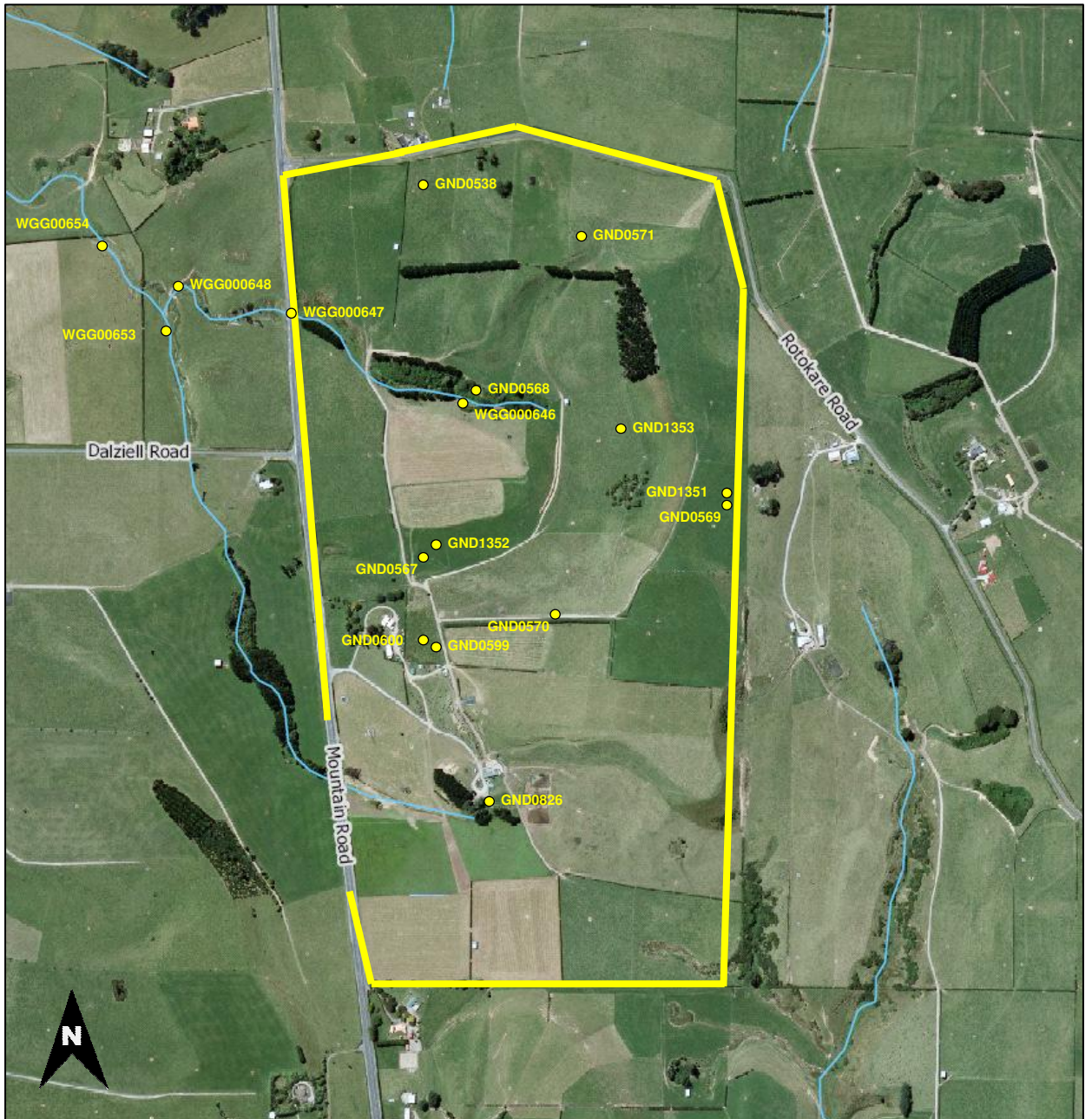


Figure 2 Aerial view of Eltham Central landfill site and sampling points

2. Results

2.1 Water

2.1.1 Inspections

No formal inspections were undertaken during the monitoring period as the consents have not been exercised. However the site was visited on numerous occasions in order to undertake baseline sampling of surface waters and groundwater, and no significant issues were noted during these visits.

2.1.2 Results of surface water monitoring

Sampling of three sites was undertaken on 31 March 2010, 25 May 2010 and 26 August 2010 and 2 December 2010. The results of the analyses are shown in Tables 3, 4, and 5.

The results for most parameters of the surface water are unremarkable, and are as expected for the site in its current use (dairy farming). The levels of zinc, copper, and dissolved reactive phosphorus are low and stable, as are the levels for alkalinity, conductivity and carbonaceous biochemical oxygen demand (CBOD). The results from this monitoring period are comparable to those found over previous monitoring period and indicate good water quality. As the site contains the whole catchment for the headwaters of the unnamed tributary, monitoring the effects of future landfill operations on the surface waters will be relatively straightforward.

Table 3 Results of surface water sampling at Eltham Central Landfill, 31 March 2010

Parameter	Unit	WGG000647 d/s of site	WGG000653 u/s landfill trib	WGG000654 d/s landfill trib
Conductivity	mS/m	22.4	27.7	24.3
Hardness	gm ³ .CaCO ₃	62	83	72
Unionised ammonia	gm ³ -N	0.00007	0.00013	0.00016
Ammoniacal nitrogen	gm ³ -N	0.026	0.029	0.03
pH	pH	7.1	7.2	7.3
Suspended solids	gm ³	45	6	15
Temperature	Deg C	10.1	12.9	12.3
Acid soluble zinc	g/m ³	0.005	<0.005	<0.005
Dissolved zinc	g/m ³	<0.005	<0.005	<0.005

Table 4 Results of surface water sampling at Eltham Central Landfill, 25 May 2010

Parameter	Unit	WGG000647 d/s of site	WGG000653 u/s landfill trib	WGG000654 d/s landfill trib
Hardness	gm ³ .CaCO ₃	64	73	57
Unionised ammonia	gm ³ -N	0.00007	0.00028	0.00023
Ammoniacal nitrogen	gm ³ -N	0.019	0.079	0.065
pH	pH	7.1	7.1	7.1
Suspended solids	gm ³	82	11	49
Temperature	Deg C	12.6	12.8	12.9
Acid soluble zinc	g/m ³	<0.005	<0.005	<0.005
Dissolved zinc	g/m ³	<0.005	<0.005	<0.005

Table 5 Results of surface water sampling at Eltham Central Landfill, 26 August 2010

Parameter	Unit	WGG000647 d/s of site	WGG000653 u/s landfill trib	WGG000654 d/s landfill trib
Conductivity	mS/m	23	25.9	23.6
Hardness	gm ³ .CaCO ₃	66	80	69
Unionised ammonia	gm ³ -N	0.00004	0.00004	0.00005
Ammoniacal nitrogen	gm ³ -N	0.01	0.005	0.007
Suspended solids	gm ³	34	<2	6
Temperature	Deg C	9.9	10.8	11

Table 6 Results of surface water sampling at Eltham Central Landfill, 2 December 2010

Parameter	Unit	WGG000647 d/s of site	WGG000653 u/s landfill trib	WGG000654 d/s landfill trib
Alkalinity	g/m ³ .CaCO ₃	55	70	60
CBOD	g/m ³	0.5	0.6	0.8
Conductivity	mS/m	22.2	25.2	22.8
Acid soluble copper	g/m ³	<0.01	<0.01	<0.01
Dissolved oxygen	g/m ³	7.51	7.22	7.51
Dissolved reactive phosphorus	g/m ³	0.013	0.009	0.014
Fecal coliforms	per/100ml	63	490	410
Acid soluble iron	g/m ³	0.72	0.29	0.77
Hardness	g/m ³ .CaCO ₃	62	78	68
Acid soluble manganese	g/m ³	0.05	0.06	0.06
Unionised ammonia	g/m ³ - N	0.00007	0.00029	0.00028
Ammoniacal nitrogen	g/m ³ - N	0.012	0.036	0.027
Nitrate/nitrate	g/m ³	3.54	2.69	3.22
% oxygen saturation	%	74	78	81
pH	pH	7.3	7.3	7.4
Suspended solids	g/m ³	22	7	22
Temperature	g/m ³	13.4	17.9	18
Acid soluble zinc	g/m ³	<0.005	<0.005	<0.005

The results are fairly typical for small streams in the in the area. Key parameters such as conductivity, ammoniacal nitrogen, biochemical and suspended solids were all at low levels on all sampling occasions and all other parameter were in expected ranges and commensurate with previous results.

Historical surface water data for the proposed landfill site for selected parameters is shown in Figures 3-5.

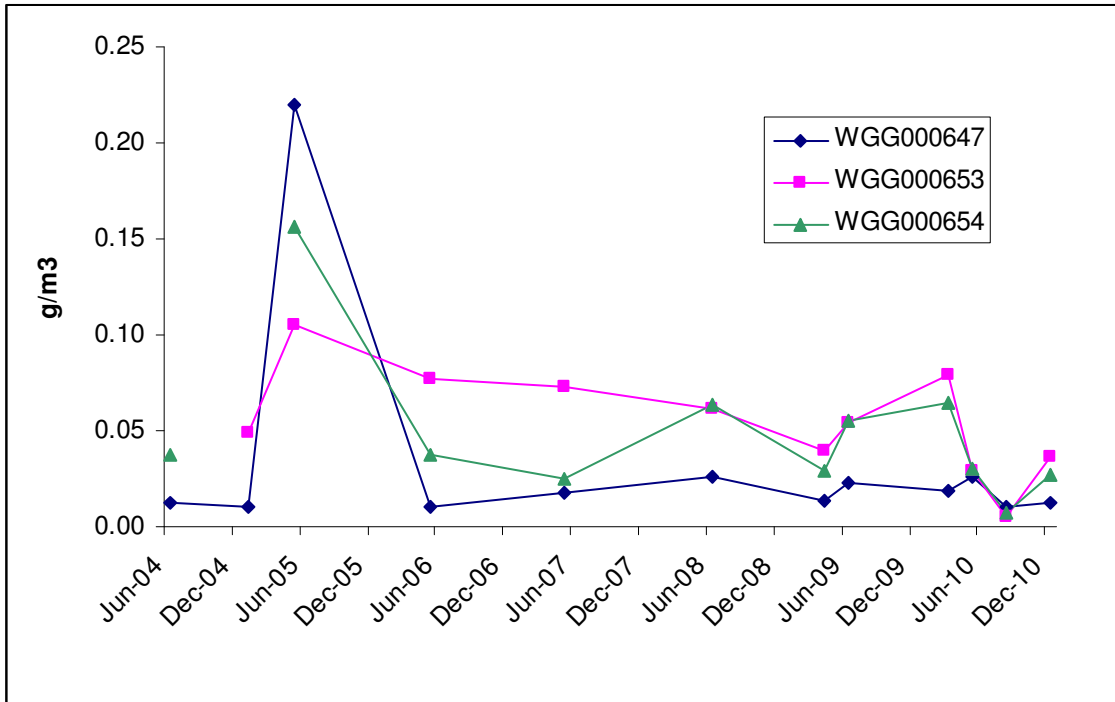


Figure 3 Ammoniacal nitrogen levels found in surface water at the Central landfill site, 2004-2011

As the graph shows, all of the sites exhibit comparative fluctuations in the levels of ammoniacal nitrogen. However, all the results are for surface waters in pastoral areas, and when taken in conjunction with pH and temperature readings, the level of free ammonia has never exceeded 0.001 g/m³ at any of the sites, which is well within the 0.025 g/m³ guideline for aquatic ecosystem protection.

