Hamilton City Council: Waste Assessment

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PREFACE

The Waste Assessment (WA) is a technical document. The key purpose of the WA is to present a clear picture of what happens with waste in the Hamilton area, what forces are driving current behaviours and outcomes, and to highlight the key issues and the basic options for addressing those issues.

This document is based on the Waste Assessment Template developed for the Councils of the Waikato and Bay of Plenty regions, and includes reference material from a number of sources.

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Table of Contents

Part 1 - Executive Summary 1
Part 2 - Introduction 2
2.1 What is the purpose of the Waste Assessment? 2
2.2 Legislative Context 2
2.3 Scope 3
2.4 Strategic Context – National 4
2.5 Local and regional context 6
2.6 International considerations 10
2.7 General data limitations, completeness and assumptions 10
Part 3 - The waste problem 11
3.1 How much waste is going to landfill from Hamilton? 11
3.2 How much is being recycled or diverted from landfill 16
Part 4 - Waste infrastructure 23
4.1 Key issues related to waste infrastructure 23
4.2 Landfills 23
4.3 Transfer Stations 25
4.4 Recycling, Recovery and Reprocessing Facilities 26
4.5 Assessment of infrastructure and council role 29
Part 5 - Waste services 29
5.1 Key issues related to waste services in Hamilton 29
5.2 How waste is currently managed 30
5.3 Council-provided waste services 31
5.4 Proposed changes to Council waste services 34
5.5 Funding for council-provided services 35
5.6 Non-Council Services 35
5.7 Sustainable procurement and community benefits 37
Part 6 - Review of the 2012-2018 Waste Management and Minimisation Plan 39
6.1 Objectives of 2012-2018 WMMP 40
6.2 Key Issues of 2012-2018 WMMP 40
6.3 New Guidance 41
6.4 Review of Actions 41
6.5 Summary of progress 47
Part 7 - Future demand and gap analysis 47
7.1 Hamilton: Kirikiriroa 47
7.2 Future Demand 47
7.3 Gap Analysis - Future Demand 51
Part 8 - Options 54
8.1 Key issues to be addressed by the 2018 – 2024 WMMP 54

Table of Contents

8.2 Committed: Implementation of new services 54
8.3 Options: Data & regulation 55
8.4 Options: CBD services 62
8.5 Options: Organic waste 65
8.6 Options: Key waste streams and targeted issues 67
8.7 Influence and partnerships 69
8.8 Summary table of potential scenarios 71
Part 9 - Statement of Council's Intended Role 73
9.1 Statutory Obligations and Powers 73
9.2 Overall Strategic Direction and Role 73
Part 10 - Statement of Proposals 74
10.1 Statement of Extent 74
A.1.0 Medical Officer of Health Statement 75
A.2.0 Glossary of Terms 78
A.3.0 National Legislative and Policy Context 81
A.4.0 International commitments 88
A.5.0 Kerbside rubbish composition 89
A.6.0 Litter and illegal dumping compliance map 90
A.7.0 Table of Tables 91
A.8.0 Table of Figures 92

PART 1 - EXECUTIVE SUMMARY

Hamilton produces an estimated 245,700 tonnes of waste each year. Of this approximately 120,099 tonnes is sent to landfill and 125,600 tonnes are diverted (to recycling or composting). This equates to around 0.78 tonnes (780 kg) of waste to landfill per person per year, slightly higher than other comparable councils in New Zealand. Rubbish volumes appear to be increasing, with an estimated 33% increase since 2012, despite the successful implementation of activities set out in the 2012-2018 Waste Management and Minimisation Plan.

However, it is difficult to confirm the extent of the increase or what may have caused it as 2012 estimates were based on desktop analysis, and estimates provided in this Waste Assessment are based on data provided by private and contracted waste collectors and operators. While current data is still of low quality, it is significantly better than data available in 2012. In addition, population growth will have contributed to the increase to an unknown extent.

Also of note is that Ministry for the Environment reports indicate that, nationwide, waste to landfill has increased by 20% since 2014.

Key opportunities for Hamilton include:

- The implementation of new kerbside waste services currently under procurement
- A review of the CBD waste services, and how these may be improved to increase waste avoidance, reduction and minimisation
- Opportunities to partner with others including regionally, sub-regionally and with mana whenua, community groups and businesses
- Key waste streams and issues to target such as construction & demolition waste, electronic waste, business waste; event waste and illegal dumping / litter
- Improving the Hamilton Solid Waste Bylaw to introduce regional consistency, improve access to quality data and to ensure waste is managed appropriately.

Acting on these opportunities will assist Hamilton City Council to meet the requirements and intent of the Waste Minimisation Act 2008 and give regard to the New Zealand Waste Strategy

The Government's waste policy, *The New Zealand Waste Strategy – Reducing harm, improving efficiency* (NZWS), sets out the Government's long-term priorities for waste management and minimisation. The Strategy's two goals are: *Reducing the harmful effects of waste* and *Improving the efficiency of resource use.*

The Waste Minimisation Act (WMA) 2008 provides tools to support progress toward the goals outlined in the NZWS. One tool is a waste disposal levy, half of which is allocated to Territorial Authorities (TAs) on a population basis. Hamilton City Council receives approximately $570,196 p.a. from the Waste Levy each year to help fund waste minimisation initiatives.

The WMA also directs TAs to prepare a Waste Assessment and a Waste Management and Minimisation Plan (WMMP). This Waste Assessment has been prepared for Hamilton City Council (HCC) in accordance with the requirements of the Waste Minimisation Act 2008.

The document details existing services and facilities, presents waste data, makes a forecast of future demand, and provides an assessment of options to meet future demands and what the Councils' roles would be in these options. It is intended to be used to inform the development of the Hamilton City Council 2018-2024 Waste Management and Minimisation Plan.

PART 2 - INTRODUCTION

2.1 What is the purpose of the Waste Assessment?

The key function of the Waste Assessment is to form a clear picture of waste flows and management options in the City. It will provide the foundation for Council to update its Waste Management and Minimisation Plan (WMMP) in an informed and effective manner.

It is a technical document that presents as clear a picture as possible of what happens with waste in the Hamilton area, what forces are driving current behaviours and outcomes, and from that to highlight the key issues and the basic options for addressing those issues.

2.2 Legislative Context

2.2.1 Waste Minimisation

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 Territorial Authorities (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 WMMP at least every six years. The review must be consistent with WMA sections 44, 50 and 51.

Section 50 of the WMA also requires all TAs to prepare a 'waste assessment' prior to reviewing its existing plan.

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.

This document has been prepared in fulfilment of that requirement.

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

2.2.2 Public Health

Protecting public health is one of the original reasons for local authority involvement in waste management.

Protection of public health is currently addressed by a number of legislative enactments, including Health Act 1956 and Health and Safety at Work Act 2015.

The Health & Safety At Work (Regulations) 2016 provide added emphasis on workplace health and safety under the Health and Safety at Work Act 2015. This legislation and the associated regulations impact on the choice of collection methodologies and working practices and the design of waste facilities.

Further discussion of the implications of the legislation is contained in Appendix A.3.0.

2.3 Scope

2.3.1 General

The WMA requirements for the waste assessment means that it must take into consideration all waste and recycling services carried out by private waste operators as well as Hamilton City Council services.

While Council has data on the waste flows that it controls, data on services provided by private industry is limited. Reliable, regular data on waste flows is important to allow Hamilton City Council to plan for the future and to include waste reduction targets in their WMMP.

In preparing this document, reference has been made to the Ministry for the Environment's 'Waste Management and Minimisation Planning: Guidance for Territorial Authorities'.

2.3.2 Period of Waste Assessment

The WMA requires WMMPs to be reviewed at least every six years. This Waste Assessment was developed between June – August 2017 and informs the 2018-2024 WMMP process.

2.3.3 Consideration of Solid, Liquid and Gaseous Wastes

This Waste Assessment, and the subsequent WMMP, is focused on solid waste, biosolids and special wastes that are managed through solid waste facilities.

Solid wastes include all solid waste material that is disposed of to land or diverted from land disposal, for example general municipal waste and recyclables.

Special wastes included in this WA include sewage milliscreenings and biosolids from the Council's wastewater treatment plant and road sweepings.

Liquid and gaseous wastes (such as refrigerant gases and LPG) are not included except where they interact with solid waste systems.

2.3.4 Consideration of Public Health

Public health issues are dependent on the local context and actions taken. As well as meeting the legislative requirements the key issues that are likely to be of concern in terms of public health include the following:

- Population health profile and characteristics
- 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

Some systems may exacerbate the problem, such as infrequent collection, user-charges, inconveniently located facilities etc. However, in most cases, public health issues will be able to be addressed through setting appropriate performance standards for waste services. It is also important to ensure performance is monitored and reported on and that there are appropriate structures for addressing issues that arise.

This WA and the WMMP will give consideration to public health impacts, with particular consideration of the potential effects on vulnerable groups. Where identified, planning will aim to anticipate, avoid or mitigate issues.

2.4 Strategic Context – National

The following national and international strategies, projects, reviews and plans have been taken into consideration in the preparation of this Waste Assessment.

2.4.1 Review of the effectiveness of the Waste Disposal Levy 2017

For the review period of 1 July 2013 to 30 June 2016, levied waste disposal facilities received a total of 10,681,295 gross tonnes of waste. From this, 1,207,786 tonnes of material were diverted, leaving total net waste to landfill at 9,473,509 tonnes.
Total gross tonnage of waste increased by 16.4% from the 2014 review, while the quantity of waste diverted decreased by 6.3%. As a result, the total net tonnage disposed to levied landfills has increased by 20.1% since the 2014 review[1].

	2010/2013	2013/2016	Difference	% Increase/decrease
Total gross tonnage	9,178,592	10,681,295	1,502,703	16.4%
Total diverted tonnage	1,288,766	1,207,786	-80,980	-6.3%
Total net tonnage to levied landfills	7,889,826	9,473,509	1,583,683	20.1%

Table 1 Total gross, diverted and net tonnages of waste at levied waste disposal facilities for the 2014 and 2017 review periods (MfE, Review of the effectiveness of the Waste Disposal Levy 2017)

Net waste to levied landfills has increased every year since the levy was introduced (except for 2012). New Zealanders are now producing about 734kg of levied waste per person annually.

The 2017 review also identified that only 11% of consented waste disposal facilities were levied. The report noted “annual levied waste is increasing, indicating that the levy is not currently achieving its objective. Added to this, the majority of New Zealand's waste disposal facilities are exempt from the levy and no data is available about the waste that is disposed at these facilities”.

[1] *Review of the effectiveness of the Waste Disposal Levy 2017*, Ministry for the Environment

The Ministry[2] intends to:

- Develop a clear vision, strategy and set of outcomes for the future direction of the waste disposal levy. Develop an aligned approach to invest funding into projects that are targeted, measurable and provide the greatest returns (over 2 years).
- Invest in developing a national waste data collection and evaluation framework that targets key information to prioritise waste issues and measures effectiveness of the waste disposal levy (over 3 years).
- Develop and implement a staged approach to applying the waste disposal levy across additional classes of landfills and assess the role of a differential rating system (over 5 years).

2.4.2 New Zealand Waste Strategy

The 2010 *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 legislation, regulation and conventions that relate to the management and minimisation of waste in New Zealand. These conventions are set out in Section A.4.0.

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.

However, section 44 of the WMA also 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.

2.4.3 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

2.4.4 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.

[2] *Review of the effectiveness of the Waste Disposal Levy 2017*, Ministry for the Environment

(a) National Waste Data Framework Project

The National Waste Data Framework (NWDF) project, led by WasteMINZ[3] sets out a consistent methodology for the collection and categorisation of waste data.

The first stage of the Framework 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 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.

(b) National Standardisation of Colours for Bins

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[4].

The recommended colours are:

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.
Red	rubbish
Yellow	commingled recycling (glass, plastic, metal and paper combined)
Lime green	food waste and food waste/garden (referring to green) waste combined
Dark Green	garden waste
Light Blue	commingled glass collections (white, brown, green glass combined)
Grey	paper and cardboard recycling

Table 2 Recommended bin and bin lid colours for MGB's

It is intended that any services provided or funded by Hamilton City Council will comply with this National Standard.

2.5 Local and regional context

The actions and objectives identified in this Waste Assessment reflect, intersect with, and are expressed through other Hamilton City Council and regional planning documents.

Key planning documents and waste-related goals and objectives that have been taken into consideration include:

2.5.1 Future Proof

Future Proof is a growth strategy specific to the Hamilton, Waipa, and Waikato sub-region and has been developed jointly by Hamilton City Council, Waikato Regional Council, and Waipa and

[3] WasteMinz is the largest representative body of the waste, resource recovery and contaminated land sectors in New Zealand
[4] More information is available from WasteMINZ - http://www.wasteminz.org.nz/sector-groups/behaviour-change/standardising-the-colours-of-mobile-waste-and-recycling-containers/

Waikato District Councils, as well as Tangata Whenua, the NZ Transport Agency (NZTA) and Matamata-Piako District Council.

The Future Proof growth strategy aims to manage growth in a collaborative way for the benefit of the Future Proof sub-region both from a community and a physical perspective. The growth strategy provides a framework for ongoing co-operation and implementation. This will ensure the costs and resources required to fund and manage infrastructure such as transport, wastewater, stormwater, recreation and cultural facilities are provided for.

2.5.2 Waikato Regional Policy Statement

The Regional Policy Statement looks 100 years into the future. This accords well with the purposes of sustainable management of our natural and physical resources, and meeting the reasonably foreseeable needs of future generations. It recognises the long life of community infrastructure, including the fact that many critical infrastructural elements in the region are either the same structures or have been in the same location for the last century. Additionally, the effects of current activities are projected to take many years for their full impacts to be realised.

2.5.3 Hamilton Urban Growth Strategy (HUGS)

Council's spatial vision for the city –a discussion of the key growth issues including:

- our growing population
- areas suitable for accommodating future residential growth
- supporting city infrastructure requirements
- where to develop first, why and when
- what other land uses are required e.g. business and industry
- ensuring social well-being and protecting the local environment

2.5.4 Hamilton's 10-Year Plan 2015-2025

The Hamilton LTCCP 2015-2025 sets out ten priorities for the City:

1. Balance our books

2. Become the third city economy in New Zealand:

3. Provide outstanding infrastructure

4. Strengthen our connection to the Waikato River

5. Have the best garden in the world

6. Have an active, strong, commercial central city with distinctive suburban villages

7. Become an urban garden

8. Provide access to affordable housing

9. Establish the Waikato as the capital of high performance sport

10. Celebrate our arts and culture

Over the next 10 years HCC plans to spend $90M on new and upgraded assets and $338M on new assets to provide for a growing city. This includes new kerbside services for most areas in the City.

2.5.5 Hamilton District Plan

This Waste Assessment includes considerations of District Plan objectives including:

Objective 25.12.2.1 Reduce the amount of solid waste generated and ultimately entering landfills.	
Policy 25.12.2.1a	**Policy 25.12.2.1b**
Promote the reduction of solid waste volumes based on the following waste hierarchy. • Reduction • Reuse • Recycle • Recovery • Treatment • Disposal	Promote practices that reduce the volume of solid waste generated and disposed of.

Table 3 Hamilton District Plan – Objectives relating to waste

2.5.6 The Hamilton City Solid Waste Bylaw 2012

The Hamilton City Council Solid Waste Bylaw relates to waste collection, processing and disposal and was adopted in 2012. The purpose of the Bylaw is to:

> i. prohibit or regulate the deposit of waste:
>
> ii. regulate the collection and transportation of waste:
>
> iii. regulate the manner of disposal of dead animals, including their short-term storage pending disposal:
>
> iv. prescribe charges to be paid for use of waste management and minimisation facilities provided, owned, or operated by the territorial authority:
>
> v. prohibit, restrict, or control access to waste management and minimisation facilities provided, owned, or operated by the territorial authority:
>
> vi. prohibit the removal of waste intended for recycling from receptacles provided by the territorial authority by anyone other than—
>
> > 1. the occupier of the property from which the waste in the receptacle has come; or
> >
> > 2. a person authorised by the territorial authority to remove the Waste

The Bylaw includes provision for:

- Licencing of waste collectors and operators of facilities.
- Managing waste within multi-unit residential or commercial buildings or complex's
- Waste management at events

2.5.7 Waikato Waste and Resource Efficiency Strategy 2015-18 (WRES)

The Waste and Resource Efficiency Strategy (WRES) describes how Waikato Regional Council will work with key stakeholders to achieve collective regional waste minimisation objectives.

The Strategy has a vision of: *"working together towards a zero waste region".*

Two key goals of the strategy are to:

- protect our communities, land, water and air from harmful and hazardous wastes; and
- encourage resource efficiency and beneficial reuse that creates sustainable, economic growth.

The Strategy also contains ten strategic guiding principles:

1. Prioritising waste prevention and reduction
2. Exploring onshore and sustainable solutions
3. Closed loop or cyclical solutions
4. Recognising kaitiakitanga (stewardship)
5. Keeping the big issues in front of decision makers
6. Supporting the valuable role of community enterprise
7. Working collaboratively with others to share responsibilities
8. Advocating for product stewardship
9. Getting the most from external funding
10. Exploring how to lower barriers to waste minimisation

A Waste Strategy Advisory Group (WSAG) was established and includes representation from industry, local authorities (including HCC), community enterprises, Bay of Plenty Regional Council, and the Ministry for the Environment.

The role of the WSAG is to monitor and review the effectiveness of the strategy, provide feedback, advice, and recommend changes, and to report back to their respective organisations. The group also investigates opportunities for joint working at a regional or sub-regional level.

2.5.8 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:

1. Waste assessments and waste management and minimisation planning
2. Solid waste bylaws, licensing and data
3. Education and communication
4. Procurement
5. 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.

2.5.9 Sub-regional collaboration

Hamilton City, Waikato District, Waipa District and Waikato Regional Councils are working together as part of a Sub-regional Waste Awareness Group (SWAG). The SWAG, in collaboration with the community, developed and is implementing a Sub-regional Waste Awareness and Communications Strategy. The strategy has the vision of working together towards a zero waste region.

Collaborating across the sub-region on waste education programs and campaigns increases efficiencies and broadens the reach of the Councils' engagement and supports all Councils in achieving their waste minimisation objectives.

2.6 International considerations

While they do not immediately impact on Hamilton's waste flows, it is worth noting the potential impact of international activities on New Zealand's waste industry.

Much of the recycling collected in NZ is exported, particularly to Indonesia and China. China has in recent year's tightened measures around the acceptance of recycled materials. The most recent initiative, translated into English as "National Sword 2017," targets "foreign waste," including plastics, industrial waste, electronics and other household waste materials[5]. It comes four years after China initiated its Operation Green Fence, an imports-enforcement campaign that required a higher standard of recycled product in order to gain approval for import into China.

Restrictions on the acceptance of recyclable material will mean changes to collection and sorting methodologies in order to achieve export standards. This may impact the costs associated with recycling.

Also of concern is the potential for climate change and rising instability to cause unrest in many countries. International conflict and unrest has the potential to disrupt recycling supply chains. As New Zealand has few processing facilities for kerbside recyclables, we are potentially vulnerable should export markets be disrupted.

2.7 General data limitations, completeness and assumptions

This waste assessment compiles and analyses available information on waste and diverted materials being generated in Hamilton City. It considers future demand for waste facilities and services; and reasonably practicable options available to meet demand, while achieving Council's objectives including waste management and minimisation objectives.

The options considered in this waste assessment will be incorporated into Council's draft WMMP for public consultation, prior to formal adoption and implementation.

This document was prepared using information gathered from a variety of sources. While every effort has been made to achieve a reasonable degree of accuracy in this assessment, limitations due to the low level, detail and quality of data available should be noted.

The information obtained in this waste assessment was considered appropriate when giving regard to:

- the significance of the information;
- the costs of, and difficulty in, obtaining the information;
- the extent of the Council's resources; and
- the possibility that the Council may be directed under the Health Act 1956 to provide the services referred to in that Act.

[5] https://resource-recycling.com/recycling/2017/02/21/china-announces-sword-crackdown-illegal-recyclable-material-imports/

PART 3 - THE WASTE PROBLEM

Based on information from operators, an estimated 245,700 tonnes of waste is collected from Hamilton waste facilities and services each year.
Of this amount, 120,099 tonnes were sent to landfill and 125,600 tonnes was recovered for reuse or recycling through resource recovery facilities such as transfer stations and the organics centre.
Recovered material included 13,950 tonnes of wastewater sludge (biosolids) from the Pukete Wastewater Treatment Plant which was vermicomposted and 10,881 tonnes of organic waste.

This does not represent all the waste and diverted materials generated in the City as an unknown volume of material is currently re-used, recovered, recycled or disposed of through other means or via facilities out of the City.

3.1 How much waste is going to landfill from Hamilton?

The identified volumes of waste disposed of to landfill from Hamilton is summarised in Table 4 below.

Waste disposed of to land	Tonnes	% of total waste collected (rubbish + recyclables = 245,700t)	Tonnes/capita/annum[6]
Levied waste to Class 1 landfills			
General	117,047	48%	0.76
Special	2,569	1%	0.02
Wastewater screenings	484	0%	0.00
Total waste to landfill	**120,099**	**49%**	**0.78**
Other waste (diverted)	92,369	51%	
Total waste collected	245,700	100%	

Table 4 Summary - estimated waste disposed of to land Hamilton City

An estimated total of 120,099 tonnes of solid waste was disposed of to landfill from Hamilton in the 2016 year. Waste disposed of to landfills comprised 49% of the total, and was equivalent to approximately 0.78 tonne per person in the 2016 year.

