PROPOSED
SOLID WASTE (Asset) MANAGEMENT AND MINIMISATION PLAN

2018 – 2028

Incorporating the 2017 Waste Assessment

Document Author: **Waitomo District Council**

Signature: Date: / /

Document reviewed by: **Waitomo District Council**

Signature: Date: / /

Revision	Revision Date	Details	Name Position	Authorised Signature
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FOREWORD

Solid waste management is a significant activity for the Waitomo District. The rationale for this service is to ensure that the natural environment is protected from detrimental effects of solid waste disposal, and that the waste diversion and disposal needs of the District community are met.

The structure of this Solid Waste (asset) Management and Minimisation Plan (SWaMMP) has been developed as a regional initiative to assist territorial authorities (TAs) in the Waikato and Bay of Plenty regions in the review of their respective WMMP's. It follows the MfE's waste minimisation planning guidance as a starting point, overlaid with WDC's own unique context and local issues.

Importantly, the structure has been developed to help facilitate potential pan-regional links and collaboration between TAs.

The development of this SWMMP will inform Council's 2018 -2028 Long Term Plan in respect of the scope and form of Council's future solid waste management activities. The Long Term Plan will determine the final priority and scale.

ACKNOWLEDGEMENTS

WDC wishes to acknowledge the vision and efforts of Waikato and Bay of Plenty Regional Council staff in preparing the template for this WMMP.

EXECUTIVE SUMMARY

City and district councils have a statutory role in managing waste. Councils are required under the Waste Minimisation Act 2008 (WMA) to promote effective and efficient waste management and minimisation within their city/district. A key part of doing this is to adopt a Waste Management and Minimisation Plan (WMMP). Councils also have obligations under the Health Act 1956 to ensure that waste management systems protect public health.

The WMMP must meet the requirements set out in the Waste Minimisation Act 2008, namely:

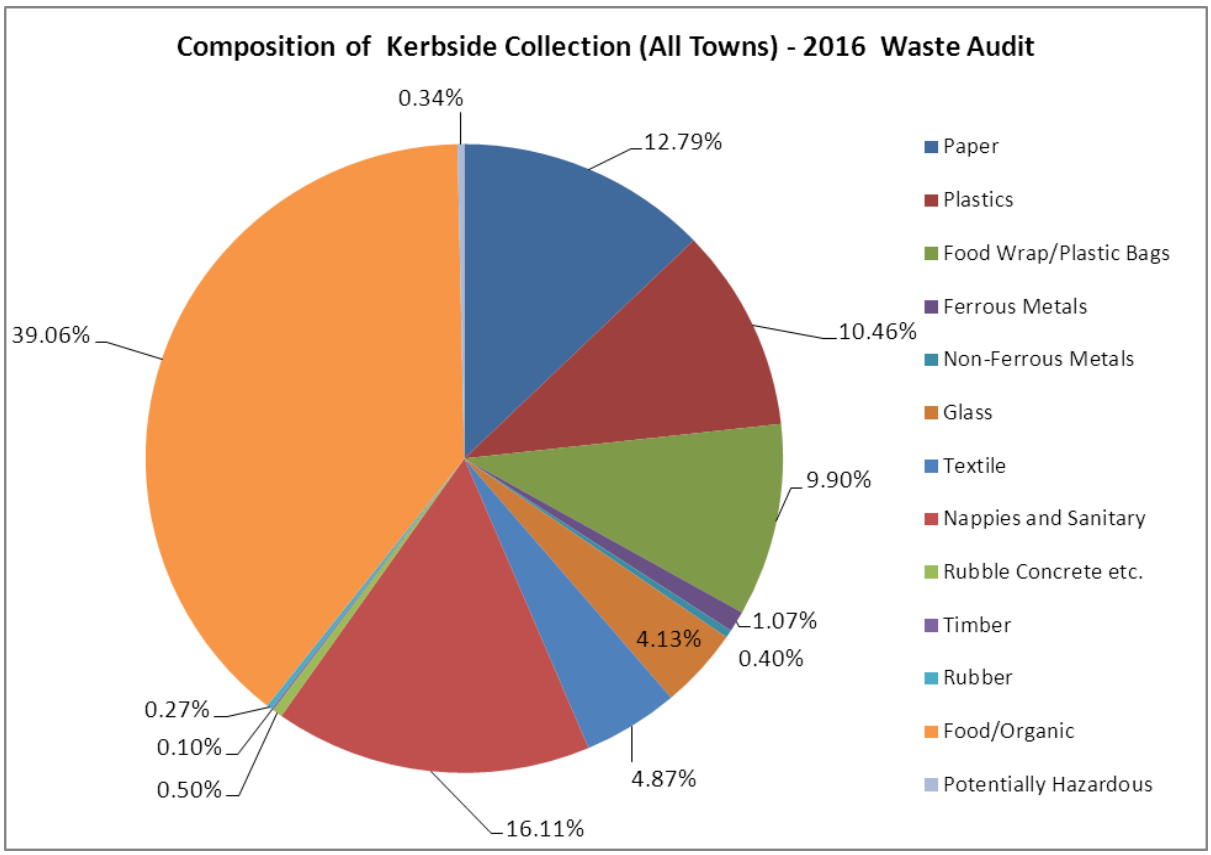
- Consider the 'Waste Hierarchy' which sets priorities for how we should manage waste (see Figure 1)
- Ensure waste does not create a 'nuisance'
- Have regard to the New Zealand Waste Strategy and other key government policies, which emphasise reducing harm and improving the efficiency of resource use
- Consider the outcomes of the most recent 'Waste Assessment' (this is a review of all relevant information about the current waste situation in 2016, including rubbish from households and businesses)
- Follow the Special Consultative Procedure set out in the Local Government Act (2002).

The Plan takes account of WDC's Waste Assessment 2017. Both documents are legislative requirements under the Waste Minimisation Act 2008, and need to be reviewed at intervals of no more than every 6 years.

The Council's existing waste assessment was written in 2011 and the WMMP was adopted on 29 June 2012.

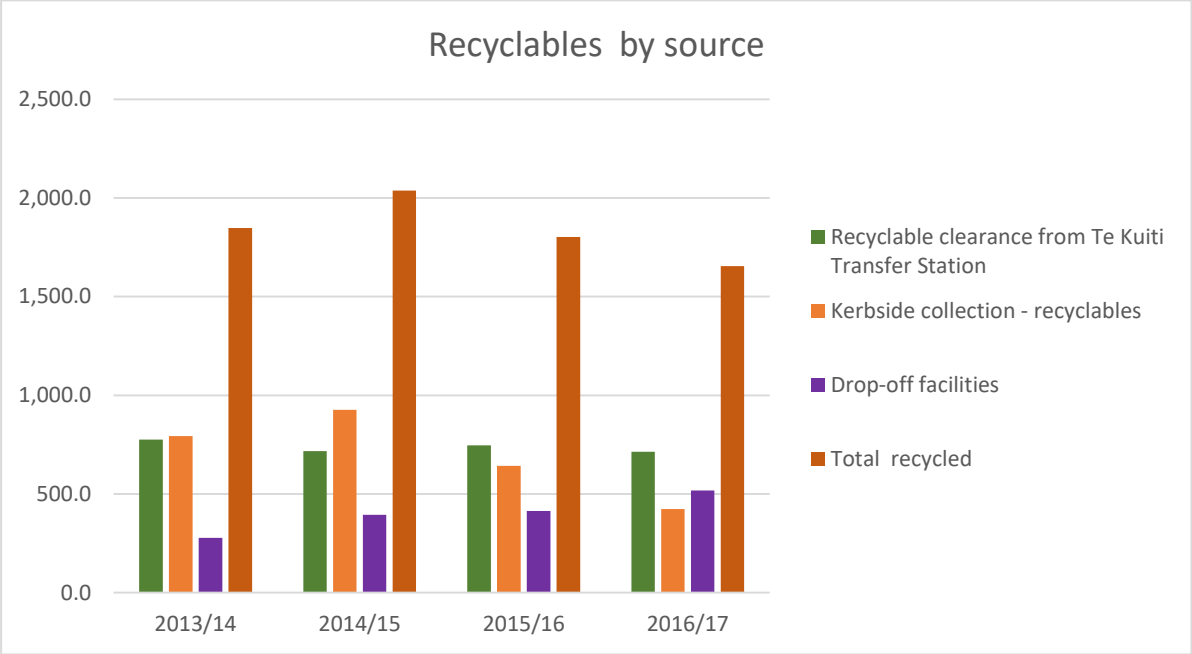
The SWaMMP sets the priorities and strategic framework for managing waste in Waitomo district. Once the plan is adopted, the actions will be carried forward into WDC's long term and annual plans to ensure the resourcing is available to deliver the Plan's goals and objectives.

The 2017 waste assessment identified the following average composition of waste types sourced through the weekly kerbside collection as surveyed in 2016. As previously, the predominant recyclable waste types is food/organics, followed by paper.



An analysis of waste recycling trends since 2013/14 has identified an initial increase in the amount of recyclables collected in 2014/15, followed by an overall downward trend. The exception to that is the tonnage of recyclables collected from the drop-off centre at Te Kuiti transfer station, which has shown a steady increase since 2013/14. The single largest recyclable is glass, representing approximately 50-60% of the kerbside collection and 85-90% of the rural transfer station collection. The overall tonnage of recyclables is sensitive to the market for glass collection.

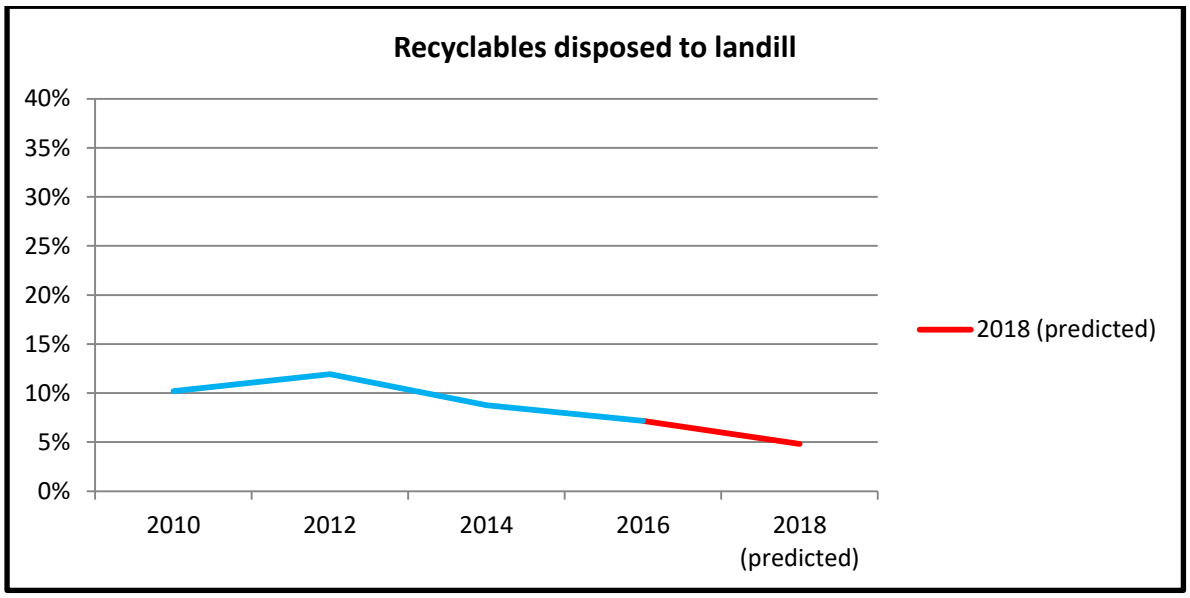
Recycling collection (tonnes)				
	2013/14	**2014/15**	**2015/16**	**2016/17**
Recyclable clearance from rural transfer stations (x5)				
Glass	708.5	612.5	688.8	651.8
Plastic	9.0	7.4	7.9	6.8
Tin/Aluminium	11.6	13.0	8.2	8.2
Paper/cardboard	46.8	83.7	40.8	47.5
Sub total	**775.9**	**716.6**	**745.7**	**714.3**
Kerbside collection - recyclables				
Glass	486.0	487.2	385.2	263.5
Plastic	28.2	34.8	37.0	16.0
Tin/Aluminium	52.1	33.2	10.7	9.0
Paper/cardboard	227.6	370.7	209.7	135.6
Sub total	**793.9**	**925.9**	**642.6**	**424.1**
Drop-off facilities (at Te Kuiti transfer station)	**278.0**	**395.0**	**414.0**	**517.0**
Total recyclables	**1,847.8**	**2,037.5**	**1,802.3**	**1,655.3**



The residual waste disposed of to landfill comprises approximately 9,700 t.p.a and is dominated by commercial/industrial/institutional waste types:

	Landfilled waste 2016/17 (excludes cover material)	
	% of total	Tonnes
Construction & demolition	0	0
Domestic kerbside	5.1%	494
Industrial/commercial/institutional	85.4%	8260
Landscaping	0	0
Domestic	0.2%	22
Rural Transfer stations	2.0%	192
Other	7.3%	700
TOTAL	**100%**	**9,668 t**

Despite the above, the proportion of recyclables disposed of at the landfill, benchmarked against 2014 quantities, has continued to decline, as illustrated below:



The potential for further reduction of household recyclables disposed to landfill is mostly associated with organic wastes, as shown below:

Type of waste in refuse bags	**2016 Waste Audit *(Percentage of waste contained in refuse bags)***	Assume 50% Recyclable
Putrescibles *(Organic/food waste)*	38.93%	19.5%
Sanitary & Nappies *(non-recyclable)*	16.06%	0.0%
Plastic Wrap *(non-recyclable)*	9.87%	0.0%
Paper *(recyclable)*	12.75%	6.4%
Textiles *(e.g.: fabric)*	4.85%	2.4%
Plastic *(recyclable)*	10.42%	5.2%
Glass *(recyclable)*	4.12%	2.1%
Metal *(ferrous metals)*	1.07%	0.5%
Potentially Hazardous *(e.g.: hair dye, chemicals)*	0.67%	0.0%
Metal non-ferrous metals *(recyclable)*	0.40%	0.2%
Rubble, concrete, timber and rubber	0.87%	0.4%
Total	100.0%	36.7%

This Plan has been adapted and extended as WDC's Solid Waste (Asset) Management and Minimisation Plan (SWaMMP), by incorporating the asset management aspects required to deliver the agreed levels of service for the activity.

The key asset components supporting delivery of waste management and minimisation services under the activity are:

Asset	Activities	Ownership/Operator
Waitomo District Landfill and Transfer Station (Te Kuiti)	Greenwaste disposal. Recycling drop off. Waste to landfill. Composting.	Waitomo District Council Envirowaste
Piopio Transfer Station	Recycling drop off. Waste to landfill.	Waitomo District Council
Marokopa Transfer Station	Recycling drop off. Waste to landfill.	Waitomo District Council
Benneydale Transfer Station	Recycling drop off. Waste to landfill.	Waitomo District Council
Kinohaku Transfer Station	Recycling drop off. Waste to landfill.	Waitomo District Council
Awakino Transfer Station	Recycling drop off. Waste to landfill.	Waitomo District Council
Waitomo Village, Mokau, Marokopa and Piopio	Recycling bins.	Waitomo District Council

The following waste management services are currently provided by WDC, using the above assets, in support of the activity:

Location	Bagged refuse collection	Kerbside recycling collection	Litter Bin emptying	Waste Transfer Station (WTS)	Landfill	Recycling centre
Te Kuiti	✓ (Friday)	✓ (Friday)	✓ (Daily)	✓	✓	✓ (At landfill)
Piopio	✓ (Tuesday)	✓ (Tuesday)	✓ (2x week)	✓		✓ (At WTS)
Benneydale			✓ (Daily)	✓		✓ (At WTS)
Marokopa			✓	✓		✓ (At WTS)
Kiritehere			✓ (Weekly)			
Kinohaku				✓		✓ (At WTS)
Awakino	✓ (Tuesday)	✓ (Tuesday)		✓		✓ (At WTS)
Mokau	✓ (Tuesday)	✓ (Tuesday)	✓ (3x week)			
Waitomo	✓ (Tuesday	✓ (Tuesday	✓ (Weekly)			

Solid waste management is a significant activity for the Waitomo District. The rationale for this service is to ensure that the natural environment is protected from detrimental effects of solid waste, and that the waste management and minimisation needs of the District community are met.

The key strategies identified in the SWaMMP designed to deliver waste services to the Waitomo community are:

1. Continuation of WDC's kerbside collection of bagged refuse and recyclables to existing areas

2. Maintaining a network of waste transfer stations to rural townships to support district wide public accessibility to recycling and/or disposal facilities outside Te Kuiti

3. Maintaining a common schedule of fees and charges across the Waitomo District Landfill and all waste transfer stations.

4. Ensuring the most cost effective waste minimisation and disposal services possible relevant to local conditions

Council believes that the above measures will contribute to the objectives of reducing the quantity of residual wastes by optimising the availability of recycling and residual waste disposal facilities for both rural and urban residents on an equitable basis. They will comply with Council's legislative obligations and align with the NZ Waste Strategy 2010. This will continue to ensure that public health is protected and efficient and effective waste management and minimisation is promoted.

The levels of service set out in Section 6.0 for achieving the above are based on resident expectations, strategic goals and statutory and regulatory requirements (e.g. resource consents). They will be used as the focus for future monitoring of resident satisfaction with the services provided. Current resident satisfaction with services provided under the solid waste activity is high, as measured in 2017, is high.

Minimising the creation of wastes has many flow-on benefits in support of the social, economic and environmental well-being of the District. Council must ensure the environmentally safe disposal of residual wastes that cannot be recycled. At this point, as in recent years, Council is in a position of not being reliant on out-of-district landfills for the costly process of residual waste disposal.

The main drivers of demand for solid waste activity are:
- Population growth and incidence of settlement
- Land use activities (e.g. land development, tourism and coastal settlements)
- Community expectations

The demographic and development trends show that increased population based demand for growth related waste management infrastructure will be only minor through to the end of 2028, after which there is expected to be a decline for the foreseeable future.

The current agricultural and pastoral based economy is expected to remain predominant in the district, with growth very dependent on economic conditions and export opportunities. Industrial growth, which can have a significant impact on waste production, is partly dependent on attracting new industries into the urban centres.

Other demand trends potentially impacting on waste management and minimisation services could include:
- Continued public demand for increased waste recycling and diversion from landfill
- Increasingly stringent conditions for the proposed re-consented section of the landfill.

The implications of these demand trends on the quantity and quality of solid waste services over the next 30 years will be:
- Future operating and maintenance costs associated with the solid waste infrastructure in general can be expected to increase within the planning period.
- The impact of increased resource recovery through waste minimisation will result in higher unit operating costs for disposal of reducing residual wastes at the landfill
- Relatively minor changes to LoS could have major impacts on costs.
- Consent standards and workplace health and safety requirements for operating the collection, landfill and transfer stations will increase costs.

Council is committed to providing the most cost effective service appropriate to district needs and affordability. Over the next three years, that will include improved accessibility to and safety of the network of transfer stations (including the transfer station at the entrance to Waitomo landfill), incorporating recycling facilities, for which there is a market, and optimised development of Waitomo Landfill.

A two stage forward plan for development of the latter will be implemented by Council during the 2018 -2021 period:
- Applying for doubling of the present consented volume
- Using the landfill up to the re-consented volume and then close it with future waste carted and disposed of at a regional landfill.

WDC holds five separate consents issued by Waikato Regional Council authorising the current Waitomo District Landfill operation and controlling the environmental effects of the activity. The consents attaching to the Waitomo District Landfill are summarised as follows:

Consent No.	Date Issued	Activity Authorised	Expiry Date
101753	8 February 1999	Placing up to 232,000 tonnes of municipal waste onto or into land	31 December 2033
101754	8 February 1999	Discharge of contaminants into air	31 December 2033
124718	3 August 2012	Discharge of up to 0.65 m3 of leachate per day into the ground	31 December 2033

A land use consent and site designation, issued by Waitomo District Council, is also in place for the landfill site

Incorporated in this SWaMMP is Council's 2017 Waste Assessment as required by section 50 of the Waste Minimisation Act 2008.

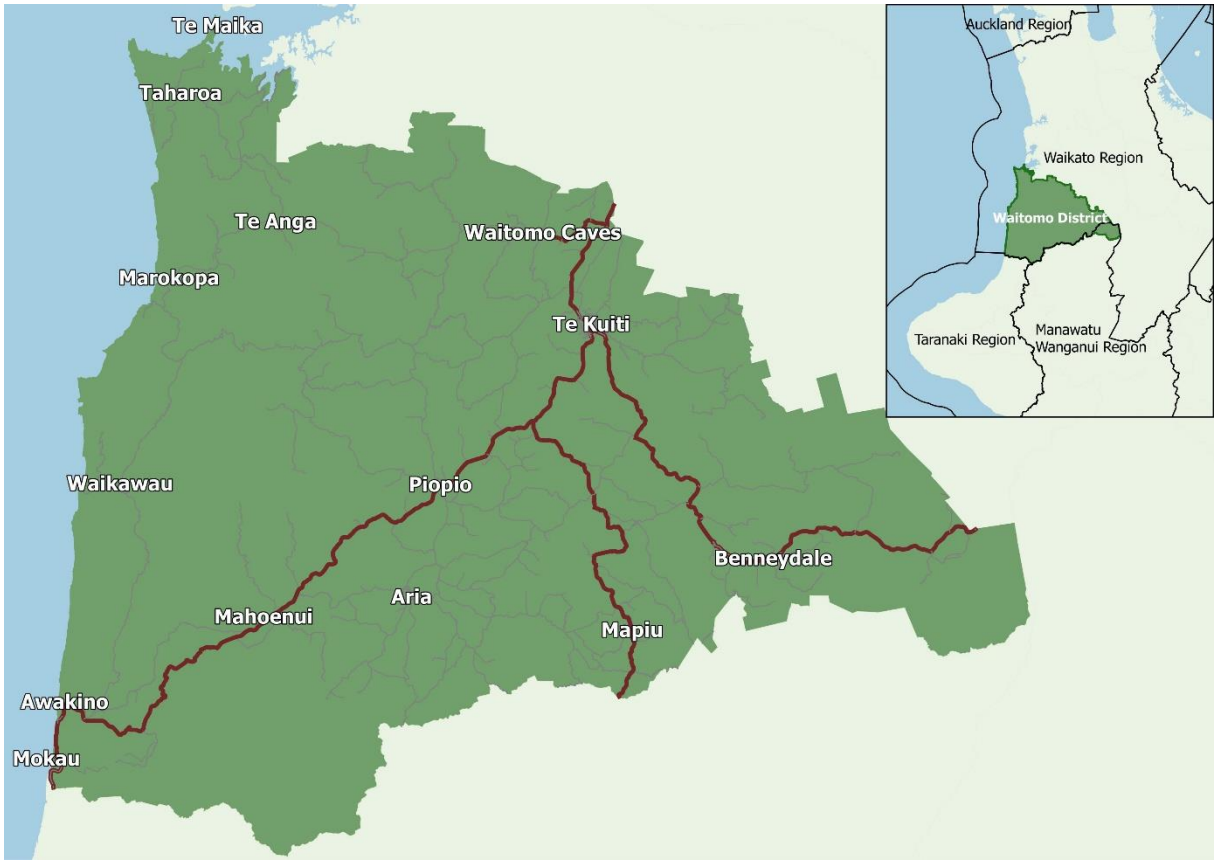
The timing of this SWaMMP sits ahead of Council's draft 2018 -2028 Long Term Plan. The adopted Long Term Plan will determine the final scope and relative priority of Council's future waste management and minimisation activities.

1.0 INTRODUCTION

1.1 Waitomo District

The Waitomo District occupies a large area extending from the west coast of the North Island between Mokau and Te Waitere through to Pureora forest in the east, and from Mapiu in the south to Waitomo Village in the north. The District is situated within the Waikato Region and comprises 3363.57 sq km of land. The total population is 8,910 (2013 Census). Te Kuiti is the administrative centre and main township of the Waitomo District, with approximately 45% of the district population residing in this town. The main rural communities are Benneydale, Piopio and Waitomo Village. There are several other smaller townships throughout the District including the popular beach settlements of Mokau, Awakino, Marokopa and Te Waitere.

The local economy of the district is based on farming, forestry, mining and tourism, all of which are key users of the District's solid waste management network.



1.2 Purpose of this Plan

Council is responsible under the Waste Minimisation Act 2008 to oversee and promote effective and efficient waste management and minimisation in the District, having regard to the New Zealand Waste Strategy (NZWS).

The Plan aims to fulfill Council's legal obligations under the Waste Minimisation Act 2008, and to provide the tactics that will enable Council to achieve its strategic goals most cost effectively. It sets the priorities and strategic framework for managing waste in Waitomo district.

This Plan is also intended to demonstrate responsible stewardship of Council's solid waste minimisation and disposal assets and services on behalf of its customers and stakeholders. The Solid Waste Activity Management and Minimisation Plan (SWaMMP) provides a basis for good activity management by WDC and demonstrates the potential for waste management services to be maintained at optimum cost, to a defined level of service, over the long term.

Waste minimisation activities are aimed at reducing the quantity of waste generated at source whereas waste diversion seeks to reduce the quantity of waste entering a landfill.

1.3 Scope of this Solid Waste (Activity) Management and Minimisation Plan

The Waste Minimisation Act 2008 defines waste as *"…any thing disposed of or discarded..",* and includes a type of waste that is defined by its source (e.g. organic waste or demolition waste etc.) and any component of diverted material if the component or element is despised of or discarded.

Solid Waste Management is the way in which solid waste is managed including reducing the amount of waste being generated, how it is managed at home, and the collection of waste through to its disposal. This SWaMMP will help Waitomo District Council and its district community manage waste produced in the district in the best way possible.

The Act describes 'waste minimisation' as **reducing waste** and increasing the **reuse, recycling,** and **recovery** of waste and diverted material. "Diverted material" is anything that is no longer required for its original purpose, but still has value through reuse or recycling.

The SWaMMP covers management of all solid waste and diverted material in the district. Waste types considered in this Plan include:

- Material disposed of that are destined for landfill
- Organic materials including greenwaste
- Material able to be recycled or reused including metals (ferrous and non-ferrous, plastics 1&2, paper, cardboard, textiles, glass and other recycling materials presented by the private sector
- Hazardous materials including, batteries, electronic waste and other materials needing special treatment before disposal.

Liquid and gaseous wastes are not included except where they interact with solid waste systems. Hazardous wastes like chemicals and the outputs from wastewater treatment plants are excluded. WDC may consider other waste in its district, and suggest areas where groups such as businesses or householders, could take action themselves.

Waste minimisation and disposal facilities relevant to the Waitomo District are:

- Recycling drop-off centres (at waste transfer stations)
- Waste transfer stations
- Kerbside collection of recyclables and bagged refuse
- Waitomo Landfill

Waste comes from a number of sources includes:

- Kerbside collection from residential, commercial and rural properties
- Illegal dumping
- Street litter collections
- Transfer stations

1.4 Key Components of the SWaMMP

The Plan must meet requirements set out in the Waste Minimisation Act 2008, including:

- Consideration of the 'Waste Hierarchy' which sets priorities for how we should manage waste (see Figure 1)
- Ensuring waste does not create a 'nuisance'
- Having regard to the New Zealand Waste Strategy and other key government policies, which emphasise reducing harm and improving the efficiency of resource use
- Having regard to the most recent 'Waste Assessment' (this is a review of all information WDC has about the current waste situation in Waitomo District, including rubbish from households and businesses), last completed on 2017 (refer to Appendix 5)
- Following the Special Consultative Procedure set out in the Local Government Act (2002).

1.5 The Waste Hierarchy

The 'waste hierarchy' for waste management refers to the idea that reducing, reusing, recycling and recovering waste is preferable to disposal (which in New Zealand usually means a landfill). Methods higher up the hierarchy are given priority because they use fewer resources.

The Waste Minimisation Act 2008 requires territorial authorities to consider (in order of importance) the following methods for managing waste:

- Reduction
- Reuse
- Recycling
- Recovery
- Treatment
- Disposal

and,

- Ensure that the collection, transport, and disposal of waste do not, or are not likely to, cause a nuisance; and
- Have regard to the New Zealand Waste Strategy, or any government policy on waste management and minimisation that replaces the strategy; and
- Have regard to the most recent assessment undertaken by the territorial authority under section 51; and
- Use the special consultative procedure set out in section 83 of the Local Government Act 2002; and
- In doing so, the most recent assessment undertaken by the territorial authority under section 51 must be notified with the Statement of Proposal.

For simplicity, the waste hierarchy has been organised into three groups as shown in the figure below, namely:

- Waste **reduction**
- Waste **diversion** (reuse, recycling, and recovery)
- Waste **disposal** (treatment and disposal).

