

Landfills in the Wellington Region

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Executive Summary

Landfills have the potential to cause adverse effects to human health and the environment through discharges to air or water and contamination of soil. The potential for adverse effects is related to a variety of factors including the age, types and quantities of refuse disposed of at the site, the location and physical characteristics of the site, and engineering design, both during operation and after closure.

A common problem when investigating old landfill sites is the lack of information regarding precise location, contents, and likely discharges. The report provides what is considered to be an adequate minimum level of information for all landfill sites identified in the Wellington Region. This information is used in a simple comparative risk assessment process to prioritise sites for further investigation.

The comparative risk assessment considered potential adverse effects of the discharge of leachate and/or landfill gas in receiving environments associated with each site. Where sites were located in isolated areas, the potential for adverse effects was generally low, particularly with regard to the discharge of landfill gas. Isolated sites also tend to serve small communities and therefore have smaller volumes of refuse and attendant leachate discharge.

15 sites were assessed as having high priority for further investigation on the basis of the potential discharge of leachate and 8 sites high priority on the basis of the potential discharge of landfill gas. The high priority sites tend to be located in the urban areas of the Region. The high priority sites are:

Site Name	Location
Leachate	
Old Wainuiomata Landfill	Wainuiomata
Frank Cameron Park	Petone
Wingate Landfill	Wingate
Eastbourne Landfill	Eastbourne
Kirk Street Landfill	Kapiti
Pukerua Bay/Airlie Road Landfill	Pukerua Bay
Batavian Rubber Landfill	Featherston
Moonshine Road No. 2	Upper Hutt
Ian Galloway Park	Wilton
Cottles Gully	Horokiwi
Raroa Park	Johnsonville
Prestons Gully	Happy Valley
Landfill, Parkvale Road	Karori
Sinclair Park	Houghton Bay
Otari Native Plants Museum	Wilton
Landfill Gas	
Frank Cameron Park	Petone
Dowse Drive Landfill	Maungaraki
Porirua Park	Cannons Creek
Fergusson Drive	Upper Hutt

Landfills in the Wellington Region

Site Name	Location
Ian Galloway Park	Wilton
Raroa Park	Johnsonville
Prestons Gully	Happy Valley
Sinclair Park	Houghton Bay

On the basis of the risk assessment it can be concluded that there are a number of closed landfill sites in the Wellington Region that may be posing an unacceptable risk to human health and/or the environment. Several mechanisms are proposed for determining the actual levels of risk posed by these sites, and where appropriate, managing those risks to an acceptable level. These are:

1. Liaison with site owners with respect to further investigations.
2. Further monitoring of discharges and/or receiving environments.
3. Further desktop study to establish the history of sites for sites where current knowledge is inadequate. This will enable the risk posed by each site to be estimated with an acceptable degree of confidence.

It should be noted that due to the fact that this report is based on a combination of desktop analysis and simple screening tests on potential receptors for discharges of leachate. It is possible that further investigation will indicate that individual sites do not pose an unacceptable risk to human health and or the environment.

1. Introduction

1.1 Background

There are over 100 closed landfill sites in the Wellington Region, many of which have had little or no assessment carried out on them to date. Several territorial authorities have initiated investigations of selected closed landfills under their ownership, but there is a large number of privately owned sites and sites perceived to be of lower risk that require further investigation.

The Proposed Regional Plan for Discharges to Land for the Wellington Region identifies landfills as one of the priority categories of potentially contaminated sites with an attendant high priority for investigation and action.

The objective of this report is to provide a single resource outlining the state of all the identified landfills in the Wellington Region in 1998. This should aid in identification of high risk sites and the allocation of resources for further study into specific sites.

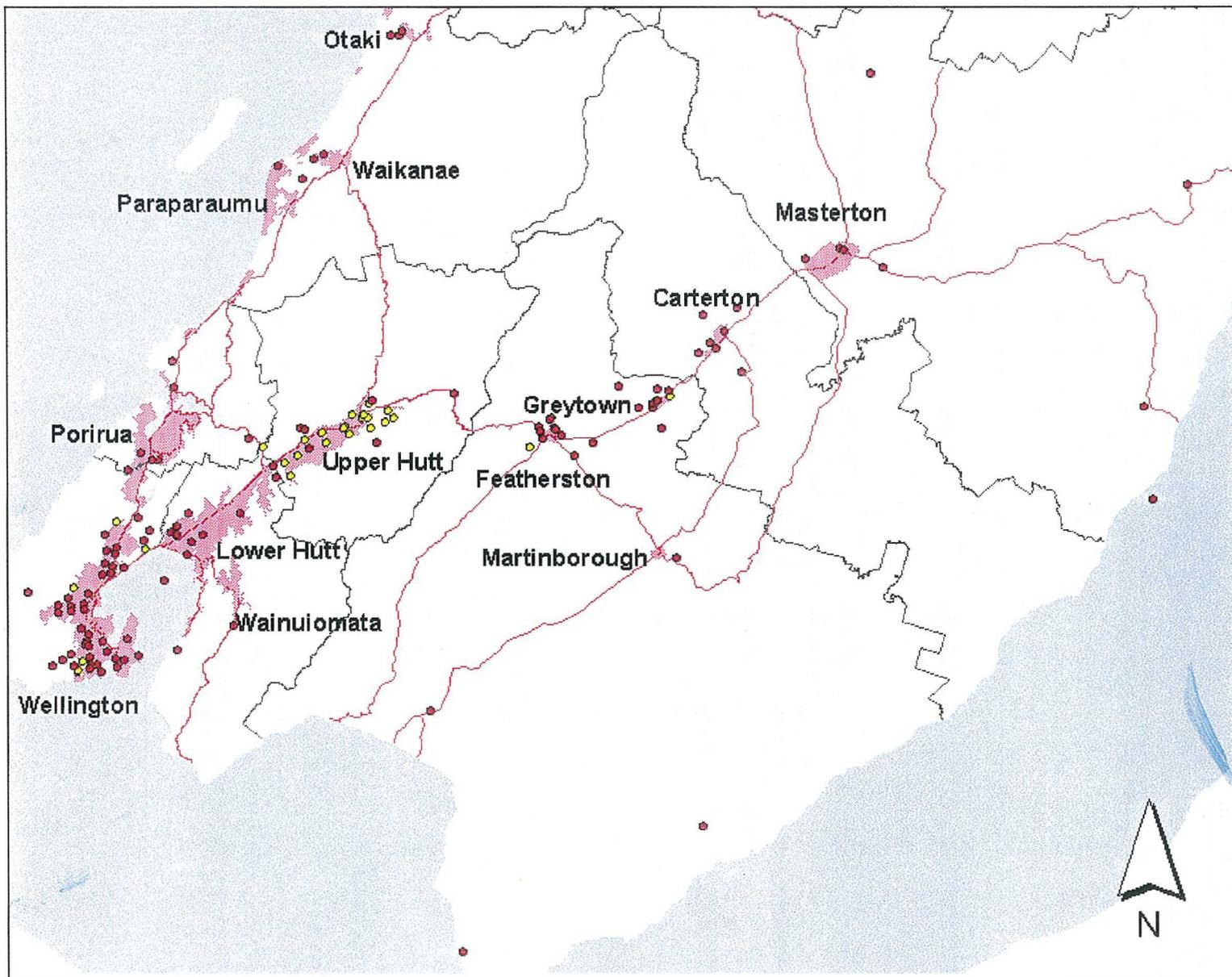
The intention of this report is not to provide in-depth information on each site, but rather to summarise available information and point to more comprehensive sources where they are available. The report also recommends further action in relation to specific sites, where appropriate, and the issue of closed landfills in general.

The map overleaf shows the landfill sites addressed in this report.

1.2 Objectives

- (1) To provide a summary of information available to the Regional Council about each known landfill in the Wellington Region.
- (2) To recommend a programme for assessing higher priority closed landfill sites in the Wellington Region.

Landfills in the Wellington Region



Legend

- Landfill
- Cleanfill
- Main Road
- District Boundary

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2. Methodology

2.1 Outline

The intention of this report was to compile sufficient information about landfill sites in the Region, and to enable the use of a simple comparative risk assessment to prioritise sites for further action.

Where sites had already been investigated, the available information was summarised and a risk ranking determined. Where there was little or no information available about a site, data will be obtained to meet the minimum requirements for calculating a risk ranking.

2.2 Minimum Data Requirements

The minimum requirements for risk assessment were:

- Site location (street address, map reference).
- Site history ([likely] fill contents, [likely] fill volume, last year of operation).
- Potential pathways for release of contaminants (groundwater, rivers/stream, stormwater, discharge to air).
- Potentially effected receptors (the general public, site users/occupants, rivers/streams, drinking water).

2.3 Risk Assessment

The comparative risk assessment process considered three aspects in determining a risk rating for both potential leachate impacts (groundwater and surface water) and impacts of potential discharges to air. These were:

- (1) The waste type(s) (domestic refuse, industrial/commercial waste, cleanfill, and landfill gas).
- (2) The pathways (discharge to ground water or surface water, discharge to air).
- (3) The receptors (aquatic ecosystems, water usage, potential gas collection points).

It should be noted that the results of this assessment are used for comparative purposes only. A site that is ranked as comparatively high priority in this exercise may be considered low priority in comparison with a different group of sites. Conversely a comparatively low priority site in this exercise may be considered high priority in a different context.

2.3.1 Leachate Impacts

Leachate impacts were assessed by considering water quality results (where available) and the use and values of that water. In the absence of water quality results, it is assumed that there is a discharge to the receiving environment and the risk ranking is determined on this basis.

Where figures indicating levels of contaminants in water were available, they were compared with the Australian and New Zealand Environmental Conservation Council (ANZECC) guideline criteria for the protection of aquatic ecosystems and stock watering.

In most cases the ANZECC guideline figures are presented as a concentration threshold over which adverse effects are presumed to occur. There are two exceptions to this:

- (1) pH - pH should be in the range 6.5 to 8.0.
- (2) Suspended solids - the change in suspended solids attributable to the discharge in question should be no greater than 10 percent.

2.3.2 Landfill Gas

No landfill gas monitoring was carried out as part of this investigation. A simple model equation based on the contents of the fill site, quantity of refuse, and age of the site was used to provide an estimate of gas production. This figure was used to provide an indication as to whether a contaminant was present.

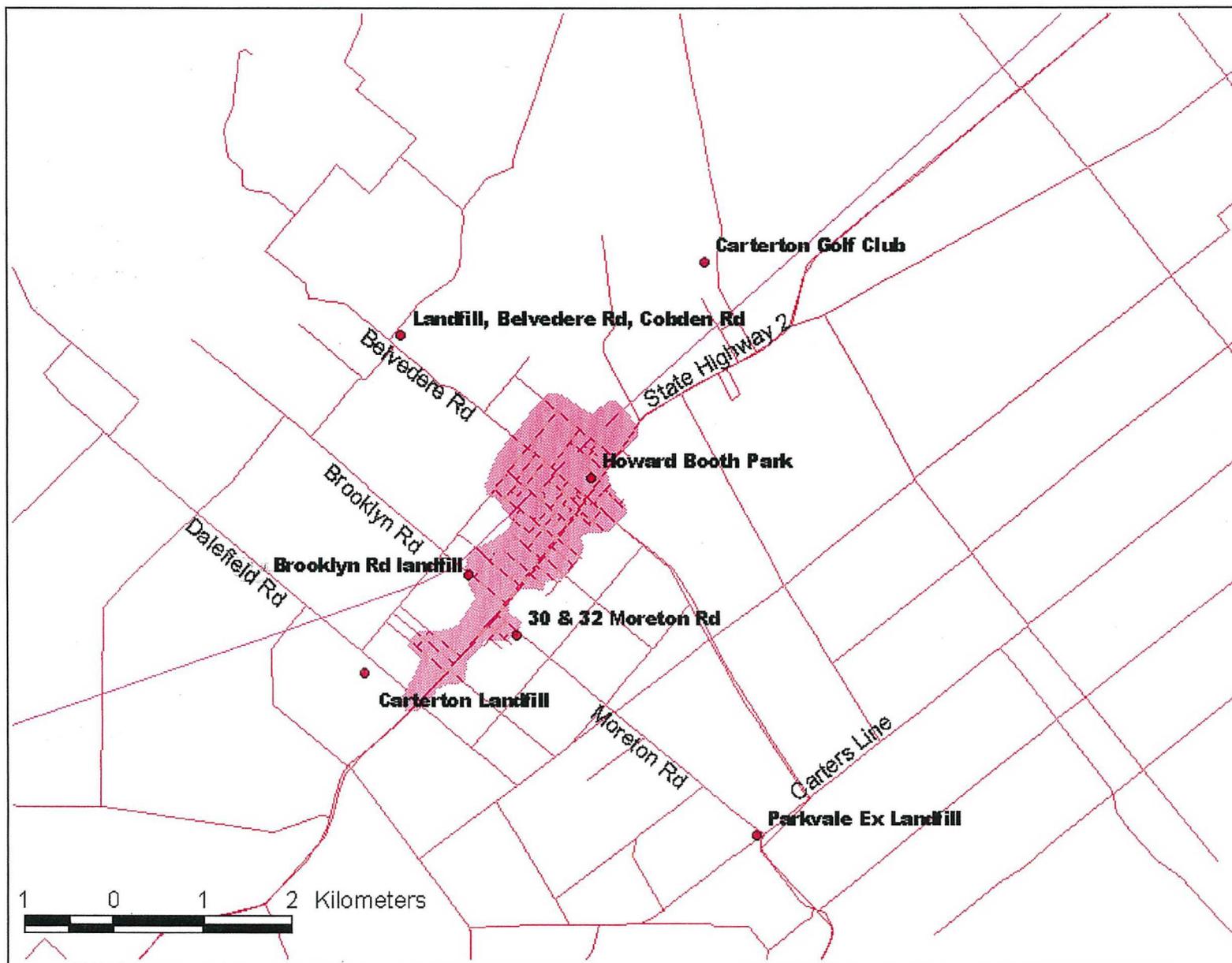
Consideration of the location of the site in relation to receptors and the potential for migration of landfill gas completed the process.

Carterton Landfills

Landfills in the Wellington Region



Carterton Landfills



Legend

- Landfill
- Cleanfill
- ~ Railway
- ~ Main Road
- ~ LGB

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3. Carterton Landfills

3.1 Howard Booth Park

3.1.1 Summary Information

Location:	Howard Booth Park	Last Used:	1940s
Access:	Belvedere Road	Map Reference:	2722723 6017501
Nearby Town:	Carterton	Survey Date:	26 November 1997
Fill Contents:	General refuse	File Number:	K/9/7/27

3.1.2 General Description

This is a small site located in the centre of a block bounded by Belvedere Road, Taverner, Kent and Wyndham Streets. The site is currently used for grazing stock and playing fields. Surrounding site use is predominantly residential with a kindergarten located at the southern corner of the playing fields. The site is owned and maintained by the Carterton District Council.

The site was an old gravel pit that was used for the disposal of various types of refuse, possibly including an old traction engine. Information on Regional Council files indicates the site was last used in the 1940s.

It appears that the fill area (gravel pit) was along the boundary between the playing fields and the grazing area based on subsidence in this part of the park. Despite the fact that the site is close to the Carterton Gasworks site, notes on file indicate it is unlikely that there was significant quantities of gasworks waste disposed of here.

The surrounding topography is relatively flat, and there are no surface water bodies within the site. The most likely pathway for discharge of contaminants is a discharge to groundwater. There are no recorded groundwater bores within 500 m of the site.

Because of the close proximity of residential properties, there is a risk with respect to migration and subsequent build-up of landfill gas. However, given the age and size of the site, the potential for generation of significant quantities of gas is considered to be low.

3.1.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

3.1.4 Howard Booth Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			x
Quantity	Low	Low	Very low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	x
Agricultural		Dermal absorption	x
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Carterton groundwater			

3.2 30 and 32 Moreton Road

3.2.1 Location Information

Location:	30/32 Moreton Road	Last Used:	
Access:	Moreton Road	Map Reference:	2721891 6015785
Nearby Town:	Carterton	Survey Date:	
Fill Contents:	Cleanfill, demolition fill	File Number:	K/9/7/28

3.2.2 General Description

The site is located on the south-western side of Moreton Road, Carterton between High Street and Rutland Road. Both properties are currently used for residential purposes. Surrounding site use is residential and agricultural. One site is privately owned and maintained, 32 Moreton Road is owned and maintained by the Carterton District Council.

The sites were used for the disposal of cleanfill and some demolition fill. The fill area at 32 Moreton Road apparently received demolition fill from an old concrete high school.

The surrounding topography is relatively flat and there are no surface water bodies within the site. The most likely pathway for discharge of contaminants is to groundwater. There are two consented groundwater bores within 500 m of the site, located to the south-east.

Since the site was used for the disposal of cleanfill and demolition only, landfill gas is not considered an issue for this site.

3.2.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

3.2.4 **Moreton Road: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Very low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A
Potentially Affected Resource			
Carterton groundwater			

3.3 Carterton Golf Club

3.3.1 Location Information

Location:	Carterton Golf Club	Last Used:	1960s
Access:	Chester Road	Map Reference:	2724000 6019900
Nearby Town:	Carterton	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/7/25

3.3.2 General Description

This site is located on the southern side of the entrance to the Carterton Golf Club on Chester Road. The site is currently used for grazing. Surrounding site use is predominantly grazing with the Golf Club located to the west. The site is owned and maintained by the Carterton Golf Club.

The site was an old gravel pit that was filled with rubbish (mainly cleanfill and vegetation) from the 1920 to 1960s.

The topography in the area is flat to rolling and there are no surface water bodies within the site. The most likely pathway for discharge of contaminants is a discharge to groundwater. There are no consented groundwater bores within 500 m of the site.

Given the indications that site was used predominantly for the disposal of cleanfill, landfill gas is not considered an issue for this site.

3.3.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

3.3.4 **Carterton Golf Club: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential Quantity	Low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A
Potentially Affected Resource			
Carterton groundwater			

3.4 **Carterton Landfill**

3.4.1 **Location Information**

Location:	Carterton Landfill	Last Used:	Operational
Access:	Dalefield Road	Map Reference:	2720191 6015363
Nearby Town:	Carterton	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/7/24

3.4.2 **General Description**

The Carterton landfill is located south of Carterton on Dalefield Road adjacent to the sewage treatment facility. Current site use is for utility services (landfill and sewage treatment), surrounding land use is agricultural. The site is owned and maintained by the Carterton District Council.

The site has been in operation since the 1950s and received an upgrade in 1991.

The site was used in the 1960s to incinerate the town's refuse. Now the Carterton District Council is reworking old fill which consists of burnt material/ashes and cover material.

Surrounding topography is flat to rolling, with the nearest surface water body being Mangatarere Stream to the west and south.

The site is surrounded by agricultural and utility services land use (sewage treatment plant) and therefore risks due to landfill gas migration are considered low.

3.4.3 **Sampling Results**

Sampling results for this site are held on the relevant consents files at the Wellington Regional Council's Wairarapa office (WAR 940047).

3.4.4 Carterton Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Carterton groundwater			

3.5 Parkvale Ex Landfill

3.5.1 Location Information

Location:	Moreton Road	Last Used:	1989
Access:	Moreton Road	Map Reference:	2724546 6013562
Nearby Town:	Carterton	Survey Date:	November 1997
Fill Contents:	General refuse	File Number:	K/9/7/23

3.5.2 General Description

The ex Parkvale Landfill is located on the south-west corner of Moreton Road and Para Road to the south-east of Carterton. It is currently used for stock grazing, surrounding land use is agricultural with the Parkvale hall located to the north-east across Moreton Road. The site is currently owned by the Carterton District Council and used for grazing.

The site was used as a rural landfill and was at one stage the main landfill for the South Wairarapa County Council. The ground surface is generally uneven, and pieces of discarded metal can be seen breaking through the capping material in places.

Surrounding topography is flat to rolling, Parkvale Stream runs approximately 300 m to the west of the site. There is a drain running along the Para Road boundary of the site that also receives run-off from the nearby Parkvale mushroom factory. There are no consented groundwater bores within 500 m of the site.

The two most likely pathways for discharge of leachate from this site are groundwater and the drain noted above. No visual indicators of a discharge into the drain were noted at the time of inspection and the lack of groundwater use in the area mean that this site is considered low priority with respect to leachate impacts.

Given the size of the site, the potential for landfill gas generation is considered low. The Parkvale Hall is a potential collection point for landfill gas, but given the likely volume generated and the fact that the landfill cap has been broken at several points, this site is considered low priority with respect to landfill gas impacts.

3.5.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

3.5.4 Parkvale Ex Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial	x	< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resources			
Parkvale Stream			
Parkvale groundwater			

3.6 Brooklyn Road Landfill

3.6.1 Location Information

Location:	BMX Track, Brooklyn Road	Last Used:	1965
Access:	Brooklyn Road	Map Reference:	2721350 6016450
Nearby Town:	Carterton	Survey Date:	6 January 1997
Fill Contents:	General refuse	File Number:	K/9/7/22

3.6.2 General Description

This site is located on the north-east side of Brooklyn Road around Dudson Place. It has been divided into three distinct parts:

- (1) Dudson Place - pensioner flats.
- (2) BMX track.
- (3) Paddock

Current land uses are residential, recreational and agricultural. Surrounding land is agricultural and residential. The site is both publicly and privately owned.

The site was operated through the early 1960s up to 1965 and received general domestic refuse. It was redeveloped as noted above. The pensioner flats have 500 mm piles into a compacted surface and have had no reported stability problems.

The general topography in the area slopes gently to the south while the site slopes to the north. There are no surface water bodies within the site, but a drain runs along the nearby railway line. The most likely discharge pathway from this site is to groundwater. There is one consented groundwater bore within 500 m of this site located to the north-east.

The most likely discharge of leachate is to groundwater which is likely to flow in a south or south-west direction. Based on this flow direction, the noted groundwater bore is up-gradient of the landfill site. Given the age and size of site, landfill gas generation is expected to low. The location of the pensioner flats on the fill means there is some potential for build-up of gas depending on their construction. Accordingly this site is considered medium priority for further action with respect to landfill gas impacts.

3.6.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

3.6.4 Brooklyn Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Medium
Potentially Affected Resource			
Carterton groundwater			

3.7 Landfill, Belvedere Road, Cobden Road

3.7.1 Location Information

Location:	Belvedere/Cobden Roads Corner	Last Used:	1960s
Access:	Belvedere Road	Map Reference:	2720600 6019088
Nearby Town:	Carterton	Survey Date:	
Fill Contents:	Car bodies, tree stumps	File Number:	K/9/7/21

3.7.2 General Description

This site is located on the western corner of Belvedere Road and Cobden Road, Carterton. It is currently used for grazing purposes, surrounding land use is agricultural. The site is currently privately owned and maintained.

The site was owned by the predecessor of the Carterton District Council and was filled with rubbish from the 1920s to 1960s. Material disposed of here included car bodies and tree stumps, but no domestic rubbish.

The site is located on flat to gently rolling country with a gradual slope to the south. The Mangatarere Stream flows under Belvedere Road approximately 1 km to the south-east of the site. There are no consented groundwater bores within 500 m of the site.

The most likely discharge of leachate from this site is to groundwater, the lack of identified groundwater bores in the area means this site is considered relatively low priority for further action with respect to leachate impacts. Given the fact that the site received predominantly inorganic refuse, landfill gas impacts are not considered an issue for this site.

3.7.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

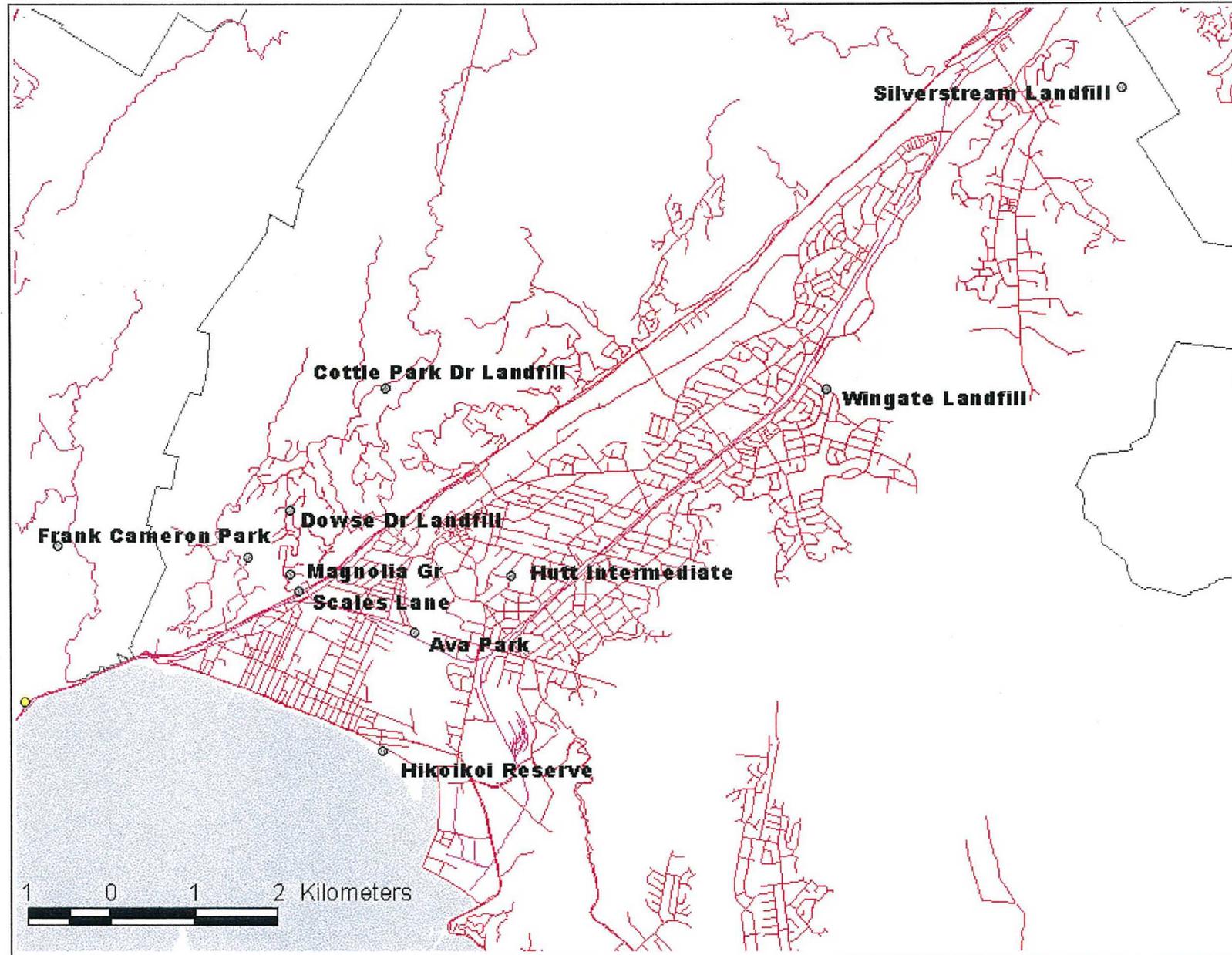
3.7.4 Belvedere Road/Cobden Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A
Potentially Affected Resource			
Carterton groundwater			

Lower Hutt Landfills

Landfills in the Wellington Region

Lower Hutt Landfills



Legend

- Landfill
- Cleanfill
- Railway
- Main Road
- LGB

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4. Lower Hutt Landfills

4.1 Wainuiomata Landfill

4.1.1 Location Information

Location:	5 km south of Wainuiomata	Last Used:	Operational, 1965, 1979
Access:	Coast Road	Map Reference:	2673200 5988200
Nearby Town:	Wainuiomata	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/3/113

4.1.2 General Description

The Wainuiomata Landfill is located on the western side of Coast Road, approximately 4 km south of Wainuiomata. Current land use is a mix of recreational, forestry and landfilling, surrounding land use includes recreational and forestry. The site is owned and maintained by the Hutt City Council, parts of the site are used by a local pony club.

There have been three distinct stages of landfill operation:

- (1) The current landfill is the southern most of the sites, operations commenced in 1979. A water right permit was granted to discharge tip leachate into a drainage channel which then discharges into the Wainuiomata River (WGN 780012, WGN 950052). Stormwater from the site is treated by a gravel filter before discharge.
- (2) The second tip was opened in 1965 approximately 300m south of the old tip in a gully. This tip was covered in 1979 and the present tip was opened immediately adjacent to it.
- (3) The first tip (the oldest) was opened in 1959 and was capped off in 1965, it now is the site of a Recreation Reserve and a pony club.

A Hutt City Council report assessed landfill gas risk as moderate to minimal, surface water risk as moderate to high and groundwater risk as moderate.

Maintec (a Hutt City Council trading enterprise) gained a resource consent in November 1997 to place fill containing some bitumen into areas that have subsided on the part of the site used by the Pony Club.

There are discharges of leachate with significant iron staining attributable to both the original and the current sites. In both situations, leachate enters tributary drains that flow into the Wainuiomata River. Sampling results for the site indicate elevated levels of several parameters including iron, manganese, copper and zinc at the outlet from the silt pond for the current landfill and the leachate discharge from the old site.

Landfills in the Wellington Region

The old landfill sites are considered relatively high priority because of potential discharge of leachate. The operational site is considered relatively low priority with respect to the discharge of leachate due to the controls involved in the resource consent process.

While the estimated landfill gas production from all of the sites is high, the lack of potential gas collection points mean that they are both considered relatively low priority with respect to the discharge of landfill gas.

4.1.3 Sampling Results

See the Wellington Regional Council Qualarc Database for results, samples WGN 00 585,586, 594. The results can be summarised as follows:

ID	Description
Y1	New Landfill leachate (WGN 000584)
Y2	Outlet from silt pond (WGN 000585)
Y3	Old landfill leachate (WGN 000586)
Y4	Old landfill leachate (WGN 000594)

Test		Y1	Y2	Y3	Y4	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	N/A	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	66.09	51.65	26.27	22.4	-	-
Conductivity	µS/cm	N/A	N/A	N/A	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	87	79.43	71.47	41.6	-	700
pH		6.43	6.88	6.62	6.77	7.0	7.0
Suspended Solids	g/m ³	41.44	60.32	38.22	26.2	10%	10%
Total Iron	g/m ³	16.60	5.47	29.62	13.2	0.5	1.0
Total Manganese	g/m ³	3.10	1.95	2.32	1.51	-	2.0
Alkalinity	g/m ³	427.19	186.56	187.26	148	-	-
Sodium	g/m ³	65.35	49.11	48.31	31.7	-	300
Total Cadmium	g/m ³	0.00	0.00	0.00	<0.01	0.0002	0.01
Total Chromium	g/m ³	0.00	0.00	0.00	<0.05	0.01	1.00
Total Copper	g/m ³	0.00	0.00	0.00	0.01	0.002	0.2
Total Lead	g/m ³	0.00	0.00	0.00	<0.10	0.001	0.2
Total Nickel	g/m ³	0.00	0.00	0.00	<0.05	0.015	0.2
Potassium	g/m ³	24.47	14.44	14.91	6.9	-	-
Total Zinc	g/m ³	0.06	0.01	0.02	0.12	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

4.1.4 **Wainuiomata Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	High	High	Very low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user		x	
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
		x	
Site Priority Ranking			Low
Potentially Affected Resource			
Wainuiomata River			

4.1.5 Old Wainuiomata Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	High	High	Very low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low
Potentially Affected Resource			
Wainuiomata River			

4.2 Frank Cameron Park

4.2.1 Location Information

Location:	Frank Cameron Park	Last Used:	1972
Access:	London Road,	Map Reference:	2667100 5997600
Nearby Town:	Korokoro/Petone	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/3/145

4.2.2 General Description

This site is located on the eastern side of London Road, Korokoro and is known as Frank Cameron Park. It is currently used as a recreation reserve. Surrounding land uses are recreational and residential. The site is currently owned by the Hutt City Council.

The landfill was owned by the Petone Borough Council, who contracted Cameron Carrying Company to operate the site. Operations commenced in 1964 and ceased in 1972 when the site was redeveloped into a recreation reserve.

The site is directly above Percy's Reserve and there is some evidence of a discharge of leachate into the stream flowing through the reserve. Drums and leachate are visible at the toe of the fill.

A report prepared for the Hutt City Council by Woodward Clyde assigned a landfill gas risk rating of moderate to high, risk to surface water as moderate to high, and risk to groundwater as moderate. Recommendations included work on dealing with the visual problem caused by leachate discharge into Percy's Reserve.

Surrounding topography is steep with both surface water and groundwater flowing in a south-east direction towards Hutt Road. There are no recorded groundwater bores within 500 m of the site.

The most likely pathway for leachate discharges is a tributary of the stream that flows through Percy's Reserve. This was confirmed by the results of sampling carried out in this stream on 23 June 1998. Levels of iron, conductivity, and ammoniacal nitrogen exceeded ANZECC aquatic ecosystems and stock watering criteria. pH was also noted as higher than is normal, this could be due to the presence of alkaline contaminants such as detergents in the leachate.

Given the age and size of the site, the landfill gas generation potential is considered high. The fill area is bordered by houses to the east and there are residential properties on the western side of London Road/Akatea Road to the west of the site. The combination of potential for gas generation and residential receptors within 300 m of the site means it is considered high priority for further action with respect to landfill gas impacts.

4.2.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
D1	Stream above Dam, Percy's Reserve (WGN 000588)
FC1	By seepage at base of fill
FC2	By Seepage at base of fill (check sample)
FC3	Where stream enters dam

Test		FC1	FC2	FC3	D1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	<u>5.0</u>	<u>4.9</u>	<u>1.6</u>	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	67	68	850	11.8	-	-
Conductivity	µS/cm	<u>1580</u>	<u>1580</u>	902	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	95	94	70	50.53	-	700
pH		<u>8.0</u>	<u>8.0</u>	7.3	7.42	7.0	7.0
Suspended Solids	g/m ³	610	370	160	4.5	10%	10%
Total Iron	g/m ³	<u>1.6</u>	<u>17</u>	<u>31.0</u>	<u>0.966</u>	0.5	1.0
Total Manganese	g/m ³	0.25	0.52	0.55	0.03	-	2.0
Alkalinity	g/m ³	-	-	-	54.52	-	-
Sodium	g/m ³	-	-	-	36.89	-	300
Total Cadmium	g/m ³	-	-	-	<0.01	0.0002	0.01
Total Chromium	g/m ³	-	-	-	<0.05	0.01	1.00
Total Copper	g/m ³	-	-	-	<u>0.01</u>	0.002	0.2
Total Lead	g/m ³	-	-	-	<0.10	0.001	0.2
Total Nickel	g/m ³	-	-	-	<0.05	0.015	0.2
Potassium	g/m ³	-	-	-	1.94	-	-
Total Zinc	g/m ³	-	-	-	<u>0.03</u>	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

4.2.4 Frank Cameron Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	High	High	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			High
Potentially Affected Resource			
Percy's Reserve			

4.3 Ava Park

4.3.1 Location Information

Location:	Ava Park	Last Used:	1940s (?)
Access:	Wakefield Street	Map Reference:	2669091 5996703
Nearby Town:	Lower Hutt	Survey Date:	9 February 1998
Fill Contents:	Commercial Refuse	File Number:	K/9/3/151

4.3.2 General Description

Ava Park is located at the eastern end of Wakefield Street Petone. Current site use is for general open space/recreation. It is bounded by the Hutt River to the west, the Wellington Wairarapa Railway to the south, and recreational and residential areas to the north and west. The site is owned by the Wellington Regional Council and extends approximately 250 m along the Hutt River.

