

Waste Assessment

Prepared for Ōpōtiki District Council

DRAFT

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Contents

1	Introduction	1
1.1	Structure of this Document	1
1.2	Purpose of this Waste Assessment	2
1.3	Legislative Context	2
1.4	Scope	3
1.4.1	General	3
1.4.2	Period of Waste Assessment	3
1.4.3	Consideration of Solid, Liquid and Gaseous Wastes	3
1.4.4	Public Health Issues	4
1.5	Strategic Context	5
1.5.1	New Zealand Waste Strategy	5
1.5.2	International Commitments	5
1.5.3	National Projects	6
1.6	Local and Regional Planning Context	7
1.6.1	Long Term Plan (2015-2025)	7
1.6.2	Regional Council Plans	8
1.6.3	Cross-Regional Collaboration	8
2	Bay of Plenty Region	10
2.1	Overview	10
2.1.1	Regional Waste and Resource Efficiency Strategy	11
2.1.2	Regional Water & Land Plan	11
2.1.3	Long Term Plan 2015 - 2025	12
3	Our District	13
3.1	Physical Characteristics	13
3.1.1	Overview	13
3.1.2	Geography	13
3.1.3	Climate	14
3.1.4	Demographics	14
3.2	Economy	19
3.2.1	Building consents	21
3.3	Implications of Economic and Demographic Trends	21
4	Waste Infrastructure	23
4.1	Disposal Facilities	23

4.1.1	Class 1 Landfills	24
4.1.2	Resource Recovery Centres	26
4.1.3	Closed Landfills.....	27
4.1.4	Class 2-4 Landfills	27
4.1.5	Assessment of Residual Waste Management Infrastructure	28
4.2	Hazardous Waste Facilities and Services	29
4.2.1	Medical Waste	29
4.2.2	Agrecovery Rural Recycling programme.....	29
4.3	Recycling and Reprocessing Facilities	30
4.3.1	Recycling and Reprocessing Facilities Outside the District/City	30
4.3.2	Assessment of Recycling and Reprocessing Facilities.....	30
5	Waste Services	32
5.1	Council-provided Waste Services.....	32
5.1.1	Council Collection Services	32
5.1.2	Other Council Services	33
5.1.3	Waste Education and Minimisation Programmes	33
5.1.4	Solid Waste Bylaw.....	33
5.1.5	Litter Control, Street Cleansing, Stream, Beach, Park Cleaning.....	34
5.1.6	Enforcement of Illegal Dumping	34
5.1.7	Public Litter Bins.....	34
5.1.8	Abandoned Vehicles	34
5.1.9	Rural and Farm Waste.....	34
5.1.10	Hazardous Waste	34
5.2	Assessment of Council-provided Solid Waste Services.....	35
5.3	Funding for Council-provided Services	35
5.4	Non-Council Services.....	35
6	Situation Review	36
6.1	Waste to Class 1-4 Landfills	36
6.1.1	Definitions Used in this Section	36
6.2	Overview of Waste to Class 1-4 Landfills.....	36
6.3	Waste Quantities	36
6.3.1	Waste to Class 1 Landfills.....	36
6.3.2	Other Waste Disposed of to Land.....	36
6.3.3	Summary of Waste Disposed of to Land.....	38

6.4	Composition of Waste to Class 1 Landfills	39
6.5	Activity Source of Waste	40
6.6	Potentially Diverted Materials	40
6.6.1	Overview of Potentially Diverted Materials.....	40
6.6.2	Council Kerbside Recycling and Drop-Off Facilities.....	40
6.6.3	Composition of Kerbside Recycling.....	41
6.6.4	Non-Council Diverted Materials.....	42
6.7	Summary of Estimates for Waste and Diverted Materials	42
7	Performance Measurement.....	43
7.1	Current Performance Measurement	43
7.1.1	Per Capita Waste to Class 1 Landfills	43
7.1.2	Per Capita Domestic Kerbside Refuse to Class 1 Landfills	44
7.1.3	Per Capita Kerbside Recycling.....	46
7.1.4	Council Bag Share of Kerbside Refuse Market.....	47
7.1.5	Public Feedback	47
8	Future Demand and Gap Analysis.....	49
8.1	Future Demand	49
8.1.1	Population.....	49
8.1.2	8.1.2 Economic Activity.....	50
8.1.3	Changes in Lifestyle and Consumption	51
8.1.4	Changes in Waste Management Approaches.....	51
8.1.5	Summary of Demand Factors.....	52
8.1.6	Projections of Future Demand.....	53
8.2	Future Demand – Gap Analysis.....	54
8.2.1	Waste Streams	54
8.2.2	Hazardous Wastes.....	55
9	Initial Review of the 2012 Waste Management and Minimisation Plan	57
9.1	Data.....	57
9.2	Key Issues.....	57
9.3	Other Issues Not Addressed.....	57
9.4	New Guidance.....	57
9.5	Actions	58
9.5.1	Council Role.....	58
9.5.2	Key Initiatives	58

9.5.3	Targets.....	58
9.6	Implementation Plan	58
9.7	Progress.....	61
10	Statement of Options.....	62
10.1	Key Advantages/Key Issues to Be Addressed by WMMP	62
10.1.1	Data	62
10.1.2	Council Services – Kerbside Collections	62
10.1.3	Council Services - Facilities.....	63
10.1.4	Aquaculture and Harbour Development	63
10.1.5	Landfill Disposal	63
10.1.6	Farm Waste	63
10.1.7	Seasonal Wastes	64
10.2	Regulation	65
10.3	Measuring and Monitoring	65
10.4	Education and Engagement	67
10.5	Collection & Services.....	67
10.6	Infrastructure	70
11	Statement of Council’s Intended Role	72
11.1	Statutory Obligations and Powers	72
11.2	Overall Strategic Direction and Role	73
12	Statement of Proposals.....	74
12.1	Statement of Extent.....	74
12.1.1	Protection of Public Health	74
12.1.2	Effective and Efficient Waste Management and Minimisation	74

1 Introduction

This Waste Assessment has been prepared for Ōpōtiki District Council (Council) in accordance with the requirements of the Waste Minimisation Act 2008 (WMA). This document provides background information and data to support the Council's waste management and minimisation planning process.

1.1 Structure of this Document

This document is arranged into a number of sections designed to help construct a picture of waste management in our district. The key sections are outlined below.

Introduction

The introduction covers a number of topics that set the scene. This includes clarifying the purpose of this Waste Assessment, its scope, the legislative context, and key documents that have informed the assessment.

BOP Region

This section presents a brief overview of key aspects of the region's geography, economy, and demographics that influence the quantities and types of waste generated and potential opportunities. It also provides an overview of regional waste facilities, and initiatives that may be of relevance to how we manage our waste.

Our District

This section presents a brief overview of key aspects of the district's geography, economy, and demographics that influence the quantities and types of waste generated and potential opportunities.

Waste Infrastructure, Services, Data and Performance Measurement

These sections examine how waste is currently managed, where waste comes from, how much there is, its composition, and where it goes. The focus of these sections is on the regional picture.

Gap Analysis and Future Demand

This section provides an analysis of what is likely to influence demand for waste and recovery services in the region and identifies key gaps in current and future service provision and in the Council's ability to promote effective and efficient waste management and minimisation.

Statement of Options & Councils' Proposed Role

These sections develop options available for meeting the forecast future demand and identify the Council's proposed role in ensuring that future demand is met, and that the Council is able to meet its statutory obligations.

Statement of Proposals

The statement of proposals sets out what actions are proposed to be taken forward. The proposals are identical to the actions that will be put forward in the upcoming Waste Management and Minimisation Plan (WMMP) so the Waste Assessment simply references the WMMP for this section.

Appendices

The appendices contain additional waste management data and further detail about facilities in each district. This additional data will enable territorial authorities (TAs) to “drill down” and access information about their district. This section includes the statement from the Medical Officer of Health as well as additional detail on legislation.

1.2 Purpose of this Waste Assessment

This Waste Assessment is intended to provide an initial step towards the development of a WMMP and sets out the information necessary to identify the key issues and priority actions that will be included in the draft WMMP.

Section 51 of the WMA outlines the requirements of a waste assessment, which must include:

- a description of the collection, recycling, recovery, treatment, and disposal services provided within the territorial authority’s district
- a forecast of future demands
- a statement of options
- a statement of the territorial authority’s intended role in meeting demands
- a statement of the territorial authority’s proposals for meeting the forecast demands
- a statement about the extent to which the proposals will protect public health, and promote effective and efficient waste management and minimisation.

1.3 Legislative Context

The principal solid waste legislation in New Zealand is the Waste Minimisation Act 2008 (WMA). The stated purpose of the WMA is to:

“encourage waste minimisation and a decrease in waste disposal in order to

(a) protect the environment from harm; and

(b) provide environmental, social, economic, and cultural benefits.

To further its aims, the WMA requires TAs to promote effective and efficient waste management and minimisation within their district. To achieve this, all TAs are required by the legislation to adopt a WMMP.

The WMA requires every TA to complete a formal review of its existing waste management and minimisation plan at least every six years. The review must be consistent with WMA sections 50 and 51. Section 50 of the WMA also requires all TAs to prepare a ‘waste assessment’ prior to reviewing its existing plan. This document has been prepared in fulfilment of that requirement. The Council’s existing Waste Assessment was written in 2011 and the WMMP was adopted in 2012.

Further detail on key waste-related legislation is contained in Appendix A.3.0.

1.4 Scope

1.4.1 General

As well as fulfilling the statutory requirements of the WMA, this Waste Assessment will build a foundation that will enable Council to update its WMMP in an informed and effective manner. In preparing this document, reference has been made to the Ministry for the Environment's 'Waste Management and Minimisation Planning: Guidance for Territorial Authorities'¹.

A key issue for this Waste Assessment will be forming a clear picture of waste flows and management options in the city/district/region. The WMA requires that a waste assessment must contain:

"A description of the collection, recycling, recovery, treatment, and disposal services provided within the territorial authority's district (whether by the territorial authority or otherwise)".

This means that this Waste Assessment must take into consideration all waste and recycling services carried out by private waste operators as well as the TA's own services. While the Council has reliable data on the waste flows that it controls, data on those services provided by private industry is limited. Reliable, regular data on waste flows is important if the TA chooses to include waste reduction targets in their WMMP. Without data, targets cannot be readily measured.

The New Zealand Waste Strategy 2010 also makes clear that TAs have a statutory obligation (under the WMA) to promote effective and efficient waste management and minimisation in their district. This applies to all waste and materials flows in the district, not just those controlled by councils.

1.4.2 Period of Waste Assessment

The WMA requires WMMPs to be reviewed at least every six years, but it is considered prudent to take a longer-term view. The horizon for the WMMP is not fixed but is assumed to be centred on a 10-year timeframe, in line with Council's Long Term Plan (LTP). For some assets and services, it is necessary to consider a longer timeframe and so this is taken into account where appropriate.

1.4.3 Consideration of Solid, Liquid and Gaseous Wastes

In line with the Council's previous WMMP, this Waste Assessment is focused on solid waste that is disposed of to land or diverted from land disposal.

The guidance provided by the Ministry for the Environment on preparing Waste Management and Minimisation Plans states that:

"Councils need to determine the scope of their WMMP in terms of which wastes and diverted materials are to be considered within the plan".

The guidance further suggests that liquid or gaseous wastes that are directly managed by a TA, or are disposed of to landfill, should be seriously considered for inclusion in a WMMP.

Other wastes that could potentially be within the scope of the WMMP include gas from landfills and the management of biosolids from wastewater treatment plant (WWTP) processes.

¹ Ministry for the Environment (2015), Waste Management and Minimisation Planning: Guidance for Territorial Authorities

Biosolids from the WTP processes are managed through vermicomposting and so it is reasonable to consider them in the context of this assessment. Therefore, apart from some liquid hazardous wastes that are managed through solid waste facilities, this Waste Assessment and the subsequent WMMP will focus primarily on solid waste.

1.4.4 Public Health Issues

Protecting public health is one of the original reasons for local authority involvement in waste management. The New Zealand Waste Strategy 2010 contains the twin high-level goals of “Reducing the harmful effects of waste”, and “Improving the efficiency of resource use”. In terms of addressing waste management in a strategic context, protection of public health can be considered one of the components entailed in “reducing harm”.

Protection of public health is currently addressed by a number of pieces of legislation. Discussion of the implications of the legislation is contained in Appendix A.3.0.

1.4.4.1 Key Waste Management Public Health Issues

Key issues that are likely to be of concern in terms of public health include the following:

- Population health profile and characteristics
- Meeting the requirements of the Health Act 1956
- Management of putrescible wastes
- Management of nappy and sanitary wastes
- Potential for dog/seagull/vermin strike
- Timely collection of material
- Locations of waste activities
- Management of spillage
- Litter and illegal dumping
- Medical waste from households and healthcare operators
- Storage of wastes
- Management of biosolids/sludges from WWTP
- Management of hazardous wastes (including asbestos, e-waste, etc.)
- Private on-site management of wastes (i.e. burning, burying)
- Closed landfill management including air and water discharges, odours and vermin
- Health and safety considerations relating to collection and handling.

1.4.4.2 Management of Public Health Issues

From a strategic perspective, the public health issues listed above are likely to apply to a greater or lesser extent to virtually all options under consideration. For example, illegal dumping tends to take place ubiquitously, irrespective of whatever waste collection and transfer station systems are in place. Some systems may exacerbate the problem (infrequent collection, user-charges, inconveniently located facilities etc.) but, by the same token, the issues can be managed through methods such as enforcement, education and by providing convenient facilities.

In most cases, public health issues will be able to be addressed through setting appropriate performance standards for waste service contracts. It is also important to ensure performance is monitored and reported on and that there are appropriate structures within the contracts for

addressing issues that arise. There is expected to be added emphasis on workplace health and safety under the Health and Safety at Work Act 2015. This legislation could impact on the choice of collection methodologies and working practices and the design of waste facilities, for example.

In addition, public health impacts will be able to be managed through consideration of potential effects of planning decisions, especially for vulnerable groups. That is, potential issues will be identified prior to implementation so they can be mitigated for.

1.5 Strategic Context

1.5.1 New Zealand Waste Strategy

The New Zealand Waste Strategy: Reducing Harm, Improving Efficiency (NZWS) is the Government's core policy document concerning waste management and minimisation in New Zealand. The two goals of the NZWS are:

1. Reducing the harmful effects of waste
2. Improving the efficiency of resource use.

The NZWS provides high-level, flexible direction to guide the use of the tools available to manage and minimise waste in New Zealand. These tools include:

- The Waste Minimisation Act 2008
- Local Government Act 2002
- Hazardous Substances and New Organisms Act 1996
- Resource Management Act 1991
- Climate Change Response Act 2002 and Climate Change (Emissions Trading) Amendment Act 2008
- International conventions
- Ministry for the Environment guidelines, codes of practice
- Voluntary initiatives.

The flexible nature of the NZWS means that councils are able to decide on solutions to waste management and minimisation that are relevant and appropriate to local situations and desired community outcomes.

Section 44 of the WMA requires councils to have regard to the NZWS when preparing their WMMP.

For the purpose of this Waste Assessment, the council has given regard to the NZWS and the current WMMP (2012).

1.5.2 International Commitments

New Zealand is party to the following key international agreements:

1. Montreal Protocol – to protect the ozone layer by phasing out the production of numerous substances
2. Basel Convention – to reduce the movement of hazardous wastes between nations
3. Stockholm Convention – to eliminate or restrict the production and use of persistent organic pollutants

4. Waigani Convention – bans export of hazardous or radioactive waste to Pacific Islands Forum countries

1.5.3 National Projects

A number of national projects are underway, aimed at assisting TAs, business and the public to adopt waste management and minimisation principles in a consistent fashion.

1.5.3.1 National Waste Data Framework Project

The first stage of the National Waste Data Framework (NWDF) project, led by WasteMINZ, was funded by a grant from the Waste Minimisation Fund. The development of the NWDF took the following form:

- A staged development approach, focusing initially on the most important elements while also setting out a clear ‘upgrade’ path to include other elements.
- The first stage of the Framework (which has been completed) includes data on waste disposed of at levied disposal sites (Class 1 landfills) and information on waste services and infrastructure as well as other areas where practicable.
- Subsequent stages of the Framework will include more detailed data on diverted materials and waste disposed of at non-levied disposal sites.

The first stage of the Framework is complete. WasteMINZ is now working on the implementation phase. The Framework will only be successful if it is widely adopted and correctly applied. The implementation report clearly sets out a range of options to move the Framework forwards.

The Council intends to be a part of the implementation of the NWDF by using the categories and terminology of the Framework in the Waste Assessment and the forthcoming WMMP.

1.5.3.2 National Standardisation of Colours for Bins

Until recently, councils and businesses in New Zealand had used a variety of colours to indicate what waste streams can be placed in what bins. This was viewed as possibly creating confusion when colours were used inconsistently and increasing the likelihood of contamination.

In October 2015 WasteMINZ, the Glass Packaging Forum, and councils around New Zealand agreed on a standardised set of colours for mobile recycling and rubbish bins, crates and internal office bins. Companies wishing to implement nationwide recycling schemes are strongly encouraged to use these colours both for their bins and also on their signage. This will ensure that the colours used are consistent with both public place recycling and household recycling. The recommended colours are:

For bin bodies:

For 240 litre and 120 litre wheeled bins, black or dark green should be used. These colours maximise the amount of recycled content used in the production of the bins.

For bin lids, crates and internal office bins:

- Red should be used for rubbish
- Yellow should be used for commingled recycling (glass, plastic, metal and paper combined)

- Lime green should be used for food waste and food waste/garden (referring to green) waste combined; noting that food waste-only collections are strongly encouraged to use a smaller bin size than combined food and garden collections.
- Dark Green should be used for garden waste.
- Light Blue should be used for commingled glass collections (white, brown, green glass combined).
- Grey should be used for paper and cardboard recycling.

Ōpōtiki District Council’s kerbside recycling collection crates was established using black crates, and these are still used for consistency and to make communications easier. Council will consider the national standards for any future collection containers.

1.5.3.3 Rural Waste Minimisation Project

Environment Canterbury is leading the New Zealand Rural Waste Minimisation Project to better understand the nature of waste on farms and to begin to identify alternatives to burning, burial and bulk storage of waste. The project has the following objectives:

1. To determine the impacts on and risks to New Zealand’s natural resources (land, water and air), economy, and social and cultural wellbeing from current rural waste burning, burying and stockpiling practices.
2. To identify new waste minimisation options for rural waste management and assess the technical and economic feasibility of these.
3. To develop implementation plans with service providers for feasible waste minimisation options.

Practical outcomes from this project could facilitate the development of rural waste solutions in our district.

1.6 Local and Regional Planning Context

This Waste Assessment and the resulting WMMP will have been prepared within a local and regional planning context whereby the actions and objectives identified in the Waste Assessment and WMMP reflect, intersect with, and are expressed through other planning documents. Key planning documents and waste-related goals and objectives are noted in this section.

1.6.1 Long Term Plan (2018-2028)

A key part of the Long Term Plan (LTP) is the vision that has been set for the Council. The Council’s vision is:

‘Strong Community – Strong Future’

The key focus areas for the Council and the key actions for each of these areas are shown in the table below:

Focus Area	Key Actions
Economic Growth	<ul style="list-style-type: none"> • Ōpōtiki Harbour development • Providing visitor and business investment information and support • Supporting local and regional business growth and workforce

	development
	<ul style="list-style-type: none"> • Promotion of facilities and activities to increase visitors, including historic precinct development and Mōtū Trails cycleway.
Quality of Life	<ul style="list-style-type: none"> • Provision of infrastructure; e.g. roads, water, stormwater, sewerage, waste • management, renewal of Ōpōtiki Township wastewater reticulation network • Advocacy with and on behalf of Ōpōtiki communities to central government • The development of the Technology and Research Centre • Walkways and cycleway maintenance • Support initiatives for development in the Coast ward.
Environmental Quality	<ul style="list-style-type: none"> • District Plan review and implementation • Maintenance and enhancement of parks and reserves • Partnership with community groups and BOPRC and DOC to undertake environmental restoration projects • Continuing the partnership with Gisborne District Council, Whakatōhea, • DOC and Mōtū Trails Charitable Trust in maintaining and enhancing the Mōtū Trails cycleway.
Strong Community Spirit	<ul style="list-style-type: none"> • Tri-annual community awards event • Promotion and support for community events

1.6.2 Regional Council Plans

The Regional Waste Strategy (2013 – 2023) presents a regional position on managing waste, hazardous substances, hazardous waste and contaminated sites in the Bay of Plenty. The Regional Waste Strategy has a vision of “working together towards a resource-efficient region”.

The Strategy also contains six key focus areas through which the vision and associated goals will be achieved:

1. Foster collaboration, partnerships and promote forward planning
2. Improve data and information management
3. Review regulatory environment governing waste
4. Increase resource efficiency and beneficial reuse
5. Reduce harmful impacts of waste
6. Stimulate research and innovation.

The Waste and Resources Advisory Group (WRAG) has been established to support progress within these six focus areas, and also to manage a small annual publicly contestable funding round (\$50,000 in 2015).

1.6.3 Cross-Regional Collaboration

The Bay of Plenty and Waikato regional councils are working together on a number of pan-regional collaborative projects that have been identified as priority actions by the constituent councils. The areas of collaborative work include:

- Waste assessments and waste management and minimisation planning

- Solid waste bylaws, licensing and data
- Education and communication
- Procurement
- Rural waste

Projects are currently under way for the first two of these priorities and there is also ongoing collaborative work among the constituent councils of the two regions on rural waste, tyres, and education and communication.

2 Bay of Plenty Region

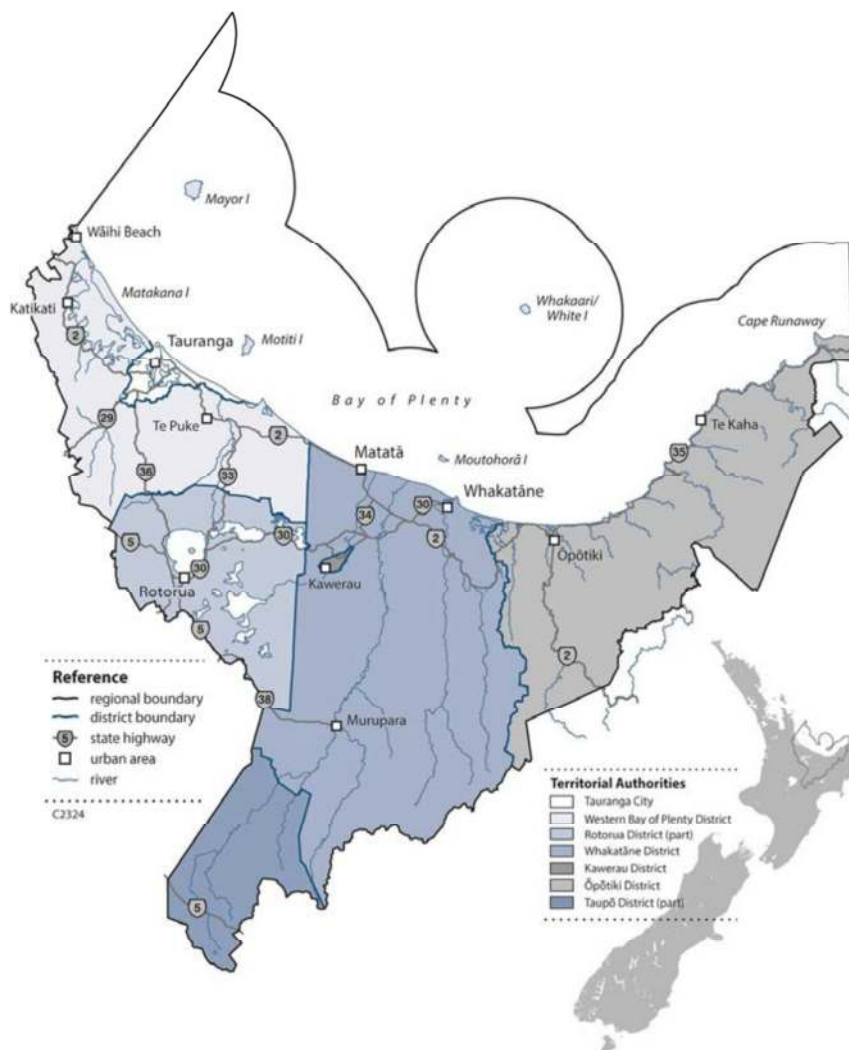
This section presents a brief overview of key aspects of the region's geography, economy, and demographics. These key aspects influence the quantities and types of waste generated and potential opportunities for the Council to manage and minimise these wastes in an effective and efficient manner.