Note: Excludes waste to non-levied landfills, as this amount is unknown.

The reliability of the estimates for different types of waste varies. Some waste to landfill data comes unverified from private waste operators, while other waste data and sludge tonnages are verifiable as they have been provided by HCC staff or council contractors.

Of the 49% of waste that was sent to landfill, 48% was General waste. This comprised of 78% household + construction and demolition waste and 19% kerbside rubbish.

[6] Future Proof projections (population = 153,331)

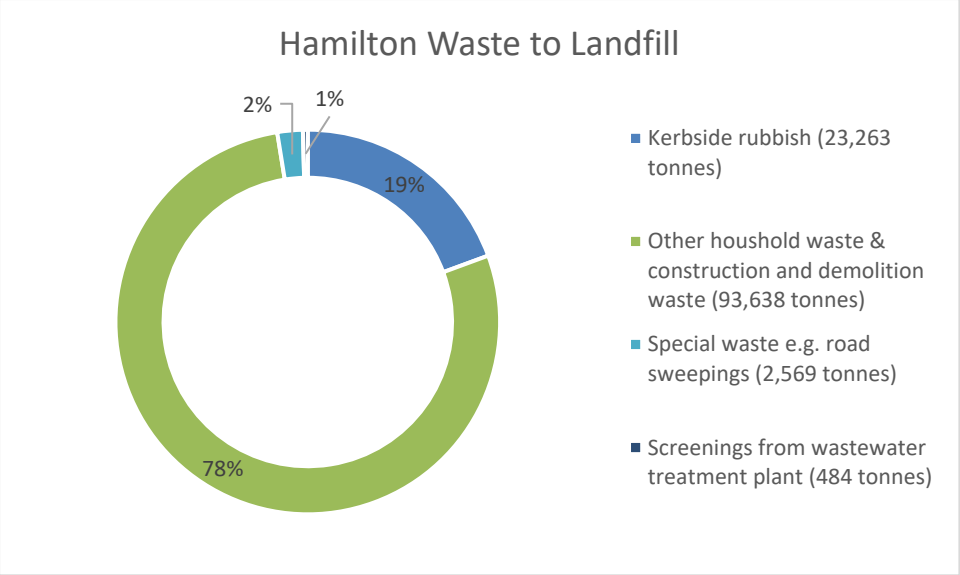


Figure 1 Compositional proportions of Hamilton waste to landfill

3.1.1 Council kerbside rubbish collection

The HCC kerbside rubbish service collected 23,263 tonnes of rubbish in 2016, an average of 152kg per person per annum, servicing on average 54,650 households[7] in 2016. This is approximately 19% of the total waste to landfill for Hamilton. This is likely to be an underestimate as not all residents receive a kerbside service.

The average per capita rubbish generation appears to have been steadily increasing (apart from in 2013). Overall an 11% increase in kerbside refuse can be seen since 2012. This is in alignment with Ministry for the Environment information which indicates waste to landfill has increased by 20% nationwide over a similar period[8].

Kerbside rubbish	2012 year	2013 year	2014 year	2015 year	2016 year
Kerbside rubbish (kg)	20,883,760	21,303,370	21,764,340	22,473,360	**23,263,110**
Population[9]	141,612	147,290	149,260	151,281	**153,331**
Kg/capita/annum	147	145	146	149	**152**
Households[10]	51,809	52,403	53,035	53,486	54,288
Kg/household/annum	403	407	410	420	**429**

Table 5 Kerbside rubbish service – kg per capita per annum

The per capita weight of rubbish is slightly lower than for similar sized councils in New Zealand. A comparison of the amounts of rubbish material collected compared to comparable councils is shown in Table 6 below.

[7] Average for households for 2016
[8] Review of the effectiveness of the Waste Disposal Levy 2017, Ministry for the Environment
[9] 2013 Census NZ Statistics and Future Proof projections (population = 153,331)
[10] Calculated from average household numbers serviced by the kerbside contract

District and year of survey	Kg/capita/ annum	Comment
Christchurch City 2011	110	Fortnightly 140-litre rubbish wheelie bin. Weekly food and garden waste collection
Hamilton City 2016	152	**Rates-funded rubbish bags, max. 2 per week**
Auckland Council 2012	160	Range of legacy council services.
Tauranga City 2010	183	User-pays bags in Tauranga.
Wellington region 2014/15	206	Estimate based on SWAP surveys at Silverstream landfill and Kāpiti Coast
Taupo District 2013	212	User-pays rubbish bags
Hastings District/Napier City 2012	214	User-pays rubbish bags (Hastings) & rates-funded bags max. 2 bags/week(Napier)

Table 6 Kerbside rubbish comparison with other councils

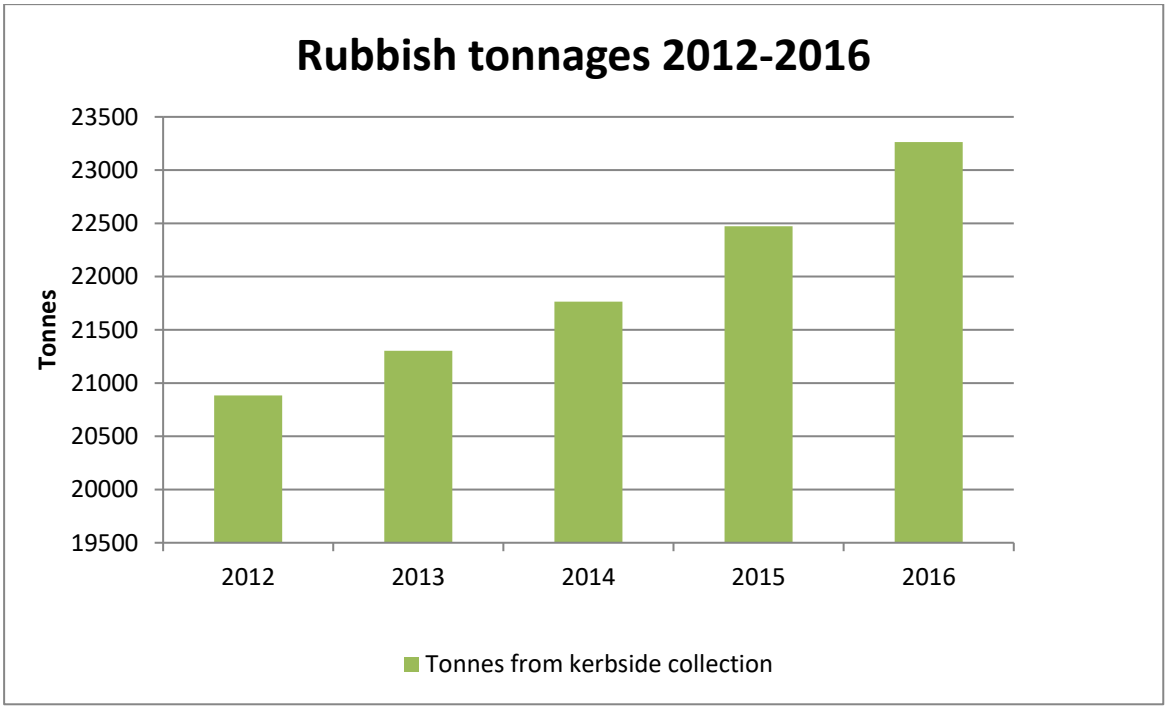


Figure 2 Rubbish tonnages 2012-2016

(a) Composition of kerbside rubbish

A compositional waste audit was undertaken in June 2017, indicating 50% of rubbish is organic material, 12% paper and 15% plastics (all potentially divertible).

If all divertible material was removed from the waste stream, there is potential for up to a 77% reduction in waste to landfill.

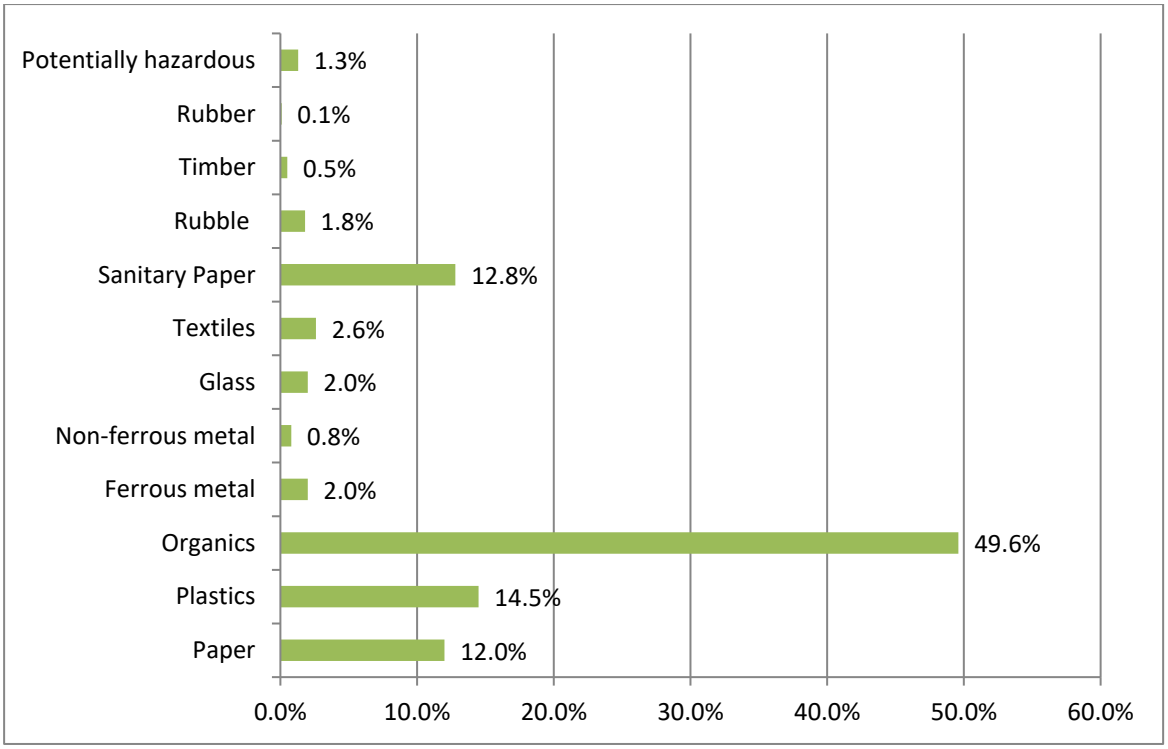


Figure 3 Kerbside rubbish composition 2017

The composition of the kerbside rubbish waste stream shows negligible change compared to the previous waste compositional audit in 2013.

Primary category	Paper	Plastics	Organics	Ferrous metals	Non-ferrous metals	Glass	Textiles	Sanitary paper	Rubble	Timber	Rubber	Potentially hazardous
2013	12.60%	13.60%	49.20%	1.70%	0.80%	2.40%	4.50%	12.30%	1.30%	0.50%	0.10%	1.10%
2017	12%	14.50%	49.60%	2%	0.80%	2%	2.60%	12.80%	1.80%	0.50%	0.10%	1.30%
Difference	**-0.6%**	**0.9%**	**0.4%**	**0.3%**	**0.0%**	**-0.4%**	**-1.9%**	**0.5%**	**0.5%**	**0.0%**	**0.0%**	**0.2%**

Table 7 Comparison of rubbish composition 2013 vs 2017

Further information on the rubbish collection services is available in Section 5.3.1.

3.1.2 Transfer Stations and recovery facilities

Industrial, commercial and institutional sources make up the largest proportion of waste being taken to transfer stations and similar facilities (41%) with construction and demolition waste making up 20% of material.

Transfer Station and other recovery facilities - waste by activity source	% of total weight
Construction & demolition (C&D)	20%
Industrial/commercial/institutional	41%

Landscaping & earthworks	3%
Residential	5%
Subtotal - general waste	70%
Kerbside waste collections	27%
Special waste	3%
TOTAL	**100%**

Table 8 Transfer station waste by activity source

Comparisons with 2013 data suggest C&D waste has increased significantly (approximately 47%). This is likely to be associated with a stronger construction sector in Hamilton in 2017 compared to 2013. Special waste was primarily comprised of road sweepings, where seasonal variations can be quite large, i.e. autumn has a high volume of leaves compared to summer. The table above includes data from the autumn period and may be higher than the annual average.

3.1.3 Wastewater sludge / biosolids

HCC owns and operates the Pukete Wastewater Treatment Plant (WWTP) in Hamilton, with a contract in place for the collection and disposal of sludge until Feb 2019. Biosolids produced from the treatment processes are diverted from landfill and vermicomposted at Kinleith at the MyNoke site. HCC will continue to monitor whether this remains the most appropriate form of diversion for the sludge. HCC records indicate that in 2016 approximately 14,434 tonnes of sludge material was generated. This comprised of 13,950 tonnes of biosolids that was sent to the MyNoke Worm Farm and 484 tonnes of screenings that were disposed of to Tirohia landfill.

3.1.4 Hazardous material

No data is available to identify the volumes of hazardous waste disposed of from Hamilton City. Types of hazardous waste collected from the City for disposal include:

- E-waste
- Medical waste
- Used oil and oil filters from automotive repairers
- Commercial hazardous materials disposed of via the private sector
- Hazardous materials collected by NZTA contractors as part of roadside maintenance

3.1.5 Construction and Demolition (C&D) waste

Data obtained from cooperative facility operators and service providers suggests approximately 18,000 tonnes of C&D waste was sent to landfill from Hamilton City in 2016. However, this is likely to be an underestimate as some facilities which collect C&D waste failed to provide data for this Waste Assessment.

3.1.6 Regional waste stocktake

An estimate of the total volume of waste to landfill in the Waikato region is provided in the 2013 report, Bay of Plenty and Waikato Regions *Waste Stocktake; Report for Bay of Plenty and Waikato Regional Councils* summarised in the table below.

Waste Stream	Bay of Plenty	Waikato	Total	% of Overall waste stream
Kerbside rubbish	48,192	78,929	127,121 t/annum	35.9%
C&D waste	8,644	16,629	40,578 t/annum	11.5%
ICI waste	26,997	51,937	126,735 t/annum	35.8%
Landscaping waste	4,680	9,004	21,971 t/annum	6.2%
Residential waste	6,657	12,806	31,248 t/annum	8.8%
Subtotal – General Waste	75,427	145,105	220,532 t/annum	62.3%
Special Waste	3,574	2,853	6,427	1.8%
Total	**127,193**	**226,887**	**354,080 t/annum**	**100%**
Other Land Disposal Sites – Bay of Plenty and Waikato Regions Combined				
Other diverted materials	T/annum		T/capita/annum	
All waste to other land disposal sites	787,000		1.13 tonnes	
Waste other than natural, virgin, excavated material	411,300		0.59 tonnes	

Table 9 Tonnage of waste to landfill from Waikato and Bay of Plenty[11]

Bay of Plenty and Waikato Regions Waste 2013 Stocktake estimates a total of 354,080 tonnes of waste are disposed of to landfill annually from Bay of Plenty and Waikato Regions. As the tonnage data has been taken from a number of different sources, no specific year has been attached to the figure.

Of the total amount disposed of to landfill, just over one third (35.9%) was kerbside rubbish, and a further third was Industrial, Commercial & Institutional (ICI). Construction & Demolition (C&D) waste made up nearly 12% while less than 2% was special waste. The figure for special waste, which primarily includes biosolids, is the least reliable, as the smallest dataset was used for its calculation. The stocktake report also estimates that 787,000 tonnes of material is disposed of at other land disposal sites annually. This is more than twice as much as is disposed of to landfills. Slightly more than half of this waste is other than natural, virgin, excavated materials.

3.2 How much is being recycled or diverted from landfill

An estimated 51% of all waste identified as being collected in Hamilton area is recycled or otherwise diverted. Total weights of material recycled or otherwise diverted from landfill in 2016 are shown in Table 10 below:

[11] Source: Bay of Plenty and Waikato Regions Waste Stocktake; Report for Bay of Plenty and Waikato Regional Councils; April 2013

Waste diverted from landfill	Tonnes	% of total waste collected	Tonnes/capita/annum
Kerbside recycling	8,806	4%	0.06
Other recycling or diversion	91,946	37%	0.60
Composted / vermicomposted	24,831	10%	0.16
Total	125,583	**51%**	**0.82**

Table 10 Recycled and diverted material – summary

Of the waste diverted from landfill, 7% was from council kerbside services and 73% from private facilities and services. 20% was composted or vermicomposted in either council or private facilities.

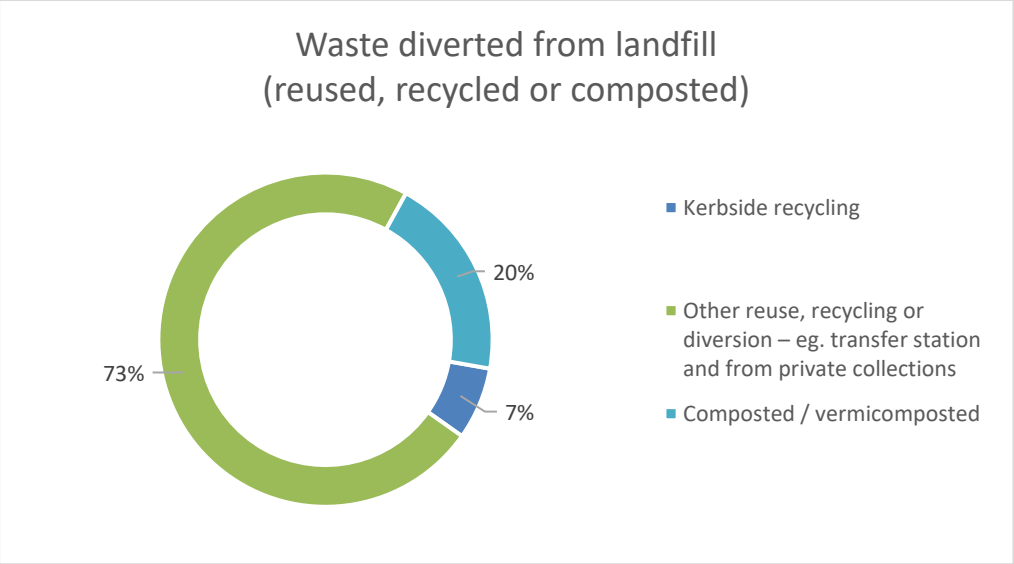


Figure 4 Waste diverted from landfill

This information includes volumes of recycled or diverted material from the following sources:

3.2.1 Council kerbside collection

The HCC recycling service accepts plastics grade 1 and 2, glass, steel and aluminium cans in official 45L crates with paper and cardboard bundled separately. This service collected 8,806 tonnes of recyclables in 2016, an average of 57kg per capita per annum, servicing on average 54,288 households[12].

Kerbside Recycling tonnages 2016	Tonnes
Paper	3609
Glass	4048
Plastic	735
Steel	344
Aluminium	69
Total kerbside recycling collection	**8,806**

Table 11 Kerbside recycling tonnages 2016

[12] Average for households for 2016

The recycling contract is due to expire in 2019 and a procurement process is underway at the time of writing this Waste Assessment.

Kerbside recycling	2012 year	2013 year	2014 year	2015 year	2016 year
Kerbside recycling (kg)	10,044,000	9,536,000	9,399,000	9,136,000	8,806,000
Population[13]	141,612	147,290	149,260	151,281	**153,331**
Kg/capita/annum	71	65	63	60	**57**
Households[14]	51,809	52,403	53,035	53,486	**54,288**
Kg/household/annum	194	182	177	171	**162**

Table 12 Kerbside recycling 2012-2016

Overall, the kg per capita rate for kerbside recycling has been steadily declining since 2012. This may be related to population growth.

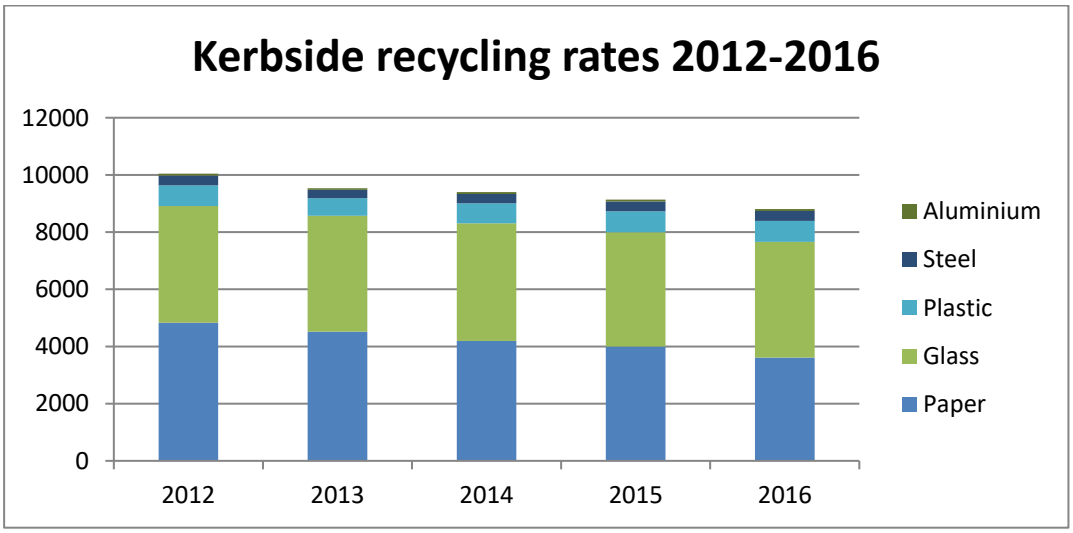


Figure 5 Kerbside recycling rates 2012 - 2016

These figures are likely to be underestimate total household recycling rates as not all residents receive a kerbside service.

