

NPDC Closed and Contingency Landfills (Inglewood, Ōkato and Marfell Park)

Monitoring Programme

Annual Report

2022-2023

Technical Report 2023-49



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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 Ōkato. 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 (inert materials) site, located on King Road at Inglewood, in the Waiongana catchment. The Ōkato landfill is an active cleanfill and green waste disposal site; located on Hampton Road at Ōkato, in the Kaihihi catchment. NPDC also maintains Marfell Park (Marfell) landfill in the Huatoki catchment. This landfill does not accept any waste for disposal (even cleanfill) and the site has been fully reinstated to a park.

This report for the period July 2022 to June 2023 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.

During the monitoring period, NPDC demonstrated a high level of environmental performance and high level of administrative performance.

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, three discharge samples, 16 receiving water samples, two biomonitoring surveys of receiving waters, and one ambient air quality analysis.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (<1%) achieved a rating of poor.

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

This report includes recommendations for the 2023-2024 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 2022 to June 2023 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 any waste types 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 Ōkato 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 if 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 is reported each year in a separate annual report. Waste is now disposed of out of the Taranaki region.

This report includes the results and findings of the monitoring programme implemented by the Council in respect of the consents held by NPDC that relate to discharges of water within the various catchments, discharges to land and the air discharge permits. This report is the 33rd annual report prepared by the Council to cover the Company's air, land and water discharges and their effects.

1.1.2 Structure of this report

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

- consent compliance monitoring under the *Resource Management Act 1991* (RMA) and the Council's obligations;
- the Council's approach to monitoring sites 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 2023-2024 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 performance

Besides discussing the various details of the performance and extent of compliance by the consent holders, this report also assigns a rating as to each Company's environmental and administrative performance during the period under review. The rating categories are high, good, improvement required and poor for both environmental and administrative performance. The interpretations for these ratings are found in Appendix II.

For reference, in the 2022-2023 year, consent holders were found to achieve a high level of environmental performance and compliance for 878 (87%) of a total of 1007 consents monitored through the Taranaki tailored monitoring programmes, while for another 96 (10%) of the consents a good level of environmental performance and compliance was achieved. A further 27 (3%) of consents monitored required improvement in their performance, while the remaining one (<1%) achieved a rating of poor.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.

¹ The Council has used these compliance grading criteria for more than 19 years. They align closely with the 4 compliance grades in the MfE Best Practice Guidelines for Compliance, Monitoring and Enforcement, 2018

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
Ōkato	3860-3	To discharge stormwater and leachate from the Ōkato 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 Ōkato 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

1.3 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 Ōkato 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 (Table 2). With regard to consents for the discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions.

1.3.4 Chemical sampling

The Council took three discharge and 16 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	2	10	4	2	1
Marfell	1	2	1	0	0
Ōkato	0	4	2	0	0
TOTAL	3	16	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 (Photo 1). 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.



Photo 1 Inglewood landfill transfer station



Figure 1 Site layout at Inglewood contingency landfill

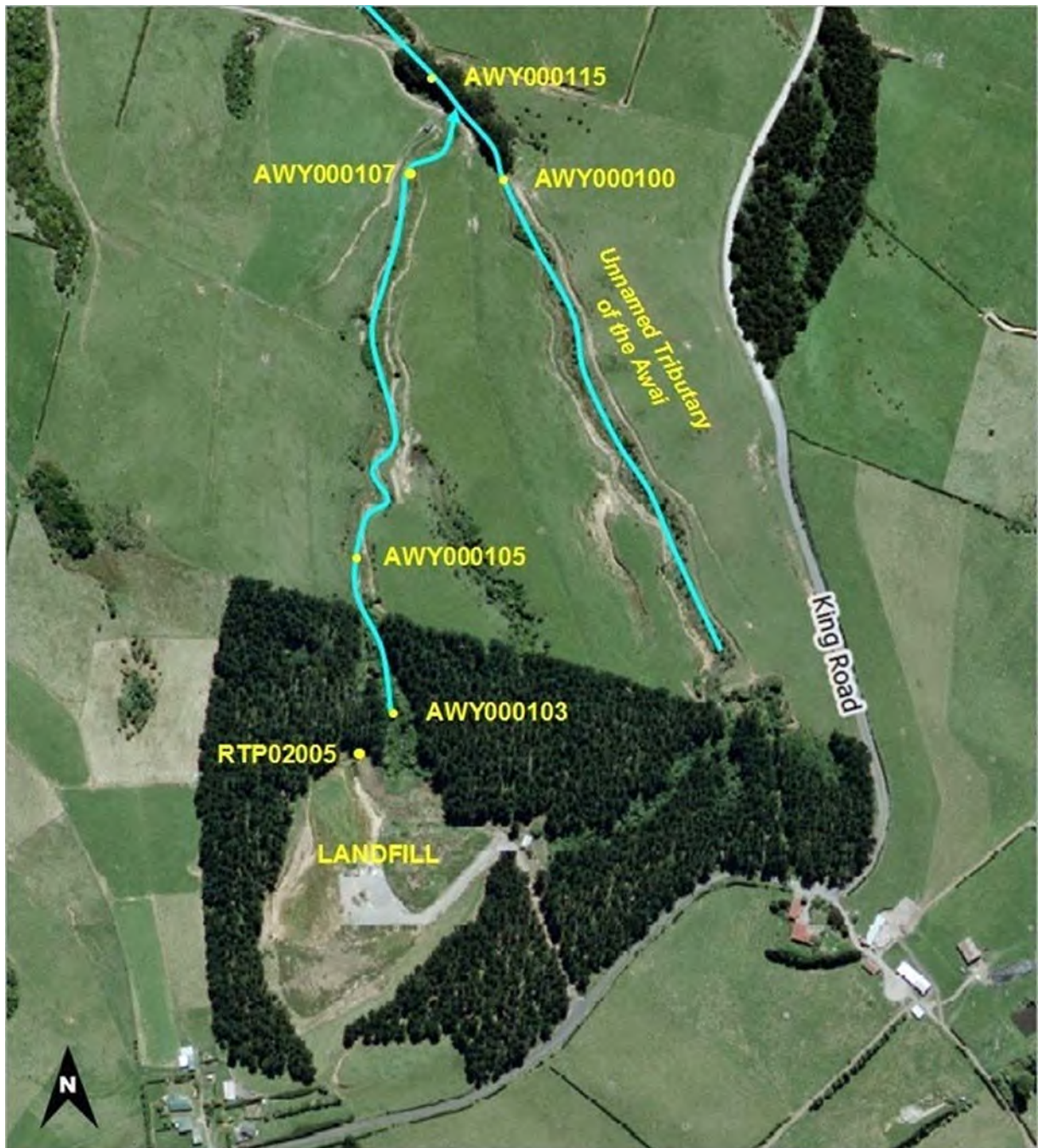


Figure 2 Inglewood landfill, discharge site and receiving water sampling sites

2.2 Results

2.2.1 Site Inspections

Inspections were undertaken on four occasions during the 2022-2023 monitoring period: 21 September and 14 November 2022, and 1 March and 2 May 2023.