2.1 Overview

Bay of Plenty is one of the country's primary fruit growing regions, and also has important forestry and tourism industries. It is home to the Port of Tauranga, the country's largest and fastest growing container port, which places Bay of Plenty in a strategic position. The region has a population of approximately 279,600 (Statistics NZ 2011 population projections). The largest urban centre is Tauranga with a population of approximately 117,100 in the greater urban area. There are no other centres of significant size in the region.

The region is divided into seven TAs spread across approximately 12,200 km² of land and 9,500 km² of coastal marine area.

Figure 1: Map of Region and Territorial Authority Areas



Source: Bay of Plenty Regional Council Annual Report 2016

2.1.1 Regional Waste and Resource Efficiency Strategy

The Bay of Plenty Regional Council reviewed their waste strategy following the completion of the last waste and infrastructure stocktake in 2013. They then adopted the *Bay of Plenty Waste and Resource Efficiency Strategy* (BoP WRES) in 2013. This document noted that the Waikato and Bay of Plenty regional waste stocktake had recently been completed. While there is no specific action to update the stocktake, the document does note that success would look like (amongst other points) “a reliable waste data network that meets all obligations is established and populated with data” and that “information enables progress to be measured and gaps to be identified”.

The BoP WRES sets out the key waste issues and priorities for the region, and outlines a programme of action through to 2023. The focus areas for the actions are:

- A. Foster collaboration, partnerships and promote forward planning
- B. Improve Data and Information management
- C. Review regulatory environment governing waste
- D. Increase product stewardship, resource efficiency and beneficial reuse
- E. Reduce the harmful impacts of waste
- F. Stimulate research and innovation to develop new solutions.

In addition the BoP WRES identifies a range of issues/opportunities for developing initiatives. These are:

- Accessing consistent reliable data
- Cleanfills and managed fills
- Construction and demolition wastes
- Contaminated soil and special wastes
- Dry recyclables and commodities
- Farm dumps
- Liquid wastes
- Organic wastes
- Product stewardship
- Recycling and waste diversion services and facilities
- Regional facilities
- Relationships and responsibilities between private, public and community sector.

2.1.2 Regional Water & Land Plan

Bay of Plenty Regional Council’s *Regional Water and Land Plan*, operative from 1 December 2008, states that the council will:

Encourage management practices which avoid the production of leachate, including:

- a) *diversion of organic materials from landfills by composting, reuse of organic materials where opportunities are available, and land application of organic materials*
- b) *limiting the volume of liquid or sludge wastes disposed to landfills*

2.1.3 Long Term Plan 2015 - 2025

Waste-related issues contained in the Bay of Plenty Regional Council's long term plan 2015-2025 potentially fall under a number of headings. These are noted below.

Resource Regulation and Monitoring

- The largely unregulated disposal of special waste (inappropriate disposal of special waste has the potential to cause significant adverse effects)

Pollution Prevention Activity

- A key role of this team is to provide leadership on minimising waste, including hazardous waste, generated by people
- An anticipated negative impact was that identifying the true cost of waste disposal may have a negative financial impact on some of the community, in terms of waste disposal charges

A key project listed in the long term plan was to support the national rural waste investigation project that was to quantify the extent of non-consented private landfills on rural land. This project was listed in the 2014-15 year and has been completed.

3 Our District

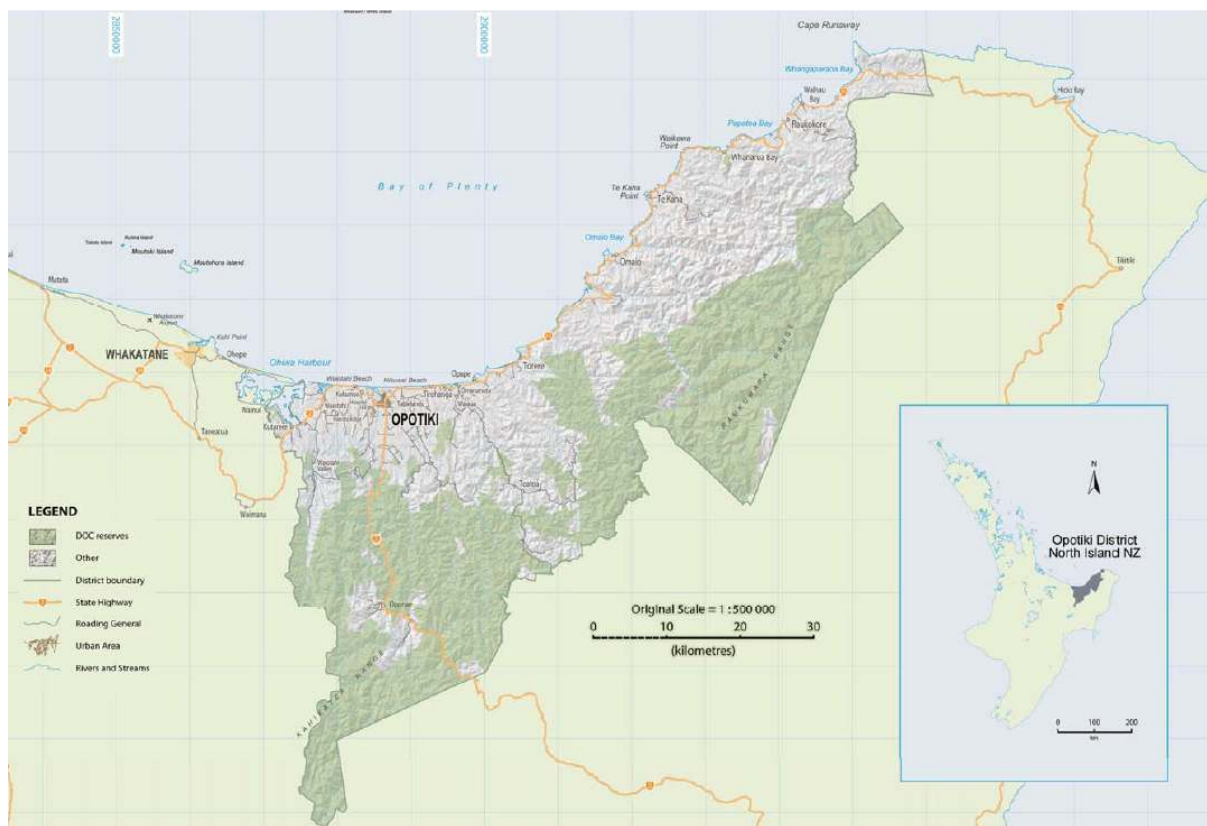
This section presents a brief overview of key aspects of the district’s geography, economy, and demographics. These key aspects influence the quantities and types of waste generated and potential opportunities for Council to manage and minimise these wastes in an effective and efficient manner.

3.1 Physical Characteristics

3.1.1 Overview

Ōpōtiki District has a land area of 3,104.54 km² (310,454 hectares). The district is located on the north-western half of east cape with 160 kilometres of coastline largely facing in towards the Bay of Plenty. The main population centre in the district is Ōpōtiki Township (pop approximately 4,000) which accounts for roughly half of the population of the area.

Figure 2: Map of District



Source: Ōpōtiki District Council Long Term Plan 2015-2025

3.1.2 Geography

The topography is predominantly steep hills dissected by fast-flowing rivers, the largest being the Motu. The coastal floodplains and terraces provide the only flat land. Ōpōtiki township is situated on the largest flat at the conjunction of the Otara River and the Waioeka River.

The district comprises 25% of the Bay of Plenty region and contains 50% of the Bay of Plenty coastline.

The rugged nature of the district means the population is concentrated along the coast. Ōpōtiki’s location on the far-east of the North Island means it is relatively isolated with limited transport links to other centres. There are no rail or commercial airline or sea links and State Highway 2 through Whakatane provides the only link to the west of the country. Gisborne to the east can be accessed via state highway 2 through Wiaoeka Gorge or via state highway 35 around East Cape.

3.1.3 Climate

Ōpōtiki has a marine west coast climate that is mild with no dry season and warm summers. Heavy precipitation occurs during mild winters which are dominated by mid-latitude cyclones.

Temperatures average 14° annually with a summer average of 19° and a winter average of around 10°. Total annual rainfall averages 1339.2 mm.²

3.1.4 Demographics

The population distribution and growth is shown in the following table:

Table 1: Population 2012 – 2016

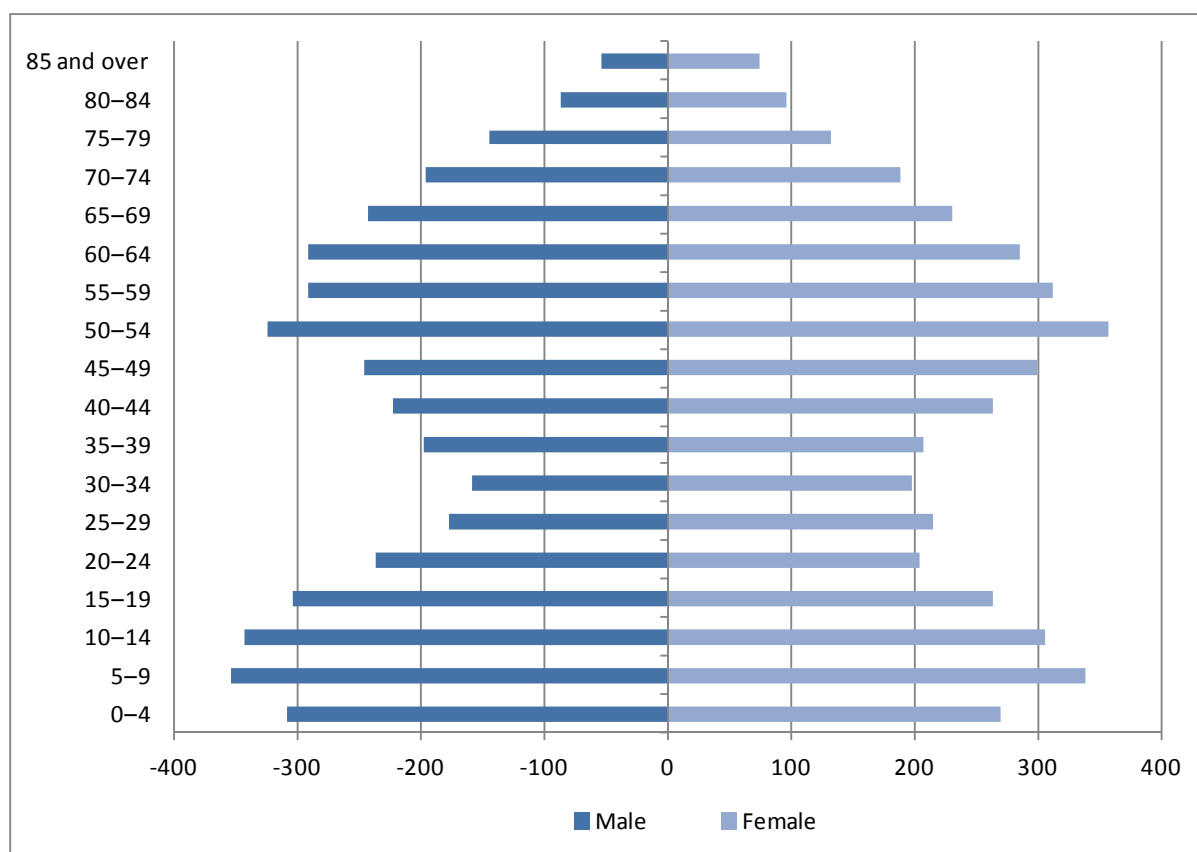
Population	2012	2013	2014	2015	2016	Mean annual growth rate
Ōpōtiki	4030	4040	4130	4130	4170	0.9%
Te Kaha	390	410	410	410	400	0.6%
Cape						
Runaway	1270	1190	1180	1170	1150	-2.4%
Oponae	310	310	300	300	300	-0.8%
Wiaotahi	2870	2840	2810	2800	2800	-0.6%
TOTAL	8870	8780	8830	8810	8820	-0.1%

Source: Statistics NZ sub-national population estimates

The population of Ōpōtiki District has been relatively static, showing a slight decline overall in the last 5 years. Ōpōtiki township and Te Kaha have grown slightly, while other areas have declined in population over the same period. As of the 2013 Census, Ōpōtiki ranked 59th in size out of the 67 districts in New Zealand.

² <http://www.Ōpōtiki.climatemps.com/>

Figure 3: Ōpōtiki District Age/ Sex Distribution



Source: <http://www.stats.govt.nz/Census/2013-census/data-tables/tables-about-a-place.aspx>

The above chart illustrates that there is an uneven distribution of the population by age with a notably low number of people in the 20-49 year range, which relates to the primary working age. This is consistent with people of working age leaving the district for the purposes of employment.

The following table shows key demographic metrics for the district

Table 2: Key Demographic Indicators

	Ōpōtiki	BOP	NZ
Total Households	4,251	117,438	1,765,896
Households (Occupied Dwellings)	3,279	103,500	1,570,698
Unoccupied Dwellings & under construction	972	13,938	195,198
Unoccupied Dwelling %	23%	12%	11%
HH Size	2.57	2.59	2.70
Median income	20700	26200	28500
Home ownership	51%	65%	57%
Formal qualifications	66%	76%	79%

Source: Compiled from <http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx>

The above statistics indicate that Ōpōtiki has a relatively high proportion of unoccupied dwellings compared to the regional and national averages, which reflects the number of holiday houses in the district. Household size is smaller than the regional and national figures, and levels of median income, home ownership and formal qualifications are all below the comparable regional and national measures. As of the 2013 census Ōpōtiki had the second lowest median personal income out of 67 territorial authorities.³

Table 3: Ethnic Composition

Ethnic group ⁴	Ōpōtiki District (percent)	New Zealand (percent)
European	52	74
Māori	60.6	14.9
Pacific peoples	2.9	7.4
Asian	2.5	11.8
Middle Eastern, Latin American, African	0.2	1.2
Other ethnicity		
New Zealander	1.2	1.6
Other ethnicity nec	0	0
Total other ethnicity	1.2	1.7

Source: http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=13978&tabname=Culturaldiversity

Ōpōtiki has a high population of Māori with 60% identifying as Maori or part-Maori as of the last census. Those identifying as European or part-European made up the second largest ethnic group at 52%.

Table 4: Households and Projected Household Growth

Number of households	2013	2018	2023	2028	2033	2038	% Per Annum
High	3,400	3,500	3,500	3,500	3,500	3,500	0.0
Medium	3,400	3,500	3,400	3,300	3,100	3,000	-0.6
Low	3,400	3,400	3,200	3,000	2,800	2,500	-1.3

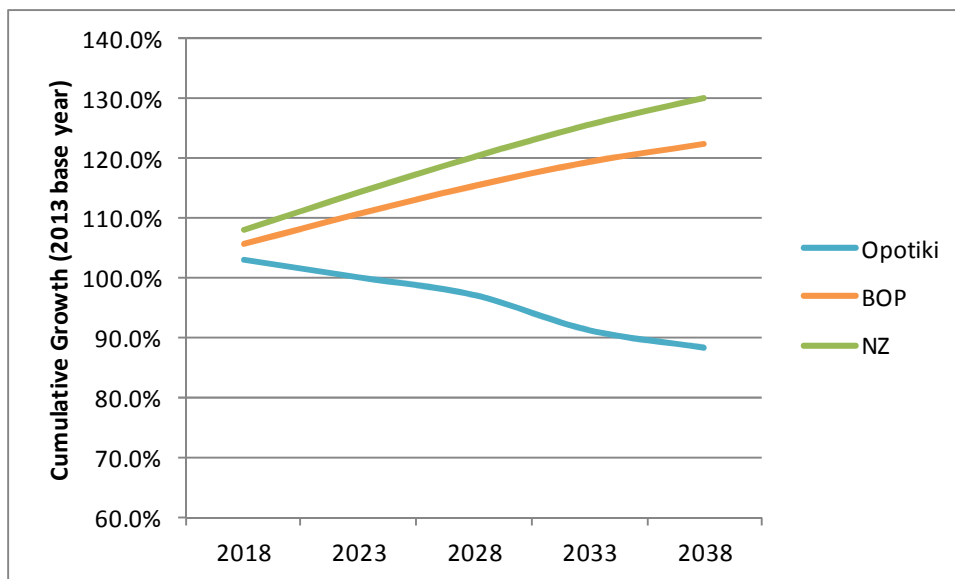
Source: Statistics NZ Subnational Family and Household Projections: 2013(base)–2038

Projections for household growth rate in Ōpōtiki compared to the Bay of Plenty and New Zealand are shown in Figure 4.

³ <http://m.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-income/personal-income-area.aspx>

⁴ Includes all people who stated each ethnic group, whether as their only ethnic group or as one of several. Where a person reported more than one ethnic group, they have been counted in each applicable group. As a result percentages do not add up to 100.

Figure 4: District, Regional and National Household Growth Rate Projections

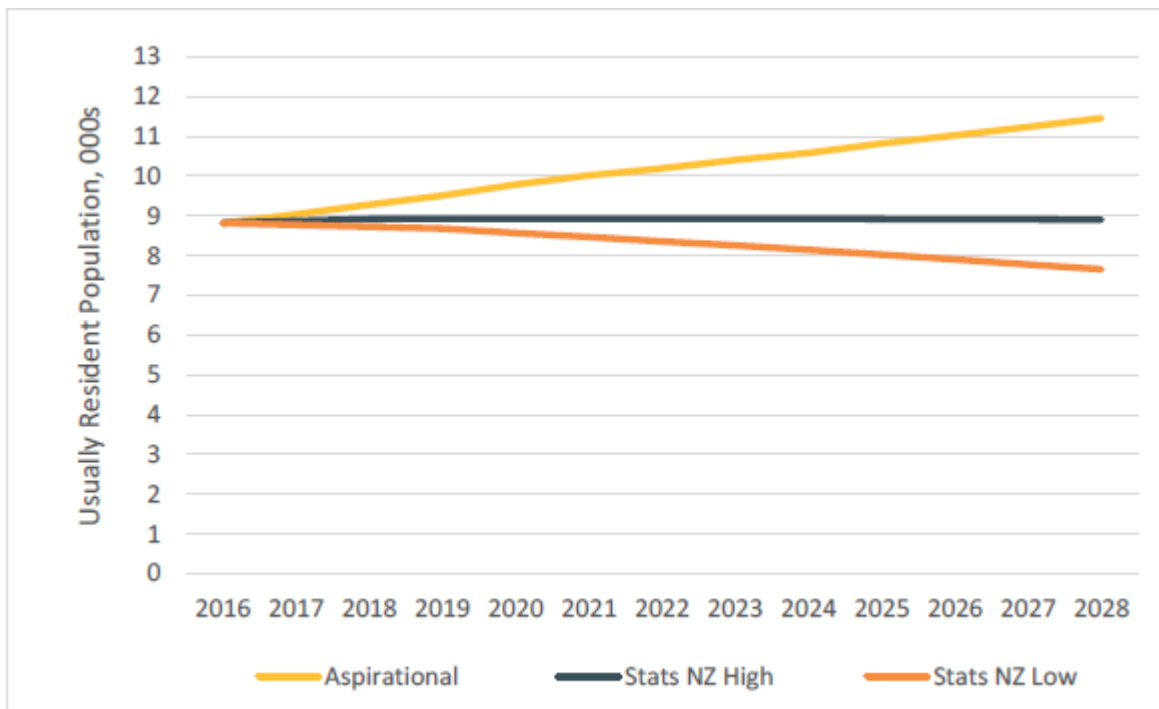


Source: Statistics NZ Subnational Family and Household Projections: 2013(base)–2038

The above chart illustrates how, while the Bay of Plenty and New Zealand households are projected to grow in the order of 20-30% over the next 20 years, the number of households in Ōpōtiki District is projected to decline by over 10%.

However, the above projections do not take into account the potential impact of economic development efforts and the increase in jobs, which could lead to more people moving to the district or choosing to stay. Projections that take these factors into account are shown in the chart below:

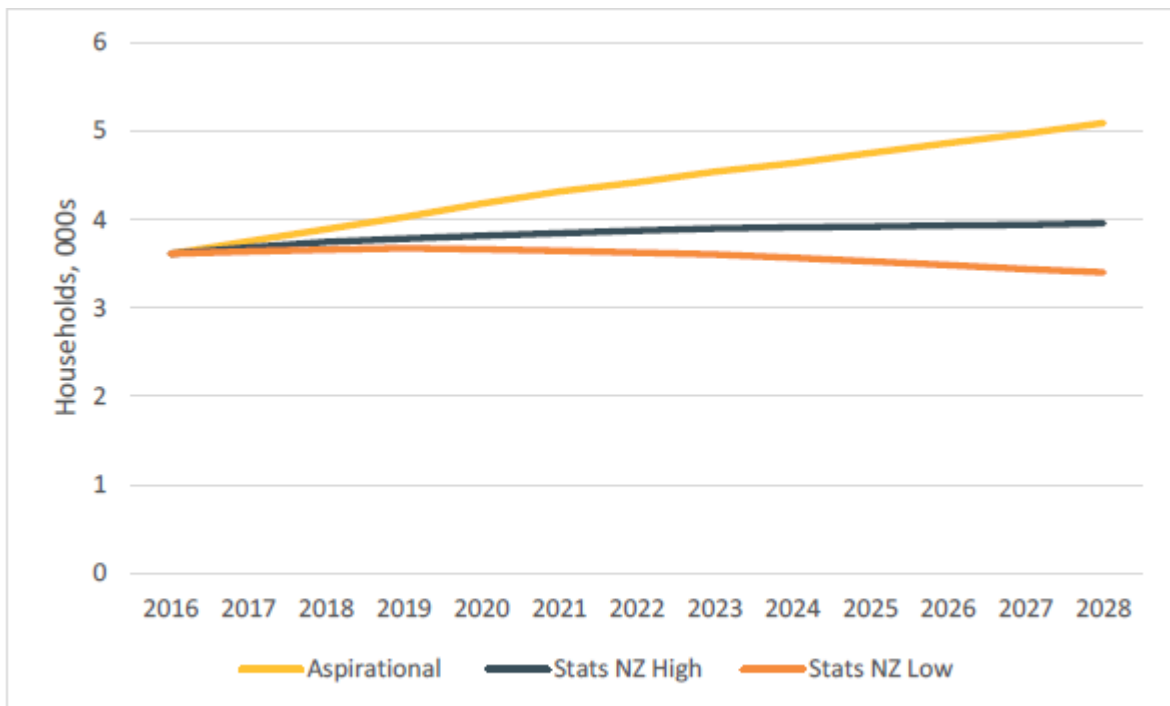
Figure 5: Population projections, Ōpōtiki, 2016–2028



Source: MartinJenkins

Under the aspirational scenario, Ōpōtiki’s population increases by 2.1 percent each year between 2018 and 2028 to 11,462, a net increase of 2,182 people.

Figure 6: Household projections, Ōpōtiki, 2016–2028



Source: MartinJenkins

Under the aspirational scenario, Ōpōtiki's households increase by 2.7 percent each year between 2018 and 2028 to 5,091, a net increase of 1,200 households.