The per capita weight of recycling is currently lower than for similar sized councils in New Zealand. A comparison of the amounts of recyclable material collected compared to other councils (based on known information) is shown below:

[13] Future proof
[14] Average calculated for kerbside collection service

District	Kg/capita/ annum	System type
Napier City Council	52 kg	Fortnightly bags or crates
Hamilton City Council	**57kg**	**Weekly 45-litre crate, separate paper collection**
Tauranga City Council	65 kg	Private wheelie bin collection service
Invercargill City Council	69 kg	Fortnightly 240-litre wheeled bin, commingled
Dunedin City	77 kg	Fortnightly 240-litre wheeled bin, fortnightly crate for glass
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
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

Table 13 Recyclable materials per capita per annum for comparable councils

3.2.2 Composition of Kerbside Recycling

Data provided by the HCC recycling contractor indicates paper (41%) and glass bottles and jars (46%) represent that largest part of materials collected in kerbside recycling services.

Composition of kerbside recycling – 2016 year	% of total	Tonnes/ annum
Paper	41%	3,609
Glass	46%	4,049
Plastic containers	8%	735
Steel cans	4%	344
Aluminium cans[15]	1%	69
TOTAL	**100%**	**8,806**

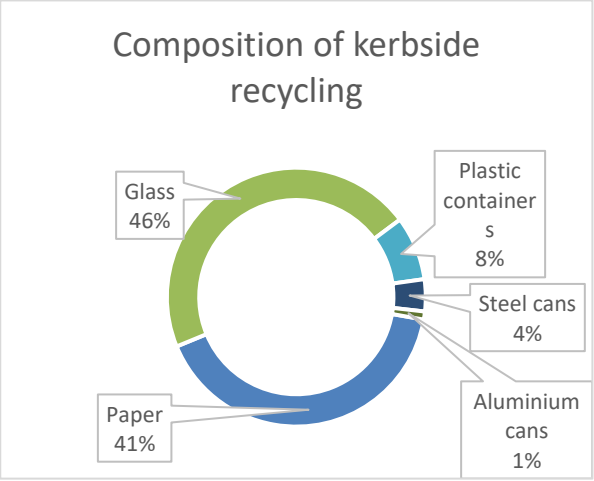


Table 14 Composition of Kerbside recycling

The capacity available for households to present cans, plastic and glass is restricted by the volume of the crate. Although it is possible to purchase an additional crate it is unknown how many residents regularly use multiple crates.

(a) Diversion rate – kerbside recycling

The kerbside diversion target is 30 per cent. This is calculated by:

[15] Note: Plastic, steel and aluminium are weighed together and then the following breakdown is applied – Plastic 64%, Steel 30% and Aluminium 6% of total mixed product.

$$Diversion\ rate = \frac{Kerbside\ recycling}{(Kerbside\ rubbish\ +\ kerbside\ recycling)}$$

Where

- **Kerbside rubbish** is the total tonnage of kerbside rubbish collected in the period.
- **Kerbside recycling** is the total tonnage of kerbside recycling material collected in the period.

Diversion rate for kerbside recycling		
2008	2015	2016
34%	29%	27%

Table 15 Diversion rate for kerbside recycling – 2008-2016

Diversion rates in Hamilton appear to be declining. In 2008 the rate was 34% and declined to 29% by the end of 2015, and to 27% by 2016. This is in alignment with national figures which indicate diversion declined by 6.3% between 2014 and 2017.

There are a number of reasons for this including:

- The measurement is based on weight and the use of heavy recycling materials (paper and glass) is on the decline. For example, readership of newspapers has declined substantially, reducing paper volumes in the recycling.
- The amount of rubbish that is put out is increasing, mainly due to population increases.
- Central government has failed to implement national waste minimisation mechanisms (such as mandatory product stewardship schemes) and the waste levy is not set at a level which discourages waste to landfill or incentivises diversion.
- Council has done minimal education and marketing in the past few years. Therefore households may not know what they can and cannot recycle. However, as composition of the rubbish stream has remained constant between 2013 and 2017, this is less likely.

3.2.3 Diversion potential – Transfer stations

(a) Lincoln Street Transfer Station

A June/July 2017 waste audit of the facility indicated approximately 42% of the material collected at the Lincoln Street facility was potentially divertible.

Of the total waste to the facility that is potentially divertible, the largest waste stream is organics with 23% divertible, followed by paper and cardboard with 9% divertible; and timber with 4% potentially divertible.

Based on information provided by the operator in 2016, a high rate of pit recycling continues to occur. Pit recycling is predominantly materials (including timber, joinery, etc.) and reusable items that are sold through the reuse shop on site. A high rate of pit recycling follows a trend which has occurred since approximately 2008. Overall, since 2008 a 124% increase in pit recycling has occurred.

The high rate of pit recycling masks a decline in separated material received at the site. The site operator indicated that this was largely attributable to a decline in the more valuable materials (in particular metals) being dropped off at the site as there are other operators that will collect

this material and/or pay for it. This is likely to account for some of the decline, but the drop appears to be across most materials[16].

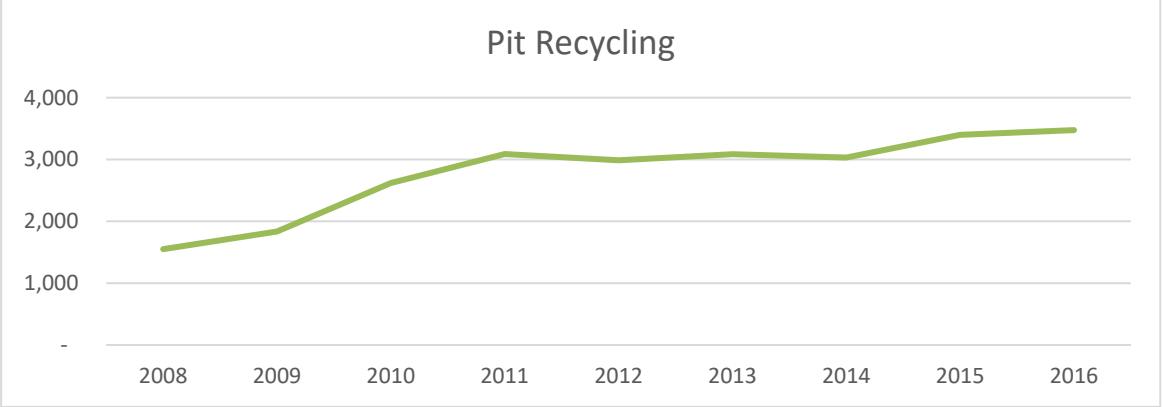


Figure 6 Changes in pit recycling 2008-2016

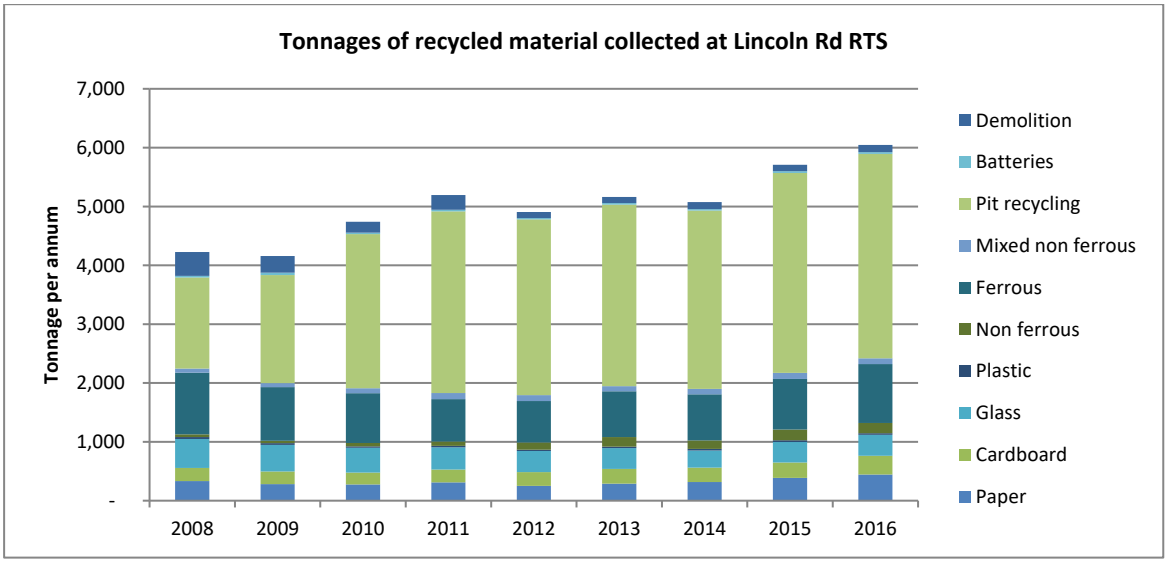


Figure 7 Tonnages of material recycled via the Lincoln Rd RTS

Overall, the Lincoln St TS shows a trend that has led to a 42% increase in recyclable tonnages being handled by the site since 2009. This is likely to be due to a range of maintenance and improvements for the site including asset management investigations in 2011/2012; a later Refuse Transfer Station Renewals project and the introduction of a new compactor and additional maintenance in 2013/2014.

(b) Sunshine Ave TS

As the Sunshine Ave TS is a private facility, available information on tonnages has been provided by the operator. A June/July 2017 waste audit of the facility indicated approximately 24% of the material collected at the Sunshine Ave facility was potentially divertible[17].

Of the total waste to the facility that is potentially divertible, the largest waste stream in paper and cardboard – with 12% divertible; followed by timber at 7.8% and organic material with 6.4% potentially divertible.

[16] Eunomia Asset Sale Review of HCC RTS and HOC Final 31-5-13
[17] Preliminary results of June 2017 swap survey of Hamilton transfer stations; WasteNot Consulting

3.2.4 Organic waste

A total of 24,984 tonnes of organic material was identified as having been diverted from landfill in 2016.

Organic material (2016)	Tonnes
Organic / composting	10,881
Waste water biosolids sent to MyNoke Worm Farm	13,950
Food waste diversion (Kaivolution)	153
TOTAL	24,984

Table 16 Composition of organic material

(a) Wastewater sludge / biosolids

HCC records indicate that in 2016 approximately 13, 950 tonnes of biosolids were diverted from landfill and were processed at the MyNoke worm farm. The City's sludge includes a high level of arsenic which limits the options for diversion and use.

(b) Green waste

The combined total of green waste through the Hamilton Organic Centre and commercial green waste collections diverted an estimated 10,881 tonnes in 2016. This material is predominantly processed into compost.

(c) Food waste diversion

A further 153 tonnes of food waste was diverted from landfill via the Kaivolution programme. Kaivolution is a Hamilton-based organisation that collects, sorts and distributes food daily. The not-for-profit organisation aims to stop edible food from being needlessly thrown away and ensure that it reaches those in our community who are struggling or vulnerable.

3.2.5 Soft plastics

Based on the data provided by the Packaging Forum for a four month period in 2017, an estimated 6,466 bags of plastic are likely to be collected annually (average 124 bags per week) from Hamilton City.

2017	Jan-17	Feb-17	Mar-17	Apr-17	Extrapolated annual
No of weeks	4	4	5	4	**52**
# bags collected	496	486	656	476	**6,466**
Estimated average weight of bag[18]	4.0	4.0	5.0	5.0	**4.5**
Average # of bags per week	124	121.5	131.2	119	**124**
Estimated kgs[19] at average weight of 4.5kg	1984	1944	3280	2380	**29,099**

Table 17 Soft plastic recycling scheme collected volumes

The Packaging Forum estimate the weight of each bag at 4 - 5kg per bag[20], leading to an estimated 29,099kg of soft plastics collected in Hamilton City annually.

[18] Estimation of average weight of bag provided by the Packaging Forum. No information was provided by the scheme manager on how the average weight of each bin was estimated, therefore the accuracy of weight information cannot be verified.
[19] Based on number of bags collected multiplied by an estimated average weight of bags

PART 4 - WASTE INFRASTRUCTURE

There are no legally operating waste landfills in the Hamilton City Council area. Of the five regional landfills, the main repositories for waste from Hamilton are the North Waikato Regional Landfill and Tirohia landfills. Both landfills also accept waste from other parts of the Waikato and Auckland Regions.

Hamilton has two transfer stations, one Council owned and one privately run, the City also has a Council owned Organics composting facility.

4.1 Key issues related to waste infrastructure

- Insufficient resource recovery infrastructure in Hamilton to meet future demand, which will peak around 2033
- Managing the anticipated increase in construction and demonstration waste
- Better planning around new multi-unit developments to ensure
    - adequate space is available for waste storage on-site
    - adequate access to properties and along roadways for diverted material and waste service vehicle

4.2 Landfills

There are currently no landfills that accept municipal solid waste in Hamilton, therefore HCC does not own or control any landfills that receive waste from Hamilton. Data and information on the volume and composition of waste being received by landfills is provided at the discretion of the landfill owner.

A high proportion of the waste that is generated within the city is disposed of at one of the two transfer stations within the city. Waste is consolidated at either the Council-owned Lincoln St rubbish transfer station (TS) or the EnviroWaste Services Ltd-owned Sunshine Avenue TS. Waste from these facilities is either bulk-hauled to North Waikato Regional Landfill (Hampton Downs landfill) or Tirohia Landfill. A small amount of waste is transported directly from Hamilton to landfill.

A small amount of the waste disposed of at Sunshine Ave TS originates in Waipa District. Other waste from outside of the city may be disposed of at the transfer stations, but no information is available. As well as the North Waikato Regional Landfill there are 4 other landfill disposal options within 100 km. The table below lists the landfills that are known to currently receive municipal waste from Hamilton.

Name & Owner/Operator	Accepts	Location	Capacity and Consent
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	Consented to 2030
Tirohia Landfill (Waste Management)	Non-hazardous residential, commercial and industrial solid waste, including special wastes. Sludges with less than 20% solid by weight are prohibited. Compostable material is also processed on site.	Tirohia, Hauraki District	Consented to accept 4 million m^3 - approximately 2035

Rotorua District Landfill (Owned:Rotorua District Council; Managed: Waste Management)	Non-hazardous residential, commercial and industrial waste, including special wastes (although bylaw may be reviewed to exclude these in future). Rotorua Landfill does not accept waste from outside the district.	Atiamuri SH30, Rotorua District	Consented to 2030
Tokoroa Landfill (South Waikato District Council)	Non-hazardous residential, commercial and industrial solid waste, including special wastes.	Newell Road, Tokoroa	Consented to 30 October 2020
Whitford Landfill (Waste Disposal Services - joint venture b/w Auckland Council and Waste Management NZ Ltd)	Non-hazardous residential, commercial and industrial solid waste, primarily from south Auckland.	Whitford, south-east Auckland	Remaining capacity 6.5M tonnes. Resource consent allows no more than 200,000 tpa.

Table 18 Class 1 landfills accessible from Hamilton City

There does not appear to be a need for a council owned landfill within the area. While some longer-term planning may be required to ensure the region as a whole has suitable landfill capacity in the 20-50-year term, this is a discussion more suitable as a private venture or a joint council initiative.

4.2.1 Closed Landfills

HCC currently manages environmental discharges from four closed landfills of various ages within Hamilton. Below are the dates when each landfill was an active municipal landfill:

- Willoughby Street Closed Landfill (early 1920s to 1973)
- Cobham Drive Closed Landfill (15 months from 1973 to 1974)
- Rototuna Closed Landfill (1974 to 1985)
- Horotiu Closed Landfill (1985 to 2006).

All of Hamilton's closed landfills have at least two resource consents allowing for the discharge of both leachate (produced when rainfall and groundwater comes in contact with refuse underground) and landfill gas (LFG). Waste within landfills breaks down at different rates, but generally, with age, leachate and LFG production reduces.

Future management of Horotiu and Rototuna especially, as with all landfills, may pose some issues through reduced discharges and having to determine whether the current treatment systems are appropriate.

(a) Leachate

Leachate from both Horotiu and Rototuna is currently pumped off site to the Pukete Wastewater Treatment Plant. Cobham and Willoughby both have consents that allow for leachate to be discharged to ground. Quantity and quality of leachate is monitored on a regular basis at all sites.

(b) Landfill Gas Extraction (LFG)

As Willoughby and Cobham are older landfills, they do not have active gas extraction systems like Rototuna and Horotiu. Active gas extraction systems utilise mechanical blowers to extract LFG from within the site. Willoughby and Rototuna also have a passive gas system as well (including bark beds, vent stacks). LFG is currently monitored at all sites on a regular basis.

4.2.2 Cleanfills

Cleanfill sites accepting less than 2500m3 per annum are permitted under the Waikato Regional Council rules and are not required to provide information to the Council on volumes or composition of accepted material. Monitoring of cleanfills is a responsibility of the Waikato Regional Council.

In a 2011 report the MfE identified a total of eleven consented cleanfills located in and around Hamilton, with three of these considered significant cleanfill sites. However, it is unknown how much or what type of material each site accepts.

Sites include:

- Te Rapa Shingle Co., Te Rapa
- Gremara Holdings Ltd T/A Gremara Contractors, Newstead
- Te Kowhai Sands 2006 Ltd, Te Kowhai
- New Zealand Transport Agency (Regional Office), Te Rapa Bypass project
- Schick Construction & Cartage Limited, Hamilton
- Norcon Investments Ltd, Hamilton
- Perry Resources (2008) Limited, Horotiu
- Winstone Aggregates Ltd, Rukuhia
- RX Plastics Ltd, Horotiu
- Riverlea Sands Ltd, Horotiu
- Horotiu Properties Ltd, Horotiu
- D&T MacDonalds

Risks associated with cleanfills are disposal of unsuitable material (i.e. material not defined as appropriate for cleanfill), settlement, slope failure, and erosion. Typically, cleanfills are not strongly regulated, although the MfE is investigating the need for further regulation of cleanfills.

4.3 Transfer Stations[21]

Transfer Stations (TS) provide a local option for residents and businesses to drop off their rubbish and recycling. Waste can be dropped off at these sites by the public and commercial collectors after paying a gate fee.

4.3.1 Lincoln Street TS

The Lincoln St TS (also known as the Hamilton Recovery Park) is situated at 60 Lincoln Street, Frankton. The facility is owned by Hamilton City Council and leased to Waste Management (WM). WM contracts site management to Essential Recycling.

The site is divided into two areas – the rubbish transfer pit and the recycling drop-off area for free of charge and re-use shop. All vehicles entering the transfer pit area must stop at the weighbridge kiosk, where the kiosk operator assesses the load and directs the driver to the appropriate drop-off area. Bags and small vehicle loads are not weighed, but are charged at a flat rate. Vehicles with larger loads, trailers, and trucks are weighed over the double weighbridge when entering and then when leaving the facility and are charged by weight.

Vehicle access is limited to less than half of the available transfer pit area, with the remainder of the pit area being used for resource recovery. Small vehicles unload in the central area of the pit

[21] Based on *Composition of Solid Waste in Hamilton*; WasteNot Consulting 2013

with trailers and large vehicles using a separate area for unloading. There is no separate green waste disposal area at the site.

Russell Recycling staff recover significant quantities of materials from the transfer pit. These materials are stored temporarily adjacent to the transfer pit before being aggregated and removed, as shown in the photo on the next page. Re-usable items are transferred to the re-use shop for sale.

Disposal charges for all waste into Lincoln St TS are set by Waste Management.

Figure 8 Lincoln Ave RTS showing vehicles unloading on the RHS and recovered materials on the pit floor on the LHS

4.3.2 Sunshine Ave TS

Sunshine Avenue TS is located at 99 Sunshine Avenue, Te Rapa. The facility is owned and operated by EnviroWaste Services Ltd.

The site comprises a recycling drop-off area, which is available for use at no charge, and a transfer shed, which includes separate drop-off areas for residual rubbish and green waste. A double weighbridge and kiosk is located past the entrance to the recycling drop-off area. All vehicles carrying waste must stop at the weighbridge kiosk, where the kiosk operator assesses the load.

Bags and small loads are not weighed, but are charged at a flat rate. Vehicles with trailers and trucks are weighed over the weighbridge entering and leaving the facility and are charged by weight. Vehicles carrying only recyclable materials do not stop at the weighbridge kiosk, but proceed directly to the recycling drop-off area.

Residual waste disposed of on the tipping floor is loaded into open-top trailers for transport to Hampton Downs landfill. Transfer station staff recover some metals and cardboard from the residual waste prior to disposal.

Figure 9 Sunshine Ave Transfer Station

Sunshine Ave TS receives primarily commercial waste delivered by commercial waste operators. A relatively small number of residents and small businesses use the facility.

The facility receives kerbside rubbish collections from Waipa District and residual waste from EnviroWaste's Cambridge transfer station. These waste streams are not included in the analysis of waste to landfill from Hamilton.

4.4 Recycling, Recovery and Reprocessing Facilities

4.4.1 Kerbside recyclables destination

Once collected and consolidated, kerbside recyclables are transported to a variety of processors, as follows:

What happens to the kerbside recyclables?		
Glass	Visy or OI in Auckland	Processing
Paper	OJI	Processing
Cardboard	OJI or Waste Management	Sent to the Kinleith plant in Tokoroa
Plastic	Waste Management - Tauranga recycling plant.	Sorted into various grades and sold on the Open Commodities market. Buyers are located throughout the world and some product is sold in NZ but most product goes to countries in Asia.
Steel	Waste Management - Tauranga recycling plant.	SIMS (Auckland) for processing.
Aluminium	Waste Management - Tauranga recycling plant.	SIMS (Auckland) for processing.

