Waste Assessment

Prepared by Taupo District Council

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Prepared by:

Brent Aitken

Solid Waste / Stormwater Asset Manager

Approved by:

Kevin Strongman
Group Manager
Operational Services Group

Contact Details

Baitken@taupo.govt.nz

07 376 0602

0274 762 800

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

Contents

1 Introduction

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

1.1 Structure of this Document

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

Introduction

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

Waikato/BOP Region

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

Our District

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

Waste Infrastructure, Services, Data and Performance Measurement

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

Gap Analysis and Future Demand

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

Statement of Options & Councils' Proposed Role

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

Statement of Proposals

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

Appendices

This section includes the statement from the Medical Officer of Health as well as additional detail on legislation.

1.2 Purpose of this Waste Assessment

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

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

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

1.3 Legislative Context

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

> "encourage waste minimisation and a decrease in waste disposal in order to
>
> (a) protect the environment from harm; and
>
> (b) provide environmental, social, economic, and cultural benefits.

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

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

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

1.4 Scope

1.4.1 General

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

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

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

This means that this Waste Assessment must take into consideration all waste and recycling services carried out by private waste operators as well as the TA's own services. While TDC has reliable data on the waste flows that it controls, data on those services provided by private industry is limited.

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

1.4.2 Period of Waste Assessment

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

1.4.3 Consideration of Solid, Liquid and Gaseous Wastes

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

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

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

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

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

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

Currently the gas emitted from the Broadlands Rd. landfill is not captured, as Council does not have a Gas capture system in place. Future operating consents may require gas capture and destruction by way of a gas flare.

Bio solids from the WTTP processes are disposed of to a vermi composting operation and have been diverted from landfill disposal from January 2017. Therefore, apart from some liquid hazardous wastes that are managed through solid waste facilities, this Waste Assessment and the subsequent WMMP will focus primarily on solid waste.

1.4.4 Public Health Issues

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

Protection of public health is currently addressed by a number of pieces of legislation. Discussion of the implications of the legislation is contained in Appendix 0.

1.4.4.1 Key Waste Management Public Health Issues

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

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

1.4.4.2 Management of Public Health Issues

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

In most cases, public health issues will be able to be addressed through setting appropriate performance standards for waste service contracts. It is also important to ensure performance is monitored and reported on and that there are appropriate structures within the contracts for addressing issues that arise. There is expected to be added emphasis on workplace health and safety under the Health and Safety at Work Act 2015. This legislation could influence the choice of collection methodologies and working practices and the design of waste facilities, for example.

It is considered that the current mix of assets and services provided by both the private sector and by Council adequately provide for the management of public health in relation to Solid Waste.

1.5 Strategic Context

1.5.1 New Zealand Waste Strategy

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

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

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

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

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

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

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

1.5.2 International Commitments

New Zealand is party to the following key international agreements:

1. Montreal Protocol – to protect the ozone layer by phasing out the production of numerous substances
2. Basel Convention – to reduce the movement of hazardous wastes between nations

3. Stockholm Convention – to eliminate or restrict the production and use of persistent organic pollutants
4. Waigani Convention – bans export of hazardous or radioactive waste to Pacific Islands Forum countries

1.5.3 National Projects

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

1.5.3.1 National Waste Data Framework Project

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

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

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

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

Taupo District Council is also in a unique position where the vast majority of ~~all~~ solid waste generated within the district is disposed of at the Broadlands road Landfill, so Council is able to collect accurate data from the weighbridge program that weighs all loads into and out of the site.

1.5.3.2 National Standardisation of Colours for Bins

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

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

For bin bodies:

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

For bin lids, crates and internal office bins:

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

As TDC is not intending to introduce a bin service at this time, it can only make recommendations to the private service providers to follow the bin colures adopted within this project.

1.5.3.3 Rural Waste Minimisation Project

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

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

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

1.6 Local and Regional Planning Context

This Waste Assessment and the resulting WMMP will have been prepared within a local and regional planning context whereby the actions and objectives identified in the Waste Assessment and WMMP reflect, intersect with, and are expressed through other planning documents. Key planning documents and waste-related goals and objectives are noted in this section. Regional waste planning is ongoing but has been a focus of the regional waste forum over the 16/17 year in preparation for local government WMMP development.

1.6.1 Cross-Regional Collaboration

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

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

- Procurement
- Rural waste

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

2 Waikato Region

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

2.1 Overview

Local authorities in the region comprise 11 territorial authorities and the Regional Council.

Figure 1: Map of Region and Territorial Authority Areas

Source: www.waikatoregion.govt.nz

Nationally waste volumes have increased 16% in over the last year reflecting the increase in economic activity.

2.1.2 Regional Council Plans

The 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 vison 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 to their respective organisations.

3 Our District

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

3.1 Physical Characteristics

3.1.1 Overview

Our District

Our district is located in the centre of the North Island of New Zealand and within the Waikato Region. Sitting at the heart of our district is the biggest freshwater lake in New Zealand, which is surrounded by mountains, forests, rivers and national parks. Complementing our natural environment are the vibrant and diverse communities that make up our urban places.

Taupo has become a key visitor and event destination possessing many unique attributes such as its panoramic stunning lake and volcanic landscape.

Lake Taupo is the biggest lake in the southern hemisphere and it is rated by the district as our most important asset

The Taupō District occupies a large proportion of the Central North Island Volcanic Plateau together with the complete catchment area of Lake Taupō and Upper Waikato River areas.

Whilst the majority of the District is situated within the Waikato Region, a small proportion also intrudes into the Bay of Plenty, Hawkes Bay and Manawatu-Wanganui regions. The District comprises 6354sqkm of land and 616sqkm of lake.

Prior to 1950, the District was largely undeveloped and sparsely populated. Since that time, population has increased rapidly to approximately 37200 (June 2018). Urban growth has focused on Taupō Township and various lakeshore settlements, whilst rural land development has been dramatic with the conversion of scrub wastelands to productive farmlands and vast exotic forest plantations and future conversion to lifestyle properties.

Lake Taupō and its surrounds have also become an important national and international tourist destination, renowned for its scenic attractions and wide ranging recreational activities.

3.1.2 Demographics

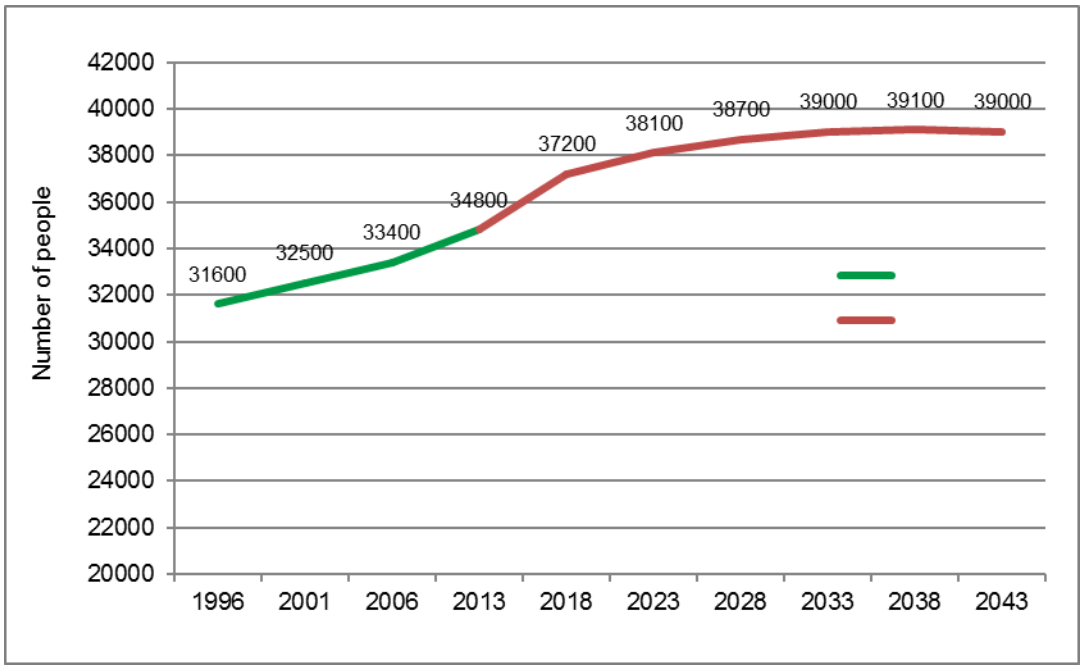
Population. Rural urban split, historic growth rates. The population distribution and growth is shown in the following table:

Estimated and projected resident population for the Taupo district.

Green = Estimate

Red = Projected

Statistics New Zealand – extracted May 2017

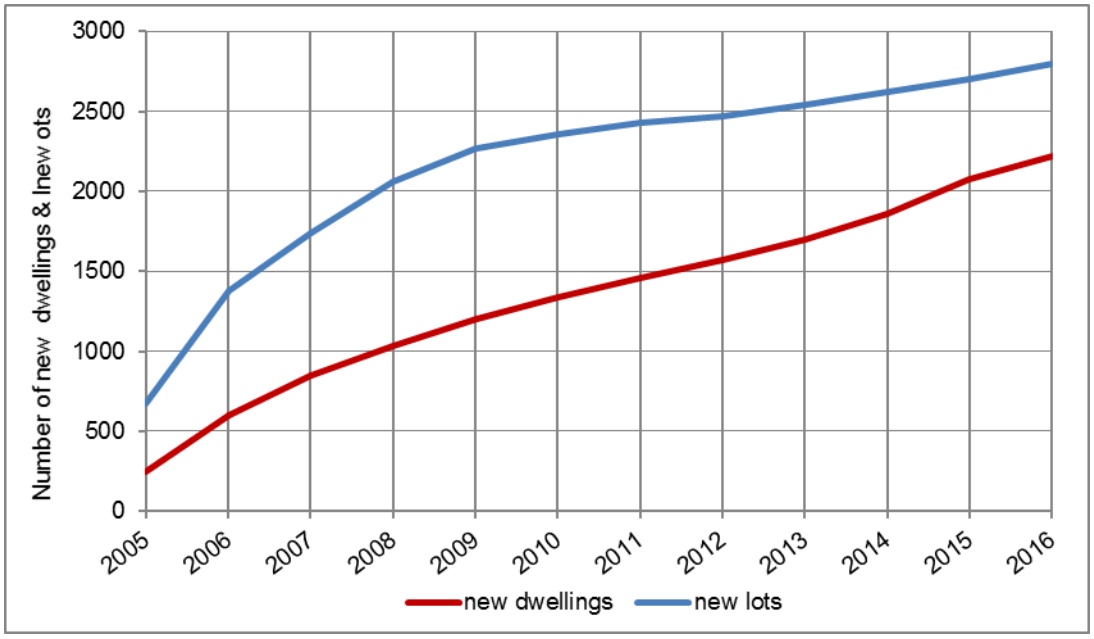


Average household size projection New Zealand Statistics May 2017

Medium projection Year as at 30 June	Average household size
2013	2.4
2018	2.4
2023	2.4
2028	2.3
2033	2.3
2038	2.2

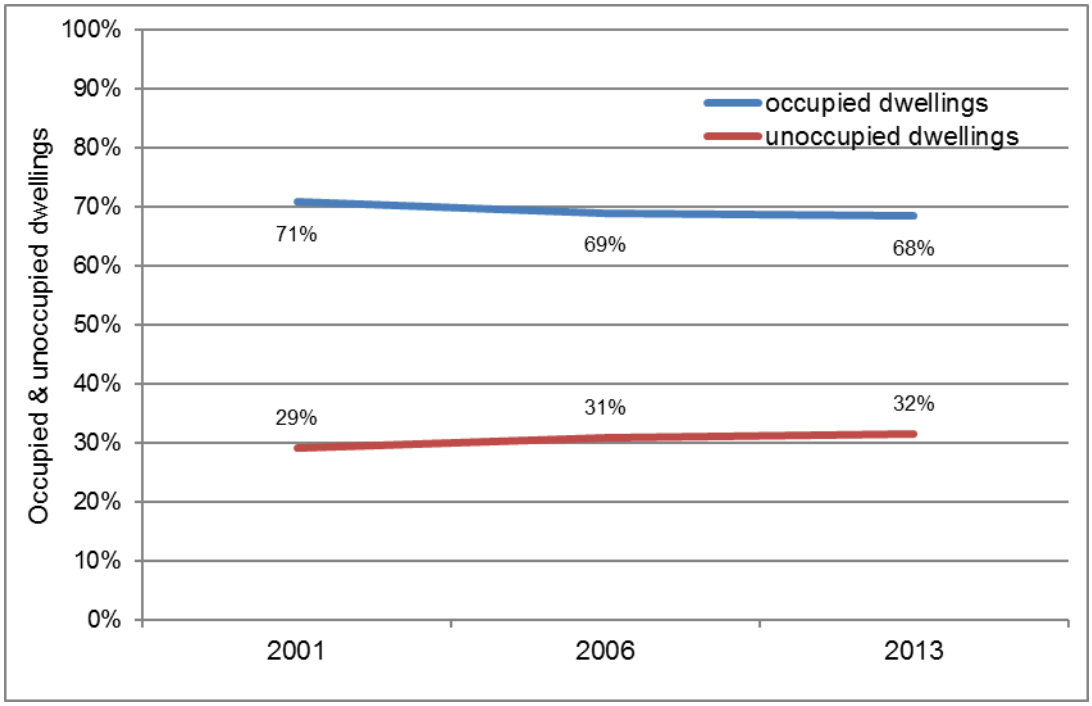
Household size is projected to reduce overtime but this is projected to have only minor impacts on waste generation within the district as waste generation numbers are more linked to GDP than household size.

Number of dwellings and new lots (cumulative) October 2 017



New lots and dwellings have shown a steady increase over the last ten years and this profile is set to continue. The Taupo district continues to be a desirable location to live as well as own holiday accommodation.