These increases would add significant demand to the waste and resource recovery infrastructure and service requirements. Because a large proportion of the economic development activity is related to two projects – the harbour basin reclamation and aquaculture – which are centred on Ōpōtiki township, it could be expected that most of this growth will occur within proximity to the township.

3.2 Economy

The Ōpōtiki District economy is driven primarily by agriculture with over 400 farms amounting to a total area of 75,660ha. 38% of this area is in beef and dairy farms, 29% in planted forests and 1% in horticulture units. The majority of horticultural land is planted in kiwifruit with plans for further development within this industry⁵. A large proportion of the land area of the district is conservation estate that produces no economic return.

The development of a large-scale mussel farm 8.5km off the coast promises to add significant economic activity to the district. It will ultimately be capable of producing 20,000 tonnes of mussels annually – approximately one fifth of the current total industry production in NZ.⁶

Central to being able to realise the potential of the 3,800 hectare mussel farm is development work on the Ōpōtiki Harbour. Completion of this project would also facilitate tourism, charter boats and commercial fishing. The Government claims the project has the potential to create 220 jobs in the region and boost economic output by up to \$55m a year.⁷

Ōpōtiki also has a thriving tourism industry, with nearly 40,000 visitors to the district each year contributing over \$20M to the local economy⁸. This industry is expected to grow significantly following the completion of the Ōpōtiki Harbour.

Ōpōtiki District has an annual GDP of approximately \$222 million, giving an annual GDP per capita figure of approximately \$26,400, which is substantially below the regional GDP per capital of \$44,997 and the average national GDP per capita of approximately \$56,400. While Ōpōtiki District comprises 3% of the Bay of Plenty population, the economy only contributes 1.7% to the gross domestic product of the region.⁹

The chart below shows the key industries in the Ōpōtiki district by employment

⁵ Ōpōtiki District Council Long Term Plan 2015-2025

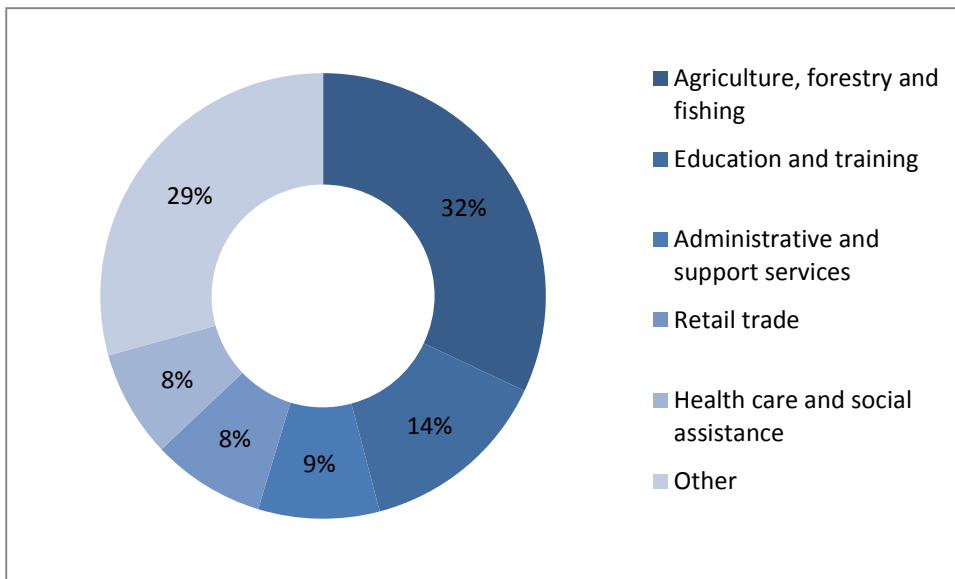
⁶ <http://www.aquaculture.org.nz/2016/11/10/mussels-for-Ōpōtiki-by-Ōpōtiki/>

⁷ <http://www.stuff.co.nz/business/73507564/Government-to-spend-up-to-29-million-on-Opotiki-River-development>

⁸ TRC Tourism (2015) "Ōpōtiki Harbour Development: The potential economic benefits of the Harbour Development Project to the local visitor industry". Report prepared for Ōpōtiki District Council, available on www.odc.govt.nz.

⁹ Ōpōtiki District Council Long Term Plan 2015-2025

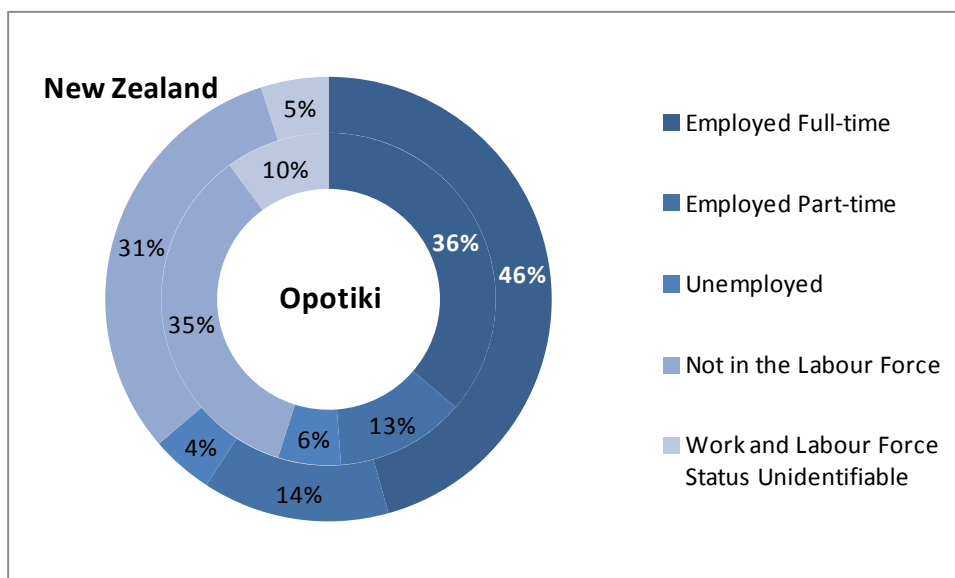
Figure 7: Key Industries by Employee Count – Ōpōtiki



Source: http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=13978&tabname=Business

The chart below shows the relative statistics for employment in NZ:

Figure 8: Employment Status – Ōpōtiki and New Zealand



Source: <http://community.infometrics.co.nz/Ōpōtiki%2bDistrict/Profile/LabourForce>

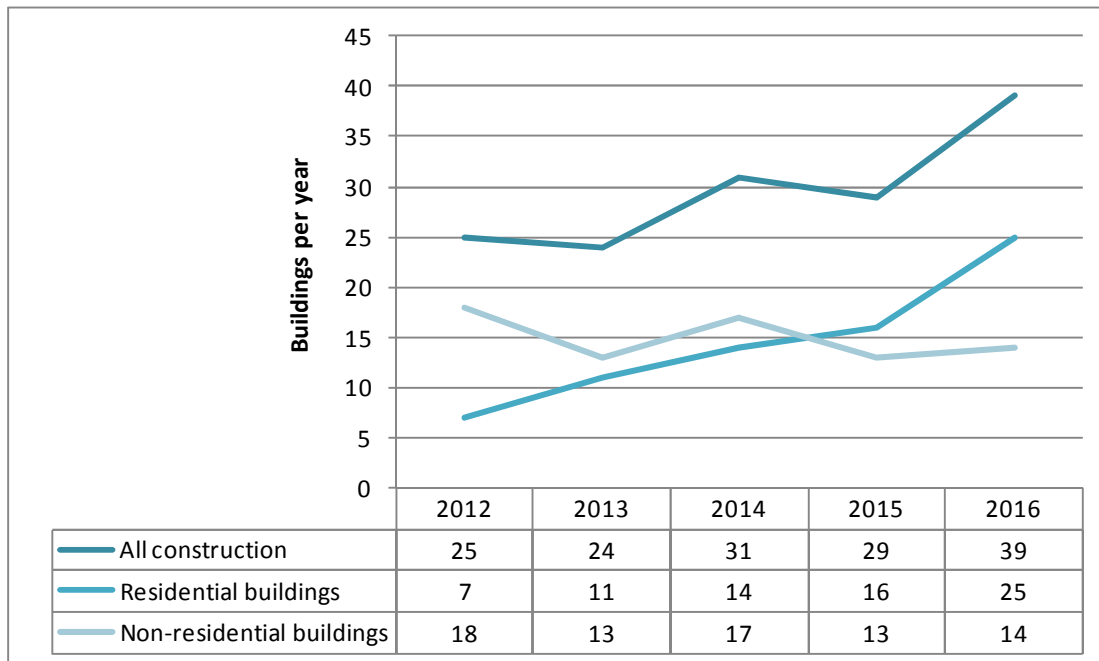
The data indicates that the proportion of those in full time employment is substantially less in Ōpōtiki (36% vs 46%) compared to NZ as a whole. Despite this differential, official unemployment figures show only a small difference of 6.1% in Ōpōtiki against 4.5% nationally. This would appear to be because a greater proportion are classified as either not in the workforce or their status is not identified.

About \$20 million a year comes into the district in social welfare¹⁰.

3.2.1 Building consents

Building consent activity is shown in the chart below:

Figure 9: Building Consents Issued by Year



Source: <http://www.stats.govt.nz/infoshare/ViewTable.aspx?pxID=9637b21f-8155-4c52-a544-1773faaee6ba>

The above chart indicates that building activity has been on the increase, driven by an increase in the number of residential buildings.

3.3 Implications of Economic and Demographic Trends

The most significant change coming for the Ōpōtiki district is the aquaculture and associated harbour development. Without these, waste quantities and types in the district would be expected to remain fairly static.

However the predicted scale of the aquaculture industry eventually is very significant, and in addition to the household-type waste produced by the anticipated additional residents, the aquaculture industry and associated processing will produce new types of wastes in large quantities.

This is going to be a significant challenge, but also opportunity, for the district during the term of the new WMMP.

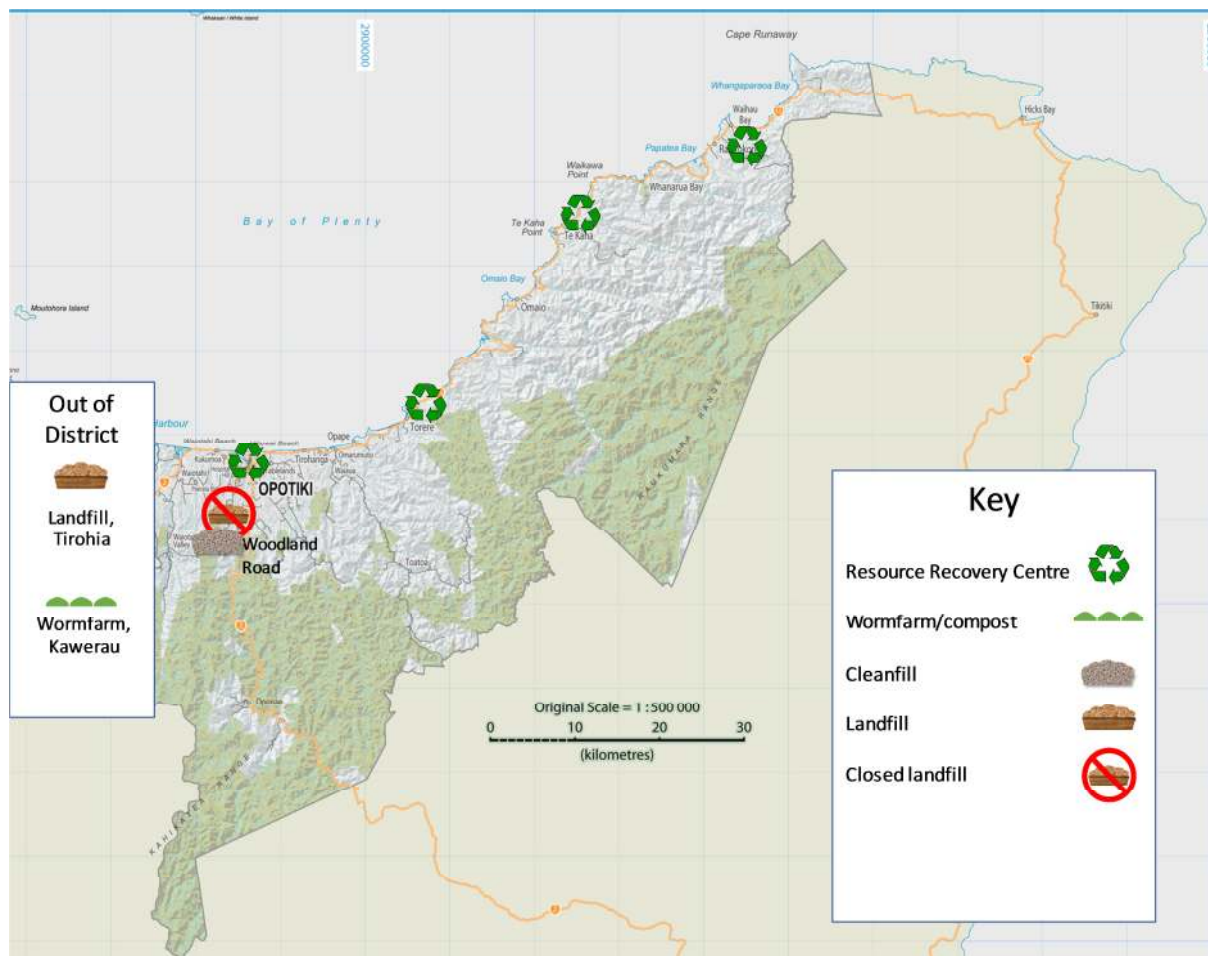
¹⁰ <http://www.aquaculture.org.nz/2016/11/10/mussels-for-Ōpōtiki-by-Ōpōtiki/>

4 Waste Infrastructure

The facilities available in Ōpōtiki district are a combination of those owned, operated and/or managed by the Council, and those that are owned and/or operated by commercial entities or community groups.

This inventory is not to be considered exhaustive, particularly with respect to the commercial waste industry as these services are subject to change. It is also recognised that there are small private operators and second-hand goods dealers that are not specifically listed. However, the data is considered accurate enough for the purposes of determining future strategy and to meet the needs of the WMA.

Figure 10: Key Waste Facilities in Ōpōtiki District



The inventory of facilities and services has been generally categorised with reference to the waste hierarchy (as defined by the WMA).

4.1 Disposal Facilities

In April 2016, the Waste Management Institute of New Zealand (WasteMINZ) released the final version of the Technical Guidelines for Disposal to Land.¹¹ These guidelines set out new standards

¹¹ Technical Guidelines for the Disposal to Land. WasteMINZ, April 2016

for disposal of waste to land and, if the Regional Council implements the new guidelines, then there will be significant changes to the operation of cleanfill sites in the region, including tighter controls.

The definitions of the four classes of landfills provided in the Guidelines are summarised in below.

Class 1 - Municipal Landfill

A Class 1 landfill is a site that accepts municipal solid waste. A Class 1 landfill generally also accepts C&D waste, some industrial wastes, and contaminated soils. Class 1 landfills often use managed fill and clean fill materials they accept as daily cover. A Class 1 landfill is the equivalent of a “disposal facility” as defined in the WMA.

Class 2 - C&D/Industrial Landfill

A Class 2 landfill is a site that accepts non-putrescible wastes including construction and demolition wastes, inert industrial wastes, managed fill, and clean fill. C&D waste and industrial wastes from some activities may generate leachates with chemical characteristics that are not necessarily organic. Hence, there is usually a need for an increased level of environmental protection at Class 2 sites.

Class 3 – Managed Fill

A Class 3 landfill accepts managed fill materials. These comprise predominantly clean fill materials, but may also include other inert materials and soils with chemical contaminants at concentrations greater than local natural background concentrations.

Class 4 - Cleanfill

A cleanfill is a landfill that accepts only cleanfill materials. The principal control on contaminant discharges to the environment from clean fills is the waste acceptance criteria.

The actual wording used in the guidelines is provided in Appendix A.2.1

4.1.1 Class 1 Landfills

There are no operating Class 1 landfill disposal facilities (as defined above) in Ōpōtiki District. All waste is currently transported to Tirohia Landfill in Hauraki District. There are a number of other landfills that are a similar distance (or closer). The table below lists the landfills that could feasibly receive municipal waste from Ōpōtiki.

Table 5: Class 1 landfills accessible from Ōpōtiki District

Name & Owner/Operator	Description	Location	Capacity and Consent
Tirohia Landfill, Waste Management	Non-hazardous residential, commercial and industrial solid waste, including special wastes. Sludges with	Tirohia, Hauraki District 224 km from Ōpōtiki	Consented to accept 4 million m ³ - approximately 2035 At current fill rates it could reach capacity

Name & Owner/Operator	Description	Location	Capacity and Consent
	less than 20% solid by weight are prohibited. Compostable material is also processed on site.		by 2029
Rotorua District Landfill, Rotorua District Council	Non-hazardous residential, commercial and industrial waste, including special wastes (although bylaw may be reviewed to exclude these in future).	Atiamuri SH30, Rotorua District 133 km from Ōpōtiki	Consented to 2030. Currently mothballed while undergoing feasibility assessment.
North Waikato Regional Landfill, EnviroWaste Services Ltd	Non-hazardous residential, commercial and industrial solid waste, including special wastes. Sludges with less than 20% solid by weight are prohibited.	Hampton Downs, Waikato District 277 km from Ōpōtiki	Consented to 2030
Taupo District Council, Taupo District	No gas capture system in place. Taupo Council and non-Council wastes	Broadlands Road landfill, Taupo 217 km from Ōpōtiki	Consented to 2027.
Tokoroa Landfill. South Waikato District Council,	Municipal waste landfill. Landfill and recycling drop-off South Waikato Council and non-Council wastes No gas capture system in place	South Waikato District 202 km from Ōpōtiki	
Waitomo District Landfill Waitomo District Council,	No gas capture system in place	Waitomo District 275 km from Ōpōtiki	Consented until 2020. Consented capacity of 232,000 tonnes. 17

Name & Owner/Operator	Description	Location	Capacity and Consent
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years of capacity at current rates.

Kawerau District Council owns a landfill for which consents are still current, however the landfill is considered to have reached capacity and it no longer accepts any waste.

Tirohia landfill has been operated by Waste Management Ltd since the end of 2016, and is consented until 2035. However, at current rates of fill it may reach capacity within the next ten years.

The distance to disposal facilities and the resulting high cost of disposal has been a driver for ODC to reduce waste to landfill. The prospect that the current disposal facility used by the district may reach capacity within the term of the next WMMP suggests that disposal options should be considered further in ODC's planning.

4.1.2 Resource Recovery Centres

Resource recovery centres (RRCs) in Ōpōtiki provide facilities for people to dispose of waste and recoverable materials. Waste and recoverable materials can be dropped off at these sites by the public and commercial operators. Material deposited at the RRCs attract a gate fee, with differential charges depending on the proportion of material that is recyclable or recoverable. Loads with 100% recyclables attract the lowest charge while those with 100% residual waste attract the highest charge. Refer Appendix A.4.0 for detail of the charges.

Table 6: Resource Recovery Centres in the District

Facility Description	Operation	Hours	Materials accepted
Wellington St, Ōpōtiki	Operated by Council	Thursday - Monday 8.00am to 4.00pm Tuesday/Wednesday Closed	A very wide range of recyclable and recoverable materials, residual waste, household hazardous waste
Copenhagen Rd Te Kaha	Operated by Council	Sat/Sun/Mon/Wed 9.00am to 2.00pm Tues/Thu/Fri Closed	Recyclable and recoverable materials, residual waste, household hazardous waste
Orete Forest RD Waihou Bay	Operated by Council	Mon/Wed/Sat 9.00am to 2.00pm Sun/Tue/Thu/Fri Closed	Recyclable and recoverable materials, residual waste, household hazardous

Nga Tai Iwi Authority Operated by Nga Tai
shed and collection Iwi
Marae Grounds
Tōrere

Once residual waste is deposited at the RTS, the waste is then compacted and bulked for transport to the Tirohia Class 1 landfill in Hauraki.

The charge for recyclables at the RRC in Ōpōtiki is relatively unusual. This does have the effect of encouraging personal responsibility for reducing ALL wastes, not just landfill waste, and also ensures that non-residential customers pay to dispose of commercial quantities of recyclables. However, while a number of householders don't have access to a kerbside recycling collection,

4.1.3 Closed Landfills

There is one closed landfill in the district. This are listed in the table below.

Table 7: Closed landfills in City/District

Local Authority	Location	Date closed
<i>Ōpōtiki District Council</i>	Woodlands Landfill	2004

4.1.4 Class 2-4 Landfills

Research estimates that waste disposed of to land other than in Class 1 landfills accounts for approximately 70% of all waste disposed of, and these operators are not required currently to pay the waste levy to central government.¹² Other disposal sites include Class 2-4 landfills and farm dumps.

The Bay of Plenty Regional Council 2008 Regional Water and Land Plan defines cleanfills as a permitted activity, as long as the operation of these cleanfills is in line with the Ministry for the Environment's Cleanfill Guidelines. There are no formal reporting requirements for these cleanfills, nor are they monitored on a proactive basis.

For this reason, and because few of these cleanfills are open to the public and many are temporary or short term associated with roading projects, it is very difficult to list these fully.

In the MfE's 2002 "A Guide to the Management of Cleanfills" 'cleanfill' is defined as: "Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:

- combustible, putrescible, degradable or leachable components

¹² Ministry for the Environment (2014) Review of the Effectiveness of the Waste Disposal Levy. The report estimates 56% of material disposed to land goes to non-levied facilities, 15% to farm dumps and 29% to levied facilities.

- hazardous substances
- products or materials derived from hazardous waste treatment, hazardous waste
- stabilisation or hazardous waste disposal practices
- materials that may present a risk to human or animal health such as medical and
- veterinary waste, asbestos or radioactive substances
- liquid waste.

There is one Class 4 site in the district that is consented by BOPRC to receive cleanfill type material and up to 10% untreated timber or greenwaste. Materials accepted include:

- Soil
- Rock
- Concrete
- Brick
- Up to 10% 10% untreated timber or greenwaste

The site is inspected every 3 months for compliance by BOPRC.

This site is estimated to receive in the order of 5,000 – 10,000 tonnes per annum of material depending on the level of construction activity.¹³ It is understood that much of this material would previously have been disposed of at the now closed Woodlands Landfill. This site is included on the map shown earlier in Figure 10.

Table 8: Consented Class 4 landfills in District

Facility	Location	Capacity	Materials and Charges
Waiotahi Contractors (Private facility)	Woodlands Road	Consented to 2032	Soil, rock, concrete (minus reinforcing), brick, up to 10% untreated timber or greenwaste.

In addition, a consented site also exists near the cleanfill for burning of untreated wood – principally trees from orchards.

Demolition material that is not able to be cleanfilled at Woodlands is taken to Tirohia for disposal. There is an estimated 50-100 tonnes of demolition material taken to landfill annually.

4.1.5 Assessment of Residual Waste Management Infrastructure

While there are alternative disposal sites available that are a shorter journey than Tirohia, these are mainly smaller council-owned facilities which are likely to have a much higher gate fee than Council currently pays at Tirohia, and therefore while the transport cost may be slightly lower, the overall cost would be higher. The possible exception to this would be Atiamuri landfill in Rotorua if/when it is reopened.

¹³ Personal communication with Spike Petersen, director, Waiotahi Contractors

The relatively low cost of disposal to sites other than a Class 1 landfill will drive residents' and commercial operators' behaviour in determining where to dispose of material, and this may limit Council's options in using disposal prices as a mechanism to drive more preferable waste management practices. Increasing disposal prices could have the result of simply driving more waste to Class 2-4 disposal sites rather than incentivising recovery.

