

NPDC Closed and Contingency Landfills

(Inglewood, Okato and Marfell Park)

Monitoring Programme

Annual Report

2020-2021

Technical Report 2021-92



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Taranaki Regional Council
Private Bag 713
Stratford

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Executive summary

The New Plymouth District Council (NPDC) maintains two closed landfills, one at Inglewood and one at Okato. Both of these sites are now used as transfer stations and are held in reserve to accept refuse, if required, as a contingency. The Inglewood landfill is an active cleanfill site; located on King Road at Inglewood, in the Waiongana catchment. The Okato landfill is an active cleanfill and green waste disposal site; located on Hampton Road at Okato, in the Kaihihi catchment. NPDC also maintains Marfell Park (Marfell) landfill in the Huatoki catchment. This landfill does not accept any waste for disposal and the site has been fully reinstated to a park.

During the monitoring period, NPDC demonstrated an overall high level of environmental performance.

This report for the period July 2020 to June 2021 describes the monitoring programme implemented by the Taranaki Regional Council (the Council) to assess NPDC's environmental and consent compliance performance during the period under review. The report also details the results of the monitoring undertaken and assesses the environmental effects of NPDC's activities.

NPDC holds seven resource consents in relation to these landfills, which include a total of 62 conditions setting out the requirements that they must satisfy. NPDC holds three consents to discharge leachate and stormwater into various streams, two consents to discharge contaminants onto and into land, and two consents to discharge emissions into the air.

The Council's monitoring programme for the year under review included seven inspections, two discharge samples, 14 receiving water samples, two biomonitoring surveys of receiving waters, and one ambient air quality analysis.

Overall during the year, NPDC demonstrated a high level of environmental and administrative performance for the three landfills discussed in this report.

For reference, in the 2020-2021 year, consent holders were found to achieve a high level of environmental performance and compliance for 86% of the consents monitored through the Taranaki tailored monitoring programmes, while for another 11% of the consents, a good level of environmental performance and compliance was achieved.

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

This report includes recommendations for the 2021-2022 year.

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1 Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is for the period July 2020 to June 2021 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by New Plymouth District Council (NPDC) for closed landfills in the district.

NPDC holds a consent to discharge leachate and contaminated stormwater from its closed landfill, Marfell Park (Marfell) landfill in the Huatoki catchment. This landfill does not accept waste for disposal to land and has been fully reinstated as a park.

NPDC also hold consents to discharge solids to land, emissions to air, and leachate and contaminated stormwater to land and water, at two contingency landfills that currently operate as transfer stations and green waste and/or cleanfill disposal sites. These are Inglewood landfill (cleanfill) in the Waiongana catchment, and Okato landfill (cleanfill and green waste) in the Kaihihi catchment. The landfills are not routinely accepting refuse and these landfilled areas of the sites have been fully restored. They do, however, retain all necessary consents to act as contingency sites if the regional landfill at Colson Road (recently closed) had to cease accepting waste, or there are transportation issues in the event of an emergency.

The Colson Road regional landfill closed to general waste in August 2019. The monitoring of this facility has been reported separately since the annual report covering the 1999-2000 monitoring period. Waste is now disposed of out of the Taranaki region.

One of the intents of the Resource Management Act 1991 (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of NPDC's use of water, land and air, and is the 31st combined annual report by the Council for NPDC.

1.1.2 Structure of this report

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

- consent compliance monitoring under the RMA and the Council's obligations;
- the Council's approach to monitoring sites through annual programmes;
- the resource consents held by NPDC for landfills/cleanfills in the Huatoki, Waiongana, and Kaihihi catchments;
- the nature of the monitoring programme in place for the period under review; and
- a description of the activities and operations conducted at the sites.

Thereafter, each landfill is discussed in a separate section - **Section 2, 3 and 4**. The subsections under each of these include the following:

Subsection 1 describes the site and past/present activities;

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

Subsection 3 discusses the results, their interpretations, and their significance for the environment;

Subsection 4 presents recommendations to be implemented in the 2021-2022 monitoring year.

Section 5 provides a summary of the recommendations.

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

1.1.3 The Resource Management Act 1991 and monitoring

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

- a. the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
- b. physical effects on the locality, including landscape, amenity and visual effects;
- c. ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
- d. natural and physical resources having special significance (for example recreational, cultural, or aesthetic); and
- e. risks to the neighbourhood or environment.

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

1.1.4 Evaluation of environmental and administrative performance

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

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

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

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

Environmental Performance

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

involving environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

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

For example:

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

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

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

Administrative performance

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

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

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

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

For reference, in the 2020-2021 year, consent holders were found to achieve a high level of environmental performance and compliance for 86% of the consents monitored through the Taranaki tailored monitoring

programmes, while for another 11% of the consents, a good level of environmental performance and compliance was achieved.¹

1.2 Resource consents

NPDC holds seven resource consents in relation to its closed and contingency landfills, the details of which are summarised in the table below. Summaries of the conditions attached to each permit are set out in the 'Evaluation of performance' sections for each site.

A summary of the various consent types issued by the Council is included in Appendix I, as are copies of all permits held by NPDC for the three landfills during the period under review.

Table 1 Summary of consents held by NPDC

Site	Consent No.	Purpose	Granted	Review	Expires
Inglewood	3954-2	To discharge up to a total of 4,752 m ³ /day (55 litres/second) of leachate and stormwater from the Inglewood municipal landfill into an unnamed tributary of the Awai Stream, a tributary of the Mangaoraka Stream in the Waiongana catchment	Feb 2002	-	Expired - S.124 Protection
	4526-3	To discharge contaminants, being landfill gas, and odours associated with a landfill, into the air from the Inglewood municipal landfill	Mar 2007	-	June 2026
	4527-3	To discharge cleanfill and inert materials onto and into land at the Inglewood municipal landfill, and to discharge municipal refuse onto and into land at the Inglewood municipal landfill when, and only when, it cannot be discharged at the Colson Road municipal landfill	Mar 2007	-	June 2026
Okato	3860-3	To discharge stormwater and leachate from the Okato municipal landfill into an unnamed tributary of the Kaihihi Stream	Sep 2013	June 2025	June 2031
	4528-3	To discharge emissions into the air from the contingency discharge of solid contaminants at the Okato municipal landfill	Sep 2013	June 2025	June 2031
	4529-3	To discharge cleanfill and green waste to land and to discharge general refuse on a contingency basis to land	Sep 2013	June 2025	June 2031
Marfell	4902-2	To discharge leachate from the Marfell former landfill site via groundwater into the Mangaotuku Stream	Oct 2014	June 2026	June 2032

¹ The Council has used these compliance grading criteria for more than 17 years. They align closely with the four compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

1.3 Monitoring programme

1.3.1 Introduction

Section 35 of the RMA sets obligations upon the Council to gather information, monitor and conduct research on the exercise of resource consents within the Taranaki region. The Council is also required to assess the effects arising from the exercising of these consents and report upon them.

The Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations and seek information from consent holders.

The monitoring programme for the NPDC landfill sites consisted of four primary components as outlined below and in Table 2. The Inglewood and Okato landfills, where cleanfill and/or green waste is still being discharged are monitored annually, while the closed Marfell site is monitored biennially.

1.3.2 Programme liaison and management

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

- ongoing liaison with resource consent holders over consent conditions and their interpretation and application;
- discussion over monitoring requirements;
- preparation for any consent reviews, renewals or new consent applications;
- advice on the Council's environmental management strategies and content of regional plans; and
- consultation on associated matters.

1.3.3 Site inspections

Seven inspections were undertaken during the monitoring period (Table2). With regard to consents for the abstraction of or discharge to water, the main points of interest were site processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air inspections focused on site processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by NPDC were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.3.4 Chemical sampling

The Council took two discharge and 14 receiving water samples for physicochemical analysis during the monitoring year across all of the NPDC landfill sites covered in this report.

Ambient air quality monitoring was also carried out at the Inglewood landfill during one inspection.

1.3.5 Biomonitoring surveys

A biological survey was performed on two occasions at the Inglewood landfill in two unnamed tributaries of the Awai Stream.

Table 2 Summary of monitoring activities carried out at the NPDC landfills during the monitoring period

Landfill	Number of discharge samples	Number of receiving water samples	Number of inspections	Biomonitoring surveys	Ambient air surveys
Inglewood	1	10	4	2	1
Marfell	1	2	1	0	0
Okato	0	2	2	0	0
TOTAL	2	14	7	2	1

2 Inglewood landfill

2.1 Introduction

2.1.1 Site description

The Inglewood landfill opened in 1978 and operated as a municipal landfill for 24 years.

The site had been constructed in the head of a gully in the Awai Stream catchment. As the gully was filled with refuse, cover material was progressively excavated from the side walls ahead of the fill. The underlying soil, cover and capping material at the site is clay (Taranaki Ash).

Solid waste from the Inglewood kerbside collection was disposed of at Colson Road from 1999 and the Inglewood landfill was closed to general waste acceptance on 1 September 2006. During the period January 2005 to March 2006 solid waste from the Stratford District kerbside collection was disposed of at this site, and for three months from July 2005 to October 2005 solid waste normally disposed of at Colson Road, was disposed of here whilst remedial work was undertaken at Colson Road.

The site has continued to be used as a waste transfer station. Refuse is placed in bins for removal and disposal at Bonny Glen landfill. The disposal of cleanfill is still permitted at the site, and the site has been identified as a contingency landfill in the event that refuse could not be disposed of at an active landfill.

Approximately 1.78 ha of the site has been used for landfilling. As required by the conditions of the consent, NPDC maintains a Landfill Closure Management Plan for the site that addresses monitoring and management of the site. NPDC staff also undertake regular inspections at the site, and the plan states that if any issues are identified they will be remediated appropriately.

The Inglewood Landfill Closure Plan states that it is suspected that when this landfill was originally developed there were no standard specifications for the siting and operation of landfills. As a result the site is not lined, nor does it have landfill gas or leachate collection systems in place.

Figure 1 shows the approximate extent of the fill and the general layout of the Inglewood landfill site. The discharge and receiving water monitoring site locations are shown in Figure 2.



Figure 1 Site layout at Inglewood contingency landfill

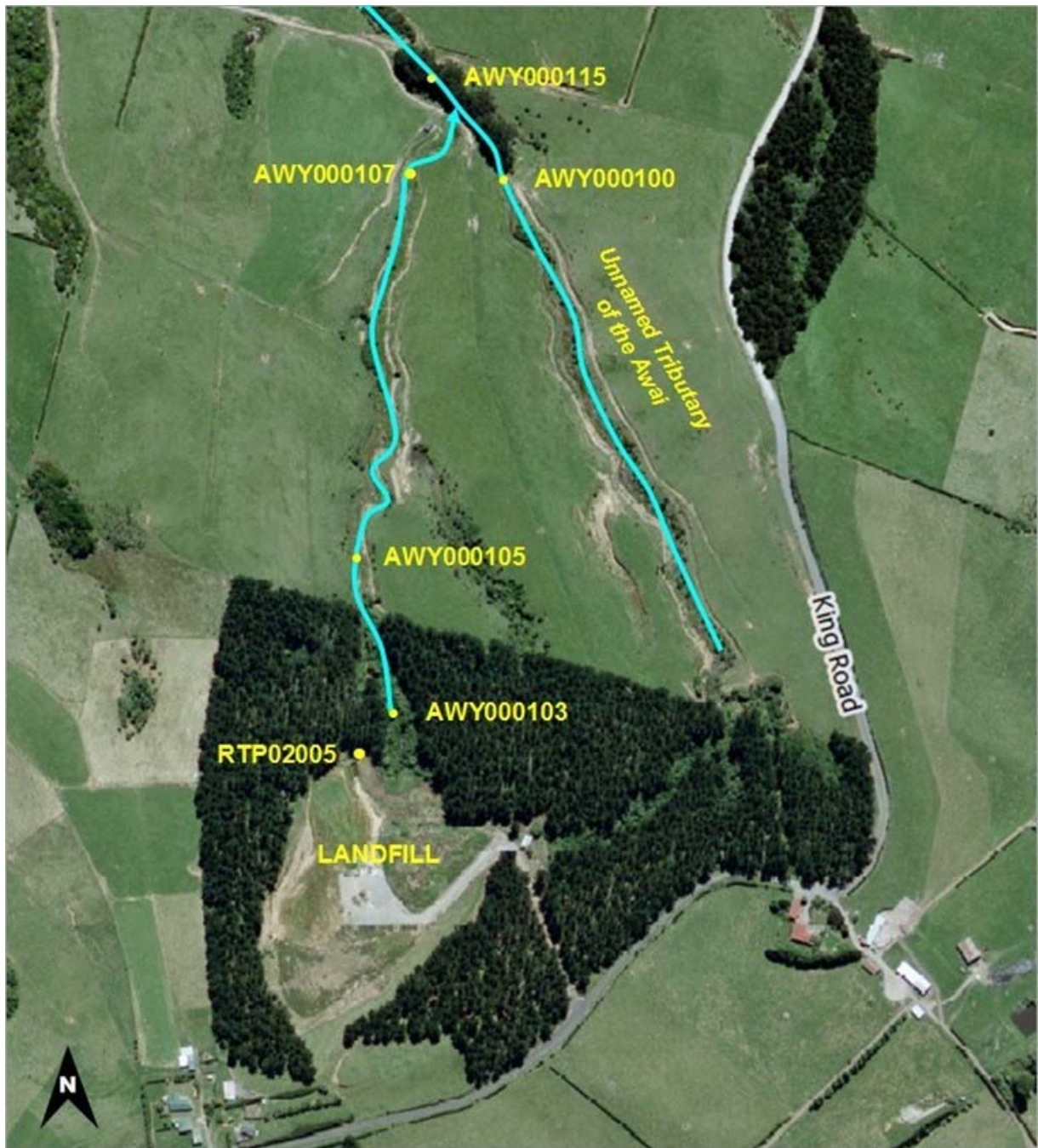


Figure 2 Inglewood landfill and receiving water sampling sites

2.2 Results

2.2.1 Site Inspections

Inspections were undertaken on four occasions during the 2020-2021 monitoring period; 24 September and 23 November 2020, and 25 February and 7 May 2021.