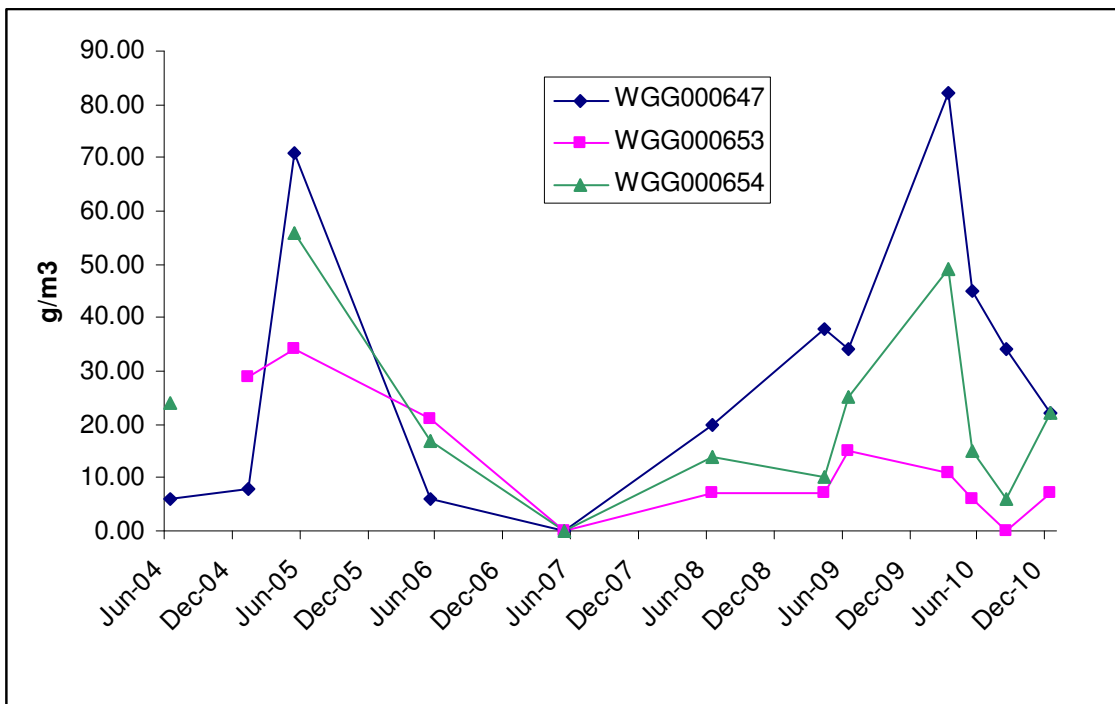


Figure 4 Suspended solids levels found in surface water at the Central landfill site, 2004-2011

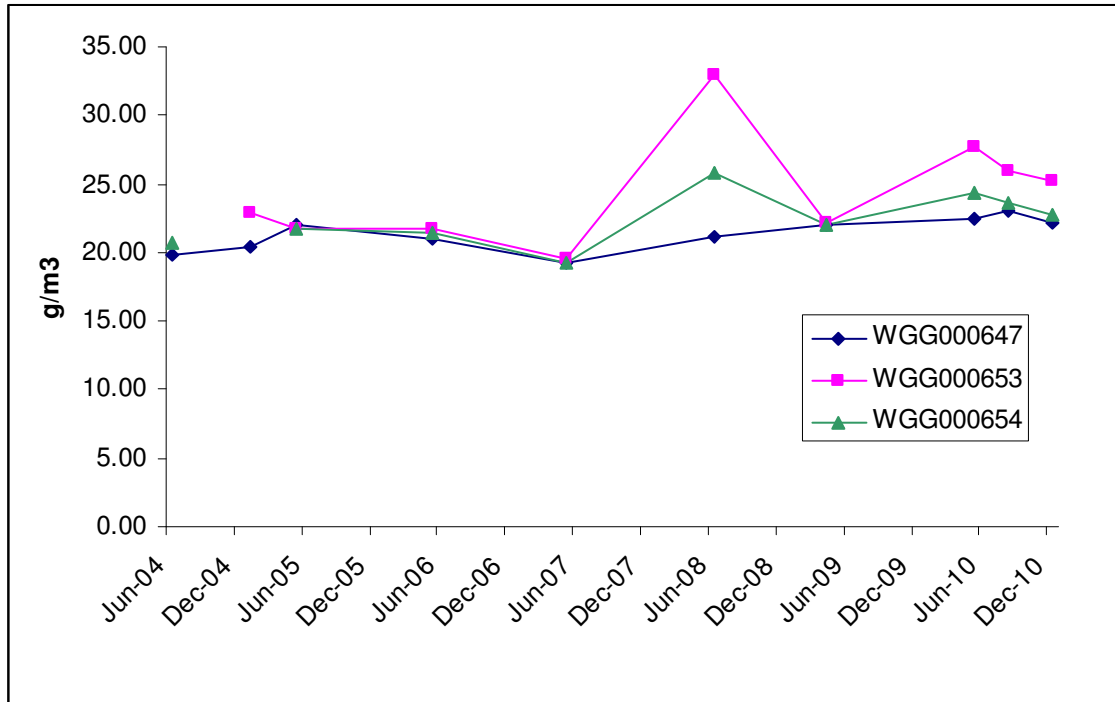


Figure 5 Conductivity levels found in surface water at the Central landfill site, 2004-2011

Suspended solids levels also fluctuate over time with a range of 6 to 82 g/m³ recorded over all the sites. The unnamed tributaries on this site are generally small, clear running low energy brooks with silty beds, however with increased rainfall the suspended solids level can rise quite quickly as silt is stirred up from the beds and edges of the streams and is entrained in the flow. Overall the level of suspended solids indicates good water quality in the stream system.

Apart from a slight comparative spike in conductivity levels in the results for June 2008 in the downstream sites, the overall levels are quite stable. All but two results are in the 18-25 mS/m range which indicates that there are only moderate to low levels of dissolved metals in this stream system.

Overall water quality downstream of the proposed landfill site is quite good and comparable to that expected in similar streams in the area.

2.1.3 Groundwater monitoring

Nine groundwater bores were sampled on two occasions over the 2009-2011 period. The bore locations are shown in Figure 2 and the results of the analysis of the samples are set out in Table 6 below. The array of monitoring bores on the site consist of three pairs of nested bores and three single bores. Details for each bore are given in Table 5 and the nested pairs are indicated by green, blue and yellow shading. Also shown are the historical levels of various parameters from the bores on the site.

2.1.3.1 Groundwater level and flow

Thirty eight groundwater readings were taken across the nine bores during the 2009-2011 period and 108 readings have been taken since monitoring began. The groundwater level results are shown in Table 7.

Table 7 Depths and water levels of bores at Eltham Central landfill

Date	GND0567	GND0568	GND0569	GND0599	GND0600	GND1351	GND1352	GND1353
25-Mar-10	13.09	5.81	25.1	26.94	17.89	8.35	7.1	6.91
31-May-10		5.7	25.42	26.96	17.34	7.7	7.45	6.87
25-Aug-10	12.16	4.35	23.84		16.25	6.45	6.15	5.34
13-Jan-11		5.52	23.9	26.63	16.06	8.22	6.24	5.47
10-May-11	12.53	5.59	24.4	26.44	16.64	7.67	6.58	5.9

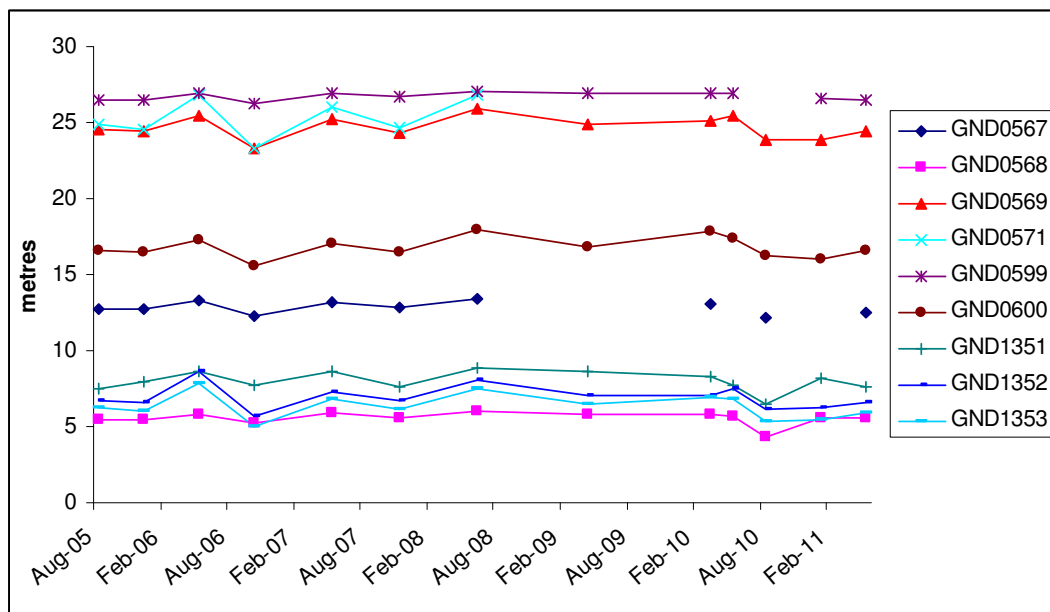


Figure 6 Groundwater levels found at Eltham Central landfill, 2005-2011

As Figure 6 shows, the levels of groundwater for each bore appear to be relatively stable through out all the seasons. In Figure 7 is a vector model using two surfaces generated from the average water levels of two bore sets selected from the shallower bores on the site. The vector model only gives a simplified indication of shallow groundwater flow direction from the limited data available. The two sets of bores used to generate the vector surfaces are shown in Table 8.

Table 8 Data sets used to generate groundwater flow vector model

Northern Surface			Southern Surface		
Bore	Bore elevation (m)	Average water level above Datum (m)	Bore	Bore elevation (m)	Average water level above Datum (m)
GND0571	92	66.166	GND1351	91.9	83.54
GND0568	69.7	63.95833	GND0600	125	107.9767
GND1353	80	73.18	GND1352	71.5	64.10667
GND1351	91.9	83.54			

This simple model agrees with the information supplied with the original application that the shallow ground water flow within the landfill is largely affected by topography and generally drains toward the headwater of the unnamed tributary of the Waingongoro shown in blue. Bore GND1351 is very close to the boundary of the Tangahoe Catchment, and groundwater at this location may tend to drain south east to the nearby headwaters of the Tawhiti Stream. Overall it would appear that most of the shallower groundwater flow from within the landfill basin area will tend to flow west toward State Highway 3 (Mountain Rd) feeding the tributary system and the shallow aquifer immediately west of the highway.