During all inspections the cap was in good condition. Both the cap and batters were well vegetated with no sign of slumping, ponding, or exposed refuse. Wilding pine control continued to have been effective. Blackberry patches were noted at each of the inspections, with the inspecting officer reporting that general maintenance was advised to control the blackberry height. Maintenance to enable continued access to the leachate pond was also advised. At the final inspection of the monitoring period it was noted that there was also gorse and other weeds present and NPDC was advised that maintenance was required on the cap and to enable easier access to the leachate pond. The stormwater perimeter drains were dry and clear with no obstructions. The perimeter drains were damp on one occasion with water present in the drains to the leachate pond. At the time of this inspection the water in the leachate pond was at a moderate level and a brown/orange colour.

Fencing, signage, and site security were intact and permanent. There was no indication of recent grazing. The transfer station was not reported to be operating at the time of any of the inspections. The site appeared to be tidy and well-managed, with no sign of unauthorised material, and no odour or dust issues.



Photo 2 Leachate/stormwater pond

2.2.2 Results of stormwater/leachate monitoring

It has previously been found that the pond (Photo 2) 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 both of the two scheduled surface water sampling surveys. The results of the samples (collected 14 November 2022 and 1 March 2023) are presented in Table 3, along with a summary of the historical data. Ammoniacal nitrogen results can fluctuate due to factors like recent grazing, topography of the surrounding area and/or leachate generation from additional stormwater infiltration. Since 2017 ammoniacal nitrogen has been consistently below 10 g/m³-N. Figure 3 shows ammoniacal nitrogen results since 2005. Some of the higher results (e.g. 2015), can be attributed to heavy rainfall preceding sampling.

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

Parameter	Unit	14 November 2022	1 March 2023	Historical results		
				Minimum	Maximum	Number of samples
pH	pH	7.7	7.1	6.7	8.5	32
Temperature	Deg. C	23.5	21.1	4.8	23.5	31
Alkalinity	g/m ³ CaCO ₃	106	76	-	-	-
Ammoniacal nitrogen	g/m ³ N	3.6	1.69	0.01	73.3	30
BOD5	g/m ³	2	3	<2	850	31
Conductivity @ 25°C	µS/cm	264	206	146	2288	32
Nitrate/nitrite nitrogen	g/m ³ N	0.80	0.45	<0.01	1.89	8
Total nitrogen	g/m ³ N	4.8	2.6	7.9	12.1	8
Turbidity	FNU	8.5	4.1	1.5	69	16
Unionised ammonia	g/m ³	0.084	0.0092	<0.01	0.04877	21
Dissolved Zinc	g/m ³	<0.0010	<0.0010	<0.005	0.63	32

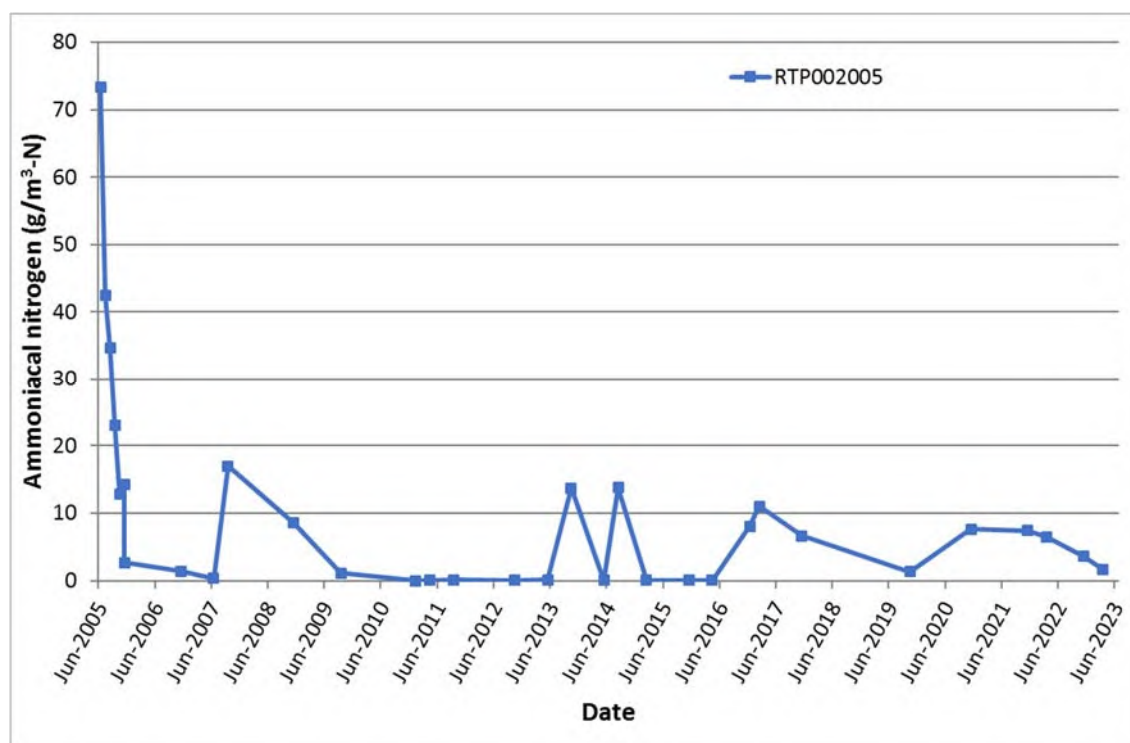


Figure 3 Ammoniacal nitrogen concentration of the Inglewood landfill stormwater/leachate (RTP002005) for monitoring from 2005 to 2023

2.2.3 Results of receiving environment monitoring

2.2.3.1 Chemical analysis

Receiving water sampling was undertaken at sites AWY000103, AWY000105, AWY000100, AWY000107 and AWY000115 on two occasions (14 November 2022 and 1 March 2023). 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 respectively.

As with previous results, the discharge from the culvert below the landfill (AWY000103) exhibits leachate contamination as indicated by high levels of conductivity, alkalinity, and total nitrogen at the time of both surveys. Moderately elevated levels of manganese, ammoniacal nitrogen found at the time of the November survey, however these were below historical values. Unionised ammonia concentration was elevated in November which reflected the elevated concentration in RTP002005.

In general, the levels of contaminants found 130 m downstream (d/s) of the discharge (at site AWY000105) indicate that the wetland continues to be effective at reducing contaminant levels downstream.