Occupied and unoccupied dwellings June 2016



- As shown, the population for the district has seen steady growth in recent times but projected growth into the future remains modest before peaking in late 2030s. It is anticipated that beyond that time a decline in population could be expected.

- Households, face growth at a rate slightly faster than the population. This is indicative of an ageing population and a lowering in the number of people per household. However, this also peaks in the late 2030s as well.

- The resident vs non-resident property owner ratio in the district has remained relatively stable in recent times.

- Likewise, the proportion of occupied vs non-occupied dwellings has also remained stable over the last three census periods indicating a stable holiday house market.

3.2 Population Dynamics

The Taupo districts main business are a mix of farming, forestry and tourist related operations. With high summer, visitor numbers affecting the kerbside refuse and recycling collection service provision to the urban communities as well as the street litter and recycling bins.

Increases in occupation numbers over summer are dealt with contractually as service provider's ramp up their service vehicle numbers and staff to deal with the peak waste volumes.

High interest in holiday home ownership in the district has seen a recent boom in the housing market and with the resulting increase in construction and demolition waste as either new homes have been built or older homes renovated.

Projections for the district show that the district will have an aging population as people choose to retire here and younger residents leave. The change in demographic makeup will mean that TDC and other service providers may need to cater for an increased number of older persons in our communities.

Estimates also predict that the average number of residents per household will also reduce over time. This should result in a plateauing effect for waste volumes in the long term but the continuation of the summer peak volumes.

Rural waste disposed of too district waste facilities will continue to show an upward trend as tighter regulation on farms regarding waste burning and burying are implemented.

4 Waste Infrastructure

This section provides a discussion of key strategic waste facilities that currently service households and businesses in the district.

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

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

TDC has six waste facilities that strategically ring the lake and provide for urban as well as rural waste disposal needs.

The outlying waste transfer stations provide a full suite of recycling options and disposal bins for waste. Bins are transported to the Broadlands road Landfill for final disposal. These sites are impacted by seasonal increase in home occupancy with the main impact from mid-December to the end of March.

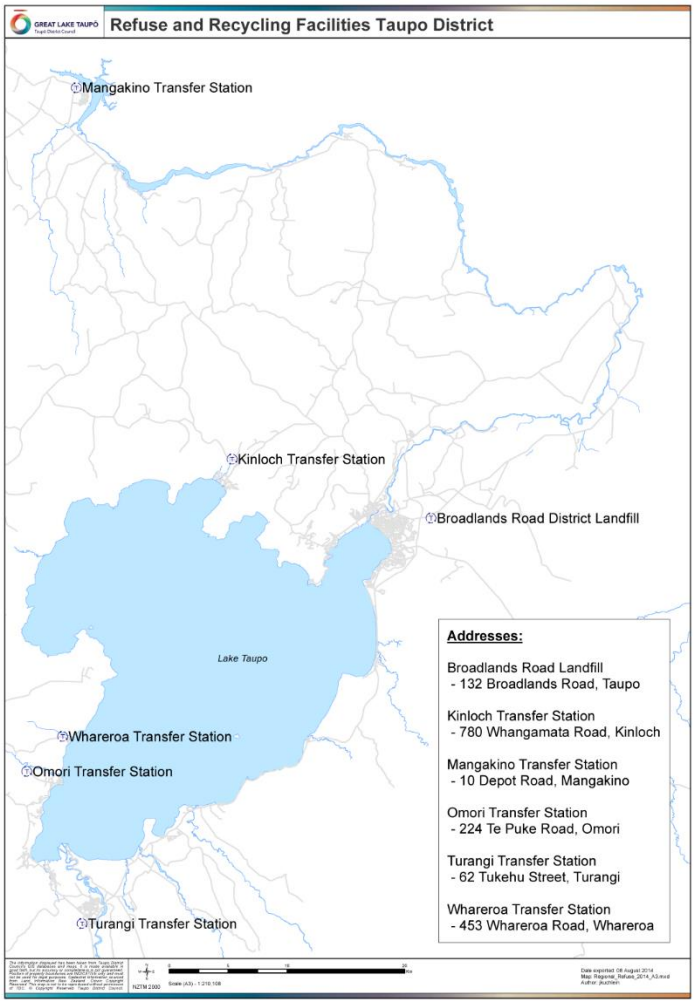
TDC varies the operating hours of all its facilities to cater for these peaks and contractors increase staff numbers as well as servicing vehicles.

The district transfer stations are for the disposal of domestic related waste, and commercial waste, but large commercial loads that would overwhelm the site capacity are directed straight to the Broadlands Rd Landfill.

The five transfer stations do not have weighbridges so load volumes are estimated. Recycling services are rate funded, they are perceived to be free to drop off which then maximises diversion by the community.

All sites also operate reuse facilities, where preloved saleable goods can be offloaded if fit for sale and resold to the community.

Figure 2: Key Waste Facilities in Taupo District owned by TDC



4.1 Disposal Facilities

In April 2016, the Waste Management Institute of New Zealand (WasteMINZ) released the final version of the Technical Guidelines for Disposal to Land.[2] These guidelines set out new standards for disposal of waste to land, which if imposed by Regional Council's will provide tighter controls of clean fill sites in the region.

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

Class 1 - Municipal Landfill

A Class 1 landfill is a site that accepts municipal solid waste. A Class 1 landfill generally also accepts construction and demolition (C&D) waste, some industrial wastes, and contaminated soils. Class 1

[2] Technical Guidelines for the Disposal to Land. WasteMINZ , April 2016

landfills often use managed fill and clean fill materials they accept as daily cover. A Class 1 landfill is the equivalent of a "disposal facility" as defined in the WMA.

Class 2 - C&D/Industrial Landfill

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

Class 3 – Managed Fill

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

Class 4 - Clean fill

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

The actual wording used in the guidelines is provided in Appendix Class 1 Landfills

There is only one Class 1 landfill disposal facility (as defined above) in the Taupo district. The table below also lists the landfills outside of the district that could take waste from the Taupo district but currently don't unless the waste type is not accepted at Broadlands Rd i.e. Asbestos.

Table 1: Class 1 landfills accessible from Taupo District

Name & Owner/Operator	Description	Location	Capacity and Consent
Name, Operator	Description of what processes take place on site and what wastes are accepted/not accepted	Address	Brief outline of consent – expiry and quantity
Tirohia Landfill, H G Leach	Non-hazardous residential, commercial and industrial solid waste, including special wastes. Sludges with less than 20% solid by weight are prohibited.	Tirohia, Hauraki District	Consented to accept 4 million m^3 - approximately 2035

Name & Owner/Operator	Description	Location	Capacity and Consent
	Compostable material is also processed on site.		
Rotorua District Landfill, Rotorua District Council	Non-hazardous residential, commercial and industrial waste, including special wastes (although bylaw may be reviewed to exclude these in future).	Atiamuri SH30, Rotorua District	Consented to 2030. Currently mothballed while undergoing feasibility assessment.
North Waikato Regional Landfill, EnviroWaste Services Ltd	Non-hazardous residential, commercial and industrial solid waste, including special wastes. Sludge's with less than 20% solid by weight are prohibited.	Hampton Downs, Waikato District	Consented to 2030
Whitford Landfill, Waste Disposal Services (joint venture between Auckland Council and Waste Management NZ Ltd)	Non-hazardous residential, commercial and industrial solid waste, primarily from South Auckland	Whitford, south-east Auckland	Remaining capacity 6.5M tonnes. Resource consent allows no more than 200,000 tpa.
Taupo District Council, Taupo District	No gas capture system in place. Taupo Council and non-Council wastes	Broadlands Road landfill, Taupo	Consented to 2027.
Tokaroa Landfill. South Waikato District Council,	Municipal waste landfill. Landfill and recycling drop-off South Waikato Council and non-Council wastes	South Waikato District	Only 5 years of fill space left

Name & Owner/Operator	Description	Location	Capacity and Consent
	No gas capture system in place		
Waitomo District Landfill Waitomo District Council,	No gas capture system in place	Waitomo District	Consented until 2020. Consented capacity of 232,000 tonnes. 17 years of capacity at current rates.

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

Broadlands Rd Landfill

The Broadlands Rd Landfill has been strategically located close to the Taupo town to minimise the cost of refuse haulage from the main urban development in the district. The location also allows for convenient disposal of refuse for the public of Taupo. Taupo districts geographical location means that there is at least a 50min drive to the nearest consented Class 1 landfill in Rotorua.

Landfill access is not considered a current issue for the Taupo district.

This isolation from other Class 1 landfills has provided a deterrent to commercial operators seeking lower disposal rates at other waste facilities, as they would have to factor in additional handling and transport cost, which currently negates any lower disposal fees at other facilities.

By TDC owning and operating its own landfill, it allows TDC to have some control of the waste stream and have greater ability to influence waste diversion. The community also does not have to pay for the transport of waste out of the district or the disposal fees set by alternative disposal facilities.

The Broadlands Rd Landfill, is fully compliant with all of its consent requirements and is performing well. A new stage (2D) was constructed in 2017 with a five-year fill capacity. Due to its location away from residential housing, daily site operations are not impacted.

The site provides for the full suite of recycling services offered by the Kerbside recycling collection service as well as the provision for recycling larger items. A reuse shop operates from the site, green waste is composted, ferrous metal can be recycled and concrete is crushed and sold as aggregate.

The landfill is operated with a mix of user pays for refuse disposal and rates funded recycling. This funding mix enables TDC to incentivise diversion of materials. Council also uses differing pricing structures to change behaviour and obtain clean material for processing, such as green waste and concrete reuse; both of these products rely on the community to supply a clean product for processing.

As recycling is rate funded, TDC has set up its waste facilities to incentivise diversion by not charging any fees to recycle, this maximises recycling. Charges are only applied for refuse disposal or where TDC has set fees to assist in the cost of processing the material (clean fill, concrete, green waste)

Waste loads into the Broadlands Rd are weighed in and out, and the difference in weight is then applied to the waste category and the fee determined.

The Broadlands Rd Landfill operational consent expires in 2027, so details regarding final waste disposal will be dealt with within the next WMMP due to be reviewed by 2024. There is a further twenty years of filling at the landfill after the consent expires if an area at the back of the Council owned land is progressively mined. This fill volume will form the basis of the landfill consent with funding available from 23/24 for the application.

Central Government costs

Central Government apply two additional costs to the operation of Class 1 Landfills in New Zealand.

The first cost is a $10 per tonne charge in the form of a waste minimisation levy, where funds are sent to Central government who then return half of the amount back to TAs based on a population bases. All funds returned to Councils must be spent on waste minimisation projects and be identified in the Councils WMMP.

The second half of the fund is put into a contestable fund for larger sized waste minimisation projects.

The Emissions trading scheme (ETS) is the other government cost placed on landfill operations where Landfill operators must surrender emissions credits for every tonne of waste disposed.

The implications for the Broadlands Rd landfill are directly related to the cost of credits, which in recent time have increased in value from $4 to $19. The net effect of this increase is that gate charges will need to be adjusted to cover cost.

Council could apply for a unique emissions factor, which could reduce cost, but first TDC would need to either remove or greatly reduce the amount of organics and other methane generating material being disposed or install a gas flare and turn the Methane currently produced into CO2.

The capital cost of gas flare is estimated to be around the $1 million mark with annual operational costs of $150K. TDC will need to continue to monitor the price of emission credits as TDC considers the renewal of the landfill consent past 2027. If the credit values continue to increase then TDC may be faced with installing gas destruction infrastructure.

4.1.1 Transfer Stations

Taupo district has five transfer stations that ring the lake and provide refuse disposal and recycling options to the urban and rural communities. These sites also offer the full suite of recycling options and each site operates a reuse shop. Garden waste is shredded and then offered back to the community free of charge.

Waste is disposed of, into a loose top bin or a compactor bin, with all bins transported to the Broadlands Rd landfill for final disposal.

The Whareroa Transfer station is rate funded, as the cost of staffing the site was not cost effective. The local community agreed to be rated and in return have been given full access to the site by use of a turnstile at the gate. As the site is a significant drive from the main highway, the site does not suffer from out of area users or illegal dumping.

Two of the five sites use compaction plant (Turangi, Mangakino) to minimise transportation costs with the remaining three utilise open top bins, which are transported by truck and trailer to Broadlands road landfill for disposal.

Facility Operating Times and Charges

Broadlands Road Resource Recovery Centre

About 3km north of Taupo on Broadlands Road

Date	Opening hours
1 September to 30 April	Monday to Friday - 8am to 5.30pm Weekends and public holidays - 8am to 6pm (Closed Christmas Day & Good Friday and up to 1pm Anzac Day)
1 May to 31 August	Monday to Friday - 8am to 5pm Weekends and public holidays - 8am to 5.30pm

Turangi Transfer Station

Te Rangitukehu Street, Turangi

Date	Opening hours
1 September to 30 April	Monday to Sunday including public holiday - 8am to 5.30pm (Closed Christmas Day & Good Friday and up to 1pm Anzac Day)
1 May to 31 August	Monday to Sunday including public holidays - 8am to 4.30pm

Kinloch Transfer Station

Whangamata Road, Kinloch

Date	Opening hours

1 May to 30 September	Closed Mondays Tuesday to Sunday - 11am to 1pm
1 October to 30 April	Closed Mondays Open Tuesday to Sunday - 11am to 3pm Peak Summer (Open Monday to Sunday from the third week of December to the second week in January) - 10.30am to 4pm (Closed Christmas Day & Good Friday and up to 1pm Anzac Day)

Omori/Kuratau Transfer Station

Te Puke Road, Omori

Date	Opening hours
Christmas school holiday periods (Secondary Schools)	Monday to Sunday including public holidays - 9am to 4.30pm (Closed Christmas Day)
Other school holiday periods (Secondary Schools)	Monday, Wednesday, Saturday, Sunday & public holidays - 11am to 4.30pm (Closed Good Friday and up to 1pm Anzac Day)
All other periods	Wednesday, Saturday, Sunday and public holidays - 11am to 4.30pm

Whareroa Transfer Station

Whareroa Road

Date	Opening hours
1 June to 31 August	Sunday and public holidays – 11am to 3pm
1 September to 31 May	Wednesday, Sunday & public holidays - 11am to 3pm Peak Summer (Monday to Sunday from the 3rd week of December until the 2nd week in January) - 11am to 3pm (Closed Christmas Day & Good Friday and up to 1pm Anzac Day)

Mangakino Transfer Station

Corner of Waipapa Road and Lake Road

Date	Opening hours
All year	Monday to Friday - 12.30pm to 4pm Saturday, Sunday and public holidays - 8.30am-noon, 12.30pm-4pm (Closed Christmas Day & Good Friday and up to 1pm Anzac Day)

Charges at Broadlands Road Resource Recovery Park

2017/18 waste disposal charges at Broadlands Road are based on weight. Load composition will be assessed upon arrival at the site.