4.2 Hazardous Waste Facilities and Services

The hazardous waste market comprises both liquid and solid wastes that, in general, require further treatment before conventional disposal methods can be used. The most common types of hazardous waste include:

- Organic liquids, such as those removed from septic tanks and industrial cesspits
- Solvents and oils, particularly those containing volatile organic compounds
- Hydrocarbon-containing wastes, such as inks, glues and greases
- Contaminated soils (lightly contaminated soils may not require treatment prior to landfill disposal)
- Chemical wastes, such as pesticides and agricultural chemicals
- Medical and quarantine wastes
- Wastes containing heavy metals, such as timber preservatives
- Contaminated packaging associated with these wastes.

A range of treatment processes are used before hazardous wastes can be safely disposed.

Most disposal is either to Class 1 landfills or through the trade waste system. Some of these treatments result in trans-media effects, with liquid wastes being disposed of as solids after treatment. A very small proportion of hazardous wastes are 'intractable', and require exporting for treatment. These include polychlorinated biphenyls, pesticides, and persistent organic pollutants.

Household quantities of hazardous wastes are primarily managed by the Council through the RRCs. Hazardous wastes are logged as they are received, and stored in the hazardous waste store until a full load is accumulated. The disposal or recovery of the hazardous wastes is contracted out as required.

4.2.1 Medical Waste

Medicines, needles, syringes etc. can be dropped off at Ōpōtiki Medical Centre, King Street, Ōpōtiki, or a local health centre. The medical waste that is collected at these sites is picked up by the District Health Board for management.

4.2.2 Agrecovery Rural Recycling programme¹⁴

This programme provides New Zealand's primary sector with responsible and sustainable systems for the recovery of 'on farm' plastics and the disposal of unwanted chemicals. It currently provides three nationwide programmes:

- Containers for the recovery of agrichemical, animal health and dairy hygiene plastic containers
- Wrap for the recovery of used silage wrap and pit covers

¹⁴ <http://www.agrecovery.co.nz/>

- Chemicals for the disposal of unwanted and expired chemicals in agriculture

These programmes are available in the Ōpōtiki District.

4.3 Recycling and Reprocessing Facilities

4.3.1 Recycling and Reprocessing Facilities Outside the District/City

Council has the benefit of a range of small infrastructure at the Ōpōtiki RRC that is capable of sorting, compacting, and baling various materials. This enables a wide range of material types to be separated at the RRC, thus enabling Council to leverage good prices for these commodities on the market.

However, all recyclables are actually reprocessed and recovered outside the district at a range of commercial processing facilities. These are described below.

Table 9: Other Recycling and Reprocessing Facilities

Facility	Description
O-I NZ Ltd	Process colour-sorted glass
Macaulay Metals	Ferrous metals recycling E-waste components
EcoCast	Vermicomposting of industrial, council (including biosolids) and some post-consumer organic wastes in Kawerau – currently accept screenings from the Imhoff waste water treatment plant.
Agrecovery	Accept unwanted agrichemicals and empty containers. Collection from properties (some charges apply) or free drop-off of containers at sites in ???
Various Commercial (EastPack, supermarkets etc.)	Recycle own cardboard and other recyclable materials
Waste Management (Tauranga)	Plastics, paper, cans, cardboard

4.3.2 Assessment of Recycling and Reprocessing Facilities

A wide range of materials are currently able to be sold for reprocessing from the district, due to the high level of separation that is achieved at the Ōpōtiki RRC. While this does not necessarily result in income for Council, due to high distances and therefore high transport costs, this does mean that Council enjoys a relatively stable market and price for their recyclables.

Within the context of current legislative and policy arrangements there is reasonable provision for e-waste collection and recovery within the region – although there is still scope for greater levels of

recovery. The cost of separate disposal of e-waste compared to landfilling is a disincentive for greater recovery.

5 Waste Services

5.1 Council-provided Waste Services

5.1.1 Council Collection Services

Council provides kerbside collections services for 1700 urban households and businesses, and 220 rural households (just outside urban area). The extension of the service to these additional households commenced at the beginning of the 2015- 2016 financial year. It appears that this increased the tonnage of residual waste collected and disposed of by estimated 50-100 tonnes per year.

The tables below outline the key Council-provided refuse and recycling collection services.

5.1.1.1 Kerbside Refuse Collection

Table 10: Council Kerbside Refuse Collections

Kerbside collection service	Charges/funding	Refuse collection contractor	Contract review dates
Weekly collection of 25L rubbish bags	Households are supplied with 52 bags per year and pay a kerbside refuse collection charge of \$129.40. Extra bags can be purchased from Council for \$1.00	Handee Can Services – Whakatāne	30 June 2019 (1+1+1 contract)

5.1.1.2 Kerbside Recycling Collection

Table 11: Council Kerbside Recycling Collections

Kerbside collection service	Materials	Refuse bag/wheelie bin collection contractor	Contract review dates
45L Crate collected weekly (at the same time/day as rubbish)	Paper, cardboard, glass, plastic bottles and bags, tin and aluminium cans including aerosol and paint tins	Handee Can Services – Whakatāne	30 June 2019 (1+1+1 contract)

5.1.2 Other Council Services

In addition to the services described above, there are other waste-related programmes and services provided by Council. This includes rates-funded clean ups of illegal dumping, and provision of litter bins in public places.

Table 12: Other Council Solid Waste Services & Contractors

Service	Contractor	Contract expiry date
Transport of waste to landfill and some recovered materials	Delta Contracting Ltd	30 June 2019 (1+1+1 contract)
Collection from coastal RRCs	Handee Can Services	
Transport of glass bins	Ōpōtiki Drainlayers	
Mulching of Green Waste	Waiotahi Contractors	
Tyres (currently sidewalls removed and landfilled)	South Pacific Waste and Recycling, Te Puke; Refined Tyre Company, Napier; Waste Tyre Solutions, Auckland	As required
Street Litter Bins	OCS	
Clean up of Illegal Dumping	OCS	

5.1.3 Waste Education and Minimisation Programmes

Council encourages all schools to adopt a Zero Waste Schools Policy. Marae are also being encouraged to adopt a recycling strategy.

Council also contracts EERST to deliver waste reduction programme in all schools from time to time. This is paid for through the income from the waste disposal levy (about \$20,000 per annum).

5.1.4 Solid Waste Bylaw

In addition to key strategic waste infrastructure assets, the Council also has responsibilities and powers as regulators through the statutory obligations placed upon them by the WMA. The Council operates in the role of regulator with respect to:

- management of litter and illegal dumping under the Litter Act 1979
- trade waste requirements
- nuisance related bylaws.

ODC has a solid waste bylaw that was adopted on 1 July 2008.

The bylaw provides for:

- Licensing of waste and recycling collectors
- Obligations on households to set out waste and recycling in an appropriate manner
- Approved containers for waste and recycling
- What can be placed in approved containers

- Ensuring the road corridor is free of litter post collection
- Behaviour at waste disposal sites and rubbish transfer stations
- Interference with or removal of rubbish and recyclables.

Under the WMA, the Council is required to review their waste bylaw by July 2018. Waste-related bylaws must not be inconsistent with the Council's WMMP. The current bylaw was adopted under the LGA 2002.

It is understood that the licensing provisions are not currently being enacted.

5.1.5 Litter Control, Street Cleansing, Stream, Beach, Park Cleaning

Litter collection and street cleaning is undertaken under contract by OCS.

5.1.6 Enforcement of Illegal Dumping

Enforcement of illegal dumping is undertaken directly by Council officers, who will attempt to identify who is responsible and recover costs.

5.1.7 Public Litter Bins

There are 19 street litter bins provided in the Ōpōtiki CBD which are serviced under contract by OCS. No bins are provided on sports or recreational fields or beaches. Council has found that less litter is created with a 'Pack it in – Pack it out' approach, where people are encouraged to take responsibility of their waste and take it home with them.

5.1.8 Abandoned Vehicles

Management of is undertaken directly by the Council, who will attempt to identify who is responsible and recover costs.

5.1.9 Rural and Farm Waste

A study of farm waste management practices in the Waikato and Bay of Plenty was carried out in 2014. This study found that a very large number of farms use one of the 'three B' methods of waste management – bury, burn, or bulk storage on property.

The methods currently used to manage farm wastes are far from ideal and, in some cases, have the potential to have a negative impact on the environment. Farmers generally agreed that these methods are not ideal and would like to have access to better options. However, the 'three Bs' are perceived to have 'no cost' compared to alternatives that do have a financial cost associated.

The study concluded that better information, education and awareness of existing alternatives are required. A better understanding of the risks and associated indirect costs involved in the current 'three B' practices would support this.

There are a number of non-farm rural properties that currently aren't able to access services from the private sector; however, the number is not currently known.

5.1.10 Hazardous Waste

Household quantities of hazardous waste can be disposed of at the Ōpōtiki RRC. Larger quantities can be handled by arrangement.

5.2 Assessment of Council-provided Solid Waste Services

While the individual bags used for the kerbside rubbish collection are small relative to other councils, at 25L, the user pays charge is also quite low at \$1 per bag. While other councils offer bag-based services with user charges, these can have varying levels of subsidy involved. The closest comparison found is Thames Coromandel District Council, which offers a 30L bag at \$1.25.

There is some concern that large families, those with small children, and/or those with very limited incomes will find the user charges difficult to manage financially.

The capacity allowed for each household in the kerbside recycling collection is also reasonably low, compared to the quantity of recyclables that each household is likely to have. For example, audit data shows that the average household can have around 2kg per week just of plastic bottles such as milk and soft drink bottles. Unless very well compacted, these will take up the majority of the 45L crate provided. Paper and cardboard can be left beside the crate.

Households that are eligible for the collections receive a weekly service.

Many households that are outside the immediate Ōpōtiki township do not receive a kerbside service. However they also do not pay the targeted rate of \$129.40 (in the 2017-18 year).

5.3 Funding for Council-provided Services

Council services are funded through several means; general rates funding, targeted rates, and user charges at the kerbside and at the RRC.

5.4 Non-Council Services

There are a number of non-Council waste and recycling service providers operating in the district.

Operator	Services	Location
Handee Can Services	Waste Collection – skip bins and private wheeled bins	Whakatāne
Blue Rock Contractors	Waste Collection – skip bins and private wheeled bins	Whakatāne
Waste Management	Waste Collection – skip bins and private wheeled bins	Whakatāne

These providers largely collect rubbish. The main option for a householder or business wanting to recycle in Ōpōtiki, that does not have access to the kerbside collection service due to geography, is to take their recyclables to the Ōpōtiki RRC.

If it is considered necessary and constructive, it may be possible for Council (like other local authorities have done) to require private rubbish collectors to also offer a recycling collection of at least two materials.

6 Situation Review

6.1 Waste to Class 1-4 Landfills

6.1.1 Definitions Used in this Section

The terminology that is used in this section to distinguish sites where waste is disposed of to land are taken from the National Waste Data Framework which, in turn, are based on those in the WasteMINZ Technical Guidelines for Disposal to Land (summarised in section 4.1).

6.2 Overview of Waste to Class 1-4 Landfills

Since the Woodland landfill closed in 2004 Ōpōtiki has had to dispose of all non-cleanfill solid waste out of the district. Municipal solid waste from kerbside collections and Resource Recovery Centres is sent to Tirohia Landfill in Hauraki District, which is approximately 200km from Ōpōtiki.

It is not known where privately collected material is deposited, but it is assumed that this would mostly go to one of the two transfer stations at Whakatane (which also sends its waste to Tirohia for disposal).

6.3 Waste Quantities

6.3.1 Waste to Class 1 Landfills

It is estimated that 1,722 tonnes of waste were disposed of to landfill in 2016. This consisted of waste sent to landfill from the RRCs, an estimate of privately collected waste sent to landfill, demolition waste to Tirohia, and other waste such as medical waste that is not managed by Council.

6.3.2 Other Waste Disposed of to Land

6.3.2.1 Class 2 - 4 Landfills

There is only one consented cleanfill site in Ōpōtiki. The site does not have a weighbridge. Information on the quantities of waste to this site were estimated by the operator. Because the district is relatively small, activity within the community is usually widely known, and there are no known non-consented cleanfills operating.

6.3.2.2 Farm Waste Disposed of On-site

Very little research has been conducted on the quantity of waste generated on farms and disposed of on-site. There are two substantive pieces of research, including one conducted in the Waikato and Bay of Plenty in 2014¹⁵ and a 2013 study of farm waste in Canterbury¹⁶. The Canterbury study found that 92% of the farms surveyed practised one of the “3B” methods (burn, bury, or bulk store indefinitely) for on-site disposal of waste.¹⁷ The studies calculated average annual tonnages of waste for four different types of farm in the regions. As farm waste from a specific type of farms is likely to be similar around the country, the data is considered to be suitable for applying to other regions, if the correct number of farm types is used for the calculations.

¹⁵ GHD (2014) *Rural Waste Surveys Data Analysis Waikato & Bay of Plenty*, Waikato Regional Council Technical Report 2014/55, July 2014

¹⁶ GHD (2013), *Non-natural rural wastes - Site survey data analysis*, Environment Canterbury Report No.R13/52

¹⁷ GHD (2013), *Non-natural rural wastes - Site survey data analysis*, Environment Canterbury Report No.R13/52

The presence of hazardous wastes including agrichemicals and containers, treated timber, paints solvents, and used oil was noted in the study, and the management techniques applied to these was variable and often of concern.

The data from the Canterbury report was applied nationally, on a regional basis, in a 2014 study that produced a database of non-municipal landfills for the Ministry for the Environment.¹⁸ The report considered “non-municipal landfills” to include “cleanfills, industrial fills, construction and demolition fills, and farm dumps”.

Based on the data contained in the 2013 Canterbury and 2014 Waikato/BOP and national studies, the approximately 400 farms in the district are estimated to have generated an average of 20.7 tonnes of waste per farm per annum. Of this total, 19 tonnes per farm are estimated to be disposed of on the farm itself through burial, burning, or indefinite bulk storage. In total, over 7,372 tonnes of waste per annum are estimated to be disposed of in this manner across the district/city.

Table 13: Estimated On-farm Disposal of Farm Waste in District/City

On-farm disposal of farm waste in district/city-tonnes/annum	Dairy	Livestock	Arable	Viticulture/ Orchards	TOTAL
Number of farm holdings (2012)	69	96	66	156	387
Non-natural rural waste (T/farm/annum)	6.1	8.9	7.4	5.5	6.8
Domestic waste (T/farm/annum)	0.6	0.08	1.1	0	0.3
Organic materials (T/farm/annum)	21.2	21.2	3.2	10	13.6
Total waste generated (T/farm/annum)	27.9	30.18	11.7	15.5	20.7
Total tonnes/annum per farm, disposed of on-farm	25.7	27.8	10.8	14.3	19.0
Total waste disposed of on-farm (T/annum)	1,771	2,665	710	2,225	7,372

Of this total of 7,372 tonnes of waste, 33% (2,412 tonnes per annum) is non-natural rural waste. This waste stream includes materials such as scrap metal, treated timber, fence posts, plastic wraps and ties, crop netting, glass, batteries, and construction and demolition wastes.

¹⁸ Tonkin & Taylor (2014), *New Zealand Non-Municipal Landfill Database*, prepared for Ministry for the Environment

Nearly two-thirds of farm waste is organic materials (4,848 tonnes per annum), which the survey found to include animal carcasses and crop residues.

6.3.3 Summary of Waste Disposed of to Land

The previous sections have quantified the disposal of solid waste to land through three separate mechanisms: waste to Class 1 landfills, farm waste disposed of onsite, and waste to Class 2-4 landfills. The disposal of solid waste to land in district/city is summarised in Table 14.

Table 14: Waste Disposed of to Land – 2016-17.

	Tonnes	%	kg/capita
Class 1			
Waste to disposal from RRC	1,070	6.2%	127
Commercial Collectors	422	2.4%	50
Demolition to Tirohia	170	1.0%	20
Other residual	60	0.3%	7
Total waste to Class 1	1,722	10.0%	204
Class 2-4			
Material to cleanfill	7,500	43.4%	889
Consented burning	680	3.9%	81
Total waste to Class 2-4	8,180	47.4%	970
Other Disposal			
Farm waste Estimate	7,372	42.7%	874
of which NNRW	2,412	14.0%	286
Total Waste to Disposal	17,274	100.0%	2,048

The above figures suggest that a total of approximately 17,000 tonnes of solid waste from Ōpōtiki were disposed of to land in the last year. Waste disposed of at Class 2-4 landfills comprised approximately 47% of the total, and was equivalent to nearly one tonne per person. Farm waste makes up the second largest fraction of waste to land accounting for approximately 43% of the total.

It should be noted that the reliability of the estimates for the different types of waste disposal varies. The data on waste to Class 1 landfills is relatively reliable, being based on weighbridge records and figures provided by operators. On the other hand, the accuracy of the estimates of waste to Class 2-4 landfills cannot be determined, as the estimates are based on information provided by site operators. The estimate of farm waste is potentially the least reliable, being based on data from a relatively small study of farms in Canterbury, Waikato and the Bay of Plenty.

6.4 Composition of Waste to Class 1 Landfills

There is no composition data available for residual waste from the Ōpōtiki District. However, some estimates of composition of kerbside waste have been made based on existing national Solid Waste Analysis Protocol (SWAP) data.

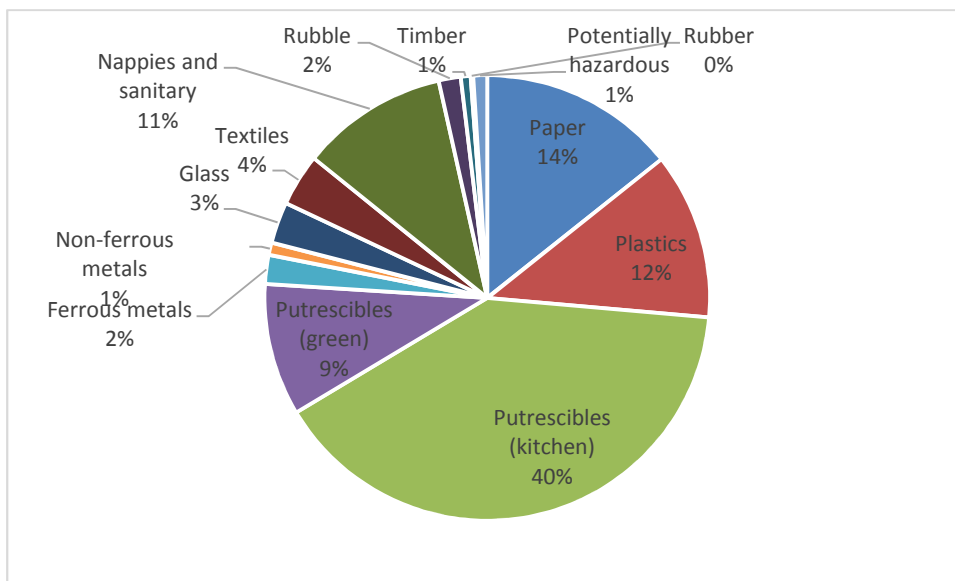
The composition is presented in this section using the 12 primary classifications in the SWAP but with putrescibles broken out into kitchen waste and green waste.

Table 15: Estimated Composition of Waste to Landfill

	Percent	Tonnes (Estimated)
Paper	14.3%	123
Plastics	12.1%	104
Putrescibles (kitchen)	40.0%	344
Putrescibles (green)	9.6%	83
Ferrous metals	2.1%	18
Non-ferrous metals	0.9%	8
Glass	3.0%	26
Textiles	3.8%	33
Nappies and sanitary	10.7%	92
Rubble	1.6%	14
Timber	0.7%	6
Rubber	0.2%	2
Potentially hazardous	1.0%	9
Total	100.0%	861

*Data from: Waste Not Consulting (2009) Household sector waste to landfill in New Zealand.
Prepared for MfE*

Figure 11: Estimated Composition of Domestic Kerbside Rubbish



Overall composition of waste to landfill is heavily influenced by the types of activities that generate waste in the district and so, without detailed data on the activity source of waste (e.g. how much is commercial, industrial, construction and demolition, residential etc) it is not possible to apply default compositions to make an estimate of the overall composition.

The only available data from Ōpōtiki on the composition of household waste is from a food waste study carried out in 2015¹⁹. This survey concluded that the average proportion of food waste was 33%; although it should be noted that a very small sample size of 25 was used and that there was a high level of variation in the measurements. The actual average proportion could easily be higher or lower than this.

6.5 Activity Source of Waste

There is no available data on the activity source of the waste.

6.6 Potentially Diverted Materials

6.6.1 Overview of Potentially Diverted Materials

Potentially diverted materials in the district are generally transported to the Ōpōtiki RRC for further sorting and pre-processing, before being transported to other centres for reprocessing and recycling.

Some commercial enterprises divert some material, particularly organic waste, directly from their premises.

6.6.2 Council Kerbside Recycling and Drop-Off Facilities

The data below shows recovered material processed through the Ōpōtiki Resource Recovery Centre.

¹⁹ Maple, P (2015) "Scoping study to look at the feasibility of introducing an urban organic waste kerbside collection and disposal system in Opotiki", completed as part requirement for an Advanced Zero Waste course at Massey University. Provided by Opotiki District Council.

Table 16: Material Recovered from Kerbside Recycling and Drop-Off Facilities (2016)

Material	Tonnes	Material	Tonnes
Glass/Bottles	296.5	Wire	5.0
Plastics	50.1	Used gas bottles	6.0
Paper	120.4	Ferrous metal	1.5
Cardboard	108.9	Paints	4.0
Ali Cans	4.8	Concrete/Rubble	135.0
Steel cans	13.8	Gib Board	10.0
Batteries	3.0	Cement Board	5.0
E-waste	15.0	Used Furniture Textiles	45.0
Oils	3.0	Wood	150.0
Tyres	15.0	Green waste	433.5
Cars/heavy gauges steel	15.0	Agrichemicals	2.0
Light gauge steel/whiteware	210.0	Reuse/shop sales	10.0
TOTAL			1,662.4

Greenwaste represents the largest stream of material recovered overall, followed by glass, steel, wood, concrete and rubble, and cardboard and paper.

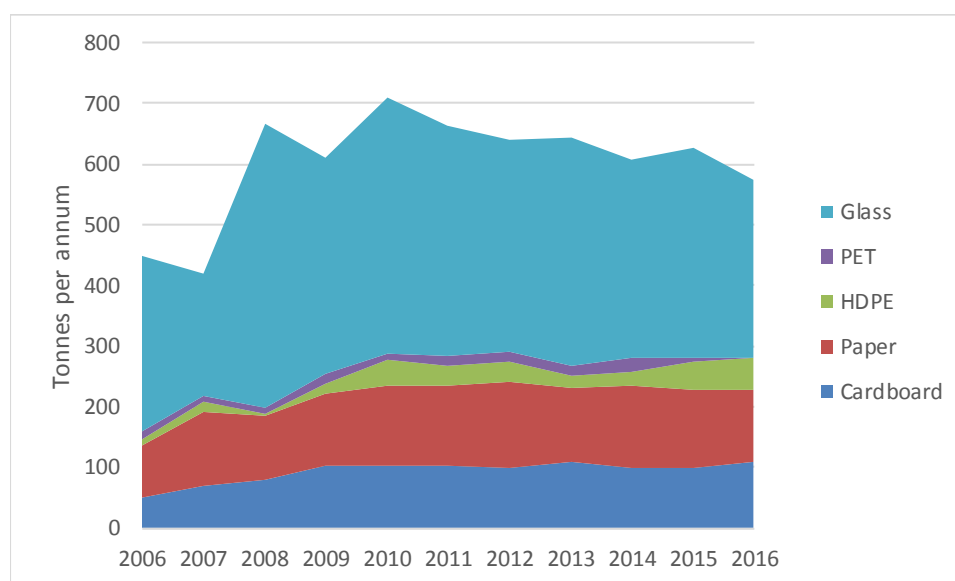
Garden waste is accepted at Wellington Street RRC where it is shredded and then composted in windrows. Mature compost is sold back to the public.