Table 4 Chemical analysis of the Awai Stream tributaries sites on 14 November 2022

Parameter	Unit	AWY000103	AWY000105	AWY000107	AWY000100	AWY000115
		30m d/s of landfill (culvert discharge)	130m d/s of landfill	400m d/s landfill face	u/s of confluence of landfill trib	d/s of confluence of landfill trib
pH	pH	7.9	7.7	7.6	7.4	7.6
Temperature	Deg C	20.6	19.8	19.3	16.8	17.1

Parameter	Unit	AWY000103	AWY000105	AWY000107	AWY000100	AWY000115
		30m d/s of landfill (culvert discharge)	130m d/s of landfill	400m d/s landfill face	u/s of confluence of landfill trib	d/s of confluence of landfill trib
Alkalinity	g/m ³ CaCO ₃	166	115	58	21	40
BOD	g/m ³	12	3	<2	<2	<2
Conductivity @ 25°C	µS/cm	458	394	215	96	158
Dissolved oxygen	g/m ³	4.9	4.38	7.11	8.44	8.42
Dissolved reactive phosphorus	g/m ³ -P	<0.004	<0.004	<0.004	<0.004	<0.004
Acid soluble iron	g/m ³	0.4	4.3	<0.4	<0.4	<0.4
Acid soluble manganese	g/m ³	2.5	1.52	0.67	0.38	0.038
Unionised ammonia	g/m ³	0.27	0.036	<0.00016	<0.00011	<0.00012
Ammoniacal nitrogen	g/m ³ -N	9.0	1.72	<0.010	0.014	<0.010
Nitrate/nitrite nitrogen	g/m ³ -N	4.0	8.1	3.1	0.45	1.82
Total nitrogen	g/m ³ -N	12.7	10.1	3.3	0.54	2.0
Turbidity	FNU	1.23	19.3	2.1	1.29	1.06
Dissolved zinc	g/m ³	0.0013	<0.0010	<0.0010	<0.0010	0.0017

Table 5 Chemical analysis of the Awai Stream tributaries sites on 1 March 2023

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
pH	pH	7.4	7.5	7.4	6.7	7.2
Temperature	Deg C	18.3	20.0	18.6	18.0	16.4
Alkalinity	g/m ³ CaCO ₃	118	109	67	25	44
BOD	g/m ³	3	3	<2	<2	<2
Conductivity @ 25°C	µS/cm	384	347	212	103	156
Dissolved oxygen	g/m ³	5.59	6.49	7.0	7.54	8.53
Dissolved reactive phosphorus	g/m ³ -P	<0.004	<0.004	<0.004	<0.004	<0.004
Acid soluble iron	g/m ³	0.6	4.3	2.2	<0.4	1.3
Acid soluble manganese	g/m ³	0.44	2.4	0.97	0.089	0.29
Unionised ammonia	g/m ³	0.00021	<0.00014	<0.00009	0.000046	0.00006

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	0.022	<0.010	<0.010	0.026	0.011
Nitrate/nitrite nitrogen	g/m ³ -N	7.8	5.9	1.72	0.38	0.97
Total nitrogen	g/m ³ -N	8.2	6.3	2.1	0.48	1.24
Turbidity	FNU	5.3	109	2.2	0.58	1.98
Dissolved zinc	g/m ³	<0.001	<0.001	<0.001	0.001	<0.001

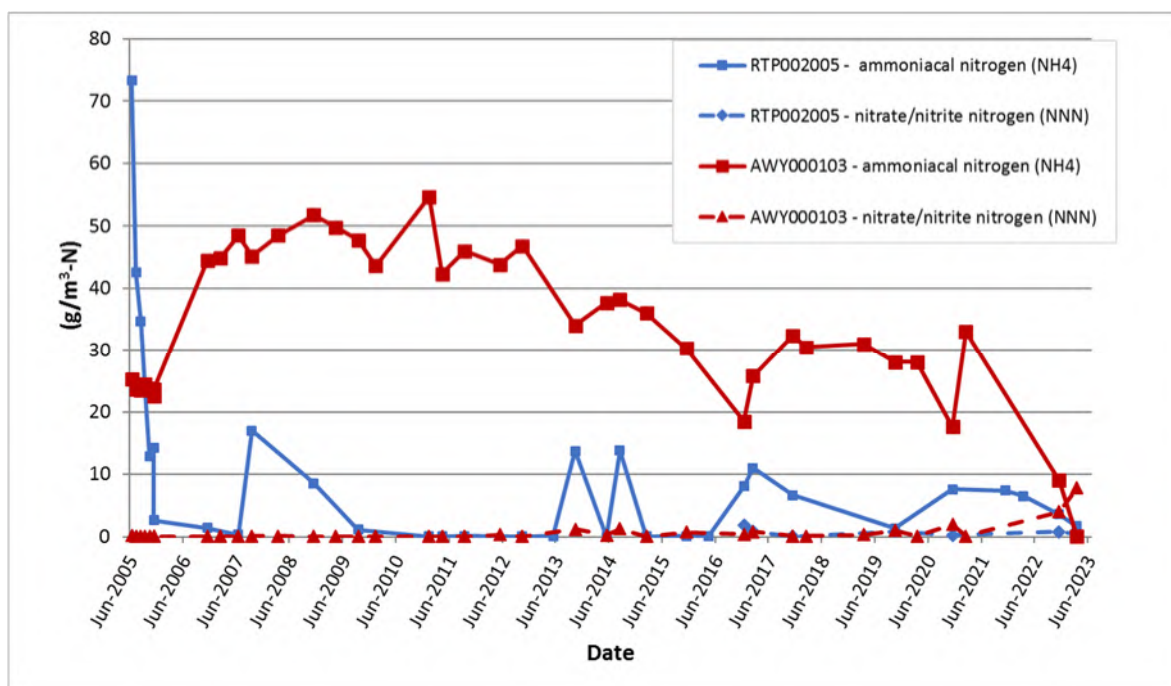


Figure 4 Ammoniacal and nitrate/nitrite nitrogen concentrations in the Inglewood landfill stormwater/leachate (RTP002005) and the tributary below the culvert outlet (AWY000103)

Figure 4 shows the ammoniacal nitrogen and nitrate/nitrite nitrogen results for the stormwater/leachate pond (RTP002005) and the landfill tributary below the culvert outlet (AWY000103). Historically the concentration of both these species have been much lower in the pond than in the tributary, with the ammoniacal nitrogen concentrations at both sites being higher than the respective nitrate/nitrite nitrogen concentrations. This continues to indicate that ammoniacal nitrogen is leaching into the landfill tributary via another route, potentially via shallow groundwater.

It is noted that during the year under review, there were successive decreases in the concentration of ammoniacal nitrogen at both sites and a decrease in the nitrate/nitrate concentration in the pond. There were successive increases in the concentration of nitrate/nitrite nitrogen concentration in the landfill tributary. Although the reason for the increase is not clear, it could be attributed to the amount of rainfall and subsequent runoff in the region preceding sampling. Further monitoring will continue to determine the trend for this analyte.