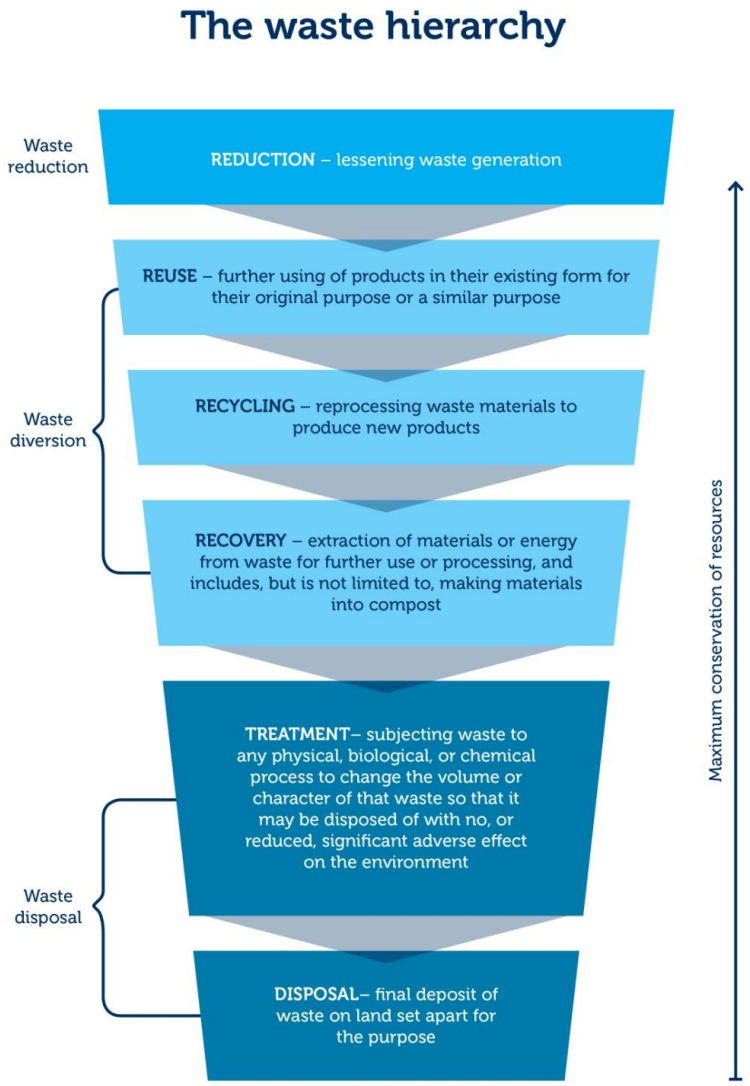


Figure 1: The Waste Hierarchy *Source: www.mfe.govt.nz*

1.6 Term of the Plan

In line with the requirement of section 50 of the WMA, the SWaMMP needs to be formally reviewed at least every six years after its adoption, but it is considered prudent to take a longer-term view for planning purposes – the planning horizon is not fixed by legislation. A 10-year timeframe has been applied in line with Council's 2018-28 Long Term Plan (LTP).

2.0 VISION, GOALS AND OBJECTIVES

2.1 Vision

Councils Vision for the 2018-28 Long Term Plan is:

"***Creating a better future with vibrant communities and thriving business"***

Council's Solid Waste Group supports this vision by:

- Protecting public health and safety
- Enabling economic growth
- Using natural resources in a sustainable manner
- Promoting efficient waste management that minimises environmental harm

2.2 Community Outcomes

The Local Government Act 2002 requires local authorities to identify Community Outcomes for their districts. Community Outcomes mean the outcomes that the Council aims to achieve in order to promote the social, economic, environmental and cultural well-being of its district in the present and for the future. Section 1 of Schedule 10 provides that Council must, to the extent determined appropriate by Council, describe the Community Outcomes for the District.

Council considers in its 2018-2028 Long Term Plan that the Solid Waste Group contributes to the following community outcomes:

CO 6 *A place that attracts more people who want to live work and play, and raise a family.*

CO 7 *A place where wealth and employment are created through local businesses and tourism opportunities and facilities are developed, facilitated and encouraged*

CO 8 *A place where the development of partnerships for the delivery of programmes and services is encouraged and pursued.*

CO9 *A place where the governance actively seeks to participate and take a leadership role in regional and national initiatives aimed at the development of the District.*

CO10 *A place that provides safe, reliable and well managed infrastructure which meets the District community needs and supports maintenance of public health, provision of good connectivity and development of the District.*

2.3 Strategic Goals

Council has developed the following Strategic Goals for this Group:

Strategic Goal 1: To ensure the safe disposal of waste to protect our natural environment.

Strategic Goal 2: To minimise waste disposal within the district.

2.4 Objectives

The Plan contains the objectives outlined below:

- To align Council's waste management strategies and programmes with the National and Regional strategic directions;
- To ensure as far as is practicable, that waste generators meet the costs of the waste they produce;
  To meet the requirements of all relevant legislation including the Local Government Act 2002 and the Waste Act 2008;
- To provide a practical guide to the management of waste in the Waitomo District;
- To promote cost effective, efficient and equitable waste management services to the community;
- To minimise the quantity of waste being generated and disposed of in order to promote the sustainable use of natural and physical resources;
- To encourage and support the principles of cleaner production and waste hierarchy by all involved in waste generation in the District;
- To follow the policies as stated in the Council's:
  - Long Term Plan
  - District Plan
- To reduce the total amount of waste per head of population generated within the District requiring disposal, having regard to the New Zealand Waste Strategy 2010 and the Waikato Regional Council Policy Statement;
- To identify and pursue opportunities for local business and communities to implement their waste reduction and resource recovery initiatives and help secure the economic advantages of the District's green image;
- To lead by example to assess the potential for waste reduction through integrated waste management principles;
- To take pride in its achievements in waste through voluntary initiatives as well as promoting economic efficiency and sustainable management of the environment which will enhance the health and well-being of all citizens in the District.

The Council's goals focus on fit for purpose levels of service necessary to manage the solid waste management facilities and services effectively, safely and sustainably.

2.5 Rationale for Service delivery

This activity exists to ensure that public health and the natural environment are protected from detrimental effects of solid waste, and that the waste disposal needs of the District community are met.

2.6 Public Health Protection

The range and level of waste management services provided by WDC will be sufficient to ensure that public health and well-being of district residents are protected effectively in the future, and they will contribute to the promotion of efficient and effective waste management.

3.0 LEGISLATION, POLICIES, PLANS

3.1 Summary of Guiding Legislation, Policies, and Plans

In preparing this SWaMMP, WDC has taken account of a wide range of considerations, including the following:

- Information on the waste we generate and manage in our district
- Projections of how our population and economy might change over time
- Residents and ratepayer surveys and other resident feedback
- The waste hierarchy
- Public health
- The potential costs and benefits of different options to manage our waste

- The regulatory framework
- WDC's funding policies.

Detail of the above factors and considerations is contained in the Waste Assessment (and other supporting documentation).

Council's key policies for giving effect to its goals and objectives for the activity are:

1. To reduce the average quantity of recyclables per bag in the WDC's kerbside collection by 1% per annum benchmarked against the 2016 waste audit.
2. To put in place programmes to promote sustainable management and protect the environment and public health.
3. To support and encourage individuals and businesses to take greater responsibility for waste reduction, reuse and recycling.
4. To maintain resident satisfaction with WDC's solid waste services at 70% or greater (as measured by safety, accessibility, and effectiveness).
5. Support national initiatives for waste stewardship.

The diagram below sets out the legal and policy structure to which Council is required to undertake its Solid Waste Management and Minimisation activities.

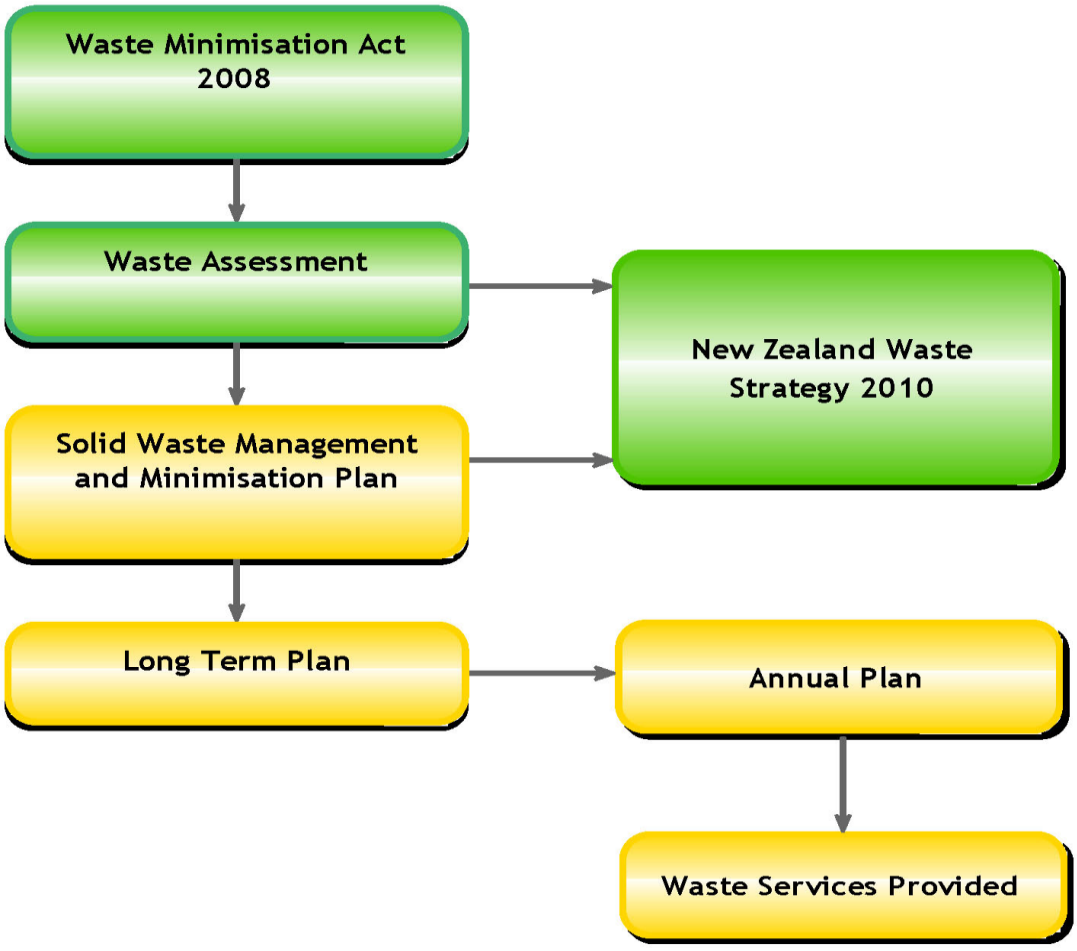


Figure 2 – Legal framework - Waste management and minimisation

The following legislation outlines the roles and responsibilities of territorial authorities for waste management and minimisation in New Zealand.

3.2 Waste Minimisation Act 2008

The principal solid waste legislation in New Zealand is the Waste Minimisation Act 2008 (WMA). The Waste Minimisation Act 2008 (WMA) came into force on 26 September 2008. The stated purpose of the WMA is to:

"Encourage waste minimisation and a decrease in waste disposal in order to

(a) protect the environment from harm; and
(b) provide environmental, social, economic, and cultural benefits."

To further its aims, the WMA requires TAs to promote effective and efficient waste management and minimisation within their district. To achieve this, all TAs are required by the legislation to adopt a WMMP and to review its Plan no later than every six years. This document has been prepared in fulfilment of that requirement.

Territorial authorities are now responsible under the WMA for implementing waste management and minimisation plans, and overseeing and promoting effective and efficient waste management and minimisation in their districts in accordance with the New Zealand Waste Strategy (NZWS).

Waitomo District Council has a statutory responsibility to promote effective and efficient waste management and minimisation within the Waitomo district under section 42 of the Act and to review its Solid Waste Management and Minimisation Plan (SWaMMP) no later than every six years.

A key element of the Act is the waste levy applied to all wastes disposed to landfill. The levy is $10 per tonne. The purpose of the levy is to increase the price of waste disposal to better reflect the cost of waste on the environment, society and the economy and to generate money for waste minimisation initiatives.

The Waste Minimisation Act 2008 requires Councils to complete a waste assessment and to have regard to the assessment in preparation of the plan. The assessment provides the necessary background information on waste and diverted material streams to determine priorities. The most recent assessment completed in 2017 is included in this WMP – refer to Appendix 5.

3.3 Local Government Act 2002

The Local Government Act 2002 required all territorial authorities to adopt a waste management and minimisation plan (WMMP) by 30 June 2005. The Act further requires that either a summary of the waste management and minimisation plan (WMMP) in force at the time or, the full proposed WMMP must be contained in the Council's Long Term Plan. The WMMP must be adopted using the special consultative procedure prescribed in the Act.

3.4 Climate Change (Emissions Trading) Amendment Act 2008 (ETS)

The New Zealand Emissions Trading Scheme (NZ ETS) is part of Government's primary response to global climate change. The Climate Change (Waste) regulations (2010) came into force on 1 January 2011. The regulations require waste disposal facility operators (DFOs) to participate in the NZ ETS.

The ETS places direct obligations on operators where the waste stream contains some elements of household waste. In this way, many waste DFOs, including WDC, are mandatory participants in the NZ ETS.

The Climate Change (Emissions Trading) Amendment Act 2008 (ETS) requires landfill owners to purchase emission trading units to cover emissions generated from their landfill.

Obligations are solely in relation to landfill methane emissions – as result from decomposition of organic waste. By placing an obligation on these facilities, the Government expects landfill operators manage their facilities to reduce methane emissions to the atmosphere (e.g. by landfill gas capture and flaring/utilisation) and, in conjunction with its users, minimise methane generating waste to

landfill (e.g. waste minimisation, waste recovery and recycling). Unlike a number of other sectors participating in the NZ ETS, there is no free allocation of NZUs (the ETS currency) to the waste sector, in other words there is no subsidisation of the emissions liability.

Since January 2013 participants have been required to surrender NZUs for the reported emissions.

The regulations provide two core methodologies for estimating emissions.

- Default Emissions Factor (DEF) - This method is described primarily in Section 5 of the Draft Climate Change (Waste) Regulations (2010). Emissions are estimated by multiplying each class of landfill waste (being gross tonnage less the diverted tonnage), the waste volume data must be collected and reported under the Waste Disposal Levy method, already being undertaken by TA's as required by the WMA.

- Unique Emissions Factor (UEF) – This method is described in Section 5 of the Draft Climate Change (Waste) Regulations (2010) but also draws directly from the Draft Climate Change (Unique Emissions Factors) Amendment Regulations (2010). Disposal Facility Operator (DFO's)

The ETS requirements has resulted in an increase in waste disposal costs. Estimates are that costs will increase somewhere from $19 to $30 per tonne. The cost of the emission units is passed on to customers of the landfill through increased prices for waste disposal.

The financial impact of the ETS, particularly when combined with the landfill levy, has lead WDC to investigate alternatives for disposal of residual waste.

3.5 Resource Management Act 1991

The Resource Management Act 1991 requires Council to manage the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while:

- Sustaining the potential for natural and physical resources to meet the reasonable foreseeable needs of future generations;
- Avoiding, remedying or mitigating any adverse effect of activities on the environment;
- Safeguarding the life-supporting capacity of air, water, soil and ecosystems.

In managing the use, development, and protection of natural and physical resources Council must;

- recognise the relationship of Maori and their culture and traditions with their ancestral lands, water, waahi tapu and other taonga;
- take into account the principles of the Treaty of Waitangi in exercising functions and powers under the Act relating to the use, development, and protection of natural and physical resources;
- comply with planning documents prepared under the Resource Management Act that impact on the management of solid waste assets, which include the Regional Plan issued by Waikato Regional Council's District Plan;
- comply with consents issued by WRC for disposal of solid wastes, gas, stormwater and leachate at the Waitomo District Landfill;
- Council's District Plan, prepared under the Resource Management Act, makes no direct provision for minimum solid waste management standards, apart from a general reference to hazardous substances in Part 3.

3.6 Health Act 1956

The Act:

- Requires local authorities to provide 'sanitary works', the definition of which includes waterworks, drainage works, wastewater works, works for collection and disposal of refuse, cemeteries and crematoria and includes all lands, buildings, machinery, reservoirs, dams, tanks, pipes and appliances used in connection with any such works;

- Empowers the Minister to require local authorities to undertake works necessary to protect public health;
- Requires provision in any dwelling house of suitable appliances for the disposal of refuse, water and sufficient sanitary conveniences;
- Empowers councils to make bylaws covering conditions to be observed in the construction and approval of drains.

3.7 New Zealand Waste Strategy

The Ministry for the Environment, in consultation with Local Government New Zealand, published its first NZWS in 2002. The Strategy was last reviewed in 2010 and remains the operative New Zealand Waste Strategy.

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

The New Zealand Waste Strategy sets out the Government's long-term priorities for waste management in New Zealand. The Strategy's two goals provide direction to local government, businesses (including the waste industry), and communities on where to focus their efforts in order to deliver environmental, social and economic benefits to all New Zealanders. The goals are:

- reducing the harmful effects of waste
- improving the efficiency of resource use.

The Strategy's flexible approach will ensure waste management activities are appropriate to local situations. The Strategy provides national guidance for waste management and includes a framework to support local and central government to move towards common goals and address particular waste issues.

The WMA (Section 44) requires that Council have regard to the NZWS or other such policy which is subsequently developed, when preparing a SWaMMP.

A comparison has been made between Council's current waste management service levels and the relevant targets of the NZ Waste Strategy (which covers all types of wastes). While there are areas that could be assessed as gaps relating to accessibility to facilities and methods of funding waste management services, the systems currently in place are appropriate for the small and diffuse distribution of the district's population. A higher level of service for recovery of the relatively low volumes of resource available would not be viable. Resident satisfaction with current levels of waste management and minimisation services is high.

Current waste management services are described in the attached Waste Assessment (refer to Appendix 5).

For the purposes of this SWaMMP, the Council has had regard to the NZWS 2010.

3.8 Waitomo District Council's Internal Planning Documents

The key internal planning document overlaying this SWaMMP is Council's 2018 – 2028 Long Term Plan (LTP) which sets out Council's role in maintaining and promoting community well-being in the District. The SWaMMP is a "tactical" plan in support of the Council's LTP, with linkages to the Council's District Plan, Structure Plans and Council bylaws pertaining to waste management related matters.

The following table summarises the linkages between AMP's and the other key components of the strategic planning and management of Council:

Long Term Plan	The broad strategic direction of Council set in the context of current and future customer requirements, many of which relate to the performance and financial requirements of the assets which are the subject of Activity Management (AM) planning. A key part of the Long Term Plan (LTP) is the vision that has been set for the Council. Our vision is: *"Creating a better future with vibrant communities and thriving business"*

	Key objectives: • Facilitate economic development • Encourage and support community connectivity and development • Good stewardship and development of assets • Work towards lower indebtedness and focus on rates affordability Key LTP projects/actions • Development of the cell in Landfill in 2019 and 2020. • Complete investigation on feasibility of moving Mokau/Awakino Transfer Station. • Improving alignment between transfer stations access hours and demand.
Annual Plan	The service level options and associated costs developed in the AMP are fed into the Annual Plan consultation process.
District Plan	The District Plan regulates the shape and form of sustainable land use and activities pertinent to achievement of the District's environmental outcomes. It identifies and protects anticipated growth areas and formalises urban supply boundaries for utility services. It establishes standards for the construction and protection of the solid waste management network and provides the mechanism for mitigating adverse effects on the natural and physical environment.
Financial Plan:	Financial plans developed in each AMP are consolidated into the short and long-term programmes of Council. AMP's improve financial planning by instigating planned long term maintenance and operation programmes and provides justification for works programmes and levels of funding.
SWaMMP	The service levels and budgets defined in the SWaMMP are incorporated into Business Plans as performance measures for the group.
Contracts	The service levels, strategies and information requirements contained in the SWaMMP become the basis for performance orientated contracts let for service delivery
Corporate Information	Quality AMP is dependent on suitable information and data. This requires the availability of sophisticated AM systems which are fully integrated with the wider corporate information systems (e.g. financial, property, GIS, customer service, etc.).

3.9 Waitomo District Solid Waste Bylaw 2009

The purpose of this bylaw is to ensure that household waste is reduced, collected and disposed of in the interests of public health and in an efficient and cost effective manner, provide for the efficient collection and recovery of recyclable waste and manage waste management facilities for the optimum disposal or recycling of waste.

Under the WMA, the Council is required to review their waste bylaw at intervals of not more than 10 years after the last review (s58). Waste-related bylaws must not be inconsistent with the Council's WMMP (s56(2)).

The current Solid Waste Bylaw adopted in June 2014, reviewed and amended the 2009 bylaw. The scope of this bylaw is to:

(a) To ensure that household waste is reduced, collected and disposed of in the interests of public health and in an efficient and cost-effective manner; and

(b) To provide for the efficient collection and recovery of recyclable waste; and

(c) To ensure that the obstruction of streets and roads by waste for collection is minimised; and

(d) To manage waste management facilities for the optimum disposal or recycling of waste.

No pressing issues have been identified with regards to the Solid Waste Bylaw 2014. The provisions have enough scope to address any issues which have arisen to date, such as afterhours trespass

onto waste facility sites. The Bylaw is responsive enough to ensure council will be able to take advantage of future opportunities that could work towards meeting waste management and minimisation goals without requiring any lengthy amendment process.

Provisions in the solid waste services contracts (500/16/038 and 500/16/041) have been drafted to meet and be consistent with the Bylaw conditions and standards.

3.10 Other relevant legislation, plans and policies

Waitomo District Council has several other plans and bylaws that have been considered when preparing this Assessment.

These include:

- The Solid Waste (asset) Management and Minimisation Plan
- The Waitomo District Plan 2009

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

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

In preparing this Plan, Council has also considered the requirements of:

- Hazardous Substance and New Organisms Act 1996 (HSNO)
- Health & Safety at Work Act 20015
- Waikato Regional Council - Regional Policy Statement
- Waikato Waste and Resource Efficiency Strategy (2016-18)/Bay of Plenty Regional Waste and Resource Efficiency Strategy (2013)

3.11 Regional Council Plans

The Waikato Regional Waste Strategy (2015 – 2018) presents a regional position on managing solid waste, hazardous liquid wastes and other harmful wastes in the Waikato Region. The Strategy has a vision of "working together towards a zero-waste region".

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

The Waste Strategy Advisory Group (WSAG) was established and includes representation from industry, local authorities, community enterprises, Auckland Council, 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.

3.12 Cross-Regional Collaboration

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

- Waste assessments and waste management and minimisation planning
- Solid waste bylaws, licensing and data
- Education and communication
- Procurement
- Rural waste

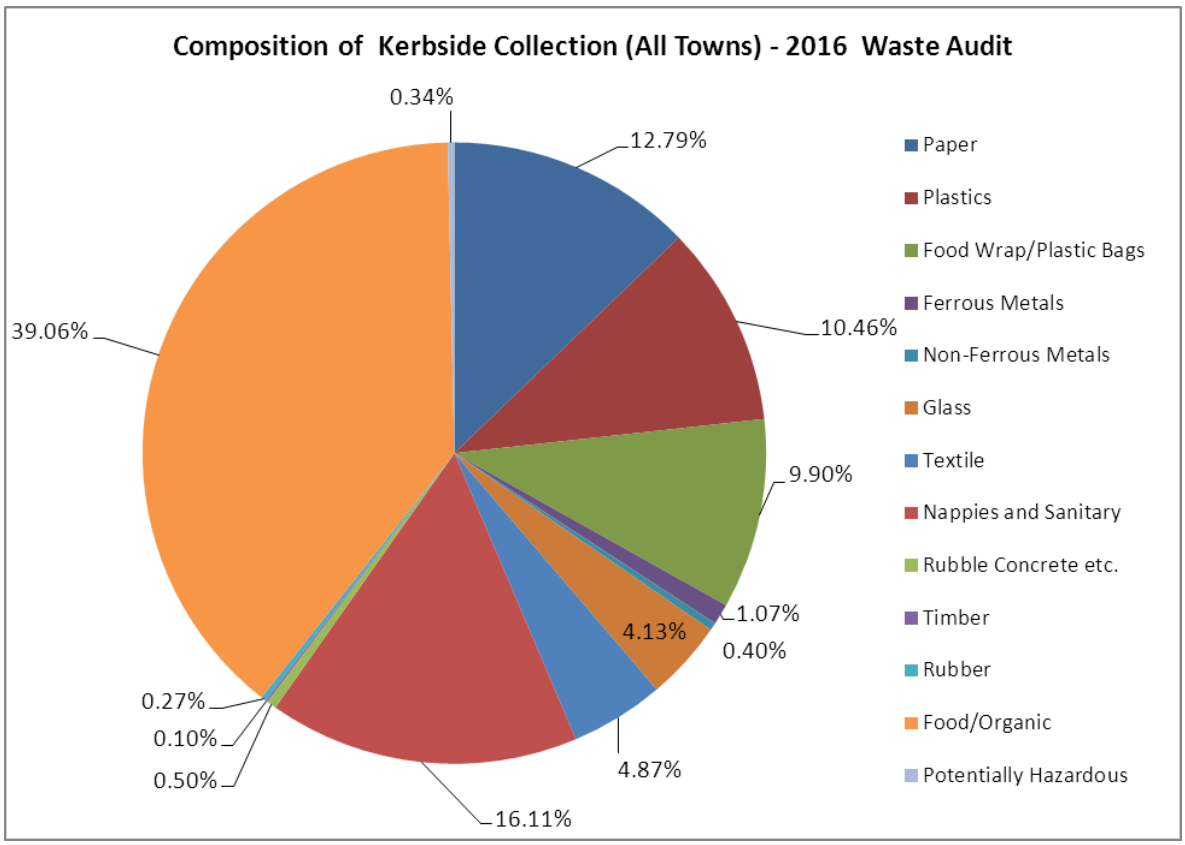
Projects are currently under way for the first two of these priorities and there is also ongoing collaborative work among the constituent councils of the two regions on rural waste, tyres and education and communication.

4.0 THE WASTE PROBLEM

In order to manage and minimise waste into the future, there is need to understand the way in which waste is currently managed, the services that are provided and the quantity and type of waste that is produced in the district. This section presents a summary of current waste services and the amount and composition of waste produced in the Waitomo District.

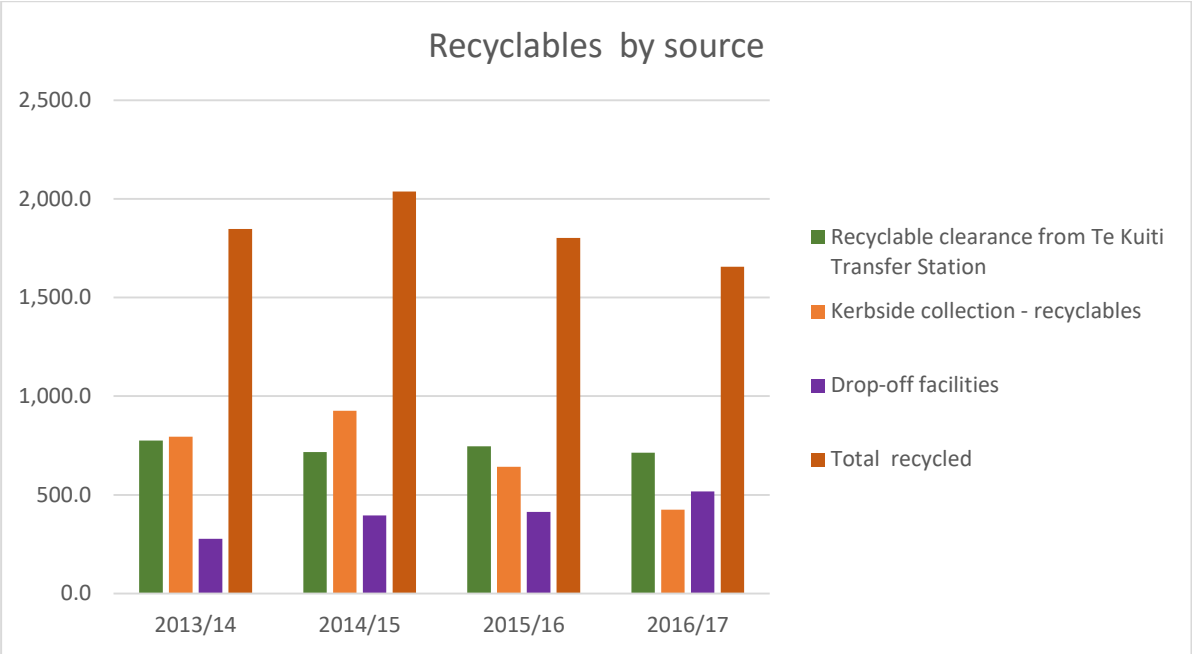
4.1 Summary of composition of waste and diverted materials

The 2017 waste assessment identified the following average composition of waste types sourced through the weekly kerbside collection, as surveyed in 2016. As previously, the predominant recyclable waste types is food/organics, followed by paper. The totals do not represent all waste and diverted materials for the district. In rural areas, an element of on-site waste disposal occurs. Also, although the network of rural transfer stations provides recycling and disposal facilities, users still have to travel to those disposal points and therefore the amount of recyclable or recovered materials decreases. If all waste was dealt with through the transfer stations, data on waste to landfill and waste minimisation would be more accurate.



An analysis of waste recycling trends since 2013/14 has identified an initial increase in the amount of recyclables collected in 2014/15, followed by an overall downward trend. The exception to that is the tonnage of recyclables collected from the drop-off centre at Te Kuiti transfer station, which has shown a steady increase since 2013/14. The single largest recyclable is glass, representing approximately 50-60% of the kerbside collection and 85-90% of the rural transfer station collection. The overall tonnage of recyclables is sensitive to the market for glass collection.

Recycling collection (tonnes)				
	2013/14	**2014/15**	**2015/16**	**2016/17**
Recyclable clearance from rural transfer stations (x5)				
Glass	708.5	612.5	688.8	651.8
Plastic	9.0	7.4	7.9	6.8
Tin/Aluminium	11.6	13.0	8.2	8.2
Paper/cardboard	46.8	83.7	40.8	47.5
Sub total	**775.9**	**716.6**	**745.7**	**714.3**
Kerbside collection - recyclables				
Glass	486.0	487.2	385.2	263.5
Plastic	28.2	34.8	37.0	16.0
Tin/Aluminium	52.1	33.2	10.7	9.0
Paper/cardboard	227.6	370.7	209.7	135.6
Sub total	**793.9**	**925.9**	**642.6**	**424.1**
Drop-off facilities (at Te Kuiti transfer station)	**278.0**	**395.0**	**414.0**	**517.0**
Total recyclables	**1,847.8**	**2,037.5**	**1,802.3**	**1,655.3**



There is potential for increased diversion to occur through the kerbside collection. The bags surveyed in 2016 contained approximately 70% by weight of potentially recyclable material, of which organics are approximately 50% of that. It is evident that there is opportunity for more emphasis on encouraging the recycling of organic material (home composting) and separation of paper and plastics from both residential and business sectors.