The site was operated during the 1940s when a local resident obtained permission to fill in an old arm of the Hutt River. It is thought that the operation accepted predominantly commercial refuse such as manufacturing waste and builders sawdust. Refuse was regularly burned (Hutt City Council 1997).

The Hutt River is eroding the eastern edge of the reserve area revealing some evidence of cleanfill and demolition fill such as iron sheeting and bricks. There are two stormwater pipes under the fill area, neither of which show any evidence of a discharge of leachate.

A Hutt City Council report assesses landfill gas risk as moderate, leachate to surface water risk as moderate to minimal, and risk to groundwater as minimal. (Hutt City Council 1997)

Surrounding topography is flat with the predominant feature being the Hutt River bounding the western side of the site. Any discharge of leachate is likely to be to the Hutt River, either directly or via groundwater. In the absence of identified discharges of leachate to the Hutt River, the site is considered relatively low priority with respect to leachate impacts.

Given the age and size of the site, the landfill gas generation potential is considered low. There are residential properties to the west of the site. The combination of potential low quantities of gas and residential receptors within 300 m of the site means it is considered medium priority for further action with respect to landfill gas.

4.3.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

4.3.4 **Ava Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			x
Quantity	Medium/high	Medium/high	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resources			
Hutt River			
Shallow groundwater			

4.4 Hikoikoi Reserve

4.4.1 Location Information

Location:	Hikoikoi Reserve	Last Used:	1964
Access:	Marine Parade	Map Reference:	2668700 5995300
Nearby Town:	Petone	Survey Date:	
Fill Contents:	General Refuse, industrial waste	File Number:	K/9/3/148

4.4.2 General Description

Hikoikoi Reserve is located on the western side of the mouth of the Hutt River, and is accessed of Marine Parade, Petone. Current site use is recreational, surrounding land uses are recreational and industrial commercial. The site is owned and maintained by the Hutt City Council.

This was the main disposal site for the Petone Borough Council, and it is estimated to have been in use from 1910 to 1964. All types of refuse were accepted at the landfill; there is anecdotal evidence that US Army supplies (jeeps, etc.) may have been dumped in the area when the Americans vacated their base at the ex Ford factory on Seaview Road, although it is possible that this would have occurred on the eastern side of the river. Burning of refuse occurred regularly.

The site currently contains a shingle quarry (reclaiming shingle from the Hutt River Mouth) with buildings comprising workshop, office and shed; scout hall and reserve area; and a house. The extent of the landfill is not fully documented, although an old plan indicates that it may extend on an angle west of the current road access, past a shelter belt of tall trees. Anecdotal evidence indicates that the fill may extend as far as Fulton Hogan's yard on Marine Parade.

A Hutt City Council report assessed landfill gas risk as moderate, surface water risk as moderate to low and groundwater risk as minimal. (Hutt City Council 1997.)

Surrounding topography is flat with the predominant feature being the Hutt River mouth. Any discharge is likely to be to the Hutt River or Wellington Harbour either directly or via groundwater. There are several recorded groundwater bores within 500 m of the site, most are to the north or north-east, up-gradient of the fill area.

This site is considered relatively low priority with regards to leachate.

Potential landfill gas generation was estimated to be medium. There are several recreational and commercial/industrial buildings on the site and across Marine Parade to the north, these are potential gas collection points. This site is considered medium priority with respect to landfill gas.

4.4.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

4.4.4 Hikoikoi Reserve: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			x
Quantity	Medium/high	Medium/high	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium
Potentially Affected Resources			
Hutt River			
Wellington Harbour			

4.5 Hutt Intermediate

4.5.1 Location Information

Location:	Hutt Intermediate	Last Used:	Unknown
Access:	Kauri Street	Map Reference:	2670241 5997377
Nearby Town:	Lower Hutt	Survey Date:	
Fill Contents:	Unknown	File Number:	

4.5.2 General Description

While our files note that this site was a landfill, no further information is available.

4.5.3 Hutt Intermediate: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A
Potentially Affected Resource			
Shallow groundwater			

4.6 Cottle Park Drive Landfill

4.6.1 Location Information

Location:	Cottle Park Drive	Last Used:	1990s
Access:	Cottle Park Drive	Map Reference:	2668747 5999584
Nearby Town:	Lower Hutt	Survey Date:	
Fill Contents:		File Number:	K/9/3/150

4.6.2 General Description

This site is off Cottle Park Drive which links to Belmont Road. New homes were built on this area. Inquiries to Hutt City Council and a search of their files found no further information on filling activity in this area.

The legal description and owner's details have been determined from the map reference only. The area of landfill possibly extends over this section to adjoining sections.

4.6.3 Cottle Park Drive: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Very low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A
Potentially Affected Resource			
Korokoro Stream - Upper reaches			

4.7 Somes Island

4.7.1 Location Information

Location:	Somes Island	Last Used:	1990s
Access:	By boat	Map Reference:	2666300 5992700
Nearby Town:	Eastbourne	Survey Date:	7 January 1998
Fill Contents:	Quarantine waste, general refuse	File Number:	K/9/5/119

4.7.2 General Description

Somes Island is currently administered by the Department of Conservation (DOC) and is accessible by private vessels or the East by West ferry operation. DOC is planning to develop the island as a sanctuary similar to Kapiti and Mana Islands, but with greater public access.

The landfill is located at the southern end of the island in a valley to the north-east of the lighthouse. In high rainfall a stream flows through this valley and into a small bay. The overflow from the oxidation ponds also runs through this valley. The bay is a nesting spot for blue penguins.

Prior to being taken over by DOC, the island was used by the Ministry of Agriculture and Fisheries (MAF) as a quarantine station. Until the early 1990s, the landfill was used by MAF to dispose of waste material that could not be treated in the Island's oxidation ponds.

Potential contents of the fill include out of date animal remedies, destroyed animals, ash from the quarantine station incinerator, and general refuse.

Surrounding topography is steep to rolling, the valley where the fill is located has a catchment area of about 2 ha. Any leachate is likely to discharge into the small bay at the base of the fill area. The sample results taken from the stream below the fill do not indicate a significant discharge of leachate from the site. This site is considered relatively low priority with respect to leachate.

Given the size and location of this site, it was considered low priority with respect to landfill gas.

4.7.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
Somes Island	Stream below lighthouse (WGN 98 00284)

Landfills in the Wellington Region

Test		Somes Island	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	33.0	-	-
Conductivity	μS/cm	793	1500.00	1500.00
Dissolved Chloride	g/m ³	180	-	700
pH		7.7	7.0	7.0
Suspended Solids	g/m ³	14	10%	10%
Total Iron	g/m ³	0.32	0.5	1.0
Total Manganese	g/m ³	0.05	-	2.0
Alkalinity	g/m ³	N/A	-	-
Sodium	g/m ³	N/A	-	300
Total Cadmium	g/m ³	N/A	0.0002	0.01
Total Chromium	g/m ³	N/A	0.01	1.00
Total Copper	g/m ³	N/A	0.002	0.2
Total Lead	g/m ³	N/A	0.001	0.2
Total Nickel	g/m ³	N/A	0.015	0.2
Potassium	g/m ³	N/A	-	-
Total Zinc	g/m ³	N/A	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

4.7.4 Somes Island: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed		x	
Potential			
Quantity	Nil	Very low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Wellington Harbour			
Somes Island			

4.8 Wingate Landfill

4.8.1 Location Information

Location:	Wingate Park	Last Used:	1972
Access:	Page Grove	Map Reference:	2674858 5998936
Nearby Town:	Taita	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/3/61

4.8.2 General Description

The Wingate landfill is located at the end of Page Grove, Wingate. The site is zoned as reserve but not used for this purpose. Surrounding land uses are recreational and industrial/commercial, the site is owned by the Hutt City Council and currently maintained by Dixon and Dunlop Ltd.

The landfill has two main areas:

Southern Area: Operated between 1956 and 1962, receiving all classes of waste. The site was subsequently rezoned as reserve but has not been used for this purpose. This area is only accessible using the landfill access road, which is fenced and has a locked gate. Filling (cleanfill) recommenced in 1997, under the operation of Valley Landfills Ltd (Dixon and Dunlop Ltd)

Northern Area: Operated 1962-72 (all refuse); 1991-97 (cleanfill). Cleanfill operations were undertaken by Valley Landfills Ltd under contract to Hutt City Council. A geotechnical report and management plan were produced for the cleanfilling operation. Filling at this site has now ceased and capping is in progress. A completion report is due to be filed with the Council by the operator.

The landfill gas risk rating was assessed in a Hutt City Council report as moderate to minimal, surface water risk as moderate to high and groundwater risk as moderate.

The site is at the base of the Eastern Hutt hills, discharge of leachate is likely to be both via the Hutt City Council stormwater system and to groundwater. Stormwater from the area is likely to discharge into the Hutt River upstream of Kennedy Good Bridge. Sampling of the stormwater has indicated elevated levels of iron and zinc, this result is supported by iron staining in areas of the stormwater drainage system.

Groundwater in the area is likely to contribute to the main Hutt aquifer system which is unconfined in this part of the valley. This resource is utilised for water supply with supply wells located at Waterloo and Petone.

On the basis of potential risks to both groundwater and surface water, this site is considered high priority with respect to leachate.

On the basis of the size and age of the site, the potential for landfill gas generation is estimated to be medium. There are commercial/industrial structures or residential dwellings within 300 m of the site that could potentially act as gas collection points. This site is considered relatively low priority with respect to landfill gas.

4.8.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
WG1	Drain in Wingate Park (WGN 000587)

Test		WG1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	61.08	-	-
Conductivity	μS/cm	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	91.64	-	700
pH		7.57	7.0	7.0
Suspended Solids	g/m ³	376.63	10%	10%
Total Iron	g/m ³	<u>18.31</u>	0.5	1.0
Total Manganese	g/m ³	0.91	-	2.0
Alkalinity	g/m ³	285	-	-
Sodium	g/m ³	69.52	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.015	0.2
Potassium	g/m ³	25.37	-	-
Total Zinc	g/m ³	0.09	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

4.8.4 Wingate Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	High	High	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user	x	Groundwater	x
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Hutt City Council stormwater system			

4.9 Eastbourne Landfill

4.9.1 Location Information

Location:		Last Used:	1992
Access:	Muritai Road	Map Reference:	2667622 5985842
Nearby Town:	Eastbourne	Survey Date:	Oct 1996 to Aug 1997
Fill Contents:	General refuse	File Number:	K/9/3/4

4.9.2 General Description

Eastbourne Landfill is located on privately owned land to the south and inland of Eastbourne. The surrounding and current land use is agricultural. The site is privately owned, but Hutt City Council is currently involved in some rehabilitation work.

The landfill served the Eastbourne area from possibly as early as 1923 until 1992. The site is believed to have received only domestic refuse and cleanfill from the mainly residential area of Eastbourne. However, it is close to the Seaview industrial area it is possible that some industrial waste was deposited here.

A tributary to Gollans Stream is diverted around the landfill and flows through a swamp before joining Gollans Stream approximately 1 km below the fill. Gollans stream then flows to the coast discharging to the sea between the Eastbourne and Wainuiomata access points. Landfill leachate discharges are noticeable to the swamp area at the base of the fill.

Landfill gas risk has been assessed as minimal to moderate, risk to surface water as moderate to high and risk to groundwater as moderate to low. (Hutt City Council 1997.)

The surrounding topography is steep to rolling hill country. This area is drained by several small tributaries to Gollans Stream. There are several swamp areas including the one at the base of the fill.

Sampling results indicate levels of selected metals exceeding ANZECC aquatic ecosystems and stock watering criteria in the swamp, and to a lesser extent, 400 m below the fill area. However, given the sensitive nature of Gollans Stream this site is considered high priority for further action with respect to the leachate discharge.

On the basis of the size and age of the site, the potential for landfill gas generation is estimated to be high. However, in the absence of any potential gas collection points in the vicinity of the fill area, this site is considered to have a relatively low priority with respect to landfill gas.

Landfills in the Wellington Region

4.9.3 **Sampling Results**

ID	Description
ES1	In stream above landfill
ES2	In swamp at the base of the landfill
ES3	40 m downstream of landfill

		ES1	ES2	ES3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	12.71	90.15	18.71	-	-
Conductivity	µS/cm	415.7	557.71	428.43	1500.00	1500.00
Dissolved Chloride	g/m ³	95.00	94.43	83.86	-	700
pH	pH	7.3	5.9	7.2	7.0	7.0
Suspended Solids	g/m ³	4.00	450.71	22.20	10%	10%
Total Iron	g/m ³	0.29	128.71	1.36	0.5	1.0
Total Manganese	g/m ³	0.07	5.37	0.14	-	2.0
Alkalinity	g/m ³	26.00	107.57	56.29	-	-
Sodium	g/m ³	55.29	55.14	55.00	-	300
Total Cadmium	g/m ³	0.00	0.00	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.00	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.00	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.00	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.00	0.00	0.015	0.2
Potassium	g/m ³	2.34	4.76	2.07	-	-
Total Zinc	g/m ³	0.00	0.07	0.00	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

4.9.4 Eastbourne Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			x
Quantity	High	High	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	x
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low
Potentially Affected Resource			
Gollans Stream			

4.10 Dowse Drive/Scales Lane Landfill

4.10.1 Location Information

Location:	Dowse Drive, Magnolia Grove, Maungaraki	Last Used:	1956
Access:	Dowse Drive	Map Reference:	2667600 5998150
Nearby Town:	Lower Hutt	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/3/146

4.10.2 General Description

This site is located at the base of the Hutt Hills and is bounded by Dowse Drive and Magnolia Grove. It is currently used for a mix of recreational and residential purposes. Surrounding land use is residential. Hutt City Council is responsible for the Magnolia Grove Road Reserve and the Recreation Reserve on the corner of Dowse Drive and Magnolia Grove. The remainder of the site is privately owned. Scales Lane was at the base of Maungaraki.

The site was operated by the Hutt City Council from 1947 and 1956 receiving industrial and domestic refuse. It is thought that Scales Lane originally extended past the site now occupied by Foundation Techniques and possibly along the route of the driveway at 2 Dowse Drive. After closure it was capped and used in the first stage of the Maungaraki Residential Development undertaken by the Lower Hutt City Council.

Subsidence is the only known problem at this tip - there are no complaints on record regarding leachate or gas emissions.

The council developed the landfill area, with approximately 14 properties affected. This area was investigated with respect to stability by Brickell Moss and Partners in 1964. There have been ongoing problems for roading and infrastructure in the area. The council has implemented a quarterly settlement monitoring programme and have had to undertake regular inspections on the stormwater and sewerage pipes in the area. (Hutt City Council 1997)

Gas risk was assessed as moderate to high, surface water risk as moderate to minimal, groundwater risk as moderate to minimal. (Hutt city Council, 1997.)

Any discharge of leachate is likely to either enter groundwater or the Hutt City Council stormwater system. Stormwater from this area ultimately discharges into the Te Mome Stream to the west of Shandon Golf Course. Groundwater is likely to flow to the south and discharge into Wellington Harbour.

This site is considered medium priority with respect to the discharge of leachate.

On the basis of the size and age of the site, the potential for landfill gas generation is estimated to be medium. Given the residential land use on parts of the site, it is considered high priority with respect to the discharge of landfill gas.

4.10.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

4.10.4 Dowse Drive Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium/high	Medium/high	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			High
Potentially Affected Resources			
Hutt City Council stormwater system			
Air - Maungaraki			

4.11 Silverstream Landfill

4.11.1 Location Information

Location:	Silverstream	Last Used:	Operational
Access:	Reynolds Bach Drive	Map Reference:	2677553 6003147
Nearby Town:	Silverstream	Survey Date:	
Fill Contents:	General refuse, Hazardous waste	File Number:	K/9/3/2

4.11.2 General Description

This site is located at the southern end of Reynolds Bach Drive in Silverstream, Lower Hutt. It is currently the operational landfill serving the Hutt Valley. The surrounding land use is vacant/open space. The site is owned and maintained by the Hutt City Council.

The site has been used for a long period of time and has accepted a variety of hazardous wastes. Refer to Wellington Regional Council consents file (WGN 950053) for further information. A comprehensive evaluation of the effects of the operation, including leachate and landfill gas issues, was included with the consent application.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is controlled by the resource consent process.

4.11.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
S1	Silt Pond Outlet (WGN 000563)
S3	Landfill stream mouth (WGN 000565)
S4	Hulls Creek below landfill stream (WGN 000566)
S5	Hulls Creek above landfill stream (WGN 000567)

Test		S1	S3	S4	S5	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	4.10	0.63	0.16	0.07	< 0.5	-
Chemical Oxygen Demand	g/m ³	68.68	34.83	23.52	23.83	-	-
Conductivity	µS/cm	511.7	242.7	196.3	184.5	1500.0	1500.0
Dissolved Chloride	g/m ³	55.84	36.46	31.04	30.09	-	700
pH		7.52	7.53	7.21	7.23	7.0	7.0
Suspended Solids	g/m ³	118.5	83.35	41.44	33.16	10%	10%
Total Iron	g/m ³	6.07	4.06	2.33	1.65	0.5	1.0
Total Manganese	g/m ³	1.32	0.45	0.18	0.08	-	2.0
Alkalinity	g/m ³	197.1	57.68	37.94	35.41	-	-

Landfills in the Wellington Region

Test		S1	S3	S4	S5	Aquatic	Stock
Sodium	g/m ³	66.19	37.52	21.5	20.31	-	300
Total Cadmium	g/m ³	0.00	<0.01	<0.01	<0.01	0.0002	0.01
Total Chromium	g/m ³	0.12	<0.05	0.33	<0.05	0.01	1.00
Total Copper	g/m ³	0.01	0.02	0.01	0.01	0.002	0.2
Total Lead	g/m ³	0.10	<u>0.7</u>	<u>0.28</u>	0.15	0.001	0.2
Total Nickel	g/m ³	0.03	0.02	0.08	0.02	0.015	0.2
Potassium	g/m ³	0.11.02	3.88	2.53	2.26	-	-
Total Zinc	g/m ³	0.22	0.14	0.07	0.08	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

4.11.4 Silverstream Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Very high	Very high	Medium/high
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	x
Recreational		Surface water	x
Groundwater user	x	Groundwater	x
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low
Potentially Affected Resources			
Hulls Creek			
Hutt River			

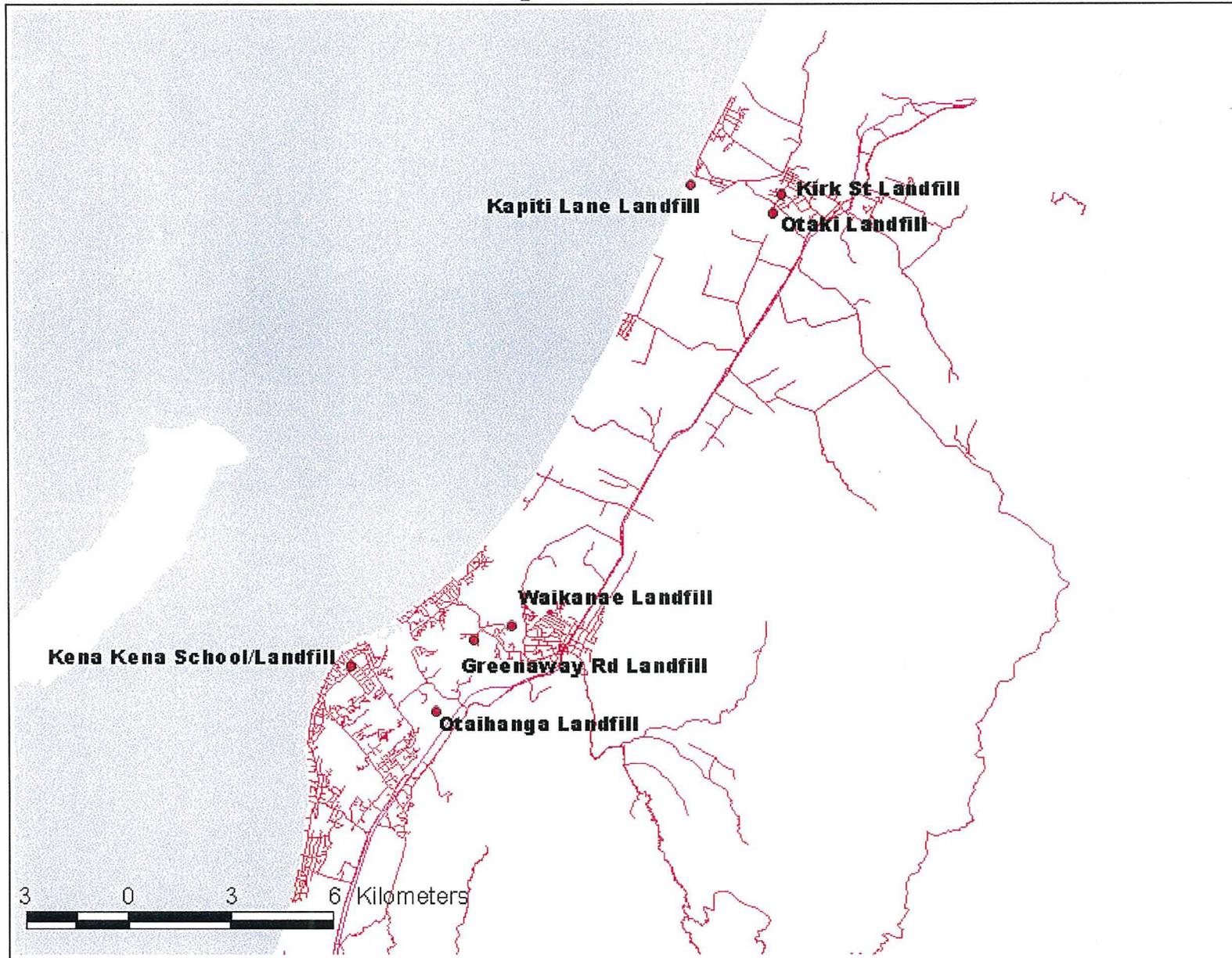
Landfills in the Wellington Region



Kapiti Coast Landfills

Landfills in the Wellington Region

Kapiti Landfills



Legend

- Landfill
- Cleanfill
- ~ Railway
- ~ Main Road
- ~ LGB

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5. Kapiti Coast Landfills

5.1 Waikanae Landfill

5.1.1 Location Information

Location:	Waikanae Landfill	Last Used:	Operational
Access:	Park Avenue	Map Reference:	2682547 6035192
Nearby Town:	Waikanae	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/1/3

5.1.2 General Description

The site is located on Park Avenue, Waikanae and operated by the Kapiti Coast District Council. Surrounding land uses are residential, agricultural and recreational.

The operation is subject to resource consents issued by the Wellington Regional Council (WGN 930178 1-6). A comprehensive evaluation of the effects of the operation, including leachate and landfill gas issues, was included with the consent application.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is adequately controlled by the resource consent process.

5.1.3 Sampling Results

Refer to the resource consent file for detailed information regarding environmental impacts.

5.1.4 **Waikanae Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium/high	Medium/high	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user	x	Groundwater	
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Waimeha Stream			

5.2 Greenaway Road Landfill

5.2.1 Location Information

Location:	Riverbank Reserve	Last Used:	1968
Access:	Greenaway Road	Map Reference:	2681463 6034771
Nearby Town:	Waikanae	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/1/23

5.2.2 General Description

Riverbank Reserve is located at the end of Greenaway Road, Waikanae. The site is currently zoned recreational. Surrounding land use is residential, agricultural, and recreational. The site is owned and maintained by the Kapiti Coast District Council.

The landfill was closed in 1968. There is no information on file regarding the contents of the site, but it has been assumed that it received general refuse. There is some evidence of filling on site including uneven surface and limited quantities of refuse (steel/plastic) that have broken through the surface of the site. The portion of the site closest to the river is covered by trees and general scrub.

Surrounding topography is flat, the nearest surface water body is the Waikanae River that flows within 100 m of the site. There are no known groundwater bores within 500 m of the site. The most likely discharge pathways are through groundwater or surface run-off to the Waikanae River.

Sampling in the Waikanae River, the most likely receiving environment, adjacent to the site did not indicate any detectable impact on water quality attributable to the site. On this basis the site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the size and age of the site, the potential for landfill gas generation is estimated to be medium. There are residential properties within 300 m of the site. Given the apparent poor integrity of the landfill cap it is likely that any landfill gas being generated is able to vent to atmosphere directly rather than migrating significant distance from the fill area. This site is considered relatively low priority with respect to the discharge of landfill gas.

5.2.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
GW1	Upstream, 50 m upstream of access to riverbank
GW2	Downstream, 100 m upstream of access to riverbank

Landfills in the Wellington Region

Test		GW1	GW2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	5	< 5	-	-
Conductivity	μS/cm	105	105	1500.0	1500.0
Dissolved Chloride	g/m ³	15	15	-	700
pH		7.2	7	7.0	7.0
Suspended Solids	g/m ³	< 2	< 2	10%	10%
Total Iron	g/m ³	< 0.03	< 0.03	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-
Sodium	g/m ³	-	-	-	300
Total Cadmium	g/m ³	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	0.01	1.00
Total Copper	g/m ³	-	-	0.002	0.2
Total Lead	g/m ³	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-
Total Zinc	g/m ³	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

5.2.4 Greenaway Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Low/medium	Low/medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Waikanae River			

5.3 Kena Kena School/Landfill

5.3.1 Location Information

Location:	Kena Kena School	Last Used:	Unknown
Access:	Donovan Road	Map Reference:	2677868 6034019
Nearby Town:	Paraparaumu	Survey Date:	Oct 1996 to Aug 1997
Fill Contents	General refuse	File Number:	K/9/1/24

5.3.2 General Description

The Kena Kena School grounds are located on the southern side of Donovan Road, Paraparaumu. Current site use is open space and playground for Kena Kena School. Surrounding land uses are commercial, residential and recreational. The site is owned and maintained by the Kapiti Coast District Council and the Ministry of Education (Kena Kena School Board of Trustees).

The site was used as a landfill for a motor camp, located to the west of the current reserve space, and received general refuse. Household members from the northern end of Aaron Court (southern end of fill area) have discovered tins and bottles while digging in their gardens.

Houses on Aaron Court and Mahana Road were constructed in the area of the fill in the 1970s and 1980s.

A stormwater drain runs along the western side of the site and discharges to the Waikanae Estuary Scientific Reserve about 700 m from the landfill area.

The site is predominantly flat and overlies the Waikanae groundwater zone. Given the location of the site and the surrounding topography it is likely that if there is a significant discharge of leachate, it will be to groundwater. Groundwater is likely to flow towards the ocean (west) from the site.

There is one recorded groundwater bore approximately 100 m down gradient from the north-west boundary of the fill area. The limited information on this bore suggests it may draw water from a significant depth, and is therefore unlikely to be affected by a discharge to groundwater from near the surface.

A visual inspection of the site in August 1997 did not indicate any obvious discharges of leachate to the stormwater drain. Sampling carried out in 1996 and 1997 indicated elevated levels of iron and zinc across the site. However, this reduced to below aquatic ecosystems criteria before discharging into the Waikanae Estuary. This site is considered low priority with respect to the discharge of leachate.

On the basis of estimates of the size and age of the site, the potential for landfill gas generation is estimated to be medium. The presence of potential gas collection points in the school buildings and residential properties on Aaron Court means the site is considered medium priority with respect to discharges of landfill gas.

5.3.3 Sampling Results

The results obtained for the Kena Kena Landfill during a survey conducted from October 1996 to August 1997 were inconclusive. Samples taken in the stormwater drain prior to discharge to the Waikanae Estuary indicated that with the exception of iron all parameters were below ANZECC criteria.

KS1 is at the southern end of the open stormwater drain, KS2 is approximately 20 m north of Donovan Road and KS3 on the northern side of Mazengarb Road. The results present in the table below are average results from the 10 sample period.

ID	Description
KS1	Southern end of open stormwater drain
KS2	in drain 20 north of Donovan Road
KS3	in drain on northern side of Mazengarb Road

Table 5.3: Average Sample Results for Kena Kena School, Paraparaumu

Parameter		KS1	KS2	KS3	Aquatic	Stock
Ammoniacal Nitrogen		N/A	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	43.57	67.57	31.43	-	-
Conductivity	µS/c	490.57	534.00	540.2	1500.0	1500.0
Dissolved Chloride	g/m ³	46.00	38.00	45.29	-	700
pH	pH	7.4	7.2	7.5	7.0	7.0
Suspended Solids	g/m ³	51.43	25.43	10.86	10%	10%
Total Iron	g/m ³	9.96	4.67	2.23	0.5	1.0
Total Manganese	g/m ³	0.36	0.29	0.26	-	2.0
Alkalinity	g/m ³	162.00	210.00	200.0	-	-
Sodium	g/m ³	33.00	30.00	33.00	-	300
Total Cadmium	g/m ³	0.00	0.00	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.00	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.00	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.00	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.00	0.00	0.015	0.2
Potassium	g/m ³	7.31	8.76	7.07	-	-
Total Zinc	g/m ³	0.10	0.07	0.00	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

5.3.4 Kena Kena School: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Low/medium	Low/medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium
Potentially Affected Resource			
Waikanae River Estuary			

5.4 Kirk Street Landfill

5.4.1 Location Information

Location:	Kirk Street	Last Used:	Unknown
Access:	Kirk Street	Map Reference:	2690452 6047637
Nearby Town:	Otaki	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/1/25

5.4.2 General Description

This site is located on the corner of Kirk and Aotaki Streets, Otaki. The site is currently used for residential purposes, as is the surrounding land. The site is owned and maintained by the Kapiti Coast District Council.

This site was the municipal refuse tip for Otaki at some time before the 1960s when pensioner flats were built on the site. There is no specific information on Wellington Regional Council files regarding the operation at this site.

Surrounding topography is flat with the nearest surface water body being the Otaki River approximately 1.8 km to the south-west. The most likely discharge pathway is to groundwater. There are 11 groundwater bores within 500 m of the site. Groundwater in the area discharges into two spring fed streams that flow from the end of Matai Street and along the southern side of Temuera Street. The main groundwater bore for Otaki water supply is near the intersection of Riverbank and Rangiuru Road, potentially downgradient of this site. Accordingly this site is considered high priority for further investigation with respect to the discharge of leachate.

On the basis of estimates of the size and age of the site, the potential for landfill gas generation is estimated to be low. The presence of potential gas collection points in the flats on the fill site and neighbouring commercial buildings means that the site is considered medium priority with respect to the discharge of landfill gas.

5.4.3 Sampling Results

Unable to obtain water quality samples for this site.

5.4.4 **Kirk Street Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Low/medium	Low/medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Medium
Potentially Affected Resource			
Otaki groundwater			

5.5 Kapiti Lane Landfill

5.5.1 Location Information

Location:	Otaki Beach	Last Used:	Unknown
Access:	Kapiti Lane	Map Reference:	2689213 6047109
Nearby Town:	Otaki	Survey Date:	November 1997
Fill Contents:	Unknown	File Number:	K/9/1/26

5.5.2 General Description

This site is located off the southern end of Kapiti Lane, Otaki, and is currently vacant (sand dunes and open space). Surrounding land use is recreational and residential. The site is currently owned and maintained by Kapiti Coast District Council.

Notes on file indicate that this site was operated as a private tip, but there is no information regarding the period of operation or the quantities or types of materials deposited. For the purposes of this assessment it has been assumed that limited quantities of all types of refuse were disposed of at the site.

Surrounding topography is flat, and the most likely discharge pathway is to groundwater which is likely to flow towards the Tasman Sea and the Otaki River. Any direct discharge to surface water will discharge to the Otaki River mouth. In the absence of observed discharges to surface water and use of groundwater in the area, this site is considered relatively low priority with respect to the discharge of leachate.

On the basis of estimates of the size and age of the site, the potential for landfill gas generation is estimated to be medium. The absence of gas collection points and the general permeability of the soil (sand) in the area means that this site is considered relatively low priority with respect to the discharge of landfill gas.

5.5.3 Sampling Results

Because this site is located on the estuary of the Otaki River, it was not possible to obtain water quality samples. There were no visual indicators of a discharge of leachate to surface water.

5.5.4 Kapiti Lane Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	x
Quantity	Low/medium	Low/medium	Low/medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Otaki River Estuary			

5.6 Otaki Landfill

5.6.1 Location Information

Location:	Otaki Landfill	Last Used:	Operational
Access:	Riverbank Road	Map Reference:	2690189 6047114
Nearby Town:	Otaki	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/1/2

5.6.2 General Description

The Otaki landfill is located between the Otaki River and Riverbank Road south of the Otaki sewage treatment ponds. Surrounding land uses are open space and agricultural. The Kapiti Coast District Council own and maintain this site.

This site is subject to several resource consents issued by the Wellington Regional Council (WGN 930179 1-6). A comprehensive evaluation of the effects of the operation, including leachate and landfill gas issues, was included with the consent application.

Surrounding topography is flat with the Otaki River being the nearest surface water body. Groundwater in the area flows to the west towards the Tasman Sea. There are 5 recorded groundwater bores within 500 m of this site.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is adequately controlled by the resource consent process.

5.6.3 Sampling Results

Sampling for this site is carried under resource consent conditions.

5.6.4 **Otaki Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium/high	Medium/high	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Otaki River			

5.7 Otaihanga Landfill

5.7.1 Location Information

Location:	Otaihanga Landfill	Last Used:	Operational
Access:	Otaihanga Road	Map Reference:	2680340 6032730
Nearby Town:	Paraparaumu	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/1/62

5.7.2 General Description

The Otaihanga Landfill is located to the south-west of Otaihanga Road. Surrounding land uses are agricultural and the Kapiti Coast District Council Paraparaumu sewage treatment plant. The site is owned and operated by the Kapiti Coast District Council.

This site is subject to several resource consents issued by the Wellington Regional Council (WGN 930177 1-7). A comprehensive evaluation of the effects of the operation, including leachate and landfill gas issues, was included with the consent application.

Surrounding topography is flat, the two likely discharge pathways are to groundwater and to surface water. Results are presented below for surface water analysis.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is adequately controlled by the resource consent process.