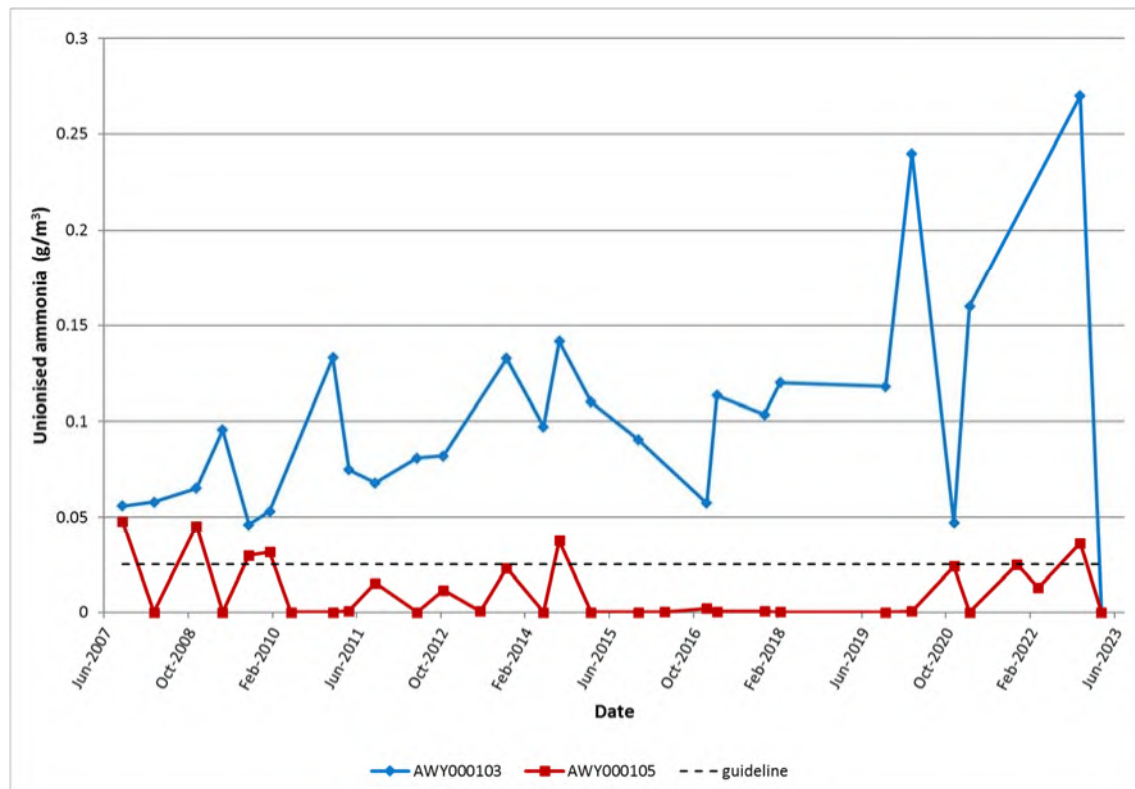


Figure 5 Unionised ammonia concentration in the landfill tributary below Inglewood landfill

Figure 5 historically shows that the unionised ammoniacal nitrogen concentration at the culvert outlet (AWY000103) has been consistently above the 0.025 g/m³ guideline adopted by the Council to protect aquatic organisms from chronic effects. For the most part, this was generally assimilated in the wetland area with concentrations found at site AWY000105 normally below this guideline value. At the time of the November 2022 survey, the unionised ammonia concentration was the highest on record at AWY000103. However, at the time of the March 2023 survey, there had been a significant reduction in concentration at both sites.

Acute toxic effects may be seen in New Zealand native fish, for example a fish kill, when the unionised ammonia concentration range reaches between 0.75 to 2.35 g/m³. The levels of unionised ammonia found at all monitoring sites during the year under review were well below this concentration range. During previous review periods the unionised ammonia concentration at AWY000105 has been above the 0.025 g/m³ guideline occasionally. Although it was above this guideline during the November 2022 sampling survey, it had reduced to a concentration that was below the detection limit at the lower end of the landfill tributary (AWY00107, Table 4).

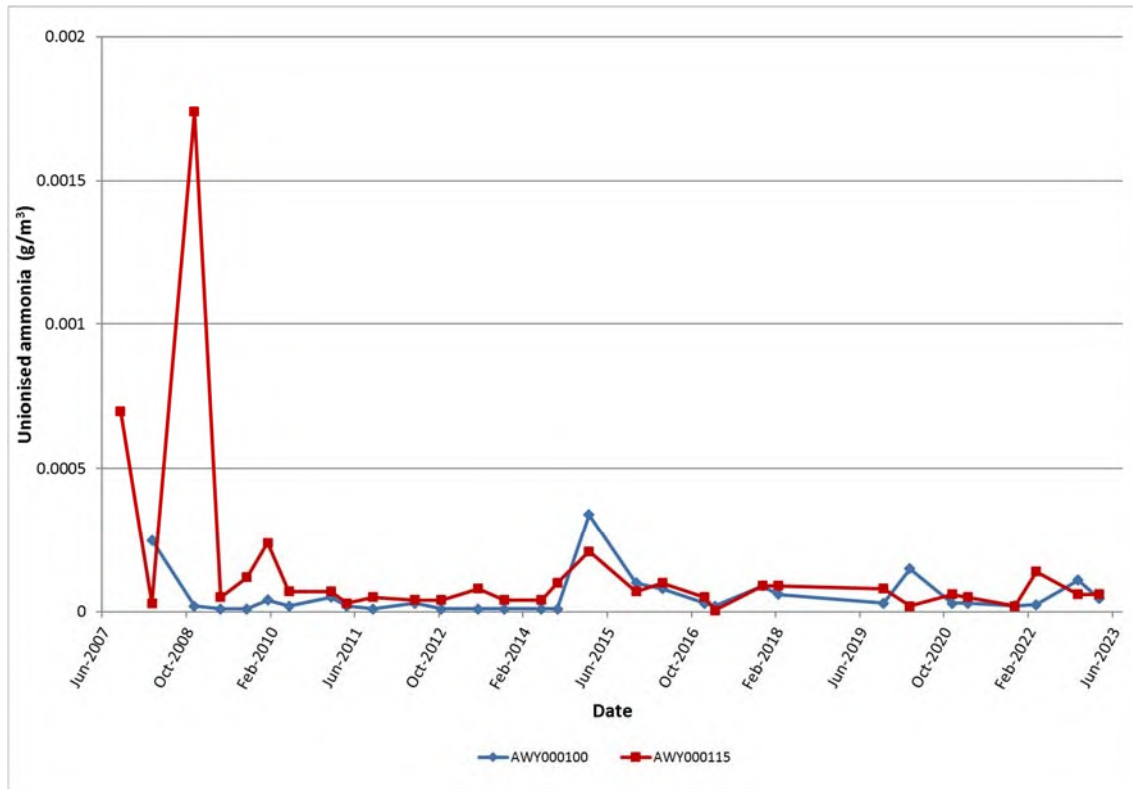


Figure 6 Unionised ammonia concentration in the main tributary below Inglewood landfill

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). There are minor fluctuations throughout the monitoring periods.