During all inspections the cap was in good condition and tidy. Both the cap and batters were well vegetated with no sign of slumping, ponding, or exposed refuse. Some minor cracks on the cap noted during the 2019-2020 monitoring period did not seem to have enlarged. Wilding pine control appeared to have been effective, as well as general weed control and the removal of blackberry patches. The stormwater perimeter drains were dry and clear with no obstructions. The leachate drains were dry during all inspections and the pond was empty and not discharging during the February inspection.

Fencing, signage, and site security were intact and permanent. There was no indication of recent grazing or vermin damage throughout the site. The transfer station was occupied and operating during two of the inspections. The site appeared to be tidy and well-managed, with no sign of unauthorised material, and no odour or dust issues.

2.2.2 Results of stormwater/leachate monitoring

It has previously been found that the pond only discharges directly into the landfill tributary after heavy rain, as accumulated water in the pond tends to be lost to evaporation and seepage. This means that there is usually a significant amount of freeboard present at any given time.

During the year under review the pond was discharging during one of the two scheduled surface water sampling surveys. The results of the sample (collected 23 November 2020) and a summary of the historical data are presented in Table 3.

Table 3 Chemical analysis of samples taken from the Inglewood landfill leachate/stormwater pond (site RTP002005)

Parameter	Unit	23 November 2020	Historical results		
			Minimum	Maximum	Number of samples
Ammoniacal nitrogen	g/m ³ N	7.6	0.01	73.3	29
Biochemical oxygen demand	g/m ³	<2	<2	850	28
Conductivity @ 25°C	µS/cm	475	146	2288	29
Nitrate/nitrite nitrogen	g/m ³ N	0.25	<0.01	1.89	5
pH	pH	6.9	6.7	8.5	29
Temperature	Deg.C	16.7	4.8	18.3	28
Total nitrogen	g/m ³ N	7.9	8.3	12.1	5
Turbidity	FNU	28	1.5	69	13
Un-ionised ammonia	g/m ³	0.0187	<0.01	0.04877	18
Zinc Dissolved	g/m ³	0.0015	<0.005	0.63	29

Ammoniacal nitrogen results can fluctuate due to factors like recent grazing, topography of the surrounding area and/or leachate generation from additional stormwater infiltration. Figure 3 shows ammoniacal

nitrogen results from 2005. Some of the higher results (e.g. 2015), can be attributed to heavy rainfall preceding sampling.

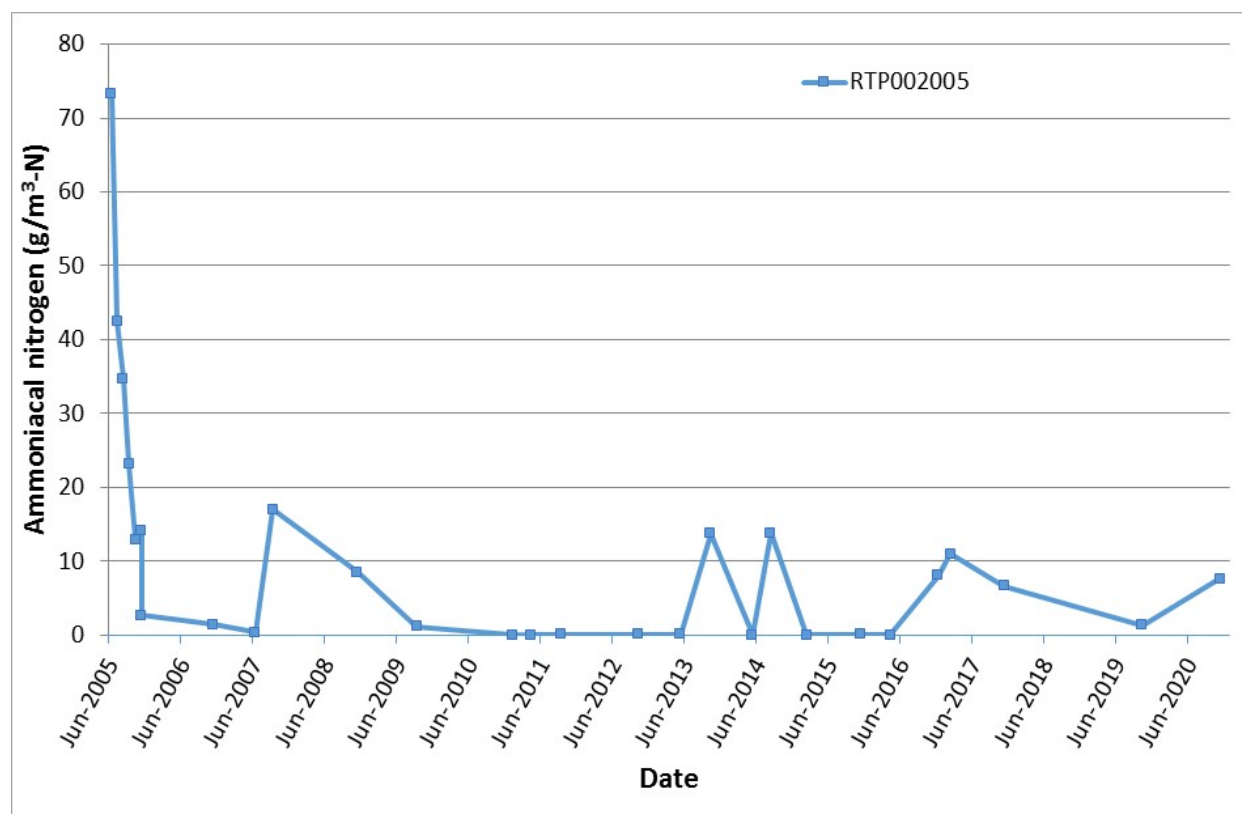


Figure 3 Ammoniacal nitrogen concentration of the Inglewood landfill stormwater/leachate (RTP002005) for monitoring to date

2.2.3 Results of receiving environment monitoring

2.2.3.1 Chemical analysis

Receiving water sampling was undertaken at sites AWY00103, AWY100105, AWY000100, AWY000107 and AWY000115 on two occasions (23 November 2020 and 2 February 2021). The locations of these monitoring sites are shown in Figure 2 and the results of the chemical analysis of the samples are presented in Table 4 and Table 5.

As with previous results, the discharge from the culvert below the landfill exhibits leachate contamination as indicated by the high levels of conductivity, alkalinity, iron, manganese, ammoniacal nitrogen and ammonia.

In general, the levels of contaminants found 130 m downstream of the discharge (at site AWY000105) indicate that the wetland is effective at reducing contaminant levels downstream. The higher nitrate/nitrite nitrogen at site AMY000105 when compared to AMY000103 is due to the oxidation of the ammoniacal nitrogen in the landfill tributary. However, it is noted that although the nitrate/nitrite nitrogen concentration increased, the total nitrogen in the waterbody had decreased significantly compared to the upstream value.

Table 4 Chemical analysis of the Awai Stream tributaries sites on 23 November 2020

Parameter	Unit	AWY000103	AWY000105	AWY000107	AWY000100	AWY000115
		30 m d/s of landfill (culvert discharge)	130 m d/s of landfill	400 m d/s landfill face	u/s of confluence of landfill trib	d/s of confluence of landfill trib
Alkalinity	g/m ³ CaCO ₃	260	119	61	24	46
BOD	g/m ³	<2	5	<2	<2	< 2
Conductivity @ 25°C	µS/cm	627	404	234	108	182
Dissolved oxygen	g/m ³	6.0	4.6	8.7	9.5	9.1
Dissolved reactive phosphorus	g/m ³ -P	0.008	<0.004	< 0.004	< 0.004	< 0.004
Acid soluble iron	g/m ³	12	0.5	< 0.4	< 0.4	<0.4
Acid soluble manganese	g/m ³	6.4	1.02	0.038	0.029	0.050
Unionised ammonia	g/m ³	0.047	0.024	<0.00006	0.00003	0.00006
Ammoniacal nitrogen	g/m ³ -N	18	3.2	<0.010	0.011	0.013
Nitrate/nitrite nitrogen	g/m ³ -N	1.9	8.3	4.8	0.45	3.0
pH	pH	7.0	7.4	7.3	7.0	7.3
Temperature	Deg C	15.0	15.8	14.2	13.6	13.3
Total nitrogen	g/m ³ -N	20	3.3	5.0	0.51	3.1
Turbidity	FNU	154	3.8	0.60	1.2	0.96
Dissolved zinc	g/m ³	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010

Table 5 Chemical analysis of the Awai Stream tributaries sites on 25 February 2021

Parameter	Unit	AWY000103	AWY000105	AWY000107	AWY000100	AWY000115
		30 m d/s of landfill (culvert discharge)	130 m d/s of landfill	400 m d/s landfill face	u/s of confluence of landfill trib	d/s of confluence of landfill trib
Alkalinity	g/m ³ CaCO ₃	350	100	61	23	48
BOD	g/m ³	<2	<2	<2	<2	<2
Conductivity @ 25°C	µS/cm**	755	331	191	88	158
Dissolved reactive phosphorus	g/m ³ -P	<0.004	<0.004	<0.004	< 0.004	<0.004
Acid soluble iron	g/m ³	12	0.6	<0.4	< 0.4	< 0.4
Acid soluble manganese	g/m ³	5.1	0.5	0.058	0.044	0.080
Unionised ammonia	g/m ³	0.160	<0.00013	<0.00006	0.00003	0.00005

Parameter	Unit	AWY000103	AWY000105	AWY000107	AWY000100	AWY000115
		30 m d/s of landfill (culvert discharge)	130 m d/s of landfill	400 m d/s landfill face	u/s of confluence of landfill trib	d/s of confluence of landfill trib
Ammoniacal nitrogen	g/m ³ -N	33 ⁽¹⁾	<0.010	<0.010	0.014	0.011
Nitrate/nitrite nitrogen	g/m ³ -N	0.093	4.1	0.43	0.21	0.35
pH	pH	7.2	7.5	7.2	6.8	7.2
Temperature	Deg C	16.5	19.0	16.7	15.1	15.9
Total nitrogen	g/m ³ -N	31 ⁽¹⁾	4.4	0.12	0.26	0.43
Turbidity	FNU	164	0.62	1.7	0.54	0.50
Dissolved zinc	g/m ³	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010

⁽¹⁾ Data as reported by laboratory. Ammoniacal nitrogen must be less than total nitrogen by definition. The laboratory noted that the apparent discrepancy as reported was within the uncertainty of the analytical methods.

Figure 4 shows the ammoniacal nitrogen results for the stormwater/leachate pond (RTP002005) and the landfill tributary below the culvert outlet (AWY000103). Historically the concentration is much lower in the pond than in the tributary, and continues to indicate that ammoniacal nitrogen is entering the landfill tributary via another route, potentially via shallow groundwater.

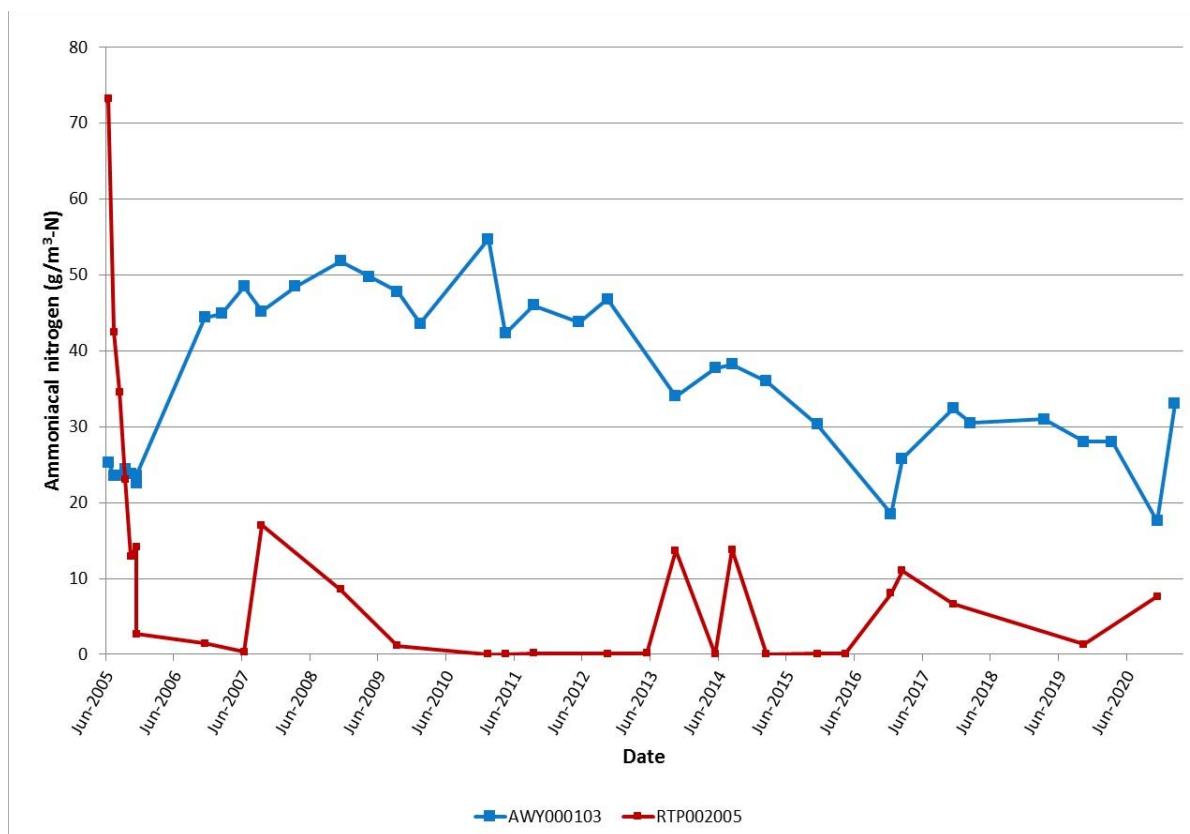


Figure 4 Ammoniacal nitrogen concentration between the Inglewood landfill stormwater/leachate (RTP002005) and the tributary below the culvert outlet (AWY000103)

It is also noted that at the culvert outlet the unionised ammoniacal nitrogen concentration has been consistently above the 0.025 g/m³ guideline adopted by the Council to protect aquatic organisms from chronic effects. From a review of the historical results, it appears that there has been an emerging trend of

increasing levels of this contaminant at this site. It is however noted that, for the most part, this is generally assimilated in the wetland area, and the concentrations found at the lower end of the landfill tributary (site AWY000105) are normally well below this guideline value (Figure 5).