5.7.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
K5	Eastern drain (WGN 000599)
K7	Western drain (WGN 000600)

Parameter		K5	K7	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	6.28	7.5	< 0.5	-
Chemical Oxygen Demand	g/m ³	N/A	N/A	-	-
Conductivity	µS/c	493	100	1500.0	1500.0
Dissolved Chloride	g/m ³	50.2	96.	-	700
pH	pH	6.8	7.4	7.0	7.0
Suspended Solids	g/m ³	N/A	N/A	10%	10%
Total Iron	g/m ³	16.9	0.9	0.5	1.0
Total Manganese	g/m ³	0.39	0.1	-	2.0
Alkalinity	g/m ³	N/A	N/A	-	-
Sodium	g/m ³	39.8	73.	-	300
Total Cadmium	g/m ³	N/A	N/A	0.0002	0.01

Landfills in the Wellington Region

Parameter		K5	K7	Aquatic	Stock
Total Chromium	g/m ³	N/A	N/A	0.01	1.00
Total Copper	g/m ³	N/A	N/A	0.002	0.2
Total Lead	g/m ³	N/A	N/A	0.001	0.2
Total Nickel	g/m ³	N/A	N/A	0.015	0.2
Potassium	g/m ³	N/A	N/A	-	-
Total Zinc	g/m ³	N/A	N/A	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

5.7.4 Otaihanga Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium/high	Medium/high	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user	x	Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low
Potentially Affected Resources			
Mazengarb Drain			
Waikanae Groundwater Zone			

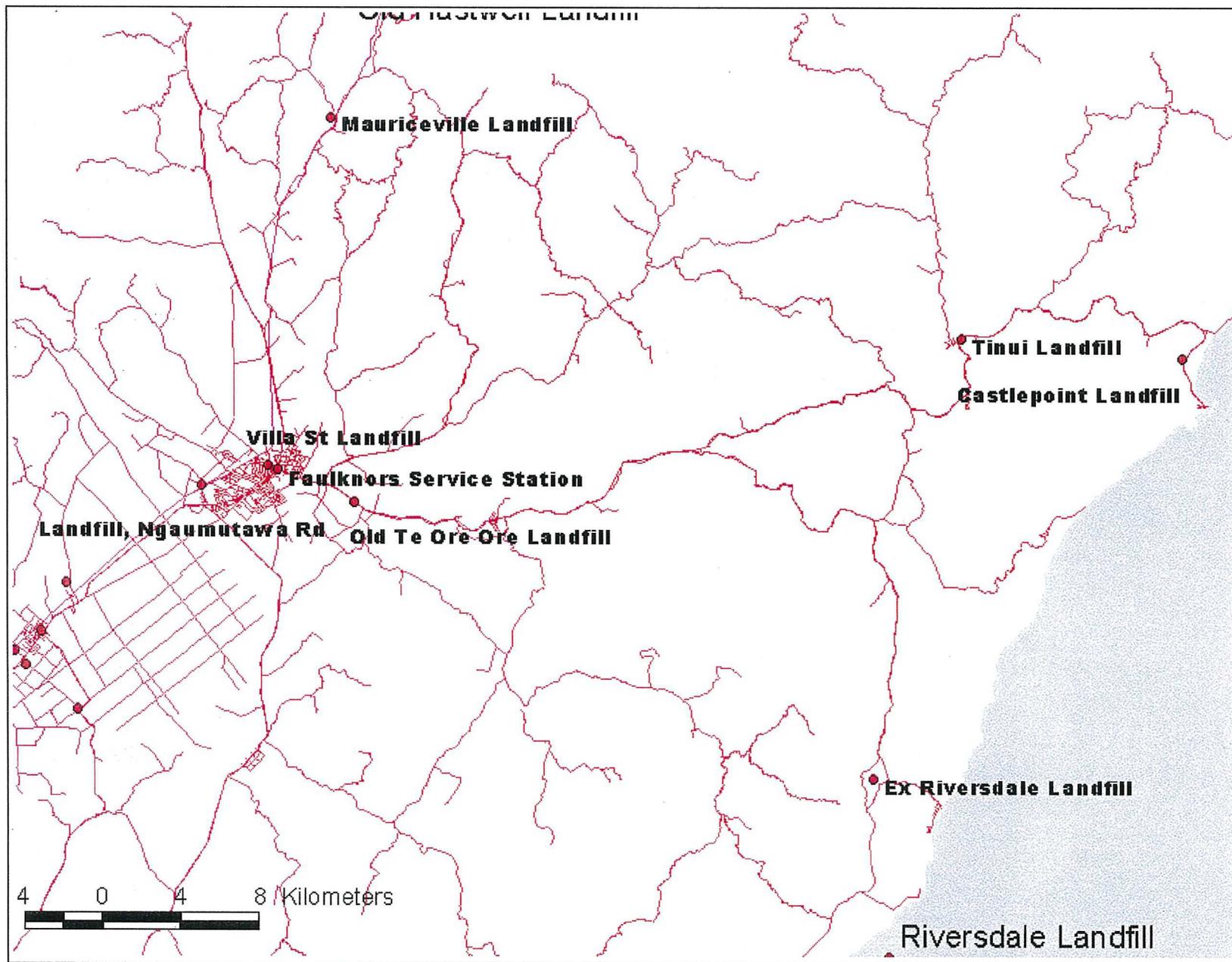
Landfills in the Wellington Region



Masterton Landfills

Landfills in the Wellington Region

Masterton Landfills



Legend

- Landfill
- Cleanfill
- Railway
- Main Road
- LGB

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6. Masterton Landfills

6.1 Masterton Landfill

6.1.1 Location Information

Location:	Masterton Landfill	Last Used:	Operational
Access:	Nursery Road	Map Reference:	2735200 2735200
Nearby Town:	Masterton	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/6/36

6.1.2 General Description

This site is located off the north-eastern end of Nursery Road, Masterton. Surrounding land use is agricultural. The site is owned and operated by the Masterton District Council.

This site is the main operational landfill for Masterton District serving the urban area. The site has been in use since the 1930s and is essentially a mound of rubbish situated close to the Ruamahanga River.

Monitoring results are held on Wellington Regional Council consent file WAR 930100. A evaluation of the effects of the operation, including leachate and landfill gas issues, is included on the consent file.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is adequately controlled by the resource consent process.

6.1.3 Sampling Results

See file WAR 930100.

6.1.4 **Masterton Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium/high	Medium/high	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user	x	Groundwater	
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Ruamahanga River			

6.2 Landfill, Ngaumutawa Road

6.2.1 Location Information

Location:	Ngaumutawa Road	Last Used:	Unknown
Access:	Ngaumutawa Road	Map Reference:	2730891 6024819
Nearby Town:	Masterton	Survey Date:	
Fill Contents:	Unknown	File Number:	K/9/6/14

6.2.2 General Description

This site is located on the corner of Ngaumutawa Road and West Bush Road on the outskirts of Masterton. It is currently used for grazing, surrounding land uses are agricultural, residential and commercial. The site is privately owned and maintained.

There are unconfirmed reports on file noting that this site was an old gravel pit (10-12 foot deep) that was filled with refuse. The ground is uneven, but there is no indication that this site was an old landfill.

Surrounding topography is flat to rolling with the nearest major surface water feature being the Waingawa River approximately 1.6 km to the south-west. There is a number of farm drains in the area that ultimately discharge into the Waingawa River.

Any discharge of leachate from the site is likely to be to groundwater, there are no recorded groundwater bores within 500 m of the site.

The site is considered relatively low priority with respect to the discharge of leachate.

Given the estimated age and size of the site, the potential landfill gas generation has been estimated as low. The site is considered low priority with respect to the discharge of landfill gas.

6.2.3 Sampling Results

No sampling was undertaken at this site due to the lack of any identified discharge to surface water, the age and size of the site, and the lack of groundwater use in the immediate area.

6.2.4 Landfill, Ngaumutawa Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed			
Potential	x	x	
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Masterton groundwater			

6.3 Mauriceville Landfill

6.3.1 Location Information

Location:	20 km north of Masterton	Last Used:	1997
Access:	Mauriceville South Road	Map Reference:	2737476 6043439
Nearby Town:	Mauriceville - 1 km	Survey Date:	27 May 1998
Fill Contents:	General Refuse	File Number:	K/9/6/37

6.3.2 General Description

This site is located on the western side of Mauriceville South Road. It has recently ceased operation, surrounding land use is agricultural. The site is owned and maintained by the Masterton District Council.

The site is bounded on the east by a sealed road, north and west by boggy pasture, and to the south by a small stream. The tip is located on a small terrace at the toe of the slope. It is physically separated from the farmland and stream by an embankment 2-3 m high.

Drainage occurs to the west into an open ditch that flows south to a small stream, a tributary of the Kopuaranga River. The steep southern slopes of the tip also drain directly into this stream. The stream is deeply incised and meanders through open farmland.

There were no signs of contamination of the stream or surrounding vegetation by tip leachate at the time of inspection. An evaluation of the effects of the operation, including leachate and landfill gas issues, is included on the consent file (WAR 940056).

Sampling in the stream by the landfill did not indicate any effects attributable to discharges from the landfill. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age and size of the site, the potential landfill gas generation is considered to be low. In the absence of potential gas collection points the site is considered relatively low priority

6.3.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
MV1	Upstream of ditch
MV2	By iron seepage
MV3	Downstream of landfill

Landfills in the Wellington Region

Parameter		MV1	MV2	MV3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	0.05	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	14	14	13	-	-
Conductivity	µS/cm	175	175	175	1500.0	1500.0
Dissolved Chloride	g/m ³	13	13	13	-	700
pH	pH	7.3	7.4	7.4	7.0	7.0
Suspended Solids	g/m ³	5	4	4	10%	10%
Total Iron	g/m ³	0.54	0.56	0.55	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	<0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-	-
Sodium	g/m ³	-	-	-	-	300
Total Cadmium	g/m ³	-	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	-	0.01	1.00
Total Copper	g/m ³	-	-	-	0.002	0.2
Total Lead	g/m ³	-	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-	-
Total Zinc	g/m ³	-	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

6.3.4 Mauriceville Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Kopuaranga River			

6.4 Tinui Landfill

6.4.1 Location Information

Location:	37 km east of Masterton	Last Used:	Operational
Access:	Castlepoint Road	Map Reference:	2780600 6031200
Nearby Town:	Tinui - 3 km	Survey Date:	18 March 1994
Fill Contents:	General refuse	File Number:	K/9/6/38

6.4.2 General Description

This site is located on the south-eastern side of the Masterton Castlepoint Road approximately 3 km from Tinui. It is currently used as a landfill, surrounding land use is agricultural. The site is owned and maintained by the Masterton District Council.

The Tinui landfill is a moderately large site positioned in a small gully falling to river terraces surrounding the Whareama River floodplain. It is surrounded to the north by farmland, to the east and west by shelterbelts. To the south the site falls steeply to the Whareama river.

A seep extends across the lower tip face, flowing from east to west, then turning north into the Whareama River. At the time of the survey the seepage was dry. There was no apparent influence in the vicinity of the tip seepage. The Whareama river is heavily influenced by farm waste and stock movement. An evaluation of the potential effects of the operation, including leachate and landfill gas issues, is included on the consent file (WAR 940057).

Sampling results from the Wharemea River in the Region of the discharge from the landfill do not indicate any detectable influence, further work is required to fully characterise the discharge from this site. This site is considered medium priority with respect to the discharge of landfill leachate.

On the basis of the size and age of the site, the potential landfill gas generation is considered low. In the absence of gas collection points, the site is considered relatively low priority with respect to the discharge of landfill gas.

6.4.3 Sampling Results

ID	Description
TN1	150 m upstream of landfill discharge into the Wharemea River
TN2	20 m downstream of landfill discharge into the Wharemea River

Landfills in the Wellington Region

Parameter		TN1	TN2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	17	18	-	-
Conductivity	μS/cm	650	648	1500.0	1500.0
Dissolved Chloride	g/m ³	53	53	-	700
pH	pH	8.0	8.0	7.0	7.0
Suspended Solids	g/m ³	2	< 2	10%	10%
Total Iron	g/m ³	0.34	0.31	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-
Sodium	g/m ³	-	-	-	300
Total Cadmium	g/m ³	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	0.01	1.00
Total Copper	g/m ³	-	-	0.002	0.2
Total Lead	g/m ³	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-
Total Zinc	g/m ³	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

6.4.4 Tinui Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low
Potentially Affected Resource			
Whareamea River			

6.5 Castlepoint Landfill

6.5.1 Location Information

Location:	58 km east of Masterton	Last Used:	1998
Access:	Castlepoint Road	Map Reference:	U26 806 312
Nearby Town:	Castlepoint	Survey Date:	28 May 1998
Fill Contents:	General refuse	File Number:	K/9/6/39

6.5.2 General Description

This site is located on the eastern side of the Masterton Castlepoint Road approximately 1.5 km from the Castlepoint township. The site is currently operational, surrounding land use is agricultural. It is owned and maintained by the Masterton District Council.

An S A Fuller report prepared in May 1994 stated:

Rather than being formed in a depression or gully as is normal, this landfill has been developed on a hill slope. The site falls steeply from the road to the west to a dry gully to the east. Because of this positioning the tip has a considerable open face up to 8 metres high on the east side. Pine shelter belts separate the site from the road to the west, and from improved pasture to the north, east and south. Rank grasses and areas of gorse surrounded the tip site proper.

There were no signs of seepage and the gully at the bottom of the slope is only seasonally wet. The valley floor was dry at the time of the survey but contained wet pasture vegetation. An evaluation of the effects of the operation, including leachate and landfill gas issues, is included on the consent file (WAR 940059).

In the absence of sampling results for the discharge of leachate from this site, the site is considered relatively medium priority with respect to the discharge of leachate.

On the basis of the size and age of the site, the potential landfill gas generation is considered low. In the absence of gas collection points, the site is considered relatively low priority with respect to the discharge of landfill gas.

6.5.3 Sampling Results

Due to lack of rain at the time of sampling, it was not possible to obtain water quality results for this site.

6.5.4 Castlepoint Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

6.6 Riversdale Landfill

6.6.1 Location Information

Location:		Last Used:	Operational
Access:	Riversdale Road	Map Reference:	2765142 6011535
Nearby Town:	Riversdale Beach	Survey Date:	18 March 1994
Fill Contents:	General refuse	File Number:	K/9/6/40

6.6.2 General Description

This site is located on the eastern side of Homewood Road approximately 4.5 km from Riversdale Beach. It is currently operational, surrounding land use is agricultural. The site is owned and maintained by the Masterton District Council.

The Riversdale landfill is a moderately large site positioned in a natural gully, with areas of associated vegetation. It is bounded to the north and east by improved pasture. To the west it is separated from a sealed road by a steep bank. To the south an area of scrub, forest and plantation pine separate the site from Motuwaireka Stream and open farmland.

An open ditch leads into the north of the site and exits as seepage to the south. This seepage flows for 30 m through dense scrub and enters a small stream (Motuwaireka). There is an obvious discharge of leachate to the stream, but this was not sampled at the time of inspection due to low water flow.

An evaluation of the effects of the operation, including leachate and landfill gas issues, is included on the consent file (WAR 940058).

In the absence of sampling results for the discharge of leachate from this site, the site is considered relatively medium priority with respect to the discharge of leachate.

On the basis of the size and age of the site, the potential landfill gas generation is considered low. In the absence of gas collection points, the site is considered relatively low priority with respect to the discharge of landfill gas.

6.6.3 Sampling Results

Due to lack of rain at the time of sampling, it was not possible to obtain water quality results for this site.

6.6.4 **Riversdale Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

6.7 Old Hastwell Landfill

6.7.1 Location Information

Location:	27 km north of Masterton	Last Used:	Operational
Access:	Hastwell North Road	Map Reference:	2738200 6050600
Nearby Town:	Masterton	Survey Date:	27 May 1998
Fill Contents:	General refuse	File Number:	K/9/6/41

6.7.2 General Description

This site is located on the western side of Hastwell North Road approximately 150 m south of the junction with Opaki Kaiparoro Road. The site is currently closed and fenced off, surrounding land use is agricultural. Masterton District Council owns and maintains the site.

This tip site was an old gravel reserve. Quarry activities lowered the area to near the water table. The landfill was then developed within this wet basin, forming a raised platform over swampy land.

The site is confined to the north and west by the old quarry faces, steep banks rising 3-4 m. To the south a formed embankment separates the tip site from open pasture. Its eastern boundary is formed by a sealed road.

Drainage is to the south through the embankment and is assisted by a field drain which appears to traverse the dirt embankment in the vicinity of the wetland. Water then flows into the upper reaches of the Kopuaranga River, a slow moving, deeply incised, meandering farm stream.

An evaluation of the effects of the operation, including leachate and landfill gas issues, is included on the consent file (WAR 940060).

The results of sampling both the leachate discharge from the site and in the vicinity of the discharge into the Kopuaranga River indicates that there is a discharge into the river. While in general the levels of contaminants noted are below ANZECC criteria for both aquatic ecosystems protection and stock watering, some further sampling is warranted to adequately characterise the effects of the discharge on the receiving environment. This site is considered relatively medium priority with respect to the discharge of leachate.

On the basis of the size and age of the site, the potential landfill gas generation is considered low. In the absence of gas collection points, the site is considered relatively low priority with respect to the discharge of landfill gas.

6.7.3 Sampling Results

ID	Description
HW1	Landfill discharge
HW2	Upstream
HW3	Downstream

Parameter		HW1	HW2	HW3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	0.1	< 0.05	0.06	< 0.5	-
Chemical Oxygen Demand	g/m ³	200	18	21	-	-
Conductivity	µS/cm	174	94	110	1500.0	1500.0
Dissolved Chloride	g/m ³	23	14	13	-	700
pH	pH	6.4	6.2	6.8	7.0	7.0
Suspended Solids	g/m ³	310	3	24	10%	10%
Total Iron	g/m ³	<u>42.0</u>	0.27	1.2	0.5	1.0
Total Manganese	g/m ³	0.43	0.06	0.05	-	2.0
Alkalinity	g/m ³	-	-	-	-	-
Sodium	g/m ³	-	-	-	-	300
Total Cadmium	g/m ³	-	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	-	0.01	1.00
Total Copper	g/m ³	-	-	-	0.002	0.2
Total Lead	g/m ³	-	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-	-
Total Zinc	g/m ³	-	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

6.7.4 Old Hastwell: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

6.8 Villa Street Landfill

6.8.1 Location Information

Location:	Waipoua riverbank	Last Used:	Unknown
Access:	Villa Street	Map Reference:	2734236 6025786
Nearby Town:	Masterton	Survey Date:	27 May 1998
Fill Contents:	General refuse	File Number:	K/9/6/42

6.8.2 General Description

This site is located on the southern banks of the Waipoua River off Villa Street. It is bounded to the north by the river, to the south by Villa and Bentley Streets, and is currently an open recreational area, surrounding site use is predominantly commercial. The site is owned and maintained by the Masterton District Council.

The site was an old landfill that was probably used for the disposal of general refuse from houses and businesses on Bentley Street. The period of use is not known, but Masterton District Council workers dug through the site when installing water pipes and noted the presence of fill material.

Leachate from this site is likely to pass either directly or via groundwater to the Waipoua River. Water quality sampling in the Waipoua River in the vicinity of the site has not detected any effects attributable to the landfill site. Accordingly this site is considered relatively low priority with respect to the discharge of leachate.

Based on the age and size of the site, potential landfill gas generation is estimated to be low. Although there are potential gas collection points within 300 m of the site, the site is considered relatively low priority with respect to the discharge of landfill gas.

6.8.3 Sampling Results

ID	Description
VS1	Upstream
VS2	Downstream

Parameter		VS1	VS2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	24	6	-	-
Conductivity	µS/cm	92	92	1500.0	1500.0
Dissolved Chloride	g/m ³	8.4	8.3	-	700
pH	pH	7.3	7.4	7.0	7.0
Suspended Solids	g/m ³	< 2	< 2	10%	10%
Total Iron	g/m ³	0.06	0.06	0.5	1.0
Total Manganese	g/m ³	0.03	< 0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-
Sodium	g/m ³	-	-	-	300

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Parameter		VS1	VS2	Aquatic	Stock
Total Cadmium	g/m ³	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	0.01	1.00
Total Copper	g/m ³	-	-	0.002	0.2
Total Lead	g/m ³	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-
Total Zinc	g/m ³	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

6.8.4 Villa Street Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed			
Potential	x	x	
Quantity	Low	Low	

Leachate Impacts

Potential Receptors

Residential
Agricultural
Commercial/industrial
Recreational
Groundwater user
Surface water user

Potential Pathways

Soil ingestion
Dermal absorption
Maintenance/excavation
Surface water
Groundwater

Site Priority Ranking

Low

Landfill Gas Impacts

Potential Receptors (within 300 m)

Residential
Commercial/industrial

Gas Production (m³/day)

Nil
< 1,000
< 10,000
> 10,000

Site Priority Ranking

Low

6.9 Old Te Ore Ore Landfill

6.9.1 Location Information

Location:	2-3 km from Masterton	Last Used:	Unknown
Access:	Te Ore Ore Road	Map Reference:	2737800 6024500
Nearby Town:	Masterton	Survey Date:	27 May 1998
Fill Contents:	General refuse	File Number:	K/9/6/42

6.9.2 General Description

This site is located on the Masterton-Castlepoint Road approximately 3 km from Masterton west of the Stronvar turn-off (Masterton Stronvar Road). Surrounding land uses are agricultural and the site is currently planted out in pasture and eucalypts. It is owned and maintained by the Masterton District Council.

This site was probably the main Masterton landfill site prior to the current site commenced operation. This would have the site operating up to the 1930s.

Surrounding topography is flat to rolling with the nearest surface water bodies being a tributary to the Whangaehu River 450 m to the south-east and the Poterau Stream 800 m to the west. Any discharge of leachate from the site is likely to be to groundwater.

Given the age of the site it is considered relatively low priority with respect to the discharge of leachate.

Based on the age and size of the site, potential landfill gas generation is estimated to be low. In the absence of potential gas collection points the site is considered relatively low priority with respect to the discharge of landfill gas.

6.9.3 Sampling Results

Due to the lack of identified discharge to surface water, this site was not sampled in the current study.

6.9.4 **Old Te Ore Ore Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

6.10 Ex Riversdale Landfill

6.10.1 Location Information

Location:	Corner of Homedale and Riversdale Roads	Last Used:	Unknown
Access:	Riversdale Road	Map Reference:	2764865 6009997
Nearby Town:	Riversdale	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/6/45

6.10.2 General Description

This site is located on Riversdale Road near the junction with Homedale Road and is bounded by the road and the Motuwaiera Stream. Current and surrounding land use is agricultural.

The site was the landfill for Riversdale prior to the current site commencing operation, closure is estimated at around 1960. It has been assumed for the purposes of this study that general refuse was disposed of at this site.

Surrounding topography is steep to rolling with the nearest surface water body being the Motuwaireka Stream, any discharge of leachate is likely to be into this stream. This site is considered medium priority with respect to the discharge of leachate. This is based on potential effects on Motuwaireka Stream and consideration of potential users of the stream water.

Based on the age and size of the site, potential landfill gas generation is estimated to be low. In the absence of potential gas collection points the site is considered relatively low priority with respect to the discharge of landfill gas.

6.10.3 Sampling Results

No sample results obtained in this study.

6.10.5 Ex Riversdale Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

6.11 Faulknors Service Station

6.11.1 Location Information

Location:	Queen Street	Last Used:	Unknown
Access:	Queen Street	Map Reference:	2734712 6025592
Nearby Town:	Masterton	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/6/46

6.11.2 General Description

This site is located on Queen Street, Masterton. It is currently used for a service station. Surrounding land use is a mixture of commercial, recreational, educational, and residential. The site is privately owned and maintained.

The service station forecourt covers an infilled rubbish pit. According to notes on Regional Council files, the pit contained *all sorts of rubbish*. The age of the pit is unknown, but the service station has been licensed since at least 1967.

Surrounding topography is flat, the nearest surface water body is the Waipoua River almost directly to the south-west. There are several known groundwater bores within 500 m of the site. The most likely discharge pathway for leachate from this site is via groundwater to the Waipoua River. Given the apparent size of the site and likely dilution, this site is considered relatively low priority with respect to the discharge of leachate.

Based on the age and size of the site, potential landfill gas generation is estimated to be low. The buildings on site and neighbouring residential properties may act as gas collection points. The site is considered relatively low priority with respect to the discharge of landfill gas.

6.11.3 Faulknors Service Station: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

Landfills in the Wellington Region

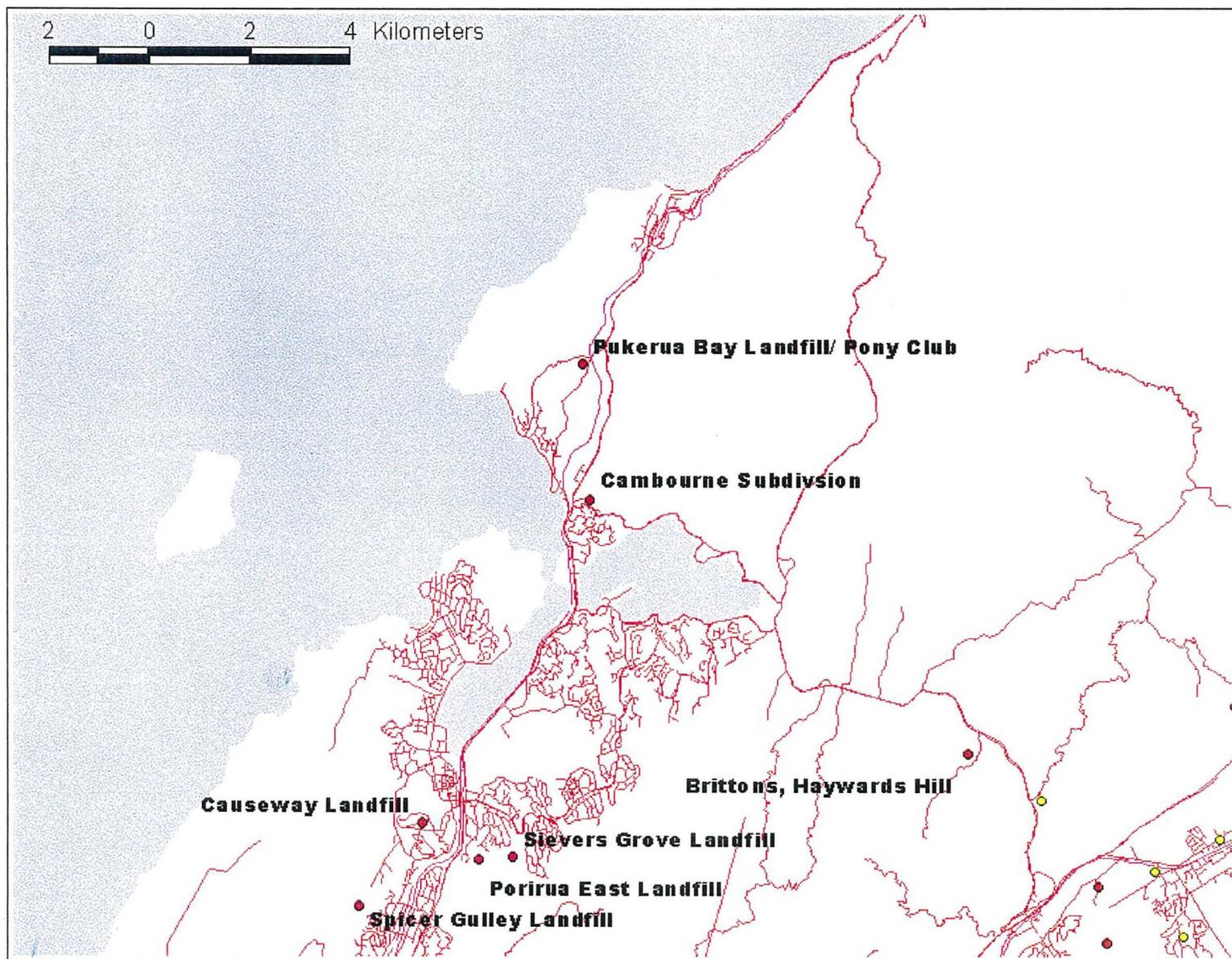


Porirua Landfills

Landfills in the Wellington Region



Porirua Landfills



Legend

- Landfill
- Cleanfill
- Railway
- Main Road
- LGB

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7. Porirua Landfills

7.1 Porirua Hospital Landfill

7.1.1 Location Information

Location:	Porirua Hospital	Last Used:	Unknown
Access:	Kenepuru Drive	Map Reference:	2664250 6005450
Nearby Town:	Porirua	Survey Date:	
Fill Contents:	Cleanfill, refuse	File Number:	

7.1.2 General Description

This site consists of several discrete areas within the grounds of Porirua Hospital off Kenepuru Drive, Porirua. The Hospital grounds are generally classified as recreational/open space. The site is owned and maintained by Capital Coast Health Ltd.

Surrounding topography is rolling with a stream running through the middle of the hospital area. Any discharge of leachate is likely to flow into this watercourse. Groundwater is likely to flow to the north-east towards the Porirua Stream and then into Porirua Harbour. There are no recorded groundwater bores within 500 m of the site.

This site is considered medium priority with respect to the discharge of leachate. This is based on the current low level of information regarding the contents of the fill, and therefore potential impacts.

Based on the age and size of the site and the expected proportion of non-cleanfill deposited, the potential landfill gas generation is estimated to be low. The buildings surrounding the site have the potential to act as gas collection points.

The site is considered relatively medium priority with respect to the discharge of landfill gas.

7.1.3 Sampling Results

No sampling has been carried out on this site to date.

7.1.4 Porirua Hospital Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	x
Commercial/industrial	x	Maintenance/excavation	x
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Medium

7.2 Camborne Subdivision

7.2.1 Location Information

Location:	Camborne	Last Used:	Unknown
Access:	Grays Road	Map Reference:	
Nearby Town:	Plimmerton	Survey Date:	2667354 6011903
Fill Contents:	Cleanfill, refuse	File Number:	K/9/2/66

7.2.2 General Description

This site is located on the northern side of Grays Road, Plimmerton, north of Westridge. It is currently (1998) being developed for residential purposes, surrounding land uses are agricultural and residential. The site is currently owned by a developer, and will be subdivided once redevelopment is complete.

The subdivision site was a clay pit that provided raw material for a brick works on the western side of State Highway 1, north of Plimmerton. The subdivision plans include provision for investigating the contents of the fill during development.

The landfill area is a small part of the overall proposed subdivision. Based on current information it is unclear whether the fill consisted of mainly cleanfill/demolition fill or whether significant quantities of general refuse were also deposited.

Surrounding topography is rolling with a small swampy gully running through the middle of the subdivision site. The fill area is to the south of and above this part of the site, so any discharge of leachate is likely to be into this water course. Groundwater is likely to flow either to the east towards the Pauatahanui Inlet or west towards Porirua Harbour. There are no recorded groundwater bores within 500 m of the site.

This site is considered medium priority with respect to the discharge of leachate. This is based on the current low level of information regarding the contents of the fill, and therefore difficulty in assessing potential impacts.

Based on the age and size of the site and the expected proportion of non-cleanfill deposited, the potential landfill gas generation is estimated to be low. The residential properties on Westridge and any houses built as part of the redevelopment have the potential to act as gas collection points.

The site is considered relatively medium priority with respect to the discharge of landfill gas.

7.2.3 Sampling Results

No sampling has been carried out on this site to date.

7.2.4 Camborne Subdivision: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	x
Commercial/industrial		Maintenance/excavation	x
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Medium

7.3 Spicers Gully Landfill

7.3.1 Location Information

Location:	Spicers Gully	Last Used:	Operational
Access:	Broken Hill Road	Map Reference:	2662751 6003887
Nearby Town:	Porirua	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/2/61

7.3.2 General Description

Spicers Landfill is located at the end of Broken Hill Road, Porirua. Surrounding land use is industrial/commercial, recreational and agricultural. The site is owned and operated by the Porirua City Council.

Hazardous wastes disposed of at this site have only come from a chemical manufacturer in Tawa and the Kenepuru Hospital. All hazardous wastes are sealed and then buried in 44 gallon drums. More information on this site including an assessment of the potential effects of the operation can be found on the Wellington Regional Council resource consent file WGN 940046 1-4.

Surrounding topography is steep to rolling and the nearest surface water body is a small stream running through the Colonial Knob reserve directly below the landfill. This stream is a tributary to the Porirua Stream. Groundwater is likely to flow to the north towards Porirua Harbour, it is possible that groundwater from under the landfill discharges into the stream.

This site is considered relatively low priority with respect to the discharge of leachate and landfill gas. This is because potential effects are considered to be addressed by the resource consent process.

7.3.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
P1	Landfill leachate above pond (WGN 000581)
P2	Stream at bridge Colonial Knob (WGN 000582)

Parameter		P1	P2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	<0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	249	13.2	-	-
Conductivity	µS/cm	N/A	259	1500.0	1500.0
Dissolved Chloride	g/m ³	290	49.9	-	700
pH	pH	7.4	7.4	7.0	7.0
Suspended Solids	g/m ³	72.5	22.7	10%	10%
Total Iron	g/m ³	23.3	0.84	0.5	1.0

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Parameter		P1	P2	Aquatic	Stock
Total Manganese	g/m ³	1.67	0.1	-	2.0
Alkalinity	g/m ³	1265	36.4	-	-
Sodium	g/m ³	219	30.6	-	300
Total Cadmium	g/m ³	0.01	<0.01	0.0002	0.01
Total Chromium	g/m ³	0.11	<0.05	0.01	1.00
Total Copper	g/m ³	0.01	0.01	0.002	0.2
Total Lead	g/m ³	0.07	0.10	0.001	0.2
Total Nickel	g/m ³	0.05	0.09	0.015	0.2
Potassium	g/m ³	96	1.86	-	-
Total Zinc	g/m ³	0.05	0.03	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

7.3.4 Spicers Gully: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Very high	Very high	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low

7.4 Pukerua Bay Landfill/ Pony Club

7.4.1 Location Information

Location:	1 km south of State Highway 1 on Airlie Road	Last Used:	1975
Access:	Airlie Road,	Map Ref:	2667204 6014546
Nearby Town:	Pukerua Bay	Survey Date:	14 November 1997
Fill Contents:	General refuse		K/9/2/3

7.4.2 General Description

This site is located on the southern side of Airlie Road, approximately 1 km south of State Highway 1. It is currently used by a local pony club, surrounding land use is agricultural.

This site was an old Hutt County Council landfill taken over by Porirua City in 1974. The site was opened in 1954 and closed in 1975 and it appears that industrial waste was not deposited here. The site is currently owned by Porirua City and leased to a local light horse club.

There are two small streams running past the site:

- stream 1 flows from the southern end, along the south-eastern side, and into a swampy area on the northern side of Airlie Road; and
- stream 2 flows along the north-western side of the fill (the toe) and then into a swampy area on the northern side of Airlie Road.

There is a significant amount of general refuse exposed along stream 2 where it follows the toe of the fill, and areas with significant quantities of oxidised iron. The refuse along the toe includes roofing iron, old car bodies and general rubbish.

Both streams discharge into a swampy area on the northern side of Airlie Road which subsequently flows into Taupo Swamp. There is a distinctive iron oxide discharge at this point. Groundwater from under the landfill is likely to either discharge to this swamp or flow to the east towards Taupo Swamp.

Surrounding topography is rolling hill country, it is expected that both surface water and groundwater from the area will ultimately discharge into Taupo Swamp. Based on the identified discharge from the site into the swamp area on the northern side of Airlie Road, this site is considered high priority with respect to the discharge of leachate.

Based on the age and size of the site, potential landfill gas generation is estimated to be medium. There are several small buildings associated with the pony club on the site, and these have the potential to act as gas collection points. The site is considered medium priority with respect to the discharge of landfill gas.

7.4.3 Sampling Results

Three samples were collected from this site on 14 November 1997.

ID	Description
AR1	In stream 1, 200 m above the southernmost part of the pony club area.
AR2	In stream 2 in ponded area 5-10 m below two car wrecks.
AR3	At discharge into swampy area north of Airlie Road, directly on the northern side of the fence.