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 showed that the difference in the nitrate/nitrite nitrogen concentrations between sites AWY000100 and AWY000115 continue to fluctuate widely (Figure 7). Overall, concentrations are lower in the upstream site compared to the downstream site, and the former has concentration levels that are fairly steady.

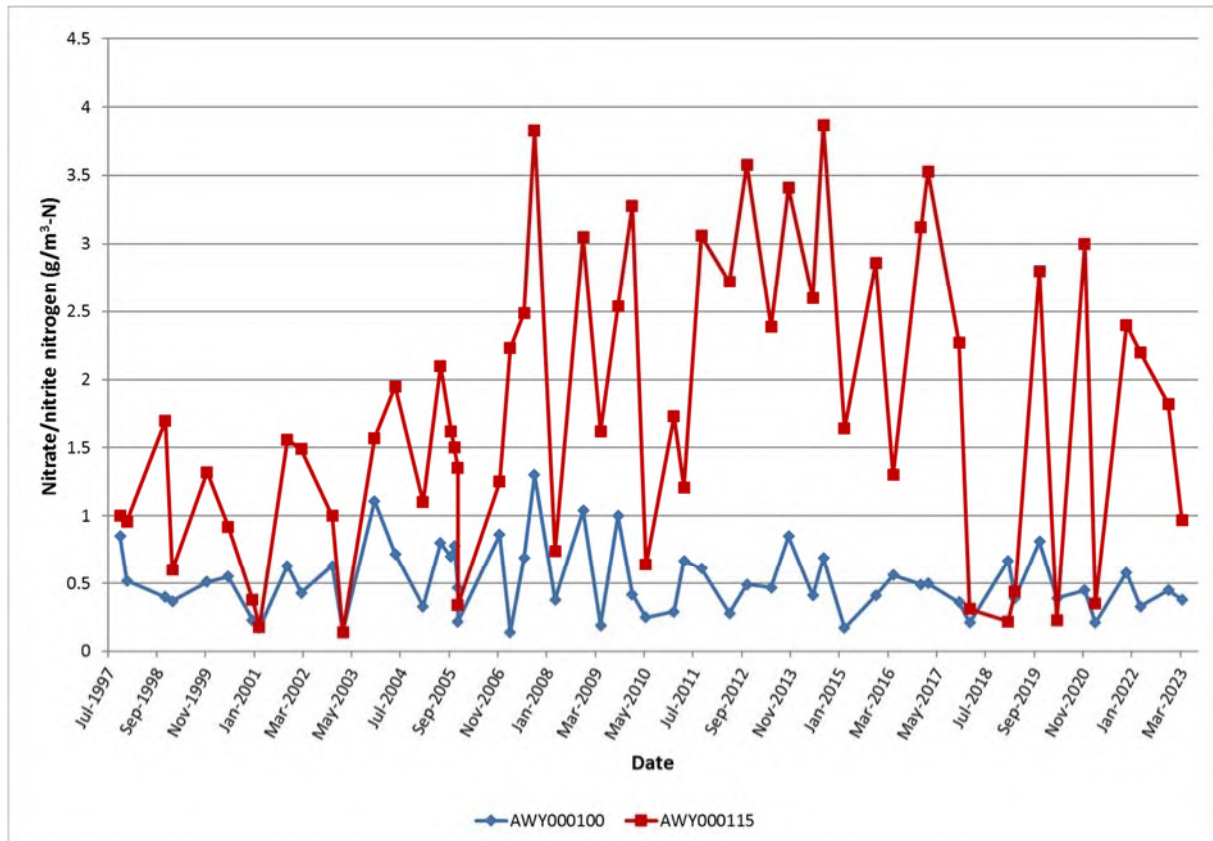


Figure 7 Nitrate/nitrite nitrogen results in the main tributary upstream and downstream of the Inglewood landfill tributary discharge

Due to the changes observed previously in the ammoniacal nitrogen and nitrate/nitrite concentrations at the various sites, total nitrogen was 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.

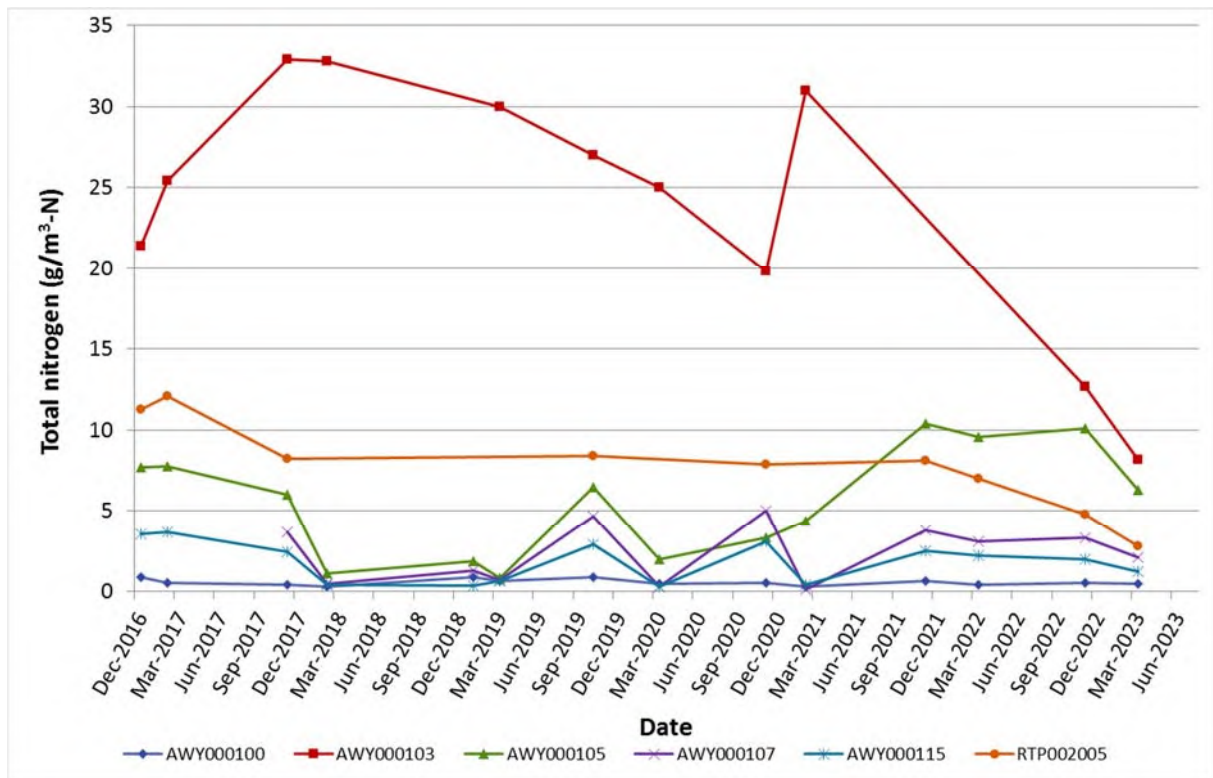


Figure 8 Total nitrogen concentration in the surface waters below the landfill and site RTP002005

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 20 October 2022 and 15 February 2023. The Council's 'vegetation-sweep' and 'kick-sampling' techniques were used at four sites to collect streambed macroinvertebrates from two unnamed tributaries of the Awai Stream (Table 6, Figure 9). This provided data to assess any potential adverse effects of leachate from the landfill on the macroinvertebrate communities of these streams. Samples were processed to provide number of taxa (richness), MCI, and SQMCI scores for each site.