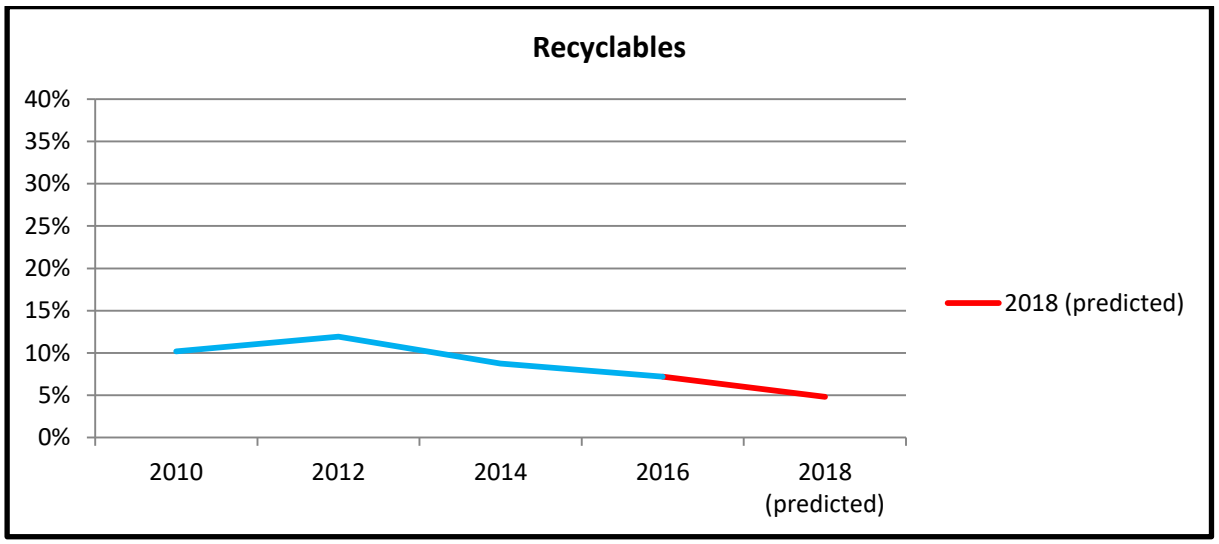
Assuming 50% recovery of the recyclable content of waste in refuse bags, the analysis below identifies that there is scope for further recycling of at least 37% of current refuse bag contents, assuming a 50% recovery rate, in addition to current recyclables already collected via the kerbside recycling collection and network of recycling facilities located at WDC's waste transfer stations.

Type of waste in refuse bags	**2016 Waste Audit *(Percentage of waste contained in refuse bags)***	Assume 50% Recyclable
Putrescibles *(Organic/food waste)*	38.93%	19.5%
Sanitary & Nappies *(non-recyclable)*	16.06%	0.0%
Plastic Wrap *(non-recyclable)*	9.87%	0.0%
Paper *(recyclable)*	12.75%	6.4%
Textiles *(e.g.: fabric)*	4.85%	2.4%
Plastic *(recyclable)*	10.42%	5.2%
Glass *(recyclable)*	4.12%	2.1%
Metal *(ferrous metals)*	1.07%	0.5%
Potentially Hazardous *(e.g.: hair dye, chemicals)*	0.67%	0.0%
Metal non-ferrous metals *(recyclable)*	0.40%	0.2%
Rubble, concrete, timber and rubber	0.87%	0.4%
Total	100.0%	36.7%

The residual waste disposed to landfill comprises approximately 9,700 t.p.a and is dominated by commercial/industrial/institutional waste types:

	Landfilled waste 2016/17 (excludes cover material)	
	% of total	Tonnes
Construction & demolition	0	0
Domestic kerbside	5.1%	494
Industrial/commercial/institutional	85.4%	8260
Landscaping	0	0
Domestic	0.2%	22
Rural transfer stations	2.0%	192
Other	7.3%	700
TOTAL	**100%**	**9,668 t**

Despite the above, the proportion of recyclables disposed of at the landfill, benchmarked against 2014 quantities, has continued to decline, as illustrated below:



Higher recovery rates would rely on a significant investment in additional infrastructure (e.g. a dedicated kerbside organic collection, additional more transfer stations), and an end-market for the recovered products. In the case of plastics, presently only two types of plastic are recycled because there is no market for other plastic types.

A key consideration for WDC is the small and dispersed nature of its population base. The relationship between population and waste production has traditionally been linear. Increased emphasis on packaging as a health and safety (in the case of food safety) and marketing tool will tend to increase that linear ratio. So while the opportunity for increased recycling might increase, it will be offset by higher waste production per head of population.

Additionally, while Te Kuiti is the population centre with approximately 4,200 people (approximately 47% of the total district population), the remaining waste catchment is derived from small and remote pocket townships. Further, the district population is forecast to decline in the medium term. The unit costs of servicing a sparsely located population base with enhanced recycling collection systems would quickly become uneconomic.

The future use and development of the Waitomo District Landfill (WDL) therefore remains a key service for the safe disposal of residual district waste stream.

The WDL is a fully engineered and resource consented site. The resource consent allows the site to be used for the disposal of up to 232,000 tonnes of municipal solid waste and discharge of contaminates to air and expires on 31 December 2033, whichever comes first.

At the current fill rate (approximately 10,000 tonnes per year) the developed area of the landfill has a residual unused capacity of approximately 6 years (i.e. to 2023). If the WDL was not further consented at that time then the site could not be further used for that purpose and there would not be any income from that source available to offset debt repayment and other holding costs.

In addition, alternative arrangements would need to be made ahead of 2023 to dispose of any residual solid waste. That arrangement would probably involve haulage and disposal costs for transfer of residual solid waste from the Te Kuiti transfer station to the nearest regional landfill.

An obvious alternative, previously identified, is to investigate and determine options for increasing the WDC capacity within the current consented site footprint. The preliminary cost assessment is that a capital investment of $1.5m would provide sufficient capacity to extend the remaining landfill capacity life from 6 years (to 2023) to 36 years (to 2053), minimum.

In the latter case, the remaining useful life of the WDL and the associated amortisation of the capital development costs would approximately coincide.

That option would also require a new resource consent to extend the term to authorise use of the WDL beyond 2033. That is not expected to be onerous given the current track record of landfill consent compliance and provided the proposed development does not extend beyond the current footprint.

Council has previously endorsed the above strategy, with the necessary re-consenting process to be initiated in the current 2017/18 year to provide early planning certainty within the period approaching 2023 and beyond and to avoid risks such as being caught by possible changes to regulations and/or legislation

4.2 Overview of Existing Waste Management & Minimisation Infrastructure & Services

Council has a legislative requirement to meet the Waste Minimisation Act 2008 requirements and to ensure refuse is adequately collected and disposed of for the purpose of public health protection under the requirements of the Public Health Act 1956.

The Waitomo District Solid Waste Management Activity has key waste facilities that currently service the District. These include kerbside collection of refuse and recyclables, recycling facilities, ownership of waste transfer stations and a fully consented landfill. Council has five (5) closed landfills within the district. There are a number of waste management and educational programmes carried throughout the schools in the district. The key waste management activities/facilities provided in the district are outlined below:

Service	Service Provider
Kerbside refuse collection	Envirowaste
Kerbside recycling collection	Envirowaste
Transfer station refuse and recycling collection	Envirowaste
Disposal of residual refuse	Waitomo Landfill

Street litter bin collections are collected by WDC Roading Contractor (Te Kuiti), Marokopa Community Board (Marokopa), Council transfer station attendant (Benneydale and Mokau) and private contractor (Piopio).

Location	Bagged refuse collection	Kerbside recycling collection	Litter Bin collection	Waste Transfer Station (WTS)	Landfill	Recycling centre
Te Kuiti	✓ (Friday)	✓ (Friday)	✓ (Daily)		✓	✓ (At landfill)
Piopio	✓ (Tuesday)	✓ (Tuesday)	✓ (2x week)	✓		✓ (At WTS)
Benneydale			✓ (Daily)	✓		✓ (At WTS)
Marokopa			✓	✓		✓ (At WTS)
Kiritehere			✓ (Weekly)			
Kinohaku				✓		✓ (At WTS)
Awakino	✓ (Tuesday)	✓ (Tuesday)		✓		✓ (At WTS)
Mokau	✓ (Tuesday)	✓ (Tuesday)	✓ (3x week)			
Waitomo	✓ (Tuesday	✓ (Tuesday	✓ (Weekly)			

Table: Existing Waste Management Services

Sludge derived from the Te Kuiti wastewater treatment plant processes is dewatered at the wastewater treatment plant and mixed with shredded greenwaste at the landfill before being applied as a cover material.

4.3 Summary of District Specific Issues

In summary, the district specific issues considered include:

- To address the remaining amount of waste going to landfill that could be recycled
- Provision for collection of special or greenwaste wastes at rural transfer stations
- Unavailability of compliant household and agricultural hazardous waste collection facilities
- Suitable disposal options of agricultural by products such as silage wrap etc.
- Event recycling
- High cost for refuse and recycling in lower populated rural areas
- The amount of organic residual waste to landfill
- The cost of disposal of residual waste.

5.0 PROPOSED METHODS FOR ACHIEVING EFFECTIVE AND EFFICIENT WASTE MANAGEMENT

Waste management and minimisation services in Waitomo district are delivered through the use of Council infrastructure and contracted services.

5.1 Summary of key waste management and minimisation services

The table below shows current infrastructure and management of key waste and diverted material streams. Collection services from the transfer stations are provided by Council's only contractor Envirowaste.

Site	Activities	Ownership/Operator
Waitomo District Landfill	Greenwaste collection Recycling drop off Waste to landfill	Waitomo District Council Envirowaste
Piopio Transfer Station	Recycling drop off Waste to landfill	Waitomo District Council
Marokopa Transfer Station	Recycling drop off Waste to landfill	Waitomo District Council
Benneydale Transfer Station	Recycling drop off Waste to landfill	Waitomo District Council
Kinohaku Transfer Station	Recycling drop off Waste to landfill	Waitomo District Council
Awakino Transfer Station	Recycling drop off Waste to landfill	Waitomo District Council

Below summarises some of the current process in the district for managing waste and diverted material streams.

Waste Stream	How they are managed
Household waste	Kerbside refuse collection, refuse transfer station waste disposed to landfill
Household diverted material	Kerbside recycling collection and refuse transfer station drop-off for recyclables from there steel tins, plastic and aluminium cans are currently delivered comingled to the Taupo branch of ESL, mixed glass is taken to Visy glass,

	paper and cardboard, are carted to Hamilton to make cardboard through CHH's paper Mills
Steel, car batteries, LPG cylinders	Collected at WDC landfill transfer station then on sold to scrap dealers
Organic Waste	WDC landfill
Hazardous waste chemicals	No commercial hazardous chemical waste is accepted at WDC landfill or transfer stations within the district, only small amounts of household and agricultural chemicals. Fluorescent lights bulbs are collected and sent for disposal to Interwaste in Auckland.
Commercial wastes and diverted materials	WDC Landfill
Biosolids	Buried at landfill or spread on land
E-waste	Goods received at WDC landfill transfer station on special e-waste collection days
Agricultural containers and chemicals	Ag-recovery collects unwanted farm chemicals
Tyres	WDC landfill Silage pits
Construction and Demolition waste	District Transfer Station (Te Kuiti) drop off then diverted to landfill if required
Greenwaste	District Transfer station (Te Kuiti) drop off then chipped and composted

5.2 Waste management and minimisation activities

WDC provides regular information promoting waste minimisation activities via its web site and newsletters. Information includes the location, hours of operation and availability of WDC services. Future information will include increased promotion of the benefits and methodologies for home composting schemes, to help reduce the volume of organic wastes entering the landfill.

5.3 Options for the future

Options for future waste management and minimisation in the district are summarised in the below table:

Reduction	• Continue with current programmes • Increased promotion of existing or new programmes • Improved education/enforcement for waste at events • Introduction of Para Kore into local Marae • Advocate for product stewardship schemes to government
Diversion - Recycling	• Continue with existing kerbside recycling collection service • Continue to provide waste sorting, recycling, at transfer stations and composting at landfill • Support community based re-use and recycling initiatives • Provide material on re-use and recycling • Continue to support RENEW • Publicise recycling venues and alternative disposal options and regularly update the public on waste management issues and initiatives • Target industry and commercial groups for waste audits and cleaner production programmes • Support and facilitate community based waste recovery initiatives in the District including working with schools • Work with the community to help to provide education material on resource recovery • Participate in regional initiatives to promote household composting of organic material.
Diversion - Recovery and Reuse	• Continuation of provision for greenwaste at landfill • Continuation of composting at landfill

	• Continuation of collection for special wastes at landfill
Disposal	• Continue with existing kerbside refuse collection services • Ensure user charges are applied to all or part of the bag collection service and its disposal cost • Investigate the provision of a half-size official refuse bag in addition to the current standard bag, or substitute the current standard refuse bag with a smaller bag, to encourage greater recycling • Ensure that all waste is collected, transported and disposed of in a safe manner • Remove any material that is likely to be injurious or offensive to public health arising from the collection/deposit of waste • Investigate and determine options for increasing the WDC capacity within the current consented site footprint. The preliminary cost assessment is that a capital investment of $1.5m would provide sufficient capacity to extend the remaining landfill capacity life from 6 years (to 2023) to 36 years (to 2053), minimum. • Engage with the farming sector to help identify and remove barriers to appropriate waste disposal • Engage with the commercial/industrial sector to help identify and remove barriers to reducing and recycling solid wastes

Development works involving the construction of Waitomo District Landfill high wall cell may be constructed during 2020-21 depending on consenting and how waste disposal develops over the years.

The future use and development of the Waitomo District Landfill (WDL) therefore remains a key service for the safe disposal of residual district waste stream.

The WDL is a fully engineered and resource consented site. The resource consent allows the site to be used for the disposal of up to 232,000 tonnes of municipal solid waste and discharge of contaminates to air and expires on 31 December 2033, whichever comes first.

At the current fill rate (approximately 9,700 tonnes per year) the developed area of the landfill has a residual unused capacity of approximately 6 years (i.e. to 2023). If the WDL was not further consented at that time then the site could not be further used for that purpose and there would not be any income from that source available to offset debt repayment and other holding costs.

In addition, alternative arrangements would need to be made ahead of 2023 to dispose of any residual solid waste. That arrangement would probably involve haulage and disposal costs for transfer of residual solid waste from the Te Kuiti transfer station to the nearest regional landfill.

An obvious alternative, previously identified, is to investigate and determine options for increasing the WDC capacity within the current consented site footprint. The preliminary cost assessment is that a capital investment of $1.5m would provide sufficient capacity to extend the remaining landfill capacity life from 6 years (to 2023) to 36 years (to 2053), minimum.

In the latter case, the remaining useful life of the WDL and the associated amortisation of the capital development costs would approximately coincide.

That option would also require a new resource consent to extend the term to authorise use of the WDL beyond 2033. That is not expected to be onerous given the current track record of landfill consent compliance and provided the proposed development does not extend beyond the current footprint.

Council has previously endorsed the above strategy, with the necessary re-consenting process to be initiated in the current 2017/18 year to provide early planning certainty within the period approaching 2023 and beyond and to avoid risks such as being caught by possible changes to regulations and/or legislation.

6.0 LEVELS OF SERVICE

Consistent with the NZ Waste Strategy 2010, this Plan takes a realistic approach to waste minimisation targets, appropriate to the scale and distribution of the population in Waitomo District.

This Plan defines the key levels of service for the Solid Waste Activity and then identifying and costing future operations, maintenance, renewal and capital works required providing those levels of service. The levels of service set out in Section 6 are based on customer expectations, business strategic goals and statutory and regulatory requirements (e.g. resource consents) as set and or interpreted by WDC staff. They will be used as the focus for future customer consultation.

6.1 Performance measures and targets

Targets are based on Council's corporate goals. As customer's expectations and ability and willingness to pay change, levels of service may change and therefore ongoing monitoring of customer expectations will be required to ensure levels of service and the SWaMMP remains valid.

6.2 Targets relating to resource recovery and diversions from landfill

The target is aimed at a reduction of waste to landfill through recovery of materials that go through the transfer stations and kerbside collections. It is estimated that about 50% of the kerbside bag collected waste could be diverted through home composting and recycling. Waitomo District Council has set a target for reduction of waste to landfill and an increase in the amount of material diverted through reusing or recycling initiatives.

On a more general basis Council depend on central government to establish and implement product stewardship provisions to reduce packaging waste that is not recyclable.

6.3 Target relating to diversion of organic material from the landfill.

From the Waste Audit completed in 2016, it was shown that organic material is the largest waste type that goes to the landfill via kerbside collections. This waste type has potential to be diverted through home composting, is high harm waste and attracts ETS levy. It is also the most difficult to influence.

6.4 Summary of measures and targets.

It has been assumed that the services involving the current weekly kerbside collections of recyclables and bagged residual refuse for landfill disposal, and operation of the existing community transfer stations, will continue at current levels (LOS), subject to some minor refinements.

Education programmes and facilitation of community initiatives targeted at waste minimisation practices are also planned to continue.

The levels of service and key performance measures for the solid waste activity are:

LEVEL OF SERVICE	PERFORMANCE MEASURE	PERFORMANCE TARGET
Users find the recycling facilities safe to use.	Percentage of users rate the safety of Council's recycling facilities safe to use.	75% min
Provision of effective waste service for the community.	Customer satisfaction survey rating on waste transfer stations.	70%
The solid waste management facilities feel safe to the user.	Percentage of users rate the District's waste transfer stations safe to use.	70% min

LEVEL OF SERVICE	PERFORMANCE MEASURE	PERFORMANCE TARGET
The solid waste management facilities are open and accessible to users at advertised times.	Number of complaints per month due to facilities not being open at advertised times.	≤1
Reduce quantity of recyclables like paper and plastics in bag collection that goes to landfill.	Percentage reduction per annum achieved through continuing education (measured against the 2016 Waste Audit).	1.0%
Reduce the quantity of organic waste like food scraps etc. in bag collection that goes to landfill.	Percentage reduction per annum achieved through continuing education and promotion of home composting (measured against the 2016 Waste Audit).	1.0%
Provision of effective solid waste management and minimisation services for the community.	Percentage of users rate the effectiveness of Council's waste management and minimisation services as satisfactory or better.	70% min

6.5 Measuring Targets

The proportion of resources recovered from the incoming waste stream is measured monthly. The facilities included are those which are owned and controlled by council. As at September 2017, these include the Waitomo District Landfill, Piopio, Benneydale, Marokopa, Kinohaku, Mokau and Waitomo District Landfill transfer stations. In some cases the land where facilities are sited is leased (e.g. Mokau).

7.0 FUTURE DEMAND

The forecast future demands for waste management and minimisation services are addressed in detail in the 2017 Waste Assessment (refer to Appendix 5). That shows that the main drivers of demand for the solid waste activity are:

- Population growth and incidence of settlement
- Economic activity (e.g. industrial development, tourism and coastal settlements)
- Community expectations
- Changes in waste management approaches

7.1 Population

Three growth scenarios were developed by *Rationale* in 2017 from three baseline resident population growth rates considered appropriate for the Waitomo district - low growth (declining population), medium growth (stable and then decrease in population), high growth (steady population growth). The medium growth scenario is considered the most appropriate for Council's long-term planning.

A summary of the key results is shown below for the recommended medium growth scenario. The change to 2048, average annual change and average annual growth rate is included. These cover the period from 2013 to 2048 for resident population and dwellings. For total rating units, these cover the period from 2018 to 2048.

The projected dwelling and rating unit growth rate is higher than for population due to flow-on effects of changes in population structure. Most of the growth is forecast to occur in the first ten to fifteen years before the rate of growth slows down towards 2048.

Output	2013	2018	2028	2038	2048	Change (to 2048)	Average annual change	Annual average growth rate
Resident Population	9,340	9,810	9,650	9,120	8,420	-920	-26	-0.3%
Total Dwellings	4,224	4,377	4,522	4,644	4,863	639	18	0.4%
Total Rating Units	n/a	5,907	6,022	6,118	6,289	382	13	0.2%

Table : Recommended medium growth scenario

With regard to the population structure, the district has a similar age profile to the rest of New Zealand. In 2013 the proportion of people aged 20 to 44 was lower than the rest of New Zealand however the proportion of people aged below 15 was higher. The proportion of people aged over 65 is projected to increase from 13% in 2013 to over 25% in 2048 and the number of people aged between 15 and 64 years of age is projected to decrease. This may have a flow-on effect to the make-up of the work force in the district, and the corresponding demand for waste management services.

7.2 Land-use development

From a recent, informal, desktop planning exercise, drawing from development proposals which are known to officers and/or are in the early stages of consent processing, it has been identified that further growth is unlikely to place pressure on the provision of Council services. Indications are the recent trends of relatively slow development are likely to continue into the foreseeable future. It is expected that any increase in demand from residential development over the term of this SWaMMP will be minor and won't impact on the existing capacity of WDC's solid waste management infrastructure.

The current agricultural and pastoral based economy is expected to remain predominant in the district, with growth very dependent on economic conditions and export opportunities. Industrial growth, which can have a significant impact on water supply, is partly dependent on attracting new industries into the urban centres.

7.3 Community Expectations

The following trends are expected to impact on the quantity and quality of solid waste management services provided:

- Continued public demand for waste recycling and diversion from landfill
- Increasingly stringent resource consent conditions for landfills

7.4 Accessibility to services

Accessibility to recycling services is available to those receiving a kerbside recycling collection in conjunction with the weekly bagged refuse collection, funded through a targeted rate differentiated by service area to reflect the operational environment within which the services are provided. There are recycling and disposal facilities at the district transfer station as well as the rural transfer stations in each community. The standard of these facilities is appropriate for the service level identified; all transfer stations are supervised. In addition, specific recycling units had been installed at the major tourist stopping spots around the district, including Waitomo Village.

7.5 Emissions Trading scheme

The Emissions Trading Scheme (ETS) Levy that came into effect from 1 January 2013 added to the waste minimisation levy that came into effect in 2010, resulting in increased disposal costs and affected the viability of the landfill. Waste minimisation overall was more effective than projected in 2012 resulting in a greater reduction of residual waste flow to the landfill thus increasing cost much quicker than anticipated.

WDC is a mandatory participant in the ETS for the district landfill. WDC is required to annually surrender emission units (also known as carbon credits or NZU's) to match the methane emissions from the landfill. The NZU's are surrendered in May of each year to meet the previous calendar years emission obligation.

The Government passed the Climate Change Response (Removal of Transitional Measure) Amendment Act in the second half of 2016, which phased out the one-for-two transitional measure for the ETS. This change took effect from 1 January 2017. Previously, the one-for-two measure allowed non-forestry participants to surrender only one emission unit (NZU) for every two tonnes of carbon dioxide

The full obligations of the phasing out of the one-for-two measure will be reached on 1 January 2019 (i.e., where participants need to surrender one unit for every tonne of emissions). The first surrender under full obligations will be in May 2020.

The price of NZU's significantly increased from $9.50 in February 2016 to $18.50 per unit at the end of October 2016. There is a current price ceiling that caps units at $25 and the Government has confirmed that this ceiling will remain, at least in the short to medium term. Prior to 2016 a NZ ETS obligation could be satisfied by surrendering international units, these units originated from overseas and were priced as low as $0.10 per unit.

The Government announced the review of ETS will continue into 2017 with legislative changes, if any, to be made in 2018. The Government has signalled that it is looking to develop policy proposals as to when and how NZ ETS should re-open to international units and whether price ceiling or price floors are necessary for price stability.

Currently WDC holds 20,389 NZU's which is estimated to cover at least two years of emissions obligations under the phasing out of the transitional measure.

Based on the remaining capacity of the landfill, an estimated additional 45,000 NZU's are required to meet the total ETS obligations (additional units previously forecast: 18,409 under one-for two provision).

7.6 Demand implications

The implications of these demand trends on the quantity and quality of solid waste services over the next 10 years will be:

- Future operating and maintenance costs associated with the solid waste infrastructure in general can be expected to increase within the planning period.
- The impact of increased resource recovery through waste minimisation will result in higher unit operating costs for disposal of reducing residual wastes at the landfill
- Relatively minor changes to LoS could have major impacts on costs.
- Consent standards and workplace health and safety requirements for operating the collection, landfill and transfer stations will increase costs.

There is likely to be a reduction of residual waste produced from within the District due to a declining population growth, but with an increase in the proportion of recoverable material due to improved public awareness, increased support of educational programmes and ongoing provision of highly rated facilities provided, Council will continue to encourage and facilitate higher priority waste minimisation choices.

Overall, the demographic and development trends show that increased population based demand for growth related waste management infrastructure will be only minor through to the end of 2028, after which there is expected to be a decline for the foreseeable future.

8.0 ACTIVITY MANAGEMENT PRACTICES

This section outlines the decision making systems that Council currently use to determine short, medium and long term collection, maintenance, renewal and capital expenditure requirements for solid waste management assets and services. It looks at three broad areas of activity:

- **Processes**: The necessary processes, analysis and evaluation techniques needed for life cycle asset management.
- **Information Systems**: The information support systems used to store and manipulate the data
- **Data**: Data available for manipulation by information systems to produce the required outputs.

8.1 Current Activity Management Practices

Activity	Process
Service Delivery	Contracts are let for the delivery of kerbside collection services, repair work, rehabilitation, renewal, and development work. The activity management and inspection is undertaken by WDC staff.
Financial Control	An NCS (Napier Computer Systems) financial management system is used to record the cost of each work activity for comparison with budget and financial control. Payments made to contractors are coded against the relevant activity.
Procurement	Council's procurement policy is guided by a comprehensive contract management policy posted on the Intranet. This document links with Council's delegation manual. Decisions on budgeted capital works can be decided by the Chief Executive up to the value of $100,000. Beyond that the Council or a delegated tenders committee exercises the required tender acceptance process.
Performance Monitoring	Records are kept of audited activities, forward and completed maintenance programmes. Council's database is updated regularly with data from the various solid waste management activities.
Condition Monitoring	Preventative maintenance inspections are routinely undertaken to monitor the condition of waste management facilities.
Quality Assurance	Audit procedures are defined for controlling the quality data received from external contracts for condition monitoring. Data from site operators and collection contractors is received for work activity, financial and waste stream quantities.
Maintenance/ operations	Records are kept of all maintenance and repair works. Change in asset data is routinely transferred to the BizeAsset system by the Information Services staff.
Waste management strategies	Activity and asset maintenance decisions are based on an assessment by experienced WDC staff
Risk Management	Risk management is practised both formally and informally. Judgments are made based on the knowledge of experienced staff.

8.2 Asset Management Data

Asset Attributes
Good records of the assets, facilities and service coverage exist. Attribute data available on solid waste management assets is stored in WDC's asset database.

The efficient operation of solid waste management assets is supported by the knowledge and judgment of experienced staff.

Condition Data
There is condition information available on solid waste management assets, with renewal and development decisions based on the experience and knowledge of key staff.

8.3 Risk Management

A practical approach has been taken to risk management in identifying risk events. They have been grouped into:

- External impacts, where other service providers fail to provide key services which impact on the organisation or individuals, e.g. power supply failures, material supply failures.
- Physical failure risks, where condition or performance of the assets could lead to failure.
- Operational risks, where management of the asset or asset management activities may impact adversely on the asset.

The solid waste management activity is an essential component of the community's lifelines. Along with water, wastewater and energy/communications, the assets employed provide an essential service necessary for a community to continue to function during and after a natural disaster.

The risk standard AS/NZS 4360:2004 is the formal framework used for risk management.

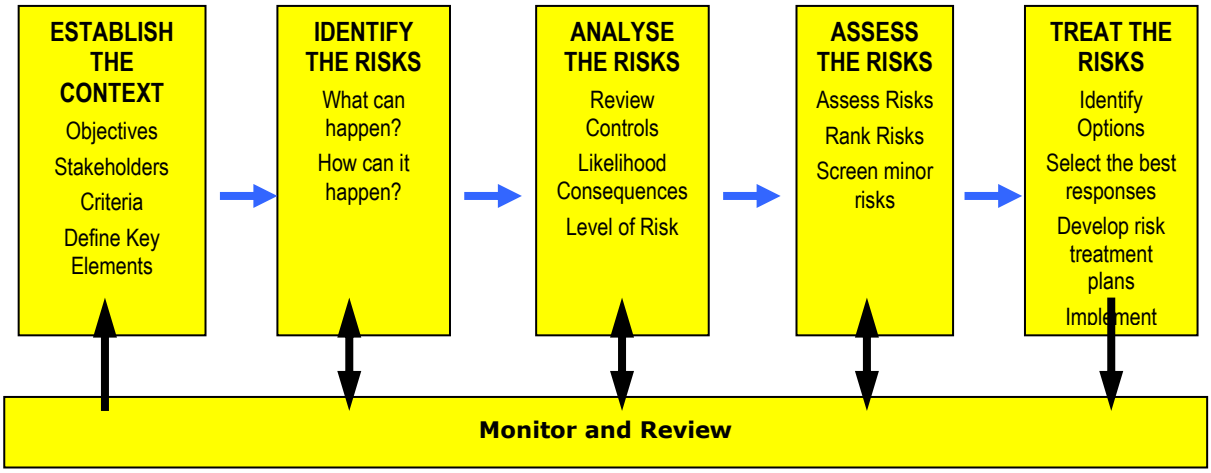
The legal liability for nuisance, negligence and third party damage needs to be recognised. Consequences of failure are linked to the asset types and include:

- Repair costs
- Loss of income
- Loss of service
- Loss of life, or injury
- Health impacts
- Damage to property
- Failure to meet statutory requirements
- Third party loss
- Loss of image

The probability of physical failure of an asset is low and only partly related to the condition of the asset.

The effort put into assessing and managing risk needs to be proportional to the risk exposure.

Risk Management Framework (Refer AS / NZS 4360)



8.4 Risks

Waste Reduction Targets

Waste reduction and diversion are the top order priorities and focus of this SWaMMP. The impact of not achieving the target of reducing the District's bag collection waste stream is that the landfill will fill quicker and its life will be reduced accordingly. In the long term, beyond the life of the landfill, residual refuse will have to be carted to commercial waste disposal facilities and the smaller the quantity the lower the cost. The conundrum however is that there is a base cost of waste disposal that has to be met and effective waste minimisation directly increases the unit rate cost of waste disposal.

The reasons for non–achievement could include poor user participation in Council's waste reduction and diversion programmes or market resistance to recycled products mainly due to poorer quality of products compared to that made of virgin material and higher price of products manufactured from recycled material than that manufactured from virgin material.

User charges for the bag collection and transfer station refuse disposal services provides a good incentive for users to be more conscious of their waste disposal practices and options.