Table 19 What happens to kerbside recyclables?

Recycling processing facilities which receive Hamilton diverted material includes[22]:

- O-I NZ Ltd
- SIMS Pacific
- Oji Fibre Solutions
- Visy MRF
- CHH Fullcircle
- Kaivolution
- Hamilton Organic Centre
- MyNoke Ltd
- South Waikato Achievement Trust
- Resene PaintWise Collection
- Agrecovery
- Envirowaste MRF - Taupo
- Smart Environmental MRF - Kopu
- International – China / Indonesia / Jakarta

The term 'recyclables processing facilities' includes:

- Material recovery facilities (MRFs). At a MRF, dry recyclables/commodities are sorted and bulked for transport to recycling facilities outside the region for processing; and
- Organic material facilities e.g. composting facilities.

In general, the collection and processing of dry recyclables/commodities from commercial premises is a mature market, with limited opportunity for expansion. The Waikato region has a particularly wide range of recovered materials processing facilities, particularly for scrap metal, organic wastes, including wood wastes, and to a lesser extent, C&D materials such as concrete.

[22] This list is not exhaustive, it is extracted from information provided by the waste operators who provided Hamilton City Council with data for this waste assessment and the 2011 Waste Assessment

While there are limited facilities for recycling or reprocessing in Hamilton City, access to such facilities is currently sufficient, but may need further development to meet future demand for reuse and recycling facilities.

4.4.2 Hamilton Organic Centre

HCC provides a green waste composting facility, the Hamilton Organic Centre (HOC) in Wickham Street, which is within the Waipa District and has resource consent to operate until 2025. HCC owns the land and infrastructure at the HOC and leases the operation of the site to a privately-owned business (Waste Management).

The HOC accepts garden waste and tree prunings from private and commercial sources, utilises windrow composting and sells compost, lawn mix, potting mix, mulch, bark, firewood, garden mix and vermicast.

The HOC accepts organic material for processing, comprising 54% of material from the public and 46% of material from commercial sources.

Hamilton Organic Centre 2016	Percentage
Public	54%
Commercial	46%
Total Tonnes in	**100%**

Table 20 HOC tonnages 2016

The HOC capacity is limited by the method of composting undertaken, the characteristics of the site and the weather. The site currently operates near capacity, with about 50% of the green waste from the HOC going to Waste Management's composting facility at Tirohia.

Challenges facing the site include[23]:

- limited capacity at the HOC, based on current green waste amounts
- maintaining a sustainable market for the site's compost and other products
- the presence of alligator weed on the site
- public feedback that green waste gate fees are too high
- geology of the site

4.4.3 Construction & demolition waste

D&T MacDonalds operate a C&D reuse facility and accept wood, brick and concrete for resale, as well as operating an on-site concrete crusher. The facility includes a cleanfill which accepts standard cleanfill, hardfill, and demolition materials (which are either sorted and resold, crushed or cleanfilled).

Both the Sunshine Ave and Lincoln Rd TS also accept C&D waste (for either recycling or disposal) as do some bin hire companies.

Data obtained from some facility operators and service providers suggests approximately 18,000 tonnes of C&D waste was sent to landfill from Hamilton City in 2016.

[23] Lincoln Avenue Refuse Transfer Station and Hamilton Organic Centre: Strategic Implications of Potential Sale; prepared for HCC by Eunomia Consultants; May 2013

4.4.4 Hazardous Waste Facilities

Hazardous waste 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
- Fuel, solvents and oils, particularly those containing volatile organic compounds
- Hydrocarbon-containing wastes, such as inks, glues and greases
- Contaminated soils
- Chemical wastes, such as pesticides and agricultural chemicals
- Household hazardous waste such as garden or kitchen chemicals, bleaches and glues
- 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 landfill 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 small proportion of hazardous wastes are 'intractable', and require exporting for treatment. These include polychlorinated biphenyls, pesticides, and persistent organic pollutants.

4.5 Assessment of infrastructure and council role

In general, Hamilton has adequate waste infrastructure to meet current waste flows, although the Lincoln St TS and HOC are nearing capacity. Further development is required to meet future demand.

The HCC Asset Management Plan includes the reconfiguration of the transfer station in 2027/28 and development of a resource recovery centre in 2038/39. Upcoming changes to service delivery also include developing community drop off points throughout the city to promote resource recovery over a five-year period commencing in 2020.

However, population growth may mean these need to be moved forward to meet demand, which will peak around 2033.

PART 5 - WASTE SERVICES

5.1 Key issues related to waste services in Hamilton

This section of the waste assessment has identified the following as being the key issues related to waste services in Hamilton:

- Efficient delivery of services – ensuring positive customer outcomes
- Data quality and management
- Illegal dumping and litter issues
- Recycling performance
- Management of key waste streams e.g. Construction and demolition; E waste, business waste and event waste
- The need for greater joint working in Council service delivery and regional and sub-regional collaboration

5.2 How waste is currently managed

This table provides an overview of what services are available for different waste streams in Hamilton.

Waste Stream	How these are currently managed
Household rubbish	A weekly kerbside rubbish service to over 54,000 residential properties within the city. Through a contracted service provider, the kerbside rubbish collection allows residents to set out two bags of rubbish per week, with a maximum weight of 20 kgs each. The Council collection is compacted at the Lincoln St RTS. (This service is not provided to inner city apartments or the commercial and industrial sector.) Transfer station drop-off
Household recyclables	A weekly kerbside recycling service to over 54,000 residential properties within the city. The collection uses an official Council 45-litre plastic crate, with residents instructed to bundle and set out paper and cardboard separately. The collection accepts: ○ plastic containers with recycling symbols #1 and #2 ○ clean steel cans ○ aluminium drink cans ○ glass jars and bottles ○ newspaper, cardboard, magazines, junk mail, envelopes and any other clean paper. Transfer station free drop-off
Aluminium, steel, car batteries, LPG cylinders	Processed at transfer stations and then on sold to markets or to scrap dealers
Organic waste	Hamilton Organic centre Private kerbside collection to compost Home composting, feeding to animals etc
Construction and Demolition waste	Transfer station drop-off From transfer station either diverted to landfill or used to fuel boiler to generate hot water on-site. Recycled concrete crushed and substituted for quarry rock or sent to cleanfill. Waste wood is reused for other purposes or taken to landfill
E-waste	Waikato Environment Centre/Go Eco e-waste recycling Transfer station drop-off Electrical goods received at transfer stations for recycling or stripped on- site and parts on-sold
Litter and illegal dumping	Council provided litterbin servicing and removal of illegally dumped waste, which is taken to rubbish transfer stations then on to landfill
Inorganic waste	Transfer station drop-off
Hazardous waste	Transfer station drop-off.

Biosolids	Transported to mynoke vermicomposting
Cleanfill materials	Disposed of at various cleanfill sites
Commercial waste and diverted materials (recyclables)	Private collections (MGB's, skip bins etc) Transfer station drop-off Commercial recyclable materials sent out of region for processing Rubbish sent to landfill disposal

Table 21 Current processes in the City for managing waste and diverted materials streams

5.3 Council-provided waste services

HCC provides a range of waste services including:

- Kerbside rubbish and recycling collection services
- City-wide services
    - Lincoln St transfer station
    - Hamilton organic centre
    - Litter collection - the pickup of litter associated with the kerbside rubbish and recycling collection service, removal of dumped rubbish (fly tipping).
    - Waste minimisation and education services
    - Administration of a waste grant program

5.3.1 Council kerbside rubbish collection service

HCC currently provides a weekly rates funded residential kerbside rubbish collection service, which allows for disposal of a maximum of two bags, not exceeding 60 litres or 20 kilograms each. HCC does not provide a kerbside rubbish collection to CBD residents because of space and access limitations. A rubbish collection service is provided to CBD residents by the private sector and CBD resident rates do not include this collection charge.

Hamilton City Council kerbside rubbish service collected 23,263 tonnes rubbish in 2016, an average of 152kg per capita per annum, servicing on average 54,288 households. Data provided by the Council kerbside rubbish contractor indicates rubbish tonnages are increasing.

The rubbish contract is due to expire in 2019 and a procurement process is underway at the time of writing this Waste Assessment.

5.3.2 Council kerbside recycling collection service

HCC provides a weekly residential kerbside recycling collection service. The recycling service is provided to all HCC residents except those in the CBD area (which includes Bridge Street to London Street and the Waikato River to Tristram Street).
The recycling service accepts plastics grade 1 and 2, glass, steel and aluminium cans in official 45L crates with paper and cardboard bundled separately. One additional recycling crate can be purchased by households for a one-off fee per crate.

5.3.3 Illegal dumping and litter control and enforcement

Public place rubbish & recycling bin emptying and litter collection services are provided under contract. The contract also covers road sweepings. A litter and illegal dumping compliance map can be seen in section A.6.0

(a) Litter servicing

International evidence indicates people look for familiar branding when seeing a litter bin. If they are out of their home region, they may not recognise a litter bin in different branding. Therefore, regional or sub-regional standardisation of litter bins, signs and branding may assist in reinforcing litter messaging and could be investigated further.

(b) Public place recycling

Approximately 1.5 tonnes of material is collected annually from the 13 public place recycling bins in Hamilton City. This material is always contaminated with other rubbish and food scraps, requiring sorting and washing prior to delivery to the transfer station recycling facilities. Collections are usually four times per week in summer and less frequent in winter.

(c) Illegal dumping

Approximately 1,200 bags/boxes of material and 142 larger items (such as couches and fridges) were collected as illegal dumping in 2016. Hamilton City Council issued 16 infringement notices for illegal dumping in 2016. Research suggests that the factors leading to illegal dumping are relatively complex and inter-related. These factors include:

- Weak formal controls over waste management;
- Perceived lack of enforcement / low risk of enforcement
- Other incentives to avoid legal disposal (e.g. distance to disposal sites)
- High costs of legal disposal options (e.g. transfer stations)
- 'Suitable' sites to tip illegally (including ease of access, ability to not be observed)
- A view that illegal dumping is non-problematic (e.g. council will deal with it)

HCC undertakes ongoing monitoring of the patterns of illegal dumping and key locations where dumping and litter occur. This information can be further utilised to develop targeted campaigns for both increased enforcement and community education.

While enforcement tends to be strong in Hamilton City, public perception related to the level of enforcement is unknown.

Further study of the patterns of illegal dumping in the City may help to reveal common causes and offenders. Overall however, increased enforcement of litter and illegal dumping, coupled with promotion of enforcement activities and provision of community education, will be required.

5.3.4 Waste education and minimisation programmes

Waste education partnerships with community groups may be beneficial, particularly where they have networks, contacts and low-cost structures for achieving maximum community involvement for waste education and promotion.

In addition, education and minimisation programs are an area where joint working with other councils has the potential to deliver significant benefits. Opportunities include:

- Regional or sub regional education programs for target groups such as farmers
- Regional messaging / branding for litter to account for cross District travel and reinforce litter messages
- Working towards consistent enforcement of illegal dumping

HCC supports 30 of the city's schools to take part in education on waste minimisation and funding support through the EnviroSchools programme. They are:

Enviroschools		
Green-Gold	Hamilton East School Hillcrest Normal School	Hukanui Primary School Rhode Street Primary School
Silver	Deanwell Primary School Frankton Primary School St Joseph's School	Nawton Primary School Waikato Waldorf School Woodstock Primary School
Bronze	Aberdeen Primary School Forest Lake Primary School Hamilton North Special School Hillcrest High School Marian Catholic School Melville Intermediate School Melville Primary School Patricia Avenue (Special needs school)	Insoll Avenue School Rototuna Primary School Southwell School St Columba's Catholic School Vardon Primary School Whitiora Primary School
Not reflected	Berkley Intermediate School Fairfield College Frankton School	Hamilton West Primary School Maeroa Intermediate Pukete School

Table 22 Enviroschools supported by HCC

5.3.5 Waste Grants

HCC provides a Contestable Waste Minimisation Fund to assist businesses, community groups and individuals who have a waste minimisation idea or project.

In 2016-2017, $50,000 was available to be allocated and applicants could apply for either a small (minimum $1,000 – maximum $5,000) or large (minimum $5,000 - maximum $15,000) grant.

The Contestable Waste Minimisation Fund supports the vision, strategic objectives and goals of the Waste Management and Minimisation Plan (WMMP) by promoting or achieving waste minimisation in Hamilton. Successful recipients have included:

Project Group	Project Title	Comments
Para Kore Marae	Para Kore ki Kirikiriroa	Implementation of Para Kore — waste minimisation, education and mentoring programme to community organisations and marae within Hamilton.
Environmental Education for Resource Sustainability Trust (EERST)	Paper4trees	EERST, through Paper4trees, provides schools and preschools with the resources they need to set up an in-house paper and cardboard recycling system. EERST provides 45 litre plastic grey bins for every room in the school/preschool where paper is generated e.g classrooms, photocopy rooms, offices, libraries etc.
Waikato Environment Centre/ Go Eco	E Waste Minimisation and Collection	Collects and diverts E waste from landfill or dumping by providing an E waste depot for 6 days per week. Raise awareness and promote the benefits of E waste collection and recycling. To improve accessibility of the

		E waste collection service for lower income households and individuals with limited mobility.
Waikato Environment Centre / Go Eco	Kaivolution Food Rescue	Kaivolution collects edible but not saleable food from growers, wholesalers, and retailers, and redistributes it to charities serving people and families in need, thus diverting it from landfill.
The Nappy Lady Limited	Behaviour Change Workshops	Provides 200 families or expectant parents in Hamilton with education, advice and incentives to promote waste minimisation in the home with babies and children. Through four Waste Free Parenting Workshops and four Love Food Hate Waste Workshops
The University of Waikato	Eco Emporium- He Kohinga Oru Oru	An educational space for students, centered on waste minimisation with recycling, repairing, up-cycling, and up-skilling workshops and information. A place where items are donated, repaired and gifted to charities, ultimately diverting unwanted items from landfill. Students volunteer their time, learn new skills and waste minimisation behaviour and engage the community.

Table 23 2017 Funding recipients

5.4 Proposed changes to Council waste services

Through the 2015-2015 LTP, Council has considered how current waste services are provided and committed to the addition of new services. These changes in service are under procurement at the time of this Waste Assessment, and will be rolled out for commencement 2019/2020.

It is anticipated that the changes in services will address many of the issues and limitations identified in relation to current services.

5.4.1 Proposed kerbside service change

The proposed kerbside service is targeting a waste diversion rate of 50 per cent, by collecting:

- Aluminium, cans, all plastics (excluding film and polystyrene) and paper in a 240 litre (L) wheeled bin; and glass in the existing recycling crate.
- food in a 23L food bin collected weekly
- Rubbish in a 120L wheeled bin, collected weekly.

Additional planned kerbside services include:

- assisted collections to help physically impaired or elderly residents
- bespoke services for intensification areas that cannot be serviced effectively through a kerbside collection service

5.4.2 Proposed city-wide services

In the 10-Year Plan, there is no capital funding available to make the improvements required to maximise possible waste diversion at the transfer station and provide efficiencies to the organic centre. It is proposed to obtain these improvements through contractor investment in the sites. The contract for the TS at Lincoln Street ends in 2019 and for the HOC in 2021. The new leases will seek to increase diversion across the sites.

5.4.3 Consultation

The proposed changes to services was consulted on in Oct-Nov 2016, and were supported by the Hamilton community. A total of 2793 submissions were received during the consultation.

Preferred Option	Number	%
Retain current service of black bags and limited recycling option	419	15%
Change to wheeled bins and more recycling options	2349	84%
Not answered	25	1%
How often respondents want their recycling collected:	**Number**	**%**
Weekly	860	31%
Fortnightly	1862	67%
Not answered	71	3%
Glass - how many respondents would like	**Number**	**%**
Separate crate for glass	1784	64%
Recycle the glass in the recycling bin	928	33%
Not answered	81	3%
Food Waste - how many respondents would like	**Number**	**%**
A food waste service	2114	76%
No food waste service	610	22%
Not answered	69	2%

Table 24 Proposed changes – consultation information

5.5 Funding for council-provided services

All council-provided services are funded out of rates revenue or Waste Levy funding provided by the Ministry for the Environment.

The Waste Levy is accumulated from a $10 per tonne levy (excluding GST) on all waste sent to landfill. The levy was introduced under the Waste Minimisation Act 2008. Disposal facility operators must pay the levy based on the weight of material disposed of at their facility. However, they may pass this cost on to the waste producer such as households and businesses.

Half of the levy money goes to territorial authorities (city and district councils) to spend on promoting or achieving the waste minimisation activities set out in their waste management and minimisation plans (WMMPs).

The remaining levy money (minus administration costs) is put into the Waste Minimisation Fund. The fund is for waste minimisation activities in New Zealand.

HCC received $570,196 levy funding in 2016.

Territorial authorities must spend the levy to promote or achieve waste minimisation. Waste management and minimisation plans (WMMP) prepared by each territorial authority set out how the levy will be used.

5.6 Non-Council Services

There are many non-Council waste and recycling service providers operating in the city.

5.6.1 Private rubbish and recycling services

Commercial rubbish and recycling is collected by a relatively large number of companies who offer a range of services including front end load (FEL) bins, skip bins, hook bins, compactors, and wheeled bins. They may accept rubbish, recycling and/or green waste.
Private operators include:

- AP Group
- Hook Bins/Waikato demolition
- Envirowaste
- Daisy Garden Bags & Bins
- Fullcircle
- Winstone Aggregates
- D & T MacDonald
- Mainfreight
- Envirofert
- Bargain Bins
- Wheelie Bin Services
- Cambridge Hire Bins
- Allens United (liquid waste)
- Greenfingers
- Property Care
- Budget Bins
- Environmental Green Bins
- Flexi Bin
- Sunshine Garden Bag and Bin Company Limited
- Waste Management Collections Limited
- Abilities
- Salters Cartage
- Hamilton garden bags and red lid bins
- J J Richards
- Waikato Garden Bins
- Bargain Skips
- Carlton Party Hire
- Sims Pacific Metals
- Skip bins Hamilton
- Demolition Traders
- Metallic recycling Scrap Pallace

5.6.2 Private reuse organisations

A number of alternatives for the disposal and sale of reusable items are available in the City, such as charity stores and second-hand clothing stores. These include:

- Presbyterian Support Northern Opportunity Shop
- Red Cross
- Salvation Army
- Waikato Second Hand Centre
- Habitat for Humanity ReStore
- Hospice Waikato

5.6.3 Soft Plastics recycling scheme

The Packaging Forum provide the voluntary Love NZ Soft Plastics Programme in the Hamilton area. The scheme takes all soft plastic bags including bread bags, frozen food bags, confectionery and biscuit wrap, pasta and rice bags, shopping bags - basically anything made of plastic which can be scrunched into a ball. Hamilton City Council has purchased an additional two bins for use at the University of Waikato and at the Municipal Building. Customers take their used soft plastics back to participating stores and put them in the recycling bin. Bags are collected from store and transported to Abilities group in Auckland for sorting and then to Melbourne, Australia for processing.

5.6.4 Event waste management

Waste created at events can be a considerable, and avoidable, volume of waste. Due to growing awareness around environmental sustainability affects poorly managed waste can leave a bad impression on – particularly international – visitors.

There are a number of factors influencing the amount, and kind, of waste generated at an event. These can include[24]:

- Length of the event (one-day events produce far less waste per person per day than three-day events factoring in camping)
- Community attracted to an event (events that attract people who consume large quantities of alcohol tend produce more waste and more litter)
- Regulation of materials onsite - some events specify what suppliers can bring onsite – e.g. no glass, or compulsory use of biodegradable plates and cutlery
- Deliberate adoption of a waste minimisation strategy during planning and running the event – waste minimisation strategies can substantially reduce waste to landfill if implemented correctly

Waste minimisation at events is becoming increasingly popular in New Zealand, and the practices involved are increasingly mature and effective.

5.6.5 CBD services

Current CBD services are managed by private operators, with no council provided services. The level of service varies and is dependent on the contract for each individual site.

There is an opportunity to investigate, and if suitable, develop new services for the CBD. Improved CBD services could be targeted to the needs of the growing community in dense urban living, and nearby businesses.

Such an opportunity may provide for sustainable procurement and partnerships with community enterprise for the provision of services within the CBD. Such partnerships may provide community benefits, improve community capacity in waste reduction and minimisation; and allow innovative waste solutions for the dense CBD area.

5.6.6 Assessment of non-council (private) waste services

There are a range of services offered by private waste collection operators with prices depending on bin size and frequency of collection. The main area of concern with private services relates to a lack of visibility around the volume and composition of rubbish collected via private services.

The most promising mechanism for obtaining information on volume and composition of material collected by private collectors and operators is the introduction of waste licencing. The introduction of licensing will greatly improve data quality for the development of the next Waste Assessment.

5.7 Sustainable procurement and community benefits

For local government, sustainable procurement (frequently used interchangeably with 'social procurement') utilises procurement procedures and purchasing power to create positive environmental and social outcomes. The council still receives the same delivery of cost effective goods, services and works that a commercial supplier could provide but community organisations and social enterprises are instead contracted.