The concentration range above which acute toxic effects may be seen for New Zealand native fish, for example a fish kill, is 0.75 to 2.35 g/m³, and the levels of unionised ammonia found at all monitoring sites during the year under review were well below this concentration range. The unionised ammonia concentration was found to be above the 0.025 g/m³ guideline at the lower end of the tributary on occasion previously, and was close to this at 0.024 g/m³ in the sample collected on 23 November 2020.

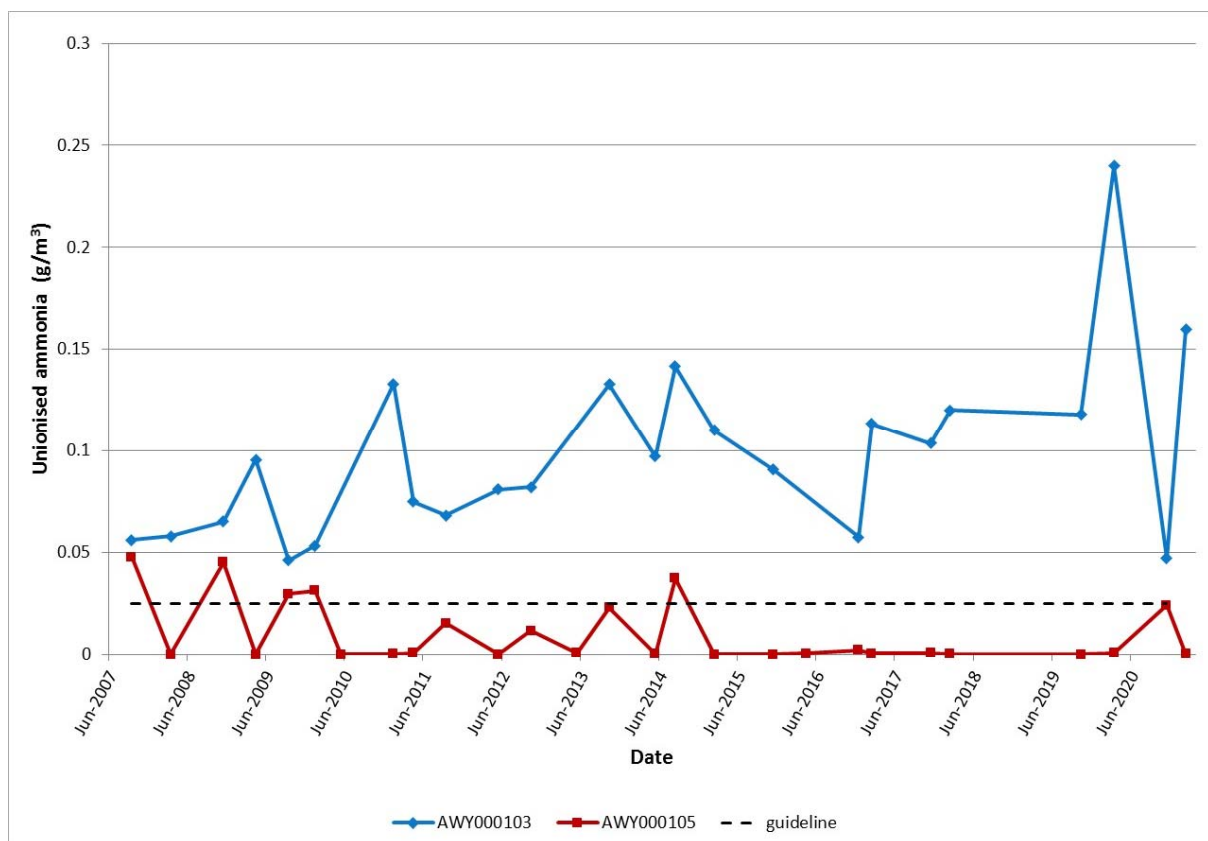


Figure 5 Unionised ammonia concentration in the landfill tributary below Inglewood landfill

Figure 6 shows that there has generally been little, if any, effect found on the unionised ammonia concentration of the larger (main) tributary (site AWY000115). Any changes that have been found have not been of environmental significance.

The main unnamed tributary that receives the discharge from the landfill tributary generally displays slight elevations in conductivity, pH, alkalinity, ammoniacal nitrogen and nitrite/nitrate nitrogen at AWY000115 when compared to the upstream site (AWY000100). These minor increases have been noted in previous monitoring years and have been considered most likely a result of the presence of the landfill and from inputs from stock grazing in the area immediately downstream of the landfill site.

A review of the historical data also shows that the difference in the nitrate/nitrite nitrogen concentrations between sites AWY000100 and AWY000115 appears to be increasing (Figure 7), although the levels vary widely downstream.

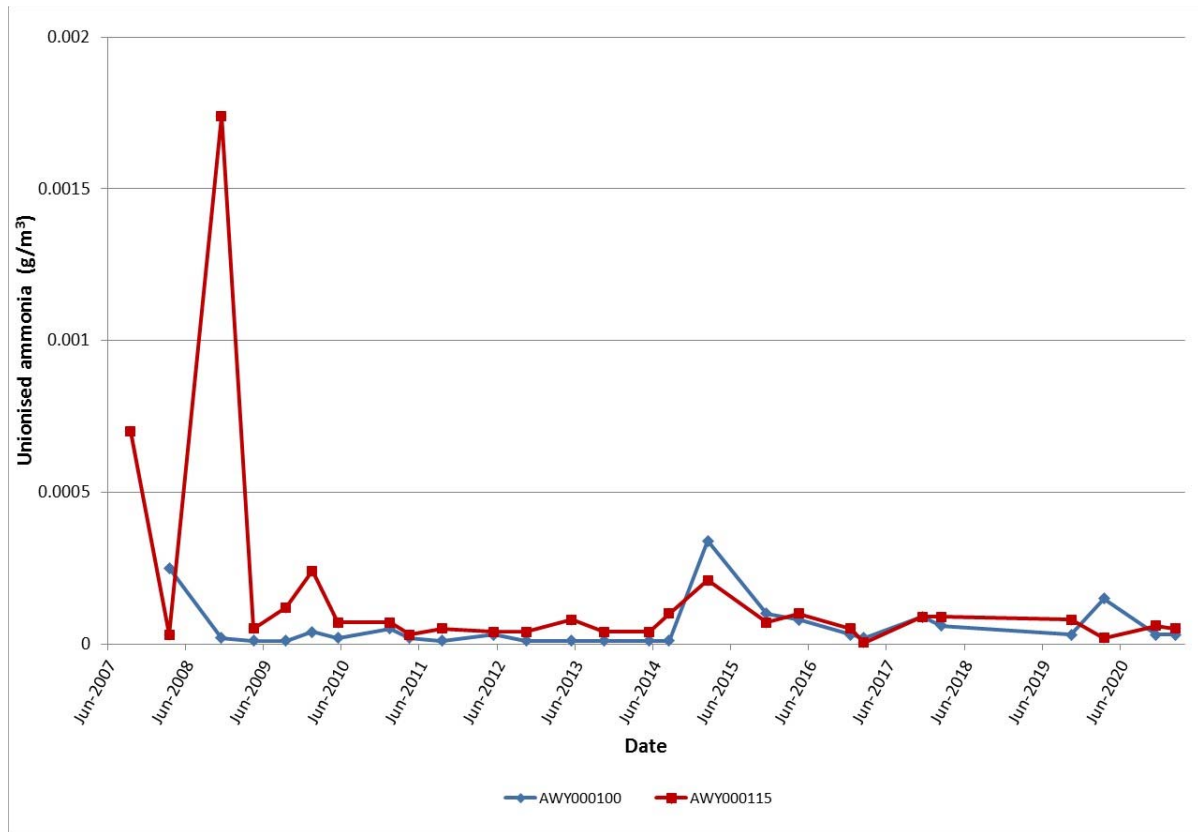


Figure 6 Unionised ammonia concentration in the main tributary below Inglewood landfill

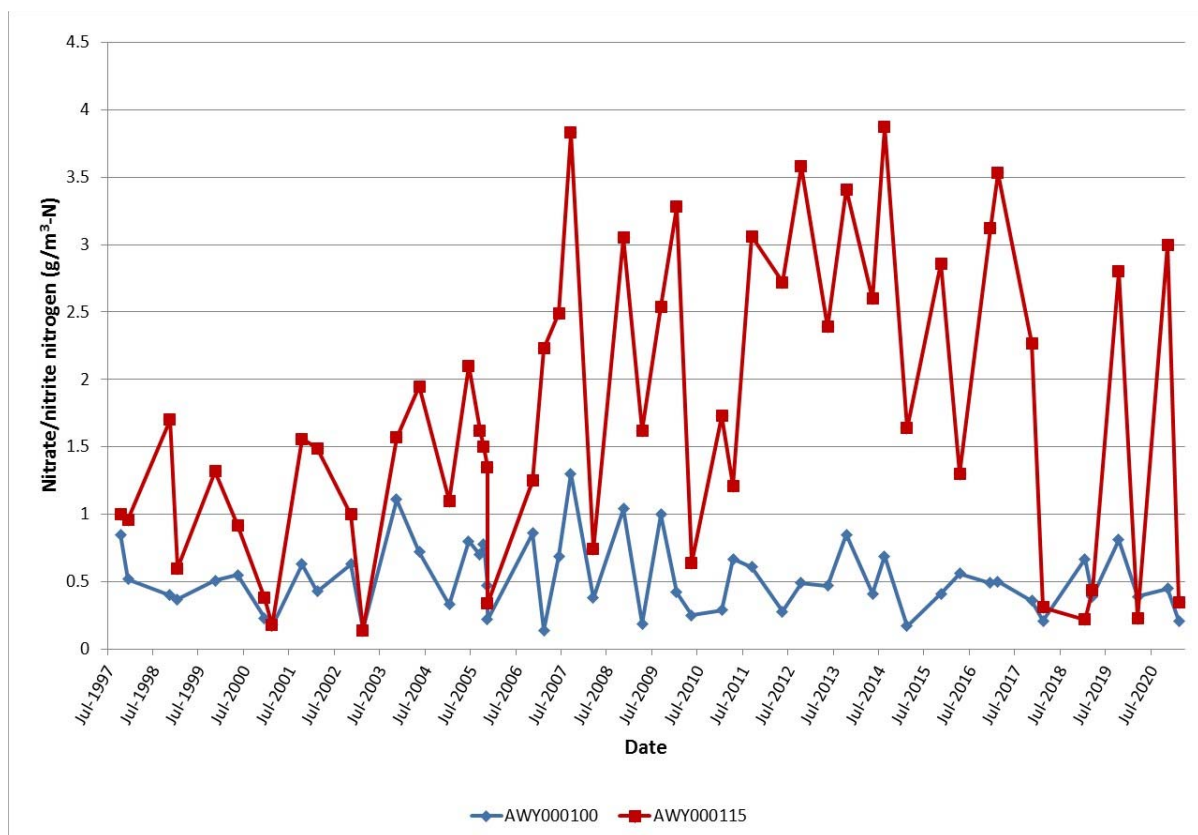


Figure 7 Nitrate/nitrite nitrogen results in the main tributary upstream and downstream of the Inglewood landfill tributary discharge

Due to the changes observed in recent years in the ammoniacal nitrogen and nitrate/nitrite concentrations at the various sites, total nitrogen has been included in the suite of analyses performed. The results obtained since this analysis was initiated in the 2016-2017 year are depicted in Figure 8 and show that:

- the nitrogen contained in the leachate/stormwater pond is significantly lower than at site AWY000103; and
- the wetland below the culvert is effective at decreasing the total nitrogen loading in the landfill tributary, and that this continues to decrease prior to the confluence with the main tributary

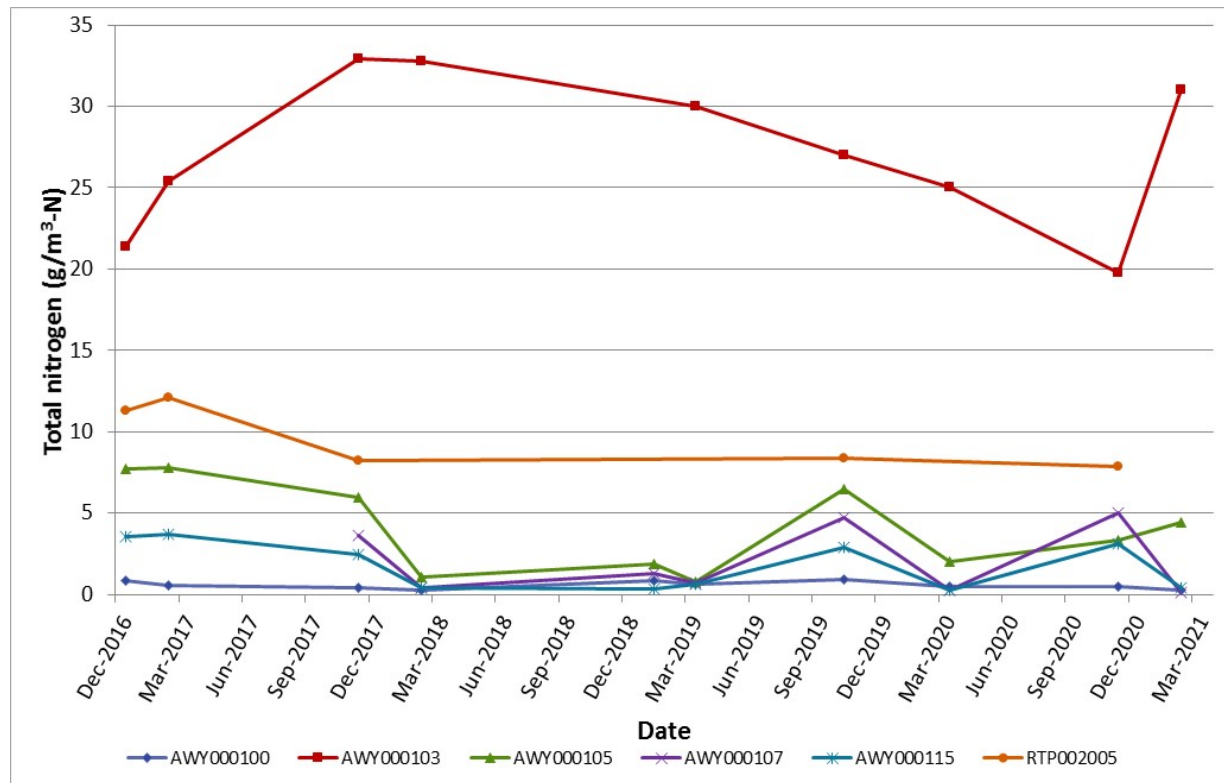


Figure 8 Total nitrogen concentration in the surface waters below the landfill

The current levels of contaminants found in the main tributary are not uncommon within agricultural areas and would therefore be considered a minor effect, at most, on the aquatic environment.