Asset Management Practices

Although service delivery is separated from asset management of the solid waste management functions, it is dealt with at management level. Therefore the risk of lack of coordination between Council's planning and budgeting processes and service delivery programmes, is small.

Of the two functions, the asset management function allows Council to best manage its ownership risks. The importance of obtaining and controlling reliable data to support the Council's planning and decision-making processes is high. By providing the activity and direct asset management function in house, Council is well placed to capture and retain the core data impacting on the planning, design, costing and performance of its services, manage its resource consent responsibilities, and implement the strategies outlined in this Waste Management Plan.

Risks associated with delivery of the collection, waste transfer stations and landfill can be mitigated by effective contract management including monitoring of contractor performance and ensuring regular reporting of core service and activity data. Council officers have the skills required to carry out this role.

Viability of Landfill

There are two key risks attendant with the waste management activity.

On one hand is the drive to minimise waste. On the other is the ability to access sufficient quantity of residual wastes from outside the district to maintain the financial viability of the landfill. Revenue from the current tonnage of 9 - 10,000 tonnes per annum is only marginal to meet costs. A minimum of 12,000 tonnes per annum is desirable for unit rates to be kept within the range of comparative rates of disposal.

The additional cost of the Emissions Trading Scheme (ETS) have increased the operating costs of the landfill. The landfill can never be of a size that will allow mitigation through methane burn off or similar practices, therefore can be expected to continue to attract the full cost of the ETS scheme.

Within the middle North Island there are a number of large landfills operating with long term consents of 15 years or more so there is little opportunity in the short-term for additional residual tonnage arising from a closed landfill and even less chance of competing with the ETS effective. Even if there was, the scale of regional waste disposal exceeds what is available at Waitomo, and the haulage distance to the next closest landfill may only marginally favour Waitomo. The largest of the regional landfills, at Hampton Downs near Meremere, has a consented volume of 30,000,000m^3 over a term expiring in 2030. Its consent was issued in 2001.

The future use and development of the Waitomo District Landfill (WDL) therefore remains a key service for the safe disposal of residual district waste stream.

Consent Compliance and Renewal

Council is the holder of five separate consents issued by Environment Waikato authorising the current landfill operation and controlling the environmental effects of the activity, summarised as follows:

Consent No.	Date Issued	Activity Authorised	Expiry Date
101753	1999	Placing up to 232,000 tonnes of Municipal waste onto or into land	31 December 2033
101754	1999	Discharge of contaminants into air	31 December 2033
124718	2012	Discharge of up to 0.65 m3 of leachate per day into the ground	31 December 2033

A land use consent and site designation, issued by Waitomo District Council, is also in place.

Monitoring monthly service request reports compiled show issues relating to odour and litter control, have little if any adverse effects outside the boundaries of the designated site.

The immediate issue is the expiry date of the discharge consents for leachate, groundwater and surface runoff, and the consent to control and divert groundwater and stormwater. Potentially, the life of the landfill could hinge on the outcome of the consent renewal process, in 2018. Leachate

discharge can be the main hurdle in landfill consent application processes, but in this case the leachate is all captured and piped to the Te Kuiti wastewater treatment plant where it becomes part of the consent compliance parameters for that operation.

The solid waste management and minimisation activity is subject to different work categories, as defined below.

8.5 Operations

Operational activity is work or expenditure which is necessary to keep assets functioning and provide the service, such as the provision of bagged refuse collection and recycling services, education programmes, staff for planning and coordinating, consumable materials, resource consent applications and compliance, monitoring and investigations.

Operational requirements and procedures for:

- contract management
- technical specifications consultancy services brief template
- project management
- safety management systems
- resource consent register

are well documented on Council's intranet. Decision-making is based on a combination of local knowledge and the judgement of experienced staff together with adopted analytical procedures.

Operational Strategies

- Preparation quality AMP's based on a sound knowledge of customer needs and preferences,
- Optimising activity management practices and decision-making;
    - document existing, and develop new business processes
    - continue to collect AM data (physical attributes, waste stream data, asset performance/ condition, and costs)
    - operate solid waste management assets in accordance with current Resource Consents.

Activity costs will be minimised by:

- considering all life cycle costs, including operational costs, when evaluating asset renewal/ acquisition options
- identify, evaluate and introduce new technologies that may improve operational and management efficiency and modify standards as appropriate
- continue to observe competitive tendering procedures for asset operation, maintenance, renewal, and construction works
- Resource Consents:
    - Discharge consent applications will propose standards for quality, disposal method and operation, which reflect community wishes with respect to environmental protection, public nuisance and affordability.

Operational Standards and Specifications

Operate assets and services in compliance with:

- this SWaMMP
- defined processes and procedures
- resource consents
- statutory requirements.

8.6 Routine maintenance

Routine maintenance falls into two broad categories as follows:

- Planned (Proactive) Maintenance: Proactive inspection and maintenance works planned to prevent service disruption or asset failure.
- Unplanned (Reactive) Maintenance: Reactive action to correct asset or service malfunctions and failures on an as required basis (i.e. removal of illegally dumped waste).

In so far as the waste management assets are concerned, a key element of activity management planning is determining the most cost effective blend of planned and unplanned maintenance as illustrated below:

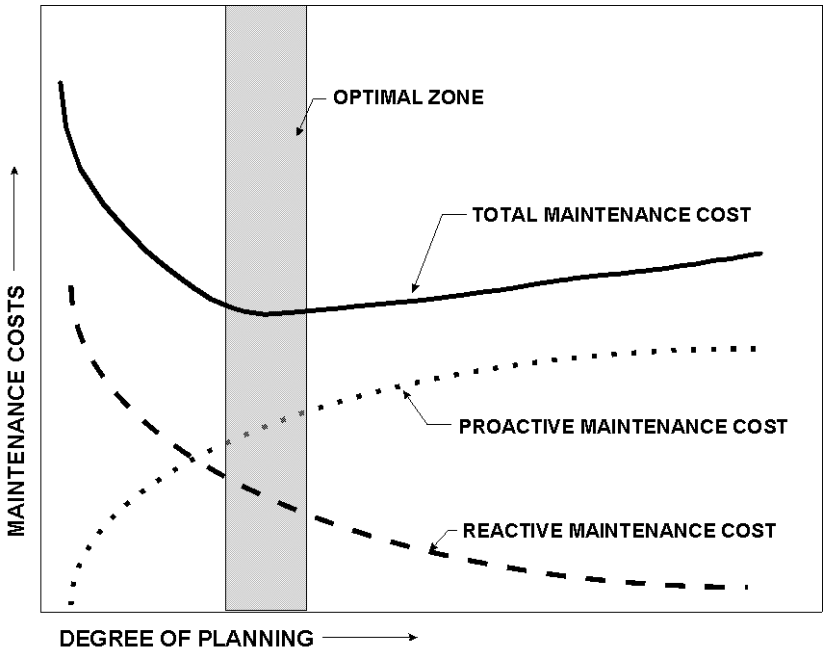


Figure: Balancing Proactive and Reactive Maintenance

8.7 Renewals

This includes replacement and rehabilitation of existing waste management infrastructure to its original condition and capacity. It applies to the infrastructure associated with Council's waste transfer stations, certain landfill components (access, fencing, drainage etc.) and recycling facilities.

The landfill disposal cells are unique in an asset management context in that the base, liners and leachate collection systems are constructed once. They are designed to operate over the life of the landfilling operation and ensuing after-care, with no programme for renewal once they have reached the end of their economic lives. They are, in effect, a sunk cost after the point of construction.

The required level of rehabilitation/renewal of the remaining waste management infrastructure will vary depending on;

- the age profile of the asset component
- the condition profile of the component
- the level of ongoing maintenance demand
- the differing economic lives of the materials used

The objective of rehabilitating and renewing the asset components is to apply the correct treatments at the optimum time so that the required level of service is delivered whilst minimising total life cycle costs.

8.8 Development Works

This section of the SWaMMP covers strategies for the creation of new assets or programmes which upgrade, extend or improve an existing asset or service beyond its existing capacity or performance in response to changes in demand or customer expectations.

Development Strategies

Solid waste management assets and services are developed to meet community expectations, growth projections over the next 20 years, and technical and environmental standards.

A 10-year programme is essential to implement the long term vision for the activity and to confirm compliance with regional waste strategies and the strategic goals for growth and development of the

District. This programme can be amended from time to time to accommodate the changing needs of the community.

A 3 year detailed programme should consist of approved works with detailed costing and design.

A 1 year programme comprises work being carried out in that financial year.

New solid waste management works are identified on the following basis:

- Growth - ability to meet the most likely demand projections
- Regulatory - anticipated expenditure needed to obtain and comply with resource consents required under the Resource Management Act
- Operational efficiency - to reduce costs and improve efficiency

The selection criteria for the prioritising and programming of solid waste asset and service development projects is a function of Council interpretation of community preference, consideration of risk, costs and benefits, affordability and ranking with other projects. Criteria to be applied to Council funded projects include the following:

Priority	Selection Criteria for New Capital Works or Programmes
1 (High)	▪ Proposed work or programme is consistent with relevant community outcomes and Council's SWaMMP ▪ Work or programme is required for compliance with statutory obligations ▪ Work or programme involves completion of an earlier stage of the project ▪ Public health considerations represent a high proportion of the work or programme benefits
2	▪ Proposed work or programme is consistent with relevant community outcomes and Council's SWaMMP ▪ Public health considerations represent a high proportion of work benefits ▪ Work or programme is strongly supported by community at large through a process of public consultation or involves work funded by a targeted rate
3	▪ Proposed work is consistent with relevant community outcomes ▪ Work or programme is strongly supported by local sector of community through a process of public consultation ▪ Work or programme is justified on the basis of robust evaluation, but deferment would result in minimal loss of opportunity or additional cost
4	▪ Work or programme is supported by an interest group or small part of local community through a process of public consultation
5 (Low)	▪ Work or programme is discretionary and can be deferred with minimal loss of benefit to the community

Table: Selection criteria for new solid waste management works or services

All options will be examined when evaluating upgrading options, including:
- status quo
- renovation or replacement
- augmentation
- disposal

Funding of Additional Capacity
Demand-related capital work will be funded principally from loan, maximising the use of external subsidies where possible. Additional solid waste management programmes will be funded from a combination of targeted rates and user charges (refer to Council's Revenue and Financing Policy in its Long Term Plan (LTP) for further details).

Mode of Service Delivery
Development works involving the construction of new assets and new or extended services is undertaken by an external contract.

8.9 Asset Disposal

Retirement or sale of surplus assets is generally concerned with the sale of surplus land and replaced structures, e.g. implement buildings associated with retired transfer station.

Also in this category is the after-care of the Waitomo District Landfill once it has been filled and/or after the consent period has expired. Monitoring, repair and intervention responsibilities for the landfill continue normally for 35 years after the consent expiry date.

Assets may become surplus to requirements for any of the following reasons:
- under utilisation
- obsolescence
- provision exceeds required level of service
- uneconomic to upgrade or operate
- policy change
- service provided by other means (e.g. private sector involvement)
- potential risk of ownership (financial, environmental, legal, social, vandalism).

Disposal activity for solid waste assets and facilities relates to the sale of surplus land, divestment or sale of the waste management assets including the landfill, and the demolition of structures.

Asset Disposal Strategies
- Develop AM systems and asset condition/performance data to allow better planning for the disposal of assets through rationalisation of the asset stock or when assets become uneconomic to own and operate.
- When considering disposal options all relevant costs of disposal will be considered, including;
    - evaluation of options
    - consultation/advertising
    - obtaining building and resource consents
    - professional services, including engineering, planning, legal, survey
    - demolition/make safe
    - after-care including site clearing, decontamination, and beautification.

The use of revenue arising from the sale of any assets shall be decided by Council at the time it gives consideration to the asset's disposal.

9.0 FUNDING OF THE PLAN

Waitomo District Council considers waste minimisation activities to be beneficial to the public. These activities are funded through a combination of rates and charges to represent as closely as possible the cost as incurred. A summary of the cost of service and how the Solid Waste (Asset) Management and Minimisation Plan will be funded can be found in Council's operative Exceptions Annual Plan.

9.1 How the implementation of the plan is to be funded

Council's current Revenue and Financing Policy separates funding of the solid waste management activity into three parts:

- Kerbside collection which comprises the bagged refuse collection service for designated communities and Kerbside recycling, in conjunction with the refuse bag collection;
- Landfill and transfer stations management which includes landfill management, the waste transfer stations; and
- Waste minimisation

The solid waste activity is funded from:
- The General Rate
- Uniform Annual General Charge (UAGC)
- Targeted Fixed Rate (TFR)
- Grants and Subsidies
- Fees and Charges

according to the following methodology:

	Funding Mechanism				
Activity	General Rate	UAGC	TFR	Waste Minimisation Rebate	Fees and Charges
Kerbside refuse collection and recycling	0	0	60% (per community where service is provided)	0	40%
Landfill and transfer stations management	0	0	40% (district wide)	0	60%
Waste minimisation	22.5%	22.5%	0	55%	0

User charges for solid waste collection and disposal services are an effective and common-place economic instrument for encouraging waste minimisation. They are reviewed by WDC annually.

The 2017/18 bag cost is $3.00 per bag.

User charges at the transfer stations and landfill are detailed in WDC's Schedule of Fees and Charges

The disposal of recyclables is free at rural transfer stations drop-off points and the Te Kuiti transfer station to encourage maximum recovery of recyclable material.

9.2 Grants and Advances of Monies

Council may decide from time to time to use a portion of funding income from its waste management and minimisation activity to support community based waste minimisation initiatives. Grant applications must be made in writing and must be consistent with Council's SWaMMP. Allocations not exceeding $1,000 can be decided by the Chief Executive with larger allocations requiring Council approval.

9.3 Waste Minimisation Levy Funding Expenditure

Council receives population based funding from the waste levy collected under the Waste Minimisation Act 2008. The levy is intended to create a dedicated fund for waste minimisation programmes and by increasing the cost of disposing of waste, it is expected to change the behaviour of those using disposal facilities. The Act allows for up to fifty percent of waste levy monies to be paid to territorial authorities on a population basis regardless of whether a community owns and operates a landfill or not. The remaining funds, minus administration costs, can be contested by interested parties (including territorial authorities).

The waste levy will help fund Council's new or improvement of existing waste minimisation activities. The waste minimisation activities to be funded from the levy include:

- Home composting investigations and promotion
- School and public education programmes
- Promotion of waste minimisation activities
- Provision of recycling activities in public areas generally and specifically when used to host events
- Community based reduction and recycling initiatives
- Investigations of waste minimisation proposals
- Coordination of waste minimisation activities.

10.0 FINANCIAL SUMMARY

10.1 Value of waste management and minimisation assets

Infrastructure	Optimised Replacement Cost as at 30 June 2017 (ORC)	Optimised Depreciated Replacement Cost as at 30 June 2017
Te Kuiti Landfill and Transfer Station	$4,811,049	$4,034,964
Rural Transfer stations	$196,126	$161,335
Resource Consents	$59,220	$33,674
TOTAL	**$5,066,395**	**$4,229,973**

10.2 Financial forecast

A summary of the direct expenditure forecasts for the solid waste activity over the 2018 – 28 LTP period is provided below (Refer to Appendix 2 for more details).

(All amounts in $1'000s) *Inflated figures*	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Direct expenditure											
Kerbside Collection	157	289	297	303	311	318	326	334	343	353	363
Kerbside Recycling*	140	0	0	0	0	0	0	0	0	0	0
Landfill and Transfer Stations	730	820	973	1,007	1,011	1,032	1,054	1,068	1,083	1,119	1,126
Waste Minimisation	11	11	11	12	12	12	12	13	13	13	14
Transfer Stations	185	198	203	207	212	218	223	229	235	241	248
Total direct expenditure	**1,223**	**1,319**	**1,484**	**1,529**	**1,546**	**1,580**	**1,616**	**1,644**	**1,675**	**1,727**	**1,751**
Total Indirect expenditure	679	736	747	792	844	857	856	846	832	810	793
Total Revenue	(999)	(1,119)	(1,147)	(1,173)	(1,201)	(1,230)	(1,262)	(1,293)	(1,328)	(1,365)	(1,403)
Net cost of service	**903**	**935**	**1,084**	**1,148**	**1,189**	**1,207**	**1,210**	**1,197**	**1,179**	**1,173**	**1,141**

*Kerbside Recycling incorporated into Kerbside Collection from 2018/19 onwards

11.0 ASSUMPTIONS

This section sets out the key assumptions made in developing the asset lifecycle management programmes and financial forecasts and identifies the likelihood and impact of variations from these assumptions. The following assumptions have been made in preparing this AMP:

	No.	Assumption	Level of Uncertainty	Impact on Integrity of LTP
GLOBAL IMPACT	1	The impacts of climate change and natural hazards will be minimal over the LTP planning period.	Medium	Low
	2	That the impact of technological change or disruption will not adversely affect Councils ability to deliver services.	Low - Medium	Low
NATIONAL IMPACT	3	Actual rates of inflation will be within the range tabulated.	Low	Low
	4	NZ Transport Agency financial assistance rates will continue at the levels set out by NZTA.	Low	Medium
	5	The average annual interest cost on borrowings will be 5.5% over the first 3 years and 6.0% over years 4 to 10.	Medium	Low
	6	Impact of Central Government changes to policy or legislation on local government income or expenditure.	Medium - High	Medium - High
	7	Government funding will continue at current levels.	Low	Low
WDC IMPACT	8	The impact of population change has been adequately provided for in the financial estimates.	Low	Low
	9	The impacts of societal changes and population structure have been adequately provided for in the financial estimates.	Low	Low
	10	The annual return on investments is assessed at zero for year 1, $200k for year 2-3 of the 2018-28 LTP and thereafter at $300k per annum over the remaining period.	Medium	Low
	11	The risk of Council's investment portfolio and inability to borrow is minimal.	Low	Low
	12	Resource consent acquisition and compliance processes are within estimated timeframes and expenditure estimates.	Low	Low
	13	The size of the rating base will not increase.	Low	Low
	14	The two major users of water and trade waste services will continue to operate within the district.	Low	Low
	15	Impact of transfer of significant Council assets will be minor.	Low	Low
	16	Changes to the scale of Council's asset inventory will be minor.	Low	Low
	17	Change in value of assets due to periodic revaluation will be in line with inflation.	Low	Low

	No.	Assumption	Level of Uncertainty	Impact on Integrity of LTP
	18	Assumed lives for Council's assets will have minimum impact on financial estimates.	Low	Low
	19	Depreciation reserves and subsidies will generally be adequate to fund asset renewal expenditure.	Low	Low
	20	The impact of growth related capital expenditure will be offset by revenue.	Low	Low

NB: All assumptions whether specifically stated or otherwise are aligned with the LTP Forecasting Assumptions.

12.0 PLAN IMPROVEMENT AND MONITORING

Areas that council will concentrate over the next three years to improve solid waste management and minimisation in the district are set out in the table below:

Ref	Description	Relative Priority				Officer Responsible	Additional Resources Required	Target Completion Date	Comment
		1	2	3	4				
1	Promote understanding, commitment and engagement of the community in waste minimisation (e.g. recycling and home composting)	**X**				Group Manager - Assets	No	Immediate and on-going	Engage the community with waste minimisation topics through local newsletters and WDC website
2	Collect and manage relevant waste minimisation and disposal data to assist planning and monitor performance	**X**				Group Manager - Assets	Collection and landfill contractors	Immediate and on-going	Waste audit completed to be presented to council in August 2014
3	Promote reduction of onsite disposal of agricultural waste products (plastic wrap etc.)		**X**			Group Manager - Assets	No	On-going	Agricultural waste education will be ongoing
4	Establish hazardous waste collection facilities at Te Kuiti transfer station		**X**			Group Manager - Assets	Yes	December 2018	Onsite
5	Undertake an annual waste audit of waste quantities by source and composition		**X**			Group Manager - Assets	Yes	Immediate and on-going	Accurate data collection is fundamental to monitoring effectiveness and trends from waste minimisation activities.

Ref	Description	Relative Priority				Officer Responsible	Additional Resources Required	Target Completion Date	Comment
		1	2	3	4				
6	Improve safety features and presentation at transfer stations	**X**				Group Manager - Assets	Yes	December 2018	Asset inventory
7	Review and improve accessibility to transfer stations and recycling drop-off centres	**X**				Group Manager - Assets	No	Immediate and on-going	Broken glass, safety barriers etc.
8	Establish recycling collection facilities at WDC's main administration building, information centre and service centres	**X**				Group Manager - Assets	No	Immediate and on-going	Important that WDC is seen to be leading by example
	Ensure recycling facilities are provided at all events hosted on WDC property		**X**			Group Manager - Assets	Yes	On-going	Requires appropriately marked containers for separate recycling types – glass, plastics etc.

Key:
1 = High importance/high urgently. 2 = High importance/low urgency. 3 = Low importance/high urgency. 4 = Low importance/low urgency.

13.0 APPENDICES

APPENDIX 1: GLOSSARY

Accredited Product Stewardship	An accredited product stewardship product scheme is a scheme that has been assessed against criteria in the Waste Minimisation Act and has been accredited by the Minister for the Environment under section 15 of the Act. Those running these schemes may apply to the Minister to have the scheme accredited.
Cleanfill	Waste disposal sites that accept only inert wastes that will have no harmful effect on the environment. These include material such as soil, clay, rock, concrete and bricks.
Cleaner Production	An approach for business and industry to address all phases of the lifecycle of a product or process in order to avoid/or reduce the amount of waste including producing environmentally sound products with few costs and higher resource recovery efficiency.
Contaminated sites	Contaminated sites are land areas where hazardous substances are in concentrations above those occurring naturally and are at risk to human health or the environment.
Diverted Material	Diverted material means 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.
e-waste	Term used to describe electronic waste.
Hazardous waste	Waste that poses a present or future threat to the environment due to, for example, its explosive, flammable, reactive, toxic, corrosive or infectious nature.
Liquid waste	Liquid waste is waste generated in, or converted to, a liquid form for disposal. It includes point and non-point source discharges, stormwater and wastewater.
Green waste	Garden waste.
Fly-tipping	Illegal dumping of waste
Landfill	A waste disposal site used for the controlled deposit of solid wastes onto or into the land.
Landfill Gas	Gases such as methane and carbon dioxide (CO), which are emitted from landfills as organic matter in the landfill rots.
Disposal	Final deposit of waste on land set apart for the purpose.
Resource Exchange	A service which provides contacts for the exchange of Network (RENEW) materials, enabling a waste material from one process to be used as a base resource for another.
Biosolids	Biosolids are a by-product of sewage collection and treatment processes, which are beneficially reused in a soil conditioner.
Recovery	Extraction of materials or energy from waste for future use or processing, and includes, but not limited to, making materials into compost.
Recycling	A general term for the reuse and reprocessing of waste materials into new ones, that is technically limited to the manufacture of new items from waste materials.
Reduction	Lessing waste generation.
Reuse	The use of waste items for a similar purpose usually after cleaning or refurbishment.

Residual Waste	Solid waste remaining after reduction and diversion (recycling etc.) measures have been applied.
Sewage sludge	Sewage sludge is a by-product of sewage collection and treatment process.
Product Stewardship	Product stewardship requires producers, brand owners, importers, retailers, consumers and other parties to accept responsibility for the environmental effects of products, from the beginning of the productions process through to, and including, disposal at the end of the product's life.
Waste	Any thing that is disposed of or discarded.
Transfer Stations	A refuse handling facility designed primarily to consolidate small loads of waste and recycling for transport to a distant disposal site.
Solid Waste	Solid waste is all waste generated as a solid or converted to a solid for disposal. It includes wastes like paper, plastic, glass, metal, electronic goods, furnishings, garden and other organic wastes.
Special Waste	Waste that requires special measures in handling and disposal over and above that normally required for general community wastes.
Waste Generator	All those involved in the production, use, retail and purchase of wastes or products which become waste.
Waste Minimisation	The range of activities which will lower the amount and/or toxicity of waste (reduce, re-use, recycle, recovery).
Waste Analysis Protocol	Waste survey methods designed by the Ministry for the (WAP) Environment for the purpose of waste survey to obtain quantitative estimate of the quantity and composition of solid wastes arising from domestic and industrial premises.
Organic Waste	Putrescible waste mainly from food preparation and leftover food scraps.

APPENDIX 2: PROJECTED COST OF SERVICE

Solid Waste Management ($000's) *Inflated figures*	**EAP 17/18**	**LTP Yr 1 18/19**	**LTP Yr 2 19/20**	**LTP Yr 3 20/21**	**LTP Yr 4 21/22**	**LTP Yr 5 22/23**	**LTP Yr 6 23/24**	**LTP Yr 7 24/25**	**LTP Yr 8 25/26**	**LTP Yr 9 26/27**	**LTP Yr 10 27/28**
Operating Revenue											
Kerbside Collection	(134,480)	(136,800)	(140,220)	(143,366)	(146,786)	(150,343)	(154,174)	(158,004)	(162,245)	(166,759)	(171,410)
Kerbside Recycling	0	0	0	0	0	0	0	0	0	0	0
Landfill and Transfer Stations	(823,211)	(937,280)	(960,712)	(982,269)	(1,005,701)	(1,030,071)	(1,056,315)	(1,082,558)	(1,111,614)	(1,142,544)	(1,174,412)
Waste Minimisation	(35,000)	(36,000)	(36,900)	(37,728)	(38,628)	(39,564)	(40,572)	(41,580)	(42,696)	(43,884)	(45,108)
Transfer Stations	(6,148)	(9,300)	(9,533)	(9,746)	(9,979)	(10,221)	(10,481)	(10,742)	(11,030)	(11,337)	(11,653)
	(998,839)	**(1,119,380)**	**(1,147,365)**	**(1,173,110)**	**(1,201,095)**	**(1,230,199)**	**(1,261,541)**	**(1,292,884)**	**(1,327,585)**	**(1,364,524)**	**(1,402,583)**
Direct Expenditure											
Kerbside Collection	156,853	289,476	296,712	303,369	310,608	318,133	326,238	334,344	343,317	352,870	362,712
Kerbside Recycling	140,358	0	0	0	0	0	0	0	0	0	0
Landfill and Transfer Stations	730,434	820,423	973,479	1,006,784	1,010,888	1,032,141	1,054,458	1,068,211	1,083,196	1,119,185	1,126,070
Waste Minimisation	11,057	11,000	11,275	11,528	11,803	12,089	12,397	12,705	13,046	13,409	13,783
Transfer Stations	184,533	197,950	202,899	207,452	212,400	217,547	223,259	228,806	234,947	241,484	248,219
	1,223,235	**1,318,849**	**1,484,364**	**1,529,132**	**1,545,699**	**1,579,910**	**1,616,352**	**1,644,065**	**1,674,506**	**1,726,948**	**1,750,784**
Indirect Expenditure											
Allocated Costs	370,954	388,656	400,253	406,403	415,269	427,368	440,689	452,262	464,816	471,411	482,998
Depreciation	63,511	90,893	93,010	108,026	126,187	119,566	120,115	120,679	121,256	121,462	122,072
Interest	244,093	256,395	253,837	277,829	302,517	310,422	294,846	272,565	245,539	217,479	188,000
	678,558	**735,945**	**747,101**	**792,258**	**843,972**	**857,356**	**855,651**	**845,506**	**831,611**	**810,352**	**793,070**
Net Cost of Service	**902,954**	**935,414**	**1,084,100**	**1,148,280**	**1,188,576**	**1,207,067**	**1,210,462**	**1,196,687**	**1,178,532**	**1,172,776**	**1,141,271**
Capital Expenditure											
Kerbside Collection	0	0	0	0	0	0	0	0	0	0	0
Kerbside Recycling	0	0	0	0	0	0	0	0	0	0	0
Landfill and Transfer Stations	295,020	185,000	1,036,175	1,201,280	310,730	335,990	336,270	336,550	336,860	337,190	337,530
Waste Minimisation	0	0	0	0	0	0	0	0	0	0	0
Transfer Stations	21,089	32,000	9,533	9,746	4,829	5,495	5,635	5,775	5,930	6,095	6,265
	316,109	**217,000**	**1,045,708**	**1,211,026**	**315,559**	**341,485**	**341,905**	**342,325**	**342,790**	**343,285**	**343,795**
Net Expenditure	**1,219,063**	**1,152,414**	**2,129,808**	**2,359,307**	**1,504,135**	**1,548,552**	**1,552,367**	**1,539,012**	**1,521,322**	**1,516,061**	**1,485,066**
Funded By											
Reserves	(242,123)	(162,000)	(172,158)	(338,426)	(280,734)	(306,010)	(305,730)	(280,450)	(255,140)	(229,810)	(204,470)
Internal Loans	(220,020)	0	(775,925)	(838,400)	0	0	0	0	0	0	0
Total Rates	(756,919)	(990,414)	(1,181,725)	(1,182,480)	(1,223,401)	(1,242,542)	(1,246,637)	(1,258,562)	(1,266,182)	(1,286,251)	(1,280,596)
	(1,219,062)	**(1,152,414)**	**(2,129,808)**	**(2,359,307)**	**(1,504,135)**	**(1,548,552)**	**(1,552,367)**	**(1,539,012)**	**(1,521,322)**	**(1,516,061)**	**(1,485,066)**

NB: Kerbside Recycling incorporated into Kerbside Collection from 2018/19 onwards

APPENDIX 3: CLOSED LANDFILLS

As at August 2017, only one landfill disposal site was in use in the Waitomo District. Five other sites were closed over 8 years prior to this. Details of the closed landfills are summarised below:

Aria Landfill

The Aria landfill is situated at Waitahi Road and is approximately 4km from Aria and 7km from Piopio. Landfilling commenced at this site in the 1970s and the landfill was officially closed in November 1993. Reinstatement works commenced immediately after its closure, the site is monitored and maintained.

Benneydale Landfill

The landfill is located at the end of a right of way off State Highway 30 and is sited 3km from Benneydale. The landfill was officially closed on 30 June 1995. By virtue of the physical setting of this landfill, long term stability of the site is monitored and maintained.

Piopio Landfill

The landfill was officially closed to the public in 1992 and has been rehabilitated. The closed landfill is sited on a flood plain of the Mokau River and is bounded by Tiki Tiki Road, the Mokau River and an old river meander, the site is monitored and maintained.

