



Bay of Plenty and Waikato Regions Waste Stocktake

Report for Bay of Plenty and Waikato Regional Councils

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Report for:

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Limitations

The preparation of this stocktake report has relied on information from many sources, including territorial authority waste assessments and waste management and minimisation plans, waste composition SWAP reports from several of the councils, resource consents, and information provided voluntarily by the waste and recycling industry. The accuracy of the data in this report is reliant on the accuracy of these sources and the data has been checked for accuracy by each of the councils involved. However, despite the efforts of all those involved, it has not been possible to calculate, with any degree of certainty, up-to-date tonnage and composition of waste being disposed to landfill or of diverted materials in the Bay of Plenty and Waikato regions.

Executive Summary

E.1.0 Introduction

This waste stocktake report has been undertaken to help construct a comprehensive picture of waste management in the Bay of Plenty and Waikato regions. It provides a snapshot of the current situation, and highlights key gaps and opportunities. This report updates and expands on separate waste stocktake reports conducted for the regions in 2007.

E.2.0 Key Findings

E.2.1 Territorial Authority Waste Management and Minimisation Plans

All of the territorial authorities (TAs) in the Bay of Plenty and Waikato regions have completed a waste assessment and adopted a new waste management and minimisation plan (WMMP) as required by the Waste Minimisation Act 2008 (WMA).

Five of the WMMPs contain 'Zero Waste' visions, while the remainder are split between reflecting the goals of The New Zealand Waste Strategy (reducing the harmful effects of waste, and improving the efficiency of resource use), and carrying over Long Term Plan (LTP) aspirations.

Ten councils set specific waste minimisation targets, while the remaining six had no specific targets. There was, however, variation in the type and number of targets set, with for example some having targets for specific waste streams while others set only overall targets.

Common actions identified in the WMMPs included increasing kerbside recycling, organic waste collections (10/16 councils), RTS management and pricing, improving data collection, actioning solid waste bylaws, improving infrastructure, collaboration - including lobbying of central government (for example on product stewardship), communications and education, and facilitating reuse.

Common themes in the WMMPs include:

- concerns around the Emissions Trading Scheme and rising disposal costs
- the ongoing presence of recyclables in the residual waste stream, even with recycling services in place
- lack of appropriate or sufficient facilities for waste and diverted materials within the districts or regions
- lack of data, both for council-controlled waste streams and those managed by the private sector
- opportunities to save costs and/or increase efficiency and effectiveness through collaboration
- significant proportions of organic waste in the residual waste stream
- addressing specific waste types such as hazardous and agricultural wastes.

There are few notable differences between the two regions, with the exception of a number of councils in the Bay of Plenty region highlighting issues with the distance to landfill disposal.

E.2.2 Waste Assessments

The waste assessments provide information on the council services provided, quantities and types of waste materials in council control (where this information is available), quantify future demand, and set out options for addressing this demand.

The most notable issue with the waste assessments is that, in most cases, consideration of wastes and diverted materials that are not directly managed by the TAs was not extensive. This is likely

because of difficulty in accessing data relating to the quantities and types of wastes not in direct council control, as well as councils' traditional focus on their own services rather than on the overall waste 'landscape'. However, a few waste assessments included data on private waste and recycling services that was obtained by approaching the private operators directly. Other areas such as private waste management services and facilities have been only briefly covered in many waste assessments.

The waste assessments often lack detail in areas such as:

- description of services (both council and private)
- description of facilities (mainly private)
- detailed description of services and council contract arrangements
- assessment of demand and addressing demand relating to waste streams outside council control.

While many TAs highlighted the difficulty in gathering data and information relating to non-council controlled waste streams and activities, not all carried this issue forward from their waste assessment to their WMMPs and action plans.

Of particular importance with regards to the lack of waste data is the inability of many councils to assess their share of the kerbside refuse market. Private waste operators collect domestic waste from the kerbside in all areas, but in many areas councils are not able to determine the extent of these collections. From the information available, the proportion of kerbside refuse collected privately varies considerably between districts, often related to the proportion of properties that the council services.

As many of the waste minimisation initiatives introduced by TAs are directed at the residential domestic waste stream, this lack of information seriously affects councils' ability to assess the effectiveness of their efforts.