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). 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.

Table 6 Biomonitoring sites in tributaries of the Awai Stream

Site number	Site code	Location
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

20 October 2022

Taxa richness was low to moderate, and ranged between 10 and 15 taxa at the four sites surveyed. These numbers were within the previously recorded range, however all sites were below their respective site median.

MCI scores were reflective of 'poor' to 'good' macroinvertebrate community health at the four sites surveyed. Sites 1a, in the smaller tributary, recorded the lowest MCI score in the current survey; with the remaining three sites all recording significantly higher. This site was dominated by two 'tolerant' fly taxa: *Polypedilum* and *Austrosimulium*, and required 'vegetation-sweep' methods due to the large amount of silt present and slow flowing water. Site 3 recorded the highest MCI score, indicating an increase in health in the larger tributary in a downstream direction.

SQMCI scores were reflective of 'very poor' to 'good' macroinvertebrate community health at the four sites surveyed. SQMCI scores in the larger Awai Stream tributary (sites 2 and 3) were significantly higher than those recorded in the smaller tributary (sites 1a and 1b), following a similar pattern to that recorded in the previous survey. Site 1b recorded the lowest SQMCI score in this survey, although recorded the highest taxa richness. Of the 15 taxa at this site, 14 were 'rare', with the remaining taxon, the 'tolerant' Oligochaete worm, recorded as 'abundant'.

No sites supported any undesirable biological growths.

Overall, there was no strong evidence that leachate discharges from the Inglewood Landfill have adversely affected the macroinvertebrate communities of the Awai Stream tributaries. Habitat differences between the smaller and larger tributaries are largely responsible for the significant differences in macroinvertebrate indices recorded.

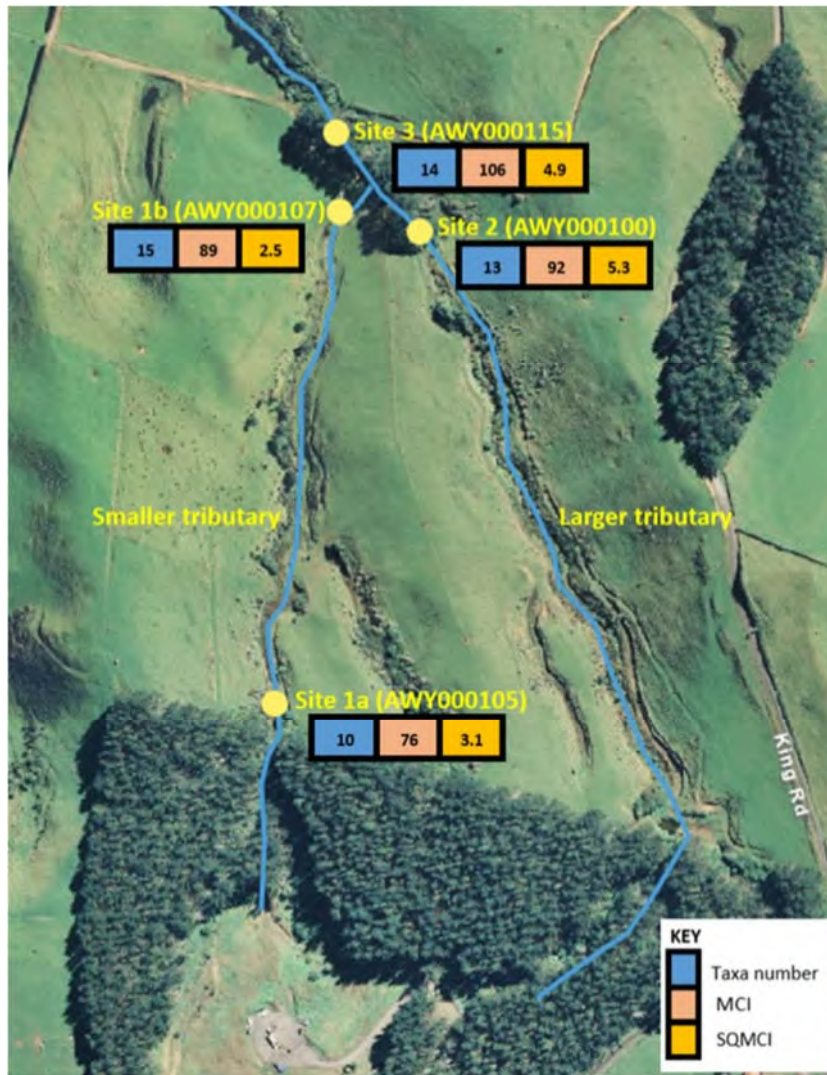


Figure 9 Spring biomonitoring sites in two tributaries of the Awai Stream with taxa number, MCI scores and SQMCI scores for each site

15 February 2023

Taxa richness was low to moderate, and ranged between 6 and 14 taxa at the four sites surveyed. These numbers were within the previously recorded range, however all sites were either equal to or below their respective site median.

MCI scores were reflective of 'poor' to 'good' macroinvertebrate community health at the four sites surveyed. Sites 1b recorded the lowest MCI score in the current survey; with the remaining three sites all recording significantly higher. The recorded MCI score of 60 units was significantly lower than that previously recorded as well as the site median, and was the lowest recorded score at that site to date.

SQMCI scores were reflective of 'very poor' to 'fair' macroinvertebrate community health at the four sites surveyed. Site 2 in the larger Awai Stream tributary scored an SQMCI score significantly higher than those recorded in the smaller tributary (sites 1a and 1b), as well as site 3 in the larger tributary. Site 1a recorded the lowest SQMCI score in this survey, which is likely due to differences in methodology, with site 1a requiring the 'vegetation-sweep' sampling method due to the large amount of silt present and having a slow flow.

No sites supported any undesirable biological growths.

Overall, there was no strong evidence that leachate discharges from the Inglewood Landfill have adversely affected the macroinvertebrate communities of the Awai Stream tributaries. Habitat differences between the smaller and larger tributaries are largely responsible for the significant differences in macroinvertebrate indices recorded.