Load	Minimum Charge	Cost Per Tonne
Refuse Bags up to 60L (Orange sticker required)	Orange Sticker ($1.50)	n/a
Refuse)	$12	$120
Green waste	$5	$50
Tyre disposal charges	n/a	$2.30-$11.80 each
Clean Fill	$2	$20
Concrete disposal	$2	$20
Crushed concrete sale	n/a	$12
Special waste - immediate burial	n/a	$122
Septage disposal	n/a	$35

Charges at District Transfer Stations

Load composition will be assessed upon arrival at the transfer station.

Load	Refuse	Greenwaste
Refuse Bags (Orange sticker required)	Orange Sticker ($1.50)	n/a
Small load e.g. car boot (under 100 kg)	$12	$5
Medium load e.g. small vans, utes, trailers (under 250 kg)	$30	$12
Large load e.g. large vans, utes, trailers (under 400 kg)	$48	$19
All loads over 400 kg (e.g. large trailers, trucks)	$120 per tonne	$50 per tonne
Tyre disposal (Turangi Transfer Station only)	$2.30 - $11.80 each	n/a

Concrete disposal (Turangi Transfer Station only)	$11 per tonne	n/a

4.1.2 Closed Landfills

There are three consented closed landfills in the Taupo district, located at Broadlands Rd, Turangi RTS, and in Mangakino.

All three have landfill closure consents, which require TDC to monitor for environmental effects, as well repair damage to landfill capping. As the landfills have been closed for more than 16 years, the environmental effects are diminishing. The landfills were operated prior to the requirement for Landfills to be lined and so sites were capped to prevent the ingress of storm water and to minimise the amount of leachate production.

4.2 Hazardous Waste Facilities and Services

TDC operates only one Hazardous waste drop off facility, which is, located at the Broadlands Rd Landfill. The facility accepts household quantities of Hazardous chemicals only and does not accept commercial or large quantities mainly due to the cost of disposal. Large and commercial volumes of hazardous waste are seen as an operating cost of the business and therefore the business must dispose appropriately.

TDC provides for used oil disposal at Broadlands Rd Landfill, Turangi and Mangakino transfer stations in the form of oil disposal tanks. Domestic quantities of waste oil are accepted and oil is collected and used for heating.

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

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

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

The waste acceptance criteria detailed in the Broadlands RD Landfill, Site Management Plan, details what can be disposed at the site.

Due to an agreement made with Iwi at the time of negotiating the operating resource consent for the Broadlands Rd landfill, TDC is unable to accept asbestos. Members of the community wanting to dispose of asbestos are directed to contractors that are certified to handle the material and then it is disposed of at either the Tirohia or the Hampton Downs Landfill.

Hazardous Waste Operators

Name	Location
Name, operator R&S McGregor Hazardous Substances management Rainbow Septic Tank Fats Oils and greases / septic tank waste	**General location** North island Taupo District

4.3 Recycling and Reprocessing Facilities

The only recycling processing facility in the Taupo district is located in the Taupo industrial area and is operated by Envirowaste Services. This facility processes material collected from kerbside as well as from the Broadlands Rd landfill and Kinloch transfer station. This site also acts as a regional processing hub for EnviroWaste where they take bulk material from out of the Taupo district and include it with the material collected locally.

The facility is part funded by the TDC's kerbside collection contract and Envirowaste receives additional revenue from the bulk load locations.

TDC also utilises the Waikato Achievement Centre in Tokoroa to process recyclable material from the Mangakino RTS site as the transportation costs back to Taupo for small loads of material from the TDC run site meant that Tokaroa was a cost saving.

Recyclables from the three southern Refuse Transfer Stations (RTS) are bulk loaded after manual sorting to market.

A large portion of the material collected through the Taupo district recycling programs is exported overseas. The exception to this is glass, which is reprocessed in Auckland, and paper and cardboard, which are reprocessed at the Kinleith Mill.

As TDC operates a kerbside sort collection for recycling, the contamination rates are very low down at 1%. Compare this to non-sorted wheelie bin collections where the contamination rate can be as high as 18%. Thus, the product currently collected from the Taupo district is of high export quality and provides for a good return from the recovered materials market.

Good quality recovered material will be required to continue to get access to the Chinese market as recently China announced they will be restricting access to contaminated materials.

The Vermicomposting operation run by Mynoke Ltd has now provided TDC with a solution for the disposal of bio-solids. Up until early 2017, some 2000 tonnes of Bio-Solids were being disposed of at the Broadlands Rd landfill. This facility may provide TDC with a viable option to divert food waste out of the waste stream as food can be added to the vermicomposting process. Before this facility, there were no viable options for the diversion of food waste due the travel distances to a processing facility. The location of this site is very close to the Taupo town so transport cost will be minimal.

The ability to increase the diversion of food waste will be determined by the final gate charge at the vermicomposting site, and the collection cost to collect material and the viability of end markets.

TDC's current program of subsidising home composting units avoids the cost of collection and handling of material.

There are a number of scrap metal dealers in the Taupo district, which are influenced by the value of scrap metal in the recovered materials market. Due to the market value of scrap metal being high over the last 6 years, the volume of scrap metal recovered at TDC's district waste facilities was relatively low.

No scrap cars over the last six years have been disposed of at any of the TDC's sites. Recently however, the value of scrap steel has started to decline and the amount of scrap steel recovered at TDC facilities has shown an increase.

A number of second hand goods stores operate throughout the Taupo district that reuse anything from clothing to furniture and TDC also operates reuse facilities at all six sites.

4.3.1 Recycling and Reprocessing Facilities outside the District

Other Recycling and Reprocessing Facilities

Facility	Description
O-I NZ Ltd	Process colour-sorted glass
SIMS Pacific	Ferrous metals recycling
MetalCo	Scrap metals recycling
Oji Fibre Solutions	Paper and some card
EcoCast	Vermicomposting of industrial, council and some post-consumer organic wastes in Kawerau
MyNoke Ltd	Vermicomposting of industrial, council and some post-consumer organic wastes in Kinleith and Bio solids In Taupo
Resene PaintWise Collection (Waihi Road, Tauranga)	Accept unwanted paint and paint containers, with a small charge for non-Resene product. No automotive or marine paint. Material is reused, recycled, or processed as appropriate.
Agrecovery	Accept unwanted agrichemicals and empty containers. Collection from properties (some charges apply)
Various retail outlets (Pak'n Save, Warehouse, New World)	Plastic shopping bags (not currently in the Taupo district)
E-waste	Waikato Achievement Centre
Reclaim	Plastics grade 1 and 2, baled cardboard

4.3.2 Assessment of Recycling and Reprocessing Facilities

The current level of recycling reprocessing facilities for kerbside collected materials is considered adequate for the Taupo district as the Envirowaste facility has additional capacity if volumes were to increase. This facility also takes material from the Broadlands Rd Landfill and Kinloch transfer station.

Currently the Envirowaste facility sorts plastics into grade 1 and 2 and then co-mingles the residual plastic with the aluminium cans. Paper and cardboard are separated ready for market and glass is

sorted at the kerbside to avoid glass contamination with the other materials. Tin cans are separated out with the use of a magnet placed over the sort line.

The sort line is mainly manual handling apart from the removal of tin.

If TDC were to move to a comingled collection using wheelie bins, then the current sort line would not be suitable and material would have to be transported out of our district for sorting or more investment into the current sorting system would need to be made. Both options would have some impact on local employment.

Home Composting

TDC's current food waste diversion program is based around subsidising home compost units and worm farms with supporting composting workshops run by the local community gardens group. By subsidising units to be used at home, the community can avoid the cost of transporting and processing bulk material and can use the resulting vermi-cast and compost on their own gardens. The subsidy program is estimated to divert 186 tonnes per annum.

Bio - Solids

The vermicomposting facility located just north of Taupo is diverting 2000 tonnes of Bio-Solids per year. Options for the operation to divert additional waste streams are being considered but the operation is still in its infancy and needs first be fully sustainable in diverting Bio-Solids prior to adding additional wastes.

Concrete

Concrete is diverted at the Broadlands Rd landfill, where material is stockpiled and then crushed. Reinforcing steel is removed by way of a magnet and the crushed material is sold to the market with 5686 tonnes diverted during the 17/18 year.

Construction and demolition waste

TDC does not currently sort and reuse construction waste with the majority being taken straight to the tip face. Construction waste currently makes up around 26% of waste disposed to landfill.

It is likely that more construction and demolition waste could be recovered, if the construction industry sorted this waste to at least a basic level on site. However, anecdotal information suggests that the industry view this as difficult and expensive.

TDC does not currently supply collection services to construction sites as this is left to the market service providers, as this is their core business. At the current landfill disposal prices, there is currently not enough incentive for construction sites to divert material apart from the heavy material like concrete. This issue is exacerbated by the fact that modern construction sites have multiple uses that come and go, and use the skip bins supplied to dispose of all material. Differential pricing of recyclable skips and waste skips works to a limited extent but is undermined by the multiple user problem.

Wood Waste

Wood waste makes up 20% of the total waste to landfill at 4988 tonnes per annum. Of that total there is estimated to be 1200 tonnes per annum that is untreated and unpainted that could be recovered. Wood diversion in the past has been difficult due to site operators needing to firstly, know the difference between treated and untreated wood, so that they are able to divert the material and secondly, a lot of the wood that comes on site is comingled with other material and is difficult to abstract.

E - Waste

Within the context of current legislative and policy arrangements, there is reasonable provision for e-waste collection and recovery within the region as the Waikato Achievement Centre offers this service. Unfortunately, without a product stewardship program in place the cost of recovery of E-waste is near $350 per tonne, which is three times the cost of disposal to landfill, so this price differential currently acts as a disincentive for greater recovery.

There is an opportunity for TDC to play a greater part for the community in offering recycling options for some items but this will be determined by the cost to reprocess and will only capture a limited amount of material, things like TVs are not cost effective, computers and peripherals are the only viable e-waste item currently.

Soft plastics

Soft plastics (plastic bags) are not currently being collected in the district and due to the cost of processing TDC is unlikely to provide this service in the future. The Packaging Forum, which supports the packaging industry, is currently trailing this service in the main centres. TDC will look to work with the Packaging Forum to try to get this service rolled out in the district, funded by the Packaging Forum.

Recycling of plastic bags can be problematic with limited outlets and uses in New Zealand. The costs of the recovery of bags is high compared to the market price when other variables are taken into account such as mixed material plastic bags , coloured bags, contamination and sorting /processing issues. Approximately 180,000 plastic shopping bags are required to make up one tonne of saleable product.

Plastic bags also have a lower market price than other plastic commodities. Polythene plastic bags (HDPE and LDPE) may be sold around $50 per tonne. Buy contract prices for other plastics were near:

Mixed plastic	$195 per tonne
Coloured 2's	$290 per tonne
Clear PET	$520 per tonne
Clear milk bottles	$750 per tonne

Car Seats

Car seat recovery is currently being undertaken in some centres, Car seats require a $10 per car seat subsidy to enable recovery. This service is not currently being provided in the Taupo district.

Tyres

Tyres nationally still do not have a sustainable recovery solution with tyres still being stockpiled and moved from centre to centre. Local government have been pushing for a product stewardship program for tyres for a number of years with industry support. Currently TDC stockpiles tyres at the Broadlands Rd Landfill.

Central Government have recently announced funding from the waste minimisation fund to support the provision of a number of tyre collection sites as well as funding support for end use processes such as cement kilns. It is yet to be seen that the funding will successfully enable the movement of end of life tyres through the process chain.

Paint

Paint taken to our district waste facilities is offered back to the community free of charge if usable, if unusable, it is disposed to landfill. Resene Paints also have a nationwide take back program operating.

Green waste

Green waste is processed at all of the TDC's RTS facilities throughout the district where Contractors are paid to shred and stockpile the material, the community is then able to take the shredded material free of charge.

The Broadlands Rd Landfill is a little different due to the amount processed 7800 cubic meters 2017. TDC pays for the shredding and then the residual material is owned by EnviroWaste Services as the landfill contractors. It is then their responsibility to get the composted material to market. The material is windrow composted as opposed to the shredded material at the transfer stations, so has a market value.

Council waste minimisation grant fund

TDC receives requests for financial support to undertake localised waste recycling and waste diversion activities. A number of other councils have set aside a small portion ($10K) per year to provide a community grant administered by the local waste manager. If Council were to implement this it would enable TDC to support these opportunities within the district and assist in building a network of support for ongoing waste minimisation. Alternatively, this could be administered by the grants committee with requirements for waste reduction or litter removal etc.

5 Waste Services

5.1 Waste Services kerbside - what's provided

Waste and recycling collection services (kerbside collections) are provided weekly to all urban communities within the Taupo District. TDC's service is currently contracted to EnviroWaste Services for a contract period of 7+2+1 with the first expiry date being July 2021.