Test		AR1	AR2	AR3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	0.15	1.8	2.3	< 0.5	-
Chemical Oxygen Demand	g/m ³	14	950	130	-	-
Conductivity	µS/cm	766	1150	1380	1500.0	1500.0
Dissolved Chloride	g/m ³	160	230	140	-	700
pH		6.8	6.9	7.3	7.0	7.0
Suspended Solids	g/m ³	2100	4000	1500	10%	10%
Total Iron	g/m ³	1.8	1200	160	0.5	1.0
Total Manganese	g/m ³	0.58	2.4	1.0	-	2.0
Alkalinity	g/m ³	-	-	-	-	-
Sodium	g/m ³	-	-	-	-	300
Total Cadmium	g/m ³	-	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	-	0.01	1.00
Total Copper	g/m ³	-	-	-	0.002	0.2
Total Lead	g/m ³	-	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-	-
Total Zinc	g/m ³	-	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

7.4.4 Pukerua Bay: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			x
Quantity	Medium/high	Medium/high	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/Industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/Industrial	x	< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium

7.5 Sievers Grove (Porirua Park) Landfill

7.5.1 Location Information

Location:	Porirua Park	Last Used:	1976
Access:	Sievers Grove	Map Reference:	2665796 6004856
Nearby Town:	Porirua	Survey Date:	Oct 1996 to Aug 1997
Fill Contents:	General Refuse, industrial waste	File Number:	K/9/2/2

7.5.2 General Description

This site is located between Mangavin Road, Sievers Grove and Gear Terrace in Porirua. Current land use is recreational. Surrounding land uses are recreational and residential. The site is owned and maintained by the Porirua City Council.

The Sievers Grove (Porirua Park) Landfill in Porirua East is the old Porirua Borough landfill, opened in 1954 and closed in 1976. General household refuse and industrial waste is known to have been deposited here.

A visual inspection of the site in August 1997 showed some evidence of iron discharge at the lower north-western corner of the upper stage in the drain below the changing rooms. There was also evidence of elevated iron levels at the stream flowing through Mungavin Park, it is possible that this is due to generally high levels of iron in the Porirua area.

Surrounding topography is rolling with the nearest surface water body being a drain running along the south-west side of the upper stage. This is culverted under the lower stage and ultimately discharges to the Porirua Stream via the Porirua City Council stormwater system. Groundwater from the area is likely to flow to the north and/or west. There are no recorded groundwater bores within 500 m of this site.

The results of sampling carried out in 1996/97 were inconclusive with respect to identifying a significant discharge of leachate from the site. It is considered that further investigation into potential impacts of any discharge is warranted. Based on these results, the site is considered medium priority with respect to the discharge of leachate.

Based on the age and size of the site, potential landfill gas generation is estimated to be high. Surrounding residential properties, and buildings associated with the park have the potential to act as gas collection points. The site is considered relatively high priority with respect to the discharge of landfill gas.

7.5.3 Sampling Results

ID	Description
SS1	East end of rugby club carpark
SS2	Stormwater inlet on road to nursery
SS3	Mungavin Road

Test		SS1	SS2	SS3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	30.14	55.57	31.00	-	-
Conductivity	μS/cm	508.6	265.1	350.7	1500.0	1500.0
Dissolved Chloride	g/m ³	59.00	39.71	49.57	-	700
pH		7.5	7.1	6.9	7.0	7.0
Suspended Solids	g/m ³	62.86	540.0	97.71	10%	10%
Total Iron	g/m ³	18.06	4.17	8.87	0.5	1.0
Total Manganese	g/m ³	1.38	0.20	0.99	-	2.0
Alkalinity	g/m ³	142.29	48.43	78.71	-	-
Sodium	g/m ³	44.00	30.00	36.00	-	300
Total Cadmium	g/m ³	0.00	0.00	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.00	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.00	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.00	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.00	0.00	0.015	0.2
Potassium	g/m ³	6.26	2.79	3.91	-	-
Total Zinc	g/m ³	0.16	0.10	0.00	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

7.5.4 Porirua Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Very high	Very high	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	x
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			High

7.6 Brittons, Haywards Hill

7.6.1 Location Information

Location:	4 km west of State Highway 58 turn-off from Lower Hutt	Last Used:	unknown
Access:	State Highway 58	Map Ref:	2674797 6006903
Nearby Town:	Lower Hutt	Survey Date:	14 November 1997
Fill Contents:	General refuse		K/9/2/11

7.6.2 General Description

This site is on the north-eastern side of Haywards Hill Road (State Highway 58) approximately 5.5 km from Pauatahanui township. It is currently used as a yard by a house removal company, surrounding land use is agricultural. The site is privately owned and maintained.

There is a stream flowing down a valley to the south-east of the fill which passes through a culvert under the fill and State Highway 58. There is one recorded groundwater take within 500 m. However, it is likely that any discharge of leachate will enter the stream culverted under the fill area.

The culvert discharges into a farm stream through a constructed rockfall. This arrangement causes significant aeration of the water before it reaches the natural watercourse and appears to remove significant quantities of iron from the water. This observation is based on the quantity of iron oxide at the top of this waterfall arrangement.

Surrounding topography is steep with the nearest surface water body being the stream sampled (a tributary to Pauatahanui Stream).

Sampling results indicate that the level of iron both above and below the fill is above aquatic ecosystems criteria but below stock watering guidelines. It is considered that further investigation into potential impacts of any discharge is warranted. Based on these results, the site is considered medium priority with respect to the discharge of leachate.

Based on the age and size of the site, potential landfill gas generation is estimated to be medium. Buildings associated with the the house removal operation have the potential to act as gas collection points. On this basis the site is considered medium priority with respect to the discharge of landfill gas.

7.6.3 Sampling Results

Three samples were collected from this site on 14 November 1997.

ID	Description
HH1	20 m above the dam upstream of the Brittons premises, prior to culverting of the stream under the fill.
HH2	From the outlet of the culvert under State Highway 58.
HH3	Just upstream of the confluence of the two streams below State Highway

The sampling results are presented below.

Test		HH1	HH2	HH3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	0.68	0.35	< 0.5	-
Chemical Oxygen Demand	g/m ³	11	8	7	-	-
Conductivity	µS/cm	166	188	201	1500.0	1500.0
Dissolved Chloride	g/m ³	31	31	31	-	700
pH		7.4	7.1	7.6	7.0	7.0
Suspended Solids	g/m ³	20	4	2	10%	10%
Total Iron	g/m ³	<u>0.86</u>	<u>0.89</u>	0.48	0.5	1.0
Total Manganese	g/m ³	< 0.05	0.07	0.06	-	2.0
Alkalinity	g/m ³	N/A	N/A	N/A	-	-
Sodium	g/m ³	N/A	N/A	N/A	-	300
Total Cadmium	g/m ³	N/A	N/A	N/A	0.0002	0.01
Total Chromium	g/m ³	N/A	N/A	N/A	0.01	1.00
Total Copper	g/m ³	N/A	N/A	N/A	0.002	0.2
Total Lead	g/m ³	N/A	N/A	N/A	0.001	0.2
Total Nickel	g/m ³	N/A	N/A	N/A	0.015	0.2
Potassium	g/m ³	N/A	N/A	N/A	-	-
Total Zinc	g/m ³	N/A	N/A	N/A	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

7.6.4 **Brittons - Haywards Hill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium

Landfills in the Wellington Region

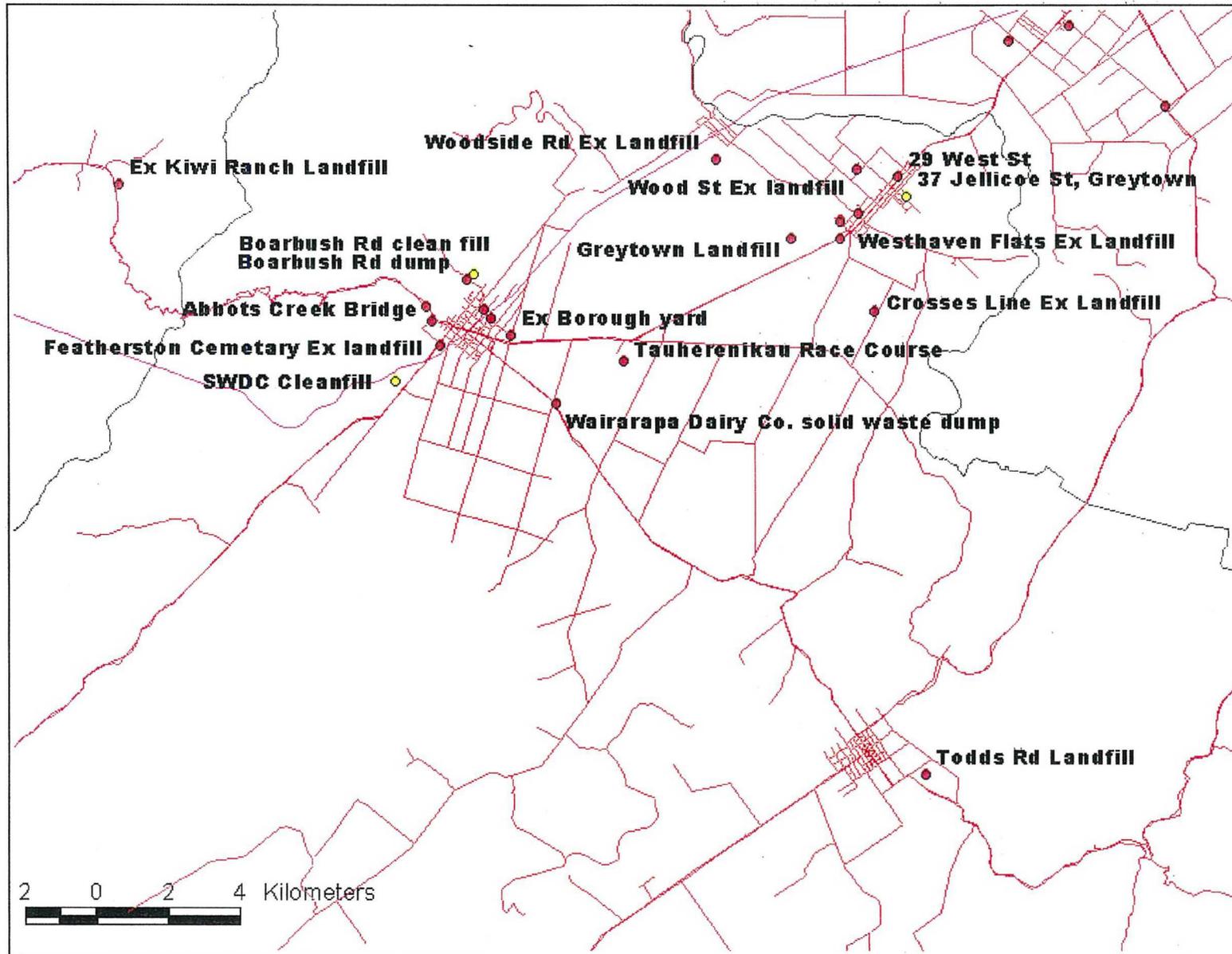


South Wairarapa Landfills

Landfills in the Wellington Region



South Wairarapa Landfills



Legend

- Landfill
- Cleanfill
- Railway
- Main Road
- LGB

2 0 2 4 Kilometers

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Landfills in the Wellington Region



8. South Wairarapa Landfills

8.1 Greytown Landfill

8.1.1 Location Information

Location:	Greytown Landfill	Last Used:	1998
Access:	State Highway 2	Map Reference:	2714134 6009864
Nearby Town:	Greytown	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/8/43

8.1.2 General Description

This site is located on the north-western side of State Highway 2 approximately 1.5 km south of Greytown. It is operational, surrounding land use is agricultural. The site is privately owned and operated by the South Wairarapa District Council.

The Greytown Landfill is on privately owned land and is not open to the public. The site was opened in 1983. The method of disposal is by trench excavation at Tauherenikau Straight, with intermediate cover.

Topography in the area is flat to gentle rolling and the nearest significant water course is the Waiohine River. There are no consented groundwater bores within 500 m of the site.

The site is covered by resource consents issued by the Wellington Regional Council (WAR 930017). A comprehensive evaluation of the effects of the operation, including leachate and landfill gas issues, was included with the consent application.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is adequately controlled by the resource consent process.

8.1.3 Sampling Results

This site is monitored under resource consent conditions.

8.1.4 **Greytown Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.2 Ngawi Landfill

8.2.1 Location Information

Location:	North-west of Ngawi	Last Used:	Approximately 1994
Access:	Cape Palliser Road	Map Reference:	2696230 5955660
Nearby Town:	Ngawi	Survey Date:	16 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/36

8.2.2 General Description

This site is on Cape Palliser Road north-west of Ngawi. Current use is open space, surrounding land use is open space/agricultural. The site is privately owned and maintained.

The site is approximately 1 ha and was operated by the South Wairarapa District Council with an informal agreement with the owners (Kawakawa 12d Trust).

The landfill was used from 1970 through to the early 1990s and received general refuse. It was situated on the beach a few metres from the high water mark. The site is now used as an informal transfer station/recycling centre, there are some piles of cleanfill and vegetation on one part of the site.

There are no indications of leachate from the site, if there is a significant discharge it is likely to be through the underlying sand and into groundwater. The groundwater is not a utilised resource and is likely to discharge into Palliser Bay. On this basis the site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age and size of the site, potential landfill gas production has been estimated as low. There are residential properties within 300 m of the site. Due to the small nature of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

8.2.3 Sampling Results

There are no sampling results on Wellington Regional Council files for this site.

8.2.4 **Ngawi Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.3 Tora Landfill

8.3.1 Location Information

Location:	Tora	Last Used:	1998
Access:	Tora Road	Map Reference:	2720588 5971065
Nearby Town:	Martinborough	Survey Date:	8 August 1997
Fill Contents:	General refuse	File Number:	K/9/8/37

8.3.2 General Description

The Tora Landfill is located on the north-eastern side of Tora Road approximately 5.5 km inland from the east coast. Current site use is agricultural, surrounding land use is agricultural. The site is currently owned by the South Wairarapa District Council but is up for sale.

The site was opened around 1988 and was operated as an open trench system that is covered over periodically. There was no control over material disposed of at this site. The site was still operating at the time of the site visit in August 1997.

The mode of operation is based on digging pits around 10 m x 3 m and filling them with general refuse. Once the pits are predominantly filled they are covered over and a new pit prepared. There are no water courses flowing through the site (the nearest surface water is around 50 metres away) The most likely form of discharge is to groundwater.

Groundwater is not used in the immediate area and there are no signs of impact on the nearby stream. The site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age and size of the site, potential landfill gas production has been estimated to be low. There were no potential gas collection points identified at the time of inspection. Due to the small nature of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

8.3.3 Sampling Results

No sampling results are available for this site.

8.3.4 **Tora Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.4 Abbots Creek Bridge

8.4.1 Location Information

Location:	1 km west of Featherston	Last Used:	1973
Access:	State Highway 2	Map Reference:	2704000 6008000
Nearby Town:	Featherston	Survey Date:	16 June 1998
Fill Contents:	Unknown	File Number:	K/9/8/22

8.4.2 General Description

This site is located on the north-east side of State Highway 2 approximately 1 km west of Featherston. Current land use is vacant, surrounding land is either vacant or used for agricultural purposes. The site is privately owned and maintained.

A note on file states that in 1973 Featherston ran out of water so the council dug these holes, lined them with polythene and treated water in them. The site only operated for a few months. After this, the holes were filled in, but there is no record of what was deposited or quantities.

The surrounding country is steep with surface water likely to discharge into Abbots Creek. Water quality samples do not indicate any effects on Abbots Creek attributable to this site. On this basis the site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age and size of the site, potential landfill gas production has been estimated as low. There were no potential gas collection points identified at the time of inspection. Due to the small nature of the site and lack of potential receptors it is considered relatively low priority with respect to the discharge of landfill gas.

8.4.3 Sampling Results

Two samples were collected from this site on 16 June 1998

ID	Description
AC1	Upstream of fill site
AC2	Downstream of fill site, by old bridge

The sampling results are presented below.

Test		AC1	AC2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	< 5	6	-	-
Conductivity	µS/cm	114	115	1500.0	1500.0
Dissolved Chloride	g/m ³	17	17	-	700
pH		7.4	7.4	7.0	7.0
Suspended Solids	g/m ³	< 2	< 2	10%	10%
Total Iron	g/m ³	< 0.03	0.05	0.5	1.0

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Test		AC1	AC2	Aquatic	Stock
Total Manganese	g/m ³	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	N/A	N/A	-	-
Sodium	g/m ³	N/A	N/A	-	300
Total Cadmium	g/m ³	N/A	N/A	0.0002	0.01
Total Chromium	g/m ³	N/A	N/A	0.01	1.00
Total Copper	g/m ³	N/A	N/A	0.002	0.2
Total Lead	g/m ³	N/A	N/A	0.001	0.2
Total Nickel	g/m ³	N/A	N/A	0.015	0.2
Potassium	g/m ³	N/A	N/A	-	-
Total Zinc	g/m ³	N/A	N/A	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

8.4.4 Abbots Creek Bridge Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.5 Ex Greytown Landfill

8.5.1 Location Information

Location:	Moroa	Last Used:	Before 1970
Access:	State Highway 2	Map Reference:	2715493 6009873
Nearby Town:	Greytown	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/8/39

8.5.2 General Description

The site is a slightly raised platform located south of the Martinborough turnoff approximately 0.5 km south of Greytown on State Highway 2. It is currently used for grazing, surrounding land use is agricultural. The site is privately owned and maintained.

The site was originally a gravel pit that was subsequently filled with refuse. It was used from around 1915 and probably closed around the time that the current Greytown Landfill began operating in 1983. The Greytown Gasworks was operational during the period that this site operated. The site has also been used as a hydatis dosing strip.

Surrounding topography is flat with the nearest surface water bodies being various farm drains. Any discharge of leachate is likely to enter groundwater, there are several recorded groundwater bores in the vicinity of the site. It may be worthwhile investigating water quality at these sites. This site is considered medium priority with respect to the discharge of leachate.

On the basis of the age and size of the site, potential landfill gas production has been estimated as low. There are potential gas collection points within 300 m of the site. Due to the small nature of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

8.5.3 Sampling Results

There are no sampling results for this site.

8.5.4 **Ex Greytown Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.6 Westhaven Flats Ex Landfill

8.6.1 Location Information

Location:	Westhaven Resthome	Last Used:	1960s
Access:	West Street	Map Reference:	2716000 6010585
Nearby Town:	Greytown	Survey Date:	
Fill Contents:	Cleanfill	File Number:	

8.6.2 General Description

This site is located at 190 West Street, Greytown. Current site use is residential, surrounding land use is residential. The site is currently owned and maintained by the South Wairarapa District Council.

The site was an old metal pit that was filled with cleanfill and inorganic refuse in the 1950s and 60s. The site may also contain bitumen, tar, and possibly material from the old gasworks which closed in the 1940s. The collapse of a large galvanised tank lead to stability problems and required the installation of deep piles to rectify the problem.

Surrounding topography is flat to rolling with no significant surface water bodies close to the site. There are several known groundwater bores within 500 m of the site. Any discharge of leachate from the site is likely to enter groundwater.

Given the period of time since the site was last used for disposal of fill (1960s) and the nature of the material disposed (predominantly inorganic and inert material) it is considered unlikely that there are significant adverse effects from this site. This cannot be confirmed without soil and/or groundwater sampling in the vicinity.

This site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age and size, and contents of the site, potential landfill gas production has been estimated as low. There are potential gas collection points within 300 m of the site. Due to the small nature of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

8.6.3 Sampling Results

There are no sample results for this site.

8.6.4 **Westhaven Flats Ex Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.7 29 West Street

8.7.1 Location Information

Location:	27-29 West Street	Last Used:	1960s
Access:	West Street	Map Reference:	2717085 6011606
Nearby Town:	Greytown	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/8/45

8.7.2 General Description

This site is located on at the north-east end of West Street, Greytown. The current site use is residential, surrounding land use is residential. The site is privately owned and maintained.

According to notes on file, this site was filled in 1950s and 1960s with cleanfill/inorganic refuse. The site was subsequently sold and developed for residential use. Subsidence problems have occurred.

Given the length of time since this site has been used, and the fact that predominantly inorganic refuse was disposed of, the potential impacts of leachate are considered minor. Accordingly the site is considered relatively low priority with respect to leachate.

Landfill gas is no considered an issue for this site.

8.7.3 Sampling Results

There are no sample results for this site.

8.7.4 **29 West Street: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

8.8 Woodside Road Ex Landfill

8.8.1 Location Information

Location:	Woodside Road	Last Used:	1960s - 70s
Access:	Woodside Road	Map Reference:	2712087 6012080
Nearby Town:	Greytown	Survey Date:	16 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/40

8.8.2 General Description

This site is located on Woodside Road, approximately 4 km west of Greytown. It is currently used for grazing. Surrounding land uses are residential and agricultural. The site is privately owned and maintained.

The site was a landfill that ceased operation 20-30 years ago. Neighbours of the site can remember shooting rats on the fill when they were children.

A significant receptor for any discharge from the site would be the Moera water race both directly from the toe of the fill and through groundwater. The water is used for irrigation, stock water and domestic purposes. Sampling results in the water race in the vicinity of the fill do not show any effects attributable to the site.

This site is considered relatively low priority with respect to the discharge of leachate.

Based on the size and age of the site, the potential landfill gas generation has been estimated to be low. There is a residential dwelling to the south-east of the fill area, this has the potential to act as a gas collection point. This site is considered relatively low priority with respect to landfill gas.

8.8.3 Sampling Results

Three samples were collected from this site on 16 June 1998

ID	Description
WS1	Upstream of the fill, north of Woodside Road
WS2	At toe of fill
WS3	Below culvert under driveway

The sampling results are presented below.

Test		WS1	WS2	WS3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	7	6	8	-	-
Conductivity	µS/cm	57	58	58	1500.0	1500.0
Dissolved Chloride	g/m ³	5.4	5.4	5.4	-	700
pH		7.4	7.5	7.4	7.0	7.0

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Test		WS1	WS2	WS3	Aquatic	Stock
Suspended Solids	g/m ³	6	5	6	10%	10%
Total Iron	g/m ³	0.17	0.17	0.20	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-	-
Sodium	g/m ³	-	-	-	-	300
Total Cadmium	g/m ³	-	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	-	0.01	1.00
Total Copper	g/m ³	-	-	-	0.002	0.2
Total Lead	g/m ³	-	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-	-
Total Zinc	g/m ³	-	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

8.8.4 Woodside Road Ex Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user	x	Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.9 Ocean Beach

8.9.1 Location Information

Location:	Ocean Beach	Last Used:	Operational
Access:	Wharehaukau Road	Map Reference:	
Nearby Town:	Martinborough	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/8/38

8.9.2 General Description

This site is located on Ocean Beach near Corner Creek. The surrounding area is general open space and is periodically used as a campsite. The site is owned and maintained by the Department of Conservation (DOC).

DOC dug a pit for the campers to use but the locals filled it with waste before campers could use it. There was also an old trench which was covered over in 1991. Infrequent rubbish collection days have been arranged where the South Wairarapa District Council sends down a rubbish truck. Generally people are supposed to take their rubbish away with them.

The site is located on the beach area with steep hill country to the north. Any discharge of leachate is likely to be to Palliser Bay via groundwater. Based on the small volumes of refuse and the expected dilution on discharge into Palliser Bay this site is considered relatively low priority with respect to the discharge of leachate.

Given the size of the site, this site is considered relatively low priority with respect to landfill gas.

8.9.3 Sampling Results

There are no sample results for this site.

8.9.4 **Ocean Beach: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.10 Wood Street Ex landfill

8.10.1 Location Information

Location:	Behind Taites Orchard	Last Used:	Operating as cleanfill
Access:	Wood Street	Map Reference:	2715966 6011792
Nearby Town:	Greytown	Survey Date:	16 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/47

8.10.2 General Description

This site is located on Wood Street on the east and west side of the corner with Mole Street. Current land use is for fruit production, surrounding land use is a mixture of orchards and residential. The site is privately owned and maintained.

The site was operated as a general tip for a period of time up to 1984. Information on file indicates that the filling began in the mid 1960s at the latest. From 1984 to 1996 the site was operated as a cleanfill tip. There is no information regarding the use of the site pre 1964.

Given the fact that the site is located near orchards, it is likely that pesticides and associated containers have been disposed of at this site. Apparently the site was originally a gully that was filled in with refuse and cleanfill.

The surrounding area is flat, the nearest surface water body is the Waiohine River approximately 1.8 km to the north. Any discharge of leachate from this site is likely to enter groundwater. There are several known groundwater bores within 500 m of the site. This site is considered medium priority with respect to the discharge of leachate.

Based on the age and estimated size of the site, the potential landfill gas generation is considered to be medium. There are no potential gas collection points in the vicinity of the site. The site is considered relatively low priority with respect to the discharge of landfill gas.

8.10.3 Sampling Results

There are no sample results for this site.

8.10.4 **Wood Street Ex Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.11 **Todds Road Landfill**

8.11.1 **Location Information**

Location:	Toods Road	Last Used:	1972
Access:	Todds Road	Map Reference:	5995103 5995103
Nearby Town:	Martinborough	Survey Date:	16 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/97

8.11.2 **General Description**

This site is located on the south-east side of Todds Road, south-east of Martinborough. Current land use is agricultural, surrounding land use is agricultural. The site is privately owned and maintained.

There is a map on file from a survey for a proposed subdivision (Jan 1996). The site is noted as being near the corner of Martinborough-Masterton Road and Todds Road. Apparently the site was used up to 1972, there is no specific information on file regarding what was disposed of there.

Surrounding topography is flat with the nearest significant water body being the Huangarua River to the north-east. Any discharge of leachate from the site is likely to enter groundwater. There are several known groundwater bores within 500 m of the site. The site is considered relatively low priority with respect to the discharge of leachate.

There is some potential for the generation of landfill gas from this site, this has been estimated to be medium on the basis of age and size. There are no potential gas collection points within 300 m of the site. The site is considered relatively low priority with respect to the discharge of landfill gas. This should be reconsidered if the site is redeveloped.

8.11.3 **Sampling Results**

There are no sample results for this site.

8.11.4 Todds Road Ex Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.12 Batavian Rubber Co. Landfill

8.12.1 Location Information

Location:	Farmland	Last Used:	1998
Access:	Viles Road	Map Reference:	2705800 6007700
Nearby Town:	Featherston	Survey Date:	6 January 1998
Fill Contents:	Cleanfill, trees, factory rubbish	File Number:	K/9/8/31

8.12.2 General Description

This site is located on the corner of Viles Road and Longwood Road, south of Featherston. Current and surrounding land use is agricultural. The site is privately owned and maintained.

It is not clear how long this site has been operating, but photos on file indicate it was used before 1991 to at least 1994. An inspection of the site in 1998 showed significant quantities of vegetation in the fill area.

The landfill is located in an unnamed watercourse that ultimately discharges into Lake Wairarapa. From the photos on file and site visits in 1998 it appears that this watercourse does not flow during times of dry weather. It is likely that any discharge of leachate from the site enters groundwater for most of the year, there are several recorded groundwater bores within 500 m of the site.

Given the lack of regulatory control for this site, it is considered relatively high priority with respect to the discharge of leachate. Further work is recommended to define what material has been disposed of here, and the potential impacts of any discharge of leachate.

On the basis of the age and size of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

8.12.3 Sampling Results

There are no sampling results on Wellington Regional Council files for this site.

8.12.4 Batavian Rubber Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	x
Quantity	Low	Low	Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.13 Featherston Cemetary Ex landfill

8.13.1 Location Information

Location:	North-east of Featherston Cemetery	Last Used:	1991
Access:	Western Lake Road	Map Reference:	2704403 6006924
Nearby Town:	Featherston	Survey Date:	6 January 1998
Fill Contents:	General refuse	File Number:	K/9/8/24

8.13.2 General Description

This site is situated on the north-east boundary of the Featherston Cemetery on Western Lake Road. The site is currently used for grazing, surrounding land use is agricultural. The site is owned and maintained by The Featherston Cemetery Trustees.

The site was operated from 1982 to the early 1990s. Compacted domestic refuse from Featherston refuse was buried on the site in pits up to 6 m deep.

Surrounding topography is flat with the Rimutaka Range approximately 800 m to the north-west. The nearest significant watercourse is Abbots Creek approximately 250 m to the north-east. There are no recorded groundwater bores within 500 m of the site. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age and size of the site, the potential for gas generation is estimated to be medium. There are no identified potential gas collection points within 300 m of the site. The site is considered relatively low priority with respect to the discharge of landfill gas.

8.13.3 Sampling Results

There are no sample results for this site.

8.13.4 Featherston Cemetary Ex Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.14 Pirinoa Landfill

8.14.1 Location Information

Location:	Pirinoa	Last Used:	1995
Access:	Lake Ferry Road	Map Reference:	2693031 5979737
Nearby Town:	Martinborough	Survey Date:	16 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/35

8.14.2 General Description

This site is located between Lake Ferry Road and the Taranganui River. It is currently operated as a transfer station, surrounding land use is agricultural. The site is owned and operated by the South Wairarapa District Council.

The site is in the flood plain of the Taranganui River and has consent to discharge leachate to the river (WAR 950019). The filling operation ceased in 1995.

Sampling results do not indicate any effects from the site on water quality in the Taranganui River.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is adequately controlled by the resource consent process.

8.14.3 Sampling Results

Two samples were collected from this site on 16 June 1998

ID	Description
PN1	Downstream of landfill, in Taranganui River
PN2	Upstream of landfill, in Taranganui River

The sampling results are presented below.

Test		PN1	PN2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	5	5	-	-
Conductivity	µS/cm	190	179	1500.0	1500.0
Dissolved Chloride	g/m ³	22	20	-	700
pH		7.2	7.4	7.0	7.0
Suspended Solids	g/m ³	< 2	< 2	10%	10%
Total Iron	g/m ³	0.12	0.11	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-
Sodium	g/m ³	-	-	-	300
Total Cadmium	g/m ³	-	-	0.0002	0.01

Landfills in the Wellington Region

Test		PN1	PN2	Aquatic	Stock
Total Chromium	g/m ³	-	-	0.01	1.00
Total Copper	g/m ³	-	-	0.002	0.2
Total Lead	g/m ³	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-
Total Zinc	g/m ³	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

8.14.4 Pirinoa Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.15 Crosses Line Ex Landfill

8.15.1 Location Information

Location:	Crosses Line	Last Used:	1990
Access:	Crosses Line	Map Reference:	2716443 6007893
Nearby Town:	Greytown	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/8/41

8.15.2 General Description

This site is located on Crosses Line 3 km from Greytown. Current use is agricultural, surrounding land use is agricultural. The site is privately owned.

The site was used for 20 years up until around 1990. The operation consisted of digging a hole, filling it with refuse for around a week and then capping it. It is likely that some burning took place at this site. Recycling from 1983/4 cut down on refuse volumes by around one third.

Surrounding topography is flat, any discharge of leachate from the site is likely to enter groundwater. There are several groundwater bores within 500 m of the site, the closest bores are approximately 280 m to the south and south-west. The site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and contents of this site, the potential landfill gas generation is estimated to be medium. There are no identified potential gas collection points within 300 m of the site. The site is considered relatively low priority with respect to the discharge of landfill gas.

8.15.3 Sampling Results

There are no sampling results for this site.

8.15.4 Crosses Line Ex landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.16 Tauherenikau Racecourse

8.16.1 Location Information

Location:	Tauherenikau Racecourse	Last Used:	1990s
Access:	State Highway 2	Map Reference:	2709500 6006500
Nearby Town:	Featherston	Survey Date:	16 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/28

8.16.2 General Description

This site is located within the grounds of the Tauherenikau Racing Club between Featherston and Greytown. Surrounding land uses are recreational and agricultural. The site is privately owned and maintained.

This site was used for the disposal of general rubbish from the racing club site and was not consented. Leachate is likely to discharge to groundwater, Tauherenikau River, and/or small drains.

Based on the likely size of this site, and the lack of identified impacts on surface water, it is considered relatively low priority with respect to the discharge of leachate.

Given the uncontrolled nature of this operation, it is unlikely that there was an appropriate cap installed on completion. If this is the case, gas generated during breakdown of the refuse will easily discharge to atmosphere. This site is considered relatively low priority with respect to the discharge of landfill gas.

8.16.3 Sampling Results

There are no sample results for this site.

8.16.4 Tauherenikau Racecourse: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Very low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user	x	Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.17 Boarbush Road dump

8.17.1 Location Information

Location:	Boarbush Road	Last Used:	1980s
Access:	Boarbush Gully Road	Map Reference:	2705140 6008730
Nearby Town:	Featherston	Survey Date:	16 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/30

8.17.2 General Description

This site is located off the end of Boarbush Road, Featherston. The surrounding land use is agricultural.

According to a note on file, the operator buried compacted refuse at the time Cross Creek (Probably Crosses Line) was operating. It is likely the mode of operation was similar to other sites operational at the time and involved burying compact refuse in open pits and then capping each pit once full.

Surrounding topography is steep to rolling (foothills of the south-eastern Tararuas), the nearest surface water body is Boar Creek that runs down a valley on the northern side of Boarbush Road. Any discharge of leachate from the site is likely to enter the creek either directly or via groundwater.

Based on the lack of identified impacts on the stream (see sampling results for Boar Bush Road cleanfill) and the likely scale of the operation, this site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and contents of the fill, potential landfill gas generation is estimated as medium. In the absence of identified potential gas collection points with 300 m of the site it is considered relatively low priority with respect to the discharge of landfill gas.

8.17.3 Sampling Results

There are no sampling results for this site. Refer to results for Boarbush Road Cleanfill for water quality in Boar Creek.

8.17.4 Boarbush Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Very low	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.18 Featherston Transfer Station

8.18.1 Location Information

Location:	Johnson Street	Last Used:	Operational
Access:	Johnson Street	Map Reference:	2705600 6007900
Nearby Town:	Featherston	Survey Date:	12 June 1998
Fill Contents:	General refuse	File Number:	K/9/8/25

8.18.2 General Description

This site is located on Johnston Street, Featherston, to the north-east of the main township area and north of the railway station. The site is used for recycling and collecting of refuse for disposal off site. Surrounding site use is recreational and agricultural and is owned and maintained by the South Wairarapa District Council.

There is a note on file indicating that there is an infilled refuse hole on the site, but no independent confirmation of this has been obtained. The transfer station and recycling operation began in 1984. Impacts in terms of leachate and gas relating to the transfer station are likely to be minor.

Between the transfer station and the railway line to the south-east there is a general fly tipping area, it appears that this has been used for some time. There is a drain that appears to be culverted under this area and then flows south towards the railway station before turning west towards Harrison Street west.

Surrounding topography is flat and with the exception of the drain noted above, there are no surface water bodies. Any discharge of leachate is likely to be predominantly to groundwater. The nearest groundwater bore is approximately 200m to the south-east. The site is considered relatively low priority with respect to the discharge of leachate, this is based largely on the fact that it is covered by resource consents.

The potential for landfill gas generation from this site has been estimated as low. The shed on the transfer station site has the potential to act as a gas collection point. Based on the likely age and size of the infilled hole, the site is considered relatively low priority with respect to the discharge of landfill gas.

8.18.3 Sampling Results

No sampling was carried out for this site.

8.18.4 Featherston Transfer Station: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.19 Ex Borough Yard, Featherston

8.19.1 Location Information

Location:	Dorset Square	Last Used:	Pre-1970s
Access:	Fitzherbert Street	Map Reference:	2706350 6007200
Nearby Town:	Featherston	Survey Date:	12 June 1998
Fill Contents:	General refuse, tar	File Number:	K/9/8/32

8.19.2 General Description

This site is currently known as Dorset Square and is on the south-western side of Fitzherbert Street at the western end of Featherston. Surrounding land use is residential and commercial.