Mokau Landfill

The landfill is situated at Te Mahoe Road and 3 - 4 km from the Mokau Township. The landfill was officially closed to the public on 23 January 1995 and reinstated after its closure. There were some concerns regarding the stability of the fill and ground movements are monitored and the site maintained.

Te Kuiti Landfill – Walker Road

The landfill is located off Walker Road and approximately 1km from the Te Kuiti Township. The landfill was closed in 1999.

The resource consents for each of the above closed landfill sites require a long period of aftercare including maintenance of the capping layers and monitoring of groundwater quality downstream from each site.

Resource Consents – Closed Landfills

Resource Consents are held for each of the closed landfills, authorising the following activities:

Location	Consent number	Map reference	Activity authorised	Sampling frequency	Consent start date	Expiry date	Amended monitoring possibility
Benneydale	103193	S17:183-972	To discharge leachate onto or into land from the Benneydale closed landfill in circumstance which may result in contaminants entering water.	Surface water, groundwater springs or seepage twice every year; site inspections twice every year.	17-Sep-2001	31-Jun-36	The consent holder may amend the frequency of inspections / monitoring after 2 years provided written approval is obtained from WRC

Location	Consent number	Map reference	Activity authorised	Sampling frequency	Consent start date	Expiry date	Amended monitoring possibility
	103194		To discharge landfill gas to air from the Benneydale closed landfill	Site inspections twice every year	17-Sep-2001	30-Jun-2036	
Waitahi Rd - Aria	103198	R 17: 857-926	To discharge leachate onto or into land from the Aria closed landfill in circumstances that may result in contaminants entering water	Surface water, Leachate monitoring twice every year; site inspection twice every year	17-Sep-2001	31-Jun-2036	The consent holder may amend the frequency of inspections / monitoring after 2 years provided written approval is obtained from WRC
	103206		Diversion of unnamed tributary of the Mokauiti Stream	Site inspections twice every year	17-Sep-2001	31-Jun-2036	
Tiki Tiki Rd - Piopio	103196	S17:906-046	To discharge leachate onto or into land from the Piopio closed landfill in circumstances that may result in contaminants entering water	Surface water monitoring twice every year; site inspections twice every year	17-Sep-2001	30-Jun-2036	The consent holder may amend the frequency of inspections / monitoring after 2 years provided written approval is obtained from WRC
	103197		To discharge landfill gas to air from the Piopio closed landfill	Site inspections twice every year	17-Sep-2001	30-Jun-2036	
Mokau							

Location	Consent number	Map reference	Activity authorised	Sampling frequency	Consent start date	Expiry date	Amended monitoring possibility
Walker Rd - Te Kuiti	103287	S16:011-167	To discharge contaminants (i.e. landfill leachate) into the ground from the closed Walker Road landfill in circumstances that result in contaminants entering groundwater	Groundwater monitoring twice every year; Site inspections twice every year	30-Sep-2007	30-Jun-2037	After at least two years of monitoring (including at least four sampling rounds) the consent holder may, subject to obtaining the written approval of WRC, amend the sampling frequency and the parameters
	103288		To discharge contaminants (i.e. landfill gas) into the air from the closed Walker Road landfill	Site inspections twice every year		30-Jun-2037	
	103289		To divert and discharge natural water and stormwater from the closed Walker Road landfill	Surface water monitoring twice every year; site inspections twice every year		30-Jun-2037	

Table: Resource Consents – Closed Landfills

APPENDIX 4: REFERENCES

Ministry for the Environment: The New Zealand Waste Strategy, October 2010, Ministry for the Environment, Wellington.

Waikato Regional Council: Waikato Regional Waste Strategy.

Ministry for the Environment: The Solid Waste Analysis Protocol 2002, Ministry for the Environment.

Waitomo District Council: Resident Satisfaction Survey 2017.

APPENDIX 5: WASTE ASSESSMENT 2017

Waste Assessment 2017

Table of Contents

SECTION ONE: Introduction

Waitomo District Council (WDC) has a statutory responsibility to promote effective and efficient waste management and minimisation within the Waitomo District in accordance with section 42 of the Waste Minimisation Act 2008 (WMA).

Council's waste management and minimisation activities are focused on the reduction, diversion and safe disposal of solid waste. They include educational programmes targeted at improving awareness of the benefits of waste reduction and services available, and promotion of and support for community initiatives.

Section 43 of the WMA requires WDC to adopt a Waste Management and Minimisation Plan. The next review of WDC's SW(a)MMP is due in 2018.

Sections 50 and 51 of the Waste Minimisation Act require preparation of a 'Waste Assessment' as the first step in conducting a review of WDC's Waste Management and Minimisation Plan. The Waste Assessment compiles available information on waste and diverted materials generated within Waitomo District. Future demands for waste facilities and services are considered and the assessment looks at the practicable options available to meet those future demands while achieving Waitomo District Councils waste management and minimisation objectives.

This document was prepared using information assembled from a variety of sources. Every effort has been used to achieve a reasonable degree of accuracy in this assessment.

1.1 PURPOSE

The purpose of the waste assessment is to identify the key issues and prioritise information to be included in the draft SWaMMP for consultation.

The requirements of Section 51 of the Waste Minimisation Act 2008 for a Waste Assessment are included below:

- a description of the collection, recycling, recovery, treatment and disposal services 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

Information is required for an assessment to the extent that the territorial authority considers appropriate, having regard to:

a) the significance of the information; and
b) the costs of, and difficulty in, obtaining the information; and
c) the extent of the territorial authority's resources; and
d) the possibility that the territorial authority may be directed under the Health Act 1956 to provide the services referred to in the Act.

However, an assessment must indicate whether and, if so, to what extent, the matters referred to in (b) and (c) have impacted materially on the completeness of the assessment.

In making an assessment, the territorial authority must:

- use its best endeavours to make a full and balanced assessment; and
- Consult the Medical Officer of Health.

1.2 SCOPE

1.2.1 Waste Types

This Waste Assessment focuses on solid and hazardous waste produced in the Waitomo District. It does not include liquid waste (sewage), bulk liquid hazardous waste, or bio-solids (sewage sludge).

The waste types considered in this assessment are:

- Residual wastes destined for landfill
- Organic materials including greenwaste
- Material able to be recycled or reused including metals (ferrous and non-ferrous), plastics, paper, cardboard, textiles, glass and other recycling materials presented by the private sector
- Hazardous materials including, batteries, electronic waste and other materials needing special treatment before disposal.

Waste management and minimisation assets and services relevant to Waitomo District are:

- Kerbside refuse and recycling collection
- Transfer Stations
- Recycling facilities
- Waitomo District Landfill (WDL)

SECTION TWO:

Waste Management and Minimisation Services

2.1 WASTE MANAGEMENT INFRASTRUCTURE

This section provides a summary of key waste management and minimisation facilities available in Waitomo District.

The facilities are a combination of those which are either owned, operated and/or managed by the Council. There are no waste facilities owned by commercial entities. Waste infrastructure includes disposal facilities such as open and closed landfills, transfer stations, recycling stations, and street litter bins.

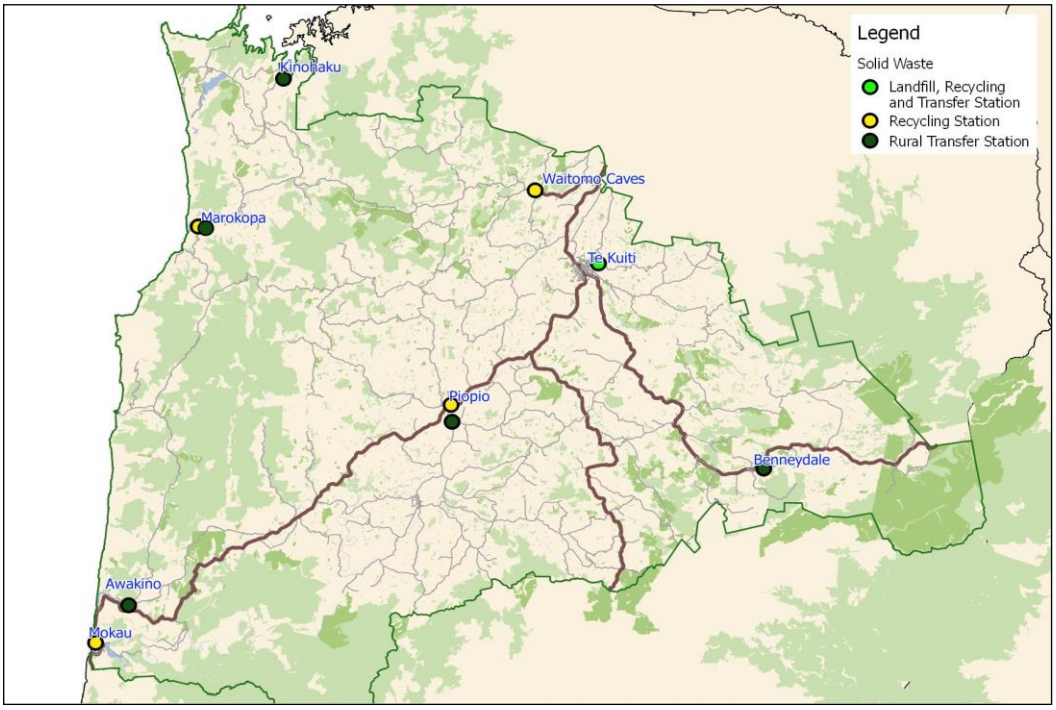


Figure 3- Key council owned waste facilities across Waitomo District

2.1.1 Disposal Facilities

The WMA classifies disposal as the final (or more than short term) deposit of waste into or onto land set apart for that purpose, or the incineration of waste.

The Waitomo District Landfill (WDL) in Te Kuiti, is the major solid waste disposal asset owned by Council. It is the only operative municipal landfill in the District and is a fully engineered and consented site. The main challenge for the landfill is the high ownership costs typical of an asset of this nature, and the need to develop a supplementary income stream from out-of-district waste, to help offset these costs.

The landfill has a consented capacity of 232,000 tonnes. The physical capacity of Cells 1 to 4, as stated in the approved Design Report (May 2006) for the amended landfill design, totals 350,000m3. This equates to a tonnage of approximately 295,000 tonnes after allowing for compaction (1tonne /m3), cover material and capping (15%), of this amount 181,223 tonnes has been filled to July 2017, leaving 50,777 tonnes of remaining consent capacity within the approved design. The landfill is preforming well with no significant consent issues.

Consent	Date Issued	Activity Authorised	Expiry Date
101753	1999	Placing up to 232,000 tonnes of Municipal waste onto or into land	31 Dec 2033
101754	1999	Discharge of contaminants into air	31 Dec 2033
124718	2012	Discharge of up to 0.65 m3 of leachate per day into ground	31 Dec 2033

Table 1 - Waitomo District Landfill resource consent information

At an average filling rate of 10,000 tonnes per year, the approved landfill design offers approximately six years of capacity. A survey completed in January 2011 followed by some modeling work showed that a total of 500,000 tonnes could be accommodated within the existing approved footprint.

The landfill is the only public disposal facility available in Waitomo. However, there is a good level of access to this facility due to the central location.

2.1.2 Landfill Classification

In April 2016, the Waste Management Institute of New Zealand (WasteMINZ) released the final version of the Technical Guidelines for Disposal to Land. These guidelines set out new standards for disposal of waste to land and, if the Regional Council implements the new guidelines, then there will be significant changes to the operation of cleanfill sites in the region, including tighter controls.

The definitions of the four classes of landfills are outlined in the Guidelines, which is included in Appendix Two for further reference. The WDL is categorised as Class 1 Landfill.

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

2.1.3 Special wastes disposal facilities

There are a number of wastes that require special handling at the landfill as, if incorrectly disposed of, they can give rise to nuisances, but are not necessarily hazardous.

Special wastes require special handling, temporary burial, pre-treatment or testing prior to final acceptance. Conditions for acceptance of special wastes and treatment procedures are outlined in the Waitomo District Landfill Management Plan 2017 (LMP). Special wastes are not accepted at rural transfer stations.

Special wastes include:

- Odorous wastes;
- Non-hazardous sludge waste;
- Non-hazardous industrial process waste;
- Non-hazardous pollution control waste;
- Waste from spillage cleanups;
- Contaminated debris from clean-up operations of waste handling facilities;
- Friable asbestos;
- Non-hazardous chemicals;
- Treated bio-medical wastes;
- Septic tank liquids and sludge; and
- Non-hazardous chemical containers and equipment

2.1.4 Treatment

The WMA classifies treatment as subjecting waste to any physical, biological, or chemical process to change it volume or character so that it may be disposed of with no reduced adverse effect on the environment (not including dilution of waste).

Sludge from the Te Kuiti Waste Water Treatment Plant and biological waste from the two local abattoirs is treated onsite at the Waste Water Treatment Plant. Resource consents for these treatment and discharge processes apply to the treatment plant not the landfill.

2.1.5 Hazardous Wastes

Hazardous Wastes are generally understood as being wastes which require special measures in handling and disposal due to some inherent hazardous property. These include any explosive, hot ashes, or highly flammable material, or infectious material, or any liquid, acid, paint, or other viscous fluid, any prescription drugs or toxic chemicals.

Hazardous wastes are not accepted in the landfill except:

- In small quantities, as can reasonably be expected to be found in normal domestic refuse

- Wastes being deposited in accordance with the waste acceptance criteria outlined in the Landfill Management Plan.

2.1.6 Medical Wastes

Resource consent conditions allow for general medical waste as per section 14 of the NZS4304 "Heath Care Waste Management" to be accepted for deposition at the WDL. This does not include hazardous medical waste.

2.1.7 Rural Transfer Stations

Rural Transfer Stations (RTS) provide for those that can't or choose not to make the journey to a landfill. Waste can be dropped off at these sites by the public and commercial collectors after paying relevant disposal fees.

RTS's are located in the communities of Benneydale, Piopio, Marokopa, Kinohaku and Mokau/ Awakino. The public interface at the WDL also occurs at a transfer station. RTS's are owned and operated by WDC, but removal of the refuse and recycling material is contracted out. Envirowaste Services Limited (ESL) hold the contract until May 2024.

General waste deposited at RTS's, is stored on site in Huka bins and transported to the landfill for weighing, final sorting (i.e. removing divertible materials) and compaction. Recycling is collected in wheelie bins and held on site before being transported back to the Contractor's depot. It ultimately ends up at Ministry for the Environment (MfE) approved Recycling Resource Recovery centres for further processing.

Figure 4 – Kinohaku Transfer Station

Name	Location	Key Services
Waitomo District Landfill	William Street Te Kuiti	Municipal Landfill Waste transfer Recycling Station
Piopio Transfer Station	Kahuwera Road, Piopio	Waste transfer and recycling centre
Marokopa Transfer Station	Te Anga Road, Marokopa	Waste transfer and recycling centre
Benneydale Transfer Station	Mine Road Benneydale	Waste transfer and recycling centre
Kinohaku Transfer Station	Harbour Road, Kinohaku	Waste transfer and recycling centre
Awakino Transfer Station	Manganui Road, Awakino	Waste transfer and recycling centre

Figure 5 – Transfer station located at Waitomo District Landfill

2.1.8 Recycling stations and units

Recycling units are stainless steel container structures with separate openings for recycling glass, plastic and paper.

The units have been placed in strategic areas around the district; Piopio Public Toilets, Mokau Public Toilets, Waitomo Village playground and outside Marokopa transfer station. Clearance is increased over the summer period in the coastal communities which experience high summer visitor numbers.

Figure 6 - Recycling unit at Kara Park, Piopio

A large purpose built and all weather recycling station was developed at the entrance to Waitomo District Landfill site in 2015. Large volumes of paper and cardboard, glass bottles green, clear and brown, plastic (types 1 and 2), aluminum cans and tin are able to be disposed of.

Figure 7 - Recycling Station at the Waitomo District landfill

2.1.9 Street litter bins

Public litterbins are provided at public areas, outside dairies and frequently used footpaths. Only general wastes are allowed to be deposed of in these. All the bins are clearly marked that no household rubbish should be deposited in the street litterbins. There are two different types – capped and open topped.

2.1.10 Closed Landfills

Since 1999 there has only been one landfill disposal site is in use in the Waitomo district. Five other sites were closed between 1992 and 1999. Details of the closed landfills are summarised below:

- **Aria Landfill**
  The Aria landfill is situated at Waitahi Road and is approximately 4km from Aria and 7km from Piopio. Landfilling commenced at this site in the 1970s and the landfill was officially closed in November 1993. Reinstatement works commenced immediately after its closure, the site is monitored and maintained.
- **Benneydale Landfill**
  The landfill is located at the end of a right of way off State Highway 30 and is sited 3km from Benneydale. The landfill was officially closed on 30 June 1995. By virtue of the physical setting of this landfill, long term stability of the site is monitored and maintained.
- **Piopio Landfill**
  The landfill was officially closed to the public in 1992 and has been rehabilitated. The closed landfill is sited on a flood plain of the Mokau River and is bounded by Tiki Tiki Road, the Mokau River and an old river meander, the site is monitored and maintained.
- **Mokau Landfill**
  The landfill is situated at Te Mahoe Road and 3 - 4 km from the Mokau Township. The landfill was officially closed to the public on 23 January 1995 and reinstated after its closure. There were some concerns regarding the stability of the fill and ground movements are monitored and the site maintained.
- **Te Kuiti Landfill – Walker Road**
  The landfill is located off Walker Road and approximately 1km from the Te Kuiti township. The landfill was closed in 1999.

The resource consents for each of the above closed landfill sites require a long period of aftercare including maintenance of the capping layers and monitoring of groundwater quality downstream from each site.

2.2 WASTE MANAGEMENT AND MINIMISATION SERVICES

This section provides information of the key waste management and minimisation services provided throughout the District. Council ensures a range of services is provided to promote resident/visitor waste minimisation practices, and to ensure refuse is adequately collected and disposed of for the purpose of public health protection under the requirements of the Public Health Act 1956.

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

Location	Bagged refuse collection	Kerbside recycling collection	Litter Bin emptying	Refuse Transfer Station (RTS)	Landfill	Recycling centre
Te Kuiti	✓ (Friday)	✓ (Friday)	✓ (Daily)	Weds to Sun 09.00 to 16.00	✓	✓ (At WDL)
Piopio	✓ (Tuesday)	✓ (Tuesday)	✓ (2x week)	Mon and Weds: 09.00 to 13.00 Sat: 08.00 to 12.00 Sun: 13.00 to 17.00		✓ (At RTS and Recycling Station)
Benneydale			✓ (Daily)	Mon and Weds: 09.00 to 13.00 Sat: 8.00 to 12.00 Sun: 3.00 to 17.00		✓ (At RTS)
Marokopa			✓ (Weekly)	Mon and Weds: 09.00 to 13.00 Sat: 08.00 to 12.00 Sun: 13.00 to 17.00		✓ (At RTS and Recycling station)
Kiritehere			✓ (Weekly)			
Kinohaku				Mon: 09.00 to 13.00 Sun: 2.00 to 16.00		✓ (At RTS)
Awakino	✓ (Tuesday)	✓ (Tuesday)	✓ (Weekly)			✓ (At RTS)
Mokau	✓ (Tuesday)	✓ (Tuesday)	✓ (3x week)	Mon and Weds: 9.00 to 13.00 Sat: 8.00 to 12.00 Sun: 3.00 to 17.00		✓ (At Recycling Station)
Waitomo	✓ (Tuesday	✓ (Tuesday	✓ (Weekly)			✓ (At Recycling Station)

Table 2 - Existing Waste Management Services

2.2.1 Kerbside refuse and recycling collection

A council-contracted weekly kerbside refuse and recycling collection service is provided in the following areas:

- Te Kuiti
- Piopio
- Mokau and Awakino
- Waitomo Village, Waitomo rural (part only – SH3, SH37, Oparure, Troopers, Te Anga, Waitomo Valley, Fullerton roads and side roads off these)

The collection activity provides an efficient and cost-effective means of collecting household volumes of refuse and recycling to safeguard public health and the environment.

The WDC kerbside refuse bag collection service is funded on a user-pay basis, through the price of each official WDC refuse bag. This is a more equitable method for all ratepayers, and in the context of waste minimisation practices, fees and charges provide a proven financial incentive for residents to reduce volumes of waste for disposal and increase resource recovery through recycling.

All properties with access to the kerbside collection service (refer to Figure 8) have been provided with 55 litre recycling containers. Recyclable product is collected each week and includes paper, cardboard, glass, tins, aluminum cans, and plastics (type 1&2). The service covers the removal and sorting of one container, per separately used and inhabited unit, of plastics, glass and tin and the equivalent volume of paper and cardboard, which can be placed beside the container. All commercial businesses within the collection route have access to the service, although once recycling quantities become too large (i.e. exceeding specified volume/ size of the recycling container) they are required to make their own private arrangements for collection.

A recycling guide has been provided to all properties receiving this service. The purpose of this information is to encourage the uptake of the service, to assist the contractor's sorting process and to reduce the incidence of contaminated or non-conforming product being placed in the recycling bins.

Kerbside collection service	Charges/funding	Materials	Refuse collection contractor	Contract review dates
Weekly collection of council bags	User fees and charges and targeted rates	General household waste	Envirowaste Services Ltd	May 2017-2024
Weekly clearance of 55l recycling bin	User fees and charges/ targeted rates	Glass, Paper, Cardboard, Plastics - types 1 & 2, Metals aluminium and tin	Envirowaste Services Ltd	May 2017-2024

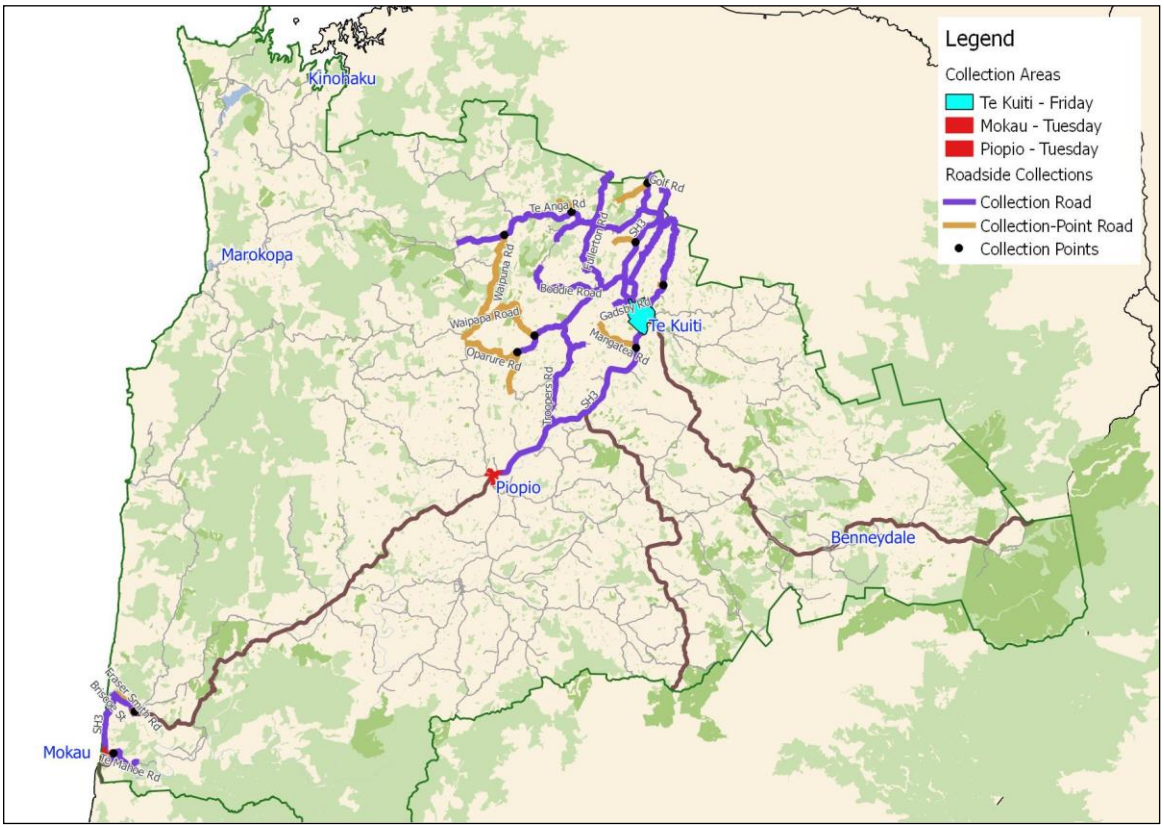


Figure 8 - Kerbside refuse and recycling collection area and routes

2.2.2. Other Recycling services

The WMA defines recycling as the reprocessing of waste or diverted material to produce new material.

Recycling and the ability to divert material is provided via the kerbside collection service, at the various recycling units and RTS's listed in Table 4 above.

RTS's can act as central collection points across the district where the recyclable and reusable materials are separated out from waste prior to transfer and disposal to the landfill as not all rural properties in the district are provided with a weekly recycling service.

Council provides for the disposal, without charge, of recyclable material at all recycling facilities, including the RTS's.

Recycling activities are consistent with the higher order waste diversion priority, and help to minimise unnecessary disposal of resources at the landfill. Landfill life is extended accordingly.

2.2.3 Street litter bins

A street litter bin clearance service as detailed in above Table 4 above is a council provided service across the district. Clearance in the high visitation coastal communities is increased over the summer period.

2.2.4 Litter control and enforcement

Litter control and management of the street and roading network is undertaken by Inframax Limited on behalf of Council. Parks, reserves and garden litter control is managed by the WDC Internal Services Unit team.

There has been a slight increase in fly tipping across the district. Community feedback suggests that this has been caused by waste disposal costs at the rural transfer stations and district landfill being too high. High risk areas have been identified and are monitored by the regulatory team.

2.2.5 Abandoned vehicles

Other waste-related services provided by the Council include the rates-funded removal of abandoned vehicles and street cleaning. These services are provided under contract by Inframax Limited. The contract expires in 2020.

2.2.6 Waste Minimisation Education Programs

- There are a number of education and behavior change initiatives and programs which can assist in raising awareness of waste minimisation to the wider public. The initiatives can help to ensure the success of Council's waste minimisation objectives.

- To date the focus has been on the Paper for Trees and Enviroschools programs. When combined with the compositing and e-waste day options, however, it is considered that this range of initiatives will provide increasing benefit to the Waitomo district going forward.

- The Paper for Trees programme has been implemented into a number of schools throughout the district. This program is a successful initiative, set up by the Environmental Education for Sustainability Trust (EERST). This initiative was the first step in committing schools to recycling.

- The Enviroschools programme aims to equip young students with the competencies they need to be leaders in sustainability. Students develop skills, understanding, knowledge and confidence through planning, designing and creating a sustainable school. Through active participation in environmental projects students can make a difference as part of the community.

- Composting – providing schools within the Waitomo District with the opportunity to receive Earthmaker Composters. This initiative could raise awareness of recycling in the wider community through school children and helps reduce the amount of organic material sent to the landfill. Wider application across other community groups could be investigated.

- E-Day at the Waitomo District Landfill to provide communities with the opportunity to dispose of e-waste such as computers, mobile phones etc. responsibly and safely

2.2.7 Rural and Farm Waste

Historically, farm waste plastics have often been disposed of by either burning or burying. Indications from central and regional government are that these practices are no longer acceptable.

A study of farm waste management practices in the Waikato and Bay of Plenty was carried out in 2014. This study found that a very large number of farms use one of the 'three B' methods of waste management – bury, burn, or bulk storage on property. The study also estimated that there would be an average of 37 tonnes of waste disposed of on each farm property.

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

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

There are two schemes available in New Zealand to recycle some of this material, they are Agrecovery and Plasback.

The schemes provide New Zealand's primary sector with options for responsible and sustainable systems for the recovery of 'on farm' plastics and the disposal of unwanted chemicals. Agrecovery currently provides three nationwide programmes:

- Containers for the recovery of agrichemical, animal health and dairy hygiene plastic containers
- Wrap for the recovery of used silage wrap and pit covers
- Chemicals for the disposal of unwanted and expired chemicals in agriculture

Waitomo District Council acts in a support role for these schemes, providing communication services and enabling the rural transfer stations to be used as designated drop-off sites for 'one off' campaign drives as and when required.

2.2.8 Hazardous Waste Services

To minimise the potential for hazardous wastes to be disposed of at the landfill, the following measures have been implemented:

- Information at the landfill kiosk entry which identifies the hazardous wastes that can be deposited in the hazardous goods store and identifies what materials are unacceptable for deposal at the landfill site.
- The landfill management plan requires the landfill operator (i.e. the operator checking the waste before it is pushed out in the landfill) to be provided with appropriate training in the identification and handling of hazardous substances. The operator is required to remove any hazardous substances identified within the waste and ensure it is delivered to the hazardous goods store. Attempts will be made to determine ownership of the deposited waste and follow up contact will be made with such people to avoid future depositing of such substances.
- Hazardous waste is not accepted at the rural transfer stations.

Table 3 outlines the known participants in the region's hazardous waste market.

Name	Materials Collected / Processed
HazSubs Service Ltd	Broad range of hazardous waste, including agrichemical, commercial, industrial and municipal
Waste Petroleum Combustion Ltd	Waste oil collection and recovery services
Waste Management NZ	Broad range of hazardous substances including medical/liquids
K2 Environmental Ltd	Asbestos testing and auditing, Ambient air testing
Asbestos Solutions	Removal and disposal of asbestos
Agricovery	Collection and disposal of agrichemicals

Table 3 – Hazardous waste disposal providers

2.2.9 E-Waste

Without a national product stewardship scheme, the e-waste treatment and collection service will continue to be somewhat ad-hoc. Currently, companies tend to cherry-pick the more valuable items, such as computers and mobile phones. As a result, the more difficult or expensive items to treat, such as CRT TVs and domestic batteries, have no alternative but to be sent to landfill.

E-waste is currently diverted out of the landfill waste stream by the public at time of disposal or by the contractors during the course of their operational work. E-waste is stockpiled and held until alternative options can be sourced.

2.2.10 Organic Services

There is no kerbside collection provided for organic waste. Home composting is encouraged by council with WDC's website containing education material for home composting to help reduce the amount of organic material being sent to landfill.