The refuse portion of the collection service is user pays and the service is provided by TDC as well as by private service providers. Some rural service provision is also provided by private service providers also on a “User Pays” basis.

Refuse collected from kerbside operations (both public & private) is ultimately disposed of at the Broadlands Rd Landfill.

There a number of collection options available, which consist of two super market bags tied together, 60L bag collections, 120L wheelie bin collections, and some larger bins and skips for multi residential, Commercial and CBD business. TDC has regulated receptacle sizes to incentivise waste minimisation but there is no limit to the amount of bagged refuse placed at the kerb.

The TDC service provides for the collection of a 60L refuse bag with an orange sticker, the value of the sticker is currently $1.50. There is also the option of having two supermarket-sized bags tied together and the sticker can be halved, this allows service provision for those that put out less waste.

TDC’s Solid Waste Bylaw provides regulation for kerbside waste collectors and allows for the licensing of collectors to make sure that their operations do not cause a nuisance. TDC has also set collection areas for each day of the week and kerbside collectors can only undertake collection in residential streets on that day, this is to avoid having refuse and trucks on streets on multiple days of the week.

CBD areas are collected twice weekly under TDC’s contract and more often under commercial agreements made by business owners to allow them to deal with greater volumes.

CBD areas and most reserves owned by TDC have street litter and recycling bins for the disposal of non-domestic waste. New Big Belly bins with solar compaction and the ability to send notification when full are slowly being rolled out in the district.

Private Service providers are providing a kerbside green waste collection in Taupo Township only with collections being user pays and collections frequency determined by the user.

In addition to the services described above, there are other waste-related programmes and services provided by TDC e.g. rates-funded clean ups of illegal dumping and the provision tidy trucks, which clean up litter.

Possible kerbside options

Wheelie bins Vs crates for kerbside waste collection (other districts)

Currently there are two Councils (Auckland, Hamilton) looking to move from crate based recycling collection and refuse bags to full wheelie bin kerbside collection with both Councils looking to put out new contracts for long terms.

The current options being looked at are for 120L or similar size refuse bin collected fortnightly, 240L wheelie bin for recycling collected fortnightly (may or may not include glass) and a weekly food waste collection in a smaller bin.

Auckland is looking to compete in the waste market for refuse service where they could possibly be undermined by the market offering cheaper service options. Hamilton is understood will be looking to rate fund the services.

Markets for collected food waste are yet to be found for what will be a significant increase in diverted material.

TDC's current waste collection service

TDC has enabled a mix of service provision for the collection of wastes and divertible material at the kerbside. TDC operates a user pays collection system for refuse, which means that the market can also compete and offer alternatives for refuse collection to the community. The market offers wheelie bin and skips for larger users, an area of service delivery that TDC currently does not offer and possibly does not need to if these services are already provided in the current competitive market.

If TDC were to move to a wheelie bin collection for waste then a decision would need to be made regarding whether TDC would want to go head to head with the market place in regards to a bin service. Alternatively, pull out of the service provision all together (Council would then lose control of this waste stream) or to rate fund the service delivery, thus eliminating competition.

The current contractor would also lose market share if TDC were to rate fund, meaning that TDCs current refuse and recycling contract would need to be renegotiated with the contractor looking to recover lost revenue.

Rate funding the service delivery will increase rates, and will reduce the incentive to recycle as by paying a rate fee the purchasing decision of placing another bag out is removed, and statistics show that bin users tend to try and maximise the amount placed as they perceive that they have paid for the capacity. This may be offset by using bin technology that reports when a bin has been placed for collection and charges are applied per bin lift but this technology is still in development stage.

Health and safety may also play a part in the provision of bins vs bags at the kerbside as the provision of bins eliminates the need for a bag lifter, which continues to be an H&S concern.

Litter from refuse disposal at kerbside is insignificant and only eventuates if animals have gotten into bags.

Moving to bins from bags half way through the contract term brings the following disadvantages:

- Cost of truck change estimated $1,000,000
- Uncertainty around market share and cost
- Possible increase in rates
- Possible loss of control of waste stream
- Cost of wheelie bins estimated $1,000,000

- Collection cost unknown

Wheelie Bins for Recycling

Currently there is very little competition for the collection of kerbside recyclables nationally and in the Taupo district due to the cost of collection and processing of this material.

Other centres are looking to provide their communities with 240L bins for recycling with a fortnightly collection frequency, which could be adjusted over peak, summer periods. There is still ongoing debate around how glass is collected but comingled glass and other recyclables contaminates the product so most Councils undertake a weekly or fortnightly glass collection in a crate.

Material from wheelie bin collections must be taken to a Materials Processing Facility (MRF) to enable materials separation. Currently there is not a MRF locally as Envirowaste only operate a manual sort line so material would need to be transported out of the district.

Advantages

- Provides additional recycling capacity
- Reduces litter on collection days (they still fall over)
- Reduces need for runners (good H&S outcome)
- Easy to take to the gate

The best time to initiate changes to the kerbside service delivery is when the contract is up for renewal, so it is considered that this issue should be dealt with in the next WMMP process.

TDC's current recycling collection service

The current TDC service relies on the community to sort material into separate crates for glass, plastic tin and aluminium and paper and cardboard. This kerbside sort option removes the need for the use of a MRF, and allows residual sorting to be undertaken locally thus providing additional local jobs. There is also an education component with the community self-sorting, as the community learns what is and is not recyclable as non-recyclable material is left in the crate and stickered by the contractor.

Contamination rates of the kerbside sorting undertaken here in the district is around 1-2% where wheelie bin contamination is up to 18% and higher. Good quality product is a necessity for collection contractors as this ensures ongoing access to markets with good returns from recovered material.

From a capacity issue (volume able to be diverted), there may be no increase by using a wheelie bin, as the current collection contract, stipulates that the contractor must collect all approved recyclable material placed at the kerb no matter the volume.

TDC will increase the amount of litter awareness and the procedures for placing recycling at the kerbside if windy (put the heavy stuff on top). However, it is acknowledged that wheelie bins would reduce windblown litter from recycling set out on windy days.

The disadvantages in changing to wheelie bins for recycling are similar to those of change for refuse collection with some minor differences

- For holiday homes owners, who puts the bin away if homeowners have gone (ongoing issue) current system allows for cardboard boxes which are also recycled
- The cost of two new trucks estimated at $1,000,000
- Cost of wheelie bins estimated at $1,000,000
- Cost of MRF or Transport of materials out of district (unknown)
- Little or no increase in diverted material
- Increase in contamination rates
- Unknown collection cost

With other centres going through the process of introducing wheelie bins services. A MRF will be required to be built regionally that could accommodate comingled collections in the future from the Taupo district. Council does have the opportunity to see what works best when these centres implement their new programs and when the current contract is ready for renewal consider further the benefits of a change.

Food waste collection / diversion discussion

Currently there is 3528 tonnes of food waste going to landfill per annum from the district. Conventional collection methodologies are expected to achieve around 40% capture, which would equate to 1400 tonnes per annum. Conventional collection methodologies are a small bin caddie for the kitchen and a larger bin to be placed at kerbside, collected weekly.

Cost to provide the service are estimated to be $1.25 per property per week, so multiply that over an estimated 18000 properties gives an estimated cost of $1,170,000, or $835 per tonne diverted.

This cost must then be compared to the current cost of waste disposal to landfill, which is currently $120 per tonne. The cost of food waste bins would be in the vicinity off $160,000, with an ongoing replacement cost.

If TDC were to consider a food waste collection service then this service would need to be rate funded as the user pays option would suffer from limited up take. The service if implemented would affect the collection frequency of the other material types placed at the kerbside (refuse /recycling).

A food waste collection service is best implemented in conjunction with changes to the other service delivery models and preferably at the beginning of a new contract term, as retrofitting existing contracts is difficult and potentially expensive.

5.1.1 Reduce Reuse Recycle & Recovery Services

TDC provides recycling services at kerbside to all urban communities within the Taupo district and the following materials are currently collected:

- **Glass bottles and jars**

- Paper / Cardboard
- Tin, Steel and Aluminium cans
- Plastics 1 to 7

The TDC owned RTS and Landfill are strategically located throughout the district to provide full recycling service delivery. These sites also provide for recycling of paint, batteries, waste oil, car bodies, white ware and light and heavy gauge steel.

Through support from the Packaging Forum, Council has been able to provide additional new recycling bins in the Taupo CBD and local reserves for the recycling of glass, plastics and tin and aluminium cans. These bins cater for the local community as well as visitors to the town.

As the Taupo District is, an "Events" location Council has made provision in its waste bylaw for all events to provide a "waste minimisation plan" to ensure that materials are recovered and that the event fits with the districts clean and green image.

There is scope for more support for event organisers in the form of a guideline document for event wastes and facilitated workshops where event waste minimisation can be discussed.

TDC works closely with Waikato Regional Council to provide support for sustainable business in the district and participates in regional waste liaison forums to discuss waste issues and to provide a lobbying voice on national waste issues.

5.1.2 Current Recovery Services

The Landfill and Transfer Stations offer a number of waste recovery and reuse options:

- green waste shredding and mulching / composting for sale
- the crushing and resale of used concrete
- the recovery and hogging of wood for fuel use
- the taking of clean fill for cover on closed landfills
- Provision of waste oil collection tanks, the oil being used to fire cement kilns.
- A hazardous waste shed at the Broadlands Rd Resource Recover Centre to recovery household quantities of hazardous waste as well as rural hazardous chemicals.
- Clothing Bins
- Second hand goods stores
- Paint reuse

TDC has built reuse sheds to house pre-loved goods at all of its district sites, so that the community has an option to avoid disposal charges and to reuse pre-loved goods. The provision of reuse centres at the district facilities supports the local communities and diverts material that would have been landfilled.

TDC's landfill operational contact also has an incentive clause where Council pays the contractor for removing recoverable material out of the transfer pit. In general, this is steel as the payment is tonnage based and steel has the greatest weight.

5.1.2 TDC Waste Education and Minimisation Programmes

TDC supports a number of waste education programs that focus mainly on waste diversion from landfill and assist TDC to achieve its waste goals and vision.

- Enviroschools (school program)
- Paper4 Trees (school program)
- Nappy lady (waste free parenting)
- Love food hate waste (National food waste reduction program)
- Radio advertising (collection days / kerbside recycling options)
- Council web content (Council waste service delivery)
- Council Phone App (Council waste service delivery)
- Composting workshops (food waste diversion)

TDC is looking to develop a more focused education program based around litter prevention, which will dovetail into the national litter education program run by the Packaging Forum and funded through the waste minimisation levy. The goal is to set a achieve a vison of Taupo district being "the cleanest district in New Zealand".

5.1.3 Solid Waste Bylaws

The purpose of the bylaw is to regulate Waste Management facilities and the collection, transport and disposal of waste in the Taupo district. From the commencement date all collectors, transporters and disposers of waste in excess of 30 tonnes per annum and operators of waste management facilities are subject to a licencing system. This is necessary to ensure Council can manage waste in a manner consistent with its statutory responsibilities and waste management objectives.

Objectives:

- Promote the Council waste strategy and NZ Waste strategy
- Ensure efficient and effective waste management in accordance with legislative requirements
- Impose performance standards for the benefit of the public
- Monitor and regulate collectors and facility operators
- Promote the safe collection and disposal of waste.

TDC's Solid Waste Bylaw must align with Councils WMMP, so the requirement to review the bylaw will be dependent on any new options taken forward through the WMMP process

5.1.4 Litter Control and Enforcement

TDC uses either internal resources or local contractors to clear up illegally dumped waste. Who collects this material will be depend on the size of the load, the content of the load (e.g. carcasses, e-waste etc.) TDC staff inspect the dumped materials to locate names and addresses to follow up, but it is difficult to obtain a prosecution unless the person dumping has been caught in the act.

Taupo is a tourist destination and has large summer visitor numbers, which results in litter being an ongoing issue throughout the district. Local roads suffer from litter in the form of takeaway residuals being disposed from vehicles. In addition, public rest areas and parking spots are often left with litter even though litterbins are provided.

TDC employs full time litter staff whom undertake regular roving collections in high use areas as well as a staff member who works in Taupo CBD and uses a portable suction unit to suck up litter. CBD streets are also cleaned and swept under contract on a regular basis.

5.1.5 Public Litter Bins

TDC has would like to set a vision of "the cleanest district in New Zealand"

The litter and recycling bin service delivery is only one of the services that will under pin this vision statement.
TDC uses internal staff who drive our tidy trucks to deal with the litter hot spots mainly within or close to the urban settlements. The roading network litter is included in the roading maintenance contract.

TDC's service delivery for bin provision varies throughout the urban settlements. Whareroa, Omori, Kuratau and Pukawa do not have any refuse bins, but do not suffer from litter, as the community is proactive in picking up any material "packs in and out" any litter. These communities also do not have any fast food outlets and thus litter that we see from these establishments in other areas is not present. The geographical isolation of these towns also means that most food is brought from super markets and consumed at home.

Other urban centres, Taupo and Turangi and Mangakino do have fast food outlets and are connected to the state highway, so see vast numbers of people passing through the district purchasing material and unfortunately discarding this material on occasion.

There is a high demand for refuse and recycling bins in the three main urban centres and Councils current service delivery covers CBDs and some parks and reserves and high use areas such as the Super Loo and Taupo Lakefront.

Litter is discarded in a number of ways; Council does have a problem with fast food containers thrown from vehicle windows after consumption, and this mainly affects the rural roads and state highways around the district. Litter is also discarded after items have been unwrapped and the wrapping is discarded, and some litter is generated from windblown kerbside collection material.