The procurement processes of large organisations like local government have a significant impact on the local environment and economy. Altering how goods and services are acquired, so that cost as well as environmental and social benefits are given equal value may help HCC to deliver strategic goals and build a stronger community.

[24] *Waste minimisation and resource recovery at events,* Barbara Hammonds, Taranaki Regional Council

5.7.1 Benefits of community involvement in waste issues

Community led resource recovery activities can provide positive outcomes for the local economy via employment creation. More labour-intensive activities such as prevention, waste minimisation and re-use create (on average) 6 – 8 jobs compared to one created through sending waste to a landfill[25].

Error! Reference source not found. The table below illustrates job growth at five community r ecycling centres around New Zealand that were previously typical transfer stations.

Employment before and after the development of Community Recycling Centres at various sites in NZ		
	Before	**After**
Waiuku	1 part-time	5 full time
Wanaka	0	16 full time
Kaikoura	1-2 full time	13 full time
Raglan	2 full time	17 full time, 23 part-time
Kaitaia	2 full time	18 full time, 16 part-time

Table 25 Employment before and after CRC development

Community or social enterprises tend to prioritise employment creation when compared to privately owned waste companies. Social enterprises create a multiplier effect - meaning that the impact of this additional employment to the local economy is larger than their take home pay might suggest.

Calculating the exact amount of return to local economies via staff spending is difficult however one study suggests that for every $1 spent on staff wages, local economic activity increases by $2.80 due to local staff spending[26]. This compares favorably to organisations which, because of their structure and methodology, take money out of communities – for example by making returns to foreign shareholders.

5.7.2 Key issues and barriers related to community involvement in waste issues

Issues and barriers to new resource recovery activities include:

- **Venue costs:** Commercial leases paid by organisations are expensive and increase regularly. This can contribute to some initiatives becoming financially marginal.
- **Access to processing**: A lack of local processing options means it is uneconomic to provide recycling services for some materials. While facilities do exist regionally, for example e-waste recycling, additional funding would be required for expansion.
- **Operational capacity**: Managing a recycling facility requires operational skills and an understanding of waste markets and waste issues. This capacity is not always available within community groups, nor may council have the internal capacity or institutional knowledge of resource recovery to upskill community groups in these areas.

[25] Valuing Recycling Town – Measuring which bucket has the most leaks : 2009 : Gary Kelk : Ministry for the Environment : New Zealand

[26] Valuing Recycling Town – Measuring which bucket has the most leaks : 2009 : Gary Kelk : Ministry for the Environment : New Zealand

- **Leadership:** There is a need for leadership in fostering collaboration and integration within council and across community to generate resource recovery and local economic development.
- **Council procurement**: Council's procurement approach is traditional and favours large businesses. Community organisations could benefit from a partnership approach to procurement that recognises the social, economic and environmental benefits of 'buying local'.

Guidelines to assist local government to implement sustainable procurement, can be found on the New Zealand Government Procurement website[27] .

PART 6 - REVIEW OF THE 2012-2018 WASTE MANAGEMENT AND MINIMISATION PLAN

This Waste Assessment provides an assessment of the 2012-2018 Waste Management and Minimisation Plan (WMMP). The assessment of this document will provide insights to guide the development of the 2018-2024 WMMP.

The 2012-2018 Waste Management & Minimisation Plan (WMMP) was the first plan developed under the Waste Minimisation Act 2008 and was adopted 5th April 2012. A comparison between this first WMMP and the information in this Waste Assessment suggests good progress has been made against the actions set out in the WMMP, but that volumes of waste to landfill have risen.

The number of private operators collecting waste in the city, and the lack of accurate data from them, makes it difficult to assess the exact quantities of waste – both during the development of the first WMMP and the development of this Waste Assessment.

Indications are that waste to landfill volumes have increased in Hamilton by approximately 33% compared to 2012. Recyclable material recovered appears to have increased by approximately 192%. However, 2012 figures were estimates based on audits and regional reports, whereas 2017 figures are based on low quality data obtained via voluntarily provision from some operators. National trends indicate a 20% increase in waste landfill has occurred and it is likely Hamilton is experiencing a similar increase.

The significant increase in recyclable material is likely to be a result of a combination of low estimates in 2012 and a genuine increase in recyclable recovery as markets have opened and private operators have moved to take advantage of these opportunities. The volumes of waste to landfill and diverted materials for the two periods can be seen in Table 26 below (excludes green waste):

Material	Tonnes		Tonnes/ capita/ annum[28]	
	2012	**2017**	**2012**	**2017**
General waste to landfill	90,000	**120,099**	0.63	**0.78**
Recyclables (kerbside + RTS)	34,500	**100,800***	0.24	**0.66**

*Table 26 Comparison of volumes of rubbish and recyclables: 2012 WA to 2017 WA * excludes composted material*

[27] http://www.procurement.govt.nz/procurement/for-agencies/guides-and-tools/A-to-Z-guides-tools-templates#st

Note: in order to compare 2012 and 2017 figures, composted material was removed from the 2017 recyclables total, to align with 2013 figures.

6.1 Objectives of 2012-2018 WMMP

The objectives of the 2012-2018 WMMP are:

2012 Objective		Progress against objective
Objective 1	That within Hamilton City, there are safe, effective and affordable services for the collection, processing, marketing and beneficial reuse of waste and diverted material.	Achieved. Procurement of new services which will improve outcomes against this objective is also underway.
Objective 2	Reduce the amount of waste generated	Not achieved. Waste to landfill is estimated to have increased by 33%. This is largely as a result of the growth Hamilton has experienced.
Objective 3	While maintaining the quality, maximise the quantity of diverted material.	Achieved. Diverted material has significantly increased.
Objective 4	The community and its visitors will be informed about waste minimisation and their responsibilities in improving the efficiency of resource use and reducing the harmful effects of waste.	Ongoing. Development of Council's Fight the Landfill waste branding. Successful consultation on the proposed kerbside service Further actions are required against this objective.
Objective 5	Any adverse public health and environmental effects resulting from the collection, treatment, storage, handling and disposal of solid waste will be avoided or mitigated.	Achieved. No complaints received from public health and environmental authorities.
Objective 6	Recognise cultural values and ensure they are provided for in respect to sustainable waste management issues.	Ongoing Integrated into our WMMP Funding of Para Kore

6.2 Key Issues of 2012-2018 WMMP

Key issues identified in the 2012-2018 WMMP were:

- **Data management -** Lack of robust and accurate waste and diverted material data held by Council for the City, especially related to the private sector provided services.
- **Emission Trading Scheme implications -** Uncertainty over Government climate change policies and carbon prices.
- **Issues with diverted material infrastructure in Hamilton -** A need to ensure there is sufficient capacity in the infrastructure to handle Council's diverted material quantities.
- **Waste Hierarchy and Community Engagement -** Community engagement and awareness of issues and priorities will enable waste minimisation to become a shared priority. It is recognised that greater effort higher up the waste hierarchy in terms of reducing and reducing waste earlier in the life cycle is needed. The community is

accustomed to the current levels of service and changes from these will require education and publicity.

- **Collaboration -** It is important that Council works with other parties to find collaborative waste management and minimisation opportunities. Continued participation in collaborative initiatives will help Council stay current on market innovation as well as provide the opportunity for cost efficiencies.
- **Other Potential Issues -** The Waste Assessment identified a number of other waste management and minimisation issues including:
    - The potential for the reduction of construction and demolition waste;
    - The need for adequate space for on-property storage and adequate access to properties and along roadways for diverted material and waste service vehicles;
    - Ongoing litter management

These issues continue to be relevant and further action is required to address them.

6.3 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. In addition, the 2012 documents did not provide for data to be collected accordance with the National Waste Data Framework, as suggested by the new guidance.

6.4 Review of Actions

The 2012-2018 WMMP initiatives are shown alongside an assessment of progress in the table below.

Original #	Grouping	Description	Original timeframe	Funding Source	Status 2017
1	Council Management Practice	Council to consider the need for a waste minimisation officer to lead waste management and minimisation within Council and coordinate the implementation of the Actions within this Plan	1-2 years	Waste levy	Completed
2	Council Management Practice	Review and evaluate future options for service delivery, including the contractual arrangements of the transfer station and collection services, for the purpose of obtaining competitive rates and security of access to disposal facilities.	1-2 years	Waste levy through staff time	Completed
3	Council Management Practice	Review, evaluate and update the existing waste bylaw to better regulate the collection, transportation and management of waste. This update should consider providing waste services to CBD residents, requiring licensing of collectors, transporters and disposers of waste, and require licensed operators to submit data returns. It should also include requiring waste management plans as part of event management. Council is legally required to review this bylaw by early 2012, and the new bylaw will expire in five years. There will therefore be an opportunity to refine the bylaw further through a review in the near future which can reflect any service delivery changes around waste which may impact the bylaw.	1-2 years	Waste levy through staff time	Bylaw reviewed and adopted April 2012. Came into force July 2012. System for licensing operators and collectors as required by bylaw has been developed and is being implemented
4	Council Management Practice	Monitor and report on the waste related complaints received through Council's service request system.	1-2 years	Waste levy through staff time	Continuing
5	Council Management Practice	Work with the Waikato District Health Board to establish formal communication protocols between the organisations regarding health implications associated with waste management and minimisation activities.	1-2 years	Waste levy through staff time	Continuing
6	Council Management Practice	Produce a guidance document that sets out Council's waste levy allocation policy, fund criteria and also application guidelines on how Council will award grants from the Waste Levy fund.	1-2 years	Waste levy through staff time	Completed
7	Council Management Practice	Seek advice about the Climate Change (Waste) Regulations 2010 and associated regulations such as the ETS, their implementation and the implications for the City.	1-2 years	Waste levy through staff time	Completed
8	Council Management Practice	Facilitate consultation on sustainable waste management issues with Iwi and other community groups and recognise and promote the principles of Kaitianga and stewardship.	1-2 years	Waste levy through staff time	Continuing

Original #	Grouping	Description	Original timeframe	Funding Source	Status 2017
9	Reduction	Continue to support education programmes that raise awareness and promote waste minimisation, including providing the public with periodic information on material diversion services available in the City.	Ongoing	Waste levy through grant	Continuing Establishment of the Fight the Landfill brand and campaign
10	Council Management Practice	When reviewing the District Plan and waste bylaw, assess and include opportunities for waste and diverted material such as recycling space requirements, development waste assessments, and waste audits.	Ongoing	Waste levy through staff time	Continuing
11	Council Management Practice	Work with the site contractor to investigate and identify how to increase demand for Hamilton Organic Centre products.	3-5 years	Waste levy through staff time	Continuing
12	Council Management Practice	In review of its procurement policy, Council will consider the use of methods designed to achieve efficient and effective waste management and minimisation.	3-5 years	Waste levy through staff time	Completed
13	Council Management Practice	In accordance with the requirements of the Act, review the Plan before the end of 2017 to ensure the Objectives, Policies and Methods are consistent with the level of services set in the Ten Year Plan. Prior to the review, and as part of the preceding waste assessment, a comprehensive analysis of the City's waste should be undertaken in line with the Solid Waste Analysis Protocol (SWAP) to ensure accurate data is used.	5 years +	Waste levy through staff time	Underway
14	Council Management Practice	Ensure that services provided by Council are in line with and promote current health and safety guidelines.	Ongoing	General rates (staff time)	Continuing
15	Reduction	Issue grants to third parties for the purpose of promoting or achieving waste minimisation and manage grants in accordance with the guidance document to be produced by Council.	1-2 years	Waste levy through grants	Completed
16	Reduction	Continue to investigate process improvements at the Water and Wastewater Treatment Plants that may allow the sewage sludge to achieve a graded level potentially allowing disposal to land in future.	1-2 years	Waste levy	Completed
17	Reduction	Further investigate, and if feasible implement or support, various options to divert green waste and putrescible waste.	1-2 years	Waste levy/private enterprise	Completed
18	Reduction	Monitor the quantities and composition of the City's waste streams together with origin and destination, and the number of service subscribers/ customers as appropriate using Council information and	1-2 years	Waste levy through staff time	Completed

Original #	Grouping	Description	Original timeframe	Funding Source	Status 2017
		data gathered from private waste operators under bylaw provisions or by other means.			
19	Reduction	Carry out community surveys at regular intervals (e.g. at least once per year) to determine the level of satisfaction with the waste management and minimisation services within the City.	1-2 years	Waste levy through staff time	Continuing
20	Reduction	Review whether the current management and operational arrangements at the Lincoln Road RTS is producing optimal outcomes for Council.	1-2 years	General rates/ Waste levy through staff time	Completed
21	Reduction	Continue to provide the Hamilton Organic Centre green waste recovery facilities and review the adequacy of infrastructure provided for diverted material.	1-2 years	General rates/ Waste levy through staff time	Completed
22	Reduction	Investigate the existing capacity and potential future provision of additional diverted material drop-off facilities for the City, including drop-off depots, new rubbish transfer stations or resource recovery centres, not excluding regional coordination opportunities.	1-2 years	Waste levy through staff time	Completed
23	Reduction	Investigate the viability of engaging with local businesses with the aim of establishing baseline quantities of waste and potentially diverted material, e.g. food waste being disposed to landfill, local scrap metal dealers.	3-5 years	Waste levy / Grant / General rates (staff time)	Continuing
24	Reduction	Investigate and implement if feasible, working with business and industry organisations to develop case studies to demonstrate benefits of minimising waste.	3-5 years	Waste levy/private enterprise	Continuing
25	Reduction	Advocate and lobby Central Government via collaboration with other Local Government bodies and UNISA (Upper North Island Strategic Alliance) to introduce legislation, levies and regulations, to encourage cleaner production, product stewardship and other waste minimisation schemes	Ongoing	Waste levy through staff time	Continuing
26	Reduction	Continue to participate in the Back to Earth joint project including Council and Waikato Regional Council as well as monitor opportunities to develop a Regional Strategy for management of organic waste, e.g. green waste, putrescibles, in cooperation with other Territorial Authorities and Waikato Regional Council	Ongoing	Waste levy through staff time	Completed until program ceased
27	Reduction	Investigate providing incentives for organics diversion and implement if feasible.	3-5 years	Waste levy through staff time	Continuing

Original #	Grouping	Description	Original timeframe	Funding Source	Status 2017
28	Reuse	Investigate options of providing and promoting, collections and individual exchanges to promote the reuse of unwanted items which could include localized community events, free to sell/exchange student waste events at the university, the use of Trademe/No throw websites and individual garage sales.	1-2 years	Waste levy through staff time	Continuing Link to No Throw/Waste Exchange website on Fight the Landfill website.
29	Reuse	Support and participate in regional construction and demolition waste reduction/reuse initiatives and investigate further mechanisms to address the construction and demolition waste issue such as requiring waste management plans for construction and demolition projects via the future review of the solid waste bylaw.	3-5 years	Waste levy through staff time	Not completed
30	Reuse	Investigate and implement if feasible alternative uses for paper and card.	3-5 years	Waste levy through staff time	Not completed
31	Reuse	Continue to promote private sector waste minimisation and material reuse programmes, such as timber and other construction and demolition materials	Ongoing	Waste levy through staff time	In part
32	Recycling	Ensure kerbside rubbish and recycling collection services are provided in residential areas and endeavour to expand these facilities and services where appropriate such as within the CBD. We will investigate the potential of collecting all classes of recycling.	1-2 years	General Rates / Waste levy through staff time	Completed
33	Recycling	Review methods of charging for Council kerbside services such as user pay methods to maximise diverted waste quantities.	1-2 years	Waste levy through staff time	Completed
34	Recycling	Investigate the possibility of an e-waste drop off day and ensure that the potential of a permanent e-waste facility within the City is pursued and encouraged.	1-2 years	Waste levy through staff time / grants	Completed
35	Recycling	Investigate options to enhance the kerbside recycling service to maximise quantity and quality.	3-5 years	Waste levy through staff time / grants	Completed
36	Recycling	Monitor progress and support WasteMINZ's Waste and Recycling National Reporting (WaRNR) project.	Ongoing	Waste levy through staff time	Continuing
37	Recycling	Continue to provide public litter bins for waste in accordance with the responsibilities under the Litter Act (1979), as well as continuing to provide recycling containers. The introduction of litter bin guidelines, and increasing the provision of Love New Zealand public space recycling facilities in the City should also be considered.	Ongoing	General rates	Continuing

Original #	Grouping	Description	Original timeframe	Funding Source	Status 2017
38	Recycling	Investigate partnering with the private sector to subsidise paper and cardboard recycling for commercial businesses.	3-5 years	Waste levy through staff time	Not completed
39	Recycling	Continue to leave the private sector to provide commercial /industrial diverted material collections.	Ongoing	None required.	Completed
40	Recycling	Promote the beneficial reuse of organic material through public facilities and home composting.	Ongoing	Waste levy through staff time / grants and General rates	Continuing
41	Recycling	Review Council's Engineering Standards to ensure adequate provision of roading infrastructure to accommodate recycling collection vehicles.	3-5 years	Waste levy through staff time	Not completed
42	Recovery	Continue to investigate suitable solutions to divert sewage sludge from the Pukete Wastewater Treatment Plant away from landfill.	1-2 years	Waste levy	Completed All sludge now being diverted from landfill and vermicomposted at Kinleith at the MYNOKE site. Investigation will still continue to monitor whether this remains the most appropriate form of diversion for the sludge
43	Treatment	Monitor the viability of creating a partnership with the private sector to subsidise year round collection of hazardous material in the City.	Ongoing	Waste levy through staff time / General rates	Continuing
44	Treatment	Continue to provide and promote hazardous waste drop off facilities for household hazardous waste and agrichemicals at the Lincoln Road transfer station at rate that is affordable and complements national schemes or services.	Ongoing	General rates and Waste levy through staff time	Continuing
45	Disposal	Monitor opportunities to develop a Regional Strategy for hazardous waste in cooperation with other Territorial Authorities and Waikato Regional Council.	Ongoing	Waste levy through staff time	Continuing
46	Disposal	Monitor and investigate fly tipping incidents and assess any correlation with need for litter bins and other services.	Ongoing	General rates / Waste levy through staff time	Continuing

Table 27 Review of Action Plan from 2012-2018 WMMP

6.5 Summary of progress

Overall, HCC has made good progress in relation to the 2012-2018 WMMP Action Plan. However, waste to landfill has increased by approximately 33% and some objectives have not been achieved. Further effort is required to collect accurate data and to achieve a real reduction in waste to landfill.

This Waste Assessment is intended to assist in the development of the 2018-2024 WMMP in order to continue and build upon the progress made in the 2012-2018 period.

PART 7 - FUTURE DEMAND AND GAP ANALYSIS

7.1 Hamilton: Kirikiriroa

Hamilton is the country's fourth most-populous city encompassing a land area of about 110 km2 on the banks of the Waikato River.

Initially an agricultural service centre, Hamilton now has a growing and diverse economy and is the third fastest growing urban area in New Zealand, behind Pukekohe and Auckland.

Hamilton's main revenue source is the dairy industry, due to its location in the centre of New Zealand's largest dairying area – the Waikato region. Also of importance to the City's economy are education, research and development; manufacturing and retail; and provision of health services through the Waikato Hospital.

7.2 Future Demand

The factors likely to impact future demand for waste minimisation and management vary over time and location and therefore create inherent uncertainties with any predictions.

Factors which influence future demand include:

- 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.

7.2.1 Population growth[29]

The population of Hamilton City is projected to grow from 147,290 in 2013 to 190,744 in 2033 (+29.5 per cent), and to 221,390 in 2063 (+50.3 per cent).

The majority of growth is expected to occur prior to 2033, with the slowing of growth reflecting ageing of the population. A natural decline (more deaths than births) begins around 2059.

[29] Jackson, N.O., Cameron, M. and Cochrane, B, 2014 Review of Demographic, Households and Labour Force Projections for the Waikato Region for the Period 2013 - 2063

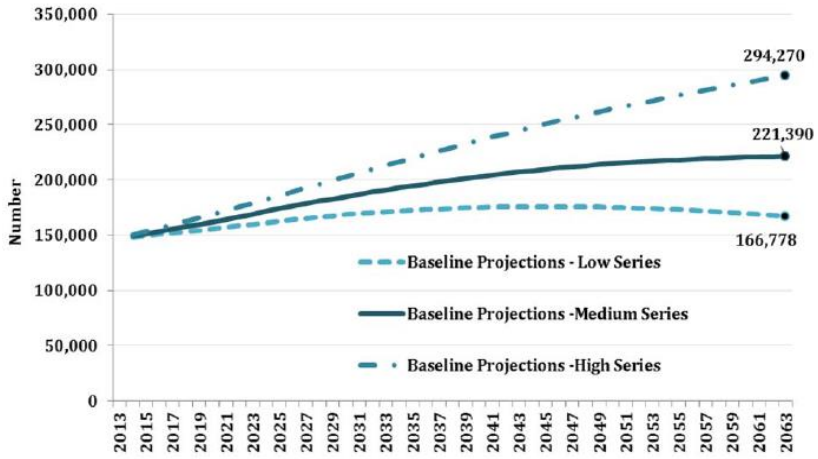


Figure 10 Projected high, medium and low baseline population, Hamilton[30]

By 2033, 21.4 per cent of Hamilton's population is projected to be aged 65+ years, up from 11.3 per cent in 2013. By 2063 that proportion is projected to reach 33 per cent.

The ratio of those aged 65+ years to those aged 0-14 years is projected to increase from 53 elderly per 100 children in 2013 to 258 elderly per 100 children by 2063 i.e. Hamilton City is ageing faster than the Waikato District in general.