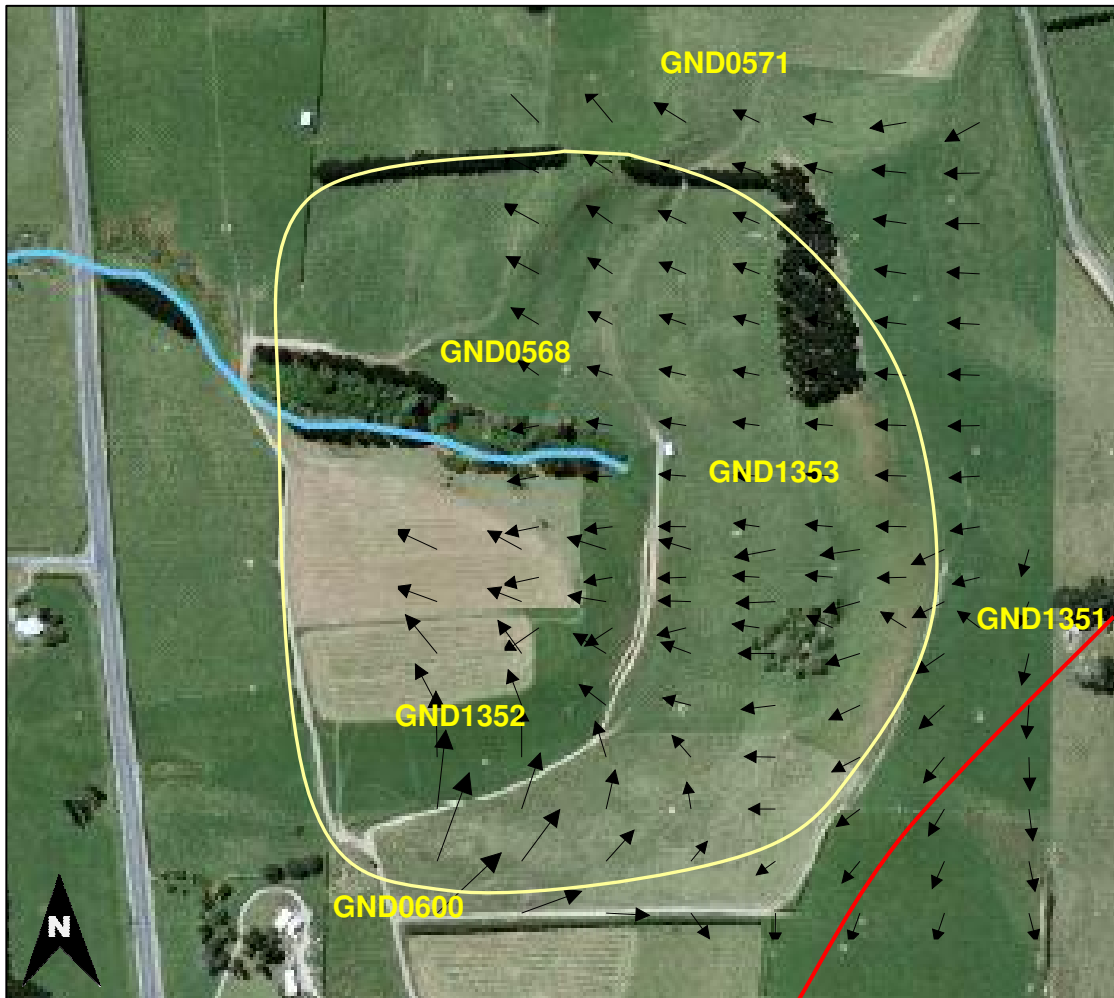


Figure 7 Simplified groundwater flow direction models and the Eltham Central Landfill site
The yellow line indicates the approximate landfill foot print and the red line shows the boundary of the neighbouring Tangahoe Catchment.

2.1.3.2 Chemical parameters

Tables 9 and 10 show the results from the 11 groundwater samples taken in the 2009-2011 period. All of the results are comparable to the historical data and within the normal ranges for groundwater in the area. Graphs in Figures 8-13 illustrate the trends over time for a number of selected parameters. The data collected so far should be understood as baseline data pre-activity and the variations in groundwater quality can be considered as natural or at most the results of subtle pressures exerted on groundwater quality by grazing and dairying activities currently undertaken at the site. However, further evaluation of the effect of recharge flow from the

surrounding hills and of the vertical component of groundwater maybe needed in order to enhance the understanding of the distribution of groundwater quality prior to the exercise of the activity (landfill).

Table 9 Results of groundwater analysis for 31 May 2010

Site	Unit	GND0568	GND0600	GND1351	GND1351	GND1353	GND1352	GND1353
Alkalinity	g/m ³	50	36	142	38	32	43	51
Boron	g/m ³	0.04	0.04	0.06	0.02	0.03	0.04	0.04
Chloride	g/m ³	24.5	40.9	22.5	45.2	43.8	34.5	30.1
Conductivity	mS/m	22.4	25.2	27.8	30.8	24.2	26.2	20.6
Acid soluble iron	g/m ³	3.18	3.63	1.17	0.45	4.69	0.78	0.44
Dissolved Iron	g/m ³	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Bicarbonate	g/m ³	61	43.92	173.24	46.36	39.04	52.46	62.22
Hardness	g/m ³	72	78	100	92	64	87	60
Manganese	g/m ³	0.27	0.19	0.46	0.03	0.17	0.06	0.02
Nitrate/nitrite	g/m ³ -N	6.64	6.74	0.57	12.6	5.41	5.84	3.67
pH	pH	6.6	6.6	8	6.6	6.3	6.5	6.8
Temperature	Deg C	12.7	13.3	12.9	13	12.9	13.1	13

Table 10 Results of groundwater analysis for 10 May 2011

Site	Unit	GND0568	GND0600	GND1351	GND1353
Alkalinity	g/m ³	50	38	32	51
Boron	g/m ³	0.01	0.01	0.01	0.01
Chloride	g/m ³	26.1	44.5	46.4	25.6
CODF	g/m ³	<5	<5	<5	<5
Conductivity	mS/m	22.8	32.3	23	20.9
Acid soluble iron	g/m ³	1.3	1.7	*	1.3
Dissolved Iron	g/m ³	<0.03	<0.03	<0.03	<0.03
Bicarbonate	g/m ³	61	46.36	39.04	62.22
Hardness	g/m ³	70	100	70	62
Manganese	g/m ³	0.12	0.14	*	0.06
Unionised ammonia	g/m ³ -N	0.00001	0.00002	0	0.00001
Ammoniacal nitrogen	g/m ³ -N	0.008	0.018	0.003	0.004
Nitrate/nitrite	g/m ³ -N	6.58	14.5	2.43	4.44
pH	pH	6.6	6.6	6.3	6.7
Temperature	Deg C	13.4	13.9	13.8	13.5

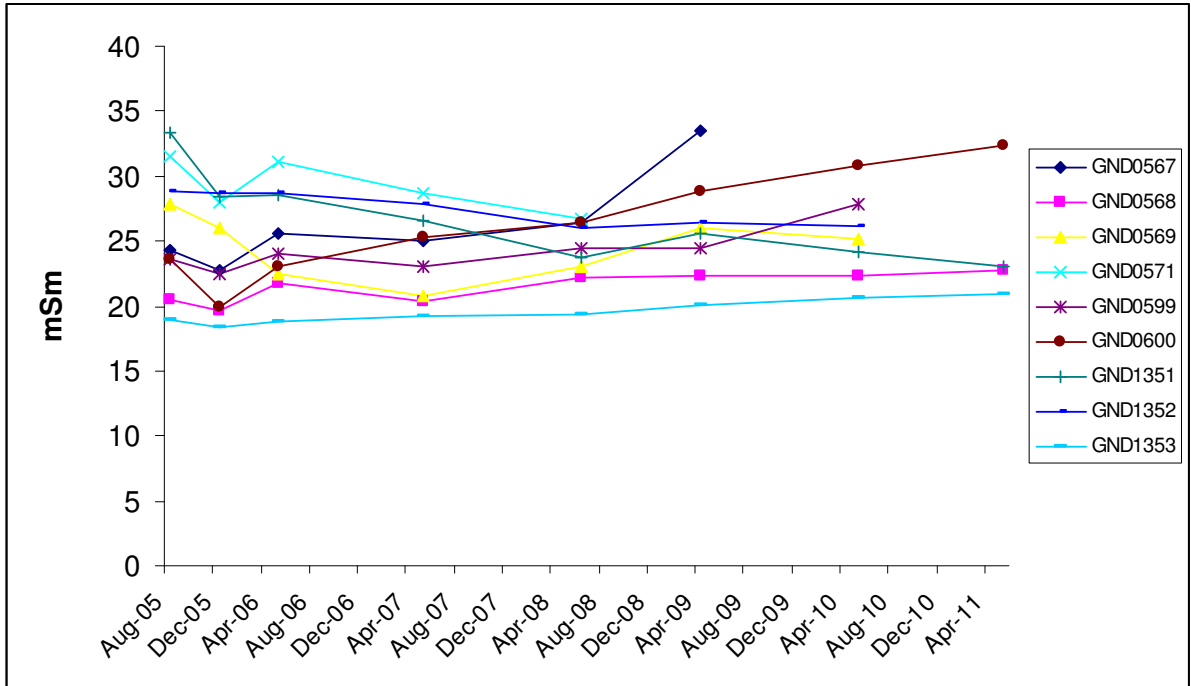


Figure 8 Conductivity found in the groundwater at Eltham Central landfill, 2005-2011

Conductivity levels over the whole site range between 15 and 35 mS/m. This indicates that the groundwater has relatively low levels of dissolved solids and that groundwater quality is quite good in this regard. Over the period that the groundwater has been monitored, the conductivity level for each bore also appears to be quite stable. The only exception to this at bore GND0600 which appears to have a steady increase of conductivity over the past 5 years.

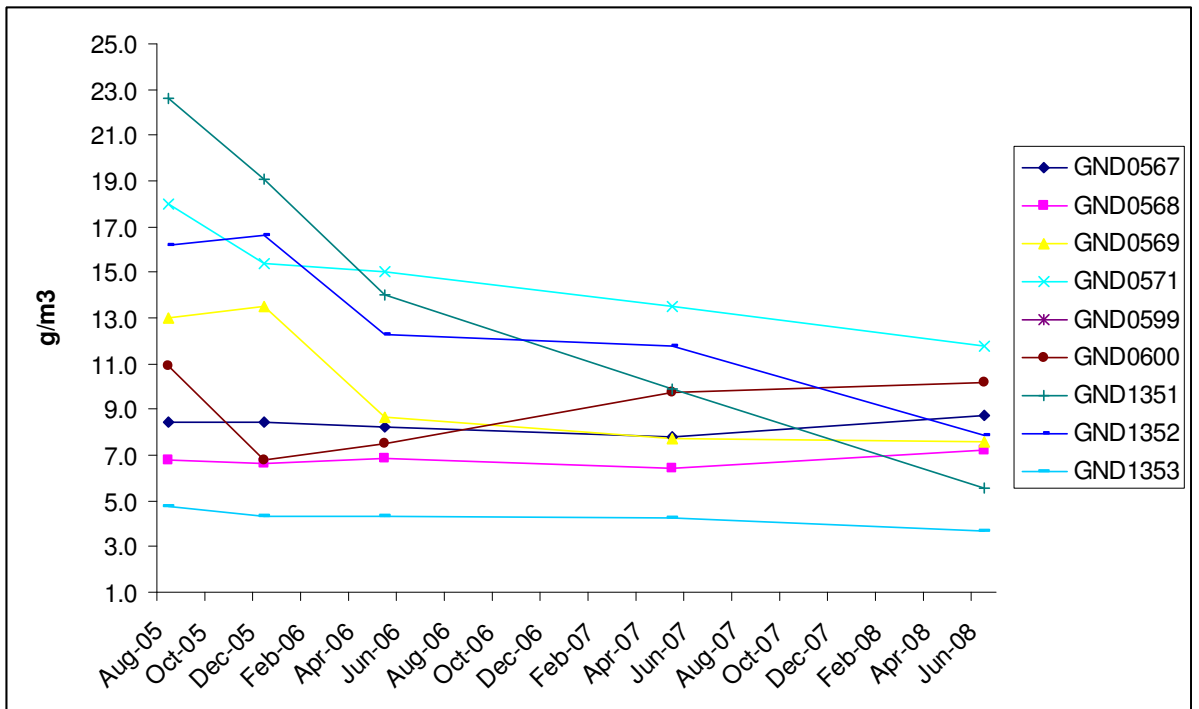


Figure 9 Nitrate/nitrite levels found in the groundwater at Eltham Central landfill, 2005-2011

Nitrite and nitrate levels show some variability with some sites showing slight increases and other showing decreases in concentration. Bore GND0599 is the exception and has very low and stable levels of nitrite/nitrate (and a higher pH) when compared to the other sites. However this bore is far deeper than the others (83 m) and reaches into the Tangahoe formation, which may explain these differences in nitrite/nitrate levels. All the other bores are between 9 and 36 metres deep and draw water from an aquifer in the shallower volcanic layers of soil, and are therefore more likely to be affected by current surface activities such as the application of fertiliser and grazing.