In addition, around 100 tonnes per annum of biosolids are diverted through vermicomposting in a nearby district.

6.6.3 Composition of Kerbside Recycling

Data for commodities that have been recycled over time is shown in the chart below.

Figure 12: Recycling Commodities Over Time



Quantities of recyclables have been declining gradually since a peak around 2010. This appears to be driven by the fact that while other commodities have remained relatively steady over this time, glass quantities have declined.

6.6.4 Non-Council Diverted Materials

Council estimates that there is in the order of 850 tonnes of material collected by private operators in the district, of which approximately half (425 tonnes) is diverted materials.²⁰ There is no information available on the composition of this material or where it is taken to for recovery.

Organic waste is also diverted from landfill disposal through private means, which are not quantified in this waste assessment, including:

- composting of organic waste on farms or private properties
- arborists chip considerable quantities of vegetation, much of which is disposed of as mulch
- piggeries collect food waste from supermarkets and food manufacturers for use as stock feed
- Some commercial enterprises sell chipped byproduct as mulch directly from their premises.

6.7 Summary of Estimates for Waste and Diverted Materials

The table below summarises the data presented in the preceding sections.

	Tonnes
Total to class 1	1,722
Cleanfill	7,500
Consented burning	680
Natural farm waste disposed	4,960
Non-natural farm waste disposed	2,412
Total to disposal	17,274
Kerbside recycling	286
Green waste	434
Other RRC recovery	943
Biosolids to vermicompost	102
Total to recovery	1,764
Total disposal and recovery	19,038
<i>Recovery as % of class 1 and recovery</i>	<i>51%</i>
<i>Recovery as % of all waste and recovery</i>	<i>9%</i>

²⁰ E-mail communication with Ian Castles, Works Manager, Opotiki District Council, Thu 12/10/2017 12:00 p.m.

7 Performance Measurement

7.1 Current Performance Measurement

This section provides comparisons of several waste metrics between district/city and other territorial authorities. The data from the other districts has been taken from a variety of research projects undertaken by Eunomia Research & Consulting and Waste Not Consulting.

7.1.1 Per Capita Waste to Class 1 Landfills

The total quantity of waste disposed of at Class 1 landfills in a given area is related to a number of factors, including:

- the size and levels of affluence of the population
- the extent and nature of waste collection and disposal activities and services
- the extent and nature of resource recovery activities and services
- the level and types of economic activity
- the relationship between the costs of landfill disposal and the value of recovered materials
- the availability and cost of disposal alternatives, such as Class 2-4 landfills
- seasonal fluctuations in population (including tourism).

By combining Statistics NZ population estimates and the Class 1 landfill waste data in section 6.3.1, the per capita per annum waste to landfill in 2016 from Ōpōtiki can be calculated as in Table 17 below. The estimate includes special wastes but excludes non-levied cleanfill materials.

Table 17: Waste Disposal per Capita – Waikato/BoP Region

Calculation of per capita waste to Class 1 landfills	
Population (Stats NZ 2013 Census)	8,436
Total waste to Class 1 landfill (tonnes 2016 year)	1,722
Tonnes/capita/annum of waste to Class 1 landfills	0.204

Table 18: Per Capita Waste to Class 1 Landfills Compared to Other Districts

Overall waste to landfill (excluding cleanfill and cover materials)	Tonnes per capita per annum
<i>Ōpōtiki District</i>	<i>0.204</i>
Gisborne District 2010	0.305
Waimakariri District 2012	0.311
Westland District 2011	0.331
Carterton/Masterton/South Wairarapa Districts 2015	0.352
Ashburton District 2014-15	0.366
Tauranga and WBoP District 2010	0.452

Napier/Hastings 2012	0.483
Southland region 2011	0.500
Wellington City & Porirua City 2015	0.507
Christchurch City 2012	0.524
Taupo District 2013	0.528
Kāpiti Coast District 2015	0.584
Wellington region 2015	0.608
New Plymouth District 2010	0.664
Hamilton City	0.668
Queenstown Lakes District 2012	0.735
Rotorua District 2009	0.736
Auckland region 2012	0.800
Upper Hutt City & Hutt City 2015	0.874

The districts with the lowest per capita waste generation tend to be rural areas or urban areas with relatively low levels of manufacturing activity. The areas with the highest per capita waste generation are those with significant primary manufacturing activity or with large numbers of tourists.

Ōpōtiki has the lowest per capita waste to class 1 landfills out of all the available data. Although the figure is very low, this is unsurprising for a geographically large district with few urban areas, and also reflects the efforts made by Ōpōtiki to reduce waste.

7.1.2 Per Capita Domestic Kerbside Refuse to Class 1 Landfills

The quantity of domestic kerbside refuse disposed of per capita per annum has been found to vary considerably between different areas. There are several reasons for this variation.

Kerbside refuse services are used primarily by residential properties, with small-scale commercial businesses comprising a relatively small proportion of collections (typically on the order of 5-10%). In districts where more businesses use kerbside wheelie bin collection services - which can be related to the scale of commercial enterprises and the services offered by private waste collectors - the per capita quantity of kerbside refuse can be higher. There is relatively little data in most areas on the proportion of businesses that use kerbside collection services, so it is not usually possible to provide data solely on residential use of kerbside services.

The type of service provided by the local territorial authority has a considerable effect on the per capita quantity of kerbside refuse. Councils that provide wheelie bins (particularly 240-litre wheelie bins) or rates-funded bag collections generally have higher per capita collection rates than councils that provide user-pays bags. The effect of rates-funded bag collections is reduced in those areas where the council limits the number of bags that can be set out on a weekly basis.

Evidence indicates that the most important factor determining the per capita quantity of kerbside refuse is the proportion of households that use private wheelie bin collection services. Households that use private wheelie bins, particularly larger, 240 litre wheelie bins, tend to set out greater quantities of refuse than households that use refuse bags. As a result, in general terms the higher the proportion of households that use private wheelie bins in a given area, the greater the per capita quantity of kerbside refuse generated.

Other options that are available to households for the disposal of household refuse include burning, burying, or delivery direct to a disposal facility. The effect of these on per capita disposal rates varies between areas, with residents of rural areas being more likely to use one of these options.

The disposal rate of domestic kerbside refuse for Ōpōtiki has been calculated to be in the order of 63 kg per capita per annum in as of 2016.

Table 19 compares the per capita rate of disposal of kerbside refuse in district/city with other urban areas in New Zealand. Data for the other districts has been taken from SWAP surveys conducted by Waste Not Consulting.

Table 19: Per Capita Disposal of Kerbside Refuse – Comparison with Other Areas

District and year of survey	Kg/capita/annum	Comment
Ōpōtiki District 2016 (Council collection only)	63	Weekly 25L rubbish bag, weekly 45L crate for recycling, with paper and card bundled
Christchurch City 2011	110	Fortnightly 140L refuse wheelie bin. Weekly organic collection
Auckland Council 2012	160	Range of legacy council services.
Hamilton City 2013	182	Rates-funded refuse bags, max. 2 per week
Tauranga City and Western Bay of Plenty District 2010	183	User-pays bags in Tauranga. No council service in WBoP.
Wellington region 2014/15	206	Estimate based on SWAP surveys at Silverstream landfill and Kāpiti Coast
Taupo District 2013	212	User-pays refuse bags
Hastings District/Napier City 2012	214	User-pays refuse bags (Hastings) & rates-funded bags max. 2 bags/week(Napier)
Rotorua District 2009	216	Council rates-funded Kleensaks. No kerbside recycling service

Of the urban areas that have been assessed, Christchurch City has the lowest per capita disposal rate of kerbside refuse. This is associated with the diversion of organic waste through the council's kerbside organic collection and the council's high market share.

Rotorua in 2009 had the highest disposal rate of the urban areas shown in the table. This was associated with the high proportion of households in Rotorua that used private collector wheelie bin

services and the (then) absence of kerbside recycling services. Rotorua District Council has since introduced council-contracted kerbside services.

7.1.3 Per Capita Kerbside Recycling

Per capita recycling rates for Ōpōtiki District are shown in Table 20 alongside comparable rates from other council areas.

Table 20: Per Capita Kerbside Recycling – Kg/Capita/Annum

District	Kg/capita/ annum	System type
Napier City Council	52 kg	Fortnightly bags or crates
Wellington region	53 kg	Various systems
<i>Ōpōtiki District (for hh with kerbside collection)</i>	<i>58 kgs</i>	<i>Weekly crate with paper and cardboard bundled at the side</i>
Ashburton District	62 kg	Weekly bags or crates depending on area
Tauranga City Council	65 kg	Private wheelie bin collection service
Invercargill City Council	69 kg	Fortnightly 240-litre wheeled bin, commingled
Waipa District	73 kg	Weekly/Fortnightly 55-litre crate, separate paper collection
Waikato District	74 kg	Weekly 55-litre crate, separate paper collection
Dunedin City	77 kg	Fortnightly 240-litre wheeled bin, fortnightly crate for glass
Horowhenua District	81 kg	Weekly crate
Auckland Council	84 kg	Fortnightly 240-litre commingled wheelie bins or 140-litre wheelie bin with separate paper collection
Waimakariri District Council	85 kg	Fortnightly 240-litre wheeled bin, commingled
Hamilton City Council	86 kg	Weekly 45-litre crate, separate paper collection
Palmerston North City	87 kg	Fortnightly 240-litre wheeled bin for commingled materials alternating with 45-litre crate for glass
Christchurch	109 kg	Fortnightly 240-litre wheeled bin

While data on kerbside recycling collections is generally readily available, accurate and reliable data relating to the total quantity of diverted materials, which includes commercial recycling, is not available for most districts.

The current kerbside recycling collection enables householders to put out one 45L crate of recyclables each week, with paper and cardboard beside the crate. However, the average

householder probably has around 2kg each week just of plastic containers²¹ – such as milk and soft drink bottles – and this alone could fill a 45L crate unless very well compacted by the householder. In practice, many households use additional containers such as cardboard boxes, plastic crates or tubs, and plastic bags to contain additional recycling that doesn't fit in to the 45L crate.

7.1.4 Council Bag Share of Kerbside Refuse Market

Limited data currently exists in respect of council kerbside rubbish collection market share, in particular in terms of the quantity of material collected by the private sector, and how much of it relates to domestic waste. Estimates supplied by the Council suggest that around 260 tonnes per year is collected through the council kerbside bag service, while over 400 tonnes are collected by private operators (both domestic and commercial). This would indicate Council has a market share for the domestic and commercial collections of around 43%.

7.1.5 Public Feedback

Ōpōtiki District Council sought feedback from the community on waste issues between 11th and 31st October 2017. The campaign was centred around social media, and sought general feedback. It did not solicit responses on particular issues but rather asked for people's thoughts and ideas. Feedback was received by online form (44 responses), email (8 responses), Facebook comments (22 responses) and physical forms (23 responses) which were placed at the Ōpōtiki i-SITE, Ōpōtiki District Library, ODC office at 108 St John Street and at each of the three RRC.

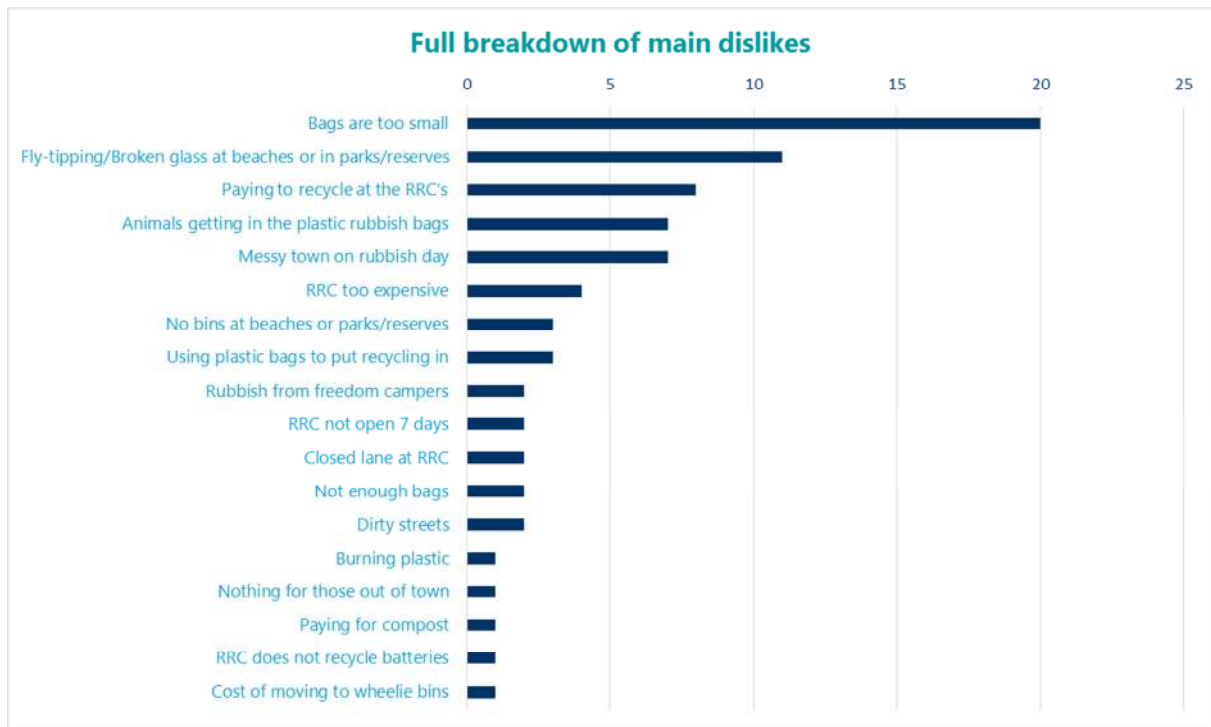
The main themes that emerged were:

- Dislike of the small size of the current black bags
- Desire for wheeled bins for rubbish and recycling
- Illegal dumping, litter etc
- No bins at beaches
- Praise for the RRC layout, cleanliness and efforts to recycle
- Cost of recycling at the RRC

A breakdown of the main comments is shown in the charts below:

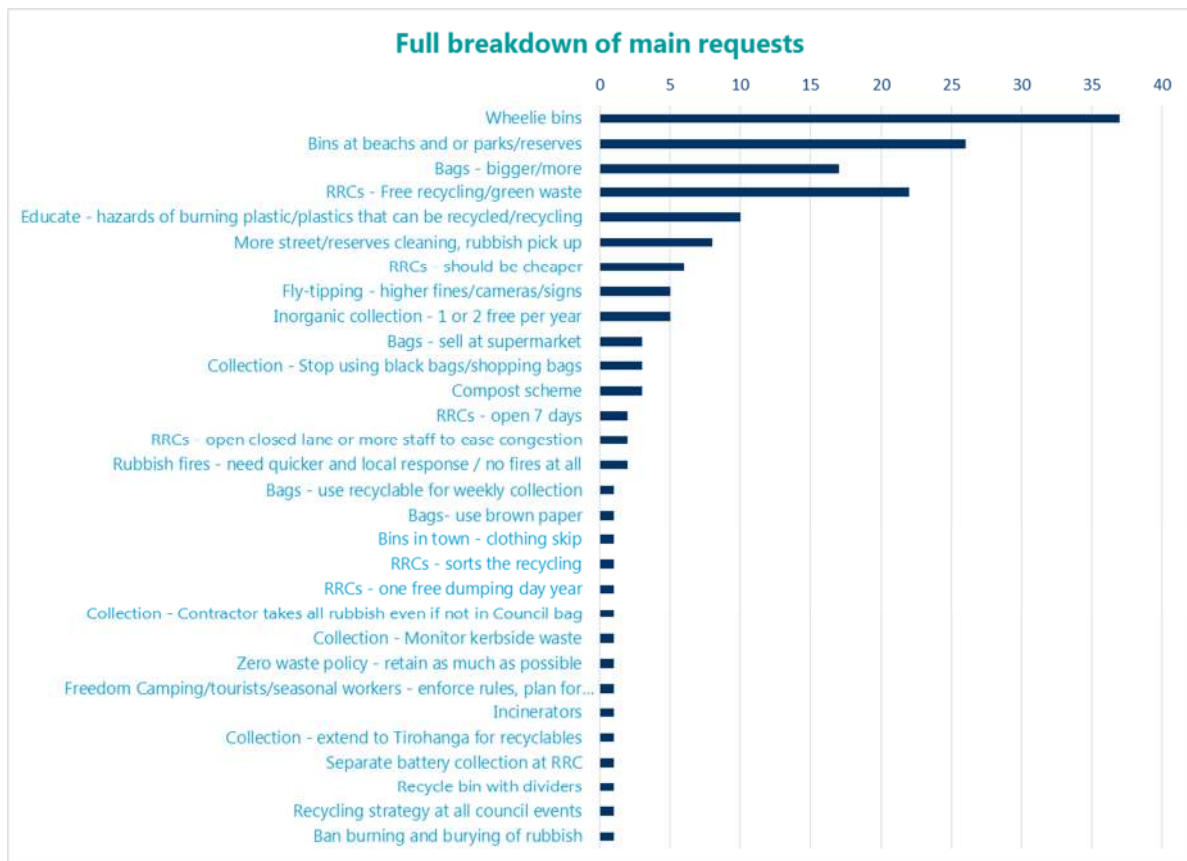
²¹ Based on a range of kerbside waste and recycling data across New Zealand, held by Eunomia.

Figure 13: Full breakdown of main dislikes



Source: Ōpōtiki District Council, Solid Waste Activity Review – Results of Community Feedback. 31 Oct 2017

Figure 14: Full breakdown of main requests



8 Future Demand and Gap Analysis

8.1 Future Demand

There are a wide range of factors that are likely to affect future demand for waste minimisation and management. The extent to which these influence demand could vary over time and in different localities. This means that predicting future demand has inherent uncertainties. Key factors are likely to include the following:

- Overall population growth
- Economic activity
- Changes in lifestyle and consumption
- Changes in waste management approaches

In general, the factors that have the greatest influence on potential demand for waste and resource recovery services are population and household growth, construction and demolition activity, economic growth, and changes in the collection service or recovery of materials.

8.1.1 Population

As noted in section 3.1.4 the population in Ōpōtiki is projected by Statistics NZ to decline in the future, but these projections do not take into account the potential impact of significant economic development initiatives that are underway. Revised projections that do take these factors into account suggest a 30% increase in population over the next 10 years in the ‘Aspirational’ scenario. The projected increases are shown in the table below:

Table 21: Statistics NZ and Aspirational population growth scenarios

	Stats NZ Low	Stats NZ High	Aspirational
2013	8,780	8,780	8,780
2014	8,830	8,830	8,830
2015	8,810	8,810	8,810
2016	8,820	8,820	8,820
2017	8,773	8,873	9,045
2018	8,727	8,927	9,279
2019	8,680	8,928	9,511
2020	8,574	8,930	9,792
2021	8,469	8,932	10,027
2022	8,363	8,934	10,195
2023	8,258	8,936	10,406
2024	8,152	8,930	10,590
2025	8,028	8,925	10,824
2026	7,904	8,919	11,033
2027	7,780	8,913	11,244

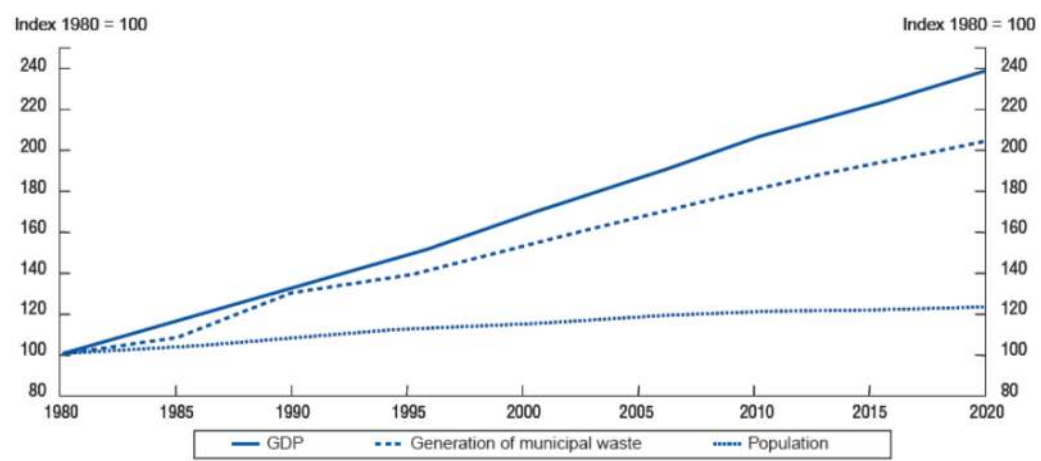
2028	7,657	8,907	11,462
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Source: Martin Jenkins

8.1.2 Economic Activity

For reference, Figure 15 below shows the growth in municipal waste in the OECD plotted against GDP and population.

Figure 15: Municipal Waste Generation, GDP and Population in OECD 1980 - 2020



Source: OECD 2001.

Research from the UK²² and USA²³ suggests that underlying the longer-term pattern of household waste growth is an increase in the quantity of materials consumed by the average household and that this in turn is driven by rising levels of household expenditure.

The relationship between population, GDP, and waste seems intuitively sound, as an increased number of people will generate increased quantities of waste and greater economic activity is linked to the production and consumption of goods which, in turn, generates waste.

Total GDP is also a useful measure as it takes account of the effects of population growth as well as changes in economic activity. The chart suggests that municipal solid waste growth tracks above population growth but below GDP. The exact relationship between GDP, population, and waste growth will vary according to local economic, demographic, and social factors. To be able to use GDP and population as accurate predictors of waste generation requires establishing correlations between changes in these factors and changes in waste generation.

Ideally, co-efficients for each factor would be calculated, with an analysis, such as regression analysis, performed to determine the impact of each of the key factors, and projections conducted from this base data. However in the Ōpōtiki context there is insufficient data on the total quantities of waste generated and historical GDP to conduct any meaningful analysis.

²² Eunomia (2007), *Household Waste Prevention Policy Side Research Programme*, Final Report for Defra, London, England

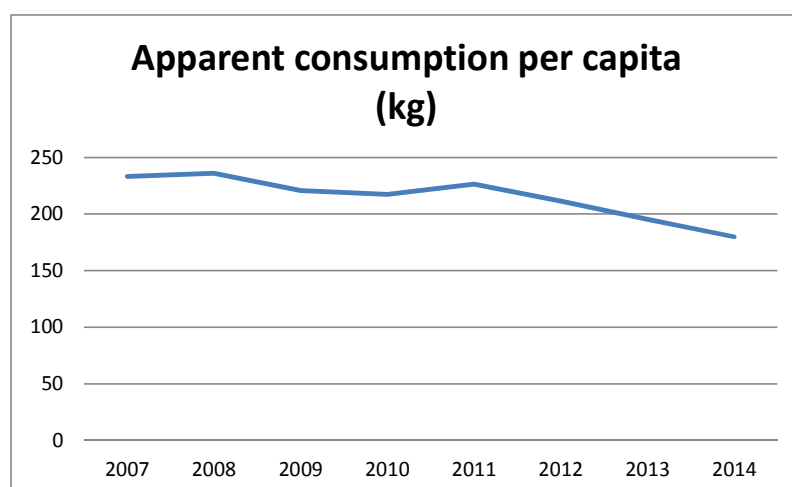
²³ EPA, 1999. *National Source Reduction Characterisation Report For Municipal Solid Waste in the United States*

8.1.3 Changes in Lifestyle and Consumption

Community expectations relating to recycling and waste minimisation are anticipated to lead to increased demand for recycling services.