The site was the location of the Featherston Gasworks from 1896 to sometime around 1916. The gasworks process produced acetylene gas from calcium carbide and water. The square was also used as a borough yard, noted on a 1954 survey plan as reserve land set aside for use as a municipal depot.

Notes on file indicate that the site was filled prior to the 1970s and the fill was likely to include tar, bitumen, and other materials relating to borough activities.

Surrounding topography is flat to the east with the Rimutakas rising to the west and the Tararuas to the north. The nearest surface water body is Abbots Creek to the south-west. Any discharge of leachate from this site is likely to enter groundwater, there are no recorded groundwater bores within 500 m of the site. This site is considered relatively low priority with respect to the discharge of leachate.

The potential for landfill gas generation from this site has been estimated as low. There are no identified potential gas collection points on the site. Based on the likely age and size of the fill area, the site is considered relatively low priority with respect to the discharge of landfill gas.

8.19.3 Sampling Results

There are no sampling results for this site.

8.19.4 Ex Borough Yard: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

8.20 Martinborough Transfer Station and Landfill

8.20.1 Location Information

Location:	Pain Farm	Last Used:	Operational
Access:	Lake Ferry Road	Map Reference:	2715500 6010400
Nearby Town:	Martinborough	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/8/34

8.20.2 General Description

This site is located on the north-western side of Lake Ferry Road approximately 2.5 km south-west of Martinborough. Surrounding land use is predominantly agricultural. The site is owned and operated by the South Wairarapa District Council.

The operation involved digging a large hole and filling it for up to several days and covering it. The site has been used since the 1960s with recycling since 1990. There is also a shallow (2-3 m deep) gully that has been progressively filled with refuse.

Surrounding topography is flat to gently rolling with the predominant water course in the area being the Ruamahunga River to the north-west. Any discharge of leachate not addressed in the landfill design is likely to be either to groundwater or via small farm drains.

This site is considered low priority with respect to both leachate and landfill gas impacts based on the fact that the operation is adequately controlled by the resource consent process.

8.20.3 Sampling Results

There are no sample results for this site.

8.20.4 **Martinborough Transfer Station and Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

8.21 Lake Wairarapa Lookout

8.21.1 Location Information

Location:	Lake Wairarapa Lookout	Last Used:	Late 1980s
Access:	State Highway 2	Map Reference:	2704143 6007598
Nearby Town:	Featherston	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/8/23

8.21.2 General Description

This site is located south of Featherston on State Highway 2, bounded by State Highway 2, Abbots Creek and residential properties. The site is currently used as a lookout/picnic area. The site is owned by the South Wairarapa District Council and maintained by Transit New Zealand.

The site was used for the disposal of a variety of waste including drums, sheets of metal and plastics. Sawdust was used to cover the final layers of refuse. The site is directly beside Abbots creek and there are areas of uncovered refuse on the stream bank.

Surrounding topography is steep to rolling with the Rimutaka Ranges to the west of the site. As noted above, Abbots Creek is the nearest significant watercourse and is likely to receive any discharge of leachate. Sampling in Abbots Creek around the toe of the fill did not indicate any effects attributable to the site. The site is considered relatively low priority with respect to the discharge of leachate.

Based on the age and size of the site, potential landfill gas generation is estimated as medium. There are residential properties within 300 m of the site, these have the potential to act as gas collection points. Given the topography (the residential properties are downhill from the fill site, it is considered unlikely that landfill gas is migrating in this direction. The site is considered medium priority with respect to the discharge of landfill gas.

8.21.3 Sampling Results

Two samples were collected from this site on 16 June 1998

ID	Description
LW1	Upstream of fill
LW2	At toe of fill
LW3	Downstream of fill

The sampling results are presented below.

Landfills in the Wellington Region

Test		LW1	LW2	LW3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	10	8	8	-	-
Conductivity	μS/cm	115	116	116	1500.0	1500.0
Dissolved Chloride	g/m ³	17	17	17	-	700
pH		7.4	7.4	7.4	7.0	7.0
Suspended Solids	g/m ³	< 2	< 2	< 2	10%	10%
Total Iron	g/m ³	< 0.03	< 0.03	< 0.03	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-	-
Sodium	g/m ³	-	-	-	-	300
Total Cadmium	g/m ³	-	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	-	0.01	1.00
Total Copper	g/m ³	-	-	-	0.002	0.2
Total Lead	g/m ³	-	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-	-
Total Zinc	g/m ³	-	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

8.21.4 Lake Wairarapa Lookout: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium

Upper Hutt Landfills

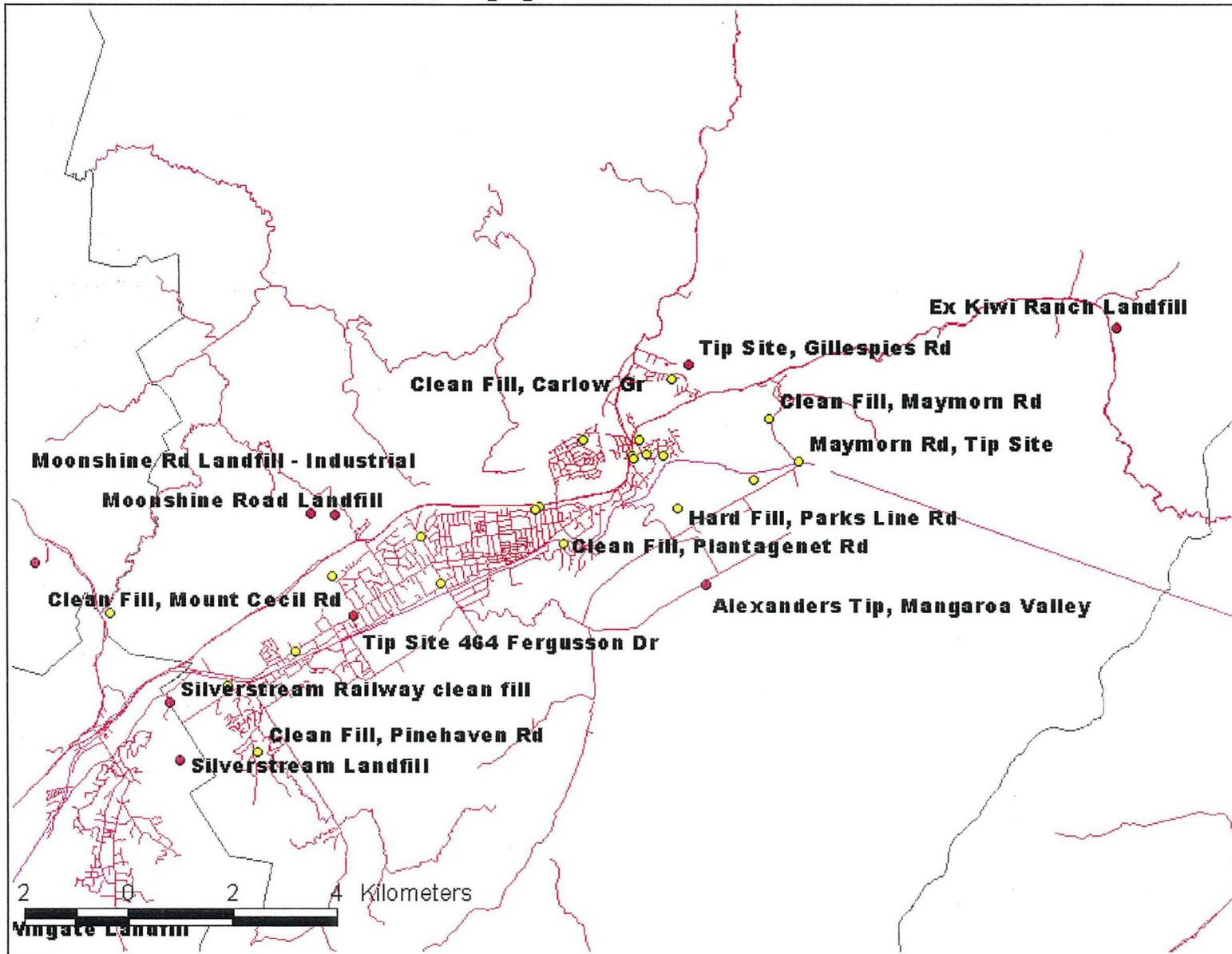
Landfills in the Wellington Region



Upper Hutt Landfills

Legend

- Landfill
- Cleanfill
- Railway
- Main Road
- LGB



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Landfills in the Wellington Region



9. Upper Hutt Landfills

9.1 Cleanfill, Maymorn Road

9.1.1 Location Information

Location:	1066 Maymorn Road	Last Used:	Operational
Access:	Maymorn Road	Map Reference:	2688838 6009635
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	Cleanfill, indiscriminate fill	File Number:	K/9/4/29

9.1.2 General Description

This site is located on Maymorn Road near State Highway 2. Current land use is cleanfilling, surrounding land use is agricultural, industrial and residential. The site is privately owned and operated.

This site is a cleanfill that has allegedly received a variety of waste and general refuse in the past. As the result of a complaint received by the Wellington Regional Council in 1995, Opus International Consultants (formerly Works Consultancy Ltd.) has undertaken investigations of groundwater on the site to determine if there is a significant discharge of leachate.

Comparison of the water quality in the groundwater monitoring bores with the ANZECC guidelines indicates that both iron and cadmium exceed criteria for the protection of aquatic ecosystems. When likely dilution after discharge of groundwater into the Mangaroa River is taken into account the figures are close to or meet the ANZECC guideline criteria.

9.1.3 Sampling Results

Sampling results from the Opus investigation can be summarised as follows:

ID	Description
Well A	South-west end of site, between fill and Mangaroa River
Well B	North-west end of site, between fill and Mangaroa River

Test		A	B	B	Aquatic	Stock
Date		20/9/94	20/9/94	21/8/97		
Ammoniacal Nitrogen	g/m ³	N/A	N/A	0.73	< 0.5	-
Chemical Oxygen Demand	g/m ³	0.25	0.19	0.055	-	-
Conductivity	µS/cm	118.0	130.0	151.0	1500.0	1500.0
Dissolved Chloride	g/m ³	0.02	0.02		-	700
pH		6.3	6.2	5.76	7.0	7.0
Suspended Solids	g/m ³				10%	10%
Total Iron	g/m ³	21.5	20.0	4.6	0.5	1.0
Total Manganese	g/m ³	0.81	0.71	0.13	-	2.0

Landfills in the Wellington Region

Test		A	B	B	Aquatic	Stock
Alkalinity	g/m ³				-	-
Sodium	g/m ³	15.0	14.3		-	300
Total Cadmium	g/m ³	<0.02	0.02	0.04	0.0002	0.01
Total Chromium	g/m ³	<0.01	<0.01	0.01	0.01	1.00
Total Copper	g/m ³	<0.03	<0.03	0.05	0.002	0.2
Total Lead	g/m ³	<0.2	<0.2	0.08	0.001	0.2
Total Nickel	g/m ³	<0.02	<0.02	0.01	0.015	0.2
Potassium	g/m ³	2.0	1.7		-	-
Total Zinc	g/m ³	0.03	0.02	0.32	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.1.4 **Cleanfill, Maymorn Road: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.2 Cleanfill, Mount Cecil Road

9.2.1 Location Information

Location:	3 km west of State Highway 58 turn-off from Lower Hutt	Last Used:	1992
Access:	State Highway 58	Map Ref:	2676247 6005966
Nearby Town:	Upper Hutt	Survey Date:	14 November 1997
Fill Contents:	Cleanfill		K/9/4/31

9.2.2 General Description

This site is located near the corner of Mt Cecil Road and State Highway 58 in Upper Hutt. Current use of the site is agricultural. Surrounding land use is agricultural. The site is privately owned and maintained on two properties.

This cleanfill site is located on several properties on the corner of Mt. Cecil Road and Haywards Hill Road (State Highway 58) approximately 2 km from the Lower Hutt end of the Haywards Hill Road. The site was used in the early 1990s for the deposition of fill from the Haywards Hill substation redevelopment, the contract for filling included a clause stating that no buildings would be constructed on the fill areas.

There are two land parcels with fill, Lot 1 DP 71783 has experienced some problems with land slumping. The fill on Lot 3 DP 71783 appears stable.

Inspection of the stream running south-west through Lot 1 reveals a discharge of water visibly contaminated with iron oxide about 3-4 m up the northern bank from a corrugated plastic pipe. This appears to come from Lot 3 but no source of the discharge from this pipe has been identified. Some of the land above this is part of Lot 3.

Further up the stream, there is evidence of slumping of the fill on Lot 1, but no obvious discharges of leachate.

The sampling results for this site do not indicate any effects on the stream attributable to the fill site, some further investigation is warranted to check the source of the water flowing through the corrugated plastic pipe. This site is considered medium priority with respect to the discharge of leachate.

Due to the fact that the site received cleanfill only, landfill gas is not considered an issue.

9.2.3 Sampling Sites

Two samples were collected from this site on 14 November 1997.

ID	Description
MC1	From stream just downstream of pooling area above Morgans fill
MC2	From the downstream side of the culvert under access track to Lots 2 and 3

Test		MC1	MC2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	8	6	-	-
Conductivity	µS/cm	173	173	1500.0	1500.0
Dissolved Chloride	g/m ³	31	30	-	700
pH		7.2	7.2	7.0	7.0
Suspended Solids	g/m ³	2	2	10%	10%
Total Iron	g/m ³	0.20	0.33	0.5	1.0
Total Manganese	g/m ³	< 0.05	0.06	-	2.0
Alkalinity	g/m ³	-	-	-	-
Sodium	g/m ³	-	-	-	300
Total Cadmium	g/m ³	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	0.01	1.00
Total Copper	g/m ³	-	-	0.002	0.2
Total Lead	g/m ³	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-
Total Zinc	g/m ³	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.2.4 **Cleanfill, Mt Cecil Road: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user	x	Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.3 Trentham Memorial Park/Moehau Park

9.3.1 Location Information

Location:	Trentham Memorial Park	Last Used:	Unknown
Access:	Holdsworth Avenue	Map Reference:	2680498 6006673
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/4/30

9.3.2 General Description

This site is located on the eastern bank of the Hutt River in Upper Hutt. Current use is recreational and surrounding land uses are recreational and residential. The site is owned and maintained by the Upper Hutt City Council.

The site was used for the disposal of cleanfill and has been rehabilitated for use as a recreational area. The fill area lies between the stop banks on the southern side of the Hutt River and an unnamed stream running from the corner of Rimutaka Street and Holdsworth Avenue to the Hutt River in a westerly direction.

There is no obvious discharge of leachate into the stream from the fill, sampling results are presented in the following section. Levels of contaminants measured were below ANZECC water quality criteria for both aquatic ecosystems and stock watering purposes. On this basis, the site is considered relatively low priority with respect to the discharge of leachate.

Due to the fact that the site received cleanfill only, landfill gas is not considered an issue.

9.3.3 Sampling Sites

Two samples were collected from this site on.

ID	Description
TM1	Upstream of fill (unnamed tributary to Hutt River)
TM2	Downstream of fill

Test		TM1	TM2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	8	5	-	-
Conductivity	µS/cm	133	115	1500.0	1500.0
Dissolved Chloride	g/m ³	17	12	-	700
pH		7.2	7.2	7.0	7.0
Suspended Solids	g/m ³	23	≤ 2	10%	10%
Total Iron	g/m ³	0.07	0.05	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	N/A	N/A	-	-

Landfills in the Wellington Region

Test		TM1	TM2	Aquatic	Stock
Sodium	g/m ³	N/A	N/A	-	300
Total Cadmium	g/m ³	N/A	N/A	0.0002	0.01
Total Chromium	g/m ³	N/A	N/A	0.01	1.00
Total Copper	g/m ³	N/A	N/A	0.002	0.2
Total Lead	g/m ³	N/A	N/A	0.001	0.2
Total Nickel	g/m ³	N/A	N/A	0.015	0.2

Test		TM1	TM2	Aquatic	Stock
Potassium	g/m ³	N/A	N/A	-	-
Total Zinc	g/m ³	N/A	N/A	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.3.4 Trentham Memorial Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.4 Ex Kiwi Ranch Landfill

9.4.1 Location Information

Location:	Main Road	Last Used:	1990s
Access:	Main Road Kaitoke	Map Reference:	2695489 6011358
Nearby Town:	Kaitoke	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/4/92

9.4.2 General Description

This site is located on the northern side of State Highway 2 north of Kaitoke Country Gardens. The current and surrounding land use is agricultural and lifestyle blocks, with plans to build a dwelling on the property. The site is privately owned and maintained.

The site was used by a nearby children's holiday camp for the disposal of general inorganic refuse. After complaints were received by the Wellington Regional Council the site was rudimentarily capped and sold. Subsequent work by the current owner has included capping the fill area with several feet of cleanfill.

Surrounding topography is flat to rolling with the stream exiting the fill area flowing into the Rimutaka Stream. There are no recorded groundwater bores in the area.

Sampling in the stream below the landfill area indicates elevated levels of iron and zinc and a nominally low pH. Given the size of the site and the cap now in place, the site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age and size of the site, the potential landfill gas generation has been estimated as low. Given the lack of potential gas collection points, the site is considered relatively low priority with respect to the discharge of landfill gas.

9.4.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description			
Downstream	Downstream of fill area			
Parameter		Downstream	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	-	0.5	-
Chemical Oxygen Demand	g/m ³	57	-	-
Conductivity	µS/cm	124	1500.0	1500.0
Dissolved Chloride	g/m ³	-	-	700
pH	pH	6.3	7.0	7.0
Suspended Solids	g/m ³	-	10%	10%
Total Iron	g/m ³	3.0	0.5	1.0

Landfills in the Wellington Region

Parameter		Downstream	Aquatic	Stock
Total Manganese	g/m ³	-	-	2.0
Alkalinity	g/m ³	-	-	-
Sodium	g/m ³	-	-	300
Total Cadmium	g/m ³	-	0.0002	0.01
Total Chromium	g/m ³	-	0.01	1.00
Total Copper	g/m ³	-	0.002	0.2
Total Lead	g/m ³	-	0.001	0.2
Total Nickel	g/m ³	-	0.015	0.2
Potassium	g/m ³	-	-	-
Total Zinc	g/m ³	0.25	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.4.4 Ex Kiwi Ranch Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Low	Very low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

9.5 Moonshine Road Landfill

9.5.1 Location Information

Location:	Moonshine Road	Last Used:	1960s
Access:	Moonshine Road	Map Reference:	2680538 6007810
Nearby Town:	Upper Hutt	Survey Date:	Oct 1996 to Aug 1997
Fill Contents:	General refuse	File Number:	K/9/4/19

9.5.2 General Description

This site is located on the southern side of Moonshine Road immediately west of the second bridge from the Upper Hutt end. The site is partly vacant and partly used for plantation forestry. It is privately owned and maintained.

According to notes on Regional Council files, the site operated in the 1960s and is likely to include some hazardous waste.

Moonshine Road Landfill was included in the 1996/97 landfill monitoring programme. Over a period of 8-9 months samples were collected at four points around the site.

There are two identified discharge points from this site:

Via a stormwater culvert under Moonshine Road to the north-west of the entrance to the property. There is a build up of orange (oxidised iron) sediment in this drain. According to the current owner of the site the drain runs constantly. Through a large area of seepage from the south-eastern edge of the fill area. This part of the site forms a 5-10 m bank on the Moonshine Stream and water from the seepage enters the stream.

In June 1998, an additional round of sampling was carried out with a fifth site selected in the stream below the seepage. These samples were also analysed for semi volatile organic compounds (SVOCs) which include organochlorines, organophosphates and PCBs.

The results of the sampling indicated a discharge of leachate detectable at both downstream sampling points with iron, zinc and manganese present in elevated concentrations. SVOCs were all non-detects, levels of contaminants in the stream (MS5) were below guideline criteria. On this basis the site is considered medium priority with respect to the discharge of leachate.

Based on the age and size of the site, the potential landfill gas generation is estimated as medium. There are no potential gas collection points within 300 m of the site. On this basis the site is considered relatively low priority with respect to the discharge of landfill gas.

9.5.3 Sampling Results

Sampling results can be summarised as follows:

Landfills in the Wellington Region

ID	Description
MS1	Eastern stream, above landfill
MS2	Western stream, above landfill
MS3	Drain under the road, east of Yules access
MS4	Stream below tip face
MS3 - 2/6/98	MS3 - sampled 2 June 1998
MS5	In stream below seepage

Parameter		MS1	MS2	MS3	MS4	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	N/A	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	21.17	49.71	15.14	34.71	-	-
Conductivity	µS/cm	231.5	237.7	439.6	821.1	1500.0	1500.0
Dissolved Chloride	g/m ³	36.50	37.71	34.14	39.57	-	700
pH	pH	7.6	7.6	6.8	7.8	7.0	7.0
Suspended Solids	g/m ³	294.2	424.1	39.71	84.43	10%	10%
Total Iron	g/m ³	3.60	5.03	14.00	47.43	0.5	1.0
Total Manganese	g/m ³	0.12	0.13	0.87	4.74	-	2.0
Alkalinity	g/m ³	45.33	48.57	154.29	390.00	-	-
Sodium	g/m ³	26.67	27.43	25.14	34.14	-	300
Total Cadmium	g/m ³	0.00	0.00	0.00	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.00	0.00	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.00	0.00	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.00	0.00	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.00	0.00	0.00	0.015	0.2
Potassium	g/m ³	2.03	2.43	4.97	21.29	-	-
Total Zinc	g/m ³	0.00	0.00	0.06	0.00	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

Parameter		MS3 - 2/6/98	MS5	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	4.2	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	19	12	-	-
Conductivity	µS/cm	546	158	1500.0	1500.0
Dissolved Chloride	g/m ³	33	23	-	700
pH	pH	6.9	7.5	7.0	7.0
Suspended Solids	g/m ³	37	8	10%	10%
Total Iron	g/m ³	16	0.30	0.5	1.0
Total Manganese	g/m ³	1.2	<0.03	-	2.0
Organochlorines	µg/l	ND	ND	0.001	-
Organophosphates	µg/l	ND	ND	0.001	-
Organonitrogen	µg/l	ND	ND	-	-
Plasticisers	µg/l	ND	ND	0.2	-
PCBs	µg/l	ND	ND	0.001	0.1
PAH	µg/l	ND	ND	3.0	0.01

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.5.4 Moonshine Road Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium/high	Medium/high	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

9.6 Moonshine Road No. 2

9.6.1 Location Information

Location:	Forest Enterprises Ltd	Last Used:	Unknown
Access:	Moonshine Road	Map Reference:	2680085 6007843
Nearby Town:	Upper Hutt	Survey Date:	7 January 1998
Fill Contents:	Industrial waste/unknown	File Number:	K/9/4/112

6.8.2 General Description

This is a relatively small site located in a natural gully accessible from Moonshine Road, Upper Hutt. The site is currently used for plantation forestry with surrounding land use including agricultural and life style blocks. It is owned and maintained by Forest Enterprises, Masterton.

The site was last used approximately 15 years ago (1983) and allegedly received a variety of industrial wastes including tyres and chemical manufacturing waste. The waste noted on site included a significant number of corroding drums and other scrap metal around the site, and several sheets of rubber visible in the stream running below the site. The fill area is located above a swamp. There is a visible discharge of iron into this swamp. There is also a visible discharge of iron into the stream below the swamp.

Surrounding topography is steep with a stream running within 20 m of the landfill area. This stream runs within 10 m of at least two dwellings, discharges into the Hutt River, and is used for stock watering.

Sampling results show a detectable difference in water quality directly beside the iron discharge into Moonshine Stream, but this is statistically insignificant based on the current level of information. Further work is required in relation to this site to better define the likely contents of the fill. This will enable further analysis targeted at identified potential contaminants. This site is considered relatively high priority with respect to the discharge of leachate.

Based on the age, size and nature of the refuse disposed of this site, the potential landfill gas generation has been estimated as low. There are no identified potential gas collection points within 300 m of the site. This site is considered relatively low priority with respect to the discharge of landfill gas.

9.6.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
M1	Upstream of iron discharge (WGN 9800285)
M2	Iron Discharge (WGN 9800286)
M3	At ford (WGN 9800287)

Landfills in the Wellington Region

Test		M1	M2	M3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	8	8	6	-	-
Conductivity	μS/cm	132	133	133	1500.0	1500.0
Dissolved Chloride	g/m ³	21	21	21	-	700
pH		7.6	7.2	7.7	7.0	7.0
Suspended Solids	g/m ³	9	6	< 2	10%	10%
Total Iron	g/m ³	0.06	0.17	0.08	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	N/A	N/A	N/A	-	-
Sodium	g/m ³	N/A	N/A	N/A	-	300
Total Cadmium	g/m ³	N/A	N/A	N/A	0.0002	0.01
Total Chromium	g/m ³	N/A	N/A	N/A	0.01	1.00
Total Copper	g/m ³	N/A	N/A	N/A	0.002	0.2
Total Lead	g/m ³	N/A	N/A	N/A	0.001	0.2
Total Nickel	g/m ³	N/A	N/A	N/A	0.015	0.2
Potassium	g/m ³	N/A	N/A	N/A	-	-
Total Zinc	g/m ³	N/A	N/A	N/A	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.6.4 **Moonshine Road Landfill No. 2: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		x
Potential			
Quantity	Medium		Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	x
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

9.7 Timberlea Park

9.7.1 Location Information

Location:	Timberlea Park	Last Used:	1992
Access:	Norana Road	Map Reference:	2686842 6008924
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/4/38

9.7.2 General Description

The site is located off Norana Road in Timberlea, Upper Hutt. Surrounding land uses are residential, vacant and railway purposes. It is owned and maintained by the Upper Hutt City Council.

It appears that the site has been used for cleanfilling during development, but there are no indications of a discharge from the site to the drains to the east and south. Any discharge is likely to be to this drain or to groundwater.

Surrounding topography is steep to the east and of medium slope to the west towards the Hutt River. Groundwater in the area is likely to flow in a south-westerly direction down valley and towards the Hutt river.

Any discharge of leachate is likely to enter groundwater, there are no recorded groundwater bores within 500 m of the site. This site is considered relatively low priority with respect to the discharge of leachate.

Due to the fact that the site received cleanfill only, landfill gas is not considered an issue.

9.7.3 Sampling Results

No samples were obtained for this site.

9.7.4 **Timberlea Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.8 Awa Kairanga Park

9.8.1 Location Information

Location:	Awa Kairanga Park	Last Used:	
Access:	California Drive	Map Reference:	2685295 6009240
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/4/23

9.8.2 General Description

The site is located off California Drive, Totara Park, Upper Hutt, and is bounded by sections off Kentucky Street and Brightwater Crescent and the Hutt River. Current site use is recreational. Surrounding land uses are recreational and residential. The site is owned and maintained by the Upper Hutt City Council.

According to notes on file, parts of this site were used for the disposal of cleanfill.

The surrounding topography is flat with the Hutt River flowing along the southern boundary of the fill area. Any discharge of leachate is likely to enter groundwater, there are no recorded groundwater bores within 500 m of the site. This site is considered relatively low priority with respect to the discharge of leachate.

Due to the fact that the site received cleanfill only, landfill gas is not considered an issue.

9.8.3 Sampling Results

No sampling was carried out at this site.

9.8.4 **Awa Kairangi Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.9 Opposite Old PO Cleanfill

9.9.1 Location Information

Location:	Bathurst Street	Last Used:	1997
Access:	Bathurst Street	Map Reference:	2679779 6005226
Nearby Town:	Upper Hutt	Survey Date:	October 1997
Fill Contents:	Cleanfill	File Number:	K/9/4/22

9.9.2 General Description

This site is located on the corner of Bathurst Street and Fergusson Drive, Upper Hutt. Current and surrounding land use is residential. The site is privately owned and maintained.

There was originally a small creek on the site that was filled in at some stage. When the current buildings were put in, 8 ft steel girders were used for the foundations. The builder of the current houses was not able to give an indication about the presence of non-cleanfill at this site.

Potential contamination from the cleanfill includes organic material and bitumen that has the potential to leach into groundwater or surface water. There are no streams within the area, and stormwater is piped. There are no groundwater users in the area.

Any surface material that may be contaminated is likely to have been identified during construction of the current buildings. The site is either seal (driveways, etc.) or grassed, so migration of any contaminated soil that may be present is unlikely to occur.

Given the nature of the site, grassed or capped, and the location (a significant distance from any waterways) and the potential contaminants the site is considered relatively low priority with respect to the discharge of leachate..

Due to the fact that the site received cleanfill only, landfill gas is not considered an issue.

9.9.3 Opposite Old PO Cleanfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.10 Sawdust Fill Pit, Whakatiki Street

9.10.1 Location Information

Location:	Whakatiki Street	Last Used:	1940s
Access:	Whakatiki Street	Map Reference:	2682195 6007427
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/4/20

9.10.2 General Description

The site is located on Whakatiki Street, Upper Hutt. The current site is used for residential purposes. Surrounding land is residential and vacant. The site is privately owned and maintained.

A pond at the front part of the property was filled with sawdust some time in the past. Apparently the stream that used to feed the pond was covered by Whakatiki Street. Three flats were built on the property and the pit was under the location of flat 1 (at the front of the property) and the drive. The current houses on the property were built 1950-59 according to Valuation New Zealand information.

It is possible that the pit extended to houses either side of the property, but the current owner suspects that the fill material was removed when the housing was developed.

Surrounding topography is flat with the Hutt River flowing approximately 750 m to the north-west, groundwater is likely to flow generally to the south-west down the valley and towards the Hutt River. Any leachate from this site is likely to enter groundwater. There are several recorded groundwater bores to the south of the site.

This site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age, size and nature of refuse disposed of at this site, the potential landfill gas generation has been estimated as low. The residential dwellings on the site and neighbouring properties are potential gas collection points. This site is considered relatively medium priority with respect to the discharge of landfill gas.

9.10.3 Sawdust Fill Pit, Whakatiki Street: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Medium

9.11 Maymorn Road, Tip Site

9.11.1 Location Information

Location:	Maymorn Road	Last Used:	Unknown
Access:	Maymorn Road	Map Reference:	2689394 6008832
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/4/18

9.11.2 General Description

This site is located on north-eastern side of Maymorn Road about 5.5 km from the centre of Upper Hutt. Current and surrounding land use is agricultural. The site is privately owned and maintained.

According to notes on file, the site was an old quarry and was used for the disposal of hardfill.

Surrounding topography is steep (foothills of the Rimutakas) and flat Mangaroa Valley, the nearest watercourse is a tributary to Blaikie Stream that flows into the Mangaroa River. Any discharge of leachate from the site is likely to discharge into this stream, either directly or via groundwater.

Given the nature of the likely contaminants (associated with cleanfill) and the lack of identified discharge to the stream, this site is considered relatively low priority with respect to the discharge of leachate.

Due to the fact that the site received predominantly cleanfill, landfill gas is not considered an issue.

9.11.3 Maymorn Road, Tip Site: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Very low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.12 Tip Site, Silverstream

9.12.1 Location Information

Location:	Field Street	Last Used:	Unknown
Access:	Field Street	Map Reference:	2678496 6004584
Nearby Town:	Upper Hutt	Survey Date:	-
Fill Contents:	Cleanfill	File Number:	K/9/4/17

9.12.2 General Description

This site is located on Field Street between the Wellington Wairarapa Railway and Hulls Creek. The site is currently vacant. Surrounding land uses include residential, commercial and railway purposes. The site is privately owned and maintained.

Notes on file indicate that the site was used as a tip and hardfill site, this is currently continuing based on a site visit in August 1998.

Surrounding topography is flat with the nearest surface water body being an unnamed tributary to the Hutt River that flows along the south-eastern side of the Wellington Wairarapa railway line. Any leachate from this site is likely to discharge into this stream either directly or via groundwater.

Given the nature of the likely contaminants (associated with cleanfill) and the lack of identified discharge to the stream, this site is considered relatively low priority with respect to the discharge of leachate.

Due to the fact that the site received predominantly cleanfill, landfill gas is not considered an issue.

9.12.3 Tip Site, Silverstream: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.13 Tip Site, Gillespies Road

9.13.1 Location Information

Location:	150 Gillespies Road	Last Used:	1997
Access:	Gillespies Road	Map Reference:	2687314 6010655
Nearby Town:	Upper Hutt	Survey Date:	October 1997
Fill Contents:	Cleanfill	File Number:	K/9/4/16

9.13.2 General Description

This site is located at the end of Gillespies Road, Upper Hutt, on agricultural land. Surrounding land use includes agricultural, residential and recreational, the Hutt River flows along the eastern boundary. The site is privately owned and maintained.

The fill appears to be basically clean with small quantities of bitumen and reinforcing steel. A stream did run into the fill from the road on the western side, subsequently disappearing into the fill about 6 m from the western edge. At this point there were several pieces of concrete creating a soak pit. Also at this point is a diesel drum (presumably empty). The water exited the fill at the base close to the Hutt River and was extensively coloured (iron oxide).

The stream entering the fill has been diverted around the fill (along the western side) and the quantity of seepage coming out the eastern side by the farm track has been significantly reduced.

Surrounding topography is steep to the west and flat to rolling to the west. There are no recorded groundwater bores in the area, but the Hutt River is a likely receptor of any discharge from the site. It is considered relatively low priority with respect to the discharge of leachate.

Due to the fact that the site received predominantly inorganic fill, landfill gas is not considered an issue.

9.13.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
Upstream	Stream entering fill
Downstream	Seepage from bottom of fill

Parameter		Upstream	Downstream	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	-	-	< 0.5	-
Chemical Oxygen Demand	g/m ³	24	350	-	-
110Conductivity	µS/cm	110	377	1500.0	1500.0
Dissolved Chloride	g/m ³	-	-	-	700
pH	pH	6.9	6.6	7.0	7.0

Landfills in the Wellington Region

Parameter		Upstream	Downstream	Aquatic	Stock
Suspended Solids	g/m ³	N/A	N/A	10%	10%
Total Iron	g/m ³	4.6	1000	0.5	1.0
Total Manganese	g/m ³	-	-	-	2.0
Alkalinity	g/m ³	-	-	-	-
Sodium	g/m ³	-	-	-	300
Total Cadmium	g/m ³	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	0.01	1.00
Total Copper	g/m ³	-	-	0.002	0.2
Total Lead	g/m ³	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-
Total Zinc	g/m ³	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.13.4 Tip Site, Gillespies Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.14 Tip Site, 464 Fergusson Drive

9.14.1 Location Information

Location:	Fergusson Drive	Last Used:	1970s
Access:	Fergusson Drive	Map Reference:	2680896 6005908
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/4/15

9.14.2 General Description

The site is located at 464 Fergusson Street, current and surrounding land use is residential with Trentham Memorial Park located across Fergusson Drive to the west. It is divided into several residential sites and is currently privately owned and maintained.

Information on Upper Hutt City Council files indicates there were investigations carried out during development of the site. This work focused on stability issues and was carried out in the 1970s and 80s. The results indicate that the area containing refuse is Lots 3 and 4 DP 28635.

There are diagrams on file outlining the approximate extent of the fill as indicated by the investigations.