The period 2033 to 2063 is where the contribution to growth at 65+ years is most significant, offsetting decline at both 0-14 and 15-39 years. The contribution to growth at 40-64 years is positive across both periods but declines from 46.1 per cent (2013 to 2033) to just 11 per cent (2034-2063), whilst at 65+ years the contribution doubles.

Net migration is projected to remain positive, but declines across the period, averaging 758 per annum between 2013 and 2033, and 574 per annum between 2034 and 2063.

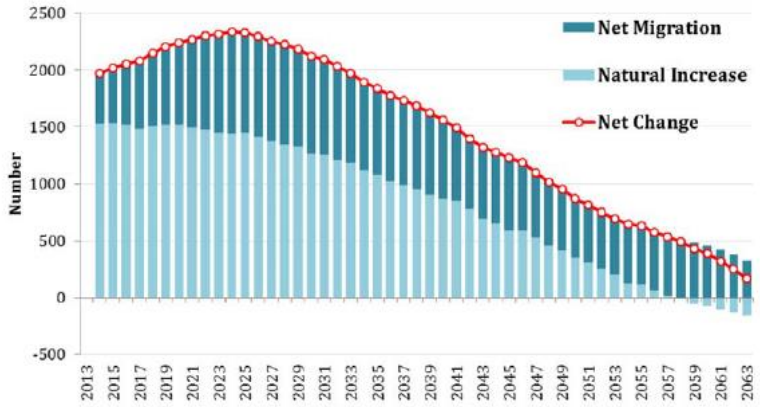


Figure 11 Projected components of populations change, Hamilton City[31]

[30] Source: 2014 Review of Demographic, Households and Labour Force Projections for the Future Proof Sub-Region for the Period 2013 - 2063

[31] Source: 2014 Review of Demographic, Households and Labour Force Projections for the Future Proof Sub-Region for the Period

The age profile of residents is changing with Hamilton having one of the fastest rates of population ageing in the Waikato region. Analysis carried out by WRAP (UK) in 2007 found older people generated approximately 25% less food waste than other age groups, when household size was controlled for[32]. Further research carried out by WRAP[33] has found that those over 65 years old are also more likely to home compost.

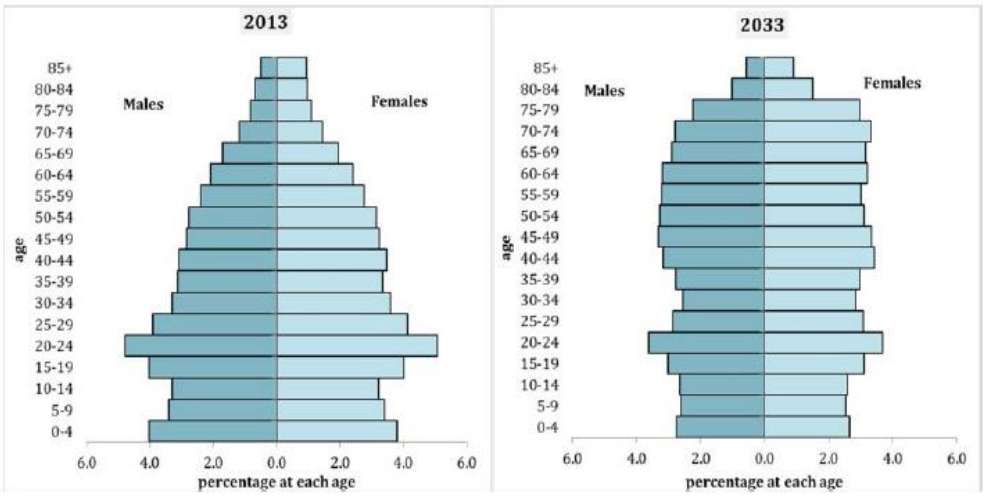


Figure 12 Age-sex structure, percentage of each, 2013-2033, Hamilton City[34]

Taking the aging population into account, it may be appropriate to tailor waste minimisation communication campaigns and waste reduction initiatives to an older age group.

Another issue that may emerge as the population ages is an increase in healthcare-related waste generated in the home as healthcare services are increasing pushed to home based healthcare.

7.2.2 Economic Activity

Research from the UK[35] and USA[36] 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. Figure 13 below shows the relationship between growth in municipal waste in the OECD plotted against GDP and population.

Total GDP is also a useful measure as it takes account of the effects of population growth as well as changes in economic activity. In general, 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.

2013 - 2063

[32] WRAP "Spaghetti Soup: The Complex World of Food Waste Behaviours" October 2013

[33] WRAP "Household food and drink waste: A people focus" October 2014

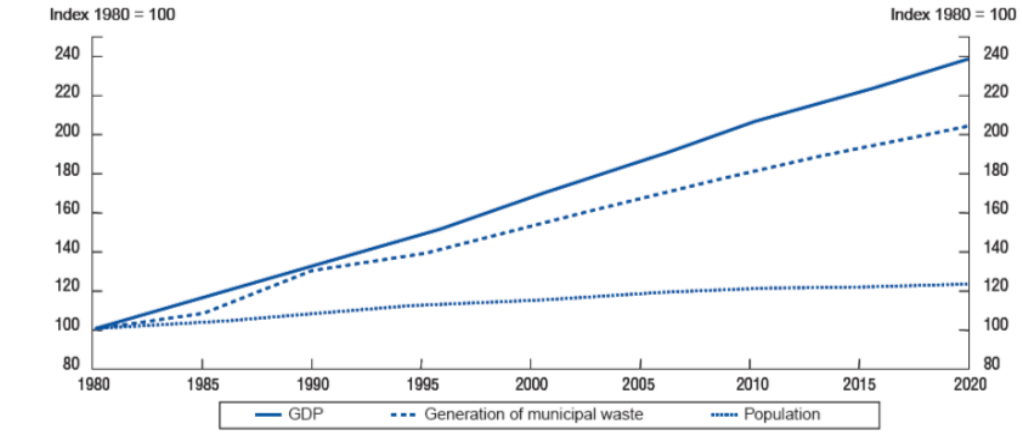
[34] Source: 2014 Review of Demographic, Households and Labour Force Projections for the Future Proof Sub-Region for the Period 2013 - 2063

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

[36] EPA, 1999. National Source Reduction Characterisation Report For Municipal Solid Waste in the United States

In effect as a country becomes richer, the volume and composition of its waste changes. With more money comes more packaging, imports, electronic waste, toys and appliances. Solid waste can thus be used as a proxy for the environmental impact of urbanization.

As Hamilton's population is anticipated to experience a steady growth, increasing +29.5% by 2033, it is likely that Hamilton would experience an approximately similar increase in waste (approximately 30%) generated within that time period assuming no change to waste behavior or resource recovery rates.



Source: OECD 2001.

Figure 13 Municipal waste generation, GDP and population in OECD 1980 – 2020[37]

7.2.3 Changes in Lifestyle and Consumption

Community expectations relating to recycling and waste minimisation are anticipated to lead to increased demand for resource recovery and recycling services. This will include raised expectations for services based on migration and travel.

Consumption habits will affect the generation of waste and recyclables. For example, there has been a national 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[38].

Conversely, growth in the consumption of electronic products has led to a rapidly increasing problem with electronic waste.

7.2.4 Changes in Waste Management Approaches[39]

It is anticipated that the methods and priorities for waste management will continue to evolve, with an increasing emphasis on diversion of waste from landfill and recovery of material value. These drivers include:

- The 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

[37] Eunomia (2007), Household Waste Prevention Policy Side Research Programme, Final Report for Defra, London, England
[38] http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10833117
[39] WDC 2015 Waste Services report

and efficient waste management and minimisation and to consider the waste hierarchy in formulating their WMMPs.
- A requirement in the current New Zealand Waste Strategy 2010 to reduce harm from waste and increase the efficiency of resource use.
- Increased costs of disposing of waste to landfill. Landfill costs have risen in the past due to higher environmental standards under the RMA, the 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 remains the potential for their values to be increased and to incentivise diversion from landfill
- A general trend to introduce more convenient collection systems. In brief, more convenient systems encourage more material recovered. For example, more convenient recycling systems with more capacity help drive an increase in the amount of recycling recovered.
- The waste industry is changing to reflect a greater emphasis on recovery and 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.
- Recovery of materials from the waste stream for recycling and reuse is heavily dependent on the recovered materials having an economic value, particularly 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.

7.2.5 Projections of Future Demand

The analysis of factors driving demand for waste services in the future suggests that changes in demand will occur over time but that no dramatic shifts are expected. If new waste management approaches are introduced, this could shift material between disposal and recovery management.

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

7.3 Gap Analysis - Future Demand

The aim of waste planning at a territorial authority level is to achieve effective and efficient waste management and minimisation. An assessment of this was undertaken using a gap analysis based on the information in this Waste Assessment. The following ‘gaps’ have been identified:

- Insufficient systems in place for obtaining waste data from private operators in the City
- Increasing population affecting waste streams and waste reduction messaging
- Infrastructure to manage increased quantities and some waste streams may be insufficient to meet future demand
- The risk of new developments failing to allow sufficient space for waste services
- CBD services may not meet future demand
- Opportunities for improved sub-regional, regional and national collaboration to achieve reduction and minimisation of waste
- Insufficient leadership from central government to address national waste issues

7.3.1 Key waste Streams to be addressed

Priority waste streams that could be targeted to further reduce waste to landfill could include:

(a) Recyclables

Recyclables from both from residential and businesses properties could be better diverted from landfill. There is particularly a gap in education and programmes targeting business waste avoidance (e.g. through education about use of reusable items or consideration of whether a product is needed), reduction (e.g. through better procurement) and recycling (e.g. through business waste minimisation and recycling practices).

(b) National problematic waste streams

Waste tyres, refrigerant gases, e-waste and packaging waste are national issues and are best managed via national product stewardship schemes. Arguably, councils have little ability to reduce or manage these waste streams due to the scale of the problem and the lack of council control over those waste streams. Such issues are most effectively managed at a national level. HCC, in conjunction with other councils, has the ability to strongly advocate for the introduction of national schemes to assist in the management of these waste streams.

(c) Construction and Demolition waste

Construction & demolition (C&D) waste may be a waste stream which, if addressed, could significantly reduce the volumes of waste being sent to landfill. The increasing volumes of C&D waste are associated with increases in development activity in the region. Targeted programmes aimed at reducing waste associated with C&D have been developed both internationally and within NZ with some success. These include resources to assist developers to better predict and manage materials (reducing waste associated with procurement); education around waste management practice and working with waste service providers to ensure infrastructure and services are available to meet demand.

7.3.2 Hazardous Wastes

(a) Household hazardous waste

Improved access to council services for household hazardous waste and used oil is likely to be of benefit for the City. A significant driver for the disposal of household hazardous waste relates to elderly residents moving or disposing of long-held homes. ‘Grandads shed’ is likely to contain a range of hazardous substances, including a number of harmful chemicals which are no longer available such as DDT, 2,4,5,T, Dialdrin and mercury.

(b) Medical Waste

As hospitals continue to shorten patients’ lengths of stay, home health care is increasingly relied upon to address the needs of patients at home. From one point of view, health care in the home environment is more comfortable for patients, offers less risk of infection, saves health care dollars, and lends itself to the promotion of ongoing strategies to improve patients’ quality of life.

However, health care produces medical waste which may require specialist treatment and disposal. In the hospital environment medical waste is treated and disposed of appropriately; while for the home healthcare patient, medical waste is problematic.

In most cases, medical waste is prohibited in both the rubbish and recycling streams. Some medical waste includes sharp items (e.g. syringes) or bodily fluids – both of which pose risks to waste handlers either during collection or processing of waste.

In addition, medical waste packaging, not being a household item, is sometimes unable to be processed in MRF facilities. For example – hemodialysis may involve containers of saline which are too large to be processed by the largest MRF (Visy). In many cases, the volume of waste created by home healthcare is greater than the normal capacity of kerbside waste receptacles.

Ideally, home healthcare providers will provide waste solutions for the medical waste created. However, barriers to provider responsibility include:

- Lack of awareness of the issue
- Cost
- A belief that council will provide appropriate waste services

An ageing population and healthcare policy indicate home healthcare will increase, and the associated waste problems will become more prevalent.

For non-home healthcare related waste issues, the Pharmacy Practice Handbook[40] sets out guidelines for appropriate disposal of medical waste:

> *4.1.16 Disposal of Unused, Returned or Expired 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 rubbish 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.*

In summary, while council is not responsible for home healthcare waste, there is likely to be an increase in queries from home healthcare patients regarding waste services. Working proactively with home heathcare providers and DHB's to assist the establishment of heathcare waste take-back programs may be a suitable solution to the issue.

(c) E-waste

Without a national product stewardship scheme, the e-waste treatment and collection system will continue to provide limited opportunities for resource recovery. Currently, companies tend to cherry-pick the more valuable items, such as computers and mobile phones while products that incur a cost to recycle are sent to landfill unless the product owner is willing to pay for recycling. As a result, the more difficult or expensive items to treat, such as CRT TVs and domestic batteries, will often still be sent to landfill.

The 2015 report *E-Waste Product Stewardship: Framework for New Zealand* commissioned by the Ministry for the Environment, concluded that although priority product status (for mandatory products stewardship) was supported by a number of stakeholders, there was insufficient data to satisfactorily prove the current management of e-waste caused significant environmental harm; and therefore they could not recommend priority product status.

[40] https://nzpharmacy.wordpress.com/2009/06/09/disposal-of-unwanted-medicines/

Improving the framework for capturing data on waste flows has therefore been shown to be a critical factor in the implementation of nationwide waste management schemes.

Introducing a data capture system, such as a waste licencing system under the Solid Waste Bylaw, would assist HCC to identify problematic waste streams, plan for future management, support regional and national initiatives and develop waste management systems for problematic waste streams.

E-waste is a national issue and is best managed via a national product stewardship scheme, however, local services and infrastructure could be strengthened within the city to provide improved access to e-waste recycling; and the ensure e-waste recyclers meet the joint Australian and New Zealand Standard AS/NZS 5377:2013 Collection, storage, transport and treatment of end-of-life electrical and electronic equipment.

PART 8 - OPTIONS

This section sets out the range of options available to Council to address the key issues identified in this Waste Assessment. Options presented in this section would need to be fully researched, and the cost implications understood before being implemented.

8.1 Key issues to be addressed by the 2018 – 2024 WMMP

Issues identified during the development of this Waste Assessment are:

- Increasing quantity of waste to landfill
- Efficient roll out of new services
- Data quality and management
- Illegal dumping and litter issues
- Recycling performance
- Management of key waste streams - construction and demolition; E waste, business waste and event waste
- Potential for greater joint working in Council service delivery and regional and sub-regional collaboration
- Greater community partnership, engagement and understanding of waste issues
- Insufficient resource recovery infrastructure in Hamilton to meet future demand
- Better planning around new multi-unit developments to ensure
    - adequate space is available for waste storage on-site
    - adequate access to properties and along roadways for diverted material and waste service vehicles

8.2 Committed: Implementation of new services

The provision of new services was determined after a Services review, development of options and a public consultation period. New services are under procurement as at the time of developing this Waste Assessment and therefore the exact detail relating to services is unknown.

However, once determined, new services will be implemented as per the development and consultative process.

The implementation of new services has been committed to. Alongside this commitment is a need to extend existing communication programmes to support any new rates-funded services provided by the Council.

8.3 Options: Data & regulation

8.3.1 Data

Throughout this Waste Assessment, the issue of data availability has been raised as a concern. Issues include:

- Inability to obtain accurate information from private collectors and operators regarding waste flows
- Difficulty planning for future demand due to a lack of knowledge about the status quo
- Inability to support regional or national initiatives to establish nationwide waste management systems by providing data on District waste flows.

Addressing the inability to obtain quality waste data must be a priority. Options for addressing the data issue include:

1. Implementation of a licensing system for waste collectors and operators, potentially in a sub-regional or regional partnership
2. Implementation of a central government waste data collection and management system which includes:
    a. TA level data collection; and
    b. Collecting data suitable for TA's to achieve their obligations under the WMA 2008; and
    c. TA access to data collected by central government
3. Amendments to the Waste Minimisation Act 2008 to obligate waste collectors and operators to provide relevant waste data to TA's

Of these options, only Option 1 is within the control of HCC.

The Ministry for the Environment has stated a key focus area for the next 1-3 years is to "invest in developing a national waste data collection and evaluation framework that targets key information to prioritise waste issues and measures effectiveness of the waste disposal levy[41]". However, the report goes on to state:

> *"A key recommendation by the OECD in its recent environmental performance review for New Zealand was that the Ministry for the Environment needed to improve its access and reporting of data and evidence regarding waste.*
>
> *Accessing data on quantities and types of waste disposed at waste disposal facilities would provide the Ministry with a deeper understanding of the waste sector in this country. This would enable the Ministry to prepare timely, comprehensive and internationally comparable reports based on sound information to support planning and strategy for the country";* and
>
> *"Further attention should be directed towards improving the availability of data from territorial authorities and Waste Minimisation Fund projects, including provision of waste minimisation data and contributions to wider outcomes".*

These comments suggest that any national waste data scheme may be focused on the Ministry for the Environment's needs for data rather than TA requirements; and also that data collection

[41] Review of the effectiveness of the Waste Disposal Levy 2017, Ministry for the Environment

may be placed as a further obligation of TA's regardless of the current difficulty to obtain such data from the private sector.

8.3.2 Solid Waste Bylaw

The HCC Solid Waste Bylaw must be reviewed by 2022. As part of this review, Council should seek to ensure regulatory consistency across regions.
A regionally consistent Bylaw could help reduce unnecessary administrative burden for private operators, and the unintended consequences of less well-regulated areas becoming a target for undesirable practices, such as cleanfilling, tyre dumping and poorly managed waste facilities.

The Solid Waste Bylaw also provides an opportunity for HCC to enact a licensing system to obtain waste data from the private sector, in order to plan, implement and evaluate waste minimisation initiatives. Licensing systems may be best developed at a sub-regional or regional level to reduce compliance costs for collectors and operators; and council management costs.

Section 4 of the current Solid Waste Bylaw covers the licensing of waste collectors and waste operators. Clause 4.1 sets out the conditions under which a waste collector or operator must obtain a licence.

In the past Council has faced resistance from collectors and operators to the introduction of a licensing system. This is similar to a large number of other councils who have solid waste bylaws which include a provision for licensing, but are not actively implementing licencing systems or not collecting data via their systems.

Auckland, Christchurch, Taupo, New Plymouth, Kapiti Coast, Waimakariri and Far North have licensing systems, the requirements vary as do the fees charged. For example the fees are $30 in New Plymouth and $435 plus $88 per vehicle in Auckland[42].

Since the adoption of the Solid Waste Bylaw, two issues have arisen which provide a compelling case for an amendment of the Solid Waste Bylaw and enactment of licensing provisions. Firstly, the Waikato and Bay of Plenty areas have experienced a number of issues regarding tyre collection and disposal which have resulted in some councils facing expensive 'clean-ups' of tyre piles, and have seen tyre piles moved from one council area to another. Concerns have been raised that tyre piles are likely to gravitate to the council area with the least effective regulation for this problematic waste stream.

Secondly, despite councils having a legislative obligation to promote effective and efficient waste management and minimisation within its district, the Waste Minimisation Act 2008 does not provide councils with the ability to obtain data about the volume or composition of waste being collected, transported, processed or disposed of via private waste operators or facilities.

In order to address these two issues, the councils of the Waikato and Bay of Plenty have worked together to develop regionally aligned Solid Waste Bylaw clauses to:

- Assist councils to offer similar levels of control of waste in their regions.
  The Bylaw clauses take into account the Auckland Council's Waste Bylaw, in order to avoid Waikato / Bay of Plenty becoming an attractive dumping ground for Auckland's problematic waste.
- Ensure councils can obtain waste volume and composition information from private operators and facilities in a manner which minimises administrative difficulties for the

[42] WDC Waste Services report 2015

operator or facility. For example, by having similar reporting requirements, categories of waste, frequency of reporting etc.

The template bylaw clauses also provide the opportunity for regional and sub-regional licensing administration. Options for working together include funding a single administrator who manages the licencing systems for all participating councils or offering a single licence which covers multiple council areas. Such co-operation is likely to reduce the administrative burden on waste operators and facilities and avoid resistance.

Another option under the Solid Waste Bylaw is to introduce minimum standards. This could be applicable to the E-Waste issue, where e-waste providers frequently fail to meet the Joint Standard for e-waste recycling. The Bylaw could place meeting the Standard as a requirement of holding a Waste Collectors or Waste Operators licence.

An earlier review and adoption of the regionally aligned Solid Waste Bylaw clauses would reduce the likelihood of HCC becoming the "weak link" in the region; and also provide an opportunity to enact a regionally aligned licencing system, potentially in co-operation with other Waikato councils.

8.3.3 District plan requirements for waste

Due to Hamilton's growth, there is a risk that new multi-unit and other developments may fail to include sufficient space for waste storage within each dwelling; or sufficient space to store and collect waste from dwellings or business.