E.2.3 Current TA Services

Fourteen of the sixteen TAs in Bay of Plenty and Waikato regions provide a kerbside refuse service to a proportion of residential properties. Seven out of the 14 operate on a user charge basis for refuse collection while a further two operate on a part charge basis (supplying the equivalent of one bag free per week and charging for additional bags). Charges range from \$1.00 to \$3.30. A.9.0 shows the services provided and the charges applied. Many rural properties are not serviced by council collections and private collection services often fill the gap. These are usually via the provision of 240-litre wheelie bins. The differing levels of service provision is one of the factors that result in differing levels of 'council control' over the waste stream between the districts.

Thirteen of the TAs provide a kerbside recycling collection. These are predominantly weekly collections utilising recycling crates. No authorities currently provide a wheelie bin-based recycling service. Insufficient capacity for householders to present their recyclable materials may be a constraining factor in recycling system performance across the districts. A.10.0 shows the types of collections and recyclable materials collected. Only one TA provides neither recycling or refuse collection; both services are provided in the district by private service providers.

Two TAs provide a greenwaste collection and two have trialled food waste collections. All except one of the TAs either own transfer stations that accept commodities for recycling or provide drop-off facilities for commodities.

E.2.4 TA Contracts

Most TAs hold contracts for the provision of kerbside waste services. Kerbside refuse collections are not provided by Waipa and Western Bay of Plenty District Councils. Rotorua District Council does not tender out its kerbside refuse collection, which is undertaken by a council unit.

Kerbside recycling collections are not provided by Western Bay of Plenty and Rotorua District Councils

and Tauranga City Council. Kawerau District Council does not tender out its kerbside recycling collection.

There are no clear synergies between council contract expiry dates that would facilitate collaboration on contracts in the immediate future. In the distinct geographical groupings of small councils, where collaboration may be most likely, existing expiry dates are not well-aligned. These groupings could include Opotiki, Whakatane, and Kawerau Districts and Otorohanga, Waitomo, and Waipa Districts.

While existing contract expiry dates do not favour collaboration through joint tendering in the short-term, joint tendering may be more likely in the future if the councils were to enter into discussions in the near-term about aligning contract expiry dates.

E.2.5 Bylaws:

Only two of the 16 TAs have no waste bylaw at the time of writing. The majority of existing bylaws are based on the model bylaw, and contain standard provisions. Three of the bylaws have no specific waste minimisation provision, while one has restrictions on recyclables in refuse, and five have provision for licensing.

Despite there being provision for licensing there is a lack of information actually being collected through the bylaws. This indicates that administration and enforcement processes are still to be developed and implemented. There is therefore an opportunity to collaborate and standardise these processes.

E.2.6 Landfill Disposal:

There are two large private landfill facilities (Hampton Downs and Tirohia) in the Waikato region and none in the Bay of Plenty region. There are four council owned disposal facilities which are located in Waitomo, South Waikato, Rotorua, and Taupo. The differences in ownership and distance to landfill result in different drivers for each council. Where there is proximity to private facilities there are then private flows to the private facilities (which is material over which the council has no influence). On the other hand, where facilities are council owned, this can result in a tension between the need to derive income from disposal versus the statutory duty to promote waste minimisation. Further, the per tonne costs of operating small facilities is relatively high which can result in those facilities losing tonnage to cheaper private facilities, exacerbating the high per tonne costs. Eastern Bay of Plenty councils face high transport costs due to a lack of proximate facilities, and this has led to an interest in alternative disposal and treatment options in these areas. Finally there are some concerns over the potential future costs of compliance with the Emissions Trading Scheme, particularly for smaller facilities where there are no gas capture systems in place.

E.2.7 Transfer stations:

There are 65 facilities across the two regions (43 in Waikato/ 22 in Bay of Plenty). Of these, two are private facilities (located in Hamilton and Waipa – plus one planned for Rotorua). Transfer stations are increasingly providing for reuse and product stewardship. Electronic-waste drop-offs are provided in 16 locations, while Paintwise now has 8 collection points for paint. Agricultural plastics and chemical containers are also collected at a range of sites.

Since the demise of the HazMobile, there appears to be a hazardous waste provision service gap.

E.2.8 Waste Data

Table E.1 Tonnage of Waste to Landfill from Bay of Plenty & Waikato

Waste stream	Bay of Plenty	Waikato	Total	% of overall waste stream
Kerbside refuse	48,192	78,929	127,121 T/annum	35.9%
<i>C&D waste</i>	13,879	26,700	40,578 T/annum	11.5%
<i>ICI waste</i>	43,346	83,389	126,735 T/annum	35.8%
<i>Landscaping waste</i>	7,514	14,456	21,971 T/annum	6.2%
<i>Residential waste</i>	10,688	20,561	31,248 T/annum	8.8%
Subtotal - General waste	75,427	145,105	220,532 T/annum	62.3%
Special waste	3,574	2,853	6,427 T/annum	1.8%
Total	127,193	226,887	354,080 T/annum	100.0%

It is estimated that a total of 354,080 tonnes of waste are disposed of to landfill annually from Bay of Plenty and Waikato regions. As the tonnage data has been taken from a number of different sources, no specific year has been attached to the figure.