2.2.3.2 Biomonitoring

Macroinvertebrate sampling was undertaken on 23 November 2020 and 11 February 2021, at four sites in two tributaries of the Awai Stream (Table 6, Figure 2) using the 'vegetation sweep' and a combination of the 'vegetation sweep' and 'kick-sampling' techniques, both standard sampling techniques used by the Council.

Table 6 Biomonitoring sites in tributaries of the Awai Stream

Site number	Site code	Location
1	AWY000103	Smaller tributary, 30 m below tip face
1a	AWY000105	Smaller tributary, 130 m below tip face
1b	AWY000107	Smaller tributary, 400 m below tip face
2	AWY000100	Larger tributary, above confluence with small tributary
3	AWY000115	Larger tributary, 80 m below confluence with small tributary

This was undertaken to assess whether leachate discharges from Inglewood landfill had had any adverse effects on the macroinvertebrate communities of this stream. Samples were processed to provide number of taxa (richness), MCI and SQMCI_s scores for each site.

The Macroinvertebrate Community Index (MCI) is a measure of the overall sensitivity of the macroinvertebrate community to the effects of nutrient pollution in streams. It is based on the presence/absence of taxa with varying degrees of sensitivity to pollution. The SQMCI takes into account taxa abundance as well as sensitivity to pollution, and may reveal more subtle changes in macroinvertebrate communities. Significant differences in either the MCI or the SQMCI between sites indicate the degree of adverse effects (if any) of the discharges being monitored, and enable the overall health of the macroinvertebrate communities to be determined. Taxa richness, together with abundance is the most robust index when determining whether a macroinvertebrate community has been exposed to toxic discharges. Macroinvertebrates when exposed to toxic discharges may perish and be swept downstream or may deliberately drift downstream as an avoidance mechanism (catastrophic drift).

23 November 2020

Taxa richness was low in the spring survey, ranging from four to 12 taxa across the four sites surveyed. All three sites (with a historic data set), recorded lower taxa numbers in comparison to site medians, however were within the range of what has previously been recorded. Site 1 recorded the lowest taxa richness (four), of the four sites surveyed which could be explained by the poor macroinvertebrate habitat at this site.

MCI scores were lowest at sites 1 and 3 and were both reflective of 'poor' macroinvertebrate community health. Site 1b recorded a 'fair' MCI score, which was significantly higher than that recorded at sites 1 and 3. The MCI score recorded at 'control' site 2 was reflective of 'good' macroinvertebrate community health and was significantly higher than that recorded at the three impacted sites. This may reflect adverse effects from the landfill leachate, however habitat differences between the smaller and larger unnamed tributaries may have also contributed to these results. Due to the low numbers of taxa recorded in this survey, slight changes to the macroinvertebrate communities between sites has given rise to large variations in MCI scores. For example, the significant decrease of 35 MCI units between sites 2 and 3 can be explained by the presence and absence of numerous 'rare' taxa that varied between the two sites. One particular significant change to taxon abundance related to the 'sensitive' taxon mayfly, which was recorded as 'abundant' at site 2, but was absent from the three impacted sites, signifying a decline in 'health' at these sites.

SQMCI scores were reflective of 'very poor' macroinvertebrate community health at site 1, 'poor' health at sites 1b and 3 and 'good' health at site 2. The SQMCI score recorded at 'control' site 2 was significantly higher than that recorded at the three impacted sites. The differences in SQMCI score between the four sites surveyed can be attributed to habitat differences between the sites, but may also be associated with adverse effects from the leachate discharge.

No sites supported any undesirable biological growths.

Overall, there was some evidence of adverse impacts from the leachate discharge from the Inglewood landfill on the macroinvertebrate communities of the Awai Stream tributaries. Sites 1, 1b and 3 all recorded significantly lower MCI and SQMCI scores in comparison to 'control' site 2, and EPT taxa were only recorded at sites 2 and 3. Differences to macroinvertebrate indices between sites could also be explained by habitat differences, particularly at site 1 which is situated in the headwaters of a predominantly groundwater fed stream. For the next sampling occasion, it was recommended that macroinvertebrate sampling be carried out at site 1a, rather than site 1, as there was no great improvement of habitat between the two sites. Given the depauperate results at the impacted sites in comparison to the 'control' site it was also recommended that an additional site be established, downstream of site 3, to provide further information on any adverse effects from the landfill leachate discharge.

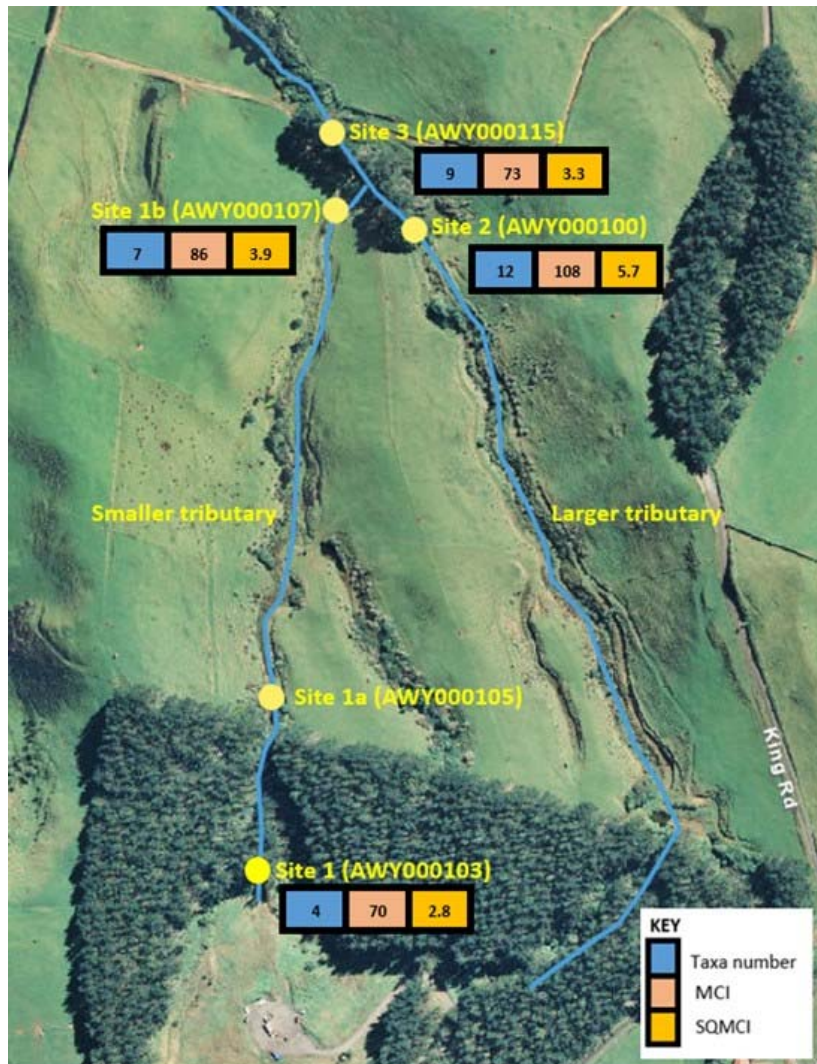


Figure 9 Spring biomonitoring sites in two tributaries of the Awai Stream with taxa number, MCI scores and SQMCI scores for each site

11 February 2021

The summer survey found taxa richness was moderately low, ranging between 11 and 13 taxa at the four sites surveyed. These numbers were within the range of what has previously been recorded, however were lower than site medians at all four sites. The survey results did not indicate a toxic discharge, which would dramatically lower taxa richness.

MCI scores were reflective of 'poor' macroinvertebrate community health at sites 1a, 1b and 3, while 'control' site 2 recorded an MCI score reflective of 'fair' health. Site 1a, the primary impacted site recorded the lowest MCI score and was significantly lower than that recorded at 'control' site 2. The habitat at site 1a was indicative of a seepage fed stream, which was reflected in the macroinvertebrate community recorded at the site, which was numerically dominated by low scoring 'tolerant' taxa. All four sites recorded MCI scores lower than their respective site medians, with site 3 recording a significantly lower MCI score. In comparison to the previous survey scores, site 3 recorded a slightly higher MCI score, while the remaining sites recorded significantly lower scores. This was likely a reflection of habitat and the very slow, almost still flows recorded at the time of this summer survey.

SQMCI scores were reflective of 'very poor' macroinvertebrate community health in the smaller Awai Stream tributary at sites 1a and 1b, and 'fair' health at sites 2 and 3 in the larger Awai Stream tributary. In comparison to site medians, sites 1a and 1b recorded slightly lower SQMCI scores, while sites 2 and 3

recorded higher scores. There were no significant differences in scores between sites 1a and 1b and between sites 2 and 3, however the scores recorded in the larger Awai Stream tributary were significantly higher than those recorded in the smaller tributary. The differences in SQMCI score recorded between the smaller and larger Awai Stream tributaries can mainly be attributed to habitat differences between the sites.

No sites supported any undesirable biological growths.

Overall, the results of the survey indicated that the leachate discharge from the Inglewood landfill was not causing significant adverse impacts on the macroinvertebrate communities of the unnamed tributaries of the Awai Stream. However, the smaller tributary, which would be the tributary expected to be affected by any leachate discharge from the Inglewood landfill, was in lower than median health. The report recommended that an additional site be established, downstream of site 3, to provide further information on any adverse effects from the landfill leachate discharge. Differences in macroinvertebrate indices between sites and from previous surveys are likely the result of differences in habitat, principally caused by flow conditions at the time of sampling.

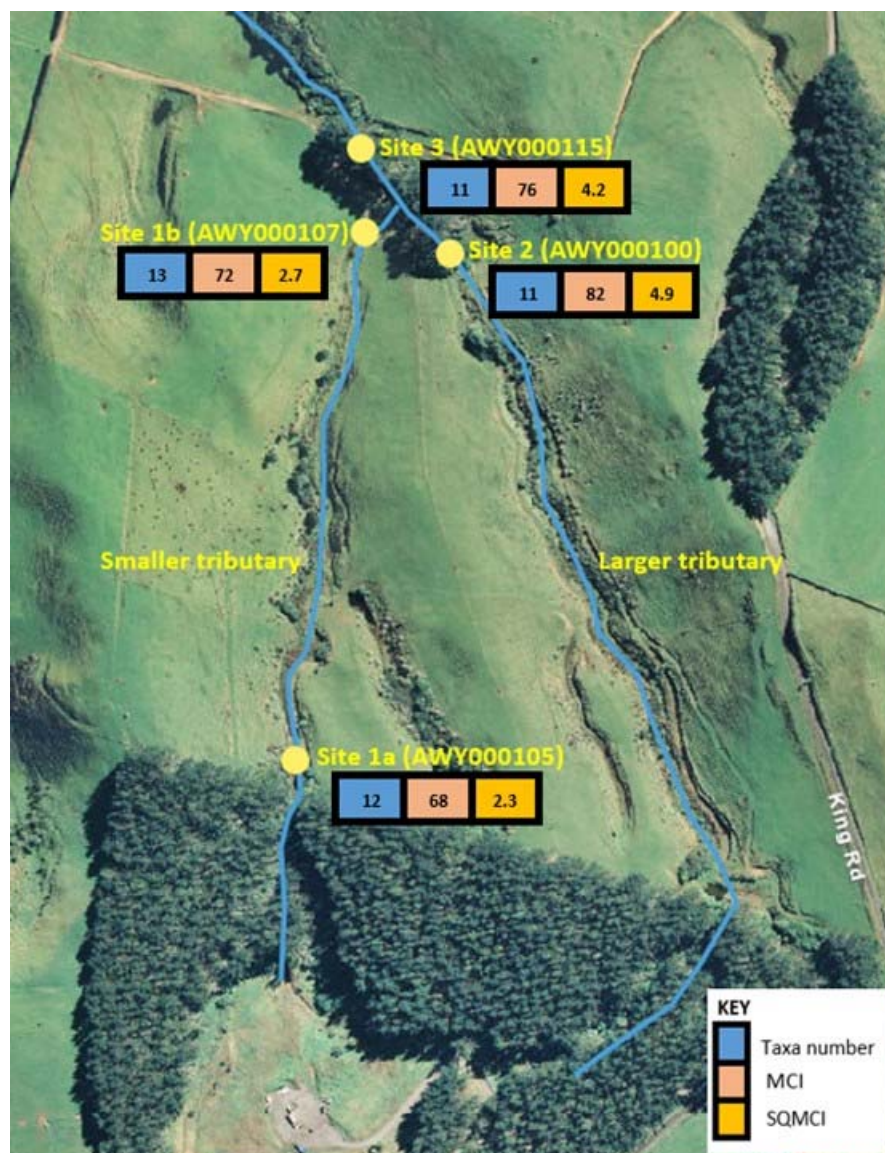


Figure 10 Summer biomonitoring sites in two tributaries of the Awai Stream with taxa number, MCI scores and SQMCI scores for each site

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

2.2.4 Air quality

Methane and hydrogen sulphide readings were taken at the landfill entrance gate, and at the culvert at the toe of the landfill, during one of the routine site inspections.