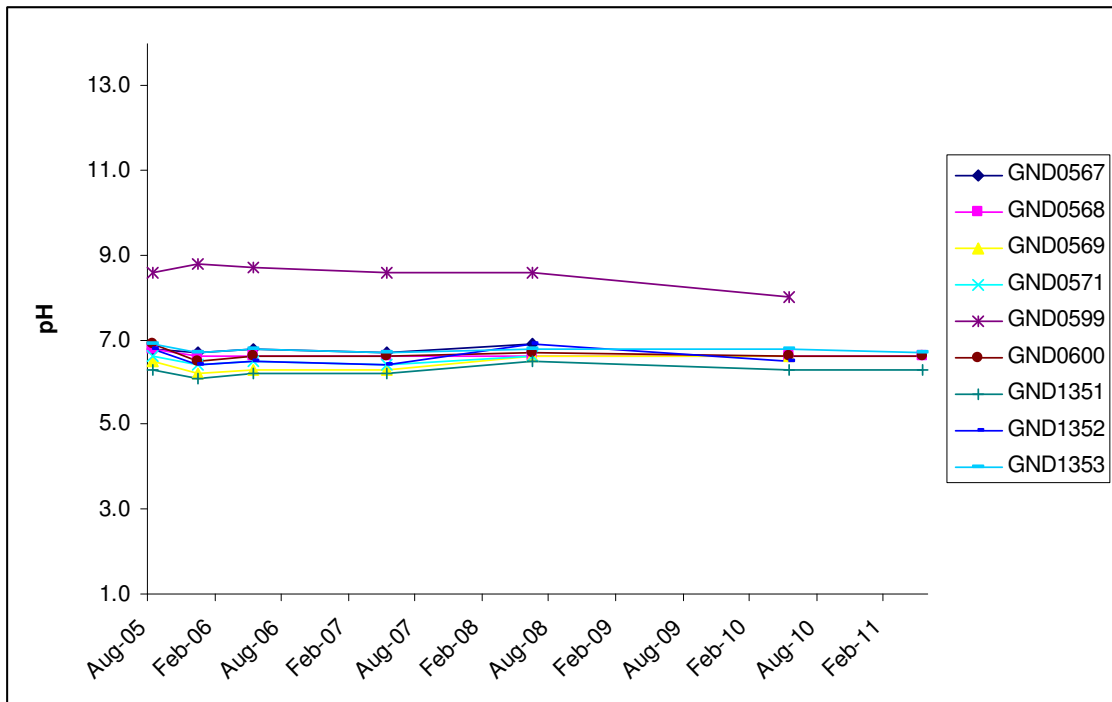


Figure 10 pH found in the groundwater at Eltham Central landfill, 2005-2009

As the graph in Figure 6 shows, the pH level of the shallow aquifer appears stable over time. Also noted is that across all bores the pH level is very similar with an overall average across all sites over the 2005-2011 period being 6.6. The deeper Tangahoe formation bore (GND0599) exhibits a significantly higher pH with an average of 8.5. The pH for this bore also appears to be stable over time.

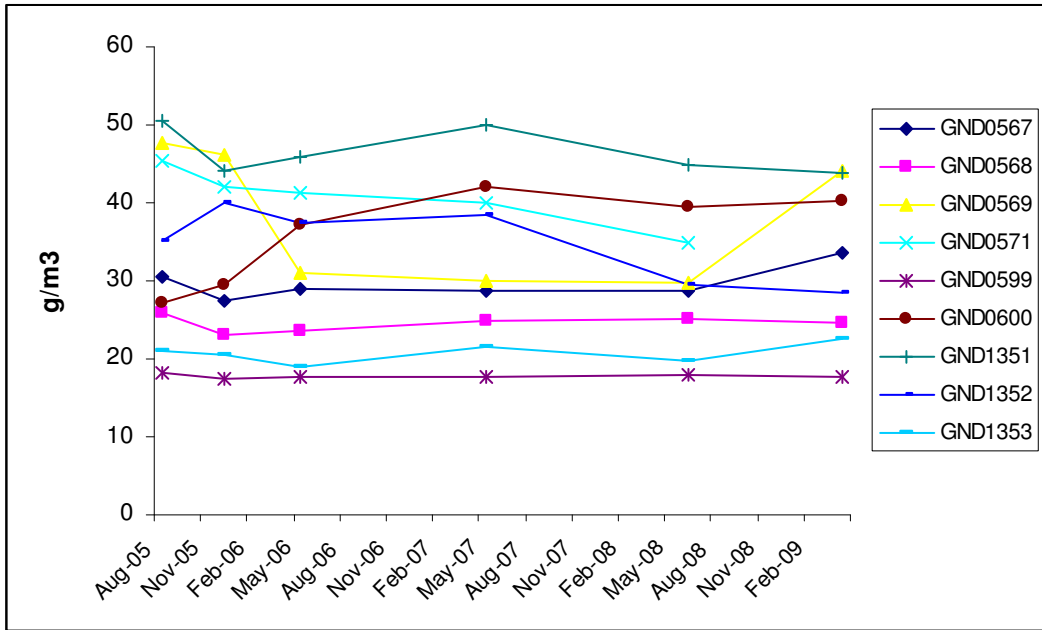


Figure 11 Chloride levels found in the groundwater at Eltham Central landfill, 2005-2011

Chlorides and hardness are in the normal ranges for Taranaki groundwater. As with other parameters, the deeper Tangahoe formation bore (GND0599) exhibits slightly more stability than the shallower bores.

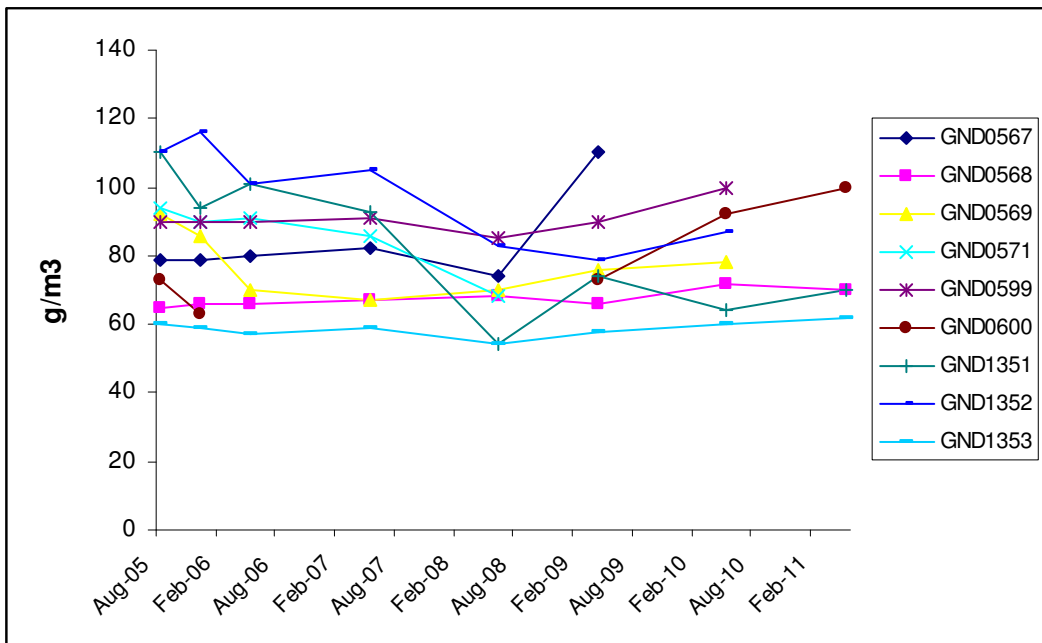


Figure 12 Hardness levels found in the groundwater at Eltham Central landfill, 2005-2011

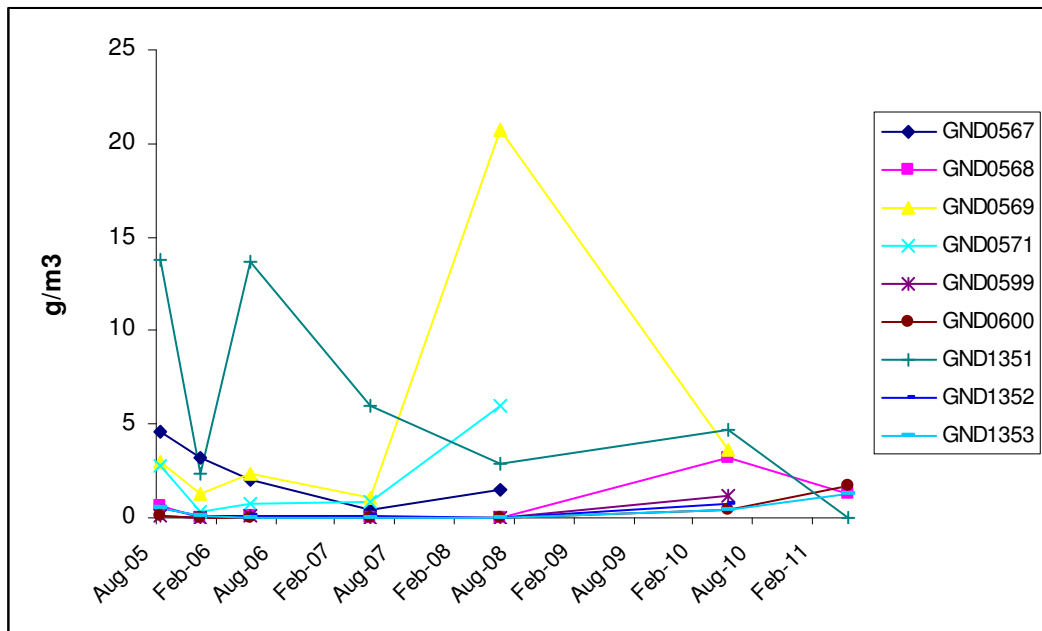


Figure 13 Acid soluble iron levels found in the groundwater at Eltham Central landfill, 2005-2009

The fluctuations in acid soluble iron are quite pronounced in bores GND0569, 571 and 1351. However this analytical method is sensitive to contamination from any suspended solids matter included in the sample which would otherwise be immobile in the groundwater. By including analyses for dissolved iron, as well as acid soluble iron, this may level out such spikes in concentration in the future.

2.1.3.3 Ongoing groundwater monitoring requirements

An issue that needs to be addressed is the fact the many of the bores will soon require maintenance and in some cases may need to be relined or re-drilled. However many of the current bores are likely to be sitting within the footprint of the landfill construction area and therefore may have to be abandoned during construction of the liner or other structures. These bores were originally installed for geotechnical and engineering purposes such as vertical velocity and flow direction, and there may be sufficient water level data collected already to serve this purpose. In any case the existing bores can be retained in their current state for the purpose of obtaining more water level data.

Bore GND0571 which appears to be outside of the proposed foot print and is badly damaged (and non functional), should be repaired as it can most likely be used for ongoing consent monitoring. Bore GND0567 is also damaged and can't be sampled for water quality; however water levels can still be taken. As this bore is nested with GND1352 (which is functioning) groundwater quality samples can still be taken from the upper reaches of the shallow aquifer at this point.

Condition 17(b) of consent 5347 also requires the installation of a bore down gradient of the proposed leachate holding sump and it would be a more appropriate use of resources to have this bore installed rather than engage in costly repair work on duplicated bores (such as GND0567) inside the landfill foot print. It would also be useful to install at least two more permanent down-gradient bores prior to the

exercise of the consent to obtain baseline groundwater quality data from bores that will actually be used in ongoing long term monitoring.

Table 11 gives the current state of the bores, their location in regards to the landfill footprint and gradient and a recommendation for the particular bore. The recommendations are based on the position of the bore in relation to the landfill footprint and its current state of repair. The yellow shaded rows highlight where action is required to be able to continue baseline monitoring, and the minimum requirement to be able to undertake ongoing monitoring when the consent is exercised.

Table 11 Current status of groundwater bores on the Central Landfill site at Eltham

STDC Bore Code	TRC Bore Code	Inside foot print?	Up/down gradient	Current Status	Recommendation
BH1	GND0569	No	Up	Metal toby and risers need attention	Repair toby and risers and continue to use for baseline and future consent monitoring
BH1a	GND1351	No	Up	Metal toby and risers need attention	
BH2	GND0568	Yes	Down	Functional	Continue to use for baseline monitoring. Use for consent monitoring if possible. Abandon bore when landfill operations encroach.
BH3	GND0567	Yes	Mid	Bore liner blocked or kinked, a not able to get sample.	Continue to use for water levels. Abandon bore when landfill operations encroach.
BH3a	GND1352	Yes	Mid	Toby rusting, riser slightly loose. Bore functional for sampling and level readings	Continue to use for baseline monitoring. Use for consent monitoring if possible. Abandon bore when landfill operations encroach.
BH5	GND0571	No	Up	Toby and riser have broken, liner probably broken below surface, Not functional for sampling or water levels	Repair toby, riser and liner and continue to use for baseline and future consent monitoring.
BH6	GND1353	Yes	Mid	Functional- Toby lid seized up and needs replacing	Repair toby cap. Continue to use for baseline monitoring. Use for consent monitoring if possible. Abandon bore landfill when operations encroach.
BH7	GND0599	No	Tangahoe formation	Toby and riser replaced 2009	Continue to use for baseline and future consent monitoring
BH7a	GND0600	No	Up	Toby and riser replaced 2009	Continue to use for baseline and future consent monitoring
New bore below proposed leachate holding sump		No	Down	Not installed	Install bore and use for ongoing baseline and consent monitoring

STDC to date have been co-operative in making repairs, such as the repairs done on bores GND0599 and 0600. They were asked to defer the more major repair work until a review of the existing data had been undertaken. On the basis of this review, and if the proposed landfill is likely to become a reality, that the recommendations given in Table 9 be implemented by the consent holder to fulfill their obligations under consent 5347.