Surrounding topography is flat and land use is residential and recreational. There are several groundwater bores for irrigation purposes in Trentham Memorial Park. The nearest surface water body is a small stream running along the eastern and southern boundary of Trentham Memorial Park.

Sampling results indicate elevated levels of several metals in a stormwater drain/stream across Fergusson Drive from the site, further investigation is warranted to better define impacts attributable to this site. It is considered medium priority with respect to the discharge of leachate.

Based on the age, size and nature of refuse disposed, this potential landfill gas generation at this site is estimated as low. The residential dwellings on the site and neighbouring properties have the potential to act as gas collection points. This site is considered high priority with respect to the discharge of landfill gas.

9.14.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
T1	Stream in Trentham Memorial Park (WGN 000590)

Landfills in the Wellington Region

Parameter		T1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	-	< 0.5	-
Chemical Oxygen Demand	g/m ³	23.4	-	-
Conductivity	µS/cm	-	1500.0	1500.0
Dissolved Chloride	g/m ³	11.6	-	700
pH	pH	6.68	7.0	7.0
Suspended Solids	g/m ³	15	10%	10%
Total Iron	g/m ³	<u>1.3</u>	0.5	1.0
Total Manganese	g/m ³	0.07	-	2.0
Alkalinity	g/m ³	24.5	-	-
Sodium	g/m ³	8.81	-	300
Total Cadmium	g/m ³	<0.01	0.0002	0.01
Total Chromium	g/m ³	0.03	0.01	1.00
Total Copper	g/m ³	0.01	0.002	0.2
Total Lead	g/m ³	<0.10	0.001	0.2
Total Nickel	g/m ³	0.03	0.015	0.2
Potassium	g/m ³	1.37	-	-
Total Zinc	g/m ³	0.12	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

9.14.4 **464 Fergusson Drive: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity		Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			High

9.15 Cleanfill Tip, Mangaroa Valley Road

9.15.1 Location Information

Location:	Mangaroa Valley Road	Last Used:	1998
Access:	Mangaroa Valley Road	Map Reference:	2687650 6006500
Nearby Town:	Upper Hutt	Survey Date:	
Fill Contents:	Cleanfill/indiscriminate fill	File Number:	K/9/4/101

9.15.2 General Description

This site is located on the eastern side of Mangaroa Valley Road on privately owned land. Current and surrounding land use is a mix of lifestyle and agricultural.

The site has been used for the deposition of cleanfill for several years with significant quantities of reinforcing steel, bitumen and whiteware disposal. It has been the subject of enforcement action by the Wellington Regional Council requiring removal of all non-cleanfill.

The fill areas are above a stream and have discharged significant quantities of silt into this stream. There are no recorded groundwater bores within 500 m of the site. This site is considered medium priority with respect to the discharge of leachate. Further action currently in process by the Wellington Regional Council should result in the removal of the majority of the remaining non-cleanfill and therefore a reduction in the discharge of leachate.

Due to the fact that the site received predominantly inorganic fill, landfill gas is not considered an issue.

9.15.3 Cleanfill Tip, Mangaroa Valley Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

9.16 Silverstream Railway Cleanfill

9.16.1 Location Information

Location:	Silverstream Railway Museum	Last Used:	1994
Access:	Field Street, Upper Hutt	Map Reference:	2677369 6004252
Nearby Town:	Upper Hutt	Survey Date:	14 November 1997
Fill Contents:	Cleanfill	File Number:	K/9/4/104

9.16.2 General Description

The Silverstream Railway Cleanfill site is located off Field Street, in Silverstream, Lower Hutt. The site is part of an area owned by the Silverstream Railway and is used for a railway museum.

The main fill area is located approximately 4 m from the eastern bank of Hulls Creek and appears to consist of mainly soil and brick/concrete material. A brief inspection of the site did not reveal any inappropriate fill.

The site was the object of some correspondence between the Wellington Regional Council and the Upper Hutt City Council, focusing on the deposition of fill too close to the stream, which was subsequently removed.

There was one area of slight iron staining to the south of the fill area related to a stream culverted through part of the railway museum area. It is unclear whether this was due to elevated iron in soils in the area or as discharge from fill in the vicinity of the culvert.

This site is considered relatively low priority with respect to the discharge of leachate. Due to the fact that the site received predominantly cleanfill, landfill gas is not considered an issue.

9.16.3 Sampling Sites

This site was not sampled due to the nature of the fill material deposited at the site (predominantly cleanfill) and the absence of any indicators of a discharge of leachate to surface water.

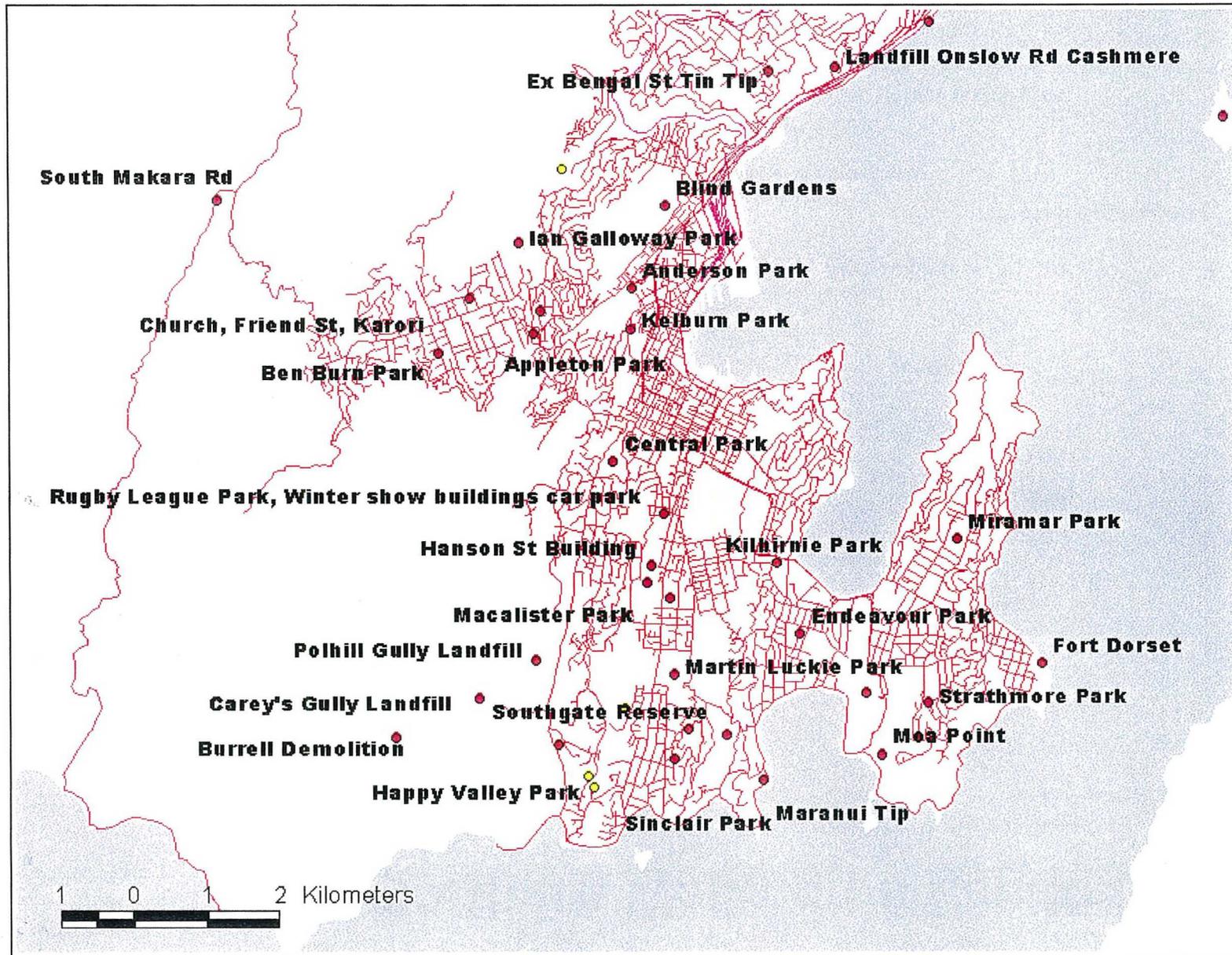
9.16.4 Silverstream Railway Cleanfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Low		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

Wellington Landfills

Landfills in the Wellington Region

Southern Wellington Landfills

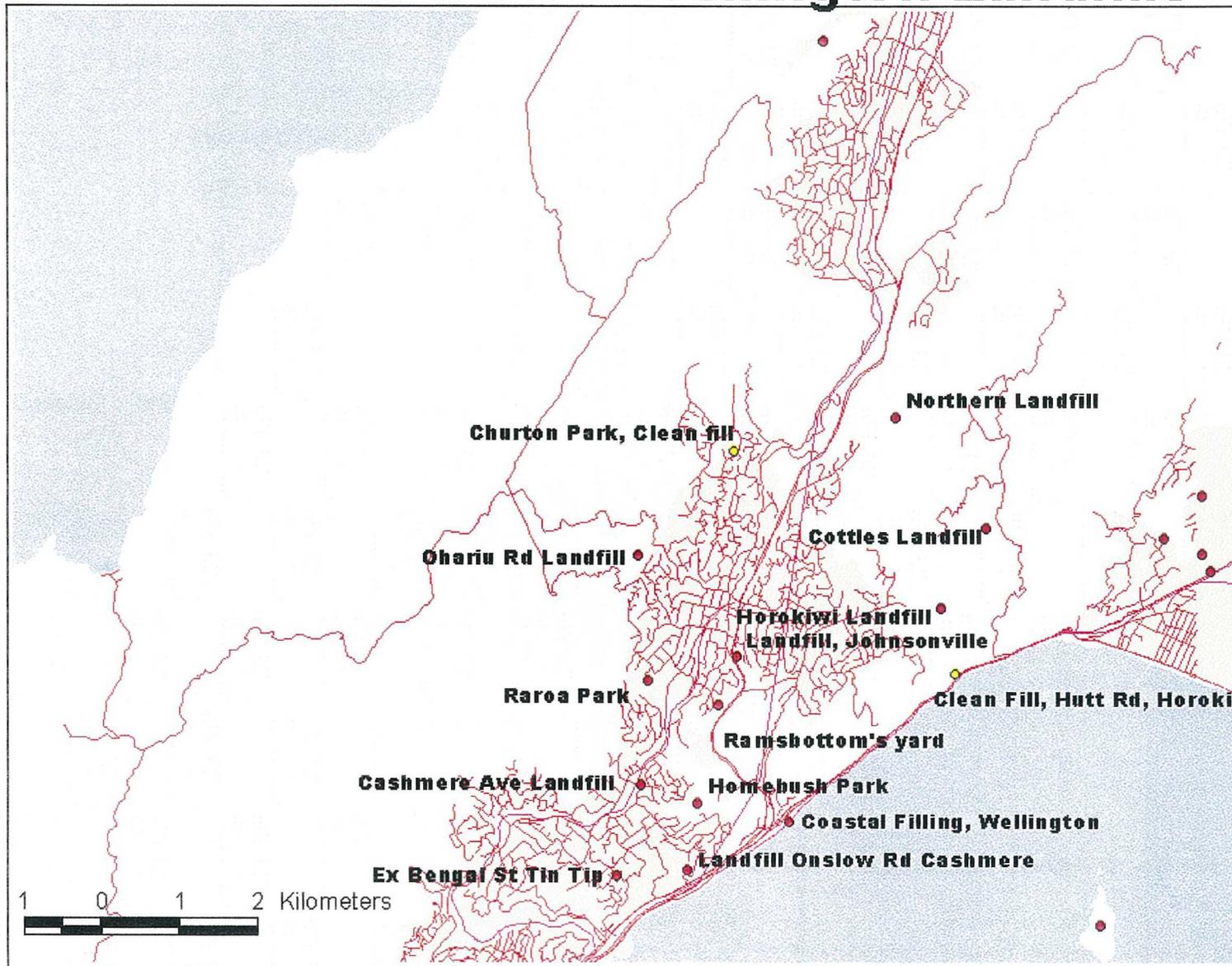


Legend

- Landfill
- Cleanfill
- Railway
- Main Road
- LGB

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Northern Wellington Landfills



Legend

- Landfill
- Cleanfill
- Railway
- Main Road
- LGB

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10. Wellington Landfills

The Wellington City Council has undertaken a major project aimed at identifying, prioritising and, where appropriate, addressing issues relating to closed landfills within their boundaries. This report will summarise information provided to the Wellington Regional Council by Wellington City Council regarding all the sites included on the Wellington Regional Council ANZECC Site Use Database.

Some of the sites noted below are not owned by the Wellington City Council and as such have not been included in the City Council study.

10.1 Martin Luckie Park

10.1.1 Location Information

Location:	Martin Luckie Park	Last Used:	Unknown
Access:	Lavaud Street,	Map Reference:	2658797 5985141
Nearby Town:	Wellington	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/19

10.1.2 General Description

Martin Luckie Park is located between Lavaud Street, Mt Albert Road and the Berhampore Golf Course. Current site use is recreational, surrounding land use is open space, recreational, and residential. The site is owned and maintained by the Wellington City Council.

The fill area extends from the bottom of a bank on the western side of Mt Albert Road to the residential sites off the western portion of Lavaud Street. The site operated from 1937, but the closure date is not noted on information currently contained on file. It is likely that the site received a variety of industrial and domestic refuse with domestic refuse comprising the majority of the material received.

There is a discharge of leachate to stormwater as evidenced by iron staining at a stormwater sump by Adelaide Road in the Berhampore Golf Course. Water flowing in this sump was sampled from 1989 to 1995 with the results noted in the following section.

Surrounding topography is steep to rolling with the nearest significant surface water body being Island Bay approximately 2.2 km to the south. Groundwater from the area is likely to flow generally down the valley towards Island Bay.

The discharge of leachate from the site is likely to discharge into groundwater and the Wellington City Council stormwater system. The stormwater system ultimately discharges into Island Bay. This site is considered medium priority with respect to the discharge of leachate.

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Based on the age, size and nature of refuse received at the site, the potential gas generation for this site is estimated as medium. There are recreational buildings on the site and residential buildings on the northern side of Lavaud Street that are potential gas collection points. This site is considered medium priority with respect to the discharge of landfill gas

10.1.3 Sampling Results

The Wellington Regional Council has undertaken a general round of landfill sampling from 1989 to 1995. The results for Martin Luckie Park are presented below.

ID	Description
ML1	Culvert by dog pound, Adelaide Road (WGN 000595)

Test		B1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	25.2	-	-
Conductivity	µS/cm	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	90.74	-	700
pH		6.2	7.0	7.0
Suspended Solids	g/m ³	22.6	10%	10%
Total Iron	g/m ³	<u>18.12</u>	0.5	1.0
Total Manganese	g/m ³	0.94	-	2.0
Alkalinity	g/m ³	58.40	-	-
Sodium	g/m ³	64.50	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.01	1.00
Total Copper	g/m ³	0.01	0.002	0.2
Total Lead	g/m ³	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.015	0.2
Potassium	g/m ³	2.60	-	-
Total Zinc	g/m ³	0.00	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.1.4 **Martin Luckie Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium/high	Medium/high	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium

10.2 Northern Landfill

10.2.1 Location Information

Location:	Northern Landfill	Last Used:	Operational
Access:	Westchester Drive,	Map Reference:	2663668 5999111
Nearby Town:	Churton Park	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/2/56

10.2.2 General Description

This site is located at the north-eastern end of Westchester Drive, north of Churton Park, Wellington. Surrounding land use is residential and open space. The site is owned and operated by the Wellington City Council.

The Northern Landfill (Churton Park Landfill) is currently one of two operational landfills run by the Wellington City Council. The site is covered by several resource consents issued by Wellington Regional Council (WGN 93139-143).

Because this is an operational site, environmental impacts, both now and in the future are covered by the resource consent process. For further information, refer to the consent files noted above.

10.2.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
G1	Northern unnamed stream above landfill (WGN 0000591)
G2	Southern unnamed stream above landfill (WGN 000592)
G3	Leachate trap below landfill (WGN 000597)
G4	Downstream of landfill, west of motorway (WGN 000598)

Test		G1	G2	G3	G4	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	0.01	0.77	0.60	0.15	< 0.5	-
Chemical Oxygen Demand	g/m ³	180.1	13.7	159.3	12.3	-	-
Conductivity	µS/cm	295.17	748.50	791.5	289.7	1500.0	1500.0
Dissolved Chloride	g/m ³	43.31	63.05	46.70	43.30	-	700
pH		7.1	7.0	6.4	7.4	7.0	7.0
Suspended Solids	g/m ³	2735.6	14.1	32.0	10.8	10%	10%
Total Iron	g/m ³	155.03	4.78	7.15	0.61	0.5	1.0
Total Manganese	g/m ³	2.03	0.47	1.01	0.07	-	2.0
Alkalinity	g/m ³	86.80	56.85	153.5	45.88	-	-
Sodium	g/m ³	33.59	40.77	42.00	32.10	-	300
Total Cadmium	g/m ³	0.00	0.00	0.00	0.00	0.0002	0.01
Total Chromium	g/m ³	0.01	0.00	0.00	0.00	0.01	1.00
Total Copper	g/m ³	0.06	0.00	0.00	0.00	0.002	0.2

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Test		G1	G2	G3	G4	Aquatic	Stock
Total Lead	g/m ³	0.11	0.00	0.00	0.00	0.001	0.2
Total Nickel	g/m ³	0.04	0.00	0.00	0.00	0.015	0.2
Potassium	g/m ³	6.58	3.39	6.70	2.50	-	-
Total Zinc	g/m ³	0.21	0.00	0.24	0.00	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.2.4 Northern Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium/high	Medium/high	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low

10.3 Macalister Park

10.3.1 Location Information

Location:	Macalister Park	Last Used:	1950
Access:	Liardet Street	Map Reference:	2658426 5986405
Nearby Town:	Berhampore	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/5

10.3.2 General Description

Macalister Park is located between Liardet Street and Adelaide Road in Berhampore, Wellington. The site is currently used for playing fields and general recreation, surrounding land uses are recreational, residential and commercial. It is owned and maintained by the Wellington City Council.

There have been several reported problems relating to this site, including subsidence, both within the park, and also along Liardet Street. Refuse was disposed of here from 1940 to 1950 and reportedly included rubber and old fuel tanks. Further information can be found on Wellington City Council file 50/1145 *Liardet Street Landfill*.

There is a visible discharge of leachate to stormwater in a creek off the end of Stanley Street (also visible from Adelaide Road). It is unclear where this stream/stormwater ultimately discharges, but it is likely that Island Bay is the final discharge point. Sampling results presented in the following section indicate elevated levels of several metals including lead and chromium.

This site is considered medium priority with respect to the discharge of leachate.

Based on the age, size and nature of refuse received at the site, the potential gas generation for this site is estimated as medium. There are recreational buildings on the site and residential buildings to the north-west of the site on Liardet Street that are potential gas collection points. This site is considered medium priority with respect to the discharge of landfill gas

10.3.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
L1	Stream below park - 422 Adelaide Road (WGN 000577)

Test		L1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	152.3	-	-
Conductivity	µS/cm	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	64.6	-	700

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Test		L1	Aquatic	Stock
pH		6.3	7.0	7.0
Suspended Solids	g/m ³	13093.20	10%	10%
Total Iron	g/m ³	<u>1591.06</u>	0.5	1.0
Total Manganese	g/m ³	<u>19.56</u>	-	2.0
Alkalinity	g/m ³	108.54	-	-
Sodium	g/m ³	<u>65.36</u>	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.02	0.01	1.00
Total Copper	g/m ³	0.09	0.002	0.2
Total Lead	g/m ³	<u>0.26</u>	0.001	0.2
Total Nickel	g/m ³	0.00	0.015	0.2
Potassium	g/m ³	6.92	-	-
Total Zinc	g/m ³	0.67	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.3.4 Macalister Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	High	High	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium

10.4 Rugby League Park, Winter Show Buildings Carpark

10.4.1 Location Information

Location:	Winter Show Grounds	Last Used:	1929
Access:	Hutchinson Road	Map Reference:	2658661 5987332
Nearby Town:	Wellington	Survey Date:	
Fill Contents:	Tin tip (trade/inorganic waste)	File Number:	K/9/5/25

10.4.2 General Description

The Wellington Winter Show Grounds and Rugby League Park are located on the corner of John Street and Hutchinson Road in Mt Cook. The fill area is in the carpark area of the show grounds/league park. There is an additional area of fill in the actual rugby league park area.

The site was used as a tin tip (trade waste, tin) with other rubbish being burnt. Clay was used as cover material. A note on file indicates that this site may have received some clinical waste during malfunctioning of the hospital incinerator. Wellington City Council file 50/241/01 *Hutchinson Road*.

Surrounding topography is steep with a general drop to the north towards Wellington Harbour. Groundwater is likely to flow towards the harbour.

There is a visible discharge of leachate to a stormwater sump in a low point below the main stand and the west of around 180 Hanson Street. It is unclear where this stream/stormwater ultimately discharges, but it is likely that it discharges to Wellington Harbour. Sampling results as presented in the following section indicate elevated levels of iron and nominally low pH. As these results are of a screening nature, further analysis is required to determine if the discharge has the potential to cause adverse effects.

This site is considered medium priority with respect to the discharge of leachate.

Based on the age, size and nature of refuse received at the site, the potential gas generation for this site is estimated as medium. There are recreational buildings on the site that are potential gas collection points. This site is considered medium priority with respect to the discharge of landfill gas

10.4.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
RL1	Stormwater sump below the main stand

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Test		RL1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	0.22	< 0.5	-
Chemical Oxygen Demand	g/m ³	52	-	-
Conductivity	µS/cm	347	1500.0	1500.0
Dissolved Chloride	g/m ³	58	-	700
pH		6.5	7.0	7.0
Suspended Solids	g/m ³	640	10%	10%
Total Iron	g/m ³	<u>13.0</u>	0.5	1.0
Total Manganese	g/m ³	0.50	-	2.0
Alkalinity	g/m ³	-	-	-
Sodium	g/m ³	-	-	300
Total Cadmium	g/m ³	-	0.0002	0.01
Total Chromium	g/m ³	-	0.01	1.00
Total Copper	g/m ³	-	0.002	0.2
Total Lead	g/m ³	-	0.001	0.2
Total Nickel	g/m ³	-	0.015	0.2
Potassium	g/m ³	-	-	-
Total Zinc	g/m ³	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.4.4 Rugby League Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial	x	< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.5 Homebush Park

10.5.1 Location Information

Location:	Homebush Park	Last Used:	1955
Access:	Homebush Road	Map Reference:	2661136 5994245
Nearby Town:	Khandallah	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/26

10.5.2 General Description

This site is located off Homebush Road, Cashmere, Wellington. Current land use is recreational. Surrounding land use is residential and open space. The site is owned and maintained by the Wellington City Council.

The site was operated as a landfill from 1941-1955 (Wellington City Council file 50/0241/26 *Homebush Road Tip*). Two bores have been installed on this site for the purpose of monitoring the potential for gas production. The results of this investigation work have not been made available to the Wellington Regional Council.

Surrounding topography is steep with the site located on a hill side overlooking Wellington Harbour. Any leachate is likely to enter the Wellington City Council stormwater system at the base of the hill (beside the Hutt Road between Kaiwharawhara and Ngauranga Gorge) and then flow into Wellington Harbour.

Based on dilution of any leachate discharged into the harbour, this site is considered medium priority with respect to the discharge of leachate.

This site is considered relatively medium priority with respect to the discharge of landfill gas, this may change on receipt of further information regarding the generation landfill of gas from the investigations noted above.

10.5.3 Sampling Results

No sampling results for this site have been provided to, or collected by, the Wellington Regional Council.

10.5.4 Homebush Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Medium

10.6 Ohariu Road Landfill

10.6.1 Location Information

Location:	1.5 km west of Johnsonville	Last Used:	Unknown
Access:	Ohariu Road	Map Reference:	2660643 5997471
Nearby Town:	Johnsonville	Survey Date:	
Fill Contents:	Cleanfill, inorganic fill	File Number:	K/9/5/27

10.6.2 General Description

This site is located on the south-western side of Ohariu Road approximately 1.5 km north-west of Johnsonville. Current land use is vacant industrial/commercial. Surrounding land uses are agricultural and residential. The site is privately owned and maintained.

According to notes on file, the site was opened around 1974 and received a variety of fill including vegetation, refuse and car bodies in addition to cleanfill.

Surrounding topography is rolling with the nearest surface water body being an unnamed tributary to the Porirua Stream that starts across Ohariu Road to the north-east of the site. Any discharge of leachate is likely to be via groundwater to this stream. This site is considered low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse received at this site, the potential landfill gas generation has been estimated as low. There are several potential gas collection points within 300 m of the site. The site is considered relatively low priority with respect to the discharge of landfill gas.

10.6.3 Sampling Results

No sampling was carried out for this site.

10.6.4 Ohariu Road Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.7 South Makara Road Landfill

10.7.1 Location Information

Location:	Makara	Last Used:	Unknown
Access:	South Makara Road	Map Reference:	2652948 5991103
Nearby Town:	Makara/Karori	Survey Date:	
Fill Contents:	Indiscriminate fill	File Number:	K/9/5/28

10.7.2 General Description

This site is located on Wellington City Council land south of Makara Township on South Makara Road. Current land use is agricultural, surrounding land uses are agricultural and open space. The site is owned and maintained by the Wellington City Council.

According to notes on file this site was an illegal landfill on land owned by the Wellington City Council and designated for use as a cemetery. The site started operation in the 1970s and allegedly received general refuse and car bodies.

Surrounding topography is steep to rolling with the nearest surface water body being the Makara Stream that flows through the site. Any leachate is likely to discharge into this stream. In the absence of further information this site is considered medium priority with respect to the discharge of leachate.

Based on the age, size and type of refuse received at this site, the potential landfill gas generation has been estimated as low. There are no potential gas collection points identified within 300 m of the site. The site is considered relatively low priority with respect to the discharge of landfill gas.

10.7.3 Sampling Results

No sampling has been carried out on this site.

10.7.4 Makara Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.8 Rhine Street Landfill

10.8.1 Location Information

Location:	Tapa Te Ranga Marae	Last Used:	1997
Access:	Rhine Street	Map Reference:	2658127 5984691
Nearby Town:	Island Bay	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/5/29

10.8.2 General Description

The site is located of the western side of Rhine Street, Island Bay, Wellington. Current land use is open space, surrounding land use is residential and Marae. The site is privately owned and operated.

This site was a consented cleanfill run by the Island Bay Marae. The intention is to form a large flat area for use as playing fields and/or parking. Wellington Regional Council consent numbers WGN 970034 1-3 and WGN 970243 01.

Surrounding topography is steep to the west and flat to rolling to the east. Leachate is likely to discharge to both groundwater and surface water, ultimately ending up in Island Bay either via groundwater or stormwater discharge.

Because this site was covered by resource consents issued by the Wellington Regional Council, environmental impacts, both now and in the future are covered by this process. For further information, refer to the consent files noted above.

10.8.3 Sampling Results

Sampling results for this site can be summarised as follows:

ID	Description
1	Neighbours yard near drain outlet

Test		1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	0.19	< 0.5	-
Chemical Oxygen Demand	g/m ³	-	-	-
Conductivity	µS/cm	-	1500.0	1500.0
Dissolved Chloride	g/m ³	-	-	700
pH		-	7.0	7.0
Suspended Solids	g/m ³	-	10%	10%
Total Iron	g/m ³	11	0.5	1.0
Total Manganese	g/m ³	-	-	2.0
Alkalinity	g/m ³	-	-	-
Sodium	g/m ³	-	-	300
Total Cadmium	g/m ³	-	0.0002	0.01
Total Chromium	g/m ³	-	0.01	1.00

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Test		1	Aquatic	Stock
Total Copper	g/m ³	-	0.002	0.2
Total Lead	g/m ³	-	0.001	0.2
Total Nickel	g/m ³	-	0.015	0.2
Potassium	g/m ³	-	-	-
Total Zinc	g/m ³	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.8.4 Rhine Street Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

10.9 Ian Galloway Park

10.9.1 Location Information

Location:	Ian Galloway Park	Last Used:	1973
Access:	Wilton Road	Map Reference:	2656700 5991000
Nearby Town:	Wilton	Survey Date:	
Fill Contents:	General refuse, industrial waste	File Number:	K/9/5/3

10.9.2 General Description

Ian Galloway Park is located to the west of Wilton Road/Curtis Street between Whitehead Road and Wallworth Street, Wellington. The current land use is recreational, surrounding land use includes recreational, educational and residential. The site is owned and maintained by the Wellington City Council.

The site operated from 1946 to 1973. A variety of industrial wastes including concrete encased drums of cyanide (1100 lbs) and significant quantities of spent oxide from the demolition of the Miramar Gasworks site are known to have been disposed of at this site.

A Wellington City Council report (1997) recommends further investigation and subsequent implementation of landfill gas control measures as appropriate.

There is a stream flowing from the base of this site through to the Otari Native Plants museum and into Kaiwharawhara Stream. There is significant discharge of leachate from the site into this stream, this is being addressed by Wellington City Council.

The site is considered high priority with respect to both the discharge of leachate and landfill gas. Wellington City Council are in the process of addressing these issues.

10.9.3 Sampling Results

Sampling results for this site can be summarised as follows:

ID	Description
WN1	Otari Branch Kaiwharawhara Stream (WGN 000596)

Test	WN1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³ N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³ 21.71	-	-
Conductivity	µS/cm N/A	1500.0	1500.0
Dissolved Chloride	g/m ³ 39.74	-	700
pH	7.2	7.0	7.0
Suspended Solids	g/m ³ 4.16	10%	10%
Total Iron	g/m ³ 1.38	0.5	1.0

Landfills in the Wellington Region

Test		WN1	Aquatic	Stock
Total Manganese	g/m ³	0.22	-	2.0
Alkalinity	g/m ³	71.36	-	-
Sodium	g/m ³	29.57	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.015	0.2
Potassium	g/m ³	2.61	-	-
Total Zinc	g/m ³	0.00	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.9.4 Ian Galloway Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium	Very high	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			High

10.10 Cottles Landfill

10.10.1 Location Information

Location:	Above Horokiwi Quarry	Last Used:	1992
Access:	Horokiwi Road	Map Reference:	2664830 5997726
Nearby Town:	Petone	Survey Date:	Oct 1996 to Aug 1997
Fill Contents:	Industrial waste	File Number:	K/9/5/30

10.10.2 General Description

This site is located on the western side of Horokiwi Road several kilometres from the Hutt Road. Current land use is agricultural. Surrounding land use includes agricultural and forestry. The site is located on several properties, all privately owned and maintained.

Cottles Landfill was a private landfill that operated from 1974 to 1984 on several private properties on Horokiwi Road, Wellington. Industrial wastes of all types were received in drums or bins and where possible burned. Corroded drums and demolition fill are visible on the face of the fill. A stream runs from the bottom of the fill down a relatively inaccessible valley and then into Horokiwi Quarry. There is anecdotal evidence that this site accepted all types of industrial waste from outside the Wellington Region.

The site is situated in steep country about 1 km away from the Wellington Harbour. There is at least one stream flowing from the toe of the fill, and this is littered with corroding drums and other refuse. The face of the fill is covered with corroding drums and some newer refuse such as car wrecks and general demolition fill.

The results obtained for Cottles Landfill during a survey conducted from October 1996 to August 1997 indicated that there was discharge of contaminants to the stream leaving the toe of the fill. The results of sampling further down the stream indicate that levels of contaminants decrease somewhat by the time the stream reaches this point.

This site is considered high priority with respect to the discharge of leachate and relatively low priority with respect to the discharge of landfill gas.

10.10.3 Sampling Results

Sampling results for this site can be summarised as follows.

ID	Description
CS1	Bottom of landfill in stream
CS2	In stream at top of waterfall into Horokiwi Quarry

Landfills in the Wellington Region

Test		CS1	CS2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	48.29	12.29	-	-
Conductivity	µS/cm	874.71	482.00	1500.0	1500.0
Dissolved Chloride	g/m ³	100.71	71.00	-	700
pH	pH	7.9	7.7	7.0	7.0
Suspended Solids	g/m ³	108.71	153.00	10%	10%
Total Iron	g/m ³	5.13	6.32	0.5	1.0
Total Manganese	g/m ³	0.79	0.82	-	2.0
Alkalinity	g/m ³	112.14	56.36	-	-
Sodium	g/m ³	99.71	55.43	-	300
Total Cadmium	g/m ³	0.00	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.00	0.002	0.2
Total Lead	g/m ³	0.69	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.00	0.015	0.2
Potassium	g/m ³	6.50	3.69	-	-
Total Zinc	g/m ³	0.28	0.12	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.10.4 Cottles Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		x
Potential			
Quantity	Medium		Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural	x	Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Low

10.11 Polhill Gully Landfill

10.11.1 Location Information

Location:	Polhill Gully	Last Used:	Operational
Access:	Landfill Road	Map Reference:	2656920 5985340
Nearby Town:	Brooklyn	Survey Date:	
Fill Contents:	Demolition Fill	File Number:	K/9/5/31

10.11.2 General Description

The site is located on Ohiro Road, Brooklyn, Wellington. It is currently operating as a demolition fill, surrounding land use is open space. The site is Maori land and is leased by a private operator.

The site is currently operated by T and T Landfills Ltd under resource consent from the Wellington Regional Council (WGN 970047) and the Wellington City Council. It has been run by various operators since around 1982 accepting demolition waste and cleanfill. There have been concerns about compliance with consent/permit conditions throughout the period of the operation.

The current operators are using cleanfill/demolition fill to rehabilitate the site including working on an effective diversion of a watercourse around the fill area.

This site is considered to be adequately controlled and monitored by the resource consent process. Accordingly it is considered relatively low priority with respect to the discharge of both leachate and landfill gas.

10.11.3 Sampling Results

Limited sampling results are noted on file, mainly in the application for the current consents. A VOC and SVOC screen returned all non-detects.

10.11.4 Polhill Gully Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	High	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.12 Raroa Park

10.12.1 Location Information

Location:	Raroa Park	Last Used:	1971
Access:	Burma Road	Map Reference:	2660500 5995800
Nearby Town:	Johnsonville	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/4

10.12.2 General Description

Raroa Park is located on the eastern side of Burma Road, Johnsonville to the south of Raroa Normal Intermediate School. The site is currently used as playing fields. Surrounding land uses include recreational, residential and commercial. The site is owned and maintained by the Wellington City Council.

The site operated from 1961 to 1971, covering approximately 1 hectare (334000 m³). The fill was mainly domestic but included abattoir effluent. Information on the site is included on Wellington City Council file CW50/0241/39 (Burma Road Tip).

Stormwater run-off from this site flows south-west down into the Ngauranga Stream. There is significant seepage of tip leachate from the face of the fill along the Wellington-Johnsonville railway line to the south-west.

A Wellington City Council report (1997) recommends the installation of a passive venting system. Leachate control works are to be designed looking at diverting stormwater flows and collecting seepage from the face of the fill. (Wellington City Council 1997.)

The site is considered high priority with respect to both the discharge of leachate and landfill gas. Wellington City Council are in the process of addressing these issues.

10.12.3 Sampling Results

Sampling results for a landfill sampling programme run from 1989 to 1995 are presented below. The figures presented are an average of the entire sampling period.