Of the total amount disposed of to landfill, just over one third (35.9%) was kerbside refuse, and a further third was Industrial, Commercial & Institutional (ICI). Construction & Demolition (C&D) waste made up nearly 12% while less than 2% was special waste. The figure for special waste, which primarily includes biosolids, is the least reliable, as the smallest dataset was used for its calculation.

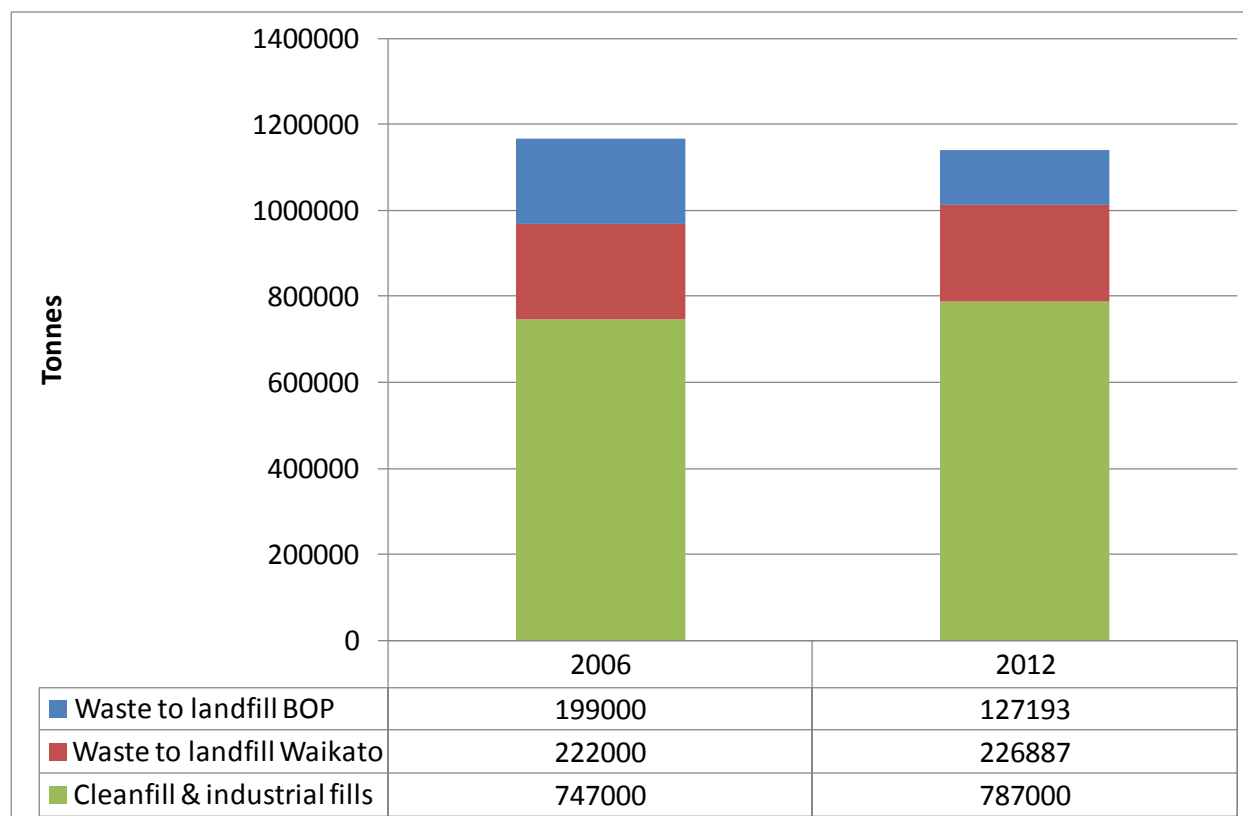
Table E.2: Other Land Disposal Sites – Bay of Plenty and Waikato Regions Combined

Other diverted materials	T/annum	T/capita/annum
All waste to other land disposal sites	787,000	1.13 tonnes
Waste other than natural, virgin, excavated material	411,300	0.59 tonnes

It has been estimated that 787,000 tonnes of material is disposed of at other land disposal sites annually. This is more than twice as much as is disposed of to landfills. Slightly more than half of this waste is other than natural, virgin, excavated materials.