Bi-annual waste audits of the kerbside collection bags have been conducted since 2008. These audits reveal that food waste makes up a significant portion of the amount waste contained in the bags. The percentage is relatively consistent over time, sitting between 35-40% which indicates that without investment in this issue the existing performance indicator goals to reduce that type of waste entering the landfill will remain unachieved.

Greenwaste is diverted from the landfill at the Transfer Station on site. Grasses, leaves, weeds, tree branches up to approx. 400mm in diameter and demolition timber are accepted. This is then stockpiled and mulched for use as cover material onsite.

On average 392 tonnes of organic material in the form of green and timber waste is diverted from the landfill each year.

2.2.11 Recovery

The WMA classifies recovery as the extraction of materials or energy from waste or diverted material for further use or processing; this includes making waste or diverted material into compost.

The Transfer Station located at the WDL provides a large designated drop off area for the diversion of greenwaste, treated timber, tyres, whiteware, e-waste, building rubble, and scrap steel. This area enables customers to separate reusable material from the waste stream.

In addition to this diversion area, the large recycling station at the entrance to the landfill enables the public to sort and store recyclables in large volumes.

The five other rural transfer stations across the District promote recycling of glass, tin/aluminium cans, cardboard, paper and plastics (type 1 and 2) also.

All recyclable material is collected and transported from the respective sites to an approved recovery centre for disposal by Envirowaste under contract. This includes the recyclable product which is collected at the kerbside, and from the recycling units across the district.

Paper and cardboard is taken to OJI in Hamilton where it is bailed and sent to pulp mills for processing. Glass is freighted to Auckland to Visy Glass where it is melted down and reused in glass bottles. Plastic, tin and aluminium are delivered to the Taupo Branch of ESL, sorted, graded and bundled to be sold to overseas markets.

Other options to divert material out of the landfill include the're-use' shop and the recovery of materials carried out at the tip face under contract by the WDL operators.

The 're-use' shop is managed by the Kiosk attendant, it provides an opportunity for diverting reusable household items and products to avoid disposal in the landfill. Items need to be in a reasonable condition that would encourage someone to want to re-purpose or re-use them. This can include a variety of goods such as books, shoes, clothes, furniture, gardening equipment, toys, bicycles, dinnerware and more.

Figure 9 – 'Re-use' shop Waitomo District Council

Diversion is a priority at all council waste facilities. All diverted material ends up stock-piled on site at WDL for either on-selling to appropriate merchants or further processing.

Figure 10 - Stockpiled scrap metal on site Waitomo District Landfill waiting for selling to merchants

2.2.12 Assessment of Waste Management Services

Community satisfaction – current services. WDC conducts an annual residential satisfaction survey for the delivery of its services.

The 2017 Resident Satisfaction Survey identified relatively high usage of the kerbside bagged refuse collection service (61% of those surveyed), followed by moderate usage of kerbside recycling collection

and refuse/recycling facilities at the landfill (41% and 46% of those surveyed, respectively). Only 29% of those surveyed had used the community based transfer stations.

Service/Amenity	2016/17 KPI Target	2017	2016	2015	2014	2013
Safety of recycling facilities	75%	95%	97%	96%	92%	94%
Kerbside rubbish collection service	N/A	85%	-	-	-	-
Provision of effective waste transfer stations	60%	88%	85%	87%	78%	80%
Safety of waste transfer stations	70%	91%	95%	95%	92%	95%
Safety of district's landfill facility	75%	96%	98%	97%	92%	93%

Table 4 – Resident satisfaction with WDC's waste management services 2013-2017

Key findings are:

- There is a consistently high level of satisfaction with the safety of both the rural waste transfer stations and landfill facility.
- Tidiness, frequency of servicing, accessibility of waste transfer stations, and bag prices were reasons given for dissatisfaction.
- There was mixed response to the option of WDC providing half size (30 L) refuse bags (41% support. 33% don't)
- Given the predominance of "satisfied" responses, it is assumed for the purposes of this process that current level of service aligns very well with resident expectations.
- Potential areas of review, based on the feedback given by respondents, involve operational considerations such as the physical appearance and "housekeeping" of recycling/transfer stations (broken glass etc.), accessibility in terms of opening hours, and increasing the use of the existing recycling facilities and service provided. Most of these refinements have been scheduled for the current 2017/18 year.

Service Performance. The current waste management and minimisation infrastructure and services provide an effective, fit-for-purpose, network of environmentally safe recycling and refuse waste facilities (see Table 2). The facilities are readily available to local and visitor populations across the District and provide options for disposal of solid waste not suitable for the bagged refuse collection, in order to safeguard public health and the environment.

The location of the Mokau/Awakino Transfer Station is the exception; the process to re-locate this transfer station to a more accessible site is under way.

The annual resident satisfaction survey includes a range of questions directly related to the district's waste management infrastructure. Table 5 outlines the results which have been achieved over the previous three surveys. The results consistently exceed performance targets and can provide council with confidence that the facilities are fit for purpose, meeting district needs and are performing well.

What We Do (Level Of Service)	How We Measure Success (Performance Measure)	Performance Target	Result for 2014/15	Result for 2015/16	Result for 2016/17
Users find the recycling facilities safe to use.	Percentage of users rate the safety of Council's recycling facilities as satisfactory or better.	75%	Achieved (96%)	Achieved (97%)	Achieved (95%)

What We Do (Level Of Service)	How We Measure Success (Performance Measure)	Performance Target	Result for 2014/15	Result for 2015/16	Result for 2016/17
Provision of effective waste service for the community.	Customer satisfaction survey rating on waste transfer stations.	60%	Achieved (87%)	Achieved (85%)	Achieved (88%)
The solid waste management facilities feel safe to the user.	Percentage of users rate the District's waste transfer stations safe to use.	70%	Achieved (95%)	Achieved (95%)	Achieved (91%)
Users find the landfill facility safe to use.	Percentage of users rate the safety of Council's landfill facility as satisfactory or better.	75%	Achieved (97%)	Achieved (98%)	Achieved (96%)
The solid waste management facilities are open and accessible to users at advertised times.	Number of complaints per month due to facilities not being open at advertised times.	≤ 1	Achieved (0)	Achieved (1)	Achieved (0)

Table 5 – Service performance measured against WDC waste management facilities KPIs

On-going regular monitoring and maintenance of the facilities will ensure high satisfaction levels are maintained.

Complaints monitoring. The current suite of solid waste management services is designed to meet community expectations and to encourage waste minimisation and decrease waste disposal to landfill.

Community expectations are consistently being met as evidenced by the low number of complaints received in relation to solid waste services.

One of the reoccurring (though low frequency) complaints relates to street litter bins, with requests being made for council to increase the number of these in various locations. Whilst each request is assessed on its merits, WDC is using the opportunity to encourage people to take responsibility for the waste they generate. Provision of too many free public street bins creates opportunity for abuse and is counterproductive to the user pays approach WDC has adopted for solid waste services.

What We Do (Level Of Service)	How We Measure Success (Performance Measure)	Performance Target	Result for 2014/15	Result for 2015/16	Result for 2016/17
Provision of an effective solid waste service for the community.	Average number of complaints received per month regarding solid waste activities.	≤ 10 per month	Achieved All months had ten or less complaints	Achieved 29 complaints for the year (ave 2.4 per month)	Achieved 23 complaints for the year (ave 1.9 per month)

Table 6 - Key performance indicator for solid waste services - complaints

Contractual processes. Solid waste services are provided to Council under fixed term contracts. Appropriate performance standards have been set within the respective contracts to ensure performance is monitored and reported on. There are appropriate provisions within the contracts to address any non-performance issues which may arise.

The existing contracts have been in place since May 2017. Early issues related to a 'settling in' period, with council confident services will be delivered to a high standard. Strengthened reporting requirements will enhance planning processes going forward.

2.2.13 Areas of concern

Reduction of recyclables and organics into the landfill - the key concern relates to the volumes of organic and recyclable product which enters the landfill via kerbside collection refuse bags. Key performance targets designed to measure and track these volumes have not been achieved over the last

three reporting periods. The best results were achieved in 2012 when there was a concerted focus and effort applied to educational programmes and initiatives.

National problem - the percentage of organic waste found in kerbside refuse bags is consistent with national trends, however KPI's have been set which strive to achieve a downward trend. Findings to date indicate that this issue needs to be re-prioritised if changes to consumer behavior are desired.

Limited purpose - alongside the wider consumer behavior issues, the poor KPI outcomes could have been caused by some internal reporting and process flaws relating to the waste audit methodology. Some consideration should also be given as to whether the current performance indicators are the most appropriate way to measure the success of endeavors to increase diversion and reduce waste to landfill. It must be noted that the KPI's are very specific to product entering the landfill from the kerbside collection waste stream only.

What We Do (Level Of Service)	How We Measure Success (Performance Measure)	Performance Target	Result for 2014/15	Result for 2015/16	Result for 2016/17
Reduce quantity of recyclables like paper and plastics in bag collection that goes to landfill.	Percentage of reduction per annum leading to 10% reduction by 2016 and 15% by 2025 achieved through continual education (both measured against the 2014 Biennial Waste Audit).	2.0%	Not Achieved	Not Achieved	Not Achieved
Reduce the quantity of organic waste (food scraps etc.) in bag collection that goes to landfill.	Percentage of reduction per annum achieved through continual education leading to 10% reduction by 2025 (measured against the 2014 Waste Audit).	1.5%	Not Achieved	Not Achieved	Not Achieved

Table 7: Kerbside collection – previous waste minimisation targets 2014/15-2016/17

2.2.14 Scope for further improvements

- Increased visitor numbers to the Benneydale area indicates it may be appropriate to install a recycling unit near the new toilet block facility.
- Street litter bin audit – a district wide audit of the street litter bins to assess the numbers and locations of open top versus capped bins would be useful to enable a cost/benefit analysis to be completed for replacement of all open top bins. This should reduce the opportunity to abuse the 'no household refuse' limits.
- Alternatively, the option of using "big belly" bins can be considered as a means of reducing misuse of current disposal units, and enable user-pays recovery of disposal costs.
- The next waste audit is due in 2018, it is timely to review and reassess the methodology and base line information used.
- Increased focus on the following strategies may also help to achieve broader diversion and reduction objectives:
    - To encourage the diversion of organic waste from landfill (household composting programme/opportunity for private enterprise)
    - To maximise household recycling (education)
    - The need for education and promotion to address agriculture waste (silage wrap, chemicals)
    - To address illegal fly tipping/abuse of recycling units and after-hours access to transfer stations

- To foster involvement of communities with waste minimisation projects (Enviroschools, Pare Kore)

- To promote event recycling within the district

- The ability to make the most of the Waste Minimisation Education programs outlined in Section 2.2.6 requires resourcing which hasn't been readily available to Council in recent years. Over 2016 and the early part of 2017 the solid waste activity focus was on the procurement of two new service contracts. However, with that process now complete and the recent appointment of a full-time Asset Team Administrator, with a focus on coordination of waste management activities, it will enable these programs and initiatives to be re-prioritised going forward.

- An increased focus in these areas should result in reduced amounts of organic and recyclable product found in the kerbside collection refuse bags. The 2018 waste audit will provide the opportunity to assess that against recent trends.

2.2.15 Barriers to increased recycling opportunities

- Within the context of current legislative and contractual arrangements, there is reasonable provision for e-waste collection and recovery within the region – although there is still scope for greater levels of recovery. The cost of separate disposal of e-waste compared to landfilling is a disincentive for greater recovery.

- The issue of cost is also a disincentive for greater recovery of recyclable plastics from the waste stream. Residents currently have the option to recycle type 1 & 2 plastics only. Extending the range of plastics able to be collected and recycled is cost prohibitive for this council. Significantly increased capital and operational costs would be incurred due to changes to infrastructure required and the level of service provided. Council collection facilities would need to be upgraded to handle the extended range of recycling options that require sorting. The Contractor's collection process and costs would increase in response to the different fleet vehicles required and increased staffing needed to meet the increased volumes and product sorting.

- A small amount of that cost could be offset by the reduced MfE levy paid on the monthly tonnage going into the landfill. However, at $10 per tonne the saving would be negligible when considered against the reality that empty plastics containers are a light weight product. It would be a challenge to generate the volumes required from the district to make this a meaningful offset.

- Similarly, the issue of cost is also a disincentive for greater recovery of organic material from the waste stream. Significantly increased capital and operational costs would be incurred due to the changes to infrastructure required and the level of service provided. Council collection facilities would need to be upgraded to enable separation of organic material at source and to process the organic material collected. The Contractor's collection process and costs would increase in response to the different fleet vehicles required and increased staffing needed to meet the increased volumes and product sorting.

- Within that context, increased operational costs would require an increase to disposal fees and charges. Significant increases to ETS costs triggered the need for higher than usual increases to the disposal fees and charges for the 2017/18 period.

Access to services

- All indicators provide confidence that Council has struck the right balance between access to solid waste services, and landfill diversion, with the exception of the operating hours for Piopio Transfer Station, and opening times for the others. Issues with the opening hours of these facilities, in part, result in afterhours trespass and increased incidences of fly-tipping at the gates. An option to have different summer and winter (i.e. linked to daylight saving) opening times is being considered.

- Commercial users of the landfill holding accounts with WDC have after-hours access. This ensures their disposal needs are met without having to rely on public opening hours.

- Key performance indicators show that satisfaction with the existing service levels remain consistently high. On balance it is unlikely that changes to service levels, which result in further

increases to disposal fees and charges, would receive much support. Previous experience shows that increased incidences of fly-tipping correlate to customer resistance to disposal fees and charges.

2.3 NON- COUNCIL SERVICES

There are several non-Council waste and recycling service providers operating in the district. These companies target businesses and commercial customers where volumes of waste are unsuitable or too large for kerbside collection, or rural customers who are unable to access Council's collection service. Product collected by these companies can be disposed of at the Waitomo District Landfill.

The known commercial companies currently operating in the district are:

- Waste Management Limited / Vander bins / Envirowaste Services Limited / Agrecovery

2.3.1 Assessment of Non- Council services

The non-council services operating in the district do not pose any risk to the viability of Council provided services. The presence of a number of service providers fosters competitive pricing, strong commitment to service and a range of service options. This is important for consumers and contributes positively to improved waste management and minimisation.

The landfill weighbridge reporting system allows for comparative analysis between Council provided and commercially provided services in the district.

SECTION THREE:

Future Demand for Waste Management and Minimisation Services in Waitomo District

3.1 CURRENT WASTE STREAMS

3.1.1 Waste quantities to Waitomo District Landfill (WDL)

Waitomo District Landfill receives waste from several different sources;

- Local municipal waste: bagged kerbside refuse, street litter bins, and product from the transfer stations (including the RTS on site).
- Commercial and industry waste: usually requires an initial pre-approval process depending on the quantity and type of waste product. Many local trade businesses have accounts with the council and are regular users.
- Out-of-district: municipal waste from Te Awamutu, Otorohanga and South Waikato districts.

Bulk out of district waste coming in via Contractors requires pre-approval. The out of district business generates a guaranteed, consistent income stream which is desirable.

To date, agreements have been made with the refuse collecting contractors not the respective local authorities. Of the three existing and long-standing arrangements, only product coming in from South Waikato is formalised as a contract, with threshold volumes and product type limits in place. It would be ideal to formalise the other two in this manner also. This would provide more control and certainty over the rate and volume which is coming in from outside sources.

Source	Approx. annual tonnage
Waitomo District including, transfer stations & street litter bins	3,000
Otorohanga and Te Awamutu Districts	3,000
South Waikato District	4,000
Total	**10,000**

Company/area	2014-15	2015-16	2016-17
Vanderbins- TA	158.44	368.87	362.53
ESL – Kawhia	64.27	176.81	177.03
ESL – Otorohanga kerbside	98.39	255.39	280.72
ESL – Otorohanga W/bins	9.24	63.75	143.0
ESL – Waipa	738.64	1,580.85	1,928.0
TOTAL	**1,068.98**	**2,445.67**	**2,891.28**

Table 8 – Out of district waste

Refuse. All waste product which comes into the WDL site is weighed and broadly categorised using the weighbridge system operated by WDC staff at the landfill kiosk. This includes refuse from all the district's waste facilities, kerbside refuse collection, out of district product, and the public, including commercial and industry users.

The weighbridge system provides an accurate reporting and audit process. There is a high level of confidence in the accuracy of the information and it is readily accessible.

The gross tonnage of product coming into the WDL over the past four years is provided in the MfE Return Levy Summary as per Table below.

Recycling. The quantities of recycling product collected from the various waste facilities across the district is accounted for via two different reporting streams. Product cleared from the recycling station at the landfill is categorised, weighed and logged over the kiosk weighbridge system. Product cleared from the kerbside collection service and transfer stations is sorted by Envirowaste at their Otorohanga depot and recorded in monthly reports provided to WDC.

To ensure an accurate account of the total tonnage disposed of to the landfill, and ensure Ministry for the Environment (MfE) levy reporting requirements are met, material which is deducted from the gross weighbridge tonnage as diverted tonnage only applies to the recyclable material which has come over the weighbridge in the first instance. Recyclable material collected from the other waste minimisation services is not included in the monthly gross weighbridge figures as it would be misleading to record that as 'diverted tonnage' for MfE waste minimisation levy purposes.

Diverted tonnage from WDL. The amount of product that is diverted from the landfill is increasing over time. This is an encouraging trend which indicates that the suite of existing solid waste infrastructure and services are working to support waste minimisation and diversion objectives.

Return	Gross Tonnage	Diverted Tonnage	Net Tonnage	Percentage diverted
2016-17	10,242.41	553.80	9,688.61	**5.4%**
2015-16	10,294.04	413.52	9,880.52	**4.02%**
2014-15	9,888.72	394.73	9.493.99	**3.99%**
2013-14	9,100.85	278.86	8,821.99	**3.06%**

Table 9 - Return Details Summary MfE Waste Minimisation Levy

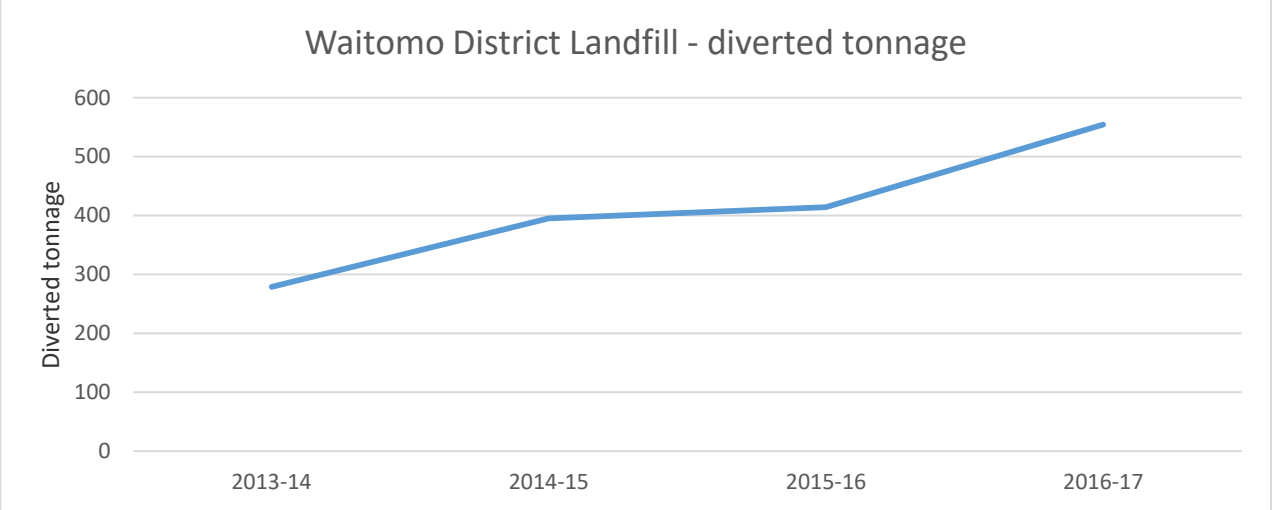


Figure 11 – Tonnage diverted from landfill

The types of product recorded as diverted tonnage includes recyclable material such as cardboard, paper, glass and plastics that have come in over the WDL weighbridge, plus other material such as scrap steel, timber, concrete and building rubble which have also been weighed. It does not include greenwaste as this is used as cover material.

3.1.2 Waste composition

The waste composition presented in this section uses the primary classifications taken from the Ministry for the Environment Solid Waste Analysis Protocol. The composition data below has been gathered using the results of the last three Waste Audits conducted in 2012, 2014 and 2016.

One of the limitations with this data is that it only provides information on the composition of waste materials going into the council bags for kerbside collection. However, it can be assumed that this is a good representation of the range of materials which enters the landfill via other waste streams such as the RTS's for the following reasons:

- the audit included a sample of kerbside bags from urban and rural collection areas
- findings are consistent with wider national statistics
- waste acceptance controls limit the type of product able to enter the landfill
- diversion practices in place ensure that the types of product not found in council refuse bags such as e-waste, tyres, whiteware, scrap metal and greenwaste are not disposed of in the landfill.

Type of waste in refuse bags	2012 Waste Audit	2014 Waste Audit[1]	2016 Waste Audit
Putrescibles (Organic/food waste)	15.40%	36.31%	39.06%
Sanitary & Nappies	Not reported	22.20%	16.11%
Plastic Wrap (non recyclable)	47.20%	17.25%	9.90%
Paper (Recyclable)	29.40%	16.34%	12.79%
Texties (eg: fabric)	Not reported	11.30%	4.87%
Plastic (recyclable)	Negligible	9.83%	10.46%
Glass (recyclable)	2.30%	8.16%	4.13%
Metal (ferrous metals)	4.00%	5.43%	1.07%
Potentially Hazardous (eg: hair dye, chemicals)	Not reported	3.57%	0.34%
Metal non-ferrous metals (recyclable)	4.10%	0.67%	0.40%
Rubble, concrete, timber and rubber	Negligible	Negligible	0.87%

Table 10 - Kerbside collection refuse bags - Waste audits

3.1.3 Source of waste

This section presents the source of levied waste disposed of at WDL. The composition is presented in this section using six of the seven "activity sources" specified in Volume One of the New Zealand Waste Data Framework.

The data is reliable being taken from the WDL weighbridge reports and waste levy returns.

Activity source	General waste - excludes special waste and cleanfill		General waste and special waste - excludes cleanfill	
	% of total	Tonnes 16/17	% of total	Tonnes 16/17
Construction & demolition	0	0		Diverted
Domestic kerbside	5%	494	5%	494
Industrial/commercial/institutional	92%	8260	92%	8260
Landscaping	0	0		Diverted
Residential	1%	22	1%	22
Rural	2%	192	2%	192
Specials			0.05%	5
TOTAL	8968			8973

Table 11: Activity source of levied waste to Waitomo District landfill 2016/17

92% of the waste volumes received at the WDL is derived from industrial and commercial sources, this includes waste sourced from outside the district.

[1] Note the 2014 audit results total 131% due to double counting of some product types and different measurement methodologies. The comparison is therefore indicative, with the 2012 and 2016 results providing a more reliable basis for trend analysis.

192 tonnes of general waste is transferred from the district transfer stations and disposed of into WDL.

3.1.4 Diverted Materials

Waste diversion programmes aim to reuse, recycle or recover waste products, with the emphasis being on waste as a resource. It is recognised that no system established for the recovery of waste materials can divert 100% of that material from the waste stream.

Programmes are pitched at a local level, with Council currently involved in the provision of recycling facilities, a kerbside collection of recyclables and diversion practices occurring at the landfill. Diversion practices are outlined in Section 2.2 and include the stockpiling of scrap metal for on-selling, concrete rubble for reuse and greenwaste for mulching into cover material.

3.1.5 Composition of kerbside refuse and recycling

Refuse. An analysis of the kerbside bagged refuse collection completed in July 2016 identified potential for increased diversion to occur, even without population growth. Approximately 50% by weight of the surveyed bags contained potentially recyclable material. This presents opportunity to increase the life of the Council's landfill and reduce operational costs related to the Emissions Trading Scheme (ETS) or transfer to a commercial landfill.

A comparison of previous four audit results show that organic wastes are consistently the highest component of waste in the refuse bags and as such the greatest opportunity for reducing demand on the landfill capacity is by targeting residential organic wastes.

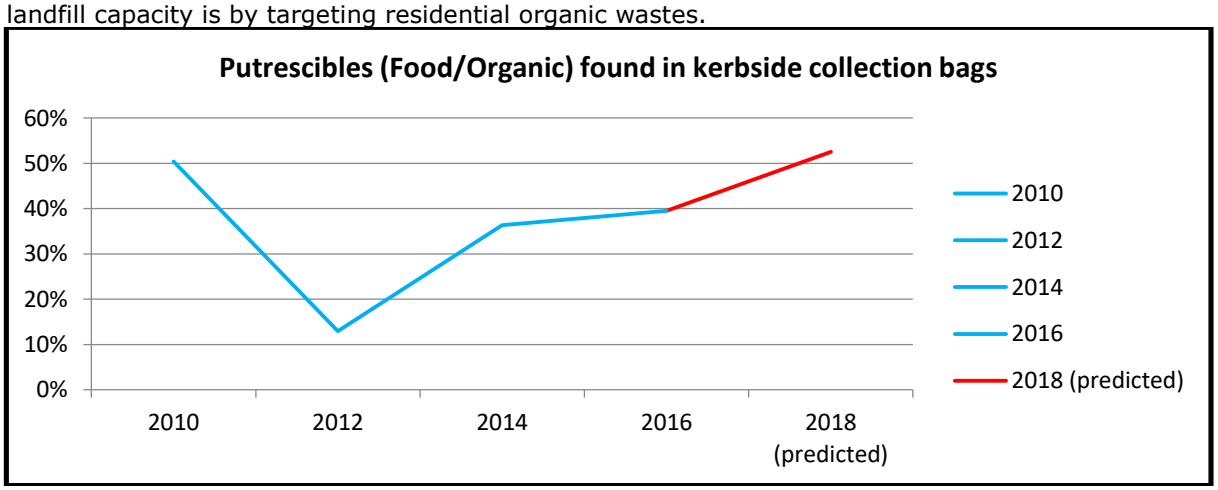


Figure 10: percentage of organic waste found in kerbside collection rubbish bags

There was a 3% increase in organic waste going into the landfill over the 2014-2016 period. This increase, along with the predicted upwards trend is disappointing, however when tracked against longer time frames the figures show that an 11% decrease has been achieved between 2010 and 2016. In 2010, putrescibles made up 50.4% of the total waste content. That was reduced to 39.5% in 2016.

Recycling. An analysis of the composition of kerbside recycling over the previous five years identifies that volume of glass material taken at the kerbside is more than all the other materials combined. The opportunity to use a kerbside collection service diverts an average of 725 tonnes of recyclable material each year out of the landfill waste stream.

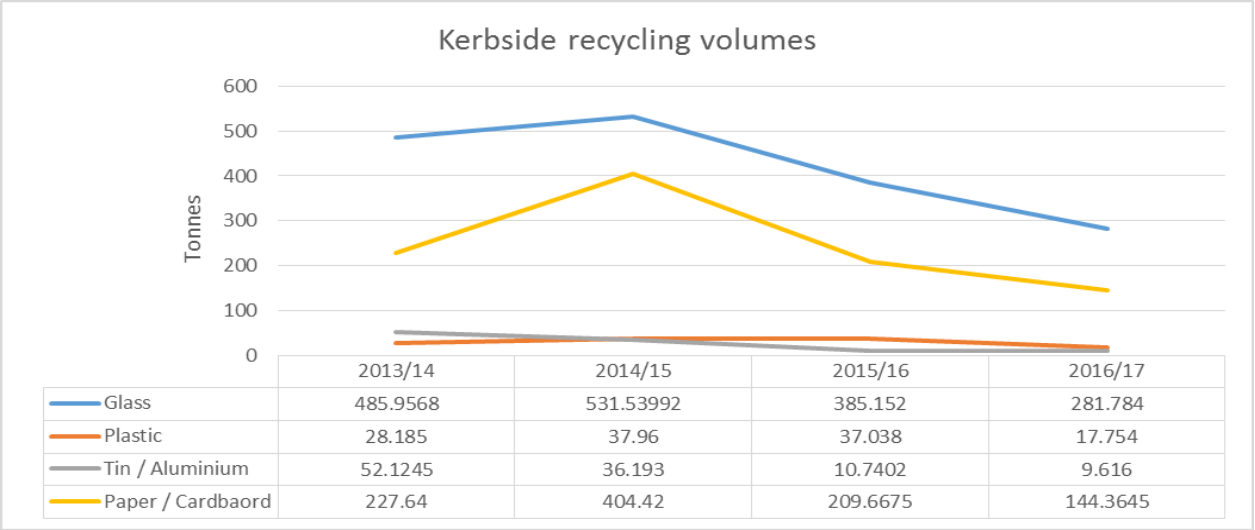
The very low percentage of contamination indicates that Council communication around collection requirements (preparation of containers and type of materials) has been very successful.

Composition of kerbside recycling 2013-2017	% of total	Ave tonnes per annum
Mixed paper	32	238
Glass bottles & jars	57	410

Plastic containers	5	33
Aluminium cans/tin cans	4	30
Contamination	2	
TOTAL	**100**	**711**

3.1.6 Quantity of district wide recycling

Kerbside. With regards to kerbside recycling quantities the following graph illustrates the product tonnage of recyclable material the collection service has diverted from the landfill since 2013.