Options to achieve cleanest district

To achieve Councils vision, a cross-organisational effort will focus on:

- Collecting discarded material.
- Educating people around why not to litter and achieving some community ownership of the issue
- Increased enforcement of the litter Act that has the ability to apply a $400 fine.

The Packaging Forum has been successful in obtaining funding from the waste minimisation levy to fund a nationwide education campaign around litter. This campaign should roll out late 2017. To

engage with the local community, it is envisaged that additional community engagement will be needed based on the Taupo district and environs.

Possible solutions to achieve Cleanest District:

- Contracted security to enforce litter outside normal hours for hot spots
- Warranting of selected staff to provide additional enforcement support.
- Own a beach / street etc program
- Have litter collection packs available for those that want collect litter, this could be a bag plus sticker, we could arrange pick up.
- Have a waste minimisation fund in the waste plan so that we can further support community initiatives
- Approach people who correctly dispose of litter with a prize, a rubbish sticker possibly (open to other options could be a voucher from retail outlets)
- Collect the litter collected over a week and make public, (take photos and place on Facebook) we need to make the community aware of the issue, plus our vision (cleanest district)
- Find out from roading contractor where most waste is discarded and increase the service level in these areas.
- Link in with local litter face book page / build relationship
- Target specific groups, back packer's / campervan folk/ locals with education program
- Signage into town / litter free district
- Enforce $400 fines

5.1.6 Rural and Farm Waste

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

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 agree, that these methods are not ideal and would like better options. However the 'three Bs' are perceived to have 'no cost' compared to alternatives that do have a financial cost associated.

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

5.2 Funding for Council-provided Services

TDC waste services are funded 51% by rate and 49% through fees and charges. Kerbside refuse collection is fully user pays. Council rate funds recycling to maximise diversion as it is perceived by the community to be free to drop off at waste facilities and at the kerbside.

5.3 Non-Council Services

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

Both Envirowaste Services and Waste Management, the two biggest waste service providers in New Zealand, provide waste collection options within the district, there is also a number of smaller operators in the market offering skips and wheeled bins to commercial premises.

Both larger companies offer wheelie bin and skip bin services throughout the district under commercial user pays contract. These services fill the needs gap where TDC provided services do not cover and both companies compete with TDC provided kerbside refuse collection. All waste from private and TDC provided refuse collection services is currently disposed of to the Broadlands Rd landfill.

Commercial operators do have the ability to take waste to other disposal facilities and reduce the Broadlands Road Landfill revenue return but the ability to do this cost effectively is governed by the transport and handling cost. With TDC's current funding mix, TDC is able to keep the gate charge at a rate that discourages waste flight.

TDC uses waste disposal pricing to incentivise waste diversion, concrete, green waste, and clean fill, and recyclables are rate funded so perceived free to drop off.

The current price for Greenwaste disposal allows the commercial market providers to offer a kerbside collection service, and there are two companies currently offering this service, Green Fingers Bins and Envirowaste Services.

The benefit to Council is that green waste is not comingled in waste bags and wheelie bins and a clean product for compost processing is delivered.

6 Situation Review

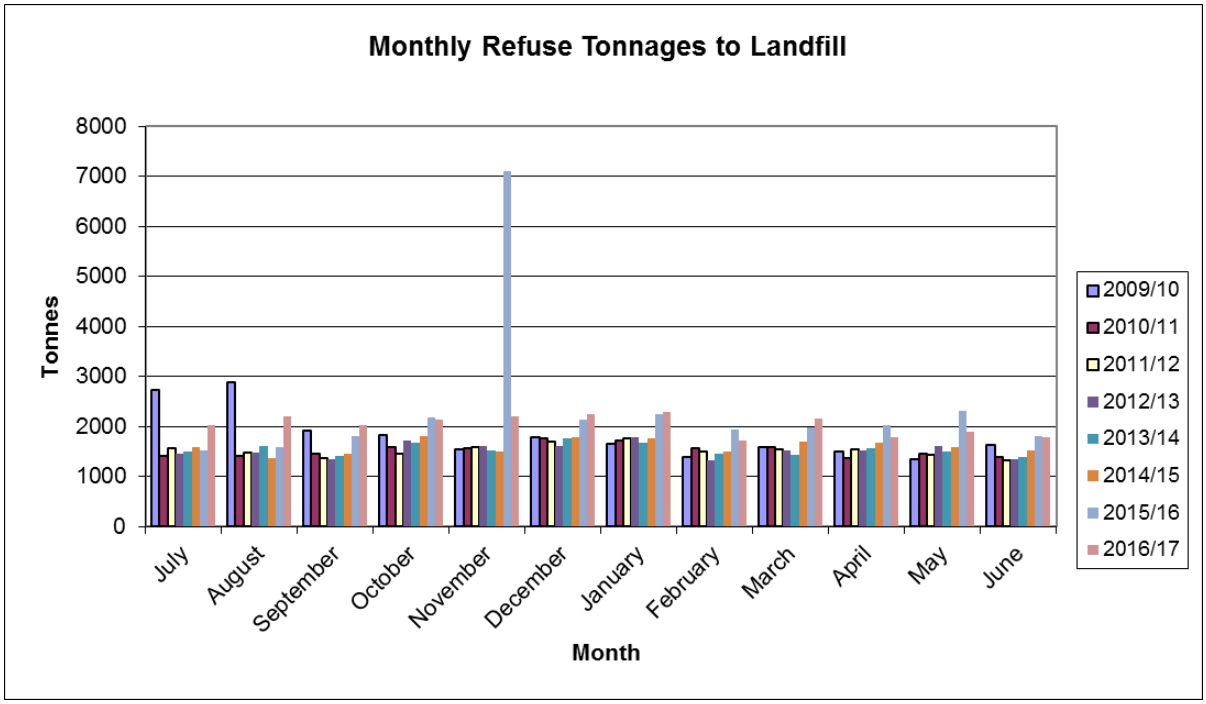
6.1 Waste to and land and Recycling Tonnages

6.1.1 Waste to Class 1 Landfills

The Broadlands Rd landfill is the only Class 1 Landfill in the Taupo district. The site does not accept waste from out of the district as TDC has ring fenced the landfill for district waste only, with this requirement policed by the district facility operators. Landfill tonnages have seen an increase over the last three years in line with the rise in economic activity in the district and nationally.

TDC is required by the Waste Minimisation Act to keep records of waste tonnages to landfill, as TDC is required to pay central government $10 per tonne in the form of a waste levy for every tonne of waste disposed to landfill.

A portion of these funds is then sent to local authorities based upon population to implement waste minimisation initiatives. The rest is kept in a consolidated fund to provide funding for large-scale projects.



Monthly landfill tonnages from July 2009 to June 2017

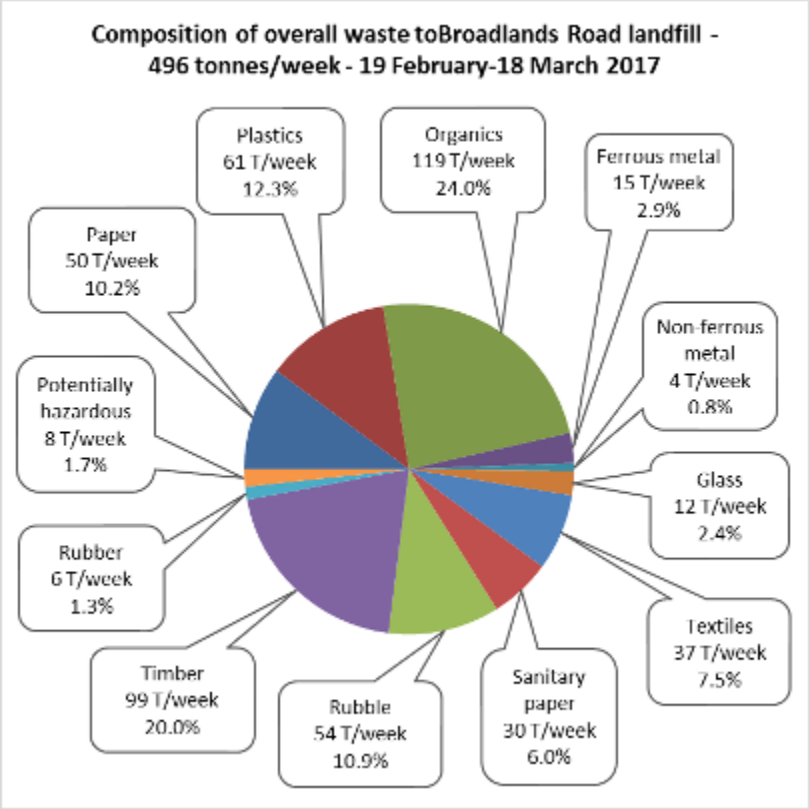
The tonnage spike in November of 2015 is when TDC disposed of material from two sludge ponds. The overall data identifies an increase in waste tonnages over the three years with numbers moving from an average of 18500 per year to 22500 if the spike in November 15/16 were removed.

6.2 Composition of Waste to Landfill

Primary composition of overall waste to Broadlands Road landfill - 19 February-18 March 2017

Overall waste to landfill - Primary composition 19 February-18 March 2017	% of weight	Tonnes/week	Tonnes per annum (indicative only)
Paper	10.2%	50 T/week	2,532 T/annum
Plastics	12.3%	61 T/week	3,065 T/annum
Organics	24.0%	119 T/week	5,974 T/annum
Ferrous metals	2.9%	15 T/week	730 T/annum
Non-ferrous metals	0.8%	4 T/week	193 T/annum
Glass	2.4%	12 T/week	589 T/annum
Textiles	7.5%	37 T/week	1,868 T/annum
Sanitary paper	6.0%	30 T/week	1,504 T/annum
Rubble	10.9%	54 T/week	2,717 T/annum
Timber	20.0%	99 T/week	4,988 T/annum
Rubber	1.3%	6 T/week	316 T/annum
Potentially hazardous	1.7%	8 T/week	425 T/annum
TOTAL	**100.0%**	**496 T/week**	**24,901 T/annum**

The tonnes per annum are indicative only as they are based on the survey data gathered over the survey period only.



Organics was the largest primary category of waste disposed of at the transfer pit, comprising 24% of the total. Timber was the second largest category, comprising 20% of the total weight. Paper, plastics, and rubble all comprised 33% of the total. Volumes will vary during the year with population and spring growth periods.

Data has been gathered by way of a TDC funded SWAP, which is a process of estimating waste volumes as waste is offloaded at the landfill.

6.3 Activity Source of Waste

Weighbridge data for the survey period shows that 496 tonnes of material per week were disposed of at Broadlands road over the four week period analysed. The proportions of the different waste sources of waste are shown below.

General waste direct to the tip-face was the largest source of waste at the landfill during the survey period, comprising 43% of the total. Kerbside waste collections, including both Council and private collections were the second largest type of waste, comprising 26% of the total. Waste from the transfer spit represented 24% of the total weight of waste.

Source of Waste to landfill

Sources of waste to Broadlands Road landfill – 19 February-18 March 2017	% of weight	Tonnes/week
General waste to tip face	43%	216 T/week
Kerbside waste collections	26%	128 T/week
Rural transfer stations	6%	29 T/week
Special wastes	1%	4 T/week
Transfer pit	24%	120 T/week
TOTAL	**100%**	**496 T/week**

Activity sources of waste to Landfill

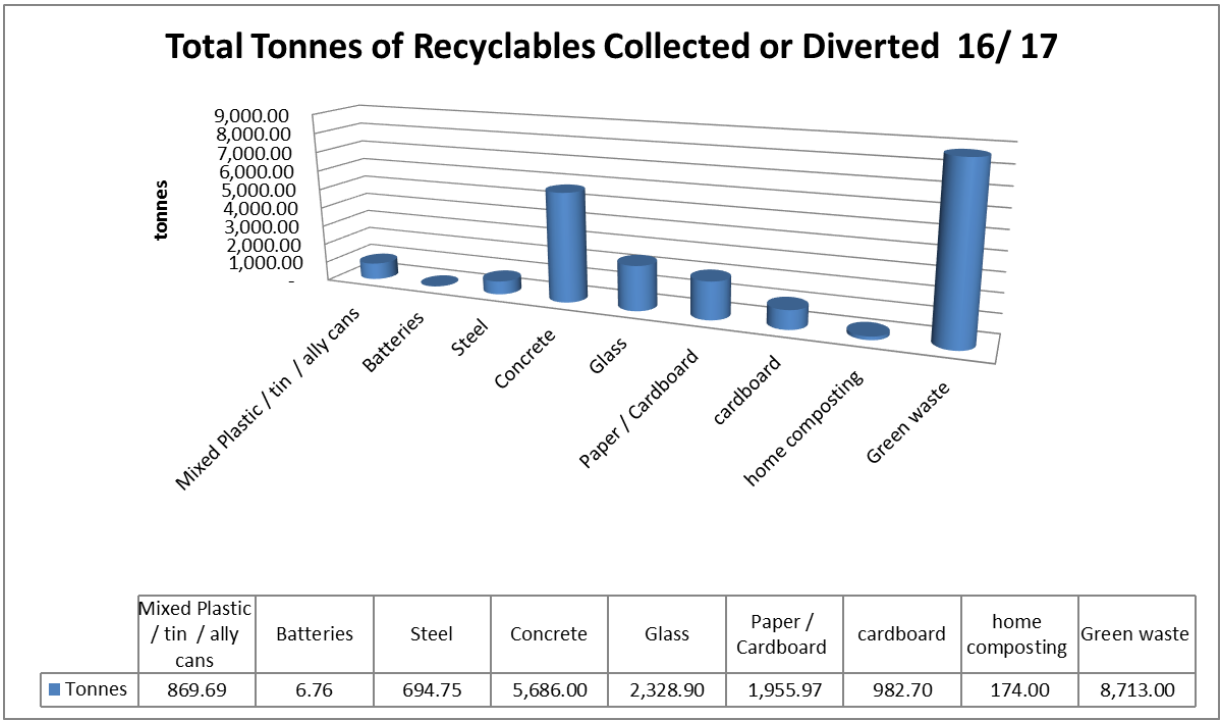
Activity sources of all waste from Taupō District 19 February-18 March 2017	% of weight	Tonnes/week
C&D	*19%*	*93 T/week*
ICI	*38%*	*186 T/week*
Landscaping	*5%*	*23 T/week*
Residential	*13%*	*62 T/week*
Subtotal – General waste	**73%**	**364 T/week**
Kerbside waste collections	26%	128 T/week
Specials	1%	4 T/week
TOTAL	**100%**	**496 T/week**

The Activity source of the waste to landfill identifies from what activities the waste was generated. The bulk of the general waste coming to the site is construction and demolition (C&D) waste, and waste from industrial, commercial and institutional sources (ICI). Kerbside waste collected makes up the majority of the remaining tonnages.