The chart below shows the estimated quantities of waste disposed of in this report compared with estimates from the previous stocktake reports (based on 2006 data).

Figure E. 1: Change in Waste Quantities over Time¹



Overall estimated quantities are very similar between the two periods. Estimates of cleanfill and industrial fills are subject to a significant margin of error, and so the apparent difference between the estimated quantities cannot be taken to be representative of any trend. The quantity of waste disposed of from Waikato appears essentially the same over time, while the quantities attributed to the Bay of Plenty appear to have declined in the order of 36%. While this may be attributable to waste minimisation (such as through a number of large waste streams being addressed), it is not possible to say if it is due to this, or to differences in the methodologies used to gather the data.

As shown in the table on the next page, approximately half of the overall waste stream disposed of to landfill from Bay of Plenty and Waikato regions could be readily diverted either by recycling/recovering or by composting. Recyclable and compostable materials comprise similar proportions of the overall waste stream - about 25% each.

Recyclable paper is the largest recyclable component of the overall waste stream, comprising 10% of the total, with recyclable glass making up a further 5%.

Of the 25% of the waste stream that is compostable, 15% is food waste and 10% is greenwaste.

It is noted that this analysis only considers materials that are commonly recycled, recovered, or composted. Some diversion of other materials is already occurring, but not all of such materials have been classified as 'divertible' in the table (for example clothing or tyres).

¹ NB: Data does not necessarily relate precisely to the years indicated, but refers to the approximate period for which the estimates were made.

Table E.3: Diversion Potential of Overall Waste to Landfill from Bay of Plenty and Waikato Regions

	% of total	Tonnes per annum
RECYCLABLE MATERIALS		
Recyclable paper	10%	36,855 T/annum
Recyclable plastic	1%	4,982 T/annum
Ferrous metal	4%	15,056 T/annum
Non-ferrous metal	1%	2,856 T/annum
Recyclable glass	5%	16,007 T/annum
Rubble & concrete	2%	5,581 T/annum
Unpainted, untreated timber	3%	9,582 T/annum
Subtotal - Recyclable	26%	90,918 T/annum
COMPOSTABLE MATERIALS		
Food waste	15%	53,554 T/annum
Greenwaste	10%	36,708 T/annum
Subtotal - Compostable	25%	90,261 T/annum
Total - Divertable	51%	181,180 T/annum
Residual	49%	172,900 T/annum
Total	100%	354,080 T/annum

E.2.9 Waste Data Gaps

The study also considered the adequacy of waste data availability. Key gaps in waste data include:

- detailed identification of cleanfills, monofills, and other consented and unconsented land disposal sites
- composition and tonnage data for cleanfills, monofills, and other land disposal sites
- detailed data for private sector recycling, composting, organic processing, and other resource recovery activities
- access to tonnage and composition information on material disposed of or processed out of the regions
- the composition of special wastes sent to landfill
- the types and quantities of special wastes diverted from disposal to land
- limited information in the public domain on the origin of materials disposed of in the regions landfills
- limited information in the public domain about quantities and types of C&D material diverted
- limited information in the public domain about quantities and composition of C&D material disposed of to landfill, cleanfills, and other land disposal sites.

E.3.0 Recommendations

On the basis of the information compiled in this stocktake report, it is recommended that Waikato Regional Council and Bay of Plenty Regional Council consider the actions set out in the following subsections in order to further their strategic objectives.

E.3.1 Increasing Waste Diversion

Private Sector

- Investigate the development of industry-wide waste reduction and resource efficiency initiatives. Councils could begin with the C&D sector. One possible method of addressing waste reduction would be for the regional councils to gauge the interest in a cross-sector working group that might include representatives of the construction industry, resource recovery service providers, material suppliers, architects, and TAs.
- The regional councils and TAs should engage with the private sector to discuss voluntary measures for restricting quantities of recoverable materials that are collected via private kerbside residual waste collections. This could include, for example, voluntary restrictions on recoverable materials that can be placed in private kerbside refuse collections as part of the operators' terms of service.
- Undertake a project to jointly investigate markets for recovered materials, including those from kerbside recycling, where either the markets do not function effectively across the regions or where there is a need to develop new markets (for example, textiles, plastic bags, timber, compost products, etc). The regional councils' role in assisting market development could include establishing clearer, more consistent links with other programme outcomes (such as air, water