	2013/14	2014/15	2015/16	2016/17
Glass	485.9568	531.53992	385.152	281.784
Plastic	28.185	37.96	37.038	17.754
Tin / Aluminium	52.1245	36.193	10.7402	9.616
Paper / Cardbaord	227.64	404.42	209.6675	144.3645

Figure 11 – Annual kerbside recycling quantities

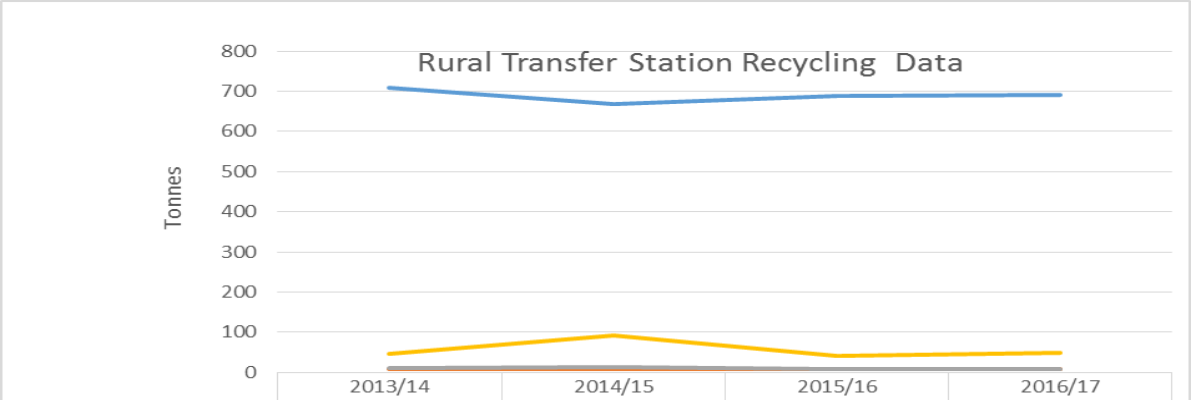
The decline in glass and paper quantities over the 2013-17 period is a particular concern. Whilst plastic and tin/aluminum recycling remains relatively consistent there has been a significant downward trend in the volume of glass and mixed paper collected from the kerbside over recent years.

Explanations could include:

- changes in manufacturing and consumer behavior in terms of packaging and consumption choices being made;
- use of other services - recycling units, transfer stations and the large recycling facility developed at the landfill in 2015;
- no recycling bin – bins were first issued in 2009 so in many cases the bins were broken or missing, distribution of a new bin to all properties with access to the service was completed in Aug 2017. At this time approx. 820 old bins were pulled from the service. This is under a third of the number of bins which should be being put out for kerbside collection – lack of access to a bin could be a reason for the declining recycling volumes. Replacement bins can be obtained from WDC but that may not have been well understood by the community.

Consumption habits will affect the waste and recyclable generation rates. For example there has been a national trend related to the decline in newsprint. In New Zealand, the production of newsprint has been in decline since 2005.

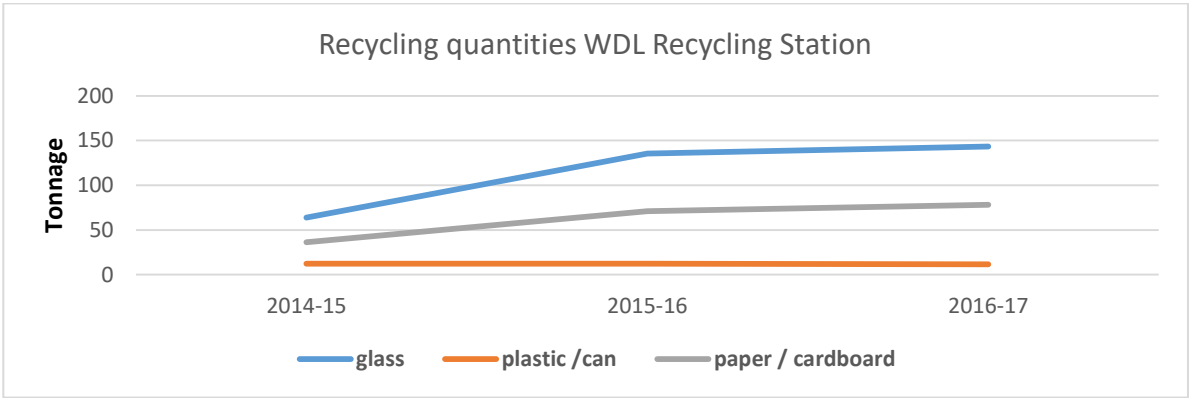
Rural Transfer Stations



	2013/14	2014/15	2015/16	2016/17
Glass	708.48	668.16	688.8	689.76
Plastic	9.03	7.507	7.89	7.47
Tin / Aluminium	11.6075	14.177	8.185	8.155
Paper / Cardbaord	46.774	91.262	40.81	49.49

The quantity of recycling collected at the rural transfer stations has remained relatively constant over the past four years.

Waitomo District Landfill Recycling Station



The Te Kuiti recycling station, located at the entrance to the Waitomo District Landfill in 2015, has shown an increasing amount of use over the previous three year period. The facility is covered, well planned, with plenty of capacity and regularly maintained.

3.1.7 Quantity of recycling from all sources

Tonnes/annum	2013/14	2014/15	2015/16	2016/17
Kerbside recycling	794	1010	643	454
Drop-off facilities	278	395	414	517
Transfer stations	776	781	746	755
TOTAL	**1848**	**2186**	**1803**	**1725**

3.1.8 Other material diverted through Waitomo District Landfill operational practices

Green waste and timber is diverted from the waste stream, stockpiled and then commercially mulched into a product that is suitable as landfill cover material.

Approximately 392 tonnes of green and timber waste are diverted from the district landfill each year. The amount of greenwaste being diverted is increasing over time. This is an encouraging trend.

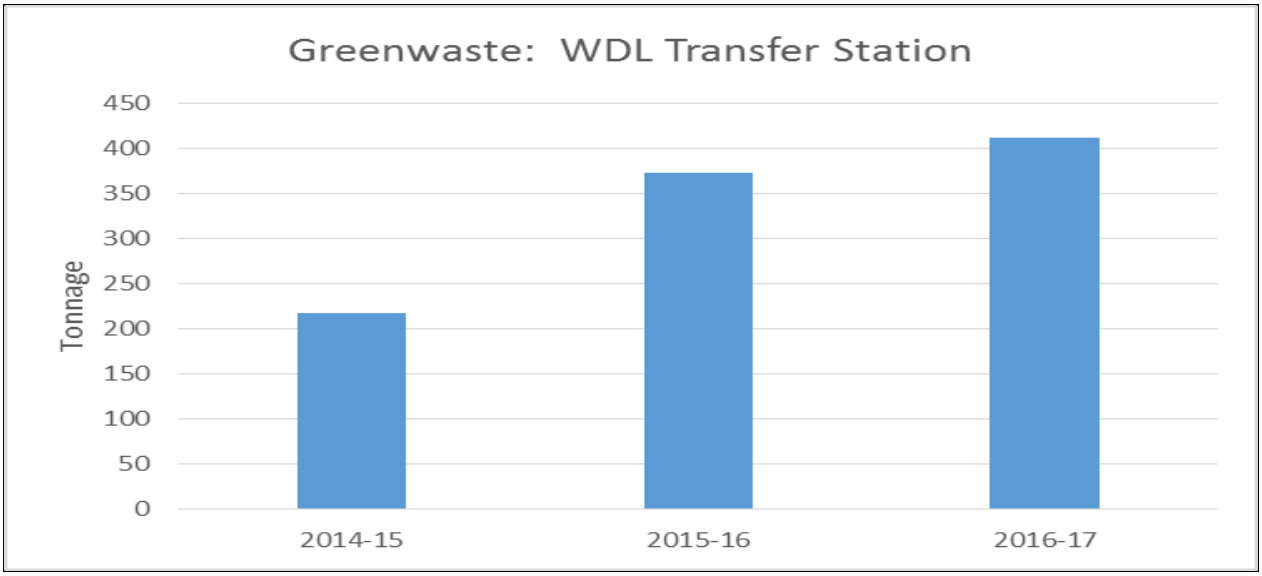


Figure 12– Annual greenwaste diversion

Other materials diverted from the landfill during the 2016/17 period are summarised in the following table:

PRODUCT	Tonnes	Number
Batteries		103
Bricks	31.24	
Cardboard & Paper	71.14	
Concrete	161.97	
Corrugated Iron Sheets		670
Gas Bottles		71
Glass	143.35	
Paint		638 Litres
Polystyrene		3.86
Plastic and Cans	12.63	
Scrap Steel	43.97	
Oil		585 Litres
Oil gas heaters		161
Timber	89.77	
Tyres		154
Tyre Rims		79
Whiteware		287

Table 11 – 2016/17 diversion totals

3.2 FUTURE DEMAND

There are a wide range of factors that are likely to affect future demand for waste management and minimisation services in the District. The extent of these influences could vary over time and across different localities. This means that predicting future demand has inherent uncertainties.

Key factors are likely to include the following:

- Population growth
- Economic activity
- Community expectations
- Changes in waste management approaches

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

3.2.1 Population

There is a direct relationship between population and waste volumes. As an approximate guide, each person produces in the order of 1 tonne per year of waste, of which a proportion is recovered through recycling and diversion programmes or similar before the net volume of residual waste finds its way to the landfill.

Analysis of future requirements uses a combination of population projections, urban growth development plans, urban structure plans and waste composition data. Population increases and changes in land-use will often cause an increase in future demand on existing waste services, resulting in increased demand for refuse collection facilities, recycling, and transfer station/landfill upgrades and development.

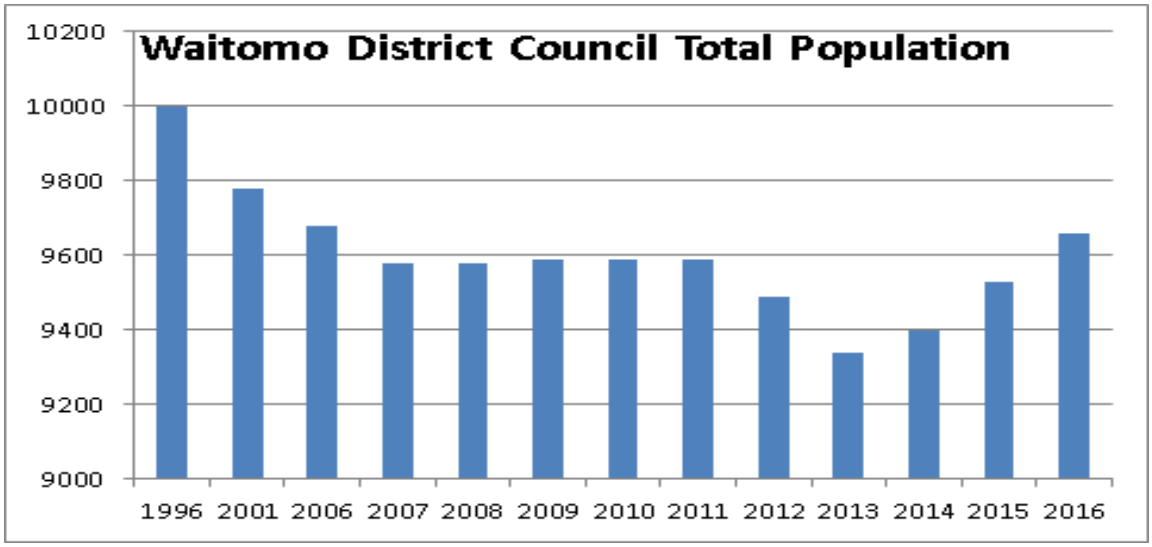
In the case of Waitomo District, since 1996 there has been an overall general trend of small population decline in both the rural and urban areas of the District. However, this can vary within sub-areas.

The following information is primarily sourced from the 2013 Census as provided by Statistics New Zealand. It is the best available information at the time of writing. Council considers that this information is adequate as a basis for this assessment and for the management plan it accompanies.

The resident population of the Waitomo District in 2013 was 8,907.

The medium projection for New Zealand has previously indicated that the national population will rise from 4,509,700 in 2014 to 5,761,100 in 2043. All regions were projected to have more people in 2043 than in 2013, although 26 territorial authority areas were projected to have less. Waitomo District was one of those projected to have less.

More recently (Dec 2016), the estimated population for the district has shown an upward trend since the 2013 census population, as illustrated in the following table:



Further, population projections for the district over the period 2013-2043, released by Statistics New Zealand on 14 Dec 2016, mirror the above trend. They show positive growth in population for all scenarios over the 2013-2018 period, continuing through to 2033 then stabilising after that in the High Projection scenario, but declining after 2018 in the Medium and Low projection scenarios.

Three growth scenarios were developed by *Rationale* in 2017 from three baseline resident population growth rates considered appropriate for the Waitomo district - low growth (declining population), medium growth (stable and then decrease in population), high growth (steady population growth). The medium growth scenario is considered the most appropriate for Council's long-term planning.

A summary of the key results is shown below for the recommended medium growth scenario. The change to 2048, average annual change and average annual growth rate is included. These cover the period from 2013 to 2048 for resident population and dwellings. For total rating units, these cover the period from 2018 to 2048.

The projected dwelling and rating unit growth rate is higher than for population due to flow-on effects of changes in population structure. Most of the growth is forecast to occur in the first ten to fifteen years before the rate of growth slows down towards 2048.

Output	2013	2018	2028	2038	2048	Change (to 2048)	Average annual change	Annual average growth rate
Resident Population	9,340	9,810	9,650	9,120	8,420	-920	-26	-0.3%
Total Dwellings	4,224	4,377	4,522	4,644	4,863	639	18	0.4%
Total Rating Units	n/a	5,907	6,022	6,118	6,289	382	13	0.2%

Table 12 : Recommended medium growth scenario

It is expected that any increase in demand from residential development in the short to medium term will not impact on the existing capacity of WDC's solid waste management infrastructure or service levels.

3.2.2 Demographic change

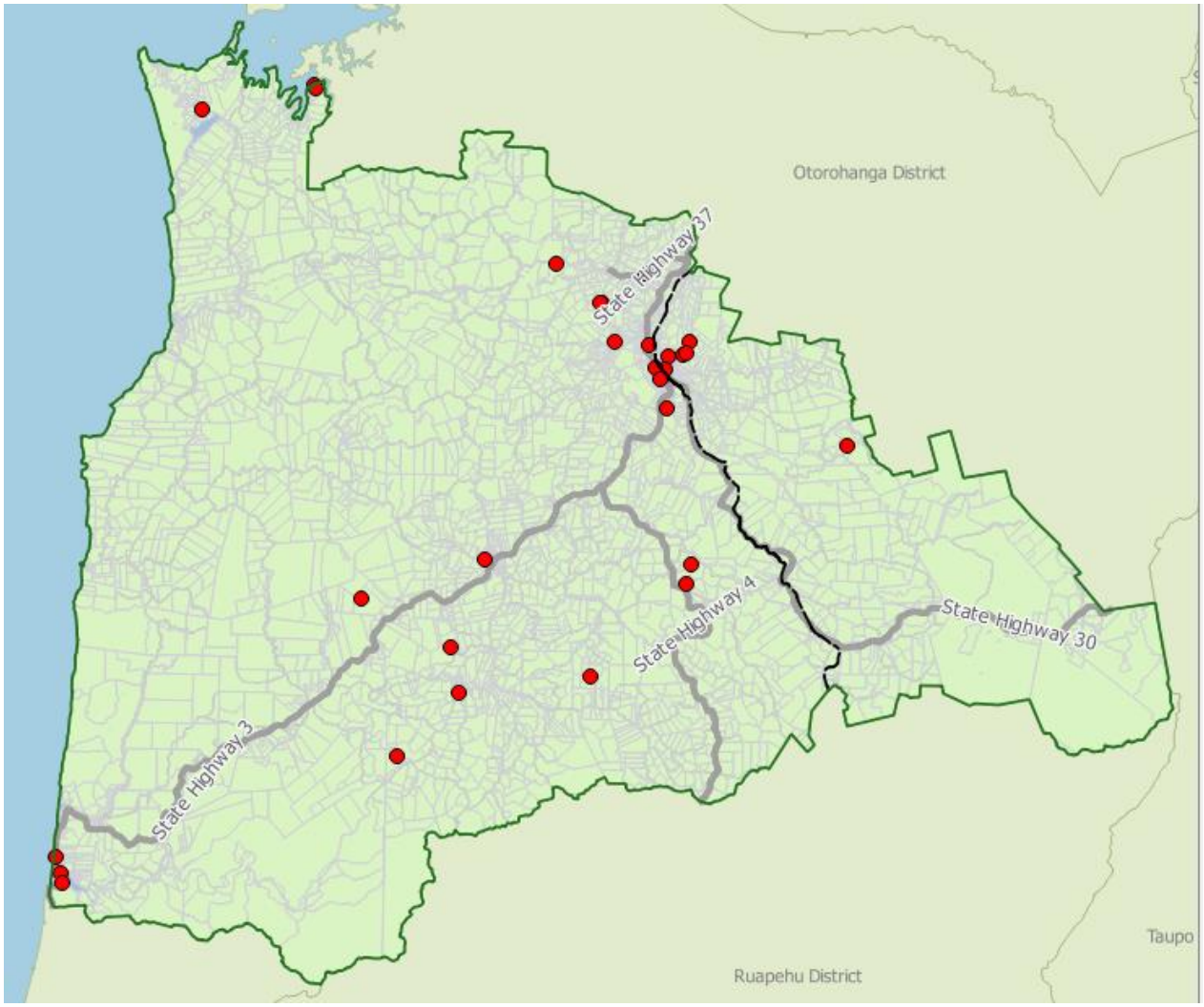
With regard to the population structure, the district has a similar age profile to the rest of New Zealand. In 2013 the proportion of people aged 20 to 44 was lower than the rest of New Zealand however the proportion of people aged below 15 was higher. The proportion of people aged over 65 is projected to increase from 13% in 2013 to over 25% in 2048 and the number of people aged

between 15 and 64 years of age is projected to decrease. This may have a flow-on effect to the make-up of the work force in the district, and the corresponding demand for waste management services.

3.2.3 Land-use development

From an informal, desktop planning exercise, drawing from development proposals which are known to officers and/or are in the early stages of consent processing, it has been identified that further growth is unlikely to place pressure on the demand for or provision of Council services. Indications are the recent trends of relatively slow development are likely to continue into the foreseeable future. It is expected that any increase in demand from residential development over the next 10-years will be minor and won't impact on the existing capacity of WDC's solid waste management infrastructure.

An indication of that is the modest number of building consents issued for new dwellings in the district over that past 3 years (i.e. since 2014) – a total of 33. While the majority of these (approx. 10) are located in and around Te Kuiti, the distribution is otherwise diffuse. The figure below illustrates this.



The current agricultural and pastoral based economy is expected to remain predominant in the district, with growth very dependent on economic conditions and export opportunities. Industrial growth, which can have a significant impact on water supply, is partly dependent on attracting new industries into the urban centres.

3.2.4 Economic growth

Waste generation is linked to changes in population numbers and population spending. Higher levels of economic growth will lead to higher production and consumption of goods which in turn creates higher quantities of waste.

The current pastoral based economy will remain the main commercial activity in the District, with growth very dependent on economic conditions and export opportunities. Farming units are tending towards larger sizes – due to aggregation of neighbouring properties. This is unlikely to have a material impact on the levels of domestic rural waste as larger farms can invest more heavily in automated systems and can utilise a seasonal worker base to meet operational requirements.

Tourism is a major economic activity in the District, with Waitomo Village being a tourism site of national and international repute, attracting approximately 500,000 – 600,000 visitors per year. One of the focuses of the Waitomo District Economic Development Strategy is ensure that visitors to Waitomo have a high quality experience. To help achieve this, it is important that there is appropriate infrastructure, accommodation and housing in place to cater for visitors and tourism and hospitality staff.

With regards to waste management and minimisation services provided to Waitomo Village, recycling facilities in the form of a weekly kerbside collection plus a recycling unit are available. Residual solid waste from the village is collected from street litter bins and via the kerbside collection service. It is then disposed of at the Waitomo District Landfill.

Predicted growth in international visitor numbers and expenditure
International tourism to New Zealand is set to grow significantly over the next decade. International visitor arrivals to New Zealand are expected to grow 5.4 per cent a year, reaching 4.5 million visitors in 2022 from 3.1 million in 2015 and total international spend is expected to reach $16 billion in 2022, up 65.5 per cent from 2015.

Waitomo District has strong tourism products from which it can capture an increased share of this predicted growth in numbers and expenditure.

Potential to increase share of the domestic tourist market
The Waitomo District is located within a "tank's drive" of many major population centres. With increasing emphasis from existing caving operators on the domestic market, the ongoing attraction of new businesses and amenities and the continuing promotion of the Timber Trail and Te Araroa Walkway, the Waitomo District is in a strong position to significantly increase domestic visitor numbers and expenditure in line with spend in neighbouring Districts.

Impact on solid waste management and minimisation services
It is expected that any growth in this area will not impact on the existing capacity of WDC's solid waste management infrastructure or service levels.

Future enhancements to waste minimisation levels of service at the district's high growth tourist areas (e.g. Waitomo Village, beach areas, Timber Trails entry routes, etc.) could include provision of different servicing options such as "big belly bins".

3.2.5 Trends

Despite increasing waste recovery volumes, at a national level the trend is for ever increasing volumes of waste being produced due to population increase and economic growth. While zero waste is a commendable strategy, the reality is that waste disposal facilities will continue to fulfil an essential role in the overall waste management hierarchy, in support of social, environmental and economic well-being well into the future.

However, the current pattern of landfill ownership at a national and regional level now means larger but fewer landfills servicing regional and pan-regional catchments. This is due to the high costs of establishment and compliance, largely because of complex and protracted processes associated with the Resource Management Act 1991 and the pressures of dealing with methane production levies which is better dealt with by large landfills where economy of scale support flare off or power generation.

The past practice of every district, if not town, having its own local landfill is no longer a viable option. High landfill ownership costs dictate the need for sufficient volumes of residual wastes to generate a viable income stream. In the case of the WDL, it has been calculated that a tonnage of 12,000t per year is required to break-even after a reasonable period.

The current average tonnage is estimated to be between 8,500- 10,000 tonnes per year. At 12,000t, this would require at least 20-40% more tonnage than is currently landfilled, which is beyond the disposal volume available from the District's population.

A potential source of extra volume could be achieved be extending the volume coming in from out of district waste streams.

The landfill at Ruapehu District Council is consented through to 2020, after which its future tenure is subject to the outcome of a new consent application including an environmental assessment. Ruapehu District Council could be interested in combining its waste disposal activities with Waitomo District Council, with potentially up to 5,000 tonnes available from that source.

3.2.6 Community expectations

The following issues have the potential to impact on the quantity and quality of the solid waste management services provided:

- Increasing public awareness of environmental issues and intolerance of pollution
- Increasingly stringent discharge consents imposed for the quality of leachate, odour and stormwater from the landfill
- Increased expectation for access to waste management services
- Increased consultation required for adoption of or amendment to Council's Solid Waste Management and Minimisation Plan

Accessibility to recycling services is achieved through provision of kerbside recycling collection in conjunction with the weekly bagged refuse collection, funded through a targeted rate differentiated by service area to reflect the operational environment within which the services are provided. There are also recycling and disposal facilities at the district transfer station as well as the rural transfer stations in each community. The standard of these facilities is appropriate for the service level identified. All transfer stations are supervised. In addition, specific recycling units had been installed at the major tourist stopping spots around the district, e.g. Waitomo Village.

The most relevant issues in a WDC context relates to access to the services (i.e. by extending current kerbside collection route) and potential expectation to have more recycling options available (e.g. plastic types 1-7).

3.2.7 Changes in waste management approaches

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

These drivers include:

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

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

3.2.8 Future opportunities

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

- Increased uptake of the kerbside recycling option from both domestic and commercial properties
- Extending the range of products which are able to be recycled e.g. type 1-7 plastics
- Organic waste, particularly food waste both from domestic and commercial properties
- Industrial and commercial plastic is a significant part of the waste stream which may be able to be recycled
- Farm waste is a relatively unknown quantity and increased awareness of the problems associated with improper disposal may drive demand for better services
- E-waste collection and processing capacity in the district, while better than many areas, has room for improvement but would be costly (regional intervention to assist smaller councils in these projects may be beneficial)
- Waste tyres may not be a large proportion of the waste stream, however the effectiveness of the management of this waste stream is unknown. Issues with management of this waste stream have recently been highlighted nationally
- Awakino/Mokau transfer station location has been identified as a potential issue due to the locality of the transfer station – relocation of the transfer station into the Mokau township is being investigated.

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

There is a large percentage of the waste stream that can potentially be diverted from the WDC landfill, in particular organic waste and recyclables as shown in the residential bagged waste composition audits, and also waste from the agricultural sector. This could be the focus of future waste minimisation initiatives and education programmes. Targeting recycling programmes to capture waste types for which there is an established markets and/or alternative end uses, is key. Recycling purely to divert wastes from the landfill to some other stockpile would simply be inefficient and counter-productive.

In summary the key opportunities are:

- Promotion of the diversion of organic waste from landfill, through household composting
- Optimising household recycling
- The need for education and promotion to address agriculture waste
- Provision of consented hazardous waste facilities for household and agriculture
- Prevention of illegal fly-tipping

- Fostering involvement of the community and iwi in waste minimisation projects
- Promotion of event recycling within the district.

3.3 KEY DEMAND ISSUES/ASSESSMENT

The current demand for waste management and minimisation services is met by the kerbside collection services, transfer stations and the WDC landfill.

From the above background, the overall projection is that there is likely to be a reduction of residual waste produced from within the District due to a declining population growth, but with an increase in the proportion of recoverable material due to improved public awareness, increased support of educational programmes and ongoing provision of highly rated facilities provided, Council will continue to encourage and facilitate higher priority waste minimisation choices.

3.3.1 Summary of demand factors

The implications of the above demand trends on the quantity and quality of solid waste services over the next 10 years will be:

- Future operating and maintenance costs associated with the solid waste infrastructure in general can be expected to increase within the planning period.
- The impact of increased resource recovery through waste minimisation will result in higher unit operating costs for disposal of reducing residual wastes at the landfill
- Relatively minor changes to LoS could have major impacts on costs.
- Consent standards and workplace health and safety requirements for operating the collection, landfill and transfer stations will increase costs.

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 routes.

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

Overall, the demographic and development trends show that increased population based demand for growth related waste management infrastructure will be only minor through to the end of 2028, after which there is expected to be a decline for the foreseeable future. At the same time, the forecast increase in the proportion of recoverable material from within the District will be due to accurate pricing of residual waste disposal costs supported by improved public awareness through targeted education programmes, increased take-up of recycling services and home composting programmes, and ongoing provision of well-designed and maintained recycling facilities. It is expected that the modest increase in demand for waste minimisation will be readily accommodated within the existing capacity of the solid waste management infrastructure.

SECTION FOUR

Options to Meet Forecast Demands

4.1 MEETING THE FUTURE DEMAND

The WMA requires that the waste assessment includes a statement and assessment of options available to meet the forecast demands pf the District.

Minimising the creation of wastes has many flow-on benefits in support of the social, economic and environmental well-being of the District. There is also a need to ensure the environmentally safe disposal of residual wastes that cannot be recycled. Waitomo District is not reliant on out-of-district landfills for the costly process of residual waste disposal, with waste minimisation helping to maximise the life of the fully consented Waitomo District Landfill. There is however a need to achieve a balance between retaining the landfill as a community asset over its consent life, and minimising its net operating costs.

The goal of positioning the Waitomo District Landfill as a sub-regional waste disposal asset has however been hindered by introduction of the Waste Levy in 2010 and Emissions Trading Scheme (ETS) in 2013. These added statutory costs may make the cost structure of the landfill non-viable.

4.2 OPTIONS

4.2.1 The following summarises the options that have been considered to meet the forecast demand for waste management and minimisation with in the district:

- Consolidation and refinement of the kerbside collection service was achieved during the 2016 procurement process for the new contract.
- Monitoring customer satisfaction to inform any changes to the service arrangement or service levels that may be required.
- Management and ongoing improvement of the Waitomo District Landfill and associated Network of Transfer Station Facilities to ensure operational efficiency in support of Waste Minimisation targets.
- Address issues raised in community surveys and consultation process
- Continuation of the user charges system applied to the price of each bag. (Note: the cost of collecting the kerbside refuse bag and recyclables is to be funded using a rate based system targeted to benefiting properties).
- Reviewing WDC's current Revenue and Financing Policy to increase the proportion of costs collected through user fees and charges for the kerbside refuse collection, the Waitomo District Landfill and all waste transfer stations.
- Ensuring the viability of the Waitomo District Landfill, while maximising its life
- Ensure the cost of disposal incorporates costs associated with the Emissions Trading Scheme
- Waste levy funds received are for waste minimization initiatives that are identified and costings provided for in Council's SWaMMP

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

- Increased uptake of the kerbside recycling option from both domestic and commercial properties
- Extending the range of products which are able to be recycled eg type 1-7 plastics
- Organic waste, particularly food waste both from domestic and commercial properties

- Industrial and commercial plastic is a significant part of the waste stream which may be able to be recycled

- Farm waste is a relatively unknown quantity and increased awareness of the problems associated with improper disposal may drive demand for better services

- E-waste collection and processing capacity in the district, has room for improvement but costly (regional intervention to assist smaller councils in these projects may be beneficial)

- Waste tyres may not be a large proportion of the waste stream, however the effectiveness of the management of this waste stream is unknown. Issues with management of this waste stream have recently been highlighted nationally

- Awakino/Mokau transfer station location has been identified as a potential issue due to the locality of the transfer station – relocation of the transfer station into the Mokau township is being investigated.

- Increase the consented landfill volume from 232,000 to 500,000 tonne.

4.2.2 There is a rural waste minimisation project in place, originally led by Environment Canterbury, to better understand the nature of waste on farms and to begin to identify alternatives to burning, burial and bulk storage of waste.

The project has the following objectives:

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

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

4.3 WASTE MANAGEMENT HIERARCHY

4.3.1 Reduction

Programmes targeted at this level will typically be coordinated at a national or regional level, such as packaging accords. Council intends to continue its role in promoting education and awareness of the waste minimisation practices and services available, and working collaboratively with community based initiatives.

Council's target of 1% reduction of the household waste stream each year through to 2028 will be measured against 2016 baseline levels relative to population growth. Waste avoidance and reduction will be the top priority of the waste hierarchy

The biannual waste audits conducted every two years help to identify the waste types being generated or recycled, including quantities and sources. This information will enable priorities to be set for disposal and also will enable benchmarks to be established to allow the measurement of progress towards the 2028 goal.

The community can play a key role in reducing waste through their purchasing decisions. Avoiding items that are over-packaged will impact on waste generated. It is perceived that consumers are not aware of the full environmental costs of the products they buy in terms of manufacture, consumption and ultimate re-use, recycling and disposal implications. Encouraging each waste

producer i.e. each household to prepare a waste audit and the use of economic instruments to achieve waste reductions will be explored

Action - Reduction

- Increased promotion of existing or new programmes.
- Continue with current programmes
- Improved education/enforcement for waste minimisation at events
- Increased support for Para Kore into local Marae
- Set benchmarks to monitor performance towards achieving the 2021 target.