ID	Description			
B1	Stream behind the abattoir (WGN 000580)			
Test		B1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	19.9	-	-
Conductivity	µS/cm	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	45.16	-	700
pH		7.0	7.0	7.0
Suspended Solids	g/m ³	26.3	10%	10%
Total Iron	g/m ³	6.45	0.5	1.0

Landfills in the Wellington Region

Test		B1	Aquatic	Stock
Total Manganese	g/m ³	0.65	-	2.0
Alkalinity	g/m ³	127.3	-	-
Sodium	g/m ³	30.4	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.01	1.00
Total Copper	g/m ³	0.01	0.002	0.2
Total Lead	g/m ³	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.015	0.2
Potassium	g/m ³	4.05	-	-
Total Zinc	g/m ³	0.14	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.12.4 **Raroa Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			High

10.13 Prestons Gully Landfill

10.13.1 Location Information

Location:	Prestons Gully	Last Used:	1977
Access:	Murchison Road	Map Reference:	2657219 5984183
Nearby Town:	Happy Valley	Survey Date:	1997
Fill Contents:	General refuse	File Number:	K/9/5/42

10.13.2 General Description

Prestons Gully is located on the northern edge of Murchison Road above Happy Valley in Wellington. The site is currently used for horse trekking and vehicular joyriding. Surrounding land is residential and vacant. The site is owned and maintained by the Wellington City Council.

The site operated from 1973 to 1977, receiving an estimated refuse volume of 1.1 million cubic metres with depths up to 42 m. The site received mainly biodegradable waste with small amounts of inert material, the southern toe of the fill is principally hardfill. Council records indicate that cleanfill was used beneath the road and correlates to a line along the southern corner of the site. A stream from the head of the valley is culverted beneath the landfill in a 300 mm concrete pipe.

A Wellington City Council report (1997) recommended investigating use or venting of gas from this site due to potential risks to houses on the southern edge of Murchison Road.

The site is considered high priority with respect to both the discharge of leachate and landfill gas. Wellington City Council are in the process of addressing issues relating to landfill gas issues. The discharge of leachate is yet to be addressed.

10.13.3 Sampling Results

The sample results available can be summarised as follows:

ID	Description
PG1	Manhole in Happy Valley Road park (WGN 000579)

Test		B1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	66.8	-	-
Conductivity	µS/cm	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	212.00	-	700
pH		6.4	7.0	7.0
Suspended Solids	g/m ³	42.6	10%	10%
Total Iron	g/m ³	16.03	0.5	1.0
Total Manganese	g/m ³	2.63	-	2.0

Landfills in the Wellington Region

Test		B1	Aquatic	Stock
Alkalinity	g/m ³	548.91	-	-
Sodium	g/m ³	156.00	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.02	0.01	1.00
Total Copper	g/m ³	0.00	0.002	0.2
Total Lead	g/m ³	0.01	0.001	0.2
Total Nickel	g/m ³	0.01	0.015	0.2
Potassium	g/m ³	14.73	-	-
Total Zinc	g/m ³	0.02	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.13.4 **Prestons Gully Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	High	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			High

10.14 Landfill, Parkvale Road

10.14.1 Location Information

Location:	Parkvale Road	Last Used:	1930s
Access:	Parkvale Road	Map Reference:	
Nearby Town:	Karori	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/22

10.14.2 General Description

The exact location of this landfill is unknown, it is however suspected that the site is located at the northern end of Parkvale Road, Karori. If this is the case the current land use is likely to be a mixture of residential and agricultural with surrounding land use being similar. The site is on several properties that are privately owned and maintained.

Notes on file (sourced from Wellington City Council information) indicate that the site was around half an acre and about 6 feet deep. It was operational from 1931 to 1934.

Discussions with a Mr Cattnach of Karori (77 years old and has lived in Karori since he was two) noted several areas of fill around Karori in the vicinity of Parkvale Road:

- (1) Opposite Chaucer Way, in creek that flowed down the LHS of Parkvale Road. Pre-World War II - Coles Farm on the LHS. Feickert's Farm on the RHS. Area was developed for residential houses during or after the war.
- (2) Near the Friend Street and Parkvale Road intersection.
- (3) Near the current location of the Medical Centre, in the creek. (Karori Stream, now culverted in this area).

This site is considered relatively medium priority with respect to the discharge of leachate due to the current lack of information.

On the basis of the age, size and type of refuse disposed, the potential gas generation from this site has been estimated to be low. Assuming the location is on Parkvale Road in the area with residential housing, it is likely that there are several potential gas collection points within 300 m of the site. This site is considered medium priority with respect to the discharge of landfill gas.

There is also the potential for issues relating to stability although this is unlikely given the reported age of the site.

10.14.3 Landfill, Parkvale Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Low/medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	x
Recreational		Surface water	x
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Medium

10.15 Southgate Reserve

10.15.1 Location Information

Location:	Southgate Park	Last Used:	1971
Access:	Southgate Road, Arun Crescent	Map Reference:	2659000 5984400
Nearby Town:	Melrose	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/6

10.15.2 General Description

Southgate Reserve is located between Arun Crescent, Southgate Road and Melrose Road in Melrose, Wellington. The site is currently used as an open space, general recreational area. Surrounding land use is residential, the site is owned and maintained by the Wellington City Council.

The landfill operated from 1963 to 1971. There was also some filling here from 1931-33 that was used to widen Melrose Road (Cross Ref section 10.18). Wellington City Council file CW50/0241/41 (Buckley Road Melrose Road Tip) has further information on this site.

Surrounding topography is steep to rolling with the majority of surface water taken via the stormwater system to Island Bay. Any leachate discharge from the site is likely to enter the stormwater system or groundwater. The site is considered relatively low priority with respect to the discharge of leachate.

There have been issues with respect to landfill gas at this site, which resulted in the installation of a flaring system to extract and dispose of gas from the site.

10.15.3 Sampling Results

There are no sampling results on Wellington Regional Council files for this site.

10.15.4 Southgate Reserve: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low (flaring)

10.16 Ben Burn Park

10.16.1 Location Information

Location:	Ben Burn Park	Last Used:	Unknown
Access:	Campbell Street	Map Ref:	2655600 5989500
Nearby Town:	Karori	Survey Date:	
Fill Contents:	Unknown	File Number:	K/9/5/7

10.16.2 General Description

Ben Burn Park is located on the south-western side of Campbell Street Karori between Cargill Street and Kano Street. It is currently used as for playing fields, surrounding land use is residential. The site is owned and maintained by the Wellington City Council.

Information regarding this site is extremely limited, Wellington City Council files merely note the fact that this site was a landfill, but offer no further information regarding contents or time of operation. Houses surrounding the park are predominantly from the period 1910 to 1930 based on information from the Valuation New Zealand Database. On this basis and based on similar sites around Karori it is likely that this site was operated in the same period.

Surrounding topography is flat with the nearest surface water body being the Karori Stream approximately 600 m to the north. Any leachate is likely to discharge into this stream via either the Wellington City Council stormwater system or groundwater. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.16.3 Sampling Results

There are no sampling results on Wellington Regional Council files for this site.

10.16.4 Ben Burn Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.17 Melrose Road, Albert Street, Foyle Street, Wellington

10.17.1 Location Information

Location:	Melrose Road	Last Used:	1933
Access:	Melrose Road	Map Reference:	2658800 5984000
Nearby Town:	Melrose, Island Bay	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/8

10.17.2 General Description

This site is now under Melrose Road, near Island Bay. The area, created by filling, was used to improve the road, surrounding land use is residential. The site is owned and maintained by the Wellington City Council.

See Wellington City Council file CW50/0241/07 (Island Bay Melrose Street Tip Sefton Bldg) for further information.

This site has been effectively capped (with roading material). Surrounding topography is steep to rolling with the majority of surface water taken via the stormwater system to Island Bay. Any leachate from the site is likely to discharge into the stormwater system or into groundwater. The site is considered relatively low priority with respect of the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.17.3 Sampling Results

There are no sampling results on Wellington Regional Council files for this site.

10.17.4 **Melrose Road: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.18 Maranui Tip

10.18.1 Location Information

Location:	Wellington City Council Works Depot	Last Used:	1936
Access:	Queens Drive	Map Reference:	2660000 5983700
Nearby Town:	Lyll Bay	Survey Date:	
Fill Contents:	Tin tip (inorganic refuse)	File Number:	K/9/5/9

10.18.2 General Description

The Maranui tip is located on Queens Drive, Lyall Bay, near the corner of Queens Drive and Hungerford Road. It is currently used as a depot by the Wellington City Council, surrounding land use is recreational. The site is owned and maintained by the Wellington City Council.

The site was operated as a tin tip from 1931-36. The types of refuse disposed of at a tin tip include metal drums, tanks, metal sheeting, wire, and oil drums. Refer to Wellington City Council file CW 50/241/5, 50/241/1 for further information.

Surrounding topography is steep to the west with Lyall Bay located on the eastern side of Queens Drive. Any discharge of leachate from the site is likely to discharge via groundwater to Lyall Bay. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. There are no identified potential gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.18.3 **Maranui Tip: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		x
Potential			
Quantity	Medium	Low/medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.19 Ramsbottom's Yard

10.19.1 Location Information

Location:	Ngauranga Gorge	Last Used:	Unknown
Access:	Ngauranga Gorge	Map Reference:	2661410 5995495
Nearby Town:	Johnsonville	Survey Date:	
Fill Contents:	Unknown	File Number:	K/9/5/91

10.19.2 General Description

This site is located under the south-west section of the Newlands Interchange to the west of Centennial Highway. Surrounding land use is vacant and the site is maintained by Transit New Zealand Ltd.

Notes on file suggest that indiscriminate tipping occurred in this area. Construction of the Newlands Interchange in 1997/98 resulted in the redevelopment of this entire site including removal of fill not appropriate for the use of the site.

Surrounding topography is steep with a tributary to Ngauranga Stream flowing down the gorge. This is partly culverted and partly open, any discharge of leachate is likely to be to this stream. In the absence of any identified discharge, this site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. There are no identified potential gas collection points with the exception of the cycle underpasses associated with the interchange. On the basis of the extremely low potential for gas generation, this site is considered relatively low priority with respect to the discharge of landfill gas.

10.19.3 Ramsbottoms Yard: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.20 Landfill, Johnsonville

10.20.1 Location Information

Location:	Sheridan Terrace	Last Used:	Unknown
Access:	Sheridan Terrace	Map Reference:	2661636 5996109
Nearby Town:	Johnsonville	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/5/93

10.20.2 General Description

This site is located at the end of Sheridan Terrace, Johnsonville, to the east of the Johnsonville/Porirua Motorway. The site is currently vacant (likely to be residential development), surrounding site is residential. The land is privately owned and maintained.

The site was originally a gully. The filling took place in the 1980s and was undertaken for John Pavan. He has provided a copy of the engineers report for the filling operation.

Surrounding topography is steep with surface water in the area contained predominantly in the Wellington City Council stormwater system. Any discharge of leachate from the site is likely to be to groundwater and possible subsequently into stormwater. Given the nature of the potential contaminants and lack of completed exposure pathways, this site is considered relatively low priority with respect to the discharge of leachate.

Landfill gas is not considered as an issue for this site.

10.20.3 Landfill, Johnsonville: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

10.21 Houghton Valley Landfill

10.21.1 Location Information

Location:	Sinclair Park	Last Used:	1963
Access:	Houghton Bay Road	Map Reference:	2659507 5984323
Nearby Town:	Island Bay	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/40

10.21.2 General Description

This site is located on the western side of Houghton Bay Road, Houghton Bay, Wellington. Current land uses are playing fields, park land, school and a light horse riding club. Surrounding land use is residential, the site is owned and maintained by the Wellington City Council and the Education Ministry.

The Houghton Valley landfill was operated in two phases during its history. The first landfilling phase filled the lower reaches of the valley and is reported to form the playing fields up to Houghton Valley School. Filling began in 1950 and was completed in 1963 (698,000 m³, 4.8 Ha). The approximate maximum depth is 18 m. Investigations suggest that most of the remnant fill is gas works material with moderate concentrations of wood, metal, plastic and newspaper also present.

The second landfilling phase formed the playing fields and reserve from the Light Horse Grounds up to Sinclair Park and operated between 1963 and 1971. (764,550 cu.m, 3.9 Ha, max depth 36 m) Investigation suggests that the fill was similar to the earlier fill, but had a greater domestic content.

There is an effluent pipeline that was designed to intercept the main Houghton Bay stormwater drain. It takes the dry weather flow westward to a discharge point into the existing sewer line. Heavy rain results in leachate overflowing into the stormwater system and then onto the beach. Based on visual and olfactory observations at Houghton Bay beach, it appears that there is an additional leachate discharge to stormwater.

The site is considered high priority with respect to both the discharge of leachate and landfill gas. Wellington City Council are in the process of addressing these issues.

10.21.3 Sampling Results

The sample results available can be summarised as follows: The site was sampled from 7 November 1989 to 18 April 1995

ID	Description
H1	Houghton stream mouth beach (WGN 000578)

Landfills in the Wellington Region

Test		H1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	66.81	-	-
Conductivity	µS/cm	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	212.00	-	700
pH		6.4	7.0	7.0
Suspended Solids	g/m ³	42.6	10%	10%
Total Iron	g/m ³	16.03	0.5	1.0
Total Manganese	g/m ³	2.63	-	2.0
Alkalinity	g/m ³	548.91	-	-
Sodium	g/m ³	156.00	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.02	0.01	1.00
Total Copper	g/m ³	0.00	0.002	0.2
Total Lead	g/m ³	0.01	0.001	0.2
Total Nickel	g/m ³	0.01	0.015	0.2
Potassium	g/m ³	14.73	-	-
Total Zinc	g/m ³	0.02	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.21.4 **Houghton Valley Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium	High	High
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			High

10.22 Carey's Gully Landfill

10.22.1 Location Information

Location:	Carey's Gully	Last Used:	1976 - Operational
Access:	Landfill Road	Map Reference:	2655001 5984273
Nearby Town:	Brooklyn	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/109

10.22.2 General Description

This site is located at the Landfill Road, Brooklyn, Wellington. It is currently operating as a landfill, surrounding land use includes landfilling and open space. The site is owned and maintained by the Wellington City Council.

Carey's Gully Landfill (Southern Landfill) is one of two landfill sites operated by the Wellington City Council and is subject to several resource consents issued by the Wellington Regional Council (WGN 70 0090-0095).

The site was initially developed in the 1970s, stage one is below the current Burrells Demolition site. There are stormwater diversion, leachate collection and gas collection systems in place.

Because this is an operational site, environmental impacts, both now and in the future are covered by the resource consent process. For further information, refer to the consent files noted above.

10.22.3 Sampling Results

The sample results available can be summarised as follows: The site was sampled from the 11 July 1989 to present.

ID	Description
W1	Stream above landfill face (WGN 000568)
W2	Stream below landfill face (WGN 000569)
W4	Stage II leachate (WGN 000571)
W5	Stage I leachate (WGN 000572)
W6	Stream along tip access road (WGN 000573)

Test		W1	W2	W4	W5	W6	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	N/A	N/A	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	6.09	12.5	147.81	41.15	13.94	-	-
Conductivity	µS/cm	243.83	373.33	N/A	N/A	424.33	1500.0	1500.0
Dissolved Chloride	g/m ³	43.50	54.35	198.44	109.54	57.73	-	700
pH		7.6	7.1	6.5	6.5	<u>8.1</u>	7.0	7.0
Suspended Solids	g/m ³	2.58	7.84	27.03	18.90	38.91	10%	10%
Total Iron	g/m ³	0.03	<u>1.37</u>	<u>14.28</u>	<u>7.84</u>	<u>2.00</u>	0.5	1.0

Landfills in the Wellington Region

Test		W1	W2	W4	W5	W6	Aquatic	Stock
Total Manganese	g/m ³	0.00	0.61	292.47	3.69	0.27	-	2.0
Alkalinity	g/m ³	34.36	103.36	823.38	464.55	82.77	-	-
Sodium	g/m ³	27.22	36.46	148.09	100.98	38.61	-	300
Total Cadmium	g/m ³	0.00	0.00	0.00	0.00	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.00	0.00	0.00	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.00	0.00	0.00	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.00	0.00	0.00	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.00	0.00	0.00	0.00	0.015	0.2
Potassium	g/m ³	0.97	2.34	24.43	14.10	2.65	-	-
Total Zinc	g/m ³	0.00	0.01	0.06	0.00	0.01	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.22.4 **Carey's Gully Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium	Very high	Medium
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low

10.23 Anderson Park

10.23.1 Location Information

Location:	Anderson Park	Last Used:	1935
Access:	Bowen Street	Map Reference:	2658235 5990383
Nearby Town:	Wellington City	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/11

10.23.2 General Description

Anderson Park is located between the Dell in the Wellington Botanical Gardens and Bowen Street. It is currently playing fields and a general recreational area. Surrounding land uses are recreational, residential and commercial. The site is owned and maintained by the Wellington City Council.

The site was operated in the 1930s, closing in 1935.

Surrounding topography is steep with surface water in the area contained predominantly in the Wellington City Council stormwater system. Any discharge of leachate from the site is likely to enter groundwater or the stormwater system. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. Recreational buildings on the site have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.23.3 **Anderson Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.24 Churton Park Cleanfill

10.24.1 Location Information

Location:	Recreation Area	Last Used:	1997
Access:	Amesbury Drive	Map Reference:	2661600 5998700
Nearby Town:	Churton Park	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/5/110

10.24.2 General Description

This site is located on the western side of Amesbury Drive to the end of Amesbury Drive, Churton Park. The proposed use of the finished fill is a general open space/recreational area. Surrounding land use is residential and agricultural. The site is currently owned by the developer of Churton Park, but will eventually be owned and maintained by the Wellington City Council.

There is some anecdotal evidence that suggests that contaminated soil went into this site, but no incident has been confirmed. The stormwater diversion outlet shows some evidence of iron contamination although similar natural iron staining in the area suggests this could be partially or completely due to natural iron deposits.

The stream receiving the discharge from the base of the fill ultimately discharges into the Porirua stream. Based on the potential contaminants this site is considered relatively low priority with respect to the discharge of leachate.

Landfill gas is not considered as an issue for this site.

10.24.3 Churton Park Cleanfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

10.25 Happy Valley Park

10.25.1 Location Information

Location:	Happy Valley Park	Last Used:	Unknown
Access:	Happy Valley Road	Map Reference:	2657219 5984183
Nearby Town:	Owhiro Bay	Survey Date:	
Fill Contents:	Unknown	File Number:	K/9/5/112

10.25.2 General Description

Happy Valley Park is located on the eastern side of Happy Valley Road directly south of the Murchison Road intersection. Current site use is recreational. Surrounding land uses are open space and educational (Happy Valley School). The site is owned and maintained by the Wellington City Council.

There is no information held on file regarding the operation, size or contents of this site.

Surrounding topography is steep and the Happy Valley Stream flows along the western side of the site. The stream is also likely to be affected by the Polhill Gully fill, Carey's Gully and Prestons Gully Landfills. Any discharge of leachate is likely to enter this stream. The site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as medium. The neighbouring school has the potential to provide gas collection points. This site is considered relatively medium priority with respect to the discharge of landfill gas.

10.25.3 Happy Valley Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	
		< 10,000	x
		> 10,000	
Site Priority Ranking			Medium

10.26 Wellington Airport landfill

10.26.1 Location Information

Location:	Wellington Airport	Last Used:	1937
Access:	Stewart Duff Drive	Map Reference:	2661400 5984900
Nearby Town:	Kilbirnie	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/114

10.26.2 General Description

The exact location of this landfill is unclear, but it is probably part of the airport block Lot 3 DP 75180 located closest to Rongotai. If this is the case, the current use is commercial/industrial (sealed surface). Surrounding land use is commercial/industrial. The site is privately owned and maintained.

Some desktop investigation has been done into this site by consultants working for prospective purchasers of Wellington International Airport Ltd. The site is in commercial industrial use and is currently used as airport apron.

There is some potential for impacts on groundwater from material in the fill. If this is the case, contaminated groundwater is likely to discharge to Lyall Bay to the south. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. Commercial/industrial buildings in the area have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.26.3 Wellington Airport Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium/high	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.27 **Miramar Park**

10.27.1 **Location Information**

Location:	Miramar Park	Last Used:	Unknown
Access:	Darlington Road	Map Reference:	2662646 5986986
Nearby Town:	Miramar	Survey Date:	
Fill Contents:	Unknown	File Number:	K/9/5/115

10.27.2 **General Description**

Miramar Park is located between Park and Darlington Roads in Miramar. Current site is recreational. Surrounding land uses are residential, educational and commercial/industrial. The site is owned and maintained by the Wellington City Council.

There is no information held on file regarding the operation, size or contents of this site. Some of the houses in the area date back to the 1920s and this is used as a basis for estimating the age of the site in the same period.

Surrounding topography is flat with the nearest surface water bodies being either Evans Bay or Worser Bay, both separated by hills from the site. Groundwater flow is likely to be to the south ultimately discharging to Lyall Bay, the nearest groundwater bore is at the Miramar Golf Course and is used for irrigation. Stormwater from the area discharges at Miramar Wharf.

Any discharge of leachate from the site is likely to be to groundwater or the stormwater system. The site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. Due predominantly to the age of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

10.27.3 **Mirimar Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.28 Cashmere Avenue Landfill

10.28.1 Location Information

Location:	Cashmere Avenue	Last Used:	Unknown
Access:	Cashmere Avenue	Map Reference:	2660415 5994484
Nearby Town:	Khandallah	Survey Date:	
Fill Contents:	Unknown	File Number:	K/9/5/116

10.28.2 General Description

This site is located between Cashmere Avenue and Delhi Crescent in Khandallah. It is currently vacant, surrounding land use is residential. The site is owned and maintained by the Wellington City Council.

There is no information held on file regarding the operation, size or contents of this site. See Wellington City Council file 50/241/03 *Cashmere Avenue*. Houses in the Region of the landfill site were built from the 1920s to the 1950s, suggesting that the area was developed prior to or at the start of this period.

Surrounding topography is rolling with the Tyers Stream running along the western side of Delhi Crescent. There are no recorded groundwater bores in the area. Any discharge of leachate is likely to enter this stream either directly or via groundwater. Due to the absence of identified discharge to the stream, the site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.28.3 Cashmere Avenue Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.29 Ex Bengal Street Tin Tip

10.29.1 Location Information

Location:	Calcutta Street	Last Used:	1930s
Access:	Calcutta Street	Map Reference:	2660112 5993247
Nearby Town:	Khandallah	Survey Date:	20 August 1997
Fill Contents:	Inorganic rubbish	File Number:	K/9/5/117

10.29.2 General Description

This site is located near the corner of Bengal and Calcutta Streets, Khandallah. Current site use is residential. Surrounding land use is also residential. The site is privately owned and maintained.

The Bengal Street tin tip is currently part of a residential site on Calcutta Street, Khandallah and forms a small flat area in what is generally relatively steep terrain. The site was used in the 1930s and 40s for the disposal of inorganic refuse and was always privately owned. Wellington City Council considered purchasing the site for development as a municipal landfill, but this was not done.

Investigations indicate that the fill area is around 10 x 10 m and up to 2-3 m deep. There is some evidence of iron stained soil at the face of the fill, but no significant discharge. When digging for piles for the current dwelling on the property, inorganic refuse such as corrugated iron was encountered.

There is a dry area at the face of the fill that may have been a wet seepage based on the colour of the soil. This would have discharged to a small stream running towards Wellington Harbour. Based on the absence of continuing discharge this site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as very low. The surrounding residential properties have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.29.3 Ex Bengal Street Tin Tip: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		x
Potential			
Quantity	Medium		Very low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.30 Landfill, Onslow Road

10.30.1 Location Information

Location:	Onslow Road	Last Used:	Unknown
Access:	Onslow Road	Map Reference:	2661004 5993392
Nearby Town:	Khandallah	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/118

10.30.2 General Description

This site is located off Onslow Road in Khandallah. It is currently used for recreational/open space purposes. The surrounding land uses are residential and recreational/open space. The site is owned and maintained by the Wellington City Council.

There is no information held on file regarding the operation, size or contents of this site. Houses in the area were built in the 1940s and 1950s so it is assumed that the landfill was completed either prior to this or during the early 1940s.

Surrounding topography is steep with the most likely discharge pathway being into a stream that discharges under the Hutt Road and the Urban Motorway into Wellington Harbour. There are no recorded groundwater bores in the area. In the absence of identified discharge of leachate, the site is considered relatively low priority with respect to the discharge of leachate.

Based on the estimated age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.30.3 Landfill, Onslow Road: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential		x	
Quantity	Medium		Low
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.31 Kilbirnie Park

10.31.1 Location Information

Location:	Kilbirnie Park	Last Used:	Unknown
Access:	Evans Bay Parade	Map Reference:	2660179 5986668
Nearby Town:	Kilbirnie	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/12

10.31.2 General Description

Kilbirnie Park is bounded by Evans Bay Parade, Wellington Road and Kilbirnie Crescent. The current land use is playing fields. Surrounding land uses are recreational, residential and commercial. The site is owned and maintained by the Wellington City Council.

There is no information held on file regarding the operation, size or contents of this site. Buildings in the area date back to the 1900s suggesting that the fill site may have been developed in that period.

Surrounding topography is flat with the closest surface water body being Evans Bay. The most likely discharge pathway is to groundwater which is likely to flow into Evans Bay, there is no recorded use of groundwater in the area. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. This site is considered relatively low priority with respect to the discharge of landfill gas.

10.31.3 **Kilbirnie Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.32 Landfill, Friend Street, Karori

10.32.1 Location Information

Location:	Friend Street	Last Used:	1933
Access:	Friend Street	Map Reference:	2655628 5990340
Nearby Town:	Karori	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/24

10.32.2 General Description

This site is located on the north-east corner of Friend and Hatton Streets. Current and surrounding land use is residential. The site is privately owned and maintained.

This landfill was on land owned by the Anglican Church that has subsequently been sub divided and redeveloped as residential properties. The site was operated by the Wellington City Council in the 1930s and accepted general rubbish from the Karori area.

One of the current landowners has reported that excavation of the site for building purposes revealed scattered pockets of glass, pottery and other inorganic refuse. This site is noted in Wellington City Council file CW 50/0241/09.

Surrounding topography is flat, the most likely contaminant discharge pathways are to groundwater and stormwater. Either pathway will eventually discharge into Karori Stream to the south along Friend Street. There is no recorded use of groundwater in the area. The site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The buildings on the site and surrounding properties have the potential to act as gas collection points. Due predominantly to the age and size of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

10.32.3 Landfill, Friend Street, Karori: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	x
Recreational		Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.33 Hanson Street Building

10.33.1 Location Information

Location:	Hanson Street	Last Used:	1953
Access:	Hanson Street	Map Reference:	2658499 5986623
Nearby Town:	Newtown	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/13

10.33.2 General Description

This site is on the corner of Hanson and Stoke Streets in Newtown, and is now a parking area with two buildings on it and a play area to the north. Surrounding land uses are recreational and residential. The two buildings are used by the City of Wellington Highland Pipe Band and a scout troop and owned by the Wellington City Council.

There is no obvious discharge from the site, but general topography in the area suggests that groundwater will flow to the north along Hanson Street. There is a significant depression at the northern edge of the play area with a large stormwater sump at the bottom. It is likely that any discharge from the fill would be collected at this low point and would possibly enter the stormwater system.

Stormwater from this area discharges to Wellington Harbour. The site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. Due predominantly to the age of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

10.33.3 Hanson Street Building: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.34 Appleton Park

10.34.1 Location Information

Location:	Appleton Park	Last Used:	1940
Access:	Chaytor Street	Map Reference:	2656891 5989769
Nearby Town:	Karori	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/23

10.34.2 General Description

This site is located between Chaytor Street and Birdwood Street at the city end of Karori. It is currently used for recreational purposes. Surrounding land uses are recreational and residential. The site is owned and maintained by the Wellington City Council.

The site was used as a tin tip for metallic waste. Dumped material included lubricating drums, fuel oil, corrugated iron, petrol tins, barrels of broken glass which was emptied into tip, steam boilers, discards from a demolished electricity powerhouse in Cable Street, tar drums, iron castings, car bodies, and sheep carcasses. The dumping of metallic waste took place specifically at the Birdwood Street end. Tin jars were placed on ground level and filled with clay. Bottles were massed and then spread in regular levels 4-6 feet deep. There is a foot of clay on top of the site.

Further information on this site is held in the Wellington City Council archives in files CW50/0241/01 (Birdwood Street Chaytor Tip), CW50/0241/29 (Birdwood Street Tip).

Surrounding topography is steep to rolling with the nearest surface water body being Kaiwharawhara Stream which is culverted under the site. Any discharge of leachate is likely to enter this stream.

Sampling results from the stream above and below the park do not indicate any significant effect on the water quality, but these results are of a screening nature only. This site is considered medium priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. Due predominantly to the age of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

10.34.3 Sampling Results

The results for Appleton Park are presented below.

ID	Description
AP1	Upstream of Appleton Park (south of Birdwood Street)
AP2	Downstream of Appleton Park

Landfills in the Wellington Region

Test		AP1	AP2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	0.07	< 0.5	-
Chemical Oxygen Demand	g/m ³	7	10	-	-
Conductivity	μS/cm	121	218	1500.0	1500.0
Dissolved Chloride	g/m ³	29	29	-	700
pH		7.6	7.6	7.0	7.0
Suspended Solids	g/m ³	3	4	10%	10%
Total Iron	g/m ³	0.12	0.43	0.5	1.0
Total Manganese	g/m ³	< 0.03	< 0.03	-	2.0
Alkalinity	g/m ³	-	-	-	-
Sodium	g/m ³	-	-	-	300
Total Cadmium	g/m ³	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	0.01	1.00
Total Copper	g/m ³	-	-	0.002	0.2
Total Lead	g/m ³	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-
Total Zinc	g/m ³	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.34.4 Appleton Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.35 Otari Native Plants Museum

10.35.1 Location Information

Location:	Otari Native Plants Museum	Last Used:	1970
Access:	Chartwell Drive	Map Reference:	2657300 5992000
Nearby Town:	Chartwell	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/5/137

10.35.2 General Description

This site is located at the northern corner of the Otari Native Botanic Garden off Chartwell Drive. Current land use is open space/recreational, surrounding land use includes agricultural, open space and residential.

The site was visited on 29 May 1995. The site discharge is located by entering the park from the end of John Winton Street, walking along the *red track* to an unnamed tributary of the Kaiwharawhara Stream, and turning right upstream. Tractor tyres and wire cable were observed in the stream, rust coloured leachate oozing from the bank. According to notes on file, the gully was filled last 15 years ago, and was filled twice. A lot of cleanfill was moving downstream towards the Kaiwharawhara Stream which runs through the park.

Sampling in the stream indicated elevated levels (exceeding guidelines for the protection of aquatic ecosystems and stock watering) of iron directly below the predominant seep with this level reducing somewhat downstream. Further work is required to adequately determine the risks associated with the discharge from this site, and accordingly it is considered relatively high priority with respect to the discharge of leachate.

Due to the fact that this site is predominantly associated with cleanfill, landfill gas is not considered as an issue.

10.35.3 Sampling Results

The results for Otari are presented below.

ID	Description					
OT1	Above main seepage					
OT2	Directly below main seepage					
OT3	Where <i>red track</i> crosses the stream					

Test		OT1	OT2	OT3	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	< 0.05	< 0.05	< 0.05	< 0.5	-
Chemical Oxygen Demand	g/m ³	10	10	9	-	-
Conductivity	µS/cm	221	245	258	1500.0	1500.0
Dissolved Chloride	g/m ³	44	47	50	-	700

Landfills in the Wellington Region

Test		OT1	OT2	OT3	Aquatic	Stock
pH		6.8	6.5	7.3	7.0	7.0
Suspended Solids	g/m ³	20	8	6	10%	10%
Total Iron	g/m ³	0.30	1.2	0.29	0.5	1.0
Total Manganese	g/m ³	< 0.03	0.35	0.07	-	2.0
Alkalinity	g/m ³	-	-	-	-	-
Sodium	g/m ³	-	-	-	-	300
Total Cadmium	g/m ³	-	-	-	0.0002	0.01
Total Chromium	g/m ³	-	-	-	0.01	1.00
Total Copper	g/m ³	-	-	-	0.002	0.2
Total Lead	g/m ³	-	-	-	0.001	0.2
Total Nickel	g/m ³	-	-	-	0.015	0.2
Potassium	g/m ³	-	-	-	-	-
Total Zinc	g/m ³	-	-	-	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.35.4 Otari Native Plants Museum: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium		
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	
Surface water user	x		
Site Priority Ranking			High
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			N/A

10.36 Strathmore Park

10.36.1 Location Information

Location:	Strathmore Park	Last Used:	1945
Access:	Walden Street	Map Reference:	2662236 5984761
Nearby Town:	Strathmore	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/14

10.36.2 General Description

Strathmore Park is located between Monorgan Road and Walden Street in Strathmore Park, Wellington. Current land use is recreational. Surrounding land uses are residential and Scots College. The site is owned and maintained by the Wellington City Council.

Further information is available on Wellington City Council archived files. (50/241/30 *Monorgan Road*.) The site operated from 1943-5 and is now a *recreational area*.

Surrounding topography is flat to rolling with the closest surface water body being Breaker Bay. Groundwater is likely to flow towards Lyall Bay with stormwater flowing in a similar direction. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. Due predominantly to the age of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

10.36.3 Strathmore Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	High	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.37 Creswick Terrace Park

10.37.1 Location Information

Location:	Creswick Terrace Park	Last Used:	1946
Access:	Creswick Terrace	Map Reference:	2656983 5990072
Nearby Town:	Northland	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/15

10.37.2 General Description

This site is located between Creswick Terrace and Putnam Road, Northland, Wellington. The current site use is recreational and possibly includes house sites at the end of Creswick Terrace, surrounding land use is residential. The site is owned and maintained by the Wellington City Council.

Further information on this site is available from Wellington City Council files CW50/0241/6 and CW50/0241/28 (Creswick Terrace Tip). The site operated from 1941-1946.

The surrounding topography is steep with the nearest surface water body being a small stream in the valley to the north-west of Curtis Street. The most likely discharge pathway from this site is to this stream via groundwater or the Wellington City Council stormwater system. There are no recorded groundwater use in the immediate area. This site is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. Due predominantly to the age of the site, it is considered relatively low priority with respect to the discharge of landfill gas.

10.37.3 Creswick Terrace Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Low	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential	x	Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.38 Moa Point Landfill

10.38.1 Location Information

Location:	Moa Point	Last Used:	1945
Access:	Moa Point Road	Map Reference:	2661610 5984058
Nearby Town:	Kilbirnie	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/16

10.38.2 General Description

The Moa Point landfill was located on Moa Point Road on the site of the Wellington City Council Sewage Treatment Plant. Surrounding land uses are open space and commercial (Wellington International Airport). The site is owned by the Wellington City Council and currently maintained by Anglian Water International (NZ) Ltd.

This site is likely to contain some material from the Miramar Gasworks as evidenced by the cyanide (blue green colouring) noted during excavation for the treatment plant. The fill was removed to Carey's Gully Landfill in 1995 during construction of Wellington City Council sewage treatment plant.

Refer to Wellington City Council archived file 50/241/23 *Moa Point* for further information.

Due to the fact that the majority of the fill was removed during construction of the treatment plant currently on the site, the Moa Point landfill is considered relatively low priority with respect to the discharge of both leachate and landfill gas.