No methane or hydrogen sulphide was detected at either monitoring location during the period under review. No objectionable odours were noted on the site or beyond the site boundary during any of the inspections.

2.2.5 Investigations, interventions, and incidents

The monitoring programme for the year was based on what was considered to be an appropriate level of monitoring, review of data, and liaison with the consent holder. During the year matters may arise which require additional activity by the Council, for example provision of advice and information, or investigation of potential or actual causes of non-compliance or failure to maintain good practices. A pro-active approach, that in the first instance avoids issues occurring, is favoured.

For all significant compliance issues, as well as complaints from the public, the Council maintains a database record. The record includes events where the individual/organisation concerned has itself notified the Council. Details of any investigation and corrective action taken are recorded for non-compliant events.

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

In the 2020-2021 period, it was not necessary for the Council to undertake significant additional investigations and interventions, or record incidents, in association with NPDC's conditions in resource consents or provisions in Regional Plans in relation to the consent holder's activities at the Inglewood landfill.

2.3 Discussion

2.3.1 Discussion of site performance

The landfill at Inglewood continues to act as a contingency landfill for NPDC, and is currently actively used for the disposal of cleanfill.

Overall, the site was well managed during the period under review with no erosion or slumping observed on either the cap or batters, and no sign of exposed refuse. Minor cracking noted on the cap during the previous monitoring period did not worsen during 2020-2021.

It was noted during the first inspection that self-sown wilding pines and patches of blackberry observed in the previous monitoring period had been removed, and weed control was maintained through the year. Air monitoring did not detect any methane or hydrogen sulphide emissions at the site, and no dust or odour issues were found.

There were no complaints received by Council in regard to the landfill during the period under review.

2.3.2 Environmental effects of exercise of consents

Water sampling undertaken during the year shows that the tributary immediately below the landfill continues to experience contamination from the landfill, however the levels of these contaminants are, on the whole, significantly attenuated in the landfill tributary 130 m downstream of the landfill.

Chemical monitoring shows that the larger tributary of the Awai Stream (downstream of the landfill tributary) appears to be impacted to only a minor degree, with the levels of contaminants being at an acceptable level in this tributary.

Long term data sets for the monitoring sites have been considered. This data is available from the Council on request. Alkalinity, ammoniacal nitrogen and nitrate/nitrite nitrogen concentrations in the discharge from the culvert (AWY000103) all appear to be declining from the peak that was reached following the use of this site for the three months of contingency filling in 2005 and closure of the site to general waste on 1 September 2006.

Although the ammoniacal nitrogen concentration has consistently been above the National Objectives Framework (NOF) bottom line of 2.2 g/m^3 (annual 95 percentile)² at the culvert outlet (AWY000103), the concentration at the wetland has decreased, and the concentrations found in the main tributary were well below this level.

The nitrate/nitrite nitrogen concentration was below the National Objectives Framework (NOF) bottom line of 9.8 g/m^3 (annual 95 percentile) at all sites, throughout the longterm record.

The Council has noted and will continue to monitor the potentially increasing nitrate/nitrogen concentrations under the routine compliance monitoring programme. In time, addition of total nitrogen analysis of the samples to the programme may help with the interpretation of the receiving water results.

Historical data has also indicated a trend of increasing acid soluble manganese in the discharges from the site. However, over recent years, the tributaries beyond the wetland treatment system are below the ANZECC guideline for the protection of 80 % of species (3.6 g/m^3), with the landfill tributary well below the guideline for the protection of 99 % of species (1.2 g/m^3).

Biomonitoring surveys undertaken during the 2020-2021 year indicated that overall, the leachate discharge from the Inglewood landfill was not causing significant adverse impacts on the macroinvertebrate communities of the unnamed tributaries of the Awai Stream. However, the smaller tributary, which would be the tributary expected to be affected by any leachate discharge from the Inglewood landfill, was in lower than median health. It was recommended that an additional site be established, downstream of site 3, to provide further information on any adverse effects from the landfill leachate discharge. Differences in macroinvertebrate indices between sites and from previous surveys are likely the result of differences in habitat, principally caused by flow conditions at the time of sampling.

The results from inspections and air quality monitoring show that the presence of the landfill is unlikely to have any significant effects in terms of emissions to air.

² Appendix 2 of the National Policy Statement for Freshwater Management (Ministry for the Environment 2014)

2.3.3 Evaluation of performance

A tabular summary of NPDC's compliance record for the year under review is set out in Tables 7-9.

Table 7 Summary of performance for Inglewood contingency landfill leachate consent 3954-2

Purpose: To discharge up to a total of 4,752 m³/day (55 L/s) of leachate and stormwater from the Inglewood municipal landfill into an unnamed tributary of the Awai Stream, a tributary of the Mangaoraka Stream in the Waiongana catchment		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Prepare and maintain a site contingency plan	Review of documentation on file in relation to inspection finding. Latest plan dated November 2017	Yes
2. Prepare and maintain a landfill operations and management plan	Plan provided. Latest plan dated August 2017	Yes
3. Provide a landfill closure management plan by 1 June 2007	Plan previously provided	Yes
4. One months' notice required by Council/ NPDC requesting/advising of changes to the operation and management or closure plans	Site inspection and review of plans on file. Latest plan dated August 2017 No changes had been requested by Council	Yes
5. Monitoring of ground and surface water on and near the site to Council's satisfaction	Surface water and groundwater monitoring	Yes
6. Maintain all parts of all stormwater and leachate systems	Site inspection	Yes
7. No actual or likely adverse impact on aquatic life or receiving water quality	Biomonitoring and surface water sampling	Inconclusive – further investigation required
8. Optional review provision re environmental effects ^{3e}	No further opportunities for review	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 8 Summary of performance for Inglewood contingency landfill air discharge consent 4526-3

Purpose: To discharge contaminants, being landfill gas, and odours associated with a landfill, into the air from the Inglewood municipal landfill		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt the best practicable option to prevent or minimise effects	Inspection and sampling	Yes
2. Consent to be exercised in accordance with application documentation	Inspection and liaison with consent holder	Yes

Purpose: To discharge contaminants, being landfill gas, and odours associated with a landfill, into the air from the Inglewood municipal landfill		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
3. One months' notice required by Council/ NPDC requesting/advising of changes to the operation and management or closure plans	Site inspection and review of plans on file. Latest plan dated August 2017 No requested by Council	Yes
4. Maintain and adhere to the landfill operations and management plan	Plan provided. Latest plan dated August 2017	Yes
5. The conditions of the consent prevail over any potential contradictions with the management plan	N/A	N/A
6. Offensive, objectionable, dangerous and noxious odours, dust or ambient levels of any other contaminant prohibited	Inspection and off site observations. Ambient air quality monitoring for methane and hydrogen sulphide	Yes
7. Burning prohibited	Site inspection	Yes
8. Significant adverse effects on any ecosystem is prohibited	Site inspection and off site observations	Yes
9. Specifies records to be kept by consent holder in the event of a complaint	Site inspection and liaison with consent holder. No complaints received by NPDC or the Council	Yes
10. Optional review provision re environmental effects	No further provision for review prior to expiry	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 9 Summary of performance for Inglewood cleanfill and contingency landfill discharge to land consent 4527-3

Purpose: To discharge cleanfill and inert materials onto and into land at the Inglewood municipal landfill, and to discharge municipal refuse onto and into land at the Inglewood municipal landfill when, and only when, it cannot be discharged at the Colson Road municipal landfill		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practicable option to prevent or minimise adverse environmental effects	Site inspections	Yes
2. The activity shall be undertaken in accordance with the application documents	Site inspection	Yes
3. Notification of changes to landfill management plan	Inspection and review of plans on file.	Yes

Purpose: To discharge cleanfill and inert materials onto and into land at the Inglewood municipal landfill, and to discharge municipal refuse onto and into land at the Inglewood municipal landfill when, and only when, it cannot be discharged at the Colson Road municipal landfill

Condition requirement	Means of monitoring during period under review	Compliance achieved?
4. Maintain and adhere to management plan	Site inspections	Yes
5. Consent conditions to prevail over management plan	Review of inspection findings in relation to documentation on file	Yes
6. Liquid waste shall not be accepted at the landfill	Site inspection – transfer station and clean filling activities only during the year under review	Yes
7. Acceptable cleanfill criteria	Site inspection	Yes
8. Unacceptable cleanfill criteria	Site inspection	Yes
9. Discharge shall not result in contaminants directly entering water	Site inspection and sampling	Yes
10. Install leachate retention structures	Site inspection	Yes
11. Install stormwater systems	Site inspection	Yes
12. Optional review provision re environmental effects	No further provision for review prior to expiry	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 10 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
2010-2011	3954-2, 4526-2, 4527-3	3	-	-	-
2011-2012	3954-2, 4526-2, 4527-3	3	-	-	-
2012-2013	3954-2, 4526-2, 4527-3	3	-	-	-
2013-2014	3954-2, 4526-2, 4527-3	3	-	-	-
2014-2015	3954-2, 4526-3	2	-	-	-
	4527-3	-	1	-	-
2015-2016	3954-2, 4526-3	2	-	-	-
	4527-3	-	1	-	-
2016-2017	4526-3	1	-	-	-
	3954-2, 4527-3	-	2	-	-
2017-2018	4526-3	1	-	-	-

Year	Consent no	High	Good	Improvement req	Poor
	3954-2, 4527-3	-	2	-	-
2018-2019	4526-3	1	-	-	-
	3954-3, 4527-3	-	2	-	-
2019-2020	4526-3	1	-	-	-
	3954-3, 4527-3	-	2	-	-
Totals		20	10	0	0

Overall during the year, NPDC demonstrated a high level of environmental performance and a high level of administrative performance in relation to the Inglewood landfill consents as defined in Section 1.1.4.

2.3.4 Recommendation from the 2019-2020 Annual Report

In the 2019-2020 Annual Report, it was recommended:

1. THAT monitoring of consented activities at the Inglewood landfill in the 2020-2021 year remain unchanged from that undertaken in 2019-2020 with the exception of an alteration to the macroinvertebrate survey to a more suitable sampling site. This will include an additional downstream site in the summer survey to further understand the landfill's impact on the stream.
2. THAT should there be issues with environmental or administrative performance in 2020-2021, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Recommendation one was partially implemented, while it was not considered necessary to carry out additional monitoring or investigation as per recommendation two.

2.3.5 Alterations to monitoring programmes for 2021-2022

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

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

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

It is proposed that for 2021-2022 the programme remain unchanged, with the exception of an alteration to the macroinvertebrate survey to include an additional downstream site in the summer survey to further understand the landfill's impact on the stream.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2021-2022.

2.4 Recommendations

1. THAT monitoring of consented activities at the Inglewood landfill in the 2021-2022 year remain unchanged from that undertaken in 2020-2021, with the addition of a downstream site in the summer macroinvertebrate survey to further understand the landfill's impact on the stream.
2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

3 Marfell Park landfill

3.1 Introduction

3.1.1 Site description

The landfill at Marfell closed in 1982. Due to effects caused by leachate discharging into the Mangaotuku Stream, NPDC applied for consent to discharge leachate in 1996. In 1998 NPDC captured the main leachate flow and directed it to the trade waste system. Various investigations have taken place at the site during previous monitoring periods, some undertaken by Council and others by consultants. The findings of these investigations are in earlier Council Annual Reports and other documents listed in the bibliography.

The discharge from the site now is predominantly stormwater. The site previously contained a park with sports field, playground and BMX track. These were removed during the 2018-2019 and 2019-2020 monitoring years.



Figure 11 An aerial view showing the former landfill at Marfell Park and associated sampling sites

3.2 Results

3.2.1 Inspection

23 October 2020

The cap was found to be in good condition, with a good covering of grass and no signs of slumping or cracking. No exposed refuse was observed on the cap or batters. The stormwater drains were clear, dry and tidy. No dust or odour issues were noted on or around the cap.

Abundant oxides were observed in and around the discharge point, there was also a strong landfill odour.

The fences were intact, and correct signage was in place. There was a new building north of the cap and the area where the BMX track was previously located.

3.2.2 Receiving water and discharge sampling

Samples were collected on one occasion during the 2020-2021 monitoring year. The sites are shown in Figure 15, and the results are presented below in Table 11.

The discharge is a mixture of stormwater and spring water that drains from the area surrounding the landfill. The bulk of the leachate from the filled area is captured and piped to trade waste.