6.4 Diverted Materials

6.4.1 Overview of Diverted Materials

Total tonnes of diverted material 16/17 Taupo District



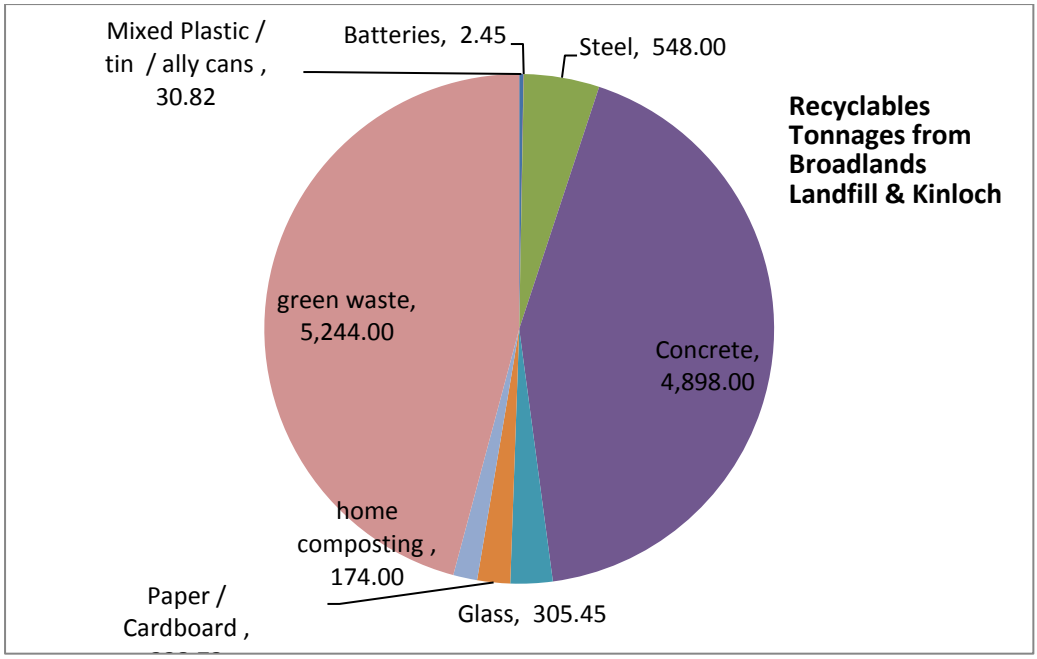
	Mixed Plastic / tin / ally cans	Batteries	Steel	Concrete	Glass	Paper / Cardboard	cardboard	home composting	Green waste
Tonnes	869.69	6.76	694.75	5,686.00	2,328.90	1,955.97	982.70	174.00	8,713.00

Over all TDC services, have diverted 21,419 tonnes of material from being disposed of to the Broadlands Rd Landfill. This sum does not take into consideration material diverted from the Reuse facilities, as weights are difficult to determine.

The overall tonnage of material processed combines 16/17 waste to landfill of 24490 and the diverted material tonnage of 21,419 for a total tonnage of 45909, and a waste diversion of 46.66%.

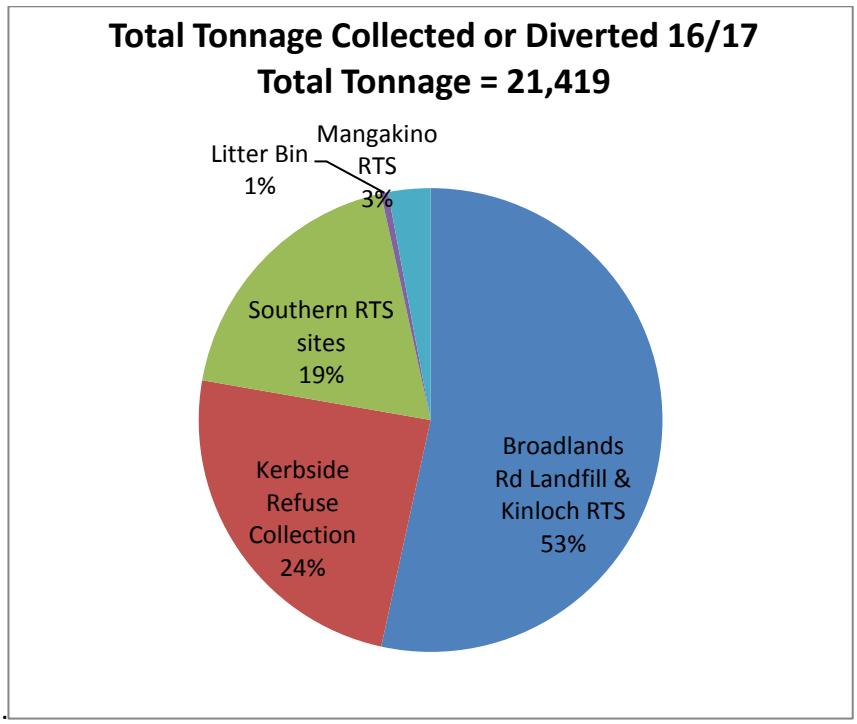
While the tonnage of plastic and glass are smaller than the concrete and green waste tonnages, these two material types require significant extra effort to process due to the numbers of items being processed.

Breaking tonnages into individual materials diverted the total glass tonnage equates to an estimated 5.24 million bottles and the plastic tonnage would equate to an estimated 15.82 million plastic containers.



The Broadlands Road Landfill is the main contributor to the diverted tonnage totals. The main materials making up this volume are from concrete and green waste diversion due to bulk green waste and the weight of the concrete. Concrete is crushed and resold to the market and is used locally for tanker tracks and drive ways and the green waste is windrow composted and is the landfill contractor's responsibility to sell to the market.

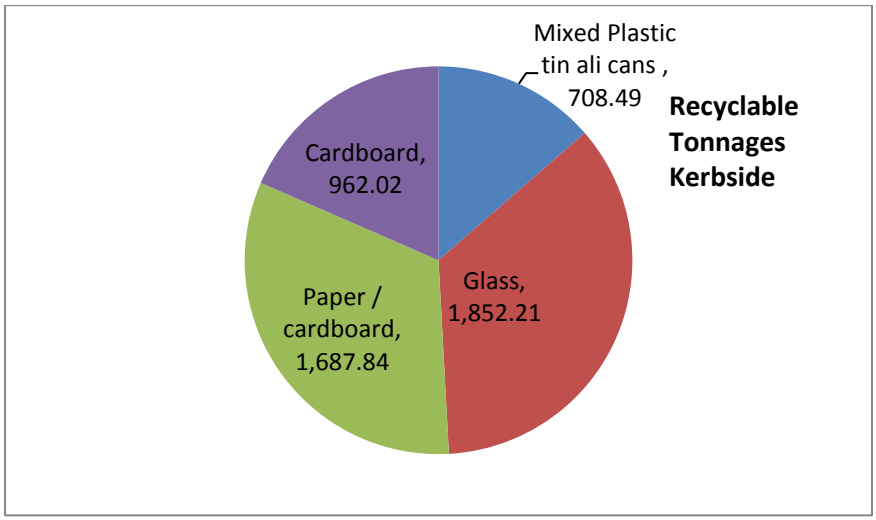
Glass paper / cardboard and the mixed plastic and aluminium cans are collected and processed over the Envirowaste sort line at their Matai street processing yard after which the material is then sent to market.



This graph identifies the percentage diversion of material from landfill from the varying service deliveries throughout the district.

6.4.2 Composition of Kerbside Recycling

The data regarding composition of the Kerbside mixed recyclables comes from Envirowaste Services sorting yard where the materials are loaded out to market. The material is collected form all urban areas in the district and tonnages include materials collected from Commercial businesses. The contamination rate of material collected from kerbside is between 1-2%



6.4.3 Diversion of Organic Waste

Council has two services that look to divert organic waste from landfill currently.

Green waste is shredded at all the six waste facilities throughout the district with a total diversion tonnage of 8713 tonnes.

Council also supports home composting through subsidising home compositing and running summer composting education program.

Council's subsidy program includes two worm farms and a composting unit with the numbers of units purchased to date being:

- Earth Maker composter 346 units
- Hungry Bin worm farm 263 units
- Can O Worms worm farm 225 units

The numbers of units sold equates to 175 tonnes of food waste diverted per year.

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

- arborists chip considerable quantities of vegetation, much of which is disposed of as mulch
- piggeries collect food waste from supermarkets and food manufacturers for use as stock feed.

7 Performance Measurement

7.1 Current Performance Measurement

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

7.1.1 Per Capita Waste to Class 1 Landfills

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

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

Per capita disposal of waste - comparison with 2008 and 2013

The per capita disposal of waste to landfill by residents of Taupō District in 2017 is calculated and compared to the same figures for 2008 and 2013.

The per capita figure is calculated, first, for all waste to landfill and, then, for all waste to landfill with special wastes excluded. For 2017, 154 tonnes of special wastes were recorded by the weighbridge at Broadlands Road.

Table 7.1 - Per capita disposal of waste to landfill - 2008, 2013, and 2017

Pop numbers Stats NZ

Per capita disposal of waste to landfill	2017	2013	2008
Usually resident population Taupō District	37,000	34,300	32,148
T/annum to landfill – including special wastes	24,901 T/annum	18,118 T/annum	19,700 T/annum
Per capita disposal of waste to landfill – including special wastes	0.673 T/capita/annum	0.528 T/capita/annum	0.613 T/capita/annum
T/annum to landfill – excluding special wastes	24,747 T/annum	17,612 T/annum	18,913 T/annum
Per capita disposal of waste to landfill – excluding special wastes	0.669 T/capita/annum	0.513 T/capita/annum	0.588 T/capita/annum

Based on tonnage data the per capita disposal of waste to landfill (including special wastes) has increased by 27% between 2013 and 2017, from 0.528 T/capita/annum to 0.673 T/capita/annum.

Per capita disposal of waste - comparison with other areas

The Taupō District per capita figure for landfilled waste, including special wastes, is compared to disposal figures from other local authorities previously surveyed by Waste Not Consulting. The national average has been calculated using MfE's waste levy data [3] and Stats NZ usually resident population estimates[4].

Taupō District disposal rates compared to other areas

Overall waste to landfill including special wastes (excluding cover materials)	Tonnes per capita per annum
Gisborne District 2010	0.305
Waimakariri District 2012	0.311
Westland District 2011	0.331
Ashburton District 2015	0.366
Napier/Hastings 2016	0.495
Southland region 2011	0.500
Tauranga and WBOP District 2014/15	0.524
Christchurch City 2012	0.524
Taupō District 2013	0.528
Wellington region 2016	0.608
Hamilton City 2013	0.668
Taupō District 2017	0.673
New Zealand 2016	0.713
Queenstown Lakes District 2012	0.735
Rotorua District 2009	0.736
Auckland region 2012	0.803
Queenstown Lakes District 2016	1.103

The per capita disposal rate for Taupō District in 2017 was marginally lower than the New Zealand average for 2016 but higher than most other provincial centres. Areas with high tourism activity, such as Taupō, Queenstown, and Rotorua, tend to have higher per capita disposal rates than areas with lower levels of tourism activity. Tourism activity generates waste but tourist are not counted as usually resident by the census.

Higher disposal rates are also associated with areas with high numbers of holiday homes. This affects the per capita disposal rates, as non-permanent residents are not counted in the census as being usually resident. Approximately 30% of dwellings in Taupō District are not permanently occupied.[5] Users of holiday homes generate waste but the occupants are not included in the population statistics.

7.1.2 Activity source comparison with other districts

% of waste to landfill – excl. special wastes	Taupō District	Taupō District	Taupō District	Taranaki Region	Ashburton District	Napier/ Hastings
Year of audit	**2017**	**2013**	**2008**	**2016**	**2015**	**2016**
Construction & demolition	19%	18%	21%	15%	17%	7%
Industrial/commercial/ institutional	38%	37%	32%	43%	46%	41%
Landscaping	5%	4%	2%	3%	0%	2%
Residential	13%	12%	13%	9%	6%	6%
Subtotal - General waste	**74%**	**70%**	**69%**	**70%**	**70%**	**57%**
Kerbside waste	26%	30%	31%	30%	28%	43%
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The data from the three surveys in Taupō District shows little change in the activity sources of general waste being generated in the District, other than a slight increase in the proportion of ICI waste. The proportion of kerbside waste has decreased from 31% in 2008 to 26% in 2017.

The relative proportions of the activity sources of waste in each district reflect the economic activity in the area and other factors, such as the costs of landfill disposal.

7.1.3 Diversion Potential of Waste to Broadlands Rd landfill

This Table compares the diversion potential calculated from the results of the 2017 audit with that of the 2013 audit and other areas surveyed by Waste Not Consulting.

This table identifies what is theoretically divertible if such things as markets, processing capacity, cost etc. we're not a factor. Practically TDC must compare the community's desire to fund additional diversion with the cost of landfilling to determine if that cost is acceptable.