Issues for consideration include:

- For multi-unit or large scale developments, consideration should be given to:
    - How residents manage waste within their dwelling e.g. is there sufficient space to store rubbish, recyclables and food waste separation in the kitchen
    - How a resident transports their waste to a storage space e.g. are their consolidation points on floors, how is waste separated etc
    - Management of waste e.g. who transports the waste to the storage facility, who puts bins out on the kerb, who manages collection services etc
    - Space made available e.g. is there sufficient space for the number of people, for separation of recyclables, for bulky items dealt with etc
- For large multi-unit developments, on-site waste storage is preferable. Kerbside services can be problematic for large sites e.g. a 50 dwelling development would mean 100+ bins or containers placed at kerbside on collections day, reducing street amenity.
- Where on-site waste storage is utilised, minimum standards should be in place to ensure ease of safe collection. Ideally, these would include an ability for waste collection vehicles to 'drive through' for collection (no turning) or have a turning bay. The need for multiple point turns or backing of collection vehicles should be avoided due to risk of injury.
- Ability to utilise council services vs need for private services i.e. does the development allow ease of use for council provided waste services? If not, is council willing to provide specialised services for multi-unit dwellings (e.g. smaller trucks, use of rear loaders etc) or will council only provide one type of service? If a development does not account for existing council waste services, whose responsibility will it be to provide specialist services and are new residents made aware of any specialist waste requirements or costs?

Due to these issues, it is recommended that HCC ensure the District Plan provides guidance and regulation related to new multi-unit developments to ensure:

- Adequate space within dwellings for waste storage and separation
- Adequate space is available for waste storage on-site
- Adequate access to properties and along roadways for diverted material and waste service vehicles

8.3.4 Enforcement of litter and illegal dumping

While HCC currently has a good level of enforcement of litter and illegal dumping, levels of litter and illegal dumping continue to be unacceptable. As discussed in Section 5.3.3, research suggests that the factors leading to illegal dumping are relatively complex and inter-related.

It is suggested that HCC undertakes a multi-pronged approach to reducing litter and illegal dumping that includes:

- Ongoing monitoring of the patterns of illegal dumping and key locations where dumping and litter occur. This information can be further utilised to develop targeted campaigns for both increased enforcement and community education
- Strong enforcement coupled with making enforcement activity public e.g. through press releases and media stories
- Partnering regionally to develop consistent education, messaging and branding for litter and illegal dumping e.g. consistent litter bin branding, consistent messages around illegal dumping.

8.3.5 Options relating to data and regulation

Data and regulation options				
Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
Maintain existing bylaw regime	Maintaining bylaw status quo would not have a positive effect on any the key issues.	*Social/Cultural:* uneven understanding of waste flows in the district *Environmental*: minimal ability to guard against environmental degradation through illegal disposal. Minimal ability to require environmental performance standards are met (e.g. recyclable material is separated) *Economic:* No change to current systems. *Health*: Limited ability to monitor and enforce actions of current providers and ensure public health is protected	A lack reliable information to monitor and plan for waste management in the region A lack of data and controls on private operators limits Councils' ability to effectively manage waste in the region. Constrained ability to plan for and respond to future demand	Council would implement and enforce existing bylaws May not be sufficient for reporting requirement changes signalled by MfE
Review Solid Waste Bylaws and implement Regionally consistent Solid Waste Bylaw	Data quality and management of data Management of key waste streams	*Social/Cultural:* better understanding of the waste flows in the district *Environmental:* would increase diversion from landfill and information about disposal practices and could potentially guard against environmental harm through illegal disposal *Economic:* small increased cost for operators; additional resources will be required to monitor and enforce the regulatory system *Health:* greater monitoring of providers to ensure no adverse health risks occur	Improved bylaws would, as a minimum, require reporting of waste material quantities. Collecting waste data is imperative to planning how to increase waste minimisation across Council provided services and commercial waste streams The bylaw could also be used to require minimum performance standards. This could be a key mechanism for addressing waste streams currently controlled by the private sector and how they provide their collection services	Councils would develop and enforce the bylaw; monitor and report on waste quantities and outcomes

Audit waste stream every 3-6 years and before and after significant service changes	Data quality and management of data	*Social/Cultural*: Identifying material streams for recovery could lead to job creation. Better understanding of waste behaviour. *Environmental*: Ability to identify materials and waste streams for potential recovery and reduction in waste to landfill. *Economic*: Operational costs of implementation Ability to identify materials and waste streams for potential recovery and reduction, giving rise to new business opportunities and reduction of disposal costs *Health*: Potential for improved data on hazardous and harmful wastes. A better understanding of the waste problem will highlight key areas for action to improve health outcomes	Better information will inform council planning to meet future demand	Plan for and action a SWAP analysis every 3-6 years
Implement National Waste Data Framework and regional collation of data	Data quality and management of data	*Social/Cultural:* improved knowledge of waste flows and better information available to the public on waste and recovery performance *Environmental*: Improved ability to monitor and manage waste collection and disposal information and make appropriate planning and management decisions *Economic:* improved understanding of waste flows resulting in better targeted waste and recovery services and facilities *Health*. Potential for improved data on hazardous and harmful wastes	The Waste Data Framework would enhance the ability to share and collate information improving overall knowledge of waste flows. It currently only covers material to disposal however	Councils would implement the Waste Data Framework by putting standard protocols in place for the gathering and collation of data. This would enable sharing and consolidation of data at a regional level
District Plan Updates to ensure new developments account for waste	Recycling performance Greater community partnership, engagement and	*Social/Cultural:* consistent access to waste services, community will be more aware of options and more engaged in the waste management process, taking a higher level of ownership of the issue	Maintain standardised waste services and meet future demand	Regulatory: enforcement and consenting Service provision for standardised services

	understanding of waste issues Better planning around new multi-unit developments	*Environmental*: services would seek to establish, support and extend positive behaviours that reduce environmental impact *Economic:* avoidance of specialised waste services placing an unnecessary cost on residents *Health*. Minimise health risks associated with waste management		
Maintain strong enforcement against litter and Illegal dumping; alongside consistent education and branding	Illegal dumping and litter issues Greater community partnership, engagement and understanding of waste issues	*Social/Cultural:* community will be more aware of litter and illegal dumping issues, taking a higher level of ownership of the issue *Environmental*: services would seek to establish, support and extend positive behaviours that reduce environmental impact *Economic:* avoidance of litter and illegal dumping costs; additional costs associated with enforcement and education – mitigated by regional partnerships *Health*. Minimise health risks associated with waste management	Meet future demand	Regulatory: enforcement Education and partnerships

Table 28 Options: Data and Regulation

8.4 Options: CBD services

The CBD was excluded from the wider service review as it was recognised a different solution is required. There is an opportunity to review CBD services to identify if changes are advisable and the extent to which innovative waste avoidance, reduction, minimisation and management opportunities can be implemented.

Future options for potential changes to CBD waste services may include the option for additional services to be provided by council (rubbish, recycling and organic waste). In particular, there may be opportunities to incorporate community partnerships and sustainable procurement into CBD waste service provision.

Such an opportunity may provide community benefits, improve community capacity in waste reduction and minimisation; and allow innovative waste solutions for the dense CBD area.

8.4.1 Options relating to CBD services

Options for CBD services				
Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
Continue existing CBD services	No change	*Social/Cultural*: no change in community level of ownership of waste issues *Environmental:* no change *Economic:* no change *Health*: Public informed of health risks of waste materials and appropriate disposal pathways	Awareness of waste issues and behaviour would not change significantly from current situation Does not provide services targeted to CBD residents who may require a different focus for waste minimisation	No change
Investigate current services to identify service change opportunities, and implement if feasible. **Potentially utilise community partnerships**	Increasing quantity of waste to landfill Efficient roll out of new services Data quality and management Illegal dumping and litter issues	*Social/cultural:* community will be more aware of options and more engaged in the waste management process, taking a higher level of ownership of the issue	Increase recycling and decrease unwanted behaviour such as land disposal Improved community engagement with waste	Councils may fund and/or coordinate services and programmes as appropriate

and sustainable procurement processes	Recycling performance Management of key waste streams - business waste Potential for greater joint working in Council service delivery and regional and sub-regional collaboration Greater community partnership, engagement and understanding of waste issues Insufficient resource recovery infrastructure in Hamilton to meet future demand	Social procurement approach may create localised jobs and improve community capacity in waste minimisation *Environmental:* services would seek to establish, support and extend positive behaviours that reduce environmental impact *Economic:* could potentially be funded through waste levy funding *Health*: Information regarding health risks of waste materials and appropriate disposal pathways would reach a wider audience. More vulnerable sectors of the public informed of health risks related to waste management. Messages better targeted to audiences needs	avoidance, reduction and minimisation of waste Greater capacity to meet waste service demand in high density area	
Investigate current services to identify service change opportunities using conventional procurement, and implement if feasible.	Increasing quantity of waste to landfill Efficient roll out of new services Data quality and management Illegal dumping and litter issues Recycling performance Management of key waste streams - business waste	*Social/cultural:* community will be more aware of options and more engaged in the waste management process, taking a higher level of ownership of the issue *Environmental:* services would seek to establish, support and extend positive behaviours that reduce environmental impact *Economic:* could potentially be funded through waste levy funding *Health*: Information regarding health risks of waste materials	Increase recycling and decrease unwanted behaviour such as land disposal Improved community engagement with waste avoidance, reduction and minimisation of waste Greater capacity to meet waste service demand in high density area	Councils may fund and/or coordinate services and programmes as appropriate

		and appropriate disposal pathways would reach a wider audience. More vulnerable sectors of the public informed of health risks related to waste management. Messages better targeted to audiences needs		
Provide same services in CBD as provided in the rest of Hamilton City	Increasing quantity of waste to landfill Efficient roll out of new services Data quality and management Illegal dumping and litter issues Recycling performance Management of key waste streams - business waste	*Social/cultural:* community will be more aware of options and more engaged in the waste management process, taking a higher level of ownership of the issue *Environmental:* services would seek to establish, support and extend positive behaviours that reduce environmental impact *Economic:* implementation could potentially be funded through waste levy funding, with ongoing costs funded via general or targeted rates *Health*: Information regarding health risks of waste materials and appropriate disposal pathways would reach a wider audience. More vulnerable sectors of the public informed of health risks related to waste management. Messages better targeted to audiences needs	Increase recycling and decrease unwanted behaviour such as land disposal Improved community engagement with waste avoidance, reduction and minimisation of waste Greater capacity to meet waste service demand in high density area May face difficulties in maintaining services as the city grows and high density housing increases in the CBD	Councils may fund and provide services

8.5 Options: Organic waste

National data indicates that a third of rubbish from householders is organic material such as food scraps. This is supported by information from the 2017 kerbside waste audit indicating 50% of rubbish material is organic in Hamilton's kerbside rubbish.

Hamilton City Council is investigating whether a food waste kerbside service is feasible to implement. This is via a procurement process underway at the time of developing this Waste Assessment. While a kerbside food waste service may be the result of the procurement activity, a range of organic waste options are presented in this Assessment.

8.5.1 Options relating to organic waste

Options for Organic Waste				
Option	**Issues Addressed**	**Strategic Assessment**	**Impact on Current/Future Demand**	**Councils' Role**
Continue with no organic waste service and some composting education	No change	*Social/Cultural*: no change in community level of ownership of waste issues *Environmental:* education programmes aim to establish and support positive behaviours that reduce environmental impact *Economic:* currently funded *Health*: public informed of health risks of waste materials and appropriate disposal pathways	Awareness of waste issues and behaviour would not change significantly from current situation	Council would continue to fund and coordinate current education programmes
Introduce kerbside food waste services and programmes to avoid and reduce food waste; encourage better behaviours around food waste	Increasing quantity of waste to landfill Efficient roll out of new services Data quality and management Diversion performance Management of key waste streams – organic waste	*Social/cultural:* community will be more aware of options and more engaged in the waste management process, taking a higher level of ownership of the issue *Environmental:* reduction in organic waste to landfill and beneficial outcomes from composting of material *Economic:* could potentially be funded through waste levy funding & targeted rates	Improved ability to meet future requirements Depending on the new services that are provided, this could potentially contribute to a significant reduction in demand for landfill.	Councils would provide service Councils would fund and coordinate education and engagement programmes. Programmes may be delivered by community or other partners.

	Potential for greater joint working in Council service delivery and regional and sub-regional collaboration Public engagement and understanding of waste issues Insufficient resource recovery infrastructure in Hamilton to meet future demand	*Health*: Information regarding health risks of waste materials and appropriate disposal pathways would reach a wider audience. Messages better targeted to audiences needs		
Introduce programmes to avoid and reduce food waste; encourage better behaviours around food waste and increase composting and associated behaviours	Increasing quantity of waste to landfill Data quality and management Diversion performance Management of key waste streams - business waste Potential for greater joint working in Council service delivery and regional and sub-regional collaboration Greater community partnership, engagement and understanding of waste issues Insufficient resource recovery infrastructure in Hamilton to meet future demand	*Social/cultural:* Community will be more aware of options and more engaged in the waste minimisation process, taking a higher level of ownership of the food waste issues. Programmes could be linked to wider council objectives and reach a wider audience *Environmental:* Education programmes would seek to establish, support and extend positive behaviours that reduce environmental impact *Economic:* funded through waste levy funding *Health*: Information regarding health risks of relevant waste materials and appropriate management targeted to audiences needs	Improved ability to meet future requirements Education alone will not support behaviour change. Pathways need to be provided for residents and businesses to take action on education messages and be supported to make behaviour change actions.	Councils would fund and coordinate education and engagement programmes. Programmes may be delivered by community or other partners.

8.6 Options: Key waste streams and targeted issues

Key waste streams and issues have been identified in this report and include event waste, C&D waste, e waste and business waste. A number of options for addressing these issues have been identified below.

8.6.1 Options relating to key waste streams and targeted issues

Options for Organic Waste				
Option	**Issues Addressed**	**Strategic Assessment**	**Impact on Current/Future Demand**	**Councils' Role**
Maintain existing services with no additional targeting of waste streams or issues	No change	*Social/Cultural*: no change in community level of ownership of waste issues *Environmental:* education programmes aim to establish and support positive behaviours that reduce environmental impact *Economic:* currently funded *Health*: public informed of health risks of waste materials and appropriate disposal pathways	Awareness of waste issues and behaviour would not change significantly from current situation	Council would continue to fund and coordinate existing education programmes
Event waste management programme, education and resources	Increasing quantity of waste to landfill Recycling performance Management of key waste streams - event waste Potential for greater joint working in Council service delivery and regional and sub-regional collaboration Greater community partnership, engagement and understanding of waste issues	*Social/cultural:* community will be more aware of options and more engaged in the waste management process, taking a higher level of ownership of the issue. Programmes could be linked to wider council objectives and reach a wider audience. *Environmental:* reduction in waste to landfill and beneficial outcomes from diversion of recyclables and organic material. Avoidance of single use plastic items. *Economic:* could potentially be funded through waste levy funding. May lead to new business initiatives.	Improved ability to meet future requirements Depending on the education / services that are provided - contribute to a significant reduction in waste to landfill.	Options – council provided; or council resources available, or education only

		Health: Information regarding health risks of waste materials and appropriate disposal pathways would reach a wider audience. Messages better targeted to audiences needs		
C&D, business & E waste - infrastructure, services and / or education/resources	Increasing quantity of waste to landfill Recycling performance Management of key waste streams – C&D, business & e-waste Potential for greater joint working in Council service delivery and regional and sub-regional collaboration Greater community partnership, engagement and understanding of waste issues	*Social/cultural:* Business and community will be more aware of options and more engaged in the waste minimisation process, taking a higher level of ownership of the food waste issues. Programmes could be linked to wider council objectives and reach a wider audience *Environmental:* programmes would seek to establish, support and extend positive behaviours that reduce environmental impact *Economic:* funded through waste levy funding. May lead to new business initiatives. *Health*: Information regarding health risks of relevant waste materials and appropriate management targeted to audiences needs	Improved ability to meet future requirements Pathways need to be provided for residents and businesses to take action on education messages and be supported to make behaviour change actions.	Councils could fund investigation into program options, and potentially fund education / resources or infrastructure in conjunction with partners Programmes may be delivered by business, community or other partners.

8.7 Influence and partnerships

A number of opportunities have been identified for HCC to exert influence and / or partner with others to achieve waste avoidance, reduction or minimisation. These include:

- greater community partnership, engagement to foster understanding of waste issues
- potential for greater joint working in Council service delivery, regional and sub-regional collaboration; and
- advocacy for Product Stewardship.

8.7.1 Options relating to influence and partnerships

Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
Strongly advocate for effective product stewardship and regulation under section 2 of the WMA2008 and support independent organisations advocating for similar outcomes	Increasing quantity of waste to landfill Data quality and management Illegal dumping and litter issues Recycling/diversion performance Management of key waste streams - construction and demolition; E waste, business waste and event waste Greater community partnership, engagement and understanding of waste issues Insufficient resource recovery infrastructure in Hamilton to meet future demand	*Social/Cultural:* product take back schemes will require behaviour change by product producers and consumers; potentially better management of hazardous materials. *Environmental:* improved resource efficiency. *Economic:* producer responsibility for key waste streams reduces reliance on council funded services *Health*: product take back will ensure better management of hazardous materials	Product stewardship is specifically enabled in the WMA. Fully enacting this principle will help ensure true costs of products are reflected in their price. Call for the introduction of a container deposit scheme Product stewardship schemes will assist Council to meet future demand by providing effective waste recycling services for products such as e-waste, agricultural chemicals and tyres	Strongly advocate to Government for regulation and product stewardship Work with other councils to call for product stewardship and regulation Work with DHB's and others to establish and implement product take back schemes for medical waste and other materials Support NGO's and other organisations acting to achieve producer responsibility for end of life products
Engage in regional cooperation including appointing a regional Coordinator to assist with joint	A regional coordinator will assist in progressing closer working in a number of areas including	*Social/Cultural/Environmental/ Health* - no new impacts *Economic*: Shared funding	No significant impact on status quo forecast of future demand	Continue to develop strategic documents through the joint committee.

projects. Each Council responsible for own jurisdiction.	solid waste bylaws, education and data			Funding for agreed projects and initiatives.
Collaborate with Mana Whenua, community groups and private sector to investigate and (if suitable) implement opportunities to enhance economic development through resource recovery	Increasing quantity of waste to landfill Recycling performance Potential for greater joint working in Council service delivery and regional and sub-regional collaboration Greater community partnership, engagement and understanding of waste issues	*Social/Cultural:* potential for downstream job creation *Environmental:* potential enhancement through waste minimisation *Economic:* could result in benefits for the local economy *Health:* Health impacts dependent on the nature of the collaboration.	There are waste minimisation activities such as reuse shops that are marginally cost effective in strictly commercial sense, but provide opportunities for social enterprise/charitable community group. Having all three sectors working together can provide mutual benefits for all.	Council to lead and facilitate Council funding & staff support may be required for both establishment and ongoing support of opportunities. Council to employ 2 full-time waste minimisation officers.
Continue existing education programmes including application of the Regional Waste Education Strategy	Increasing quantity of waste to landfill Data quality and management Illegal dumping and litter issues Recycling performance Potential for greater joint working in Council service delivery and regional and sub-regional collaboration Greater community partnership, engagement and understanding of waste issues	*Social/Cultural*: no change in community level of ownership of waste issues *Environmental:* education programmes aim to establish and support positive behaviours that reduce environmental impact *Economic:* currently funded *Health*: Public informed of health risks of waste materials and appropriate disposal pathways	Awareness of waste issues and behaviour would not change significantly from current situation	Council would continue to fund and coordinate education programmes

8.8 Summary table of potential scenarios

The above options can form an almost infinite number of combinations. To simplify consideration of the options, high level scenarios with logical combinations of the above options are laid out in the table below. The scenarios are for illustration and can be amended.

	Status Quo	Scenario 1:	Scenario 2:
Data & regulation	Regional bylaw without enacting operator and facility licensing HCC gathers own data not in alignment with National Waste Data Framework (no regional collation)	Regionally aligned bylaw with operator and facility licensing, data provision, service standards and receptacle restrictions All reporting to be against the standard reporting indicators under the National Waste Data Framework Regional or sub-regional licensing to reduce compliance costs	Regionally aligned bylaw with operator and facility licensing, data provision, service standards, and receptacle restrictions All reporting to be against the standard reporting indicators under the National Waste Data Framework Separate HCC licencing
CBD services	No change in services	Review CBD services to identify improvements and opportunities. Implement opportunities identified where appropriate	Provide same services to CBD as provided in the rest of Hamilton City
Organic waste	No change in services	Introduce programmes to avoid and reduce food waste; encourage better behaviours around food waste and increase composting and associated behaviours	Provide a Council kerbside food waste collection service and introduce programmes to avoid and reduce food waste; encourage better behaviours around food waste
Key waste streams and targeted issues	Maintain existing services with no additional targeting of waste streams or issues	Council supported event waste management programme, education and resources – delivered by partners Council investigated and supported C&D, business & E waste - infrastructure, services and / or education/resources	Council provided event waste management programme, education and resources. Council provided C&D, business & E waste - infrastructure, services and / or education/resources

Influence and partnerships	Maintain current level of advocacy Maintain current relationships and level of regional collaboration	Strongly advocate for effective product stewardship and regulation under section 2 of the WMA2008 and support independent organisations advocating for similar outcomes Engage in regional cooperation including appointing a Regional Coordinator to assist with joint projects. Each Council responsible for own jurisdiction. Collaborate with Mana Whenua, community groups and private sector to investigate and (if suitable) implement opportunities to enhance economic development through resource recovery Continue existing education programmes including application of the Regional Waste Education Strategy	Commit budget allocation for ongoing advocacy programme calling for effective product stewardship and regulation under section 2 of the WMA2008 and support independent organisations advocating for similar outcomes Engage in regional cooperation including appointing a Regional Coordinator to assist with joint projects. Each Council responsible for own jurisdiction. Collaborate with Mana Whenua, community groups and private sector to investigate and implement opportunities to enhance economic development through resource recovery Continue existing education programmes including application of the Regional Waste Education Strategy

Table 29 Summary: Potential scenarios

PART 9 - STATEMENT OF COUNCIL'S INTENDED ROLE

9.1 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).[43]
- 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 Councils' waste strategy.
- Under the Local Government Act 2002 (LGA) the 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 rubbish 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.
- The Waikato/BoP region Councils, in determining their role, need to ensure that their statutory obligations, including those noted above, are met.