10.38.3 Moa Point Landfill: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial	x	Maintenance/excavation	
Recreational		Surface water	
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.39 Blind Gardens

10.39.1 Location Information

Location:	Blind Gardens	Last Used:	Early 1950s
Access:	Hobson Street	Map Reference:	2658700 5991500
Nearby Town:	Thorndon	Survey Date:	
Fill Contents:	Cleanfill	File Number	K/9/5/17

10.39.2 General Description

This site is located on the corner of Hobson Street and Fitzherbert Terrace in Thorndon, Wellington and includes the Blind Gardens and a section of the Urban Motorway. Surrounding land uses are residential, recreational and commercial. The site is owned and maintained by the Wellington City Council.

This area was used for the disposal of spoil produced as part of the construction of the Wellington City Council sewerage tunnel system in the early 1950s. The majority of the spoil produced was later excavated for the construction of the motorway in the 1960s and 70s.

Due to the fact that the majority of the spoil was removed during the construction of the motorway, and available information indicates the fill was predominantly clean material, this site is considered relatively low priority with respect to the discharge of both leachate and landfill gas.

10.39.3 Blind Gardens: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	x
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.40 Fort Dorset

10.40.1 Location Information

Location:	Fort Dorset	Last Used:	1940
Access:	Burnham Street	Map Reference:	2663800 5985300
Nearby Town:	Seatoun	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/18

10.40.2 General Description

Fort Dorset is located on Burnham Street, Seatoun and is currently used for defence purposes. The site is currently owned and maintained by the New Zealand Defence Force who is proposing to sell the site for residential development. Surrounding land uses are recreational and residential,.

The Wellington City Council and the New Zealand Defence force have undertaken joint investigations to determine if the site is suitable for residential development. These investigations pinpointed the boundary of the landfill and gave some indications of the contents.

Groundwater is present at the base of the fill and may be contributing some metal and PAH contamination to the harbour. Given the dilution factor on entering the harbour, the consultants for Wellington City Council/Defence Force did not consider the discharge of contaminated groundwater to be significant.

The former defence area has been zoned residential with all activities on the landfill requiring a discretionary consent from the Wellington City Council.

Surrounding topography is flat with the nearest surface water body being Wellington Harbour within 10-20 m of the site. Groundwater under the site is likely to discharge directly to the Harbour. Given the age of the site, it is considered relatively low priority with respect to the discharge of leachate.

Based on the age, size and type of refuse disposed, the potential landfill gas generation has been estimated as low. The surrounding residential properties have the potential to act as gas collection points. Due predominantly to the age of the site, it is considered relatively low priority with respect to the discharge of landfill gas. This is supported by limited gas monitoring carried out on behalf of the Defence Force and Wellington City Council.

10.40.3 Fort Dorset: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.41 Horokiwi Landfill

10.41.1 Location Information

Location:	Horokiwi Landfill	Last Used:	1990s
Access:	Ladbrook Drive	Map Reference:	2664248 5996727
Nearby Town:	Newlands	Survey Date:	
Fill Contents:	General Refuse	File Number:	K/9/5/2

10.41.2 General Description

The site is located at the end of Ladbrook Drive, Newlands. It is currently being redeveloped as a recreational area. Surrounding land uses are recreational and vacant. The site is owned and maintained by the Wellington City Council.

Horokiwi Landfill was operated by the Wellington City Council up to the mid 1990s and served the northern part of Wellington City. It is currently being capped for use as a recreation reserve.

Recent leachate discharge upgrade works have involved the installation of a rockfall aeration system to enhance the removal of oxidisable material.

Files include:

- Wellington City Council file CW50/0241/46 (Horokiwi proposed tip), CW50/0241/46/01 (Horokiwi Landfill Access Road), CW50/0241/46/02 (Horokiwi Landfill Operation Contract 2513)
- Wellington Regional Council Files W/5/6/5: Landfills, Horokiwi, WGN 950019, WGN 980170

This site is the subject of several resource consents issued by the Wellington Regional Council as noted above, the consenting processing is considered to adequately address potential environmental effects due to this site.

10.41.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description			
N1	Horokiwi stream from Horokiwi landfill (WGN 000574)			
Test		N1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	4.02	< 0.5	-
Chemical Oxygen Demand	g/m ³	44.5	-	-
Conductivity	µS/cm	910	1500.0	1500.0
Dissolved Chloride	g/m ³	108	-	700
pH		7.03	7.0	7.0

Landfills in the Wellington Region

Test		N1	Aquatic	Stock
Suspended Solids	g/m ³	21.9	10%	10%
Total Iron	g/m ³	9.57	0.5	1.0
Total Manganese	g/m ³	8.85	-	2.0
Alkalinity	g/m ³	472	-	-
Sodium	g/m ³	92.3	-	300
Total Cadmium	g/m ³	0.01	0.0002	0.01
Total Chromium	g/m ³	0.11	0.01	1.00
Total Copper	g/m ³	0.01	0.002	0.2
Total Lead	g/m ³	0.06	0.001	0.2
Total Nickel	g/m ³	0.06	0.015	0.2
Potassium	g/m ³	11.3	-	-
Total Zinc	g/m ³	0.09	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.41.4 **Horokiwi Landfill: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	x
Potential			
Quantity	Medium	High	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user		Groundwater	x
Surface water user	x		
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	
		< 10,000	
		> 10,000	x
Site Priority Ranking			Low

10.42 Central Park

10.42.1 Location Information

Location:	Central Park	Last Used:	1935
Access:	Brooklyn Road	Map Reference:	2657979 5988038
Nearby Town:	Wellington City	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/20

10.42.2 General Description

Central Park is located on the western side of Brooklyn Road opposite a large block of flats. Current land use is recreational. Surrounding land uses are recreational and residential. The site is owned and maintained by the Wellington City Council.

The tip operated from 1929 to 1935. There is no information on file regarding the contents of the fill although it is likely to have received general refuse. There is significant iron staining in the stormwater outlet across Brooklyn Road from the Tennis Centre.

Surrounding topography is steep with the nearest surface water body being a small stream running in the gully between Brooklyn Road and the Council Flats. This stream is likely to eventually discharge to the Wellington Harbour via the Wellington City Council stormwater system.

There is no use of groundwater in the area.

Levels of iron and zinc exceeded ANZECC criteria and would pose an unacceptable risk if the water was to be used for stock watering or entered a significant ecosystem without adequate dilution. On the basis of the results noted in the following section, the site is considered medium priority with respect to the discharge of leachate.

On the basis of the age, size and type of refuse disposed of at the site, potential gas generation has been estimated as low. The tennis complex has several buildings that have the potential to act as gas collection points. Based predominantly on the age of the site, it is considered relatively low priority with respect the discharge of landfill gas.

10.42.3 Sampling Results

Leachate discharge from Central park was monitored from 20 February 1990 to 18 April 1995 by the Wellington Regional Council.

ID	Description
CP1	Culvert behind Council flat (WGN 000576)

Landfills in the Wellington Region

Test		B1	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	18.45	-	-
Conductivity	µS/cm	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	56.93	-	700
pH		7.2	7.0	7.0
Suspended Solids	g/m ³	11.45	10%	10%
Total Iron	g/m ³	2.95	0.5	1.0
Total Manganese	g/m ³	0.23	-	2.0
Alkalinity	g/m ³	65.23	-	-
Sodium	g/m ³	40.80	-	300
Total Cadmium	g/m ³	0.00	0.0002	0.01
Total Chromium	g/m ³	0.00	0.01	1.00
Total Copper	g/m ³	0.00	0.002	0.2
Total Lead	g/m ³	0.00	0.001	0.2
Total Nickel	g/m ³	0.00	0.015	0.2
Potassium	g/m ³	2.73	-	-
Total Zinc	g/m ³	0.03	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.42.4 **Central Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium/high	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	x
Groundwater user	x	Groundwater	x
Surface water user			
Site Priority Ranking			Medium
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial	x	< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.43 Kelburn Park

10.43.1 Location Information

Location:	Kelburn Park	Last Used:	1935
Access:	Salmanca Road	Map Reference:	2658217 5989822
Nearby Town:	Kelburn	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/21

10.43.2 General Description

Kelburn Park is located on Salamanca Road, Kelburn. Current land use is playing fields and a bowling green. Surrounding land uses are recreational, residential and Victoria University of Wellington. The site is owned and maintained by the Wellington City Council.

The landfill operated from 1929 to 1935, receiving general refuse.

Surrounding topography is steep and the nearest identified surface water body is the Wellington Harbour. The most likely discharge pathway is through stormwater to the Wellington Harbour. There is no groundwater use in the immediate area. Prior to construction of the motorway from Te Aro to Thorndon, there was a valley with a stream flowing through it which probably received leachate from this site.

The site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age, size and type of refuse disposed of at the site, potential gas generation has been estimated as low. There are buildings that have the potential to act as gas collection points. Based predominantly on the age of the site, it is considered relatively low priority with respect the discharge of landfill gas.

10.43.3 **Kelburn Park: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.44 Endeavour Park

10.44.1 Location Information

Location:	Endeavour Park	Last Used:	1937
Access:	Endeavour Street	Map Reference:	2660500 5985700
Nearby Town:	Kilbirnie	Survey Date:	
Fill Contents:	General refuse	File Number:	K/9/5/10

10.44.2 General Description

Endeavour Park is located at the end of Endeavour Street, Rongatai. Current land use is recreational. Surrounding land uses are residential and commercial. The site is owned and maintained by the Wellington City Council.

The site was operated from 1932 - 1937 and received general refuse. Further information is available from Wellington City Council files CW50/0241/05 (Lyll Bay Endeavour Street Eastern Suburbs Tip) and CW50/0241/14 (Endeavour Street Tip No 4).

Surrounding topography is flat with the nearest surface water body being Lyall Bay. The most likely discharge pathway is to Lyall Bay through groundwater and/or the Wellington City Council stormwater system.

The site is considered relatively low priority with respect to the discharge of leachate.

On the basis of the age, size and type of refuse disposed of at the site, potential gas generation has been estimated as low. There are residential dwellings surrounding the site that have the potential to act as gas collection points. Based predominantly on the age of the site, it is considered relatively low priority with respect the discharge of landfill gas.

10.44.3 Endeavour Park: Risk Ranking

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x	x	
Potential			
Quantity	Medium	Medium	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational	x	Surface water	
Groundwater user		Groundwater	x
Surface water user			
Site Priority Ranking			Low
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential	x	Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

10.45 Burrell Demolition

10.45.1 Location Information

Location:	Carey's Gully	Last Used:	Operational
Access:	Landfill Road	Map Reference:	2656151 5984820
Nearby Town:	Brooklyn	Survey Date:	
Fill Contents:	Cleanfill	File Number:	K/9/5/124

10.45.2 General Description

This site is located on the western side of Landfill Road below the Wellington City Council Careys Gully Landfill. Surrounding land use is landfilling and general open space. The site is leased from Wellington City Council and maintained by Burrell Demolition Ltd.

The site has been in operation as a cleanfill/demolition fill since 1978 and is currently consented by the Wellington Regional Council. (WGN 94 0057)

Surrounding topography is steep and the most likely discharge pathway is to the landfill stream and, ultimately, Owhiro Bay. There is a watercourse from the surrounding catchment piped under the landfill in a 900 mm pipe.

Sampling results indicate levels of several metals exceeding guidelines for aquatic ecosystems including lead, chromium and nickel.

Because this is an operational site, environmental impacts, both now and in the future are covered by the resource consent process. For further information, refer to the consent files noted above. The site is considered relatively low priority with respect to the discharge of both leachate and landfill gas.

10.45.3 Sampling Results

Sampling results can be summarised as follows:

ID	Description
BL1	Stream above Burrells tip (WGN 000593)
BL2	Outfall from Burrells Tip (WGN 000570)

Parameter		BL1	BL2	Aquatic	Stock
Ammoniacal Nitrogen	g/m ³	N/A	N/A	< 0.5	-
Chemical Oxygen Demand	g/m ³	9	9.47	-	-
Conductivity	µS/cm	N/A	N/A	1500.0	1500.0
Dissolved Chloride	g/m ³	40.8	45.05	-	700
pH	pH	7.61	7.56	7.0	7.0
Suspended Solids	g/m ³	<2.0	2.94	10%	10%
Total Iron	g/m ³	0.08	1.06	0.5	1.0

Landfills in the Wellington Region

Parameter		BL1	BL2	Aquatic	Stock
Total Manganese	g/m ³	<0.05	0.05	-	2.0
Alkalinity	g/m ³	34.2	36.89	-	-
Sodium	g/m ³	27.1	31.36	-	300
Total Cadmium	g/m ³	<0.01	<0.01	0.0002	0.01
Total Chromium	g/m ³	<0.05	0.04	0.01	1.00
Total Copper	g/m ³	0.01	0.01	0.002	0.2
Total Lead	g/m ³	<0.10	0.03	0.001	0.2
Total Nickel	g/m ³	<0.05	0.06	0.015	0.2
Potassium	g/m ³	1.09	1.52	-	-
Total Zinc	g/m ³	<0.10	0.07	0.005	2.00

Note: Bold denotes exceeds ANZECC Aquatic Ecosystems guideline level, bold/underline denotes exceeds ANZECC Aquatic Ecosystem and Stock Watering guideline levels.

10.45.4 **Burrell Demolition: Risk Ranking**

Waste Type	Cleanfill	General Refuse	Hazardous/ Industrial
Confirmed	x		
Potential			
Quantity	Medium	High	
Leachate Impacts			
Potential Receptors		Potential Pathways	
Residential		Soil ingestion	
Agricultural		Dermal absorption	
Commercial/industrial		Maintenance/excavation	
Recreational		Surface water	x
Groundwater user		Groundwater	x
Surface water user	x		
Site Priority Ranking			Low (consents)
Landfill Gas Impacts			
Potential Receptors (within 300 m)		Gas Production (m³/day)	
Residential		Nil	
Commercial/industrial		< 1,000	x
		< 10,000	
		> 10,000	
Site Priority Ranking			Low

11. Results and Discussion

11.1 Summary of the Potential Environmental Effects of Landfill Sites

These environmental effects may be due to any or all of the following:

- Discharge of landfill gas to air.
- Discharge of landfill leachate to groundwater.
- Discharge of landfill leachate to surface water.

Sites are listed in the table below in terms of priority for further action with respect to the discharge of leachate and/or landfill gas¹.

Site Name	Location	Section	Page
Leachate			
Old Wainuiomata Landfill	Wainuiomata	4.1	
Frank Cameron Park	Petone	4.2	
Wingate Landfill	Wingate	4.8	
Eastbourne Landfill	Eastbourne	4.9	
Kirk Street Landfill	Otaki	5.4	
Pukerua Bay/Airlie Road	Pukerua Bay	7.4	
Batavian Rubber Landfill	Featherston	8.13	
Moonshine Road No 2	Upper Hutt	9.6	
Ian Galloway Park	Wilton	10.10	
Cottles Gully	Horokiwi	10.11	
Raroa Park	Johnsonville	10.13	
Prestons Gully	Happy Valley	10.14	
Landfill, Parkvale Road	Karori	10.15	
Sinclair Park	Houghton Bay	10.23	
Otari Native Plants Museum	Wilton	10.37	
Landfill Gas			
Frank Cameron Park	Petone	4.2	
Dowse Drive Landfill	Maungaraki	4.10	
Porirua Park	Cannons Creek	7.5	
464 Fergusson Drive	Upper Hutt	9.14	
Ian Galloway Park	Wilton	10.10	
Raroa Park	Johnsonville	10.13	
Prestons Gully	Happy Valley	10.14	
Sinclair Park	Houghton Bay	10.23	

¹ See LandfillRanking.xls for a table of all sites, rankings and c.f. ANZECC Standards.

Landfills in the Wellington Region

Water bodies potentially affected by the sites noted as higher priority are:

Wainuiomata River	Kaiwharawhara Stream
Wellington Harbour	Lower Hutt Valley groundwater system
Gollans Creek	Taupo Swamp
Ngauranga Stream	Owhiro Stream
Houghton Bay	

Areas potentially affected by discharges to air from higher priority sites are:

Korokoro/Maungaraki	Cannons Creek
Trantham	Wilton
Johnsonville	Happy Valley
Houghton Bay	

11.2 Multiple Impacts on Catchments

In some locations within the Region, several landfills lie within a catchment. In these circumstances, cumulative effects of landfills are possible.

11.2.1 Horokiwi Stream

This catchment contains Horokiwi Landfill (Wellington City Council) and Cottles Landfill (privately owned/operated). Both sites are discharging leachate into streams that flow into the Horokiwi Quarry before converging and flowing into Wellington Harbour.

11.2.2 Wellington City Council Stormwater System

The section of the Wellington City Council stormwater system that discharges into Island Bay receives discharges from the Lavaud Street landfill, Rhine Street cleanfill, and McAlistar Park. Both McAlistar Park and Lavaud Street have the potential to be discharging significant quantities of leachate.

The section of the Wellington City Council stormwater system that discharges into Wellington Harbour in the Waterfront area is likely to receive discharges from the following sites:

- Rugby League Park
- Hanson Street
- Central Park
- Kelburn Park
- Anderson Park

There is visible iron staining in stormwater downstream of both Rugby League and Central Parks.

11.2.3 Kaiwharawhara Stream

Kaiwharawhara Stream receives discharges from the Ian Galloway Park (Wilton Landfill), the cleanfill above Otari Native Plants Museum, and Appleton Park (Birdwood Street/Chaytor Street landfill).

There is notable iron staining below both Ian Galloway Park and the Otari cleanfill. Wellington City Council are undertaking upgrade work at the toe of Ian Galloway Park.

11.2.4 Karori Stream

Karori Stream is likely to receive any discharges from the Friend Street landfill, Parkvale Road, and Ben Burn Park. These are all relatively old sites and the quantity and strength of any leachate discharge is likely to be relatively low.

11.2.5 Owhiro Stream

Owhiro Stream receives discharges from several landfills including Prestons Gully, Happy Valley Park, Carey's Gully (Southern Landfill), Maori Gully, and Polhill Gully). The last three are operating sites and would therefore be expected to have some form of leachate control.

11.2.6 Hutt City Council Stormwater System

The Hutt City Council stormwater system is likely to receive any discharges from Frank Cameron Park, Dowse Drive, and Wingate Landfills. Frank Cameron and Dowse Drive are likely to contribute to stormwater discharging into the Te Mome Stream east of the Shandon Golf Course. Leachate from Wingate is likely to ultimately discharge into the Hutt River north-east of the Kennedy-Good Bridge in Avalon.

11.3 Work in Progress

Of the sites identified as having high priority for further action, several are being addressed by the landowner (territorial authorities). These sites and the actions being taken are:

Wellington City Council

Ian Galloway Park - Leachate and gas mitigation measures

Raroa Park - mitigation measures under consideration

Prestons Gully - landfill gas mitigation measures under consideration

Sinclair Park - Leachate mitigation measures.

Hutt City Council

Old Wainuiomata Landfill - Leachate mitigation options under consideration
 Eastbourne Landfill
 Dowse Drive/Scales Lane - gas monitoring
 General landfill leachate monitoring programme

Masterton District Council

General landfill leachate monitoring programme.

11.4 Breakdown of Priority Sites

The higher priority sites tend to be in the western part of the Region. This is probably because of the following reasons:

This part of the Region has a greater population and a greater industrial activity, and can therefore be expected to produce larger quantities of waste. Landfills in the Wairarapa tend to be located in areas remote from potential receptors.

In some districts the number of sites is inflated by the inclusion of cleanfills, where others have no cleanfills. The large number of sites in Wellington City may be related to the early date of settlement, population and the fact that Wellington City Council has been a relatively stable local body for a significant period of time. Both records and institutional knowledge have been lost for many of the other territorial authorities.

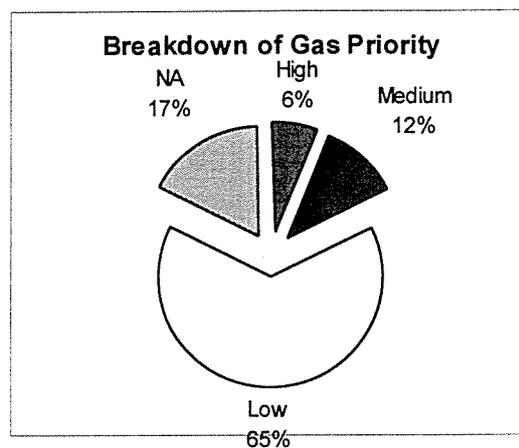
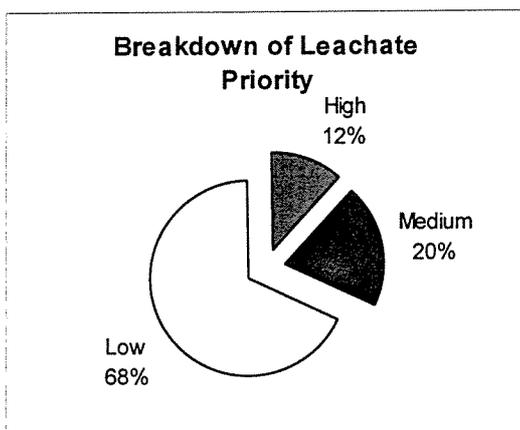
The following table summarises the number of priority sites in each district. Distinction is made according to the nature of contaminants (i.e., leachate of landfill gas).

Authority		High	Medium	Low	N/A	Cleanfills	Total
Carterton	Leachate		1	6	-	3	7
	Gas		1	3	3		
Kapiti	Leachate	1		6	-		7
	Gas		2	5			
Lower Hutt	Leachate	4	1	7	-	2	12
	Gas	2	1	7	2		
Masterton	Leachate		5	6	-		11
	Gas			11			
Porirua	Leachate	1	3	2	-		6
	Gas	1	4	1			
South Wairarapa	Leachate	1	2	19	-	1	22
	Gas		1	20	1		
Upper Hutt	Leachate	1	5	10	-	11	16
	Gas	1	1	3	11		

Landfills in the Wellington Region

Authority		High	Medium	Low	N/A	Cleanfills	Total
Wellington	Leachate	7	9	30	-	5	46
	Gas	4	5	32	5		
Region	Leachate	15	26	86		22	127
	%	11.8	20.5	67.7	-	17.3	100
	Gas	8	15	82	22		
	%	6.3	11.8	64.6	17.3		

The graphs below note the percentage of sites which have high, medium or low priority for the discharge of leachate and landfill gas.



12. Proposed Further Action

There are a number of closed landfill sites in the Wellington Region that may pose an unacceptable risk to human health and/or the environment. Several mechanisms are proposed for determining the levels of risk posed by these sites, and where appropriate managing those risks to an acceptable level. These are:

- Liaison with site owners with respect to further investigations.
- Further monitoring of discharges and/or receiving environments
- Further desktop study to establish the history of sites for sites where current knowledge is inadequate.

Proposed mechanisms for addressing each of the higher priority sites are noted below.

Landfill Name	Action
Old Wainuiomata Landfill	Hutt City Council Landfill Project
Frank Cameron Park	Hutt City Council Landfill Project
Wingate Landfill	Hutt City Council Landfill Project
Eastbourne Landfill	Hutt City Council Landfill Project
Kirk Street Landfill	History and monitoring
Pukerua Bay/Airlie Road	History and monitoring
Batavian Rubber Landfill	History, owners/polluters to clean up
Moonshine Road No 2	History and monitoring
Ian Galloway Park	Wellington City Council Landfill Project (gas/leachate)
Cottles Landfill	site investigation, further monitoring
Raroa Park	Wellington City Council Landfill Project (gas)
Prestons Gully	Wellington City Council Landfill Project (gas)
Landfill, Parkvale Road	History, site investigation
Sinclair Park	Wellington City Council Landfill Project (gas/leachate)
Otari Cleanfill	History, site investigation
Dowse Drive Landfill	Hutt City Council Landfill Project
Porirua Park	Liaison with Porirua City Council regarding gas issues.
464 Fergusson Drive	Liaison with Upper Hutt City Council potential gas issue

Landfill Sites - Summary

District	Site Name	Pathways	(Potential) Receptors	Sampling	Exceeds	Leachate	Gas	
CARTERTON LANDFILLS	Howard Booth Park	GW	GW users	No	n.a.	Low	Low	
	Moreton Rd	GW	GW users	No	n.a.	Medium	NA	
	Carterton Golf Club	GW	GW users	No	n.a.	Low	NA	
	Carterton Landfill	GW	GW users	Consents	n.a.	Low (Consents)	Low	
	Parkvale Ex Landfill	GW, SW	GW users, drain	No	n.a.	Low	Low	
	Brooklyn Rd	GW	GW users	No	n.a.	Low	Medium	
	Belvedere Rd/Cobden Rd	GW	GW users	No	n.a.	Low	NA	
LOWER HUTT LANDFILLS	Wainuiomata Landfill	GW, SW	Wainuiomata River	Yes	Stock	Low	Low	
	Old Wainuiomata Landfill	GW, SW	Wainuiomata River	Yes	Stock	High	Low	
	Frank Cameron Park	GW, SW, Gas	Percy's Reserve, residents	Yes	Aquatic	High	High	
	Ava Park	SW	Hutt River	No	n.a.	Low	Low	
	Hikoikoi Reserve	SW	Hutt River	No	n.a.	Low	Medium	
	Hutt Intermediate	SW	Hutt River	No	n.a.	Low	NA	
	Cottle Park Dr	SW		No	n.a.	Low	NA	
	Somes Island	SW	Wellington Harbour	Yes	Meets All	Low	Low	
	Wingate Landfill	GW, StormW	Hutt Aquifer, HCC stormwater system	Yes	Aquatic	High	Low	
	Eastbourne Landfill	SW	Tributary to gollans stream	Yes	Stock	High	Low	
	Dowse Drive Landfill	Gas	residents	No	n.a.	Medium	High	
	Silverstream Landfill	SW, GW	Hulls Creek, Hutt Aquifer	Consents	Stock	Low (Consents)	Low	
	KAPITI COAST LANDFILLS	Waikanae Landfill	GW, SW	GW users	Consents	n.a.	Low (Consents)	Low
		Greenaway Rd	SW	Waikanae River	Yes	Meets All	Low	Low
Kena Kena School		SW, GW	Waikane Estuary, GW users	Yes	Aquatic	Low	Medium	
Kirk St Landfill		GW	Otaki Water Supply	No	n.a.	High	Medium	
Kapiti Lane Landfill		GW, SW	Otaki River mouth	No	n.a.	Low	Low	
Otaki Landfill		GW, SW	Otaki River	Consents	n.a.	Low (Consents)	Low	
Otaihanga Landfill		GW, SW	Waikanae River, GW users	Consents	Aquatic	Low (Consents)	Low	
MASTERTON LANDFILLS	Masterton Landfill	GW, SW	Ruamahunga River, GW users	Consents	n.a.	Low (Consents)	Low	
	Landfill, Ngaumutawa Rd	GW	GW users	No	n.a.	Low	Low	
	Mauriceville Landfill	SW	Kopuaranga River	Yes	Aquatic	Low (Consents)	Low	
	Tinui Landfill	SW	Whareama River	Yes		Medium	Low	
	Castlepoint Landfill	SW	Unnamed stream	Consents	n.a.	Medium	Low	
	Riversdale Landfill	SW	Kohiwai Stream	Consents	n.a.	Medium	Low	
	Old Hastwell	SW	Kopuaranga River	Yes	Stock	Medium	Low	
	Villa St Landfill	SW	Waipoua River	Yes	Meets All	Low	Low	
	Old Te Ore Ore Landfill	GW	GW users	No	n.a.	Low	Low	
	Ex Riversdale Landfill	SW	Motuwaiera Stream	No	n.a.	Medium	Low	
	Faulknors Service Station	GW	GW users	No	n.a.	Low	Low	
	PORIRUA LANDFILLS	Porirua Hospital Landfill	SW	Porirua Stream	No	n.a.	Medium	Medium
		Cambourne Subdivision	SW	Porirua Harbour	No	n.a.	Medium	Medium
		Spicers Gully	SW	Porirua Stream	Consents	Aquatic	Low (Consents)	Low
Pukerua Bay		SW	Taupo Swamp	Yes	Stock	High	Medium	
Porirua Park		SW	Porirua Stream	Yes	Aquatic	Medium	High	
Brittons - Haywards Hill		SW	Pauatahanui Stream	Yes	Aquatic (Fe)	Low	Medium	

SOUTH WAIRARAPA LANDFILLS

Greytown Landfill	GW	GW users	Consents	n.a.	Low (Consents)	Low
Ngawihi Landfill	SW	Palliser Bay	No	n.a.	Low	Low
Tora Landfill	SW	Whakapuni Stream	No	n.a.	Low	Low
Abbots Creek Bridge Landfill	SW	Abbots Creek	Yes		Low	Low
Ex Greytown Landfill	GW	GW users	No	n.a.	Medium	Low
Westhaven Flats - ex landfill	GW	GW users	No	n.a.	Low	Low
Greytown Transfer Station	GW	GW users	No	n.a.	Low	Low
29 West St	GW	GW users	No	n.a.	Low	NA
Woodside Rd - Ex Landfill	SW	Moera Water race	Yes		Low	Low
Ocean Beach	SW	Palliser Bay	No	n.a.	Low	Low
Wood St Ex Landfill	GW	GW users	No	n.a.	Medium	Low
Todds Rd ex Landfill	GW	GW users	No	n.a.	Low	Low
Batavian Rubber Landfill	SW, GW	GW users, unnamed stream	No	n.a.	High	Low
Featherston Cemetary - ex landfill	GW	GW users	No	n.a.	Low	Low
Pirinoa Landfill	SW	Turanganui River	Yes		Low (Consents)	Low
Crosses Line - ex landfill	GW	GW users	No	n.a.	Low	Low
Tauherenikau Race course	GW	GW users, Tauherenikau River	No	n.a.	Low	Low
Boarbush Rd	GW	Boar Creek	Yes		Low	Low
Featherston Transfer Station	GW	GW Users	No	n.a.	Low (Consents)	Low
Ex Borough Yard, Featherston	GW	GW Users, Abbots Creek	No	n.a.	Low	Low
Martinborough Transer Station and Landfill	GW	Ruamahanga River	No	n.a.	Low	Low

UPPER HUTT LANDFILLS

Lake Wairarapa Lookout	SW	Abbots Creek	Yes		Low	Medium
Clean fill - Maymorn Rd	SW	Mangaroa River	Yes	Aquatic	Medium	NA
Clean Fill - Mt Cecil Rd	SW	Manor Park Stream	Yes	Meets All	Medium	NA
Trentham Memorial Park	SW	Hutt River	Yes	Meets All	Low	NA
Ex Kiwi Ranch Landfill	SW	Rimutaka Stream	Yes	Aquatic	Low	Low
Moonshine Rd Landfill	SW	Moonshine Stream	Yes	Stock	Medium	Low
Moonshine Rd Landfill No. 2	SW	Moonshine Stream	Yes		High	Low
Timberlea Park	GW	Hutt River			Low	NA
Awa Kairangi Park	SW	Hutt River			Low	NA
Opposite Old PO Cleanfill	GW				Low	NA
Sawdust Fill Pit, Whakatiki St	GW				Low	Medium
Maymorn Rd, Tip Site	SW	Mangaroa River			Low	NA
Tip Site, Silverstream	SW	Hutt River			Low	NA
Tip Site, Gillespies Rd	SW	Hutt River	Yes	Aquatic	Low	NA
464 Fergusson Dr	GW, SW	Hutt River	Yes	Aquatic	Medium	High
Alexanders Tip	SW	Mangaroa River			Medium	NA
Silverstream Railway Clean Fill	SW	Hutt River			Low	NA

WELLINGTON CITY LANDFILLS

Martin Luckie Park	StormW	WCC Stormwater System	Yes	Stock	Medium	Medium
Causeway Landfill	StormW				Low	Low
Northern Landfill	SW	Porirua Stream	Yes	Stock	Low (Consents)	Low
McAlistair Park	StormW	WCC Stormwater System	Yes	Stock	Medium	Medium
Rugby League Park	StormW	WCC Stormwater System	No	n.a.	Medium	Low
Homebush Park	SW, Gas	Wellington Harbour			Medium	Medium
Ohariu Rd Landfill					Medium	NA

Landfill Sites - Summary

South Makara Rd Landfill	SW	Makara Stream			Medium	Low
Rhine St Landfill	SW	Island Bay			Low	NA
Ian Galloway Park	SW	Kaiwharawhara Stream	Yes	Stock	High	High
Cottles Landfill	SW	Horokiwi Stream	Yes	Stock	High	Low
Polhill Gully Landfill	SW	Owhiro Stream			Low	Low
Raroa Park	SW	Ngauranga Stream	Yes	Aquatic	High	High
Prestons Gully Landfill	SW, Gas	Owhiro Stream	Yes	Stock	High	High
Landfill - Parkvale Rd	StormW	Karori Stream			High	Medium
Southgate Reserve	StormW, Gas	Island Bay			Low	Low (Flaring)
Ben Burn Park	StormW	Karori Stream			Low	Low
Melrose Rd	StormW	Island Bay			Low	Low
Maranui Tip	SW	Lyll Bay	No		Low	Low
Ramsbottoms Yard	SW	Ngauranga Stream	No	n.a.	Low	Low
Clean fill - Johnsonville	SW	WCC Stormwater System	No	n.a.	Low	NA
Sinclair Park	SW	Houghton Bay	Yes	Stock	High	High
Carey's Gully Landfill	SW	Owhiro Stream	Yes	Meets All	Low (Consents)	Low
Anderson Park	SW	WCC Stormwater System			Low	Low
Churton Park - CLean fill	SW	Porirua Stream			Low	NA
Happy Valley Park	SW	Owhiro Stream			Low	Medium
Wellington Airport Landfill	SW, GW	Lyll Bay	No	n.a.	Low	Low
Mirimar Park	SW, GW	Lyll Bay	No	n.a.	Low	Low
Cashmere Park	SW	Wellington Harbour			Low	Low
Ex Bengal St Tin Tip	SW	Wellington Harbour	No	n.a.	Low	Low
Landfill - Onslow Rd, Cashmere	SW	Wellington Harbour			Low	Low
Kilbirnie Park	SW, GW	Evans Bay	No	n.a.	Low	Low
Landfill - Friend St, Karori	StormW	Karori Stream	No	n.a.	Low	Low
Hanson St Building	StormW	WCC Stormwater System			Low	Low
Appleton Park	SW	Kaiwharawhara Stream			Medium	Low
Otari Native Plants Museum	SW	Kaiwharawhara Stream			High	NA
Strathmore Park	GW				Low	Low
Creswick Tce Park	SW	Kaiwharawhara Stream			Low	Low
Moa Point Landfill	SW	Lyll Bay	No	n.a.	Low	Low
Blind Gardens	StormW	WCC Stormwater System	No	n.a.	Low	Low
Fort Dorset	SW	Wellington Harbour			Medium	Low
Horokiwi Landfill	SW	Horokiwi Stream	Yes	Stock	Low	Low
Central Park	StormW	WCC Stormwater System	Yes	Stock	Medium	Low
Kelburn Park	SW	WCC Stormwater System			Low	Low
Endeavour Park	SW, GW	Lyll Bay	No	n.a.	Low	Low
Burrel Demolition	SW	Owhiro Stream	Yes	Stock	Low (Consents)	Low