The table identifies that the biggest percentage of divertible material is timber and organics.

14.2% of the possible divertible organics is food waste with a large portion of this coming from kerbside bags.

Timber is usually transported to the site in mixed loads.

Diversion potential of overall waste streams - comparison with previous audits and other areas

Overall waste to landfill - Diversion potential	Taupo District 2017	Taupo District 2013	Taranaki Region 2016	Wellington Region	Tauranga City 2010
RECYCLABLE AND RECOVERABLE MATERIALS					
Paper - Recyclable	4.8%	9.50%	4.20%	10.80%	11.30%
Paper - Cardboard	3.9%		4.30%		
Plastics - Recyclable	1.2%	1.20%	1.20%	1.20%	1.70%
Ferrous metals - All	2.9%	3.20%	2.70%	2.50%	3.70%
Non-ferrous metals - All	0.8%	0.80%	0.80%	0.60%	0.80%
Glass - Recyclable	1.3%	2.10%	1.50%	3.40%	5.70%
Rubble - Cleanfill	2.4%	1.70%	1.60%	2.30%	1.10%
Timber - Untreated & unpainted	5.1%	5.10%	1.80%	2.20%	3.20%
Subtotal	**22.5%**	**23.6%**	**18.1%**	**23.0%**	**27.5%**
COMPOSTABLE MATERIALS					
Organics - Kitchen/food	14.2%	14.90%	11.90%	15.80%	14.50%
Organics - Comp. Greenwaste	6.3%	5.30%	6.10%	11.10%	9.20%
Organics - Multi/other	1.3%	1.30%	2.30%	3.70%	4.40%
Subtotal	**21.8%**	**21.5%**	**20.3%**	**30.6%**	**28.1%**
DIVERTABLE MATERIALS	**44.2%**	**45.1%**	**38.4%**	**53.6%**	**55.6%**

It is recognised that no system established for the recovery of waste materials is capable of diverting 100% of that material from the waste stream. The estimate that is presented, therefore, represents a theoretical maximum, rather than the proportion of the waste stream that is likely to be recovered should a full suite of diversion initiatives be established.

8 Future Demand and Gap Analysis

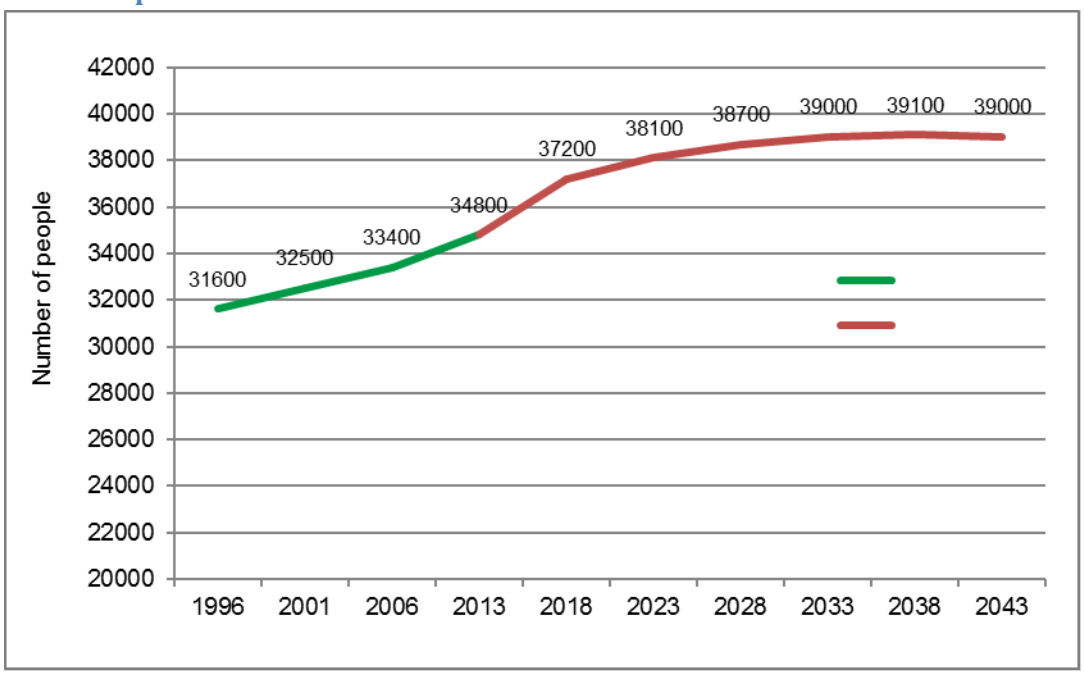
8.1 Future Demand

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

- Overall population growth
- Economic activity
- Changes in lifestyle and consumption
- Changes in waste management approaches
- Transfer station location
- Refuse collection area boundaries
- Expanded recycling options
- Tourism
- Out of district home ownership
- Service provisiono by the private sector
- Lifestyle trends
- Council policy and plans
- Product Stewardship schemes
- Changes in legislation and national direction

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

8.1.1 Population Stats NZ



Resident population projections coupled with the current per capita waste disposal rate identify that that the total annual waste tonnages will only increase by 1200 tonnes per annum by 2043. Increases in annual tonnages of this magnitude are easily catered for in regards transporting and final disposal within TDC's current mix of services.

Refuse collection truck numbers could easily be increased to cater for the greater volume and area serviced. Refuse transfer station disposal bins can be transported more regularly once full. Some minor adjustment to the timing of the creation of landfill disposal cells would need to be undertaken.

It is envisaged that there would also be a corresponding increase in diverted material as communities become more aware of the need to live within a circular economy. Again, the current service levels for diverted material can easily be expanded as communities grow and demand changes.

A possible effect on the levels of divertible material, which is currently unknown, is the future development or in some cases, the retrenchment of markets for recovered materials.

Just recently, we have seen that recovered materials markets in China are becoming more difficult to access, so this makes it imperative that only high quality recovered product is sent to market.

Central government policy will also influence the overall waste and diverted materials streams. Local government has been a long-time advocate of producer pays policy, (product stewardship) which has the ability to alter who pays for the recovery of materials.

8.1.2 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.

8.1.3 Summary of Demand Factors

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

8.2 Future Demand – Gap Analysis and key issues

The aim of waste planning at a territorial authority level is to achieve effective and efficient waste management and minimisation. Priority waste streams and service options that could be targeted to reduce waste to landfill include:

- Construction and demolition waste and in particular timber is a significant part of the waste stream which may be able to be recovered
- Organic waste
- E-waste
- Litter and litter awareness
- Kerbside recyclables both from domestic and commercial properties
- Rural and farm waste is a relatively unknown quantity and increased awareness of the problems associated with improper disposal may drive demand for better services
- Street recycling
- Support of local Marae and Iwi groups
- Product stewardship support (lobbying central govt)
- Schools organics
- Waste fund to support community waste minimisation programs
- Price incentivise diversion practises
- Support events with waste guidelines and education support

8.2.1.1 Medical Waste

The Pharmacy Practice Handbook states:[6]

> *4.1.16 Disposal of Unused, Returned or Expired Medicines*
>
> *Members of the public should be encouraged to return unused and expired medicines to their local pharmacy for disposal. Medicines, and devices such as diabetic needles and syringes, should not be disposed of as part of normal household refuse because of the potential for misuse and because municipal waste disposal in landfills is not the disposal method of choice for many pharmaceutical types. Handling and disposal should comply with the guidelines in NZ Standard 4304:2002 – Management of Healthcare Waste.*

8.2.1.2 E-waste

Without a national product stewardship scheme, the e-waste treatment and collection system will continue to be somewhat precarious. 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, will often still be sent to landfill. TDC does not currently offer an E-Waste recycling service due to the cost of processing versus the cost of diversion. Members of the community are directed to the Waikato Achievement Centre. There is an opportunity for TDC to offer limited services, for computer and computer peripherals but other types of E-waste will continue to be disposed of to landfill unless central government enable product stewardship legislation.

9.0 Initial Review of the 2012 Waste Management and Minimisation Plan

The 2012 – 2017 WMMP had a target and a number of actions required to achieve the target.

Council's waste reduction Target for the 2012 waste plan was:

By 2018, reduce the quantity of waste (tonnes) disposed to landfill per person per year by 3% relative to an established 2010 baseline.

The estimated resident population has increased from 34800 to 37200 or 2400 people over the period.

Waste tonnages have increased from an average of 18500 to 22500 for the last three years, which reflects an overall increase in waste per capita from the 2008 total, of 0.588 T/capita/annum to the 2017 number of 0.669 T/capita/annum a 13% increase so Council has been unable to achieve its overall waste reduction target.

The increase in waste tonnage reflects the national volume increase in waste to landfill and is a reflection of the increase in GDP.

8.3 Data

In 2017, the district disposed 24490 tonnes of waste to the Broadlands Rd Landfill and diverted 21419 tonnes, which equates to 46.66% diversion rate.

8.4 Key Issues

The Key issues in the last Waste Management and Minimisation Plan were:

- Collection of 1-7 Plastic codes
- Removal of 240L wheelie Bins from domestic household use
- Expansion of the street recycling bin program
- E-Waste recycling service provision
- Subsidising Home Composting Units and education program
- Advocacy for Product stewardship

Council has actioned and achieved the desired service change for all of the key issues identified above apart from the provision of E-Waste recycling.

Currently community members wishing to recycle E-Waste are directed to the Waikato Achievement Centre in Tokaroa, but there is the ability for TDC to offer limited E-waste recycling as part of the development of the 2018 Waste plan.

8.5 Other Issues Addressed

Council has been able to divert 2000 tonnes per annum of Bio Solids out of the Broadlands Rd Landfill. At the time of the development of the last plan in 2012, Bio Solids were not being disposed to the landfill, but in the interim, January 16 to January 17 this became a requirement. Council now disposes the Bio solids to a worm farming operation that is set up on TDC land.

Council now has the two main operational contracts set in place, Kerbside Collection and Landfill operation and both contracts have expiry dates that extend past the 2018 plan.

9 Statement of Options

This section sets out the range of options available to the Council to address the key issues that have been identified in this Waste Assessment (see 8.2 page 51). An initial assessment is made of the strategic importance of each option, the impact of the option on current and future demand for waste services, and the Council's role in implementing the option. Options presented in this section would need to be fully researched, and the cost implications understood before being implemented.

Below are listed the possible new actions to be included into the WMMP.

A commentary on each action and a recommendation is include in the appendix.

9.1 Regulation

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
R1	Review existing Bylaw to ensure that it is effective and enforceable	To make sure that the Bylaw is consistent with the new WMMP	**Social / Cultural**: Positive outcome as Bylaw would be aligned with WMMP. **Environmental**: that private service providers do not negatively impact the environment **Economic**: That community outcomes are considered when pricing service delivery	Sets a series of operating standards for operators to ensure costs are not transferred to ratepayers and that WMMP outcomes are being achieved. So will support waste reduction aspirations	Conduct review if changes to WMMP require
R2	Increase the number of warranted litter officers with existing staff	To reduce the amount of fly tipping and litter	**Social / Cultural:** provide a cleaner district, change community behaviour **Environmental:** reduce the impact that litter and refuse has on the environment **Economic:** reduce the cost of litter collection	May reduce the need for litter collection and the removal of illegally dumped refuse, but will not reduce overall tonnage of waste to Landfill	Additional Council staff would be involved in litter enforcement

9.2 Measuring and Monitoring

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
M1	Understand the generation of construction and demolition waste and work with commercial operators to increase diversion	Determine if there is the ability to divert construction and demolition waste	**Social / Cultural**: increase the awareness around diverting construction and demolition materials **Environmental:** increased diversion of C&D waste to landfill **Economic:** reduced disposal costs as waste diverted	C&D waste is a large component of the waste currently going to landfill	Facilitate diversion opportunities
M2	Understand the generation of farm waste and waste management in rural areas	Further understand the needs of the rural sector and plan to support rural waste disposal and waste diversion	**Social / Cultural**: could raise awareness of waste management in areas which currently very little is known **Environmental:** if data highlights areas where additional services could be provided or certain waste diversion facilitated then a reduction of waste to landfill could be achieved **Economic:** There maybe costs for new programs	Analysis of available data shows that there are gaps in knowledge and understanding of rural waste needs in the district. Availability of more data and tailoring of services accordingly could increase the demand for recycling services and reduce waste to landfill.	Council to initiate and oversea research studies and audits and feed results in to future iterations of WMMP and action plans.