2.1.4 Biomonitoring results

No biomonitoring surveys were programmed for the period under review.

2.2 Air monitoring

No air monitoring or inspections were carried out as the landfill is not in operation. Once the Eltham Central landfill commences operations an air quality monitoring programme will be implemented to monitor dust deposition, particulate matter, methane levels and odour.

3. Discussion and conclusions

The Eltham Central landfill site baseline results are not remarkable in themselves. Surrounding farming activities exert subtle and varying pressures on surface water and groundwater quality as would be expected. The results however show no unusually high values for any given water quality indicator.

3.1 Alterations to monitoring programmes

In designing and implementing the monitoring programmes for air/water discharges in the region, the Taranaki Regional Council has taken into account the extent of information made available by previous authorities, its relevance under the Resource Management Act, the obligations of the Act in terms of monitoring emissions/discharges and effects, and subsequently reporting to the regional community, 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 emitting to the atmosphere/discharging to the environment.

It is proposed that the current programme continue for the purposes of baseline monitoring

3.2 Exercise of optional review of consents

The consents held by the STDC for the Eltham Central landfill provided for an optional review in June 2005. At the time of the review the STDC sought variation on all the consents to increase the lapse period from 5 to 20 years. The review also varied the waste catchment area to allow for the Eltham Central landfill newly proposed regional status. The next optional review date for these consents is in June 2017.

3.3 Evaluation of performance

As none of the consents have been exercised, no evaluation of performance is required. The STDC has however complied with baseline monitoring requirements stipulated in the special conditions of the consents.

4. Recommendations

1. THAT current programme in place for monitoring baseline conditions remain unchanged and be implemented in the 2011-2013 monitoring period.
2. THAT in the event that the proposals to construct a Central landfill site at Eltham are confirmed, that STDC immediately implement the recommendations on bore remediation given in Table 11 of this report.

Glossary of common terms and abbreviations

The following abbreviations and terms are 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
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

Bibliography and references

- South Taranaki District Council (2005): 'Application for Variations and Extensions to Existing Resource Consents for Eltham Landfill'
- Centre for Advanced Engineering, University of Canterbury (2000): 'Landfill Guidelines- Towards Sustainable Waste Management in New Zealand'
- South Taranaki District Council (1998): 'Proposed Central Landfill, Eltham- Application for South Taranaki District Council and Taranaki Regional Council''
- Taranaki Regional Council (1996): 'Baseline Environmental Report for the Proposed South Taranaki District Council (Eltham) Landfill'
- Taranaki Regional Council (2006): 'South Taranaki District Council Central landfill Baseline Monitoring Programme Triennial Report 2004-2007' Technical Report 06-117
- Taranaki Regional Council (2009): 'South Taranaki District Council Central landfill Baseline Monitoring Programme Triennial Report 2007-2009' Technical Report 09-111

Appendix I

Resource consents held by STDC

Consent 5347-1




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

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA

Change To
Conditions Date:  20 July 2005 [Granted: 15 March 2000]

Conditions of Consent

Consent Granted: To discharge contaminants onto and into land at the South Taranaki District Council Central Landfill, Eltham at or about GR: Q20:222-936

Expiry Date: 1 June 2034

Review Date(s): June 2005, June 2011, June 2017, June 2023, June 2029

Site Location: Central Landfill, Rotokare Road, Eltham

Legal Description: Pt Sec 26 Sec 27 Blk XIV Ngaere SD

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document*
www.trc.govt.nz

Working with people • Caring for our environment

Consent 5347-1

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. That :

- a) the consent holder shall prepare a Landfill Management Plan addressing proposed operation, management and monitoring at the landfill for the purpose of demonstrating among other things the means by which compliance with the conditions set in this consent shall be achieved, such Plan (excluding that part of the Plan that deals with contingency events) to be prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council three months prior to the exercise of this consent. The initial Management Plan shall be reviewed by the General Manager in consultation with the Neighbourhood Liaison Group. The adverse environmental effects arising from implementation of the Management Plan, and any subsequent version required under Condition 1(b), shall be no greater than those arising from the implementation of the draft plan provided with the application dated May 1998 and in any case shall be within the limits set by the conditions on this consent;
- b) the Management Plan shall be reviewed and updated at not greater than two yearly intervals, in consultation with the General Manager, Taranaki Regional Council, and the Neighbourhood Liaison Group;
- c) the consent holder shall adhere to and comply with the procedures, requirements, obligations and all other matters specified in the management plan, unless it can be demonstrated to the reasonable satisfaction of the General Manager, Taranaki Regional Council, that any changes in those procedures, requirements, and obligations will result in the same or any lesser adverse environmental effect than already allowed; and
- d) in case of any contradiction between the management plan and the conditions of this resource consent, the conditions of this resource consent shall prevail.

Consent 5347-1

2. That the consent holder shall ensure that:
 - a) the operation of the landfill and the disposal of wastes shall be carried out at all times in accordance with the requirements of the Landfill Management Plan prepared as required in Condition (1) above or subsequent version of that document which does not lessen environmental protection standards;
 - b) all site staff working at the landfill are regularly trained on the content and implementation of the Landfill Management Plan, the maximum period between training sessions being 12 months. New staff are to be trained on recruitment and the training record made available to the General Manager, Taranaki Regional Council upon request; and
 - c) in order to avoid adverse effects arising from the exercise of this consent, all site staff are advised immediately of any revision or additions to the Landfill Management Plan.
3. That the consent holder shall meet the reasonable cost of the Taranaki Regional Council retaining a Technical Advisor, suitably qualified and knowledgeable in landfill development and operational procedures, to advise the General Manager, Taranaki Regional Council on aspects of the operation of the landfill related to disposal of solid waste and the installation and maintenance of the leachate collection system, and the ability to achieve compliance with the conditions of consent. Apart from other activities undertaken by the Technical Advisor, the Advisor shall undertake annual reviews, or other such reviews as reasonably determined by the General Manager, Taranaki Regional Council, of the landfill operations for the first 6 years and thereafter at a frequency determined by the General Manager, Taranaki Regional Council, in consultation with the Neighbourhood Liaison Group.
4. That the consent holder shall:
 - a) construct a composite liner in all areas where refuse is to be placed. The liner shall be constructed with a layer of compacted clay with a permeability of less than 1×10^{-8} m/sec and a minimum thickness of 600 mm, overlain by a membrane of high density polyethylene HDPE at least 1.5 mm thick. The consent holder may use materials and a specification other than described above, provided that any such materials shall perform to the same or higher standard than those specified and provided further that the consent holder shall first obtain the written approval of the General Manager, Taranaki Regional Council; and
 - b) provide for collecting leachate from the liner and transferring it to a pond within the landfill property boundary, such pond to be lined with a composite liner as specified in Condition 4(a) above;
 - c) ensure there is no discharge of refuse or leachate to land or water in any area without the liner as required in Conditions 4a and 4b above; and
 - d) remove sufficient daily cover and remove at least 20% of the intermediate cover to ensure downward migration of leachate, before placing refuse on an existing cell.

Consent 5347-1

5. That the construction, installation, placement, integrity and expected performance of landfill lining systems, groundwater drainage systems, and leachate interception, collection, holding and recirculation systems on any part of the site shall be certified by a registered engineer, a copy of such certification to be provided to General Manager, Taranaki Regional Council, prior to discharge of waste in those areas.
6. That the consent holder shall maintain a manifest / declaration system that shall record the following information on the waste received for disposal. This information is to be forwarded to the General Manager, Taranaki Regional Council on a 6-monthly basis no later than the 10th working day of the following month:
 - a) general description in volume or quantity in cubic metres or kilograms per day of domestic, commercial and industrial waste received from other than transfer stations; and
 - b) general description in volume or quantity (in cubic metres or kilograms) of all waste received at the landfill from transfer stations.

Where the consent holder reasonably considers any information required under this condition is confidential, it may notify the General Manager, Taranaki Regional Council, accordingly so that reasonable measures can be taken to protect confidentiality.

7. That the consent holder shall ensure that:
 - a) Medical waste is managed in accordance with NZS4304;
 - b) Animal parts are buried immediately upon receipt
 - c) Asbestos is managed in accordance with the Asbestos Regulations;
 - d) Waste that is potentially a health hazard shall be placed in a hole specifically excavated and immediately covered with appropriate cover material. The location of special waste holes shall be recorded by survey.
8. That any contaminated soils that are accepted at the landfill and whose contaminant concentration exceeds those levels specified in any New Zealand Standard or guidelines as being appropriate for industrial unpaved sites shall be covered over as soon as practicable such that the risk to human and environmental health is avoided.
9. That the consent holder shall appoint a person to control entry of waste into the landfill.
10. That the consent holder shall not dispose of waste of an explosive, flammable, reactive, toxic, radioactive, corrosive or infectious nature other than minor quantities of such waste where they are ordinarily part of and found in general wastes. In addition, the consent holder shall not dispose of wastes deemed unacceptable under Conditions 11 and 12.

Consent 5347-1

11. That further to Condition 10 of this consent, the wastes which are acceptable or unacceptable are as follows:
 - a) General waste is solid waste generated from residential, commercial and industrial sources. General waste covers all waste not otherwise defined below. It is acceptable and may contain minor quantities of special or prohibited waste which are normally part of the waste stream;
 - b) Difficult wastes are wastes which are acceptable but due to their physical nature require specific disposal management. These wastes include offal, dead animal bodies, wire rope, documents and bulky items;
 - c) Special Wastes contain substances that may adversely affect the final landfill or leachate or landfill gas quality. Their acceptance in the landfill shall be based on an assessment of the nature of the waste and its effects on the landfill and its receiving environment in accordance with the requirements of Condition 12 of this consent;
 - d) Liquid wastes shall not be accepted other than those liquids which are in small containers that are impractical to empty ;
 - e) Sludges may be accepted, as long as they contain no separated liquids.
12. That no waste shall be accepted for disposal which may cause a significant potential or actual adverse environmental effect. In the absence of other criteria, no wastes shall be accepted:
 - a) if a TCLP test extract exceeds 2,500 times the level specified in any New Zealand Standard or guideline as being appropriate for stock watering purposes; or
 - b) if containing any contaminant exceeding 300 times the level specified in any New Zealand Standard or guideline as being appropriate for soil for agricultural use unless such wastes have been treated so as to comply with conditions as above and are not placed within the top 4 metres lift of refuse beneath any final landfill cap at any point.
13. That in order to maintain the integrity of the liner and to minimise the risk of discharge of contaminants, the consent holder shall ensure that special wastes as defined in Condition 11(c) shall not be deposited within 5 metres of the liner or the top 4 metres lift of refuse beneath the final landfill cap at any point or within 10 metres of the edge of the landfill.
14. That the consent holder shall take all practicable measures to avoid the discharge of contaminants from within the landfill site to surrounding land. To this end, the consent holder shall ensure:
 - a) refuse is spread in thin layers and is compacted on the same day refuse is received;
 - b) the amount of refuse exposed at any one time is confined to a practicable minimum; and
 - c) exposed refuse is covered regularly with appropriate material and in any case no less frequently than daily.