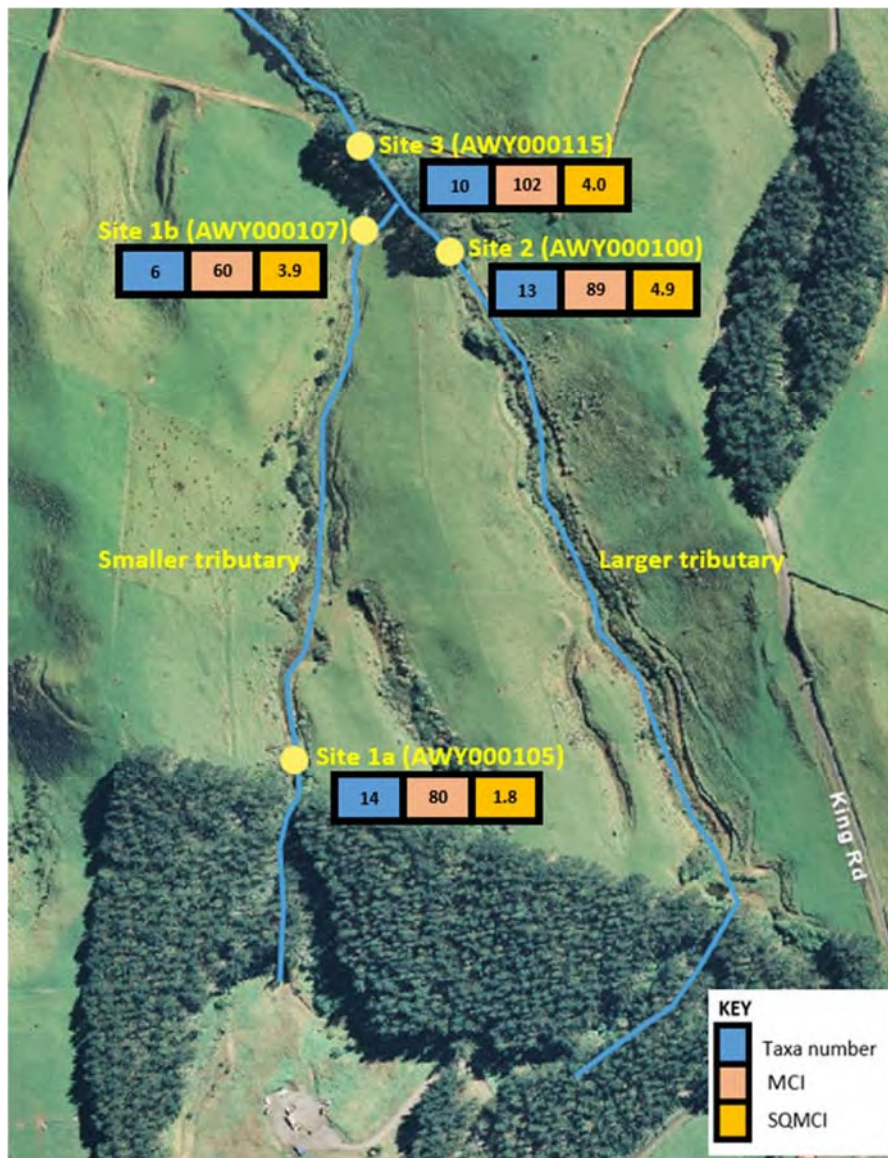


Figure 10 Summer biomonitoring sites in two tributaries of the Awai Stream with taxa number, MCI scores and SQMCI scores for each site

Copies of the full 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 NPDC. 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 2022-2023 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. In terms of appropriate vegetative cover, there has been good management of wildling pines during the year under review, with none noted as being present at the site. However, other weeds are becoming established including blackberry and gorse. NPDC was advised that maintenance was required on the cap and to enable easier access to the leachate pond. Gorse plants have deep tap roots that can affect the integrity of the cap, so these need to be controlled.

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.

Biomonitoring surveys undertaken during the 2022-2023 year indicated that overall, there was no strong evidence that leachate discharges from the Inglewood landfill had adversely affected the macroinvertebrate communities of the Awai Stream tributaries. Habitat differences between the smaller and larger tributaries is largely responsible for the significant differences in macroinvertebrate indices recorded.

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.

2.4 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.	Yes
5. Monitoring of ground and surface water on and near the site to Council's satisfaction	Surface water 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	Yes
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

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?
2. Consent to be exercised in accordance with application documentation	Inspection and liaison with consent holder	Yes
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	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

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?
3. Notification of changes to landfill management plan	Inspection and review of plans on file.	Yes
4. Maintain and adhere to landfill 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	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	-	-

Year	Consent no	High	Good	Improvement req	Poor
2017-2018	4526-3	1	-	-	-
	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	-	-
2020-2021	3954-3, 4526-3, 4527-3	3	-	-	-
2020-2021	3954-3, 4526-3, 4527-3	3	-	-	-
Totals		26	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 Appendix II.

2.4.1 Recommendation from the 2021-2022 Annual Report

In the 2021-2022 Annual Report, it was recommended:

1. THAT monitoring of consented activities at the Inglewood landfill in the 2022-2023 year remain unchanged from that undertaken in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

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

2.4.2 Alterations to monitoring programmes for 2023-2024

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 2023-2024 the programme remains 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 2023-2024.

2.5 Recommendations

1. THAT monitoring of consented activities at the Inglewood landfill in the 2023-2024 year remain unchanged from that undertaken in 2022-2023.
2. THAT should there be issues with environmental or administrative performance in 2023-2024, 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 (Figure 11) 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 monitoring years. The landfill at Marfell is monitored biennially.



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

3.2 Results

The closed landfill at Marfell is monitored on a biennial basis. Monitoring was carried out during the 2022-2023 year, with one inspection and one set of samples.

3.2.1 Site Inspections

24 February 2023

At the time of inspection it was found that the gate to the park was left open and the safety barrier had been removed.

The cap was in good condition with no slumping evident. The grass on the fields had been recently cut, and the previous BMX track area was heavily overgrown. There was no exposed refuse from the former landfilling activity, however there was some rubbish present around the skate park and rubbish bins.

The stormwater drains were in good condition, although there was some tree debris present in the drain. There were no obvious visual environmental effects in the receiving waters at the time of the sampling undertaken in conjunction with this inspection.

3.2.2 Receiving water and discharge sampling

Samples were collected on one occasion during the 2022-2023 monitoring year. The sites are shown in Figure 11, and the results are presented in Table 11.