Consumption habits will affect the waste and recyclables generation rates. For example, there has been a national trend related to the decline in newsprint. In New Zealand, the production of newsprint has been in decline since 2005, when it hit a peak of 377,000 tonnes, falling to 276,000 tonnes in 2011.²⁴ Further indication of the decline in paper consumption comes from the Ministry for Primary Industry statistics shown in Figure 16.

Figure 16: Apparent Paper Consumption per Capita



8.1.4 Changes in Waste Management Approaches

There are a range of drivers that mean methods and priorities for waste management are likely to continue to evolve, with an increasing emphasis on diversion of waste from landfill and recovery of material value. These drivers include:

- Statutory requirement in the Waste Minimisation Act 2008 to encourage waste minimisation and decrease waste disposal – with a specific duty for TAs to promote effective and efficient waste management and minimisation and to consider the waste hierarchy in formulating their WMMPs.
- Requirement in the New Zealand Waste Strategy 2010 to reduce harm from waste and increase the efficiency of resource use.
- Increased cost of landfill. Landfill costs have risen in the past due to higher environmental standards under the RMA, introduction of the Waste Disposal Levy (currently \$10 per tonne) and the New Zealand Emissions Trading Scheme. While these have not been strong drivers to date, there is a strong expectation that within the time period of the WMMP that their values will increase and that this will incentivise diversion from landfill
- Collection systems. In brief, more convenient systems encourage more material. An increase in the numbers of large wheeled bins used for refuse collection, for example, drives

²⁴ http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10833117

an increase in the quantities of material disposed of through them. Conversely, more convenient recycling systems with more capacity help drive an increase in the amount of recycling recovered.

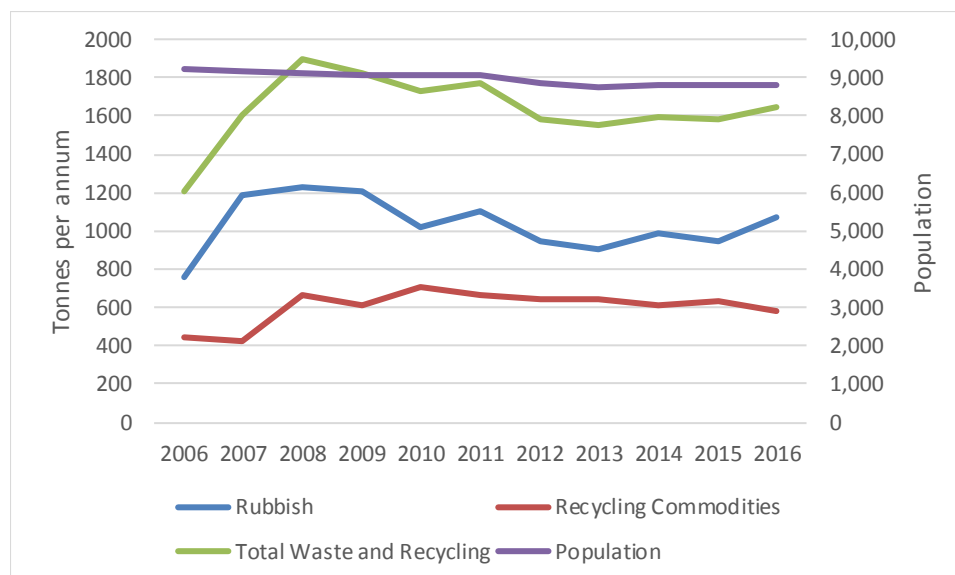
- Waste industry capabilities. As the nature of the waste sector continues to evolve, the waste industry is changing to reflect a greater emphasis on recovery and is developing models and ways of working that will help enable effective waste minimisation in cost-effective ways.
- Local policy drivers, including actions and targets in the WMMP, bylaws, and licensing.
- Recycling and recovered materials markets. Recovery of materials from the waste stream for recycling and reuse is heavily dependent on the recovered materials having an economic value. This particularly holds true for recovery of materials by the private sector. Markets for recycled commodities are influenced by prevailing economic conditions and most significantly by commodity prices for the equivalent virgin materials. The risk is linked to the wider global economy through international markets.

8.1.5 Summary of Demand Factors

The analysis of factors driving demand for waste services in the future suggests that changes in demand are most likely to be driven by shifts in population and economic development. If new waste management approaches are introduced, this could shift material between disposal and recovery management routes.

The chart below shows population plotted against available data on waste and recycling over time:

Figure 17: Population and Waste Quantities Over Time



Regression analysis on the correlation between total waste and recycling and population provides an r value of 0.499 at a 95% confidence interval.²⁵ This suggests a weak correlation between waste quantities and population based on available data. However, we do not think the available waste data is sufficiently complete, as it does not account for waste going out of district, other recovered materials, waste to cleanfill, and farm waste.

²⁵ An R squared value of 1 is a perfect correlation, while a value of 0 is no correlation.

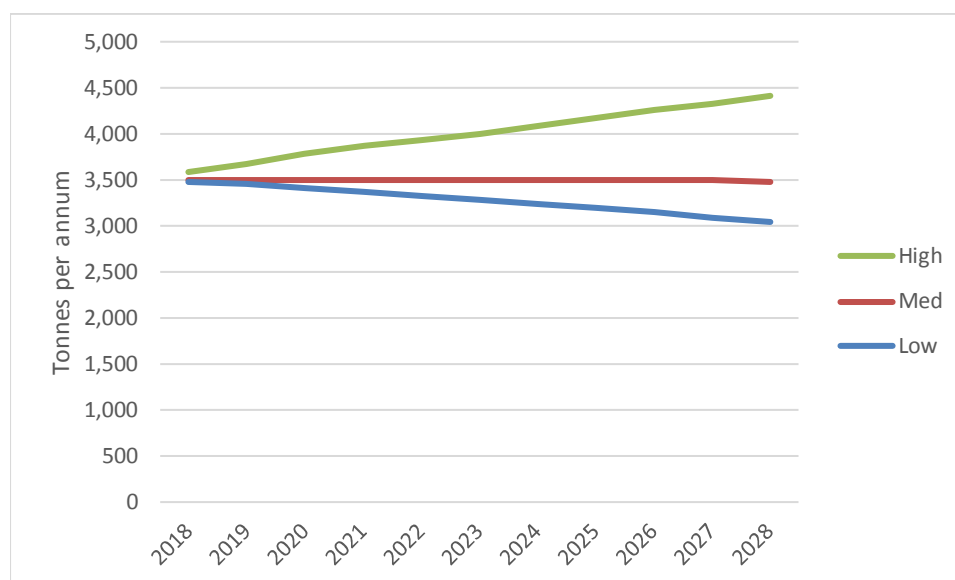
Population and economic growth will drive moderate increases in the waste generated. The biggest change in demand is likely to come about through changes within the industry, with economic and policy drivers leading to increased waste diversion and waste minimisation.

8.1.6 Projections of Future Demand

The base data for constructing the projection was taken from the waste to Class 1 landfill and recovered material estimates contained in section 6.7.

In the absence of reliable local data on the relationships between quantities of waste generated over time and indices such as population and GDP, projections of future waste growth have been based on the available population projections. Projections produced for Ōpōtiki District Council which take into account the impact of economic development initiatives can be taken to serve as a proxy for a combination of population and GDP projections, and are therefore potentially the most useful in this context. The outcome of the future demand projection is shown in the chart below.

Figure 18: Projections for Waste to Class 1 Landfill and Recovery 2018 -2028



It is notable that there is quite significant divergence between the scenarios in the quantity of material that could be required to be managed. The projections suggest that in the low scenario there would be a decrease in waste generation, while in the medium scenario waste generation is stable, and in the high scenario it could grow substantially by the order of 27%.

It is useful to consider projections for future household growth as the numbers of households can relate directly to the delivery of council collection services and facilities and the demand for these.

Table 22: Household Projections

	Stats NZ Low	Stats NZ High	Aspirational
2018	3,659	3,743	3,891
2019	3,675	3,780	4,027
2020	3,661	3,813	4,181
2021	3,645	3,844	4,315
2022	3,625	3,873	4,419

2023	3,604	3,900	4,541
2024	3,569	3,909	4,636
2025	3,524	3,918	4,752
2026	3,483	3,930	4,861
2027	3,440	3,941	4,972
2028	3,401	3,956	5,091

Source: Martin Jenkins

In the 'low' scenario, household numbers fall slightly from current levels. Most of this drop would be expected to be in the more remote rural communities, and this would not affect council kerbside service demand significantly. The medium household projection suggests a rise in households of around 10% on current numbers by 2028. This could have an impact on the demand for kerbside services. The high growth scenario on the other hand could add approximately 1500 households to the district, with the majority of these likely to be within the kerbside collection area. There is potential for the number of households requiring services to increase in the order of 75% over the next 10 years.

8.2 Future Demand – Gap Analysis

The aim of waste planning at a territorial authority level is to achieve effective and efficient waste management and minimisation. The following 'gaps' have been identified:

8.2.1 Waste Streams

The most significant initial challenge for Ōpōtiki is a lack of comprehensive data that can enable it to understand where material is generated and how it is managed from that point. Available data is concentrated on the streams that are controlled by Council, but investigations and analysis carried out for this waste assessment suggest that this may only be a fraction of the total waste generated in the district. In particular there are large quantities of material going to cleanfill disposal, on-farm disposal, and out of district through private operators. It should be noted that this is not an issue unique to Ōpōtiki by any means and is common across most authorities. The lack of data in Ōpōtiki does however extend to a lack of information on what activities are responsible for generating waste (e.g. households, commercial and industrial, construction and demolition, landscaping etc.), and the composition of the waste that is generated – in particular that which is not currently recovered.

Based on the available information however the key waste issues which should be addressed in the Waste Management and Minimisation Plan are listed below

- If the population and number of households increase in line with the projections that account for economic development, then this could significantly increase the demand for services and the pressure on facilities
- Organic waste, particularly food waste both from domestic and commercial properties, could account for up to half of collected residual waste by weight
- More capacity is required for kerbside recycling, which could increase the capture of recyclables both from domestic and commercial properties
- Farm waste is likely to make up a substantial proportion of the total waste that is currently being generated in the district. Further work to increased awareness of the problems associated with improper disposal may drive demand for better services

- Construction and demolition waste, in particular timber, is a significant part of the waste stream which may be able to be recovered to a greater extent. Economic activity and population growth could lead to a significant increase in this waste stream in the future which will require planning.
- E-waste collection and processing capacity in the district is well set up currently but will need to expand with future demand
- Biosolids are currently well managed and it is assumed current arrangements will be able to continue
- Waste tyres may not be a large proportion of the waste stream; however the effectiveness of the management of this waste stream is unknown. Issues with management of this waste stream have recently been highlighted nationally
- There will need to be attention paid to the facilities provided for tourists. Issues such as bins on beaches, freedom camping and litter and illegal dumping will all be important to address.
- Ōpōtiki, by nature of its relative geographic isolation, faces challenges in accessing appropriate facilities for disposal and processing of material. While there are facilities that can be accessed with the region for most waste streams, transport distances, and hence costs mean that recovery and disposal options all have substantial costs attached
- Forthcoming developments relating to aquaculture and the Ōpōtiki harbour will result in a significant increase in waste streams associated with shellfish processing, and some waste streams associated with water-based tourism activities. These developments will take place during the term of the new WMMP.

Infrastructure upgrades to manage the increased quantities and new waste streams may be required.

8.2.2 Hazardous Wastes

Household quantities of hazardous wastes are primarily managed by the Council through the Resource Recovery Centre. Hazardous wastes are logged as they are received, and stored in the hazardous waste store until a full load is accumulated. The disposal or recovery of the hazardous wastes is contracted out as required. This arrangement is functional for the present, but may need to be reviewed in light of increased demand, including how hazardous waste from farms is managed in the future

8.2.2.1 Asbestos Removal

Some commonly used products that contain asbestos include roof tiles, wall claddings, fencing, vinyl floor coverings, sprayed fire protection, decorative ceilings, roofing membranes, adhesives and paints. The most likely point of exposure is during building or demolition work.

Asbestos can be managed at the Ōpōtiki RRC with prior notice.

8.2.2.2 Medical Waste

The Pharmacy Practice Handbook states:²⁶

4.1.16 Disposal of Unused, Returned or Expired Medicines

²⁶ <https://nzpharmacy.wordpress.com/2009/06/09/disposal-of-unwanted-medicines/>

Members of the public should be encouraged to return unused and expired medicines to their local pharmacy for disposal. Medicines, and devices such as diabetic needles and syringes, should not be disposed of as part of normal household refuse because of the potential for misuse and because municipal waste disposal in landfills is not the disposal method of choice for many pharmaceutical types. Handling and disposal should comply with the guidelines in NZ Standard 4304:2002 – Management of Healthcare Waste.

Medicines, needles, syringes etc. can be dropped off at Ōpōtiki Medical Centre, King Street, Ōpōtiki, or a local health centre. The medical waste that is collected at these sites is picked up by the District Health Board for management. There are not perceived to be significant issues with this approach at present. It is logical for the DHB to take an active role in managing medical wastes, and to ensure adequate service provision in the future.

8.2.2.3 E-waste

Without a national product stewardship scheme, e-waste treatment and collection system will be sub-optimal as it is costly to process and recover much of the material from electronics, such as the plastics. The current process of local disassembly at the RRC and recovery of valuable materials appears adequate for existing needs. The situation will need to be reviewed regularly in light of changes in demand, product types, and any future product stewardship schemes.

9 Initial Review of the 2012 Waste Management and Minimisation Plan

The last WMMP for Ōpōtiki district was prepared in 2012. The Waste Minimisation Act requires that each Waste Assessment include a review of the last WMMP, including an assessment of data, key issues from the last WMMP, any other issues not addressed, and an update on the action plan from the last WMMP including progress.

9.1 Data

There is data presented on the quantity of waste and waste sources, and quantities of diverted material. However, as with the data available for this Waste Assessment, the available data is incomplete and includes estimates for important fractions. There is no composition data on residual waste, no accurate data on the activity source of waste, and no information on waste to non-levied disposal. No information is provided on council market share and only limited information on trends over time.

9.2 Key Issues

The key issues identified in the last WMMP were:

- The ongoing availability of a landfill facility that is prepared to accept the District's residual waste and the location of the facility which, for current waste disposal, is located outside the District at Tirohia at a cost the community can afford.
- Potential for recyclable materials entering the residual waste stream without continued Council monitoring and involvement.

9.3 Other Issues Not Addressed

Key issues that were not addressed in the last WMMP include:

- Farm waste
- Cleanfill
- The size of containers for household rubbish collection
- The size and type of containers for kerbside recycling collections
- H&S manual handling, dog strike, competition with private sector service...?
- Freedom camping
- Bins at beaches
- Litter, and litter bins
- Illegal dumping, burning

9.4 New Guidance

New guidance from MfE on Waste Management and Minimisation Planning was released in 2015. The 2012 WA and WMMP, while consistent with the guidance at the time they were written, do not fully align with the new (2015) MfE Guidance. The new guidance places more emphasis on funding of plans, inclusion of targets and how actions are monitored and reported. The 2012 documents also did not provide data in accordance with the National Waste Data Framework, as suggested by the new guidance.

9.5 Actions

9.5.1 Council Role

- Develop educational material
- Retain kerbside collection
- Continue to operate RRCs
- Operate reuse shops on koha basis
- Process residual waste for shipping to landfill
- Process recyclable materials for sale
- Improve quality of recyclable processing
- Litter collection
- Collect hazardous and e-wastes
- Work with community

9.5.2 Key Initiatives

- Improve recovery of material from residual waste
- Investigate kitchen waste collection
- Work with other councils on common initiatives
- Review solid waste bylaw 2008
- Advocate for product stewardship nationally

9.5.3 Targets

The Council set two targets for itself in the 2012 WMMP. These were:

Target 1: Reduce the volume of residual waste for disposal to landfill by 10% by 2018 over the 2011 level.

Target 2: Increase the volume of recyclable materials collected at Council's Resource Recovery Centres by 10% by 2018 over the 2011 level.

The actions and targets in the plan focused around maintaining of existing operations and services and making incremental improvements. The Waste Assessment had not identified substantial strategic issues that required a significant change of direction from what had been working well up to that point.

9.6 Implementation Plan

The implementation plan identified key actions, methods to address the issues, funding sources, and monitoring and reporting metrics and frequencies. The responsibility for all the actions identified was with Council. The table below shows progress made on individual actions.

Table 23: Review of 2012 WMMP Action Plan

Action Plan	Action Detail (timeframe, funding)	Progress
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Method 1 – develop and deliver educational and promotional programmes	Council will continue to raise awareness in the community about what householders and businesses can do to minimise their waste, including reducing the harmful effects of waste on human health and the environment and the services that the Council provides. This includes: continuing educational visits at schools	Awareness is raised in the community through a number of different methods. Most recently, Council have undertaken an extensive engagement exercise seeking to raise awareness of waste issues and explore community issues and preferences.
	Regular community awareness programmes through Council’s panui	Completed
	The placement of signage and information at Council’s resource recovery centres	Completed and reviewed on an ongoing basis
	Encourage businesses to establish best practice methods for minimising their waste	Some work undertaken
	Provide information on Council’s website	Completed
Action Plan 2 – Residual waste reduction and increasing recovery of recyclable materials	Method 2: Maintain a user-pays system for residual waste disposal and collection of recyclables at council’s three resource recovery centres	Achieved
	Method 3: Maintain kerbside collection of residual waste and recyclable materials in the Ōpōtiki township and the Woodlands/Hikutaia area using: <ul style="list-style-type: none"> • 25L plastic bags for residual waste • 45L recycling bins 	Achieved
	Method 4: Continue participation in regional and national e-waste collections as a means of encouraging diversion of e-wastes from landfill as a free service	Since regional and national e-waste collections no longer take place, Council provides an e-waste disposal service through the RRC on a cost-recovery basis.
	Method 5: Continue participation in regional and nationally organised hazardous waste collections as a means of diversion of hazardous wastes from landfill as a free service	Since regional and national hazardous waste collections no longer take place, Council provides a household hazardous waste disposal service through the RRC.
	Method 6: Continue the collection of whiteware and scrap metal for recycling	Achieved
Action Plan 3 – Collection of litter from the town centre and clean up of illegal dumping sites in the district	Method 7: Continue litter collection services and clean-up and enforcement for illegal dumping, including the removal of abandoned vehicles	Completed – some enforcement action undertaken where evidence can be found to indicate responsibility.

Action Plan 4 – Monitoring and reporting and tracking progress towards achievement of targets	<p>Method 8: Collect waste data in a consistent manner and measure progress towards targets</p> <ul style="list-style-type: none"> Collect information on the volume of residual waste collected and processed at the Ōpōtiki RRC and disposed of to landfill 	<p>Completed</p>
	<ul style="list-style-type: none"> Collect information on the composition and volume of recoverable materials collected and processed at the Ōpōtiki RRC for sale to agent purchasers 	<p>Completed</p>
	<ul style="list-style-type: none"> Work with private waste collecting contractors and obtain waste quantity data 	<p>A District bylaw that enables licensing of operators, with data collection as part of the licensing requirements, is required to achieve this. This work is being progressed through the Bay of Plenty and Waikato local authority waste forum.</p>
	<ul style="list-style-type: none"> Record any continuous improvement made or new initiatives implemented 	<p>Completed</p>
	<p>Method 9: report on performance in achieving waste minimisation</p> <ul style="list-style-type: none"> Council will report on its performance in achieving waste minimisation to the community 	<p>Completed</p>
	<p>Council will report to the waste advisory board (as required under section 86 (c) of the Waste Minimisation Act) on an annual basis including how it spends its waste levy and performance in achieving waste minimisation with the services, facilities and activities provided or funded with its waste management and minimisation plan</p>	<p>Completed</p>
Action Plan 5 – Collaboration, new initiatives and continuous improvement	<p>Method 10: Investigate and where appropriate implement new procedures and processes for sorting recyclable materials from residual waste at the RRC</p>	<p>Completed</p>
	<p>Method 11: Investigate opportunities for the separation of kitchen wastes from residual wastes and recyclable materials for kerbside collection</p>	<p>An investigation was completed in 2015 and recommendations were made. The issue of appropriate food waste management has been carried forward to the new WMMP.</p>

	Method 12: work collaboratively with other councils in the Bay of Plenty developing and where appropriate implementing waste management initiatives on a regional basis	Council waste staff participate in the Waikato and Bay of Plenty local authority waste officers forum. Several projects have been completed through this group.
	Method 13: Review the solid waste bylaw 2008 to assess whether it is consistent with this WMMP once it is adopted	The solid waste bylaw review was put on hold pending the outcomes of the Bay of Plenty and Waikato regional solid waste bylaw project.
Action Plan 6 – Advocacy on product stewardship schemes	Method 14: Advocate at a national level on product stewardship schemes as opportunities are presented	Completed, via the Waikato and Bay of Plenty forum

9.7 Progress

Most of the identified actions related to ongoing operations. These were all carried out over the term of the plan.

The key element that was not progressed was a review of the solid waste bylaw 2008. Also, while an investigation was carried out into food waste collections (in 2015), the recommendations from this review were not implemented.

The date for completion of the targets within the plan has not been reached yet. However the level of change targeted was relatively low and could be within annual fluctuations. The targets related to waste going to landfill, and recyclables materials – with a 10% improvement expected in each over the 2011 figures. The table below shows these figures for 2011 and the most recent figure, with the % improvement.

Table 24: Progress against waste reduction targets from the previous plan

Measure	2011	Latest	% improvement
Residual waste disposed of to landfill	1,100	1,070	3%
Recyclable materials collected at resource recovery centres (including kerbside recycling)	1,431	1,662	16%

This shows that the target for increasing the amount that is recycled was achieved – and was actually well exceeded.

The target for reducing waste to landfill however was not. This may partly be due to the impact of the global financial crisis during 2012-2012, which depressed consumption and therefore waste production globally. As a result, a 10% reduction on this baseline during more buoyant economic conditions is challenging.

10 Statement of Options

This section sets out the range of options available to the Council to address the key issues that have been identified in this Waste Assessment. An initial assessment is made of the strategic importance of each option, the impact of the option on current and future demand for waste services, and the Council's role in implementing the option. Options presented in this section would need to be fully researched, and the cost implications understood before being implemented.

10.1 Key Advantages/Key Issues to Be Addressed by WMMP

10.1.1 Data

There is reasonably reliable data on the waste sent by Council out of the district to landfill disposal, and also on the quantities of materials recovered; based on weighbridge data and figures provided by operators.

The figures provided for waste to class 2-4 landfills are based on estimates provided by site operators. The estimate for farm waste is based on data from a relatively small study of farms in Canterbury, Waikato, and the Bay of Plenty. There is some composition data available, but this only applies to kerbside-collected waste and is focused on 'kitchen waste' (usually known as food waste or putrescible organic waste).

There is limited or no data on commercial and private rubbish and recycling collections, and composition of waste streams other than kerbside landfill waste.

10.1.2 Council Services – Kerbside Collections

The kerbside collection services are well-embedded, with few changes made for many years to the user-pays rubbish collection from 25L bags and kerbside recycling collection that are in place. The structure of the collections enables glass to be colour separated, which ensures the maximum return, but does raise some concerns with respect to manual handling health and safety issues. The service has recently been extended to some suburban/rural properties.

There are ongoing issues with litter problems resulting from roaming animals (usually dog strike) opening rubbish bags and spreading the contents on the street. Despite intensive dog control efforts, this continues to be a problem. Dog ownership in the district is very high compared with other parts of the country.

The kerbside recycling capacity is somewhat restricted in capacity, with a 45L crate for all recyclables collected weekly apart from paper and cardboard, which can be placed beside the crate. While the individual rubbish bags are restricted in capacity at 25L and 52 bags provided each year, additional bags can be purchased for \$1 each. This may cause difficulties for lower income and large households.

A food waste collection would ease the pressure for these households, enabling them to divert more waste from the rubbish collection and therefore from landfill. Increasing diversion from landfill for the district would help to minimise future exposure to increasing costs of landfilling, and associated charges such as the landfill levy and ETS implications.