Table 11 Results of sampling undertaken at Marfell Park landfill on 23 October 2020

Parameter	Unit	MGK000176	STW001123	MGK000178	Consent limit (downstream)
		10 m u/s discharge	discharge	20 m d/s discharge	
Alkalinity	g/m ³ CaCO ₃	30	220	34	-
Conductivity @ 25°C	mS/m	14.6	51.7	15.3	-
Acid soluble iron	g/m ³	0.4	24	0.8	-
Unionised ammonia	g/m ³ -N	0.00005	0.0162	0.00044	0.025
Ammoniacal nitrogen	g/m ³ -N	0.021	9.0	0.187	0.9
pH	pH	7.0	6.8	6.9	6.0-9.0
Temperature	Deg C	14.3	16.0	14.3	
Dissolved zinc	g/m ³	<0.0010	0.0055	<0.0010	0.05

In addition, the stormwater discharge sample was assessed for a full range of semi-volatile organic compounds. All results were below the level of detection.

The results of the discharge monitoring indicate that some low level contamination is occurring from the landfill. With the exception of ammoniacal nitrogen, the receiving water shows very little change in water quality between the upstream and downstream sites. Although the ammoniacal nitrogen of the stream was found to have increased by more than a factor of ten, the ammoniacal concentration of the stream remained at an acceptable level, and the unionised ammonia concentration in the stream remained relatively low. This has been a consistent finding over the last several years of monitoring.

Based on these results and those gathered in previous monitoring periods the discharges from the closed Marfell landfill are having only a minor effect on the receiving water.

3.2.3 Investigations, interventions, and incidents

In the 2020-2021 period, it was not necessary for the Council to undertake significant additional investigations and interventions, or record incidents, in association with NPDC's conditions in resource

consents or provisions in Regional Plans in relation to the consent holder's activities at the closed Marfell Park landfill.

3.3 Discussion

3.3.1 Evaluation of performance

A tabular summary of NPDC's compliance record for the year under review is set out in Table 12.

Table 12 Summary of performance for Marfell Park closed landfill leachate consent 4902-2

Purpose: To discharge up to 2 L/s of leachate from the Marfell Park former landfill site via groundwater into the Mangaotuku Stream in the Huatoki Catchment		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Adopt best practice to prevent or minimise any adverse effects on the environment	Inspections and sampling	Yes
2. Maintain cap and drains on site to minimise ponding, stormwater infiltration, ensure stormwater diversion and drainage, and prevent iron oxide on outlet structure entering the stream	Inspections and sampling	Yes
3. Site to be operated in accordance with management plan that details how the site will be managed to ensure consent compliance. Plan required by 21 January 2014	Plan received. Inspections and liaison with consent holder	Yes
4. The discharge shall not cause specified parameter concentrations to be outside prescribed limits in the Mangaotuku Stream	Water sampling	Yes
5. Prohibits certain effects in the stream beyond reasonable mixing	Inspections and water sampling	Yes
6. Provision of review of consent conditions	Next opportunity for review June 2026	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 13 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
2010-2011	4902-1	1	-	-	-
2011-2012	4902-1	Not monitored			
2012-2013	4902-1	1	-	-	-
2013-2014	4902-1	Not monitored			
2014-2015	4902-1	1	-	-	-

Year	Consent no	High	Good	Improvement req	Poor
2015-2016	4902-2	Not monitored			
2016-2017	4902-2	1	-	-	-
2017-2018	4902-2	Not monitored			
2018-2019	4902-2	-	1		
2019-2020	4902-2	Not monitored			
Totals		3	1	0	0

During the year, NPDC demonstrated an overall high level of environmental performance and administrative performance with their Marfell landfill resource consent as defined in Section 1.1.4.

3.3.2 Recommendation from the 2019-2020 Annual Report

In the 2019-2020 Annual Report, it was recommended:

1. THAT the biennial monitoring of discharges at the Marfell landfill continues unchanged and that the programme next be implemented in the 2020-2021 period.
2. THAT should there be issues with environmental or administrative performance in 2020-2021, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Recommendation one was implemented, while it was not considered necessary to carry out additional monitoring or investigation as per recommendation two.

3.3.3 Alterations to monitoring programmes for 2021-2022

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

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

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

It is proposed that the biennial monitoring of discharges at the Marfell landfill continues unchanged with the programme next being implemented in 2022-2023.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2021-2022.

3.4 Recommendation

1. THAT the biennial monitoring of discharges at the Marfell landfill continues unchanged and that the programme next be implemented in the 2022-2023 period.

2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

4 Okato landfill

4.1 Introduction

4.1.1 Site description

The Okato landfill stopped accepting general waste for discharge to land in 2005. The landfill was capped and the site became a transfer station. NPDC also continued to exercise consent 4529-3 (discharge of contaminants to land) for the purpose of accepting and discharging green waste and cleanfill. All other refuse accepted at the site is transferred to New Plymouth for disposal or recycling. The site is also designated as a contingency landfill in the event that Colson Road landfill and/or Inglewood landfill became unusable or inaccessible.

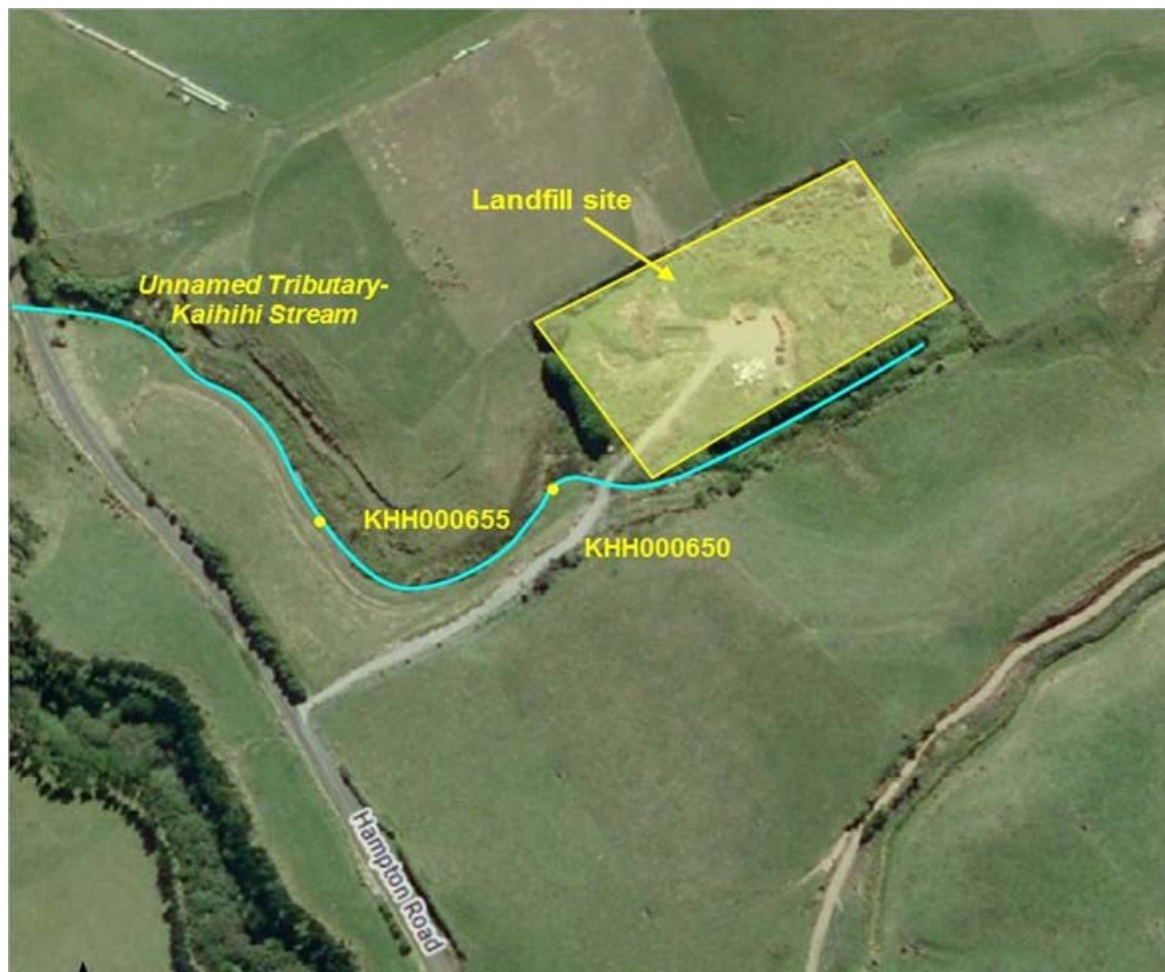


Figure 12 Okato landfill and sampling sites

4.2 Results

4.2.1 Inspections

The site was visited on 8 October 2020 and 23 April 2021. On both occasions the cap and batters were observed to be well-vegetated and intact. There was no sign of slumping, cracking, or exposed refuse. The stormwater drains were tidy and clear of vegetative growth. There was no sign of recent ponding and all stormwater drains were dry. The site was secure and well-fenced with permanent fencing. No sign of cattle access was noted, and the site was unoccupied at the time of inspection. The waste transfer station (Photo

1) was tidy, and well-maintained. The cleanfill and greenwaste areas (Photo 2) were well-managed, with no unauthorised material noted. There were no odour or dust issues.



Photo 1 Okato waste transfer station, April 2021



Photo 2 Okato cleanfill and greenwaste area, April 2021

4.2.2 Results of surface water sampling

Samples were collected from the tributary of the Kaihihi Stream below the landfill on two occasions, 8 October 2020 and 23 April 2021. The site 200m downstream of the landfill was dry on both sampling occasions and therefore a sample could not be collected. The sites are shown in Figure 16 and the results are presented in Table 14 below.

As with previous monitoring results there is no indication that the presence of the landfill is having any significant adverse effects on the environment. The levels of ammonia and other indicator contaminants immediately below the landfilled area are low, indicating only minor levels of leachate contamination.

Table 14 Chemical analysis of a tributary of the Kaihihi Stream in relation to the Okato landfill

Parameter	Unit	8 October 2020	23 April 2021
		KHH000650	KHH000650
		30 m d/s of landfill	30 m d/s of landfill
Alkalinity	g/m ³ CaCO ₃	107	111
Conductivity @ 25°C	µS/m	367	350
Dissolved reactive phosphorus	g/m ³ -P	<0.004	<0.004
Acid soluble iron	g/m ³	1.8	7.6
Unionised ammonia	g/m ³	0.00068	0.0065
Ammoniacal nitrogen	g/m ³ -N	0.21	0.31
Nitrate/nitrite nitrogen	g/m ³ -N	1.60	0.124
pH	pH	7.0	7.9
Temperature	Deg C	16.3	14.8
Dissolved zinc	g/m ³	0.0043	0.0016

4.2.3 Air quality

Objectionable odour and dust nuisance were checked for during each inspection undertaken in the 2020-2021 monitoring year. There were no problems in regard to dust or odour during any of the inspections for the period under review.

4.2.4 Investigations, interventions, and incidents

In the 2020-2021 period, it was not necessary for the Council to undertake significant additional investigations and interventions, or record incidents, in association with NPDC's conditions in resource consents or provisions in Regional Plans in relation to the consent holder's activities at the Okato landfill.

4.3 Discussion

4.3.1 Discussion of site performance

Overall, the site was well managed during the 2020-2021 period. There were no issues in regards to cap condition, stormwater or leachate control. It was considered that there was good control over the site and its operation during the monitoring period.

4.3.2 Environmental effects of exercise of consents

The landfill will continue to generate leachate, some of which will enter the stream below the site via ground and spring water. Physicochemical analysis of the unnamed tributary indicates that the landfill is having no significant adverse effect on water quality at this site.

There were no issues of concern during the 2020-2021 monitoring period. No odour or dust problems were observed at or beyond the boundary of the site.

4.3.3 Evaluation of performance

A tabular summary of NPDC's compliance record for the year under review is set out in Tables 15-17.

Table 15 Summary of performance for Okato contingency landfill leachate consent 3860-3

Purpose: To discharge stormwater and leachate from the Okato municipal landfill into an unnamed tributary of the Kaihihi Stream		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option	Site inspection	Yes
2. Discharges in accordance with management plan	Site inspection	Yes
3. Install and maintain stormwater diversion drains	Site inspection	Yes
4. Surface runoff and leachate directed to leachate stormwater/collection drain	Site inspection	Yes
5. All leachate generated from a contingency discharge to be directed to a lined pit and removed from site	No contingency discharge during monitoring period	N/A
6. Consent lapse September 2018 if not exercised	N/A	N/A
7. Optional review provision re environmental effects	Next opportunity for review in June 2025	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 16 Summary of performance for Okato contingency landfill air discharge consent 4528-3

Purpose: To discharge emissions into the air from the contingency discharge of solid contaminants at the Okato municipal landfill		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharge to occur on contingency basis only	Consent not exercised	N/A
2. Optional review provision re environmental effects	Consent not exercised	N/A
3. Discharge not to result in offensive or objectionable odours at or beyond the boundary	Consent not exercised	N/A
4. Limits on deposited and suspended dust	Consent not exercised	N/A
5. Lapse of consent	N/A	N/A
6. Optional review provision re environmental effects	Next opportunity for review in June 2025	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		N/A
Overall assessment of administrative performance in respect of this consent		N/A

Table 17 Summary of performance for Okato contingency landfill discharge to land consent 4529-3

Purpose: To discharge cleanfill and green waste to land and to discharge general refuse on a contingency basis to land		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Discharges to occur within existing landfill footprint	Site inspection	Yes
2. Best practicable option to prevent or minimise environmental effects	Site inspection	Yes
3. Consent holder to install stormwater diversion drains	Site inspection	Yes
4. Existing landfill cap to remain undisturbed	Site inspection	Yes
5. Areas used for discharge of cleanfill and green waste to be stabilised and revegetated prior to surrender or expiry	Consent still being exercised	N/A
6. Cleanfill may be discharged at any time in accordance with Management Plan	Site inspection	Yes
7. Allowable cleanfill materials	Site inspection	Yes
8. Materials not to be discharged	Site inspection	Yes
1. Written approval required where uncertainty of acceptability of waste	Site inspection	Yes
2. Green waste may be discharged at any time in accordance with Management Plan	Site inspection	Yes
3. Discharge of general refuse on a contingency basis only	No discharge to landfill during the monitoring period	N/A
4. Notification of contingency discharge	No discharge to landfill during the monitoring period	N/A
5. Contingency discharge to be capped and revegetated	No discharge to landfill during the monitoring period	N/A
6. Consent lapse September 2018	Consent exercised	N/A
7. Optional review of consent	Next opportunity for review in June 2025	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

N/A = not applicable

Table 18 Evaluation of environmental performance over time

Year	Consent no	High	Good	Improvement req	Poor
2010-2011	3860-2, 4528-2, 4529-2	3	-	-	-
2011-2012	3860-2, 4528-2, 4529-2	3	-	-	-
2012-2013	3860-2, 4528-2, 4529-2	3	-	-	-
2013-2014	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
2014-2015	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
2015-2016	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
2016-2017	3860-3, 4528-3	2	-	-	-
	4528-3	N/A	-	-	-
2017-2018	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
2018-2019	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
2019-2020	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
Totals		23	0	0	0

During the year, NPDC demonstrated a high level of environmental and administrative performance in relation to the Okato landfill resource consents as defined in Section 1.1.4.