9.2 Overall Strategic Direction and Role

The Councils overall strategic direction and role has been set out in the Hamilton City Council 2018-2024 WMMP.

[43] 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.

PART 10 - STATEMENT OF PROPOSALS

Council proposes for the 6-year term of its next WMMP to continue providing the following current waste services in Hamilton:

- Council provided kerbside rubbish and recycling collection, processing and disposal
- Litter bin servicing and illegal dumping collection
- ongoing monitoring of closed landfills to ensure that resource consent conditions continue to be met; and
- waste minimisation promotion and education.

In addition, 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 2018-2024 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 Councils' goals and objectives for waste management and minimisation. These goals and objectives will be confirmed as part of the development and adoption of the 2018-2024 Waste Management and Minimisation Plan.

10.1 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.

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

It is considered that these proposals will adequately protect public health.

10.1.2 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.

A.1.0 Medical Officer of Health Statement

A draft of the Waste Assessment was provided to the Medical Officer of Health for comment as per the requirements of the Waste Minimisation Act 2008.

The Act states:

Section 51 Requirements for waste assessment

(5) In making an assessment, the territorial authority must—

(a) use its best endeavor's to make a full and balanced assessment; and

(b) consult the Medical Officer of Health.

Commentary from the Medical Officer of Health is provided below. The Medical Officer of Health supported the proposed options to improve access to quality data, and the proposed kerbside services.

POPULATION HEALTH

Waikato District Health Board

3 August 2017

Sandra Murray
Zenzic Consulting
C/- Hamilton City Council
HAMILTON

Dear Sandra

Re: Hamilton City Council Waste Assessment

Thank you for consulting the Medical Officer of Health on the draft Hamilton City Council Waste Assessment as per Section 51 of the Waste Minimisation Act 2008. I am pleased to be able to respond to your consultation.

Effective waste management is critical for good public health outcomes. From a public health perspective, sanitary collection and disposal of solid waste is essential for:

- Human disease control (for example pathogenic wastes and reducing harbourage of human disease vectors such as rats, fleas, and mosquitoes)
- Control of health nuisances from dust, odour and pest species
- Control of health risks from hazardous wastes such as asbestos
- Prevention of contamination of drinking or recreational water from runoff or leachate
- Public safety, in terms of uncluttered thoroughfares

The waste assessment was well written and thorough. However, the assessment has identified that there are gaps in some areas of waste data collection. For example there is no data available to identify the volumes of hazardous waste disposed of from Hamilton City. Data gaps appear to be, at least in part, due to the number of private operators involved in waste services and the lack of accurate data available from them. Good quality waste data is important, as it is only through a clear understanding of the amount and composition of the various waste streams that plans can be put into place to minimise waste. I therefore support the proposed options that may help to address this issue, including the proposed licensing system for waste collectors and operators.

Waste minimisation practices (such as reducing, reusing and recycling) reduce the amount of waste generated and thereby reduce the health hazards associated with waste. The waste assessment has identified that kerbside rubbish collection has increased between the years 2012 and 2016, as has the household rate of waste to landfill. During this same period kerbside recycling appears to have declined.

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I note that there is a potential for a 77% reduction in waste to landfill from kerbside collections, if all divertible waste is removed from kerbside waste. This provides a significant opportunity to further reduce waste to landfill.

I support the proposed kerbside service change to a larger wheeled bin for recycling, with an increased range of accepted plastics, together with a smaller bin for rubbish and an additional bin for food waste collection. The public health preference is for the use of bins for waste collection, when compared to plastic bags, due to the better isolation of refuse from interference by domestic and wild animals, control of odour and better isolation from insect pests. It will, however, be important to consider issues such as container design and collection frequency for the food waste collection to protect against any nuisance issues. The collection container will need to be resistant to animals and pest insects and adequately control odour.

The provision of an educaton programme, together with the proposed changes in kerbside recycling collection, is likely to provide additional benefits in reducing waste to landfill.

Kerbside recycling collection does not appear to be available to businesses, or to residents in the central business district (CBD). Provision of such services would be another means of reducing waste to landfill. We support the proposed options that would improve opportunities for recycling to those in the CBD and small businesses.

I hope that these comments will add to the utility of the Hamilton City Council Waste Assessment, and be helpful in developing the Waste Management and Minimisation Plan.

Yours sincerely

Dr Richard Wall
Medical Officer of Health

A.2.0 Glossary of Terms

Term	Definition
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. See Landfill categories and definitions in Appendix A.2.2 below
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 or green waste	Plant based material and other bio-degradable material that can be recovered through composting, digestion or other similar processes.
RRP	Resource Recovery Park
RTS	Rubbish 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: 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 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

Table 30 Glossary of terms

Landfill definitions (From the 'Technical Guidelines for Disposal to Land' (2016))	
WAC	Waste Acceptance Criteria
Class 1 - Landfill	A Class 1 landfill is a site that accepts municipal solid waste as defined in the Guidelines. 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 comprises: • municipal solid waste; and • for potentially hazardous leachable contaminants, maximum chemical contaminant leachability limits (TCLP) from Module 2 Hazardous Waste Guidelines – Class A4.
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. 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. 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: • a list of acceptable materials; and • maximum ancillary biodegradeable 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 the 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.
Class 4 Landfill - Cleanfill	Class 4 landfill accepts only clean fill material as defined in the 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 incidental5 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.
Note: The Guidelines should be referred to directly for the full criteria and definitions.	

Table 31 Landfill definitions

A.3.0 National Legislative and Policy Context

(a) 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-improvingefficiency.

(b) 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 and 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.

(c) 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 2017[44]. This review notes that for the review period of 1 July 2013 to 30 June 2016, levied waste disposal facilities received a total of 10,681,295 gross tonnes of waste. From this, 1,207,786 tonnes of material were diverted, leaving total net waste to landfill at 9,473,509 tonnes. Total gross tonnage of waste

[44] Ministry for the Environment. 2017. 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

increased by 16.4% from the 2014 review, while the quantity of waste diverted decreased by 6.3%. As a result, the total net tonnage disposed to levied landfills has increased by 20.1% since the 2014 review.

The review goes on to note: "Systems and processes to administer the waste disposal levy are operating efficiently and effectively, and all stakeholders are meeting their obligations relevant to this review as prescribed in the Waste Minimisation Act. However, annual levied waste is increasing, indicating that the levy is not currently achieving its objective. Added to this, the majority of New Zealand's waste disposal facilities are exempt from the levy and no data is available about the waste that is disposed at these facilities".

In conclusion, the Ministry intends to develop and implement a staged approach to applying the waste disposal levy across additional classes of landfills and assess the role of a differential rating system. This staged approach will be developed over a 1-5-year period.

(d) 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[45]. No Priority Products have been declared as of May 2015.[46]

Further details on current schemes are available on: http://www.mfe.govt.nz/waste/product-stewardship/accredited-voluntary-schemes

(e) 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.

[45] Waste Management Act 2008 2(8)

46 MfE, Priority waste streams for product stewardship intervention: Consultation Feedback Publication date: April 2015

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.

(f) 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.

(g) 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.

(h) 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 CO_2 (equivalent) that they produce. To date however the impact of the NZETS on disposal prices has been very small. There are a number of reasons for this:

- The global price of carbon crashed during the GFC in 2007-8 and has never recovered. Prior to the crash it was trading at around $20 per tonne. The price has been as low as $2, but 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 $18 per tonne)[47].
- The transitional provisions of the Climate Change Response Act, which were extended indefinitely 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[48]
- 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 CO_2) 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 negligible. Disposal facilities have typically imposed charges (in the order of $5 per tonne) to their customers, but these charges currently reflect mainly the costs of scheme administration, compliance, and hedging against risk rather than the actual cost of carbon.

[47] https://carbonmatch.co.nz/ accessed 19 July 2016
[48] The two for one transitional provisions are now to be phased out by the Government from 1 January 2017

The way the scheme has been structured to date also results 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 waste, which then increases gas production and which can then be captured and offset against ETS liabilities.

Despite these constraints on the impact of the ETS, there may be potential for the picture to change in the future (to a degree). The United Nations Climate Change Conference, (COP21) to be 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. The other factor which is likely to come into play is the removal of the transitional provisions from 1 January 2017– meaning that landfills will need to surrender twice the number of NZUs they do currently. Even in a 'worst case' scenario however where the transitional provisions are removed and the price of carbon rises dramatically to say $50 per tonne, the liability for a landfill that is capturing 80% of methane generated would only be $13.10.[49] Therefore while the ETS could have an impact on disposal costs in the medium term this level of impact will likely not be sufficient to drive significant change in the waste sector.

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

(i) 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.

The legislative definition of the term "Litter" is wide and includes rubbish, 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

[49] Each tonne of waste is assumed under the NZETS to generate 1.31 tonnes of CO_2 equivalent. Therefore one tonne of waste requires 1.31 carbon offsets, which at $50 a tonne would cost $65.50. 20% of $65.50 (the liability if 80% of methane is captured and destroyed) is $13.10

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.

(j) 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 rubbish, 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.[50]

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

(k) 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.

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.[51]

(l) Health and Safety at Work Act 2015

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 is due to come 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)

[50] From: MfE 2009: Waste Management and Minimisation Planning, Guidance for Territorial Authorities.
[51] MfE 2009: Waste Management and Minimisation Planning, Guidance for Territorial Authorities

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.

Health and Safety at Work (Hazardous Substances) Regulations 2016 are due to be released March 2017 and come into effect December 2017. These regulations will place additional controls on the collection, storage, handling and transport of hazardous waste. If a council managed household hazardous waste facility or service is established, they will need to comply with these regulations.

(m) Other legislation

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.4.0 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:

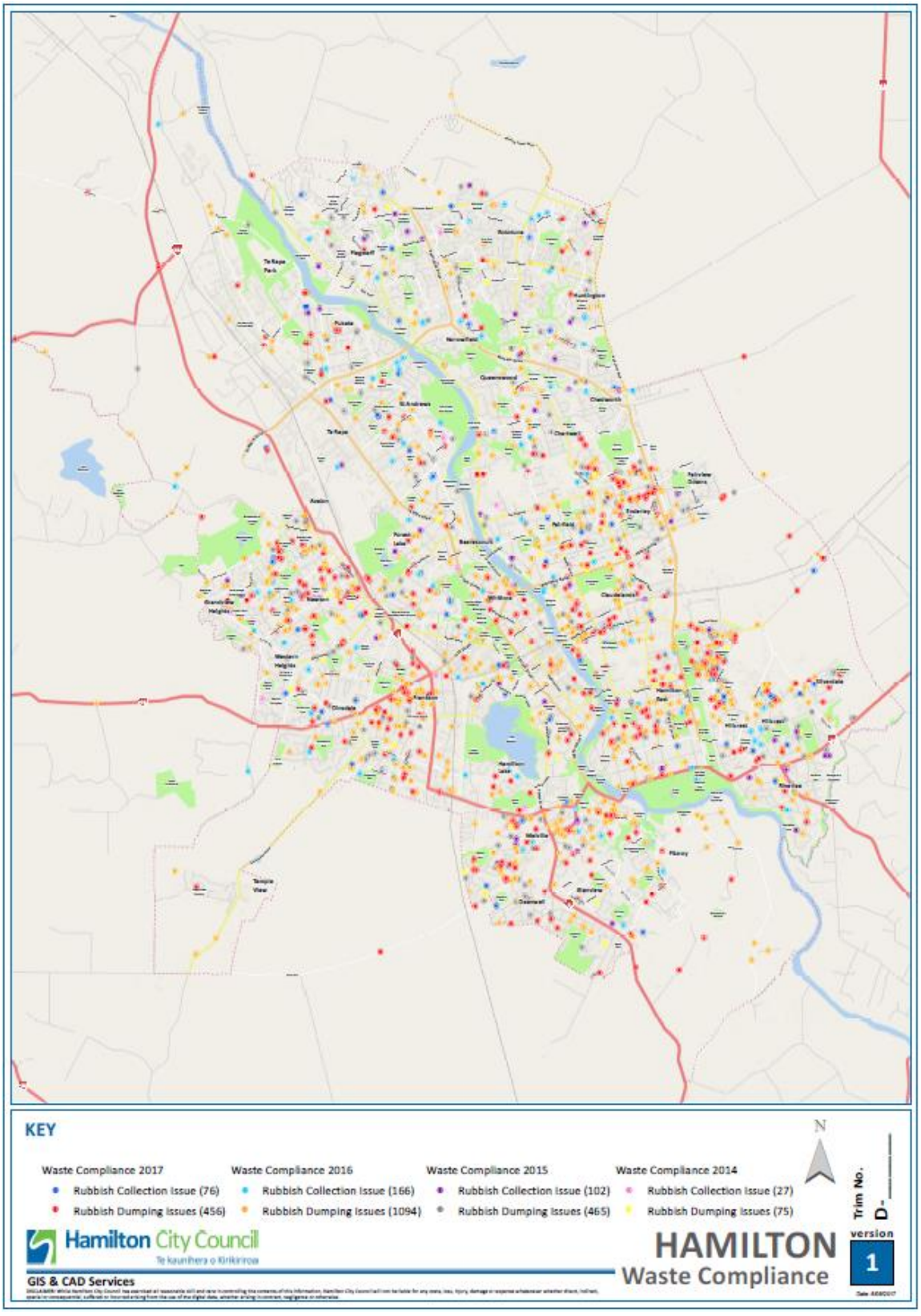
- Montreal Protocol
- Basel Convention
- Stockholm Convention
- Waigani Convention
- Minamata Convention.

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

A.5.0 Kerbside rubbish composition

Hamilton City Council - Domestic kerbside rubbish bags June 2017 (Margins of error for 95% confidence level)		**% of total weight**	**Mean wt. per rubbish bag**	**Mean wt. per household set out (average 1.53 bags)**
Paper	Recyclable	8.9% (±1.6%)	0.51 kg (±0.09 kg)	0.78 kg (±0.14 kg)
	Non-recyclable	3.1% (±1.0%)	0.18 kg (±0.06 kg)	0.27 kg (±0.09 kg)
	Subtotal	**12.0% (±1.8%)**	**0.69 kg (±0.11 kg)**	**1.05 kg (±0.16 kg)**
Plastics	# 1-2 containers	1.8% (±0.3%)	0.10 kg (±0.01 kg)	0.15 kg (±0.02 kg)
	# 3-7 containers	1.6% (±0.2%)	0.09 kg (±0.01 kg)	0.14 kg (±0.02 kg)
	Plastic bags & film	8.1% (±0.4%)	0.46 kg (±0.03 kg)	0.71 kg (±0.04 kg)
	Other non-recyclable plastic	3.1% (±0.6%)	0.18 kg (±0.03 kg)	0.27 kg (±0.05 kg)
	Subtotal	**14.5% (±0.8%)**	**0.83 kg (±0.05 kg)**	**1.28 kg (±0.07 kg)**
Organics	Kitchen/food waste	36.6% (±3.7%)	2.10 kg (±0.21 kg)	3.21 kg (±0.32 kg)
	Green waste	10.3% (±3.7%)	0.59 kg (±0.21 kg)	0.91 kg (±0.32 kg)
	Other organic	2.7% (±1.2%)	0.15 kg (±0.07 kg)	0.24 kg (±0.10 kg)
	Subtotal	**49.6% (±4.3%)**	**2.85 kg (±0.25 kg)**	**4.36 kg (±0.38 kg)**
Ferrous metal	Steel cans	0.9% (±0.2%)	0.05 kg (±0.01 kg)	0.08 kg (±0.02 kg)
	Other steel	1.1% (±0.4%)	0.06 kg (±0.02 kg)	0.10 kg (±0.04 kg)
	Subtotal	**2.0% (±0.5%)**	**0.11 kg (±0.03 kg)**	**0.17 kg (±0.04 kg)**
Non-ferrous metal	Aluminium cans	0.1% (±0.0%)	0.01 kg (±0.00 kg)	0.01 kg (±0.00 kg)
	Other non-ferrous	0.6% (±0.2%)	0.04 kg (±0.01 kg)	0.06 kg (±0.02 kg)
	Subtotal	**0.8% (±0.2%)**	**0.04 kg (±0.01 kg)**	**0.07 kg (±0.02 kg)**
Glass	Bottles/jars	1.5% (±0.4%)	0.08 kg (±0.02 kg)	0.13 kg (±0.04 kg)
	Non-recyclable glass	0.6% (±0.3%)	0.03 kg (±0.02 kg)	0.05 kg (±0.03 kg)
	Subtotal	**2.0% (±0.6%)**	**0.12 kg (±0.03 kg)**	**0.18 kg (±0.05 kg)**
Textiles	Clothing/textiles	1.9% (±1.1%)	0.11 kg (±0.06 kg)	0.17 kg (±0.09 kg)
	Multimaterial/other	0.7% (±0.3%)	0.04 kg (±0.02 kg)	0.06 kg (±0.03 kg)
	Subtotal	**2.6% (±1.1%)**	**0.15 kg (±0.06 kg)**	**0.23 kg (±0.09 kg)**
Sanitary paper		**12.8% (±2.4%)**	**0.74 kg (±0.14 kg)**	**1.13 kg (±0.21 kg)**
Rubble		**1.8% (±1.5%)**	**0.10 kg (±0.08 kg)**	**0.16 kg (±0.13 kg)**
Timber		**0.5% (±0.3%)**	**0.03 kg (±0.02 kg)**	**0.04 kg (±0.03 kg)**
Rubber		**0.1% (±0.0%)**	**0.00 kg (±0.00 kg)**	**0.01 kg (±0.00 kg)**
Potentially hazardous	Household	1.2% (±0.6%)	0.07 kg (±0.04 kg)	0.11 kg (±0.05 kg)
	Other	0.1% (±0.1%)	0.00 kg (±0.00 kg)	0.01 kg (±0.01 kg)
	Subtotal	**1.3% (±0.6%)**	**0.07 kg (±0.04 kg)**	**0.11 kg (±0.05 kg)**
TOTAL		**100.0%**	**5.74 kg (±0.38 kg)**	**8.78 kg (±0.58 kg)**

A.6.0 Litter and illegal dumping compliance map



A.7.0 Table of Tables

Table 1 Total gross, diverted and net tonnages of waste at levied waste disposal facilities for the 2014 and 2017 review periods (MfE, Review of the effectiveness of the Waste Disposal Levy 2017) 4

Table 2 Recommended bin and bin lid colours for MGB's 6

Table 3 Hamilton District Plan – Objectives relating to waste 8

Table 4 Summary - estimated waste disposed of to land Hamilton City 11

Table 5 Kerbside rubbish service – kg per capita per annum 12

Table 6 Kerbside rubbish comparison with other councils 13

Table 7 Comparison of rubbish composition 2013 vs 2017 14

Table 8 Transfer station waste by activity source 15

Table 9 Tonnage of waste to landfill from Waikato and Bay of Plenty 16

Table 10 Recycled and diverted material – summary 17

Table 11 Kerbside recycling tonnages 2016 17

Table 12 Kerbside recycling 2012-2016 18

Table 13 Recyclable materials per capita per annum for comparable councils 19

Table 14 Composition of Kerbside recycling 19

Table 15 Diversion rate for kerbside recycling – 2008-2016 20

Table 16 Composition of organic material 22

Table 17 Soft plastic recycling scheme collected volumes 22

Table 18 Class 1 landfills accessible from Hamilton City 24

Table 19 What happens to kerbside recyclables? 27

Table 20 HOC tonnages 2016 28

Table 21 Current processes in the City for managing waste and diverted materials streams 31

Table 22 Enviroschools supported by HCC 33

Table 23 2017 Funding recipients 34

Table 24 Proposed changes – consultation information 35

Table 25 Employment before and after CRC development 38

Table 26 Comparison of volumes of rubbish and recyclables: 2012 WA to 2017 WA * excludes composted material 39

Table 27 Review of Action Plan from 2012-2018 WMMP 46

Table 28 Options: Data and Regulation 61

Table 29 Summary: Potential scenarios 72

Table 30 Glossary of terms 79

Table 31 Landfill definitions 80

A.8.0 Table of Figures

Figure 1 Compositional proportions of Hamilton waste to landfill 12
Figure 2 Rubbish tonnages 2012-2016 13
Figure 3 Kerbside rubbish composition 2017 14
Figure 4 Waste diverted from landfill 17
Figure 5 Kerbside recycling rates 2012 - 2016 18
Figure 6 Changes in pit recycling 2008-2016 21
Figure 7 Tonnages of material recycled via the Lincoln Rd RTS 21
Figure 8 Lincoln Ave RTS showing vehicles unloading on the RHS and recovered materials on the pit floor on the LHS 26
Figure 9 Sunshine Ave Transfer Station 26
Figure 10 Projected high, medium and low baseline population, Hamilton 48
Figure 11 Projected components of populations change, Hamilton City 48
Figure 12 Age-sex structure, percentage of each, 2013-2033, Hamilton City 49
Figure 13 Municipal waste generation, GDP and population in OECD 1980 – 2020 50