9.3 Education and Engagement

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
EE1	Support district Marae and iwi groups with targeted education campaign	Provide waste education to support Iwi to divert waste	**Social / Cultural**: would increase the awareness of waste diversion options **Environmental:** would lessen the amount of waste to landfill in particular food waste **Economic:** will reduce the cost of waste disposal for Marae	Will reduce waste to landfill	Funding and support
EE2	Work with local schools to increase organics diversion through education and the home composting subsidy program	Increase the participation in the home composting program	**Social / Cultural**: will increase the awareness around composting and worm farming **Environmental:** will reduce the amount of food waste going to landfill from the district schools **Economic:** will reduce the waste disposal costs for Marae	less organic waste to landfill	Funding and support
EE3	Support local events to minimise event waste	Provide additional support to local event organisers to increase their waste diversion	**Social / Cultural**: will support the districts clean green image **Environmental:** will reduce the amount of	Increased waste diversion from events	Funding and support and the provision of an events guideline and education program

			event waste going to landfill **Economic:** Post event clean-up costs will be minimised		
EE4	Implement a targeted litter prevention program	Reduce the incidences of illegal dumping and reduce the amount of litter	**Social / Cultural**: Community having a willingness to have a clean environment **Environmental:** less environment impact from litter and illegal dumping **Economic**: less money spent on litter and illegally dumped refuse clean-up	Litter reduction and less fly tipping in the district	Provision of targeted program which will dovetail into national litter program

9.4 Collection & Services

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
CS1	Introduce a food waste collection program	Reduce the amount of organic waste going to landfill	**Social / Cultural**: would enable the community to have a convenient food waste disposal option, but may discourage home composting **Environmental:** would reduce the amount of	Food waste makes a significant percentage of waste to landfill	Design and implementation of program

			food waste going to landfill **Economic**: a cost for the additional service (bins, collection, processing) which is high compared to landfill disposal cost		
CS2	Introduce 240L wheelie bins for recycling collection	Reduce the amount of litter from kerbside recycling collection	**Social / Cultural**: would impact the other kerbside service frequency which would impact out of district home owners **Environmental:** will show a small reduction from windblown litter on collection days **Economic**: will not have significant impact on recycling volumes and will increase the cost of processing. Also requires investment into new trucks and bins and will reduce local employment	Will only have minor impact on reducing waste to landfill	Design and implementation of program
CS3	Introduce a E-Waste recycling program	Reduce the amount of electronic waste going to Landfill	**Social / Cultural**: Would enable to the community a convenient option to recycle electronic waste		

			Environmental: Harmful electronic waste is not disposed to landfill **Economic**: Currently the community has to drive outside of the district to recycle E-Waste		

9.5 Infrastructure

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
IN1	Make site improvements to the current facilities as required to cater for peak demand (increase recycling area, hard stand areas, provide for increased waste diversion)	Provide adequate capacity at district facilities	**Social / Cultural**: will allow the community the ability to maximise waste diversion **Environmental:** increased waste diversion and less waste to landfill **Economic**: Facilities need to cater for peak demand to maximise diversion	Will provide more opportunity for the community reduce reuse recycle	Provision of facility improvements as when required

9.6 Leadership and Management

Ref	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role
LM1	Provide a community waste minimisation fund ($10K per annum from waste levy funds)	To support community waste minimisation activities	**Social / Cultural**: will provide the community with funding momentum to participate in waste diversion **Environmental:** will enable small scale waste diversion opportunities to developed by the community to proceed with the resulting environmental benefits **Economic**: small cost compared to building community relationships	Will depend on what the community initiative is but fund will focus on reduction of waste to landfill	Funding and support, funding provided by waste minimisation fund

9.7 Status Quo Services and Programs

Below are the current services and programs already operating in the district, which are recommended to continue.

Status Quo	Option	Issues Addressed	Strategic Assessment	Impact on Current/Future Demand	Councils' Role

Broadland Rd Landfill and district Transfer stations	Status quo	Provide disposal and waste diversion opportunities throughout the district	**Social / Cultural**: The community needs convenient facilities to dispose of waste and divertible materials **Environmental:** facilities provide for the appropriate disposal of wastes **Economic**: council owned facilities allows fees to be set to maximise waste diversion	Facilities are capable of coping with peak demands	Maintain existing service arrangements
Kerbside refuse and recycling collection in urban areas	Status quo	Provide a convenient refuse and recycling collection service to the urban community	**Social / Cultural**: refuse disposal and recycling is convenient for domestic and commercial users **Environmental:** urban communities have access to collection services **Economic**: Council has entered into long term contracts for collections	Kerbside collection service is flexible to cater for changes demand and opportunities to increase waste diversion	Maintain existing service arrangements
Current mix of education programs (paper for trees, nappy	Status quo	Provide targeted education programs for specific waste	**Social / Cultural**: the community have the ability to learn about difficult	The current mix of education programs are	Maintain existing service arrangements

Lady, love food hate waste, composting workshops)		diversion opportunities	waste issues and diversion opportunities **Environmental:** increase the knowledge of the community regarding waste **Economic**: current targeted programs reduce community waste disposal costs	consistent nationally	
Continue to price incentivise waste diversion activities	Status quo	Maximise the opportunities to divert materials	**Social / Cultural**: effective method to change behaviour around waste **Environmental:** provides high quality end products and incentivises waste diversion **Economic**: the use of a mix of user charges and rates enables Council to use service pricing to drive waste diversion	Further waste diversion opportunities will develop as waste costs increase and recovered material markets develop	Continue to analyse waste streams to determine opportunities
Lobby central government on	Status quo	Shift the burden of waste diversion to	**Social / Cultural**: will provide a	Product stewardship policy	Work nationally, regionally and

Product stewardship		the producer and consumer and provide a circular economy	circular economy where end of life products are reused **Environmental:** will increase the ability to divert waste from landfill **Economic**: the cost of recovery of materials will be included in the purchase price	will have major impacts on the amount of waste sent to landfill and will reduce the cost of collection of waste on the ratepayer	locally to lobby government
Street litter and recycling bin service/ in house litter collection	Status quo	Provide for refuse and recycling collection for the community and visitors when they are out and about	**Social / Cultural**: provides the ability for the community and visitors to disposal and recycle wastes when out. **Environmental:** lessens the impact of waste on the environment **Economic**: avoids the cost of clean-up of litter	Continue to cater for peak demand	Maintain existing service arrangements and continue the Big Belly Bin and recycling bin roll out as required.

10 Statement of Council's Intended Role

10.1 Statutory Obligations and Powers

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

- Under the WMA each Council "must promote effective and efficient waste management and minimisation within its district" (s 42). The WMA requires TAs to develop and adopt a Waste Management and Minimisation Plan (WMMP).[7]
- The WMA also requires TAs to have regard to the New Zealand Waste Strategy 2010. The Strategy has two high levels goals: 'Reducing the harmful effects of waste' and 'Improving the efficiency of resource use'. These goals must be taken into consideration in the development of the Council's waste strategy.
- Under Section 17A of the Local Government Act 2002 (LGA) local authorities must review the provision of services and must consider options for the governance, funding and delivery of infrastructure, local public services and local regulation. There is substantial cross over between the section 17A requirements and those of the WMMP process in particular in relation to local authority service provision.
- Under the Local Government Act 2002 (LGA) Councils must consult the public about their plans for managing waste.
- Under the Resource Management Act 1991 (RMA), TA responsibility includes controlling the effects of land-use activities that have the potential to create adverse effects on the natural and physical resources of their district. Facilities involved in the disposal, treatment or use of waste or recoverable materials may carry this potential. Permitted, controlled, discretionary, non-complying and prohibited activities and their controls are specified within district planning documents, thereby defining further land-use-related resource consent requirements for waste-related facilities.
- Under the Litter Act 1979 TAs have powers to make bylaws, issue infringement notices, and require the clean-up of litter from land.
- The Health Act 1956. Health Act provisions for the removal of refuse by local authorities have been repealed by local government legislation. The Public Health Bill is currently progressing through Parliament. It is a major legislative reform reviewing and updating the Health Act 1956, but it contains similar provisions for sanitary services to those currently contained in the Health Act 1956.
- The Hazardous Substances and New Organisms Act 1996 (the HSNO Act). The HSNO Act provides minimum national standards that may apply to the disposal of a hazardous substance. However, under the RMA a regional council or TA may set more stringent controls relating to the use of land for storing, using, disposing of or transporting hazardous substances.
- Under current legislation and the new Health and Safety at Work Act the Council has a duty to ensure that its contractors are operating in a safe manner.

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

The Taupo District Council, in determining its role, needs to ensure that their statutory obligations, including those noted above, are met. This Waste Assessment identifies that Council is meeting these obligations.

10.2 Overall Strategic Direction and Role

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

11 Statement of Proposals

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

It is expected that the implementation of these proposals will meet forecast demand for services as well as support TDC'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.

11.1 Statement of Extent

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

11.1.1 Protection of Public Health

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

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 are regulated through the Solid waste Bylaw.

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

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

11.1.2 Effective and Efficient Waste Management and Minimisation

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

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

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

Appendices

A.1.0 Medical Officer of Health Statement

Seek commentary from the medical officer of health in the later stages of the Waste Assessment. Insert here when received based on a final, or nearly final, draft.

A.2.0 Glossary of Terms

Class 1-4 Landfills	Classification system for facilities where disposal to land takes place. The classification system is provided in **Error! Reference source not found.** below for reference.
Cleanfill	A cleanfill (properly referred to as a Class 4 landfill) is any disposal facility that accepts only cleanfill material. This is defined as material that, when buried, will have no adverse environmental effect on people or the environment.
C&D Waste	Waste generated from the construction or demolition of a building including the preparation and/or clearance of the property or site. This excludes materials such as clay, soil and rock when those materials are associated with infrastructure such as road construction and maintenance, but includes building-related infrastructure.
Diverted Material	Anything that is no longer required for its original purpose and, but for commercial or other waste minimisation activities, would be disposed of or discarded.
Domestic Waste	Waste from domestic activity in households.
ETS	Emissions Trading Scheme
ICI	Industrial, Commercial, Institutional
Landfill	A disposal facility as defined in S.7 of the Waste Minimisation Act 2008, excluding incineration. Includes, by definition in the WMA, only those facilities that accept 'household waste'. Properly referred to as a Class 1 landfill.
LGA	Local Government Act 2002
Managed Fill	A disposal site requiring a resource consent to accept well-defined types of non-household waste, e.g. low-level contaminated soils or industrial by-products, such as sewage by-products. Properly referred to as a Class 3 landfill.
MfE	Ministry for the Environment
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
NZ	New Zealand
NZWS	New Zealand Waste Strategy

Putrescible, garden, greenwaste	Plant based material and other bio-degradable material that can be recovered through composting, digestion or other similar processes.
RRP	Resource Recovery Park
RTS	Refuse Transfer Station
Service Delivery Review	As defined by s17A of the LGA 2002. Councils are required to review the cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good-quality local infrastructure, local public services, and performance of regulatory functions. A review under subsection (1) must consider options for the governance, funding, and delivery of infrastructure, services, and regulatory functions.
TA	Territorial Authority (a city or district council)
TDC	Taupo District Council
Waste	Means, according to the WMA: a) Anything disposed of or discarded, and b) Includes a type of waste that is defined by its composition or source (for example, organic waste, electronic waste, or construction and demolition waste); and c) To avoid doubt, includes any component or element of diverted material, if the component or element is disposed or or discarded.
WA	Waste Assessment as defined by s51 of the Waste Minimisation Act 2008. A Waste Assessment must be completed whenever a WMMP is reviewed
WMA	Waste Minimisation Act 2008
WMMP	A Waste Management and Minimisation Plan as defined by s43 of the Waste Minimisation Act 2008
WWTP	Wastewater treatment plant

A.2.0 National Legislative and Policy Context

A.2.1 The New Zealand Waste Strategy 2010

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

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

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

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

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

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

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

A.2.2 Waste Minimisation Act 2008

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

The WMA introduced tools, including:

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

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

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

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

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

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

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

In summary, the WMA:

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

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

A.2.3 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.[8] The review indicates that the levy may be extended in the future:

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

A.2.4 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.[9] No Priority Products have been declared as of xx 2017.

The following voluntary product stewardship schemes have been accredited by the Minister for the Environment:[10]

- Agrecovery rural recycling programme
- Envirocon product stewardship
- Fonterra Milk for Schools Recycling Programme
- Fuji Xerox Zero Landfill Scheme
- Holcim Geocycle Used Oil Recovery Programme (no longer operating)
- Interface ReEntry Programme
- Kimberly Clark NZ's Envirocomp Product Stewardship Scheme for Sanitary Hygiene Products
- Plasback

[8] 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
[9] Waste Management Act 2008 2(8)
[10] http://www.mfe.govt.nz/waste/product-stewardship/accredited-voluntary-schemes

- 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

A.2.5 Waste Minimisation Fund

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

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

Criteria for the Waste Minimisation Fund have been published:

1. Only waste minimisation projects are eligible for funding. Projects must promote or achieve waste minimisation. Waste minimisation covers the reduction of waste and the reuse, recycling and recovery of waste and diverted material. The scope of the fund includes educational projects that promote waste minimisation activity.

2. Projects must result in new waste minimisation activity, either by implementing new initiatives or a significant expansion in the scope or coverage of existing activities.

3. Funding is not for the ongoing financial support of existing activities, nor is it for the running costs of the existing activities of organisations, individuals, councils or firms.

4. Projects should be for a discrete timeframe of up to three years, after which the project objectives will have been achieved and, where appropriate, the initiative will become self-funding.

5. Funding can be for operational or capital expenditure required to undertake a project.

6. For projects where alternative, more suitable, Government funding streams are available (such as the Sustainable Management Fund, the Contaminated Sites Remediation Fund, or research funding from the Foundation for Research, Science and Technology), applicants should apply to these funding sources before applying to the Waste Minimisation Fund.

7. The applicant must be a legal entity.

8. The fund will not cover the entire cost of the project. Applicants will need part funding from other sources.

9. The minimum grant for feasibility studies will be $10,000.00. The minimum grant for other projects will be $50,000.00.

Application assessment criteria have also been published by the Ministry.

A.2.6 Local Government Act 2002

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

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

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

A.2.6.1 Section 17 A Review

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

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

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

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

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

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

While the WMMP process is wider in scope – considering all waste service provision in the local authority area – and generally taking a longer term, more strategic approach, there is substantial crossover between the section 17A requirements and those of the WMMP process, in particular in relation to local authority service provision. The S17A review may however take a deeper approach go into more detail in consideration of how services are to be delivered, looking particularly at financial aspects to a level that are not required under the WMMP process.

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

A.2.7 Resource Management Act 1991

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

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

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

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

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

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

These prohibitions aim to protect air quality.

A.2.8 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[11]) .
- 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.

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

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:

- 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[12]. 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.

A.2.9 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.

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

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.

A.2.10 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.[13]

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

A.2.11 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

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

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.[14]

A.2.12 Health and Safety at Work Act 2015[15]

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.

[14] From: MfE 2009: Waste Management and Minimisation Planning, Guidance for Territorial Authorities.
[15] 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.

A.2.13 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.

A.2.14 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.