4.3.4 Recommendation from the 2019-2020 Annual Report

In the 2019-2020 Annual Report, it was recommended:

1. THAT monitoring of consented activities at Okato landfill in the 2020-2021 year continue at the same level as in 2019-2020.
2. THAT should there be issues with environmental or administrative performance in 2020-2021, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Recommendation one was implemented, while it was not considered necessary to carry out additional monitoring or investigation as per recommendation two.

4.3.5 Alterations to monitoring programmes for 2021-2022

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

- the extent of information already made available through monitoring or other means to date;

- its relevance under the RMA;
- the Council's obligations to monitor consented activities and their effects under the RMA;
- the record of administrative and environmental performances of the consent holder; and
- reporting to the regional community.

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

It is proposed that for 2021-2022 the monitoring of discharges at the Okato landfill continue unchanged.

It should be noted that the proposed programme represents a reasonable and risk-based level of monitoring for the site in question. The Council reserves the right to subsequently adjust the programme from that initially prepared, should the need arise if potential or actual non-compliance is determined at any time during 2021-2022.

4.4 Recommendations

1. THAT monitoring of consented activities at Okato landfill in the 2021-2022 year continue at the same level as in 2020-2021.
2. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

5 Summary of Recommendations

The following is a summary of the recommendations for each landfill as presented in the individual sections of this report.

1. THAT monitoring of consented activities at the Inglewood landfill in the 2021-2022 year remain unchanged from that undertaken in 2020-2021, with the addition of a downstream site in the summer macroinvertebrate survey to further understand the landfill's impact on the stream.
2. THAT in the monitoring of discharges at the Marfell landfill continues unchanged from the 2020-2021 monitoring year and that the biennial programme next be implemented in the 2022-2023 period.
3. THAT monitoring of consented activities at the Okato landfill in the 2021-2022 year continue at the same level as in the 2020-2021 period.
4. THAT should there be issues with environmental or administrative performance in 2021-2022, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

Glossary of common terms and abbreviations

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

Biomonitoring	Assessing the health of the environment using aquatic organisms.
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.
Conductivity	Conductivity, an indication of the level of dissolved salts in a sample, usually measured at 25°C and expressed in $\mu\text{S}/\text{cm}$.
Cu*	Copper.
Cumec	A volumetric measure of flow- 1 cubic metre per second ($1 \text{ m}^3\text{s}^{-1}$).
DO	Dissolved oxygen.
DRP	Dissolved reactive phosphorus.
EPT taxa	Total number of taxa within the pollution sensitive orders of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies).
FNU	Formazin nephelometric units, a measure of the turbidity of water.
g/m^3	Grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures.
Incident	An event that is alleged or is found to have occurred that may have actual or potential environmental consequences or may involve non-compliance with a consent or rule in a regional plan. Registration of an incident by the Council does not automatically mean such an outcome had actually occurred.
Intervention	Action/s taken by Council to instruct or direct actions be taken to avoid or reduce the likelihood of an incident occurring.
Investigation	Action taken by Council to establish what were the circumstances/events surrounding an incident including any allegations of an incident.
Incident register	The incident register contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan.
L/s	Litres per second.
m^2	Square Metres.
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.
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.
$\mu\text{S}/\text{cm}$	Microsiemens per centimetre.

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).
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water.
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.
Resource consent	Refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15).
RMA	<i>Resource Management Act 1991</i> and including all subsequent amendments.
SS	Suspended solids.
SQMCI	Semi quantitative macroinvertebrate community index.
Temp	Temperature, measured in °C (degrees Celsius).
Turb	Turbidity, expressed in NTU or FNU.
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 a Science Services Manager.

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Appendix I

Resource consents held by New Plymouth District Council

(For a copy of the signed resource consent
please contact the TRC Consents department)

Water abstraction permits

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or it falls within some particular categories set out in Section 14. Permits authorising the abstraction of water are issued by the Council under Section 87(d) of the RMA.

Water discharge permits

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations. Permits authorising discharges to water are issued by the Council under Section 87(e) of the RMA.

Air discharge permits

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising discharges to air are issued by the Council under Section 87(e) of the RMA.

Discharges of wastes to land

Sections 15(1)(b) and (d) of the RMA stipulate that no person may discharge any contaminant onto land if it may then enter water, or from any industrial or trade premises onto land under any circumstances, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Permits authorising the discharge of wastes to land are issued by the Council under Section 87(e) of the RMA.

Land use permits

Section 13(1)(a) of the RMA stipulates that no person may in relation to the bed of any lake or river use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Land use permits are issued by the Council under Section 87(a) of the RMA.

Coastal permits

Section 12(1)(b) of the RMA stipulates that no person may erect, reconstruct, place, alter, extend, remove, or demolish any structure that is fixed in, on, under, or over any foreshore or seabed, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations. Coastal permits are issued by the Council under Section 87(c) of the RMA.

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

Name of
Consent Holder: New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH 4342

Decision Date: 13 September 2013

Commencement Date: 13 September 2013

Conditions of Consent

Consent Granted: To discharge stormwater and leachate from the Okato
Municipal Landfill into an unnamed tributary of the Kaihihi
Stream

Expiry Date: 1 June 2031

Review Date(s): June 2019, June 2025

Site Location: Okato Municipal Landfill, Hampton Road, Okato

Legal Description: Lot 1 DP 13150 Blk I Cape SD (Discharge site)

Grid Reference (NZTM) 1674817E-5663981N

Catchment: Kaihihi

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

General condition

- a. The consent holder shall pay to the Taranaki Regional Council [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act.

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. All discharges permitted under this consent shall be undertaken in accordance with the "Okato Landfill Contingency Disposal Management Plan" as supplied with the application (5831).
3. The consent holder shall install and maintain all stormwater diversion drains to minimise stormwater entering or flowing across the discharge area.
4. During routine operations all surface runoff and leachate from the previously filled area of the landfill shall be directed to the leachate stormwater/ collection drain.
5. During and after any contingency discharge of general refuse (as permitted under consent 4529-2), all leachate generated from the new fill shall be directed to a lined pond and removed from the site.
6. This consent shall lapse on 30 September 2018, 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.
7. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2019 and/ or June 2025 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 13 September 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH

Consent Granted 18 February 2002
Date:

Conditions of Consent

Consent Granted: To discharge up to a total of 4,752 cubic metres/day (55 litres/second) of leachate and stormwater from the Inglewood Municipal Landfill into an unnamed tributary of the Awai Stream, a tributary of the Mangaoraka Stream in the Waiongana Catchment at or about GR: Q19:124-296

Expiry Date: 1 June 2020

Review Date(s): June 2008, June 2014

Site Location: Inglewood Municipal Landfill, 277 King Road, Inglewood

Legal Description: Lot 1 DP 16116 Blk XI Paritutu SD

Catchment: Waiongana

Tributary: Mangaoraka
Awai

General conditions

- a) That on receipt of a requirement from the Chief Executive, Taranaki Regional Council (hereinafter the Chief Executive), the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.
- b) That 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) That 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. Within three months of granting of this consent the consent holder shall prepare and maintain a site contingency plan to the satisfaction of the Chief Executive, Taranaki Regional Council, outlining measures and procedures undertaken to prevent spillage or accidental discharge of contaminants and procedures carried out should such a spillage or discharge occur. This shall be reviewed by the Council on an annual basis.
- 2. Within three months of granting of this consent the consent holder shall prepare and maintain a landfill operations and management plan to the satisfaction of the Chief Executive, Taranaki Regional Council, and shall adhere to such a plan in so far as they concern the exercise of this consent at all times.
- 3. The consent holder shall provide a landfill closure management plan to the satisfaction of the Chief Executive, Taranaki Regional Council, by 1 June 2007 or 3 months prior to the closure of the landfill should this occur before 1 June 2007; such plan to address site security, litter control, vegetation cover, stormwater diversion, leachate control, site contouring, and cover placement and compaction, in addition to any other matters relevant to the exercise of this consent.
- 4. The consent holder shall advise the Taranaki Regional Council one month prior to any changes being made to the operation and management plan or landfill closure management plan. Should the Taranaki Regional Council wish to review either of these plans, one month's notice shall be provided to the consent holder.
- 5. The monitoring of the site and adjacent surface and groundwaters shall be to the satisfaction of the Chief Executive, Taranaki Regional Council
- 6. The leachate and stormwater diversion, collection, treatment and discharge systems shall be maintained to the satisfaction of the Chief Executive, Taranaki Regional Council
- 7. Any discharge shall not, in the opinion of the Chief Executive, Taranaki Regional Council, cause nor be likely to cause any significant adverse effects on aquatic life or receiving water quality.

Consent 3954-2

8. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2008 and/or June 2014, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 18 February 2002

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH 4600

Consent Granted 20 March 2007
Date:

Conditions of Consent

Consent Granted: To discharge contaminants, being landfill gas, and odours
associated with a landfill, into the air from the Inglewood
Municipal Landfill at or about GR: Q19:120-295

Expiry Date: 1 June 2026

Review Date(s): June 2014, June 2020

Site Location: Inglewood Municipal Landfill, 277 King Road, Inglewood

Legal Description: Lot 1 DP 16116 Blk XI Paritutu SD

General conditions

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

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of applications 4475, 1611 and 94/118. In the case of any contradiction between the documentation submitted in support of applications 4475, 1611 and 94/118 and the conditions of this consent, the conditions of this consent shall prevail.
- 3. The consent holder shall advise the Taranaki Regional Council one month prior to any changes being made to the landfill management plan, and/or landfill closure management plan. Should the Taranaki Regional Council wish to review any of these plans, one month's notice shall be provided to the consent holder.
- 4. The consent holder shall maintain the landfill management plan to the satisfaction of the Chief Executive, Taranaki Regional Council, and shall adhere to such a plan in so far as it concerns the exercise of this consent at all times.
- 5. In case of any contradiction between the landfill management plan and the conditions of this consent, the conditions of this consent shall prevail.
- 6. The discharge of contaminants into the air from the landfill operation shall not result in any of the following - offensive or objectionable odours; offensive or objectionable dust; or dangerous or noxious ambient concentrations of any airborne contaminant - as determined by at least one enforcement officer of the Taranaki Regional Council, at or beyond the boundary of the site.
- 7. No material is to be burnt at the landfill site.

Consent 4526-3

8. The discharges authorised by this consent shall not give rise to any significant adverse ecological effects on any ecosystem, including but not limited to, habitats, plants, animals, microflora and microfauna.
9. 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.
10. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2014 and/or June 2020, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 20 March 2007

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH 4600

Consent Granted
Date: 20 March 2007

Conditions of Consent

Consent Granted: To discharge cleanfill and inert materials onto and into land
at the Inglewood Municipal Landfill at or about
GR: Q19:120-295, and to discharge municipal refuse onto
and into land at the Inglewood Municipal Landfill when, and
only when, it cannot be discharged at the Colson Road
Municipal Landfill

Expiry Date: 1 June 2026

Review Date(s): June 2014, June 2020

Site Location: Inglewood Municipal Landfill, 277 King Road, Inglewood

Legal Description: Lot 1 DP 16116 Blk XI Paritutu SD

Catchment: Waiongana

Tributary: Awai
Mangaoraka

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

General conditions

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

Special conditions

- 1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
- 2. The exercise of this consent shall be undertaken generally in accordance with the documentation submitted in support of applications 4476, 1613 and 94/119. In the case of any contradiction between the documentation submitted in support of applications 4476, 1613 and 94/119 and the conditions of this consent, the conditions of this consent shall prevail.
- 3. The consent holder shall advise the Taranaki Regional Council one month prior to any changes being made to the landfill management plan, and/or landfill closure management plan. Should the Taranaki Regional Council wish to review any of these plans, one month's notice shall be provided to the consent holder.
- 4. The consent holder shall maintain the landfill management plan to the satisfaction of the Chief Executive, Taranaki Regional Council, and shall adhere to such a plan in so far as it concerns the exercise of this consent at all times.
- 5. In case of any contradiction between the landfill management plan and the conditions of this consent, the conditions of this consent shall prevail.
- 6. Waste, including liquid and sludges, with a solids content of 20% or less, shall not be accepted at the landfill.
- 7. For the purposes of this consent, "clean fill and inert materials" are defined as materials consisting of any solid concrete, cement or cement wastes, bricks, mortar, tiles (clay, ceramic or concrete), non-tanalised timber, porcelain, glass, gravels, boulders, shingles, fibreglass, plastics, sand, soils and clays, and/or tree stumps and roots, whether singly or in combination or mixture, or any other material that when placed onto and into land will not render that land or any vegetation grown on that land toxic to vegetation or animals consuming vegetation.