Altering the rubbish collection to a wheeled-bin based collection would address the current issues with dog strike. However a wheeled bin collection is more expensive, due to the cost of the bins

themselves and the vehicles required to collect them, and any change would need to be managed carefully to ensure that the quantity of waste being sent to landfill doesn't increase.

10.1.3 Council Services - Facilities

The council- run RRC in Ōpōtiki accepts a very wide range of materials. The Council also receives a good return on recyclable materials, due to the accuracy and extent of sorting that takes place. This helps to offset the high costs of transport as Ōpōtiki is at such a distance from most processors and end markets.

There may be an opportunity to expand the reuse and refurbishing elements at the Ōpōtiki RRC, perhaps in conjunction with providing training and business incubation opportunities to the local community. There is signage at the RRC, but this is somewhat inconsistent and could be improved to be more noticeable, and consistent within the centre and with national branding and guidelines.

There is no weighbridge at the RRC, which makes it difficult to collect accurate data on waste and materials coming into the site. There is a charge for recycling, albeit small, which may be necessary given the site is used by commercial organisations as well as householders. However, the capacity of the kerbside recycling collection is quite restrictive and the charge for recycling at the RRC may make it less desirable for householders to separate out additional recycling and bring it to the RRC instead.

10.1.4 Aquaculture and Harbour Development

The burgeoning aquaculture industry, and the associated developments planned for the harbour, are at a stage where waste management and minimisation implications can easily be assessed and managed.

However the potential impact of these projects on waste flows and material types in the district could be extremely significant, and there is a need for these projects to be addressed specifically in the forthcoming WMMP. Council has a role to work alongside the iwi and commercial organisations involved in these projects to ensure that waste types and quantities are assessed and planned for in a way that supports the vision, goals and objectives of the WMMP.

10.1.5 Landfill Disposal

The current Class 1 disposal site used by Council and many other waste operators in the district may reach capacity within the next ten years. While there are alternatives available, it would be sensible for Council to monitor the situation closely, and continue to work with other councils in the region on a wider strategic approach to this and other waste facilities.

10.1.6 Farm Waste

It is likely that at present, much farm waste in the district is managed using the 'three Bs' – burning, burial, or bulk storage on private property. There is relatively little known about the current management of farm waste; nor what types of waste there might be and what quantities.

A national project is nearing completion which seeks to identify the best management options for farm wastes which could be implemented nationally. Council should monitor this project and look to implement the recommendations and outcomes from this project.

10.1.7 Seasonal Wastes

Ōpōtiki district experiences changes in waste patterns at certain times of the year, due to freedom campers and seasonal workers. This means that services which previously were appropriate may no longer cope with demand; or that services are absent altogether.

Particular issues are noted at coastal locations that are used by locals and visitors for ‘freedom camping’ during the summer months.

There are also a number of accommodation options in the district that are used predominantly by seasonal workers at peak times such as kiwifruit picking in late summer/autumn. These businesses need to plan for and manage the wastes created by their customers.

10.2 Regulation

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
R1	Retain existing bylaw	Existing level of regulation is maintained	Social/cultural: no new impacts Environmental: the bylaw as it stands can prevent some unwanted practices Economic: no new impacts	No new impacts	Continue to enforce the existing bylaw provisions
R2	Review existing bylaw to ensure alignment with any changed services, and incorporate standard clauses from the Bay of Plenty/Waikato template bylaw as appropriate	Ensuring regulation is aligned to the strategic outcomes of the WMMP, as required by the WMA. Enables Council to have involvement in any future cross-regional licensing and data collection work.	Social/cultural: good community consultation during any review would have a positive social and cultural impact. Environmental: regulation can prevent unwanted practices such as illegal dumping Economic: there can be a financial impact from being required to manage waste more responsibly.	A bylaw can be used to ensure that services are used properly, and could protect against negative environmental impacts due to incorrect services use or illegal dumping.	Conduct review following the adoption of the new WMMP and adopt revised bylaw if necessary

10.3 Measuring and Monitoring

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future	Councils' Role
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			Demand		
M1	Status quo – records of tonnages sent for diversion and landfill disposal from Council’s facilities	None	No new strategic impacts	No impact on current or future demand	Maintain existing approach
M2	Increase monitoring to provide more information in areas such as composition of kerbside waste and waste to landfill; and rural, farm and commercial wastes	Addresses the current lack of data, or quality of data, in various areas	Social/cultural: could raise awareness Environmental: services could be improved enabling more waste to be diverted from landfill. Economic: additional monitoring would come at a cost. Increased diversion from landfill could reduce costs.	Availability of better and more data could enable services to be altered to better address need, ensuring that more waste is diverted from landfill	Council to fund and manage research and incorporate the results in to future waste assessments and WMMPs
M3	Develop a data strategy that is aligned with the national waste data framework will ensure that Council is collecting accurate and appropriate data to use in future waste assessments. This may involve carrying out ‘SWAP’ composition studies, and collecting data on quantity of wastes from kerbside rubbish and	Addresses the current lack of data, or quality of data, in various areas	Social/cultural: could raise awareness Environmental: services could be improved enabling more waste to be diverted from landfill. Economic: additional monitoring would come at a cost. Increased diversion from landfill could reduce costs.	Availability of better and more data could enable services to be altered to better address need, ensuring that more waste is diverted from landfill	Council to fund and manage research and incorporate the results in to future waste assessments and WMMPs

recycling collections.

10.4 Education and Engagement

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
EE1	Status quo	None	No new strategic impacts	Little impact on current or future demand	Maintain existing approach
EE2	Extend education and engagement to provide additional information on existing services and, in particular, about new services should these be introduced	Community is well-informed about available services and how to use them	<p>Social/cultural: community will be more aware of options, more engaged in waste management and should take more ownership of their waste.</p> <p>Environmental: better use of services would reduce waste to landfill.</p> <p>Economic: providing more frequent and extensive information to the community would come at a cost.</p>	Better and more extensive use of services could ensure more waste is diverted from landfill	Council to fund and implement extended education and engagement campaigns, particularly when/if new services are introduced

10.5 Collection & Services

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
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CS1	Status quo – existing kerbside collections.	None	No new impacts	No impact	Maintain existing services
CS2	Improve existing services by increasing the capacity of the recycling collection through provision of an additional larger container	Will enable some householders to recycle more; other householders won't need to use own containers for additional recycling	Social/cultural: an improved service will be provided to the community Environmental: should result in a slight increase in waste being diverted from landfill Economic: increased cost of additional recycling containers should be balanced by reduced disposal costs.	A smaller quantity of additional waste will be diverted from landfill.	Purchase and deliver additional recycling crates to householders receiving the kerbside collection service
CS3	Improve existing services by adding a kerbside food waste collection	Food waste can be diverted from landfill and instead processed into a beneficial product	Social/cultural: an additional service will be provided to the community Environmental: waste diverted from landfill will increase significantly Economic: the collection is approximately cost-neutral or will come at an additional cost to householders, depending on the processing option available	A significant additional quantity of waste will be diverted from landfill	Purchase and deliver appropriate containers for householders receiving the kerbside collection service, integrate collection into the existing collection service, and arrange appropriate processing.
CS4	Continue involvement	Dependent on agreed	Dependent on agreed	Dependent on agreed	Dependent on agreed

	in the cross-regional food waste investigation project and implement any agreed outcomes.	outcomes	outcomes	outcomes	outcomes
CS3	Amend existing services by providing a small (40L – 80L) wheeled bin for rubbish collections rather than the existing 25L bags	The preference of some householders for a wheeled bin will be accommodated. Some issues with dog strike and litter from rubbish will be reduced (although not prevented)	Social/cultural: an improved service will be provided to those in the community that prefer wheeled bins Environmental: less material will be diverted through recycling, and the quantity of waste sent to landfill will increase slightly Economic: costs of collection will increase due to the cost of collection vehicles for the wheeled bins, the cost of the containers, cost of the additional waste sent to landfill, and the reduced income from diverted material.	More waste will be sent to landfill than currently.	Purchase and deliver wheeled bins to householders; and tender for an appropriate collection service.
CS4	As above, with the addition of a weekly kerbside food waste collection, enabling the rubbish collection to	The preference of some householders for a wheeled bin will be accommodated. Some issues with dog	Social/cultural: an improved service will be provided to those in the community that prefer wheeled bins,	A significant additional quantity of waste will be diverted from landfill	Purchase and deliver appropriate containers and wheeled bins to householders; and tender for an

	become a fortnightly collection	strike and litter from rubbish will be reduced (although not prevented) Food waste can be diverted from landfill and instead processed into a beneficial product	with an additional food waste collection service. Environmental: the quantity of waste diverted from landfill will increase significantly. Economic: costs of collection will increase due to the cost of collection vehicles for the wheeled bins and the cost of the containers.	appropriate collection service.
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10.6 Infrastructure

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
IN1	Maintain existing infrastructure	No new issues	No new impacts	No new impacts	No change in role
IN2	Extend existing infrastructure to enable diversion and processing of more materials	More waste can be diverted from landfill and accommodation made for possible future increases in waste streams	Social/cultural: community would have access to new infrastructure. Environmental: additional waste would be diverted from landfill, particularly looking ahead several years.	More waste should be diverted from landfill.	Council should work collaboratively with industry and iwi to identify future waste streams and quantities, and support better management of these by identifying and making available appropriate

Economic: Possible reduced costs to the community as a whole depending on what new infrastructure is developed.

infrastructure.

11 Statement of Council's Intended Role

11.1 Statutory Obligations and Powers

Councils have a number of statutory obligations and powers in respect of the planning and provision of waste services. These include the following:

- Under the WMA each Council “must promote effective and efficient waste management and minimisation within its district” (s 42). The WMA requires TAs to develop and adopt a Waste Management and Minimisation Plan (WMMP).²⁷
- The WMA also requires TAs to have regard to the New Zealand Waste Strategy 2010. The Strategy has two high levels goals: ‘Reducing the harmful effects of waste’ and ‘Improving the efficiency of resource use’. These goals must be taken into consideration in the development of the Council’s waste strategy.
- Under Section 17A of the Local Government Act 2002 (LGA) local authorities must review the provision of services and must consider options for the governance, funding and delivery of infrastructure, local public services and local regulation. There is substantial cross over between the section 17A requirements and those of the WMMP process in particular in relation to local authority service provision.
- Under the Local Government Act 2002 (LGA) Councils must consult the public about their plans for managing waste.
- Under the Resource Management Act 1991 (RMA), TA responsibility includes controlling the effects of land-use activities that have the potential to create adverse effects on the natural and physical resources of their district. Facilities involved in the disposal, treatment or use of waste or recoverable materials may carry this potential. Permitted, controlled, discretionary, non-complying and prohibited activities and their controls are specified within district planning documents, thereby defining further land-use-related resource consent requirements for waste-related facilities.
- Under the Litter Act 1979 TAs have powers to make bylaws, issue infringement notices, and require the clean-up of litter from land.
- The Health Act 1956. Health Act provisions for the removal of refuse by local authorities have been repealed by local government legislation. The Public Health Bill is currently progressing through Parliament. It is a major legislative reform reviewing and updating the Health Act 1956, but it contains similar provisions for sanitary services to those currently contained in the Health Act 1956.
- The Hazardous Substances and New Organisms Act 1996 (the HSNO Act). The HSNO Act provides minimum national standards that may apply to the disposal of a hazardous substance. However, under the RMA a regional council or TA may set more stringent controls relating to the use of land for storing, using, disposing of or transporting hazardous substances.
- Under current legislation and the new Health and Safety at Work Act the Council has a duty to ensure that its contractors are operating in a safe manner.

²⁷ The development of a WMMP in the WMA is a requirement modified from Part 31 of the LGA 1974, but with even greater emphasis on waste minimisation.

The Council, in determining their role, needs to ensure that their statutory obligations, including those noted above, are met.

11.2 Overall Strategic Direction and Role

The overall strategic direction and role is presented in the Waste Management and Minimisation Plan.

12 Statement of Proposals

Based on the options identified in this Waste Assessment and the Council's intended role in meeting forecast demand a range of proposals are put forward. Actions and timeframes for delivery of these proposals are identified in the Draft Waste Management and Minimisation Plan.

It is expected that the implementation of these proposals will meet forecast demand for services as well as support the Council's goals and objectives for waste management and minimisation. These goals and objectives will be confirmed as part of the development and adoption of the Waste Management and Minimisation Plan.

12.1 Statement of Extent

In accordance with section 51 (f), a Waste Assessment must include a statement about the extent to which the proposals will (i) ensure that public health is adequately protected, (ii) promote effective and efficient waste management and minimisation.

12.1.1 Protection of Public Health

The Health Act 1956 requires the Council to ensure the provision of waste services adequately protects public health.

The Waste Assessment has identified potential public health issues associated with each of the options, and appropriate initiatives to manage these risks would be a part of any implementation programme.

In respect of Council-provided waste and recycling services, public health issues will be able to be addressed through setting appropriate performance standards for waste service contracts and ensuring performance is monitored and reported on, and that there are appropriate structures within the contracts for addressing issues that arise.

Privately-provided services will be regulated through local bylaws.

Uncontrolled disposal of waste, for example in rural areas and in cleanfills, will be regulated through local and regional bylaws.

It is considered that, subject to any further issues identified by the Medical Officer of Health, the proposals would adequately protect public health.

12.1.2 Effective and Efficient Waste Management and Minimisation

The Waste Assessment has investigated current and future quantities of waste and diverted material, and outlines the Council's role in meeting the forecast demand for services.

It is considered that the process of forecasting has been robust, and that the Council's intended role in meeting these demands is appropriate in the context of the overall statutory planning framework for the Council.

Therefore, it is considered that the proposals would promote effective and efficient waste management and minimisation.

Appendices

A.1.0 Medical Officer of Health Statement

TBC

A.2.0 Glossary of Terms

Class 1-4 Landfills	Classification system for facilities where disposal to land takes place. The classification system is provided in A.2.1 below for reference.
Cleanfill	A cleanfill (properly referred to as a Class 4 landfill) is any disposal facility that accepts only cleanfill material. This is defined as material that, when buried, will have no adverse environmental effect on people or the environment.
C&D Waste	Waste generated from the construction or demolition of a building including the preparation and/or clearance of the property or site. This excludes materials such as clay, soil and rock when those materials are associated with infrastructure such as road construction and maintenance, but includes building-related infrastructure.
Diverted Material	Anything that is no longer required for its original purpose and, but for commercial or other waste minimisation activities, would be disposed of or discarded.
Domestic Waste	Waste from domestic activity in households.
ETS	Emissions Trading Scheme
ICI	Industrial, Commercial, Institutional
Landfill	A disposal facility as defined in S.7 of the Waste Minimisation Act 2008, excluding incineration. Includes, by definition in the WMA, only those facilities that accept 'household waste'. Properly referred to as a Class 1 landfill.
LGA	Local Government Act 2002
Managed Fill	A disposal site requiring a resource consent to accept well-defined types of non-household waste, e.g. low-level contaminated soils or industrial by-products, such as sewage by-products. Properly referred to as a Class 3 landfill.
MfE	Ministry for the Environment
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
NZ	New Zealand
NZWS	New Zealand Waste Strategy

Putrescible, garden, greenwaste	Plant based material and other bio-degradable material that can be recovered through composting, digestion or other similar processes.
RRP	Resource Recovery Park
RTS	Refuse Transfer Station
Service Delivery Review	As defined by s17A of the LGA 2002. Councils are required to review the cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good-quality local infrastructure, local public services, and performance of regulatory functions. A review under subsection (1) must consider options for the governance, funding, and delivery of infrastructure, services, and regulatory functions.
TA	Territorial Authority (a city or district council)
Waste	Means, according to the WMA: <ul style="list-style-type: none"> a) Anything disposed of or discarded, and b) Includes a type of waste that is defined by its composition or source (for example, organic waste, electronic waste, or construction and demolition waste); and c) To avoid doubt, includes any component or element of diverted material, if the component or element is disposed of or or discarded.
WA	Waste Assessment as defined by s51 of the Waste Minimisation Act 2008. A Waste Assessment must be completed whenever a WMMP is reviewed
WMA	Waste Minimisation Act 2008
WMMP	A Waste Management and Minimisation Plan as defined by s43 of the Waste Minimisation Act 2008
WWTP	Wastewater treatment plant

A.2.1 Classifications for Disposal to Land

In the 'Technical Guidelines for Disposal to Land' (2016) the following definitions are given:

Class 1 - Landfill

A Class 1 landfill is a site that accepts municipal solid waste as defined in this Guideline. A Class 1 landfill generally also accepts C&D waste, some industrial wastes and contaminated soils. Class 1 landfills often use managed fill and clean fill materials they accept, as daily cover.

Class 1 landfills require:

- a rigorous assessment of siting constraints, considering all factors, but with achieving a high level of containment as a key aim;
- engineered environmental protection by way of a liner and leachate collection system, and an appropriate cap, all with appropriate redundancy; and
- landfill gas management.

A rigorous monitoring and reporting regime is required, along with stringent operational controls. Monitoring of accepted waste materials is required, as is monitoring of sediment runoff, surface water and groundwater quality, leachate quality and quantity, and landfill gas.

Waste acceptance criteria (WAC) comprises:

- municipal solid waste; and
- for potentially hazardous leachable contaminants, maximum chemical contaminant leachability limits (TCLP) from Module 2 Hazardous Waste Guidelines – Class A4.

WAC for potentially hazardous wastes and treated hazardous wastes are based on leachability criteria to ensure that leachate does not differ from that expected from nonhazardous municipal solid waste.

For Class 1 landfills, leachability testing should be completed to provide assurance that waste materials meet the WAC.

Class 2 Landfill

A Class 2 landfill is a site that accepts non-putrescible wastes including C&D wastes, inert industrial wastes, managed fill material and clean fill material as defined in these Guidelines. C&D waste can contain biodegradable and leachable components which can result in the production of leachate – thereby necessitating an increased level of environmental protection. Although not as strong as Class 1 landfill leachate, Class 2 landfill leachate is typically characterised by mildly acidic pH, and the presence of ammoniacal nitrogen and soluble metals, including heavy metals. Similarly, industrial wastes from some activities may generate leachates with chemical characteristics that are not necessarily organic.

Class 2 landfills should be sited in areas of appropriate geology, hydrogeology and surface hydrology. A site environmental assessment is required, as are an engineered liner, a leachate collection system, and groundwater and surface water monitoring. Additional engineered features such as leachate treatment may also be required.

Depending on the types and proportions of C&D wastes accepted, Class 2 landfills may generate minor to significant volumes of landfill gas and/or hydrogen sulphide. The necessity for a landfill gas collection system should be assessed.

Operational controls are required, as are monitoring of accepted waste materials, monitoring of sediment runoff, surface water and groundwater quality, and monitoring of leachate quality and quantity.

Waste acceptance criteria comprises:

Waste acceptance criteria comprise:

- a list of acceptable materials; and
- maximum ancillary biodegradable materials (e.g. vegetation) to be no more than 5% by volume per load; and
- maximum chemical contaminant leachability limits (TCLP) for potentially hazardous leachable contaminants.
- For Class 2 landfills, leachability testing should be completed to provide assurance that waste materials meet the WAC.

Class 3 Landfill – Managed/Controlled Fill

A Class 3 landfill accepts managed fill materials as defined in these Guidelines. These comprise predominantly clean fill materials, but may also include other inert materials and soils with chemical contaminants at concentrations greater than local natural background concentrations, but with specified maximum total concentrations.

Site ownership, location and transport distance are likely to be the predominant siting criteria. However, as contaminated materials (in accordance with specified limits) may be accepted, an environmental site assessment is required in respect of geology, stability, surface hydrology and topography.

Monitoring of accepted material is required, as are operational controls, and monitoring of sediment runoff and groundwater.

Waste acceptance criteria comprises:

- a list of acceptable solid materials; and
- maximum incidental or attached biodegradable materials (e.g. vegetation) to be no more than 2% by volume per load; and
- maximum chemical contaminant limits.

A Class 3 landfill does not include any form of engineered containment. Due to the nature of material received it has the potential to receive wastes that are above soil background levels. The WAC criteria for a Class 3 landfill are therefore the main means of controlling potential adverse effects.

For Class 3 landfills, total analyte concentrations should be determined to provide assurance that waste materials meet the WAC.

Class 4 Landfill - Cleanfill

Class 4 landfill accepts only clean fill material as defined in these Guidelines. The principal control on contaminant discharges to the environment from Class 4 landfills is the waste acceptance criteria.

Stringent siting requirements to protect groundwater and surface water receptors are not required. Practical and commercial considerations such as site ownership, location and transport distance are likely to be the predominant siting criteria, rather than technical criteria.

Clean filling can generally take place on the existing natural or altered land without engineered environmental protection or the development of significant site infrastructure. However, surface water controls may be required to manage sediment runoff.

Extensive characterisation of local geology and hydrogeology is not usually required. Monitoring of both accepted material and sediment runoff is required, along with operational controls.

Waste acceptance criteria comprises:

- virgin excavated natural materials (VENM), including soil, clay, gravel and rock; and
- maximum incidental inert manufactured materials (e.g. concrete, brick, tiles) to be no more than 5% by volume per load; and
- maximum incidental or attached biodegradable materials (e.g. vegetation) to be no more than 2% by volume per load; and
- maximum chemical contaminant limits are local natural background soil concentrations.

Materials disposed to a Class 4 landfill should pose no significant immediate or future risk to human health or the environment.

The WAC for a Class 4 landfill should render the site suitable for unencumbered potential future land use, i.e. future residential development or agricultural land use.

The WAC for a Class 4 landfill are based on the local background concentrations for inorganic elements, and provide for trace concentrations of a limited range of organic compounds.

Note: The Guidelines should be referred to directly for the full criteria and definitions.

A.3.0 National Legislative and Policy Context

A.3.1 The New Zealand Waste Strategy 2010

The New Zealand Waste Strategy 2010 provides the Government's strategic direction for waste management and minimisation in New Zealand. This strategy was released in 2010 and replaced the 2002 Waste Strategy.

The New Zealand Waste Strategy has two goals. These are to:

- reduce the harmful effects of waste
- improve the efficiency of resource use.

The strategy's goals provide direction to central and local government, businesses (including the waste industry), and communities on where to focus their efforts to manage waste. The strategy's flexible approach ensures waste management and minimisation activities are appropriate for local situations.

Under section 44 of the Waste Management Act 2008, in preparing their waste management and minimisation plan (WMMP) councils must have regard to the New Zealand Waste Strategy, or any government policy on waste management and minimisation that replaces the strategy. Guidance on how councils may achieve this is provided in section 4.4.3.

A copy of the New Zealand Waste Strategy is available on the Ministry's website at

www.mfe.govt.nz/publications/waste/new-zealand-waste-strategy-reducing-harm-improving-efficiency.

A.3.2 Waste Minimisation Act 2008

The purpose of the Waste Minimisation Act 2008 (WMA) is to encourage waste minimisation and a decrease in waste disposal to protect the environment from harm and obtain environmental, economic, social and cultural benefits.

The WMA introduced tools, including:

- waste management and minimisation plan obligations for territorial authorities
- a waste disposal levy to fund waste minimisation initiatives at local and central government levels
- product stewardship provisions.

Part 4 of the WMA is dedicated to the responsibilities of a council. Councils "must promote effective and efficient waste management and minimisation within its district" (section 42).

Part 4 requires councils to develop and adopt a WMMP. The development of a WMMP in the WMA is a requirement modified from Part 31 of the Local Government Act 1974, but with even greater emphasis on waste minimisation.

To support the implementation of a WMMP, section 56 of the WMA also provides councils the ability to:

- develop bylaws
- regulate the deposit, collection and transportation of wastes
- prescribe charges for waste facilities
- control access to waste facilities
- prohibit the removal of waste intended for recycling.