Waste Audits

- Seek out and promote community based waste reduction initiatives.
- Establish a register of commercial and industrial producers of waste.
- Encourage each waste producer to prepare a waste audit.
- Take an advocacy role to carry out an internal waste audit.
- Encourage households and commerce to identify the waste produced by carrying out waste audits and follow a policy of waste minimisation.
- Advocate for product stewardship schemes to government

4.3.2 Recycling and diversion

Waste diversion programmes aim to reuse, recycle or recover waste products, with the emphasis being on waste as a resource. Programmes of this nature are typically pitched at a local level, with Council currently involved in the provision of recycling facilities and a kerbside collection of recyclables in conjunction with the refuse bag collection service.

From an analysis of the kerbside bagged refuse collection completed in June 2016, there is potential for increased diversion to occur, even without growth. Approximately 50% by weight of the surveyed bags contained potentially recyclable material. This presents opportunity for increasing the life of the Council's landfill.

Emphasising the need for recovery and recycling is a key role for the Solid Waste Group. Re-use and recycling provide opportunities to divert waste from the landfill. Council can and does support private recycling initiatives, where they are economically and environmentally sustainable and fit within its overall waste management objectives.

Council has not run an inorganic collection for a number of years, users have the opportunity to dispose of inorganic waste at the landfill and rural transfer stations.

Action – Recycling and diversion

Council will:

- Support community based re-use and recycling initiatives.
- Provide educational material on re-use and recycling.
- Support re-use and recycling through Council purchasing policies where applicable.
- Continue to support RENEW.
- Publicise recycling venues and alternative disposal options and regularly update the public on waste management issues and initiatives within the Waitomo District.
- Target the industry and commercial groups for waste audits and cleaner production programmes.
- Support and facilitate community based waste recovery initiatives in the District including working with schools.
- Work with the community and Iwi to help to provide education material on resource recovery.
- Encourage and support for further composting of garden waste.
- Participate in regional initiatives to promote the making of compost and collection of compostable material.
- Monitor and encourage diversion practices across all solid waste facilities

Resource Exchange Network (RENEW)

- Continue to Work with Waikato Regional Council to update the resource exchange network in the region or district to match wastes with resource requirements.

Community Education

Council will promote awareness and develop a strong community commitment to waste management activities by:

- Developing information programmes to increase awareness of current waste trends and waste management issues.
- Providing feedback to the community on the progress towards achieving its 2021 target.
- Continue to promote waste minimisation education programmes in Waitomo District to all sectors of the community.
- Continue working with the Regional Council and the community to provide education resource materials for schools to illustrate the problems and solutions associated with waste management.
- Continue its programme of surveys of domestic and commercial waste stream in conjunction with industry and community to obtain good baseline information on waste stream.

Public Recognition

- Encouraging, supporting and recognising initiatives within the community or commercial sectors which reduce waste.

4.3.3 Disposal

The containment of hazardous and special waste materials will impose additional charges reflecting the technology required. There is an obligation for the community to meet some of these costs. However, where the source of a special waste can be identified, the principles of polluter and user pays will be applied.

Action - Disposal

Waitomo District Landfill
Council will:

- Continue with landfill charges which reflect full environmental costs and encourage maximum resource recovery.
- Protect the environment from the potential adverse effects of facilities used for the disposal of solid waste.
- Provide education materials for safe disposal of hazardous and special wastes.
- Promote waste minimisation practices, including re-use and recovery of wastes through RENEW.
- Undertake a two yearly waste audit to confirm waste composition and quantities entering the landfill, establish the potential for increased reduction and diversion activities, and provide a means of measuring the effectiveness of Council's waste management programmes.
- Engage with the farming sector to help identify and remove barriers to appropriate waste disposal.
- Engage with the commercial/industrial sector to help identify and remove barriers to reducing and recycling solid wastes.
- Undertake at intervals not exceeding two years, a topographical survey of the landfill site to confirm the rate of filling and residual capacity.
- Optimise the remaining capacity of the landfill within the current footprint

Transfer Stations
Council will:

- Continue to carry out education programmes through newspapers, schools and personal contact to make community aware of dangers, handling, storage and disposal of hazardous wastes that are not accepted at any transfer stations.

4.3.4 Collection

The kerbside collection service for business and household wastes is a user friendly method of protecting public health in the community. While predominantly targeted at the higher density urban areas, there has been a recent project undertaken to ensure all those with access to the collection route are aware of the service and provided with a recycling bin to encourage uptake of it. The size of the refuse and recycling waste receptacles, and the price of the services are designed to encourage separation of waste at source, best facilitated by the parallel collection service for residual refuse and recyclables.

Action - Collection

Waste Collection Systems

WDC will promote best practices in environmentally responsible waste management by:

- Ensuring that all wastes are collected, transported and disposed of in a safe and responsible manner.
- Ensuring that all or part of the cost of the bag collection service, including the bag and its disposal cost at the landfill, is continued through the system of user charges applied to the price of each bag.
- Investigating the provision and cost of a half-size official refuse bag in addition to the current standard size official bag, or substituting the current standard bag with a smaller bag, to encourage greater recycling.
- Ensuring the provision of a weekly kerbside collection service for complying household and business wastes from designated areas
- Continuing the provision of waste sorting and recycling at its landfill.
- Ensuring the mitigation of any nuisance or the removal of any condition likely to be injurious or offensive to health arising from the collection/disposal of waste in Waitomo District.

4.4 HOW PERFORMANCE WILL BE MEASURED

The following levels of service will be reviewed on an annual basis, with achievement monitored and reported six-monthly:

LEVEL OF SERVICE	PERFORMANCE MEASURE	PERFORMANCE TARGET
Users find the recycling facilities safe to use.	Percentage of users rate the safety of Council's recycling facilities safe to use.	75% min
Provision of effective waste service for the community.	Customer satisfaction survey rating on waste transfer stations.	70%
The solid waste management facilities feel safe to the user.	Percentage of users rate the District's waste transfer stations safe to use.	70% min
The solid waste management facilities are open and accessible to users at advertised times.	Number of complaints per month due to facilities not being open at advertised times.	≤1
Reduce quantity of recyclables like paper and plastics in bag collection that goes to landfill.	Percentage reduction per annum achieved through continuing education (measured against the 2016 Waste Audit).	1.0%
Reduce the quantity of organic waste like food scraps etc. in bag collection that goes to landfill.	Percentage reduction per annum achieved through continuing education and promotion of home composting (measured against the 2016 Waste Audit).	1.0%

LEVEL OF SERVICE	PERFORMANCE MEASURE	PERFORMANCE TARGET
Provision of effective solid waste management and minimisation services for the community.	Percentage of users rate the effectiveness of Council's waste management and minimisation services as satisfactory or better.	70% min

SECTION FIVE:

WDC'S INTENDED ROLE IN MEETING FORECAST DEMANDS

5.1 COUNCIL'S ROLE

Waitomo District Council's role in waste management is to develop and implement policies, provide relevant and effective services, develop and enforce standards through bylaws, and monitor the waste stream.

Providing services is influenced by three key Acts, namely Waste Minimisation Act 2008, Local Government Act 2002, and Health Act 1956. Section 42 of the Waste Minimisation Act states *"A territorial authority must promote effective and efficient waste management and minimisation within its district."* The Act does not dictate the role territorial authorities will have in waste management and minimisation. Rather, it places an onus on the Council to assess and plan for meeting the forecast demands for waste management and minimisation in its district, to inform the community as to how those services will be delivered, and what its role in that will be.

Over the past 10 years there have been significant changes in the way waste is collected, transported and disposed of in Waitomo District. More emphasis has been placed on the recovery of materials for re-use or recycling. Emphasis has also been on public health issues and improved cost efficiency of collection systems. The WDC landfill has a finite life even with increased efforts to minimise waste. At current disposal rates, the Te Kuiti landfill will be filled well within its remaining consent life i.e. by 2033. Therefore, more emphasis on recovery and re-use of resources, with systems designed to separate waste into streams to maximise recycling, will facilitate the opportunity for the landfill capacity to be extended in line with remaining consent life.

WDC's transfer stations provide all-weather access for disposal and recycling and provide opportunities for new recovery and waste separation systems along with minimal environmental waste impacts.

5.2 SUMMARY OF COUNCIL'S ROLE IN MEETING FORECAST DEMANDS

Option	Proposal	Council Role
Reduction	Education	Provider
	RENEW	Facilitator
	Promotion	Provider
Diversion	Recycling	Provider/Facilitator/Advocate
	Composting	Provider/Facilitator/Advocate
	Recovery	Provider/Facilitator/Advocate
Collection and Disposal	Kerbside collection	Provider
	Litter bins	Provider
	Transfer stations	Provider
	Landfill	Provider

SECTION SIX:

Proposals for Meeting Forecast Demands

6.0 STATEMENT OF PROPOSALS

Based on the options identified in this Waste Assessment, and the Council's intended role in meeting forecast demand, a range of proposals have been developed. Actions and timeframes for delivery of these proposals are summarised in Section 4 of this Waste Assessment. Programmes, funding and scheduling are identified in the Solid Waste (asset) Management and Minimisation Plan.

Overall, WDC's proposals for meeting the forecast demand will closely match current levels of service. Variations to that will be of a refinement nature – extending access hours to transfer stations, etc.

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

6.1 NEW OR REPLACEMENT INFRASTRUCTURE

Council has identified through this Waste Assessment that its forecast future demand for waste management and minimisation services in the District can be met from its existing infrastructure.

While no new infrastructure is required, extension to the existing Waitomo District Landfill is planned for 2019-21 at an estimated cost of $1.5M.

Replacement of the remaining waste management and minimisation infrastructure has been scheduled in accordance with condition assessments to ascertain the forecast remaining useful lives. The attendant financial programme is included in Council's Solid Waste (asset) Management and Minimisation Plan.

SECTION SEVEN:

Protection of Public Health

7.0 PUBLIC HEALTH

In accordance with section 51(f)(i) of the WMA, a Waste Assessment must include a statement about the extent to which the proposals will ensure that public health is adequately protected.

WDC's current levels of service and proposals for waste minimisation measures are designed to individually and collectively contribute to the objectives of reducing the volumes of residual wastes disposed to landfill, optimising the availability of recycling and residual waste disposal facilities for both rural and urban residents, comply with our legislative requirements, and align with the NZ Waste Strategy. They are considered to be not only the most equitable, but also the most cost effective. They will continue to ensure that public health is protected, and will contribute to the promotion of efficient and effective waste management and minimisation.

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

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

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

Privately-provided services will be regulated through local bylaws.

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

It is considered that, subject to the further issues identified by the Medical Officer of Health n Clause 7.2 below, the proposals would adequately protect public health.

7.1 KEY PUBLIC HEALTH ISSUES

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

- Population health profile and characteristics
- Meeting the requirements of the Health Act 1956
- Management of putrescible wastes
- Management of nappy and sanitary wastes
- Potential for dog/seagull/vermin strike
- Timely collection of material
- Locations of waste activities
- Management of spillage
- Litter and illegal dumping
- Medical waste from households and healthcare operators
- Storage of wastes
- Management of biosolids/sludges from wastewater treatment plants
- 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.

7.2 MANAGEMENT OF PUBLIC HEALTH ISSUES

From a strategic perspective, the public health issues listed above are likely to apply to a greater or lesser extent to virtually all options under consideration. For example, illegal dumping tends to take

place ubiquitously, irrespective of whatever waste collection and transfer station systems are in place. Some systems may exacerbate the problem (infrequent collection, user-charges, inconveniently located facilities etc.) but, by the same token, the issues can be managed through methods such as enforcement, education and by providing convenient facilities.

In WDC's case, public health issues are addressed through appropriate performance standards in the waste service contracts. Performance is monitored and reported on and there are appropriate structures within the contracts to address any issues that arise. The procurement process for the contracts was completed in 2017 and included an added emphasis on workplace health and safety under the Health and Safety at Work Act 2015.

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

The Medical Officer of Health was consulted in making this assessment in accordance with Part 4 s.51 clause 5(b) of the WMA – refer to Appendix Three for the letter from Medical Officer of Health dated 12 Feb 2018.

In summary, the Medical Officer of Health has:

- Highlighted the importance of sanitary collection and disposal of solid wastes for the protection of public health, including control of human diseases, health nuisances and health risks such as asbestos, prevention of contamination of drinking or recreational water, and public safety in terms of uncluttered thoroughfares
- Supported WDC's biannual waste audits for maintaining up to date solid waste data in support of waste management and minimisation planning decisions
- Suggested the use of smaller sized refuse bins or bags to encourage a more equitable waste minimisation outcome by reducing disadvantage to low socio economic groups through the price of WDC's standard size official refuse bags
- Supported actions that reduce waste to landfill, noting the significant potential to reduce the proportion of wastes (up to 50%) contained in WDC's kerbside refuse bag that is potentially recyclable, and the observed decline in the quantity of kerbside glass and paper collected since 2013
- Recommended and supported actions that might lead to increased recycling and reduction of waste to landfill, such as increased education and promotion within the district community as proposed in WDC's waste assessment
- Encouraged WDC to engage with the farming community to help quantity and address the quantity of farm waste disposed of within the district
- Recommended that WDC facilitates increased uptake of farm waste services by the farming community through a combination of education and the identification and removal of barriers to appropriate waste disposal
- Encouraged WDC to undertake further investigation into the source of industrial and commercial wastes, and to identify and remove barriers to reducing and recycling wastes produced by this sector
- Offered to continue working with WDC in the development of its Waste Management and Minimisation Plan.

SECTION EIGHT:

Effective and Efficient Waste Management & Minimisation

8.0 EFFECTIVE AND EFFICIENT WASTE MANAGEMENT AND MINIMISATION

In accordance with section 51(f)(ii) of the WMA, a Waste Assessment must include a statement about the extent to which the proposals will promote effective and efficient waste management and minimisation.

WDC's waste management and minimisation services have evolved over time. They reflect the dispersed nature of the community and the need to meet demand with services that are most effective and relevant to achieving Councils waste management objectives. They are future proofed in that they correspond to core waste management requirements and are adaptable to variables in market demand for diverted waste resources. They are designed to be fit for purpose.

In addition, Council's funding mechanisms are pitched at incentivising waste minimisation services over disposal. The pricing of disposal options strikes a balance between encouraging responsible disposal behaviours, maximising recycling practices, and affordability. Public health and environmental protection are core considerations in this mix.

Minimising the creation of wastes has many flow-on benefits in support of the social, economic and environmental well-being of the District. There is also a need to ensure the environmentally safe disposal of residual wastes that cannot be recycled. At this point, the District is not reliant on out-of-district landfills for the costly process of residual waste disposal, with waste minimisation helping to maximise the life of the fully consented Waitomo District Landfill.

There is, however, a need to achieve an optimum balance between maximising the life of the landfill as a community asset, and minimising its net operating costs.

This will be achieved by maximising the lode of the landfill without extending its footprint. As it stands, the loan repayment costs of past investment in development of the landfill will endure beyond its consent fill capacity. Extending the consent life of the landfill, at marginal additional cost, will allow the income stream to align with loan maturity dates.

APPENDICES

APPENDIX 1: NATIONAL LEGISLATIVE AND POLICY CONTEXT

A1.1 The New Zealand Waste Strategy 2010

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

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

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

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

Under section 44 of the Waste Management Act 2008, in preparing their waste management and minimisation plan (WMMP) councils must have regard to the New Zealand Waste Strategy, or any government policy on waste management and minimisation that replaces the strategy. Guidance on how councils may achieve this is provided in section 4.4.3.
A copy of the New Zealand Waste Strategy is available on the Ministry's website at www.mfe.govt.nz/publications/waste/new-zealand-waste-strategy-reducing-harm-improving-efficiency.

A1.2 Waste Minimisation Act 2008

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

The WMA introduced tools, including:

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

Part 4 of the WMA is dedicated to the responsibilities of a council. Councils "must promote effective and efficient waste management and minimisation within its district" (section 42).
Part 4 requires councils to develop and adopt a WMMP. The development of a WMMP in the WMA is a requirement modified from Part 31 of the Local Government Act 1974, but with even greater emphasis on waste minimisation.
To support the implementation of a WMMP, section 56 of the WMA also provides councils the ability to:

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

A number of specific clauses in Part 4 relate to the WMMP process. It is essential that those involved in developing a WMMP read and are familiar with the WMA and Part 4 in particular.
The Waste Minimisation Act 2008 (WMA) provides a regulatory framework for waste minimisation that had previously been based on largely voluntary initiatives and the involvement of territorial authorities under previous legislation, including Local Government Act 1974, Local Government Amendment Act (No 4) 1996, and Local Government Act 2002. The purpose of the WMA is to encourage a reduction in the amount of waste disposed of in New Zealand.
In summary, the WMA:

- Clarifies the roles and responsibilities of territorial authorities with respect to waste minimisation e.g. updating Waste Management and Minimisation Plans (WMMPs) and collecting/administering levy funding for waste minimisation projects.
- Requires that a Territorial Authority promote effective and efficient waste management and minimisation within its district (Section 42).

- Requires that when preparing a WMMP a Territorial Authority must consider the following methods of waste management and minimisation in the following order of importance:
    - Reduction
    - Reuse
    - Recycling
    - Recovery
    - Treatment
    - Disposal
    - Put a levy on all waste disposed of in a landfill.
    - Allows for mandatory and accredited voluntary product stewardship schemes.
    - Allows for regulations to be made making it mandatory for certain groups (for example, landfill operators) to report on waste to improve information on waste minimisation.
    - Establishes the Waste Advisory Board to give independent advice to the Minister for the Environment on waste minimisation issues.

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

A1.3 Waste Levy

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

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

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

Currently the levy is set at $10/tonne and applies to wastes deposited in landfills accepting household waste. The MfE published a waste disposal levy review in 2014.[2] The review indicates that the levy may be extended in the future:

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

A1.4 Product Stewardship

Under the Waste Minimisation Act 2008, if the Minister for the Environment declares a product to be a priority product, a product stewardship scheme must be developed and accredited to ensure effective reduction, reuse, recycling or recovery of the product and to manage any environmental harm arising from the product when it becomes waste.[3] No Priority Products have been declared.
The following voluntary product stewardship schemes have been accredited by the Minister for the Environment:[4]

- Agrecovery rural recycling programme
- Envirocon product stewardship
- Fonterra Milk for Schools Recycling Programme
- Fuji Xerox Zero Landfill Scheme
- Holcim Geocycle Used Oil Recovery Programme (no longer operating)
- Interface ReEntry Programme

[2] Ministry for the Environment. 2014. Review of the effectiveness of the waste disposal levy, 2014 in accordance with section 39 of the Waste Minimisation Act 2008. Wellington: Ministry for the Environment
[3] Waste Management Act 2008 2(8)
[4] http://www.mfe.govt.nz/waste/product-stewardship/accredited-voluntary-schemes

- Kimberly Clark NZ's Envirocomp Product Stewardship Scheme for Sanitary Hygiene Products
- Plasback
- Public Place Recycling Scheme
- Recovering of Oil Saves the Environment (R.O.S.E. NZ)
- Refrigerant recovery scheme
- RE:MOBILE
- Resene PaintWise
- The Glass Packaging Forum

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

A1.5 Waste Minimisation Fund

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

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

Criteria for the Waste Minimisation Fund have been published:

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

   Application assessment criteria have also been published by the Ministry.

A1.6 Local Government Act 2002

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

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

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

A1.6.1 Section 17 A Review

A section 17 A review in regards to the service provision of the Kerbside collection and Landfill operation workstreams has been completed in 2016 before the procurement for both these services.

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

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

Local Authorities have three years from 8 August 2014 to complete the first review of each service i.e. they must have completed a first review of all their services by 7 August 2017 (unless something happens to trigger a review before then).
Other than completion by the above deadline, there are two statutory triggers for a section 17A review:

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

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

While the WMMP process is wider in scope – considering all waste service provision in the local authority area – and generally taking a longer term, more strategic approach, there is substantial crossover between the section 17A requirements and those of the WMMP process, in particular in relation to local authority service provision. The S17A review may however take a deeper approach go into more detail in consideration of how services are to be delivered, looking particularly at financial aspects to a level that are not required under the WMMP process.
Because of the level of crossover however it makes sense to undertake the S17A review and the WMMP process in an iterative manner. The WMMP process should set the strategic direction and gather detailed information that can inform both processes. Conversely the consideration of options under the s17A process can inform the content of the WMMP – in particular what is contained in the action plans.

A1.7 Resource Management Act 1991

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

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

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

Under section 31 of the RMA, council responsibility includes controlling the effects of land-use activities that have the potential to create adverse effects on the natural and physical resources of their district.

Facilities involved in the disposal, treatment or use of waste or recoverable materials may carry this potential. Permitted, controlled, discretionary, noncomplying and prohibited activities, and their controls, are specified in district planning documents, thereby defining further land-use-related resource consent requirements for waste-related facilities.

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

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

A1.8 New Zealand Emissions Trading Scheme

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

The NZ ETS was introduced in 2010 and, from 2013, landfills have been required to surrender New Zealand Emissions Units for each tonne of CO_2 (equivalent) that they produce. Until recently however the impact of the NZETS on disposal prices has been limited. There are a number of reasons for this:

- The global price of carbon crashed during the GFC in 2007-8 and has been slow to recover. Prior to the crash it was trading at around $20 per tonne. The price has been as low as $2, although since, in June 2015, the Government moved to no longer accept international units in NZETS the NZU price has increased markedly (currently sitting at around $19 per tonne[5]) .
- The transitional provisions of the Climate Change Response Act, which were extended in 2013 (but have now been reviewed), mean that landfills have only had to surrender half the number of units they would be required to otherwise. These transitional provisions were removed in January 2017 which will effectively double the price per tonne impact of the ETS.
- Landfills are allowed to apply for 'a methane capture and destruction Unique Emissions Factor (UEF). This means that if landfills have a gas collection system in place and flare or otherwise use the gas (and turn it from Methane into 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 small for most landfills – particularly those that are able to claim high rates of gas capture. Disposal facilities have typically imposed charges (in the order of $5 per tonne) to their customers, but these charges have mostly reflected the costs of scheme administration, compliance, and hedging against risk rather than the actual cost of carbon.

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

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

[5] https://carbonmatch.co.nz/ accessed 25 October 2016

- In June 2015, the Government moved to no longer accept international units in NZETS. This has had a significant impact, as cheap international units which drove the price down cannot be used. Many of these were also of dubious merit as GHG offsets[6]. This has resulted in a significant rise in the NZU price.
- The transitional provisions relating to two-for-one surrender of NZUs were removed from 1 January 2017, meaning that landfills will need to surrender twice the number of NZUs they do currently – effectively doubling the cost of compliance.
- The United Nations Climate Change Conference, (COP21) held in Paris France in November – December of 2015, established universal (but non-binding) emissions reduction targets for all the nations of the world. The outcomes could result in growing demand for carbon offsets and hence drive up the price of carbon. Balanced against this however is the degree to which the United States, under the new Republican administration, will ratify its commitments.

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

If for example, the price of carbon were to rise to $50 per tonne, the liability for a landfill without gas capture will be $65.50 (based on a default emissions factor of 1.31 tonnes of CO_2e per tonne of waste), whereas for a landfill claiming 90% gas capture (the maximum allowed under the scheme), the liability will be only $6.55. This type of price differential will mean it will become increasingly cost competitive to transport waste larger distances to the large regional landfills.
More information is available at www.climatechange.govt.nz/emissions-trading-scheme.

A1.9 Litter Act 1979

Under the Litter Act it is an offence for any person or body corporate to deposit or leave litter:
- In or on any public place; or
- In or on any private land without the consent of its occupier.

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

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

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

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

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

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

[6] http://morganfoundation.org.nz/wp-content/uploads/2016/04/ClimateCheat_Report9.pdf

A1.10 Health Act 1956

The Health Act 1956 places obligations on TAs (if required by the Minister of Health) to provide sanitary works for the collection and disposal of refuse, for the purpose of public health protection (Part 2 – Powers and duties of local authorities, section 25). It specifically identifies certain waste management practices as nuisances (S 29) and offensive trades (Third Schedule). Section 54 places restrictions on carrying out an offensive trade and requires that the local authority and medical officer of health must give written consent and can impose conditions on the operation. Section 54 only applies where resource consent has not been granted under the RMA. The Health Act enables TAs to raise loans for certain sanitary works and/or to receive government grants and subsidies, where available.[7]

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

A1.11 Hazardous Substances and New Organisms Act 1996 (HSNO Act)

The HSNO Act addresses the management of substances (including their disposal) that pose a significant risk to the environment and/or human health. The Act relates to waste management primarily through controls on the import or manufacture of new hazardous materials and the handling and disposal of hazardous substances.
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.[8]

A1.12 Health and Safety at Work Act 2015[9]

The new Health and Safety at Work Act, passed in September 2015 replaces the Health and Safety in Employment Act 1992. The bulk of the Act came into force from 4 April 2016.
The Health and Safety at Work Act introduces the concept of a Person Conducting a Business or Undertaking, known as a PCBU. The Council will have a role to play as a PCBU for waste services and facilities.

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

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

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

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

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

[7] From: MfE 2009: Waste Management and Minimisation Planning, Guidance for Territorial Authorities.
[8] From: MfE 2009: Waste Management and Minimisation Planning, Guidance for Territorial Authorities.
[9] http://www.legislation.govt.nz/act/public/2015/0070/latest/DLM5976660.html#DLM6564701

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

A1.13 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.

A1.14 International commitments

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

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

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

APPENDIX 2: CLASSIFICATIONS FOR DISPOSAL TO LAND

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

Class 1 - Landfill

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

Class 1 landfills require:

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

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

Waste acceptance criteria (WAC) comprises:

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

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

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

Class 2 Landfill

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

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

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

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

Waste acceptance criteria comprise:

- 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 these Guidelines. These comprise predominantly clean fill materials, but may also include other inert materials and soils with chemical contaminants at concentrations greater than local natural background concentrations, but with specified maximum total concentrations.

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

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

Waste acceptance criteria comprises:

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

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

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

Class 4 Landfill - Cleanfill

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

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

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

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

Waste acceptance criteria comprises:

- virgin excavated natural materials (VENM), including soil, clay, gravel and rock; and
- maximum incidental inert manufactured materials (e.g. concrete, brick, tiles) to be no more than 5% by volume per load; and

- maximum incidental or attached biodegradable materials (e.g. vegetation) to be no more than 2% by volume per load; and
- maximum chemical contaminant limits are local natural background soil concentrations.

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

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

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

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

APPENDIX 3: MEDICAL OFFICER OF HEALTH CONSULTATION

POPULATION HEALTH

Waikato District Health Board

Waitomo District Council
RETURN TO FILE
Date: 15 FEB 2018
Doc #:
File #:

12 February 2018

Kobus Du Toit
General Manager – Infrastructure Services
Waitomo District Council
P.O Box 404
TE KUITI 3941

Dear Kobus

Re: Waitomo District Council - Draft Waste Assessment 2017

Thank you for the opportunity to comment on the Waitomo District Council draft Waste Assessment 2017, as per the requirements of Section 51 of the Waste Minimisation Act 2008. I have reviewed the assessment and am pleased to be able to respond and provide some comments.

The waste assessment is a well written, comprehensive document. It has identified key issues that are likely to be of concern in terms of public health. 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, pest species or smoke from indiscriminate burning of waste
- 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.

Waitomo District Council is to be congratulated on conducting biannual waste audits, so that waste data is available. 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 appropriate plans can be put into place to minimise waste. I support ongoing regular waste audits.

It is important that care is taken to ensure that certain populations are not disadvantaged in regards to waste collections, such as rural or low socioeconomic groups. I note that Waitomo District Council refuse bag collection is funded on a user pay basis through the price of an official refuse bag. The requirement to purchase bags for refuse collection may help encourage recycling in the supplied recycling bins. However, it also has the potential to create inequities and to disadvantage low socioeconomic groups. Recycling behaviour could instead be encouraged by using smaller sized bins or bags for waste, which may provide a more equitable outcome.

Public Health can be protected in the longer term by minimising the impact of waste on our environment. I therefore support actions that reduce waste to landfill, such as reducing, recycling and reusing. I note that the amount of product that is diverted from landfill is increasing over time, which is promising. However there is significant potential for increased diversion to occur, with approximately 50% by weight of kerbside refuse bags containing potentially recyclable material, and an observed decline in kerbside recycling quantities of glass and paper from 2013. I recommend and support actions that may lead to increases in recycling and reduction of waste to landfill, such as increased education and promotion within the community as suggested within the Assessment. Encouraging recycling behaviour may require additional actions to ensure that the best choice is the easiest choice for communities, such as delivery of replacement recycling bins when the original is lost.

DHB2

Hugh Monckton Trust Building, Rostrevor Street, Private Bag 3200, Hamilton 3240, New Zealand
T: 07 838 2569 F: 07 838 2382
www.waikatodhb.health.nz

The quantity of farm waste disposed of within the district is unknown, but is likely to contribute a significant proportion of waste within the district. It is known, from a study of farm waste management practices in the Waikato and Bay of Plenty, carried out in 2014 that a large number of farmers burn, bury or bulk store waste on their properties.
As noted within the Waste Assessment, these methods have the potential to have a negative impact on the environment. I encourage Council engagement with farms to help quantify and address this issue and recommend that Council facilitate the uptake of farm waste services through a combination of education, and the identification and removal of barriers to appropriate waste disposal.

The Waste Assessment notes that 92% of waste volume received at the Waitomo District Landfill is derived from industrial and commercial sources, including waste sourced from outside the district. I encourage Council to undertake further investigation into this source of waste and look to identify and remove barriers to reducing and recycling of waste by industrial and commercial waste producers.
Once again, thank you for the opportunity to comment on the Waste Assessment. The Waikato Public Health Unit recognises that effective waste management contributes to better health outcomes for the community and would like to continue working with the Council in the development of the Waste Management Plan.

Kind regards

Dr Richard Wall
Medical Officer of Health

DHB2

Hugh Monckton Trust Building, Rostrevor Street, Private Bag 3200, Hamilton 3240, New Zealand
T: 07 838 2569 F: 07 838 2382

www.waikatodhb.health.nz