Table 11 Results of sampling undertaken at Marfell Park landfill on 24 February 2023

Parameter	Unit	MGK000176	STW001123	MGK000178	Consent limit (downstream)
		10 m u/s discharge	discharge	20 m d/s discharge	
pH	pH	7.5	7.2	7.5	6.0-9.0
Temperature	Deg C	15.3	14.6	15.4	
Alkalinity	g/m ³ CaCO ₃	35	220	39	-
Conductivity @ 25°C	µS/m	161	494	168	-
Acid soluble iron	g/m ³	0.5	22	0.9	-
Unionised ammonia	g/m ³ -N	<0.00010	0.035	0.0020	0.025
Ammoniacal nitrogen	g/m ³ -N	<0.010	8.3	0.22	0.9
Dissolved zinc	g/m ³	0.0011	0.0034	0.0011	0.05

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

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.

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, 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 monitoring periods.

Based on these and previous results, 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 2022-2023 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	Site inspection and sampling	Yes
2. Maintain cap and drains on site to minimise ponding, stormwater infiltration, and ensure stormwater diversion and drainage	Site inspection	Yes
3. Site to be operated in accordance with management plan	Site inspection	Yes
4. The discharge shall not cause specified parameter concentrations to be outside prescribed limits in the Mangaotuku Stream	Sampling of discharge and receiving waters	Yes
5. Prohibits certain effects in the stream beyond reasonable mixing	Site inspections and sampling of receiving waters	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	-	-	-

Year	Consent no	High	Good	Improvement req	Poor
2013-2014	4902-1	Not monitored			
2014-2015	4902-1	1	-	-	-
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			
2020-2021	4902-2	1	-	-	-
2021-2022	4902-2	Not monitored			
2022-2023	4902-2	1	-	-	-
Totals		6	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 Appendix II.

3.3.2 Recommendation from the 2021-2022 Annual Report

In the 2021-2022 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 2022-2023 period.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, 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 2023-2024

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 2024-2025.

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 2023-2024.

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 2024-2025 period.
2. THAT should there be issues with environmental or administrative performance in 2023-2024, monitoring may be adjusted to reflect any additional investigation or intervention as found necessary.

4 Ōkato landfill

4.1 Introduction

4.1.1 Site description

The Ōkato landfill (Figure 12) 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 Ōkato landfill and sampling sites

4.2 Results

4.2.1 Inspections

The site was visited on 3 November 2022 and 8 June 2023. 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 stock were

noted on either visit. The waste transfer station was tidy, and well-maintained. The cleanfill and greenwaste areas were well-managed, with no unauthorised material noted. There were no odour or dust issues.

4.2.2 Results of surface water sampling

Samples were collected from the tributary of the Kaihihi Stream below the landfill on two occasions, 3 November 2022 and 8 June 2023. The sites are shown in Figure 12 and the results are presented in Table 14.

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 Ōkato landfill

Parameter	Unit	3 Nov 2022		8 Jun 2023	
		KHH000650	KHH000655	KHH000650	KHH000655
		30 m d/s of landfill	200 m d/s of landfill	30 m d/s of landfill	200 m d/s of landfill
pH	pH	7.1	7.2	7.5	7.7
Temperature	Deg C	20.1	20.1	14.2	14.2
Alkalinity	g/m ³ CaCO ₃	81	90	92	81
Conductivity @ 25°C	µS/m	283	296	312	281
Dissolved reactive phosphorus	g/m ³ -P	<0.004	<0.004	<0.004	<0.004
Acid soluble iron	g/m ³	3.9	3.2	4.0	1.1
Unionised ammonia	g/m ³	0.00008	<0.00007	0.00188	<0.00014
Ammoniacal nitrogen	g/m ³ -N	0.016	<0.010	0.26	<0.010
Nitrate/nitrite nitrogen	g/m ³ -N	0.32	0.110	1.50	0.81
Dissolved zinc	g/m ³	0.0018	<0.0010	0.0172	<0.0010

4.2.3 Air quality

Objectionable odour and dust nuisance were checked for during each inspection undertaken in the 2022-2023 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 2022-2023 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 Ōkato landfill.

4.3 Discussion

4.3.1 Discussion of site performance

Overall, the site was well managed during the 2022-2023 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 2022-2023 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 Ōkato contingency landfill leachate consent 3860-3

Purpose: To discharge stormwater and leachate from the Ōkato 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 Ōkato contingency landfill air discharge consent 4528-3

Purpose: To discharge emissions into the air from the contingency discharge of solid contaminants at the Ōkato 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

Purpose: To discharge emissions into the air from the contingency discharge of solid contaminants at the Ōkato municipal landfill		
Condition requirement	Means of monitoring during period under review	Compliance achieved?
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

N/A = not applicable

Table 17 Summary of performance for Ōkato 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
9. Written approval required where uncertainty of acceptability of waste	Site inspection	Yes
10. Green waste may be discharged at any time in accordance with Management Plan	Site inspection	Yes

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?
11. Discharge of general refuse on a contingency basis only	No discharge to landfill during the monitoring period	N/A
12. Notification of contingency discharge	No discharge to landfill during the monitoring period	N/A
13. Contingency discharge to be capped and revegetated	No discharge to landfill during the monitoring period	N/A
14. Consent lapse September 2018	Consent exercised	N/A
15. 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	-	-	-
2020-2021	3860-3, 4529-3	2	-	-	-

Year	Consent no	High	Good	Improvement req	Poor
	4528-3	N/A	-	-	-
2021-2022	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
2022-2023	3860-3, 4529-3	2	-	-	-
	4528-3	N/A	-	-	-
Totals		29	0	0	0

During the year, NPDC demonstrated a high level of environmental and administrative performance in relation to the Ōkato landfill resource consents as defined in Appendix II.

4.3.4 Recommendation from the 2021-2022 Annual Report

In the 2021-2022 Annual Report, it was recommended:

1. THAT monitoring of consented activities at Ōkato landfill in the 2022-2023 year continue at the same level as in 2021-2022.
2. THAT should there be issues with environmental or administrative performance in 2022-2023, 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 2023-2024

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 2023-2024 the monitoring of discharges at the Ōkato 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 2023-2024.

4.4 Recommendations

1. THAT monitoring of consented activities at Ōkato landfill in the 2023-2024 year continue at the same level as in 2022-2023.
2. THAT should there be issues with environmental or administrative performance in 2023-2024, 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 2023-2024 year remain unchanged from that undertaken in 2022-2023.
2. THAT monitoring of discharges at the **Marfell landfill** continues unchanged from the 2022-2023 monitoring year and that the biennial programme next be implemented in the 2024-2025 period.
3. THAT monitoring of consented activities at the **Ōkato landfill** in the 2023-2024 year continue at the same level as in the 2022-2023 period.
4. THAT should there be issues with environmental or administrative performance in 2023-2024, 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 an Environment Quality 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 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

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 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

Appendix II

Categories used to evaluate environmental and
administrative performance

Categories used to evaluate environmental and administrative performance

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

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

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

Environmental Performance

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

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

For example:

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

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

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

Administrative performance

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

Good: Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively

adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

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

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