A number of specific clauses in Part 4 relate to the WMMP process. It is essential that those involved in developing a WMMP read and are familiar with the WMA and Part 4 in particular.

The Waste Minimisation Act 2008 (WMA) provides a regulatory framework for waste minimisation that had previously been based on largely voluntary initiatives and the involvement of territorial authorities under previous legislation, including Local Government Act 1974, Local Government Amendment Act (No 4) 1996, and Local Government Act 2002. The purpose of the WMA is to encourage a reduction in the amount of waste disposed of in New Zealand.

In summary, the WMA:

- Clarifies the roles and responsibilities of territorial authorities with respect to waste minimisation e.g. updating Waste Management and Minimisation Plans (WMMPs) and collecting/administering levy funding for waste minimisation projects.
- Requires that a Territorial Authority promote effective and efficient waste management and minimisation within its district (Section 42).
- Requires that when preparing a WMMP a Territorial Authority must consider the following methods of waste management and minimisation in the following order of importance:
 - Reduction
 - Reuse
 - Recycling
 - Recovery
 - Treatment
 - Disposal
 - Put a levy on all waste disposed of in a landfill.
 - Allows for mandatory and accredited voluntary product stewardship schemes.
 - Allows for regulations to be made making it mandatory for certain groups (for example, landfill operators) to report on waste to improve information on waste minimisation.
 - Establishes the Waste Advisory Board to give independent advice to the Minister for the Environment on waste minimisation issues.

Various aspects of the Waste Minimisation Act are discussed in more detail below.

A.3.3 Waste Levy

From 1st July 2009 the Waste Levy came in to effect, adding \$10 per tonne to the cost of landfill disposal at sites which accept household solid waste. The levy has two purposes, which are set out in the Act:

- to raise revenue for promoting and achieving waste minimisation
- to increase the cost of waste disposal to recognise that disposal imposes costs on the environment, society and the economy.

This levy is collected and managed by the Ministry for the Environment (MfE) who distribute half of the revenue collected to territorial authorities (TA) on a population basis to be spent on promoting or achieving waste minimisation as set out in their WMMPs. The other half is retained by the MfE and managed by them as a central contestable fund for waste minimisation initiatives.

Currently the levy is set at \$10/tonne and applies to wastes deposited in landfills accepting household waste. The MfE published a waste disposal levy review in 2014.²⁸ The review indicates that the levy may be extended in the future:

“The levy was never intended to apply exclusively to household waste, but was applied to landfills that accept household waste as a starting point. Information gathered through the review supports consideration being given to extending levy obligations to additional waste disposal sites, to reduce opportunities for levy avoidance and provide greater incentives for waste minimisation.”

A.3.4 Product Stewardship

Under the Waste Minimisation Act 2008, if the Minister for the Environment declares a product to be a priority product, a product stewardship scheme must be developed and accredited to ensure effective reduction, reuse, recycling or recovery of the product and to manage any environmental harm arising from the product when it becomes waste.²⁹ No Priority Products have been declared as of xx 2017.

The following voluntary product stewardship schemes have been accredited by the Minister for the Environment:³⁰

- Agrecovery rural recycling programme
- Envirocon product stewardship
- Fonterra Milk for Schools Recycling Programme
- Fuji Xerox Zero Landfill Scheme
- Holcim Geocycle Used Oil Recovery Programme (no longer operating)
- Interface ReEntry Programme
- Kimberly Clark NZ's Envirocomp Product Stewardship Scheme for Sanitary Hygiene Products
- Plasback
- Public Place Recycling Scheme
- Recovering of Oil Saves the Environment (R.O.S.E. NZ)

²⁸ Ministry for the Environment. 2014. Review of the effectiveness of the waste disposal levy, 2014 in accordance with section 39 of the Waste Minimisation Act 2008. Wellington: Ministry for the Environment

²⁹ Waste Management Act 2008 2(8)

³⁰ <http://www.mfe.govt.nz/waste/product-stewardship/accredited-voluntary-schemes>

- Refrigerant recovery scheme
- RE:MOBILE
- Resene PaintWise
- The Glass Packaging Forum

Further details on each of the above schemes are available on:

<http://www.mfe.govt.nz/waste/product-stewardship/accredited-voluntary-schemes>

A.3.5 Waste Minimisation Fund

The Waste Minimisation Fund has been set up by the Ministry for the Environment to help fund waste minimisation projects and to improve New Zealand's waste minimisation performance through:

- Investment in infrastructure;
- Investment in waste minimisation systems and
- Increasing educational and promotional capacity.

Criteria for the Waste Minimisation Fund have been published:

1. Only waste minimisation projects are eligible for funding. Projects must promote or achieve waste minimisation. Waste minimisation covers the reduction of waste and the reuse, recycling and recovery of waste and diverted material. The scope of the fund includes educational projects that promote waste minimisation activity.
2. Projects must result in new waste minimisation activity, either by implementing new initiatives or a significant expansion in the scope or coverage of existing activities.
3. Funding is not for the ongoing financial support of existing activities, nor is it for the running costs of the existing activities of organisations, individuals, councils or firms.
4. Projects should be for a discrete timeframe of up to three years, after which the project objectives will have been achieved and, where appropriate, the initiative will become self-funding.
5. Funding can be for operational or capital expenditure required to undertake a project.
6. For projects where alternative, more suitable, Government funding streams are available (such as the Sustainable Management Fund, the Contaminated Sites Remediation Fund, or research funding from the Foundation for Research, Science and Technology), applicants should apply to these funding sources before applying to the Waste Minimisation Fund.
7. The applicant must be a legal entity.
8. The fund will not cover the entire cost of the project. Applicants will need part funding from other sources.
9. The minimum grant for feasibility studies will be \$10,000.00. The minimum grant for other projects will be \$50,000.00.

Application assessment criteria have also been published by the Ministry.

A.3.6 Local Government Act 2002

The Local Government Act 2002 (LGA) provides the general framework and powers under which New Zealand's democratically elected and accountable local authorities operate.

The LGA contains various provisions that may apply to councils when preparing their WMMPs, including consultation and bylaw provisions. For example, Part 6 of the LGA refers to planning and decision-making requirements to promote accountability between local authorities and their communities, and a long-term focus for the decisions and activities of the local authority. This part includes requirements for information to be included in the long-term plan (LTP), including summary information about the WMMP.

More information on the LGA can be found at ww.dia.govt.nz/better-local-government.

A.3.6.1 Section 17 A Review

Local authorities are now under an obligation to review the cost-effectiveness of current arrangements for meeting community needs for good quality infrastructure, local public services and local regulation. Where a review is undertaken local authorities must consider options for the governance, funding and delivery of infrastructure, local public services and local regulation that include, but are not limited to:

- a) in-house delivery
- b) delivery by a CCO, whether wholly owned by the local authority, or a CCO where the local authority is a part owner
- c) another local authority
- d) another person or agency (for example central government, a private sector organisation or a community group).

Local Authorities have three years from 8 August 2014 to complete the first review of each service i.e. they must have completed a first review of all their services by 7 August 2017 (unless something happens to trigger a review before then).

Other than completion by the above deadline, there are two statutory triggers for a section 17A review:

- The first occurs when a local authority is considering a significant change to a level of service
- The second occurs where a contract or other binding agreement is within two years of expiration.

Once conducted, a section 17A review has a statutory life of up to six years. Each service must be reviewed at least once every six years unless one of the other events that trigger a review comes into effect.

While the WMMP process is wider in scope – considering all waste service provision in the local authority area – and generally taking a longer term, more strategic approach, there is substantial crossover between the section 17A requirements and those of the WMMP process, in particular in relation to local authority service provision. The S17A review may however take a deeper approach

go into more detail in consideration of how services are to be delivered, looking particularly at financial aspects to a level that are not required under the WMMP process.

Because of the level of crossover however it makes sense to undertake the S17A review and the WMMP process in an iterative manner. The WMMP process should set the strategic direction and gather detailed information that can inform both processes. Conversely the consideration of options under the s17A process can inform the content of the WMMP – in particular what is contained in the action plans.

A.3.7 Resource Management Act 1991

The Resource Management Act 1991 (RMA) promotes sustainable management of natural and physical resources. Although it does not specifically define 'waste', the RMA addresses waste management and minimisation activity through controls on the environmental effects of waste management and minimisation activities and facilities through national, regional and local policy, standards, plans and consent procedures. In this role, the RMA exercises considerable influence over facilities for waste disposal and recycling, recovery, treatment and others in terms of the potential impacts of these facilities on the environment.

Under section 30 of the RMA, regional councils are responsible for controlling the discharge of contaminants into or on to land, air or water. These responsibilities are addressed through regional planning and discharge consent requirements. Other regional council responsibilities that may be relevant to waste and recoverable materials facilities include:

- managing the adverse effects of storing, using, disposing of and transporting hazardous wastes
- the dumping of wastes from ships, aircraft and offshore installations into the coastal marine area
- the allocation and use of water.

Under section 31 of the RMA, council responsibility includes controlling the effects of land-use activities that have the potential to create adverse effects on the natural and physical resources of their district. Facilities involved in the disposal, treatment or use of waste or recoverable materials may carry this potential. Permitted, controlled, discretionary, noncomplying and prohibited activities, and their controls, are specified in district planning documents, thereby defining further land-use-related resource consent requirements for waste-related facilities.

In addition, the RMA provides for the development of national policy statements and for the setting of national environmental standards (NES). There is currently one enacted NES that directly influences the management of waste in New Zealand – the Resource Management (National Environmental Standards for Air Quality) Regulations 2004. This NES requires certain landfills (e.g., those with a capacity of more than 1 million tonnes of waste) to collect landfill gases and either flare them or use them as fuel for generating electricity.

Unless exemption criteria are met, the NES for Air Quality also prohibits the lighting of fires and burning of wastes at landfills, the burning of tyres, bitumen burning for road maintenance, burning coated wire or oil, and operating high-temperature hazardous waste incinerators.

These prohibitions aim to protect air quality.

A.3.8 New Zealand Emissions Trading Scheme

The Climate Change Response Act 2002 and associated regulations is the Government's principal response to manage climate change. A key mechanism for this is the New Zealand Emissions Trading Scheme (NZ ETS) The NZ ETS puts a price on greenhouse gas emissions, providing an incentive for people to reduce emissions and plant forests to absorb carbon dioxide. Certain sectors are required to acquire and surrender emission units to account for their direct greenhouse gas emissions or the emissions associated with their products. Landfills that are subject to the waste disposal levy are required to surrender emission units to cover methane emissions generated from landfill. These disposal facilities are required to report the tonnages landfilled annually to calculate emissions.

The NZ ETS was introduced in 2010 and, from 2013, landfills have been required to surrender New Zealand Emissions Units for each tonne of CO₂ (equivalent) that they produce. Until recently however the impact of the NZETS on disposal prices has been limited. There are a number of reasons for this:

- The global price of carbon crashed during the GFC in 2007-8 and has been slow to recover. Prior to the crash it was trading at around \$20 per tonne. The price has been as low as \$2, although since, in June 2015, the Government moved to no longer accept international units in NZETS the NZU price has increased markedly (currently sitting at around \$19 per tonne³¹).
- The transitional provisions of the Climate Change Response Act, which were extended in 2013 (but have now been reviewed), mean that landfills have only had to surrender half the number of units they would be required to otherwise. These transitional provisions were removed in January 2017 which will effectively double the price per tonne impact of the ETS.
- Landfills are allowed to apply for 'a methane capture and destruction Unique Emissions Factor (UEF). This means that if landfills have a gas collection system in place and flare or otherwise use the gas (and turn it from Methane into CO₂) they can reduce their liabilities in proportion to how much gas they capture. Up to 90% capture and destruction is allowed to be claimed under the regulations, with large facilities applying for UEF's at the upper end of the range.

Taken together (a low price of carbon, two for one surrender only required, and methane destruction of 80-90%) these mean that the actual cost of compliance with the NZETS has been small for most landfills – particularly those that are able to claim high rates of gas capture. Disposal facilities have typically imposed charges (in the order of \$5 per tonne) to their customers, but these charges have mostly reflected the costs of scheme administration, compliance, and hedging against risk rather than the actual cost of carbon.

The way the scheme has been structured has also resulted in some inconsistencies in the way it is applied – for example class 2-4 landfills and closed landfills do not have any liabilities under the scheme. Further, the default waste composition (rather than a SWAP) can be used to calculate the theoretical gas production, which means landfill owners have an incentive to import biodegradable

³¹ <https://carbonmatch.co.nz/> accessed 25 October 2016

waste, which then increases gas production and which can then be captured and offset against ETS liabilities.

Recently, however the scheme has had a greater impact on the cost of landfilling, and this is expected to continue in the medium term. Reasons for this include:

- In June 2015, the Government moved to no longer accept international units in NZETS. This has had a significant impact, as cheap international units which drove the price down cannot be used. Many of these were also of dubious merit as GHG offsets³². This has resulted in a significant rise in the NZU price.
- The transitional provisions relating to two-for-one surrender of NZUs were removed from 1 January 2017, meaning that landfills will need to surrender twice the number of NZUs they do currently – effectively doubling the cost of compliance.
- The United Nations Climate Change Conference, (COP21) held in Paris France in November – December of 2015, established universal (but non-binding) emissions reduction targets for all the nations of the world. The outcomes could result in growing demand for carbon offsets and hence drive up the price of carbon. Balanced against this however is the degree to which the United States, under the new Republican administration, will ratify its commitments.

These changes to the scheme mean that many small landfills which do not capture and destroy methane are now beginning to pay a more substantial cost of compliance. The ability of landfills with high rates of gas capture and destruction to buffer the impact of the ETS will mean a widening cost advantage for them relative to those without such ability. This could put further pressure on small (predominantly Council owned) facilities and drive further tonnage towards the large regional facilities (predominantly privately owned).

If for example, the price of carbon were to rise to \$50 per tonne, the liability for a landfill without gas capture will be \$65.50 (based on a default emissions factor of 1.31 tonnes of CO₂e per tonne of waste), whereas for a landfill claiming 90% gas capture (the maximum allowed under the scheme), the liability will be only \$6.55. This type of price differential will mean it will become increasingly cost competitive to transport waste larger distances to the large regional landfills.

More information is available at www.climatechange.govt.nz/emissions-trading-scheme.

A.3.9 Litter Act 1979

Under the Litter Act it is an offence for any person or body corporate to deposit or leave litter:

- In or on any public place; or
- In or on any private land without the consent of its occupier.

The Act enables Council to appoint Litter Officers with powers to enforce the provisions of the legislation.

³² http://morganfoundation.org.nz/wp-content/uploads/2016/04/ClimateCheat_Report9.pdf

The legislative definition of the term "Litter" is wide and includes refuse, rubbish, animal remains, glass, metal, garbage, debris, dirt, filth, rubble, ballast, stones, earth, waste matter or other thing of a like nature.

Any person who commits an offence under the Act is liable to:

- An instant fine of \$400 imposed by the issue of an infringement notice; or a fine not exceeding \$5,000 in the case of an individual or \$20,000 for a body corporate upon conviction in a District Court.
- A term of imprisonment where the litter is of a nature that it may endanger, cause physical injury, disease or infection to any person coming into contact with it.

Under the Litter Act 1979 it is an offence for any person to deposit litter of any kind in a public place, or onto private land without the approval of the owner.

The Litter Act is enforced by territorial authorities, who have the responsibility to monitor litter dumping, act on complaints, and deal with those responsible for litter dumping. Councils reserve the right to prosecute offenders via fines and infringement notices administered by a litter control warden or officer. The maximum fines for littering are \$5,000 for a person and \$20,000 for a corporation.

Council powers under the Litter Act could be used to address illegal dumping issues that may be included in the scope of a council's waste management and minimisation plan.

A.3.10 Health Act 1956

The Health Act 1956 places obligations on TAs (if required by the Minister of Health) to provide sanitary works for the collection and disposal of refuse, for the purpose of public health protection (Part 2 – Powers and duties of local authorities, section 25). It specifically identifies certain waste management practices as nuisances (S 29) and offensive trades (Third Schedule). Section 54 places restrictions on carrying out an offensive trade and requires that the local authority and medical officer of health must give written consent and can impose conditions on the operation. Section 54 only applies where resource consent has not been granted under the RMA. The Health Act enables TAs to raise loans for certain sanitary works and/or to receive government grants and subsidies, where available.³³

Health Act provisions to remove refuse by local authorities have been repealed.

A.3.11 Hazardous Substances and New Organisms Act 1996 (HSNO Act)

The HSNO Act addresses the management of substances (including their disposal) that pose a significant risk to the environment and/or human health. The Act relates to waste management primarily through controls on the import or manufacture of new hazardous materials and the handling and disposal of hazardous substances.

³³ From: MfE 2009: Waste Management and Minimisation Planning, Guidance for Territorial Authorities.

Depending on the amount of a hazardous substance on site, the HSNO Act sets out requirements for material storage, staff training and certification. These requirements would need to be addressed within operational and health and safety plans for waste facilities. Hazardous substances commonly managed by TAs include used oil, household chemicals, asbestos, agrichemicals, LPG and batteries.

The HSNO Act provides minimum national standards that may apply to the disposal of a hazardous substance. However, under the RMA a regional council or TA may set more stringent controls relating to the use of land for storing, using, disposing of or transporting hazardous substances.³⁴

A.3.12 Health and Safety at Work Act 2015³⁵

The new Health and Safety at Work Act, passed in September 2015 replaces the Health and Safety in Employment Act 1992. The bulk of the Act came into force from 4 April 2016.

The Health and Safety at Work Act introduces the concept of a Person Conducting a Business or Undertaking, known as a PCBU. The Council will have a role to play as a PCBU for waste services and facilities.

The primary duty of care requires all PCBUs to ensure, so far as is reasonably practicable:

1. the health and safety of workers employed or engaged or caused to be employed or engaged, by the PCBU or those workers who are influenced or directed by the PCBU (for example workers and contractors)
2. that the health and safety of other people is not put at risk from work carried out as part of the conduct of the business or undertaking (for example visitors and customers).

The PCBU's specific obligations, so far as is reasonably practicable:

- providing and maintaining a work environment, plant and systems of work that are without risks to health and safety
- ensuring the safe use, handling and storage of plant, structures and substances
- providing adequate facilities at work for the welfare of workers, including ensuring access to those facilities
- providing information, training, instruction or supervision necessary to protect workers and others from risks to their health and safety
- monitoring the health of workers and the conditions at the workplace for the purpose of preventing illness or injury.

A key feature of the new legislation is that cost should no longer be a major consideration in determining the safest course of action that must be taken.

WorkSafe NZ is New Zealand's workplace health and safety regulator. WorkSafe NZ will provide further guidance on the new Act after it is passed.

A.3.13 Other legislation

³⁴ From: MfE 2009: Waste Management and Minimisation Planning, Guidance for Territorial Authorities.

³⁵ <http://www.legislation.govt.nz/act/public/2015/0070/latest/DLM5976660.html#DLM6564701>

Other legislation that relates to waste management and/or reduction of harm, or improved resource efficiency from waste products includes:

- Hazardous Substances and New Organisms Act 1996
- Biosecurity Act 1993
- Radiation Protection Act 1965
- Ozone Layer Protection Act 1996
- Agricultural Chemicals and Veterinary Medicines Act 1997.

For full text copies of the legislation listed above see www.legislation.govt.nz.

A.3.14 International commitments

New Zealand is party to international agreements that have an influence on the requirements of our domestic legislation for waste minimisation and disposal. Some key agreements are the:

- Montreal Protocol
- Basel Convention
- Stockholm Convention
- Waigani Convention
- Minamata Convention.

More information on these international agreements can be found on the Ministry's website at www.mfe.govt.nz/more/international-environmental-agreements.

A.4.0 Transfer Station Detail

Charges

Household/Domestic Waste	Green Waste	% Recyclable				Non Recycled
		100%	75%	50%	25%	
Cars	\$5.00	\$5.00	\$8.00	\$10.00	\$12.00	\$15.00
Ute, station wagon, van, small trailers (up to 1m ³)	\$8.00	\$8.00	\$11.00	\$14.00	\$17.00	\$20.00
Large trailers (1m ³ to 2m ³)	\$16.00	\$16.00	\$22.00	\$28.00	\$34.00	\$40.00
Loads greater than 2m ³ (per cubic metre charge)	\$10.00	\$10.00	\$25.00	\$40.00	\$55.00	\$70.00
Plastic Bags: (each)						
	Small - Less than 25 Litres	Large - Up to 75 Litres	Extra Large - over 75 Litres and wheelie bins	Wool fadge		
	\$2.00	\$3.00	\$5.00	\$20.00		
Commercial/Industrial/Business Waste						
Depending on ease of handling, price by negotiation, but generally \$70.00 per m ³ . For loads greater than 2m ³ , waste depositors may have to arrange for their own transport to landfill. Note: Council reserves the right to reject any commercial, business or industrial loads.						
Whiteware, TVs, PCs etc.		\$5.00 each				
Car bodies: Empty (no fuel or oil)		\$25.00 (car bodies are only accepted at the Ōpōtiki RRC)				

Gas bottles	Up to 9.00 kg	\$5.00 empty	\$10.00 with gas
	Over 9.00 kg	\$10.00 empty	\$20.00 with gas
Tyres		<u>Without rims</u>	<u>With rims</u>
	Car / Van	\$3.00	\$4.00
	4x4 Ute or Truck	\$7.50	\$10.00
	Tractor or Truck	\$11.00	\$15.00
Waste Definitions:			
Household / Domestic Waste	The amount of refuse that would normally be generated from a residential property up to a volume of 2m ³ load.		
Commercial / Industrial / Business Waste	Any load greater than 2m ³ in volume. Any waste generated from commercial, industrial or business activities, inclusive of forestry, orchard, farming and property rental activities.		
Green Waste	Vegetation and garden waste with tree limbs up to a maximum of 100mm in diameter.		

- **What we accept**

Recyclable Materials

- Aluminium cans (clean)
- Bottles (green, white, brown)
- Cans, tin (clean)
- Cardboard - corrugated, boxes
- Glass (anything that will hold liquid; not light bulbs)
- Non Fe. Metal (copper, brass, bronze, aluminium)
- Newspaper, magazines, paper (clean)

- Plastics - milk/drink bottles, supermarket bags

Non-Recyclable Materials

- Agricultural chemicals & poisons (with conditions)
- Batteries (all types)
- Car bodies (no refuse inside)
- Clean waste (concrete, stones, rubble)
- Electronics (tv,s, stereos, computers)
- Fe metal (steel, cast iron, roofing iron, tubing)
- Glass (windcreens or window glass)
- Waste oil (all types)
- Plastics (supermarket bags, cling wrap film (clean))
- Paint (acrylic, enamel, undercoat)
- Residual waste - kitchen waste, white polystyrene, disposable nappies, other
- Timber (usable for firewood)/non-reusable building materials
- Weed spray (with conditions)
- Whiteware - (fridge/freezers, dishwashers, washing machines)
- Wood shavings and sawdust
- Gas bottles
- Tyres
- Fence wire – free of battens, posts and wood
- Lawn clippings - Ōpōtiki only
- Garden green materials
- Useable wood framing material - domestic quality
- Internal/external wall linings - Ōpōtiki only

Reusable Items (accepted by negotiation only)

Bins are available for all articles that can be reused:

- Tools

- Books
- Magazines
- Clothes
- Crockery
- Garden Tools
- Furniture
- Bric-a-brac
- Toys.
- **What we do not accept**

Ōpōtiki

- Asbestos
- Explosives (Flares, Bullets)
- Soil
- Hypodermic Needles
- Hot Fireplace Embers
- Vegetation other than garden material/trees.

Te Kaha and Waihou Bay

As for Ōpōtiki above and also including:

- Internal/External Wall and Roof Linings
- Commercial quantities of timber framing/building materials
- Lawn clippings
- Agricultural chemicals
- Poisons.