Consent 5347-1

15. That the consent holder shall:
- a) compact refuse to such an extent that post closure settlement is minimised, targeting a compacted refuse density averaging at least 700 kg/m^3 as far as practicable;
 - b) progressively, as parts of the landfill are completed, cover exposed refuse with not less than 650 mm of earth material, of which 500 mm is compacted to a permeability of less than $1 \times 10^{-7} \text{ m/sec}$, and no less than 150 mm comprises topsoil, and establish and maintain pasture on those completed areas at the landfill; and
 - c) within two months following the closure of any landfill stage, grade the tipping face to achieve a final slope less than or equal to 1V:3H (1 in 3) on any face.
16. That within one month following completion of each stage at the landfill, the consent holder shall report in writing to the General Manager, Taranaki Regional Council of the consent holder's compliance with Condition 15 of this consent.
17. That the consent holder shall maintain and comply with an Annual Monitoring Plan prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council and prepared in consultation with the Neighbourhood Liaison Group. The Annual Monitoring Plan may be amended by the General Manager following consultation with the consent holder. The Plan shall describe in detail practices for water and soil chemistry monitoring, shall contain guidelines for the determination of whether contamination is occurring including "alert" and "response" levels for individual contaminants and shall make reference to the Management Plan, to be prepared as required in Condition 1 of this consent. The initial Monitoring Plan is to be received by the General Manager, Taranaki Regional Council, at least six months prior to any discharge of solid wastes authorised by this consent. The initial Monitoring Plan is to include:
- a) further baseline monitoring [biological, chemical and physical] of surface water quality and groundwater prior to commencement of landfilling;
 - b) quarterly monitoring of groundwater levels and water quality of each of the existing monitoring bores shown in Figure 4 of the application documentation dated May 1998, plus the installation and monitoring of at least one further bore downslope of the leachate storage lagoon at a site approved by the General Manager, Taranaki Regional Council;
 - c) biological, physical and chemical monitoring of surface water quality twice per year in the two unnamed tributaries of the Waingongoro River at site(s) approved by the General Manager, Taranaki Regional Council;
 - d) measurement of volume of leachate removed from the site monthly;

Consent 5347-1

- e) annual testing of leachate for the following components: pH, conductivity, alkalinity, chloride, sulphate, carbonate, bicarbonate, ammonia-N, nitrate-N, reactive dissolved phosphorus; COD, BOD₅; aluminium, arsenic, boron, cadmium, calcium, chromium, copper, iron, magnesium, manganese, mercury, sodium, nickel, potassium, lead, zinc; volatile organic compounds, semi-volatile organic compounds [volatile and semi-volatile organic compound scans to include but not be restricted to benzene, benzo-a-pyrene, phenol, perchlorethylene, and naphthalene], organochlorine pesticides screen, organophosphate pesticide screen, and polyaromatic hydrocarbon screen;
 - f) quarterly testing of leachate for the following components: pH, conductivity, alkalinity, chloride, sulphate, carbonate, bicarbonate, ammonia-N, nitrate-N, reactive dissolved phosphorus; COD, BOD₅; aluminium, arsenic, boron, cadmium, calcium, chromium, copper, iron, magnesium, manganese, mercury, sodium, nickel, potassium, lead, zinc;
 - g) quarterly sampling and testing of groundwater from on-site bores as noted in Condition 17(b) above as follows: Comprehensive testing (April) - pH, conductivity, alkalinity, chloride, sulphate, carbonate, bicarbonate, ammonia-N, nitrate-N, reactive dissolved phosphorus; COD, BOD₅; aluminium, arsenic, boron, cadmium, calcium, chromium, copper, iron, magnesium, manganese, mercury, sodium, nickel, potassium, lead, zinc, benzo-a-pyrene, benzene, phenol, perchlorethylene, and naphthalene; Indicator testing (July, October, January) - pH, conductivity, COD, boron, iron, manganese, chloride, ammonia-N, nitrate-N;
 - h) annual sampling and testing of surface water supplies and bores on neighbouring properties, located as noted in Appendix 10 of the application documentation dated May 1998, subject to the agreement of the respective owners, as follows: pH, benzene, zinc, alkalinity, conductivity, chloride, ammonia-N, nitrate-N, nitrite-N, boron, COD, iron, manganese; and
 - i) analysis shall be conducted by a laboratory with appropriate accreditation for those parameters measured.
18. That the results of the Annual Monitoring Programme for the year ending 30 June be provided to the General Manager Taranaki Regional Council by 31 August of each year following the monitoring, and be made available to the Neighbourhood Liaison Group, and to any other interested party.
19. That the consent holder shall prevent surface runoff of water or contaminants to the unnamed tributaries of the Waingongoro River from any surface area being used or previously used for the deposition of refuse, or for extraction of soil, clay, or other cover material, or prepared for the deposition of refuse, unless such surface area has been covered and rehabilitated.

Consent 5347-1

20. That where any leachate or other contaminants associated with the consent holder's activities or processes associated with the landfill significantly affect surface and ground water, the consent holder shall:
- a) undertake appropriate remedial action as soon as practicable as described in the consent holder's Management Plan required by Condition 1, or other such action reasonably required by the General Manager, Taranaki Regional Council;
 - b) as soon as reasonably practicable, notify the General Manager, Taranaki Regional Council, of the escape of wastes;
 - c) shall review the Monitoring Programme and Management Plan and incorporate such reasonable modifications as are considered necessary by the General Manager, Taranaki Regional Council; and
 - d) where water supplies are significantly affected, immediately provide alternative supplies as reasonably required by the General Manager, Taranaki Regional Council.

"Significantly affected" for the purposes of this condition shall be determined by the General Manager Taranaki Regional Council, by reference to the monitoring data and taking into account the purpose for which the water is to be used.

21. That the consent holder shall inspect the landfill for leachate break out, settlement and other adverse environmental effects at least once per month until such time as discharge of refuse to the landfill ceases. Thereafter, the frequency of inspection shall be determined in consultation with the General Manager, Taranaki Regional Council.
22. That the consent holder shall record the date, time, observations and any remedial action as a result of Condition 21. The record shall be made available to the Neighbourhood Liaison Group and the General Manager, Taranaki Regional Council on an annual basis.
23. That the consent holder shall ensure that records are kept of any site investigations for any engineering works associated with this consent, and that these records are forwarded to the General Manager, Taranaki Regional Council.
24. That the consent holder and staff of the Taranaki Regional Council shall meet, with representatives of the Neighbourhood Liaison Group to discuss any matter relating to the exercise of this resource consent, in order to facilitate ongoing consultation, such meetings to be according to the following schedule:
- (a) one month prior to the exercise of this consent;
 - (b) thereafter at intervals of three months for the first eighteen months after the date of exercise;
 - (c) thereafter at one interval of no more than six months; and
 - (d) thereafter at intervals of no more than twelve months;

unless all parties agree that changes to the intervals are acceptable.

The Technical Adviser may attend one meeting per year for the first six years and thereafter at a frequency determined by the General Manager, Taranaki Regional Council

- ★ 25. That this consent shall lapse on the expiry of twenty [20] years after the date of commencement 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.
- ★ 26. That the consent holder shall not apply for any further variation of its resource consent seeking to permit the discharge of waste into the Eltham landfill from beyond Taranaki Region (i.e. beyond the waste-stream presently accepted by New Plymouth, South Taranaki and Stratford District Councils) and for avoidance of doubt includes the peripheral townships of Awakino and Mokau. Any further variations will be restricted to health and safety and/or applications to enhance the environmental performance of the Eltham landfill due to improvements in engineering methods and available technology relevant to landfill construction and operation or as a result of monitoring.
27. That the Taranaki Regional Council may, under section 128(1)(a) of the Resource Management Act 1991, serve notice of review of conditions of this consent in June 2005, June 2011, June 2017, June 2023, and June 2029 and within 18 months of the exercise of this consent, for the purpose of:
- i) assessing the ongoing adequacy of the Monitoring Programme and methods of implementation outlined in Condition 17 of this consent; and
 - ii) assessing the effectiveness of conditions in avoiding, remedying or mitigating adverse effects on the environment from the discharge of contaminants to land.

The review of conditions may allow for:

- a) modification of the Monitoring Programme and methods of implementation outlined in Condition 17 of this consent;
- b) deletion, additions or changes to General Condition (d) and Conditions 3, 4, 7, 8, 11, 13, 14, 15 and 20.

Signed at Stratford on 20 July 2005

For and on behalf of
Taranaki Regional Council



Director-Resource Management

Consent 5348-1




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

CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE: 06-765 7127
FAX: 06-765 5097
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Please quote our file number
on all correspondence

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA

Change To
Conditions Date:  20 July 2005 [Granted: 15 March 2000]

Conditions of Consent

Consent Granted: To discharge emissions into the air from landfilling activities at the South Taranaki District Council Central Landfill, Eltham at or about GR: Q20:222-936

Expiry Date: 1 June 2034

Review Date(s): June 2005, June 2011, June 2017, June 2023, June 2029

Site Location: Central Landfill, Rotokare Road, Eltham

Legal Description: Pt Sec 26 Sec 27 Blk XIV Ngaere SD

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document*
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Consent 5348-1

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. That:
 - a) the consent holder shall prepare a Landfill Management Plan addressing proposed operation, management and monitoring at the landfill for the purpose of demonstrating among other things the means by which compliance with the conditions set in this consent shall be achieved, such Plan (excluding that part of the Plan that deals with contingency events) to be prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council three months prior to the exercise of this consent. The initial Management Plan shall be reviewed by the General Manager in consultation with the Neighbourhood Liaison Group. The adverse environmental effects arising from implementation of the Management Plan, and any subsequent version required under Condition 1(b), shall be no greater than those arising from the implementation of the draft plan provided with the application dated May 1998 and in any case shall be within the limits set by the conditions on this consent;
 - b) the Management Plan shall be reviewed and updated at not greater than two yearly intervals, in consultation with the General Manager, Taranaki Regional Council, and the Neighbourhood Liaison Group;
 - c) The consent holder shall adhere to and comply with the procedures, requirements, obligations and all other matters specified in the management plan, unless it can be demonstrated to the reasonable satisfaction of the General Manager, Taranaki Regional Council, that any changes in those procedures, requirements, and obligations will result in the same or any lesser adverse environmental effect that already allowed; and
 - d) in case of any contradiction between the management plan and the conditions of this resource consent, the conditions of this resource consent shall prevail.

Consent 5348-1

2. That the consent holder shall at all times adopt the best practicable option [as defined in section 2 of the Act] to prevent or minimise any actual or likely adverse effect on the environment arising from emissions from the landfill operation.
3. That the discharge of contaminants into the air from the landfill shall not result in offensive or objectionable odours or dangerous or noxious ambient concentrations of any airborne contaminant, in the opinion of an appropriately qualified enforcement officer of the Taranaki Regional Council, at or beyond the boundary of the site.
4. That the discharge of contaminants into the air from the landfill shall not result in either dust or other particulate matter that is offensive or objectionable, in the opinion of an appropriately qualified enforcement officer of the Taranaki Regional Council, at or beyond the boundary of the site.
5. That the consent holder shall ensure that dust is controlled on access roads and on the landfill as necessary.
6. That there shall be no burning of waste at the site.
7. That there shall be no composting of waste at the site.
8. That there shall be no extraction venting of untreated landfill gases within 200 metres of the boundary of the site.
9. That the consent holder shall take all practicable measures to avoid the discharge of waste or contaminants from within the landfill site to the surrounding environment. To this end, the consent holder shall ensure:
 - a) refuse is spread in thin layers and is compacted on the same day refuse is received;
 - b) the amount of refuse exposed at any one time is confined to a practicable minimum; and
 - c) exposed refuse is covered regularly with appropriate material and in any case no less frequently than daily.