Consent 4527-3

8. For the purposes of this consent, “clean fill and inert materials” excludes: food wastes, paper and cardboard, grass clippings, vegetative wastes other than tree stumps and roots, textiles, steel, galvanised metals, construction materials containing paint or fillers or sealers or their containers, oils or greases or any liquids or sludges or their containers, any industrial process by-products other than as permitted under condition 7, any poisons or solvents or their containers, batteries, general domestic refuse not otherwise described, or any wastes with the potential to render land or any vegetation grown on the land toxic to vegetation or to animals consuming such vegetation.
9. The discharge to land shall not result in any contaminant entering surface water.
10. Silt and leachate retention structures shall be installed and maintained to the satisfaction of the Chief Executive, Taranaki Regional Council.
11. The consent holder shall install and maintain stormwater diversion drains to minimise stormwater movement across, or ponding on the site, to the satisfaction of the Chief Executive, Taranaki Regional Council.
12. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2014 and/or June 2020, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 20 March 2007

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH 4342

Decision Date: 13 September 2013

Commencement Date: 13 September 2013

Conditions of Consent

Consent Granted: To discharge emissions into the air from the contingency
discharge of solid contaminants at the Okato Municipal
Landfill

Expiry Date: 1 June 2031

Review Date(s): June 2019, June 2025

Site Location: Okato Municipal Landfill, Hampton Road, Okato

Legal Description: Lot 1 DP 13150 Blk I Wairau SD (Discharge source & site)

Grid Reference (NZTM) 1674817E-5663981N

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

General condition

- a. The consent holder shall pay to the Taranaki Regional Council [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act.

Special conditions

1. The discharge of general refuse at the site shall only occur on a contingency basis and in accordance with the Okato Landfill Contingency Disposal Management Plan as submitted with application 5832.
2. The consent holder shall at all times adopt the best practicable option or options [as defined in section 2 of the Resource Management Act 1991] to prevent or minimise any actual or potential effect on the environment arising from any discharge at the site.
3. That the discharge of contaminants into the air shall not result in offensive or objectionable odours or dangerous or noxious ambient concentrations of any airborne contaminant that, in the opinion of at least one enforcement officer of the Taranaki Regional Council, is offensive or objectionable at or beyond the boundary of the site.
4. The discharges authorised by this consent shall not give rise to suspended or deposited dust at or beyond the boundary of the site that is offensive or objectionable. For the purpose of this condition, discharges in excess of the following limits are deemed to be offensive or objectionable:
 - a) dust deposition rate 0.13 g/m²/day; and/or
 - b) suspended dust level 3 mg/m³.
5. That this consent shall lapse on 1 June 2031, 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.
6. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2019 and or June 2025, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 13 September 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

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

Name of
Consent Holder: New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH 4342

Decision Date: 13 September 2013

Commencement Date: 13 September 2013

Conditions of Consent

Consent Granted: To discharge cleanfill and greenwaste to land and to
discharge general refuse on a contingency basis to land

Expiry Date: 1 June 2031

Review Date(s): June 2019, June 2025

Site Location: Okato Municipal Landfill, Hampton Road, Okato

Legal Description: Lot 1 DP 13150 Blk I Wairau SD (Discharge source & site)

Grid Reference (NZTM) 1674817E-5663981N

Catchment: Kaihihi

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

General condition

- a. The consent holder shall pay to the Taranaki Regional Council [the Council] all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act.

Special conditions

1. All discharges permitted by this consent shall occur within the existing landfill footprint as shown by the red dotted line on the attached plan (appendix 1).
2. The consent holder shall at all times adopt the best practicable option or options [as defined in section 2 of the Resource Management Act 1991] to prevent or minimise any actual or potential effect on the environment arising from any discharge at the site.
3. The consent holder shall install and maintain stormwater diversion drains to minimise stormwater entering or flowing across the discharge area.
4. The existing landfill cap shall at all times be maintained in its existing condition and shall not be disturbed during any activities permitted by this consent.
5. Prior to the expiry or surrender of this consent all areas used to discharge greenwaste and/or cleanfill shall be stabilised and re-vegetated to minimise erosion, sedimentation and stormwater infiltration.

Cleanfill

6. Cleanfill as defined by special conditions seven and eight may be discharged at any time and shall be undertaken in accordance with the Okato Landfill Contingency Disposal Management Plan as submitted with application 5833.
7. The contaminants to be discharged shall be limited to cleanfill and/or inert materials. For the purposes of this condition, "clean fill and inert materials" are defined as materials consisting of any concrete, cement or cement wastes, bricks, mortar, tiles [clay, ceramic or concrete], non-tanalised timber, porcelain, glass, gravels, boulders, shingles, fibreglass, plastics, sand, soils and clays, and/or tree stumps and roots, whether singly or in combination or mixture, or any other material [subject to condition 8] that when placed onto and into land will not render that land or any vegetation grown on that land toxic to vegetation or animals consuming vegetation.
8. The discharge of the following contaminants shall not occur: food wastes, paper and cardboard, grass clippings, garden wastes including but not limited to wastes containing foliage or other vegetation [other than tree stumps and roots as permitted under condition 7], textiles, steel, galvanised metals, construction materials containing paint or fillers or sealers or their containers, oils or greases or any liquids or sludges or their containers, any industrial process by-products other than as permitted under condition 7, any poisons or solvents or their containers, batteries, general domestic refuse not otherwise described, or any wastes with the potential to render land or any vegetation grown on the land toxic to vegetation or to animals consuming such vegetation.

Consent 4529-3

9. If the consent holder is uncertain as to the acceptability or not of a certain material the consent holder shall obtain written approval from the Consents Manager, Taranaki Regional Council, prior to its discharge.

Greenwaste

10. Green waste may be discharged at any time and shall be undertaken in accordance with the Okato Landfill Contingency Disposal Management Plan as submitted with application 5833.

Contingency Landfilling

11. The discharge of general refuse at the site shall only occur on a contingency basis and in accordance with the Okato Landfill Contingency Disposal Management Plan as submitted with application 5833.
12. In the event that contingency filling is required, the consent holder shall notify Council within 48 hours via email at worksnotification@trc.govt.nz. The notification shall include, reasons for using the site, likely volume of material to be discharged and likely duration of the contingency discharge.
13. Upon completion of any contingency discharge, the discharged refuse shall be capped and re-vegetated to the specifications set out in section 4.10.3 of the Okato Landfill Contingency Disposal Management plan as submitted with application 5833.
14. This consent shall lapse on 30 September 2018, 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
15. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2019 and or June 2025, for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 13 September 2013

For and on behalf of
Taranaki Regional Council

Director-Resource Management

Appendix 1

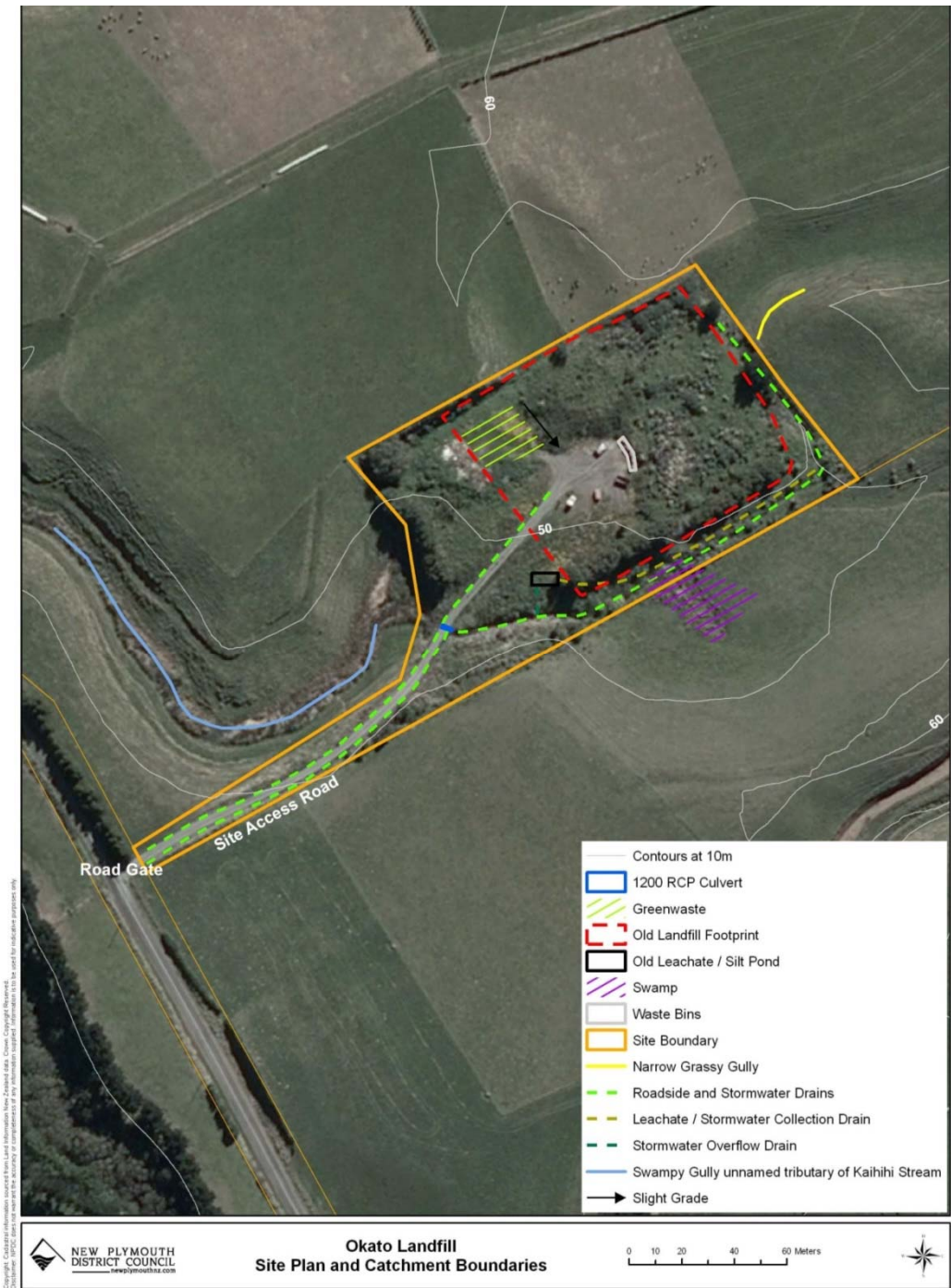


Figure 1 Aerial plan of Okato landfill site

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

Name of
Consent Holder: New Plymouth District Council
Private Bag 2025
New Plymouth 4342

Decision Date: 21 October 2014

Commencement Date: 21 October 2014

Conditions of Consent

Consent Granted: To discharge leachate from the Marfell Park former landfill
site via groundwater into the Mangaotuku Stream

Expiry Date: 01 June 2032

Review Date(s): June 2020, June 2026

Site Location: Marfell Park, Grenville Street, New Plymouth

Legal Description: Lot 4 DP 9485 (Discharge point)
Lot 1 DP 9295 Lot 1 DP 15742 (Discharge source)

Grid Reference (NZTM) 1690275E-5674646N

Catchment: Huatoki

Tributary: Mangaotuku

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

General condition

- a. The consent holder shall pay to the Taranaki Regional Council all the administration, monitoring and supervision costs of this consent, fixed in accordance with section 36 of the Resource Management Act 1991.

Special conditions

1. The consent holder shall at all times adopt the best practicable option, as defined in section 2 of the Resource Management Act 1991, to prevent or minimise any adverse effects on the environment from the exercise of this consent.
2. The landfill cap and associated stormwater structures shall be maintained in a manner that;
 - a) Minimises ponding to prevent stormwater infiltration into the filled area;
 - b) Ensures stormwater is adequately diverted and/or drained away from the land fill cap; and
 - c) Ensures iron oxide deposits on the outfall structure do not directly enter the Mangaotuku Stream.
3. The site shall be operated in accordance with a 'Management Plan' prepared by the consent holder within 3 months of granting of this consent, and approved by the Chief Executive, Taranaki Regional Council, acting in a certification capacity. The plan shall detail how the site will be managed to achieve compliance with the conditions of this consent and shall include but not be limited to:
 - a) maintenance of the landfill cap to minimise ponding and stormwater infiltration;
 - b) maintenance and management of the stormwater drains on and around the landfill to ensure stormwater is adequately diverted and/or drained away from the land fill cap; and
 - c) monitoring and management of iron oxide deposits on the outfall structure to ensure iron oxide deposits do not enter the water way.
4. After reasonable mixing the receiving waters downstream of the discharge shall meet the following standards;
 - a) unionised ammonia concentration less than 0.025 g/m³;
 - b) ammoniacal nitrogen level concentration less than 0.9 g/m³;
 - c) pH within the range of 6.0 and 9.0; and
 - d) dissolved zinc concentration less than or equal to 0.05 g/m³.
5. The discharge shall not cause the following effects in the receiving waters after reasonable mixing;
 - a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) any conspicuous change in the colour or visual clarity;
 - c) any emission of objectionable odour;
 - d) the rendering of fresh water unsuitable for consumption by farm animals;
 - e) any significant adverse effects on aquatic life.

Consent 4902-2.0

6. In accordance with section 128 and section 129 of the Resource Management Act 1991, the Taranaki Regional Council may serve notice of its intention to review, amend, delete or add to the conditions of this resource consent by giving notice of review during the month of June 2020 and/or June 2026 for the purpose of ensuring that the conditions are adequate to deal with any adverse effects on the environment arising from the exercise of this resource consent, which were either not foreseen at the time the application was considered or which it was not appropriate to deal with at the time.

Signed at Stratford on 21 October 2014

For and on behalf of
Taranaki Regional Council

B G Chamberlain
Chief Executive