Consent 5348-1

10. That the consent holder shall maintain and comply with an Annual Monitoring Plan, prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council, and prepared in consultation with the Neighbourhood Liaison Group, setting out details of monitoring to be carried out and containing guidelines for the determination of whether contamination is occurring. The Annual Monitoring Plan may be amended by the General Manager following consultation with the consent holder. The initial Monitoring Plan is to be received by the General Manager, Taranaki Regional Council, at least six months prior to any discharge under this consent. The initial Monitoring Plan is to include:
 - a) annual sampling of landfill gas constituents for a period of five years and thereafter at five yearly intervals from a suitable landfill gas well using a tech tube or equivalent method to the satisfaction of the General Manager Taranaki Regional Council. The head space in the water monitoring bores B1 and B3, as shown in Figures 5 and 8 of Appendix 4 of the application documentation dated May 1998, and in the leachate pump chamber shall also be sampled;
 - b) samples shall be monitored and analysed for: hydrogen sulphide, methane and carbon dioxide, vinyl chloride, benzene, perchlorethylene and xylene;
 - c) every five years another landfill gas well shall be installed in waste placed in the preceding five years and monitored as in (a) and (b) above;
 - d) monitoring of each well shall cease when there is a significant reduction in the level of landfill gas [to the reasonable satisfaction of the General Manager, Taranaki Regional Council];
 - e) analysis shall be conducted by a laboratory with appropriate accreditation for those parameters measured; and
 - f) monthly odour surveys around the perimeter of the site or a lesser frequency as agreed to by the Neighbourhood Liaison Group.
11. That a meteorological station be established, at a site to the reasonable satisfaction of the General Manager, Taranaki Regional Council, to measure and record, for a period of no less than 12 months commencing within one year of the development of the site, wind speed, wind direction, temperature and net radiation . The results are to be used to undertake dispersion modelling to predict ground level concentrations of hydrogen sulphide or other gaseous or airborne contaminants around the site.
12. That in fulfilment of Condition 11 above the meteorological parameters are to be measured as specified in Appendix 10 to the application documentation dated May 1998.

Consent 5348-1

13. That the consent holder shall keep a record of any complaints received relating to discharges to air with respect to the landfill activity. The complaints record shall include the following where possible:
 - a) name and address of complainant;
 - b) nature of complaint;
 - c) date and time of the complaint and alleged event;
 - d) weather conditions at the time of the event; and
 - e) any action taken in response to the complaint.
14. That the results of the Annual Monitoring Plan, the complaints record, and the meteorological data, for the year ending 30 June be provided to the General Manager Taranaki Regional Council by 31 August of each year following the monitoring, and be made available to the Neighbourhood Liaison Group, and to the public.
15. That the consent holder shall ensure that records are kept of any site investigations for any engineering works associated with this consent, and that these records are forwarded to the General Manager, Taranaki Regional Council.
16. That the consent holder and staff of the Taranaki Regional Council shall meet with representatives of the Neighbourhood Liaison Group to discuss any matter relating to the exercise of this resource consent, in order to facilitate ongoing consultation, such meetings to be according to the following schedule:
 - a) one month prior to the exercise of this consent;
 - b) thereafter at intervals of three months for the first eighteen months after the date of exercise;
 - c) thereafter at one interval of no more than six months;
 - d) thereafter at intervals of no more than twelve months;

unless all parties agree that changes to the intervals are acceptable.

The Technical Adviser may attend one meeting per year for the first six years and thereafter a frequency determined by the General Manager, Taranaki Regional Council.



17. That this consent shall lapse on the expiry of twenty [20] years after the date of commencement 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.



18. That the consent holder shall not apply for any further variation of its resource consent seeking to permit the discharge of waste into the Eltham landfill from beyond Taranaki Region (i.e. beyond the waste-stream presently accepted by New Plymouth, South Taranaki and Stratford District Councils) and for avoidance of doubt includes the peripheral townships of Awakino and Mokau. Any further variations will be restricted to health and safety and/or applications to enhance the environmental performance of the Eltham landfill due to improvements in engineering methods and available technology relevant to landfill construction and operation or as a result of monitoring.
19. That the Taranaki Regional Council may, under section 128(1)(a) of the Resource Management Act 1991, serve notice of review of conditions of this consent in June 2005, June 2011, June 2017, June 2023, and June 2029 and within 18 months of the exercise of this consent, for the purpose of:
- i) assessing the ongoing adequacy of the Monitoring Programme and methods of implementation outlined in Condition 10 of this consent; and
 - ii) assessing the effectiveness of conditions in avoiding, remedying or mitigating adverse effects on the environment from the discharge of contaminants to air.

The review of conditions may allow for:

- a) modification of the Monitoring Programme and methods of implementation outlined in Condition 10 of this consent; and
- b) deletion, additions or changes to conditions 2, 3, 4 and 9 and General Condition (d).

Signed at Stratford on 20 July 2005

For and on behalf of
Taranaki Regional Council

Director Resource Management

Consent 5349-1




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

CHIEF EXECUTIVE
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47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
PHONE: 06-765 7127
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Please quote our file number
on all correspondence

Name of Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA

Change To Conditions Date:  20 July 2005 [Granted: 15 March 2000]

Conditions of Consent

Consent Granted: To discharge up to 15,000 cubic metres/day of uncontaminated stormwater and 4,000 cubic metres/day of treated stormwater from the South Taranaki District Council Central Landfill, Eltham, onto and into land and into an unnamed tributary of the Waingongoro River at or about GR: Q20:222-936

Expiry Date: 1 June 2034

Review Date(s): June 2005, June 2011, June 2017, June 2023, June 2029

Site Location: Central Landfill, Rotokare Road, Eltham

Legal Description: Pt Sec 26 Sec 27 Blk XIV Ngaere SD

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document*
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Consent 5349-1

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. That:
 - a) the consent holder shall prepare a Landfill Management Plan addressing proposed operation, management and monitoring at the landfill for the purpose of demonstrating among other things the means by which compliance with the conditions set in this consent shall be achieved, such Plan (excluding that part of the Plan that deals with contingency events) to be prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council three months prior to the exercise of this consent. The initial Management Plan shall be reviewed by the General Manager in consultation with the Neighbourhood Liaison Group. The adverse environmental effects arising from implementation of the Management Plan, and any subsequent version required under Condition 1(b), shall be no greater than those arising from the implementation of the draft plan provided with the application dated May 1998 and in any case shall be within the limits set by the conditions on this consent;
 - b) The Management Plan shall be updated at not greater than two yearly intervals, to the satisfaction of the General Manager, Taranaki Regional Council, and following consultation with the Neighbourhood Liaison Group;
 - c) The consent holder shall adhere to and comply with the procedures, requirements, obligations and all other matters specified in the management plan, unless it can be demonstrated to the reasonable satisfaction of the General Manager, Taranaki Regional Council, that any changes in those procedures, requirements, and obligations will result in the same or any lesser adverse environmental effect than already allowed; and
 - d) in case of any contradiction between the management plan and the conditions of this resource consent, the conditions of this resource consent shall prevail.

Consent 5349-1

2. That no leachate discharge shall be permitted by the exercise of this consent.
3. That in order to give effect to Condition 2, the consent holder shall ensure that the leachate storage lagoon is bunded to ensure no entry of stormwater to that lagoon.
4. That the consent holder shall at all times adopt the best practicable option [as defined in section 2 of the Act] to keep uncontaminated stormwater separate from contaminated stormwater.
5. That no contaminated stormwater be discharged directly to the unnamed tributaries of the Waingongoro River.
6. That stormwater holding ponds be installed.
7. That after allowing for reasonable mixing in a zone that extends downstream no further than the western boundary of the site ["the mixing zone"], the discharge shall not give rise to all or any of the following effects in the receiving water:
 - (a) the production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - (b) any conspicuous change in the colour or visual clarity;
 - (c) any emission of objectionable odour;
 - (d) the rendering of freshwater unsuitable for consumption by farm animals; and
 - (e) any significant adverse effects on aquatic life.
8. That the exercise of this consent shall not cause the water quality of the tributary streams, beyond the mixing zone, to exceed the following criteria:

Parameter	Limit
pH	6.0-9.0
Copper (dissolved)	0.01 g/m ³
Iron (dissolved)	1.0 g/m ³
Manganese (dissolved)	0.01 g/m ³
Zinc (dissolved)	0.1 g/m ³
Dissolved reactive phosphorus	0.5 g/m ³
Nitrate nitrogen	10 g/m ³
Ammonia nitrogen	1.8 g/m ³
Suspended solids	100 g/m ³
Faecal coliforms	1000 n/100 ml

Consent 5349-1

9. That all stormwater diversion and containment channels shall be designed, constructed and maintained so as to prevent or minimise erosion of the channel.
10. That the earthworks and construction associated with the landfill and the stormwater diversion and containment channels shall be designed, constructed and maintained so as to minimise instability of the surrounding land.
11. That the consent holder shall repair and rehabilitate any land made unstable and any erosion occurring due to the construction or maintenance of the diversion channels or landfilling operations associated with the exercise of this consent.
12. That the consent holder shall minimise disturbance to riparian vegetation during the exercise of this consent, and shall undertake, at a minimum, planting within the site in accordance with those areas shown in Figures 5a, 5b, 5c, and 5d of the Assessment of Environmental Effects accompanying the application dated May 1998.
13. That the consent holder shall maintain and comply with an Annual Monitoring Plan prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council and prepared in consultation with the Neighbourhood Liaison Group. The Plan shall describe in detail practices for water monitoring. The Annual Monitoring Plan may be amended by the General Manager following consultation with the consent holder. The initial Monitoring Plan is to be received by the General Manager, Taranaki Regional Council, at least six months prior to any discharge under this consent. The initial Monitoring Plan is to include:
 - a) biological and water quality monitoring twice per year in the two unnamed tributaries of the Waingongoro River at site(s) to the reasonable satisfaction of the General Manager, Taranaki Regional Council;
 - b) monitoring of the parameters as set out in Condition 8 above, and also alkalinity, BOD₅, and conductivity; and
 - c) analysis shall be conducted by a laboratory with appropriate accreditation for those parameters measured.
14. That the results of the Annual Monitoring Programme for the year ending 30 June be provided to the General Manager Taranaki Regional Council by 31 August of each year following the monitoring, and be made available to the Neighbourhood Liaison Group, and to any other interested party, and to the public.
15. That the construction, installation, placement, integrity and expected performance of stormwater collection, drainage and holding systems on any part of the site shall be certified by a registered engineer, a copy of such certification to be provided to the General Manager, Taranaki Regional Council, prior to and on completion of construction of any such systems, and prior to the disposal of any waste in those areas.

16. That the consent holder and staff of the Taranaki Regional Council shall meet as appropriate, and at least once per year, with representatives of the Neighbourhood Liaison Group to discuss any matter relating to the exercise of this resource consent, in order to facilitate ongoing consultation, such meetings to be according to the following schedule:
- (a) one month prior to the exercise of this consent;
 - (b) thereafter at intervals of three months for the first eighteen months after the date of exercise;
 - (c) thereafter at one interval of no more than six months; and
 - (d) thereafter at intervals of no more than twelve months;

unless all parties agree that changes to the intervals are acceptable.

The Technical Adviser may attend one meeting per year for the first six years and thereafter at a frequency determined by the General Manager, Taranaki Regional Council.



17. That this consent shall lapse on the expiry of twenty [20] years after the date of commencement 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.



18. That the consent holder shall not apply for any further variation of its resource consent seeking to permit the discharge of waste into the Eltham landfill from beyond Taranaki Region (i.e. beyond the waste-stream presently accepted by New Plymouth, South Taranaki and Stratford District Councils) and for avoidance of doubt includes the peripheral townships of Awakino and Mokau. Any further variations will be restricted to health and safety and/or applications to enhance the environmental performance of the Eltham landfill due to improvements in engineering methods and available technology relevant to landfill construction and operation or as a result of monitoring.

Consent 5349-1

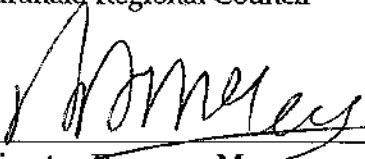
19. That the Taranaki Regional Council may, under section 128(1)(a) of the Resource Management Act 1991, serve notice of review of conditions of this consent in June 2005, June 2011, June 2017, June 2023, and June 2029 and within 18 months of the exercise of this consent, for the purpose of:
- i) assessing the ongoing adequacy of the Monitoring Programme and methods of implementation outlined in Condition 13 of this consent; and
 - ii) assessing the effectiveness of conditions in avoiding, remedying or mitigating adverse effects on the environment from the discharge of contaminants to land and water.

The review of conditions may allow for:

- a) modification of the Monitoring Programme and methods of implementation outlined in Condition 13 of this consent; and
- b) deletion, additions or changes to Conditions 7 and 8 and General Condition (d).

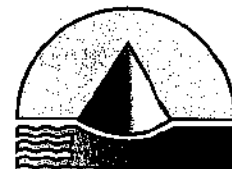
Signed at Stratford on 20 July 2005

For and on behalf of
Taranaki Regional Council



Director Resource Management

Consent 5350-1




**TARANAKI
REGIONAL
COUNCIL**

CHIEF EXECUTIVE
PRIVATE BAG 713
47 CLOTEN ROAD
STRATFORD
NEW ZEALAND
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Please quote our file number
on all correspondence

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

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA

Change To
Conditions Date:  20 July 2005 [Granted: 15 March 2000]

Conditions of Consent

Consent Granted: To dam and divert water around the South Taranaki District Council Central Landfill, Eltham, in the headwaters of an unnamed tributary of the Waingongoro River at or about GR: Q20:222-936

Expiry Date: 1 June 2034

Review Date(s): June 2005, June 2011, June 2017, June 2023, June 2029

Site Location: Central Landfill, Rotokare Road, Eltham

Legal Description: Pt Sec 26 Sec 27 Blk XIV Ngaere SD

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document
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Consent 5350-1

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. That:
 - a) the consent holder shall prepare a Landfill Management Plan addressing proposed operation, management and monitoring at the landfill for the purpose of demonstrating among other things the means by which compliance with the conditions set in this consent shall be achieved, such Plan (excluding that part of the Plan that deals with contingency events) to be prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council three months prior to the exercise of this consent. The initial Management Plan shall be reviewed by the General Manager in consultation with the Neighbourhood Liaison Group. The adverse environmental effects arising from implementation of the Management Plan, and any subsequent version required under Condition 1(b), shall be no greater than those arising from the implementation of the draft plan provided with the application dated May 1998 and in any case shall be within the limits set by the conditions on this consent;
 - b) the Management Plan shall be reviewed and updated at not greater than two yearly intervals, in consultation with the General Manager, Taranaki Regional Council, and the Neighbourhood Liaison Group;
 - c) the consent holder shall adhere to and comply with the procedures, requirements, obligations and all other matters specified in the management plan, unless it can be demonstrated to the reasonable satisfaction of the General Manager, Taranaki Regional Council, that any changes in those procedures, requirements, and obligations will result in the same or any lesser adverse environmental effect than already allowed; and
 - d) in case of any contradiction between the management plan and the conditions of this resource consent, the conditions of this resource consent shall prevail.

Consent 5350-1

2. That all stormwater diversion and containment channels shall be designed, constructed and maintained so as to prevent or minimise erosion of the channel in all circumstances.
3. That the earthworks and construction associated with the landfill and the stormwater diversion and containment channels shall be designed, constructed and maintained so as to minimise instability of the surrounding land.
4. That the consent holder shall repair and rehabilitate any land made unstable and any erosion occurring due to the construction or maintenance of the diversion channels or landfilling operations associated with the exercise of this consent.
5. That the consent holder shall maintain and comply with an Annual Monitoring Plan prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council and prepared in consultation with the Neighbourhood Liaison Group. The Annual Monitoring Plan may be amended by the General Manager following consultation with the consent holder. The initial Monitoring Plan is to be received by the General Manager, Taranaki Regional Council, at least six months prior to any dam construction under this consent. The initial Monitoring Plan shall describe in detail practices and sites for water monitoring.
6. That the construction, installation, placement, integrity and expected performance of the damming and diversion systems on any part of the site shall be certified by a registered engineer, a copy of such certification to be provided to the General Manager, Taranaki Regional Council, prior to and on completion of the construction of any such systems in those areas.
7. That the consent holder and staff of the Taranaki Regional Council shall meet with representatives of the Neighbourhood Liaison Group to discuss any matter relating to the exercise of this resource consent, in order to facilitate ongoing consultation, such meetings to be according to the following schedule:
 - (a) one month prior to the exercise of this consent;
 - (b) thereafter at intervals of three months for the first eighteen months after the date of exercise;
 - (c) thereafter at one interval of no more than six months; and
 - (d) thereafter at intervals of no more than twelve months;

unless all parties agree that changes to the intervals are acceptable.

The Technical Adviser may attend one meeting per year for the first six years and thereafter a frequency determined by the General Manager, Taranaki Regional Council.

- 
8. That this consent shall lapse on the expiry of twenty [20] years after the date of commencement 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.



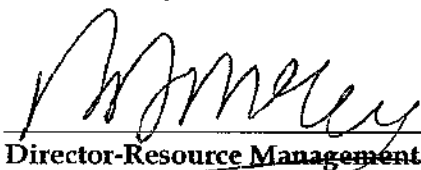
9. That the consent holder shall not apply for any further variation of its resource consent seeking to permit the discharge of waste into the Eltham landfill from beyond Taranaki Region (i.e. beyond the waste-stream presently accepted by New Plymouth, South Taranaki and Stratford District Councils) and for avoidance of doubt includes the peripheral townships of Awakino and Mokau. Any further variations will be restricted to health and safety and/or applications to enhance the environmental performance of the Eltham landfill due to improvements in engineering methods and available technology relevant to landfill construction and operation or as a result of monitoring.
10. That the Taranaki Regional Council may, under section 128(1)(a) of the Resource Management Act 1991, serve notice of review of conditions of this consent in June 2005, June 2011, June 2017, June 2023, and June 2029 and within 18 months of the exercise of this consent, for the purpose of:
- i) assessing the ongoing adequacy of the Monitoring Programme and methods of implementation outlined in Condition 5 of this consent; and
 - ii) assessing the effectiveness of conditions in avoiding, remedying or mitigating adverse effects on the environment from the damming and diversion of water.

The review of conditions may allow for:

- a) modification of the Monitoring Programme and methods of implementation outlined in Condition 5 of this consent; and
- b) deletion, additions or changes to General Condition (d).

Signed at Stratford on 20 July 2005

For and on behalf of
Taranaki Regional Council



Director-Resource Management

Consent 5351-1




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

CHIEF EXECUTIVE
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Please quote our file number
on all correspondence

Name of
Consent Holder: South Taranaki District Council
Private Bag 902
HAWERA

Change To
Conditions Date:  20 July 2005 [Granted: 15 March 2000]

Conditions of Consent

Consent Granted: To erect, place and maintain structures in the beds of unnamed tributaries of the Waingongoro River for the construction and maintenance of the South Taranaki District Council Central Landfill, Eltham at or about GR: Q20:222-936

Expiry Date: 1 June 2034

Review Date(s): June 2005, June 2011, June 2017, June 2023, June 2029

Site Location: Central Landfill, Rotokare Road, Eltham

Legal Description: Pt Sec 26 Sec 27 Blk XIV Ngaere SD

Catchment: Waingongoro

*For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document*
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Consent 5351-1

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. That:
 - a) the consent holder shall prepare a Landfill Management Plan addressing proposed operation, management and monitoring at the landfill for the purpose of demonstrating among other things the means by which compliance with the conditions set in this consent shall be achieved, such Plan (excluding that part of the Plan that deals with contingency events) to be prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council three months prior to the exercise of this consent. The initial Management Plan shall be reviewed by the General Manager in consultation with the Neighbourhood Liaison Group. The adverse environmental effects arising from implementation of the Management Plan, and any subsequent version required under Condition 1(b), shall be no greater than those arising from the implementation of the draft plan provided with the application dated May 1998 and in any case shall be within the limits set by the conditions on this consent;
 - b) the Management Plan shall be updated at not greater than two yearly intervals, in consultation with the General Manager, Taranaki Regional Council, and the Neighbourhood Liaison Group;
 - c) the consent holder shall adhere to and comply with the procedures, requirements, obligations and all other matters specified in the management plan, unless it can be demonstrated to the reasonable satisfaction of the General Manager, Taranaki Regional Council, that any changes in those procedures, requirements, and obligations will result in the same or any lesser adverse environmental effect than already allowed; and
 - d) in case of any contradiction between the management plan and the conditions of this resource consent, the conditions of this resource consent shall prevail.

Consent 5351-1

2. That the construction and maintenance authorised by this consent, in conjunction with the exercise of any other consent associated with the landfill, shall not give rise to all or any of the following effects in the unnamed tributaries of the Waingongoro River at the western boundary of the site:
 - a) the production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of freshwater unsuitable for consumption by farm animals; and
 - e) any significant adverse effects on aquatic life.
3. That the earthworks and construction associated with the erection, placement and maintenance of structures shall be designed, constructed and maintained so as to minimise instability of the stream banks and the surrounding land.
4. That the consent holder shall repair and rehabilitate any land made unstable and any erosion occurring due to the construction or maintenance of the structures.
5. That the consent holder shall minimise disturbance to riparian vegetation during the exercise of this consent, and that any areas of such vegetation disturbed shall be reinstated and additional areas planted within the site in accordance with those areas shown in Figures 5a, 5b, 5c, and 5d of the Assessment of Environmental Effects accompanying the application dated May 1998.
6. That the consent holder shall maintain and comply with an Annual Monitoring Plan prepared to the reasonable satisfaction of the General Manager, Taranaki Regional Council and prepared in consultation with the Neighbourhood Liaison Group. The Annual Monitoring Plan may be amended by the General Manager following consultation with the consent holder. The initial Monitoring Plan is to be received by the General Manager, Taranaki Regional Council, at least six months prior to any streambed structure construction under this consent. The initial Monitoring Plan shall describe in detail practices and sites for water monitoring.
7. That the construction, installation, placement, integrity and expected performance of the structures in the streambeds on any part of the site shall be certified by a registered engineer, a copy of such certification to be provided to the General Manager, Taranaki Regional Council, prior to and on completion of the construction of any structures in those areas.

Consent 5351-1

8. That the consent holder shall remove any structure(s) in waterways and reinstate the area if and when any structure(s) is no longer required.
9. That the consent holder and staff of the Taranaki Regional Council shall meet as appropriate, and at least once per year, with representatives of the Neighbourhood Liaison Group to discuss any matter relating to the exercise of this resource consent, in order to facilitate ongoing consultation, such meetings to be according to the following schedule:
 - a) one month prior to the exercise of this consent;
 - b) thereafter at intervals of three months for the first eighteen months after the date of exercise;
 - c) thereafter at one interval of no more than six months; and
 - d) thereafter at intervals of no more than twelve months;

unless all parties agree that changes to the intervals are acceptable.

The Technical Adviser may attend one meeting per year for the first six years and thereafter at a frequency determined by the General Manager, Taranaki Regional Council.



10. That this consent shall lapse on the expiry of twenty [20] years after the date of commencement 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.



11. That the consent holder shall not apply for any further variation of its resource consent seeking to permit the discharge of waste into the Eltham landfill from beyond Taranaki Region (i.e. beyond the waste-stream presently accepted by New Plymouth, South Taranaki and Stratford District Councils) and for avoidance of doubt includes the peripheral townships of Awakino and Mokau. Any further variations will be restricted to health and safety and/or applications to enhance the environmental performance of the Eltham landfill due to improvements in engineering methods and available technology relevant to landfill construction and operation or as a result of monitoring.

Consent 5351-1

12. That the Taranaki Regional Council may, under section 128(1)(a) of the Resource Management Act 1991, serve notice of review of conditions of this consent in June 2005, June 2011, June 2017, June 2023, and June 2029 and within 18 months of the exercise of this consent, for the purpose of:

- i) assessing the ongoing adequacy of the Monitoring Programme and methods of implementation outlined in Condition 6 of this consent; and
- ii) assessing the effectiveness of conditions in avoiding, remedying or mitigating adverse effects on the environment from the construction and maintenance of structures.

The review of conditions may allow for:

- a) modification of the Monitoring Programme and methods of implementation outlined in Condition 6 of this consent; and
- b) deletion, additions or changes to General Condition (d) and Condition 2.

Signed at Stratford on 20 July 2005

For and on behalf of
Taranaki Regional Council



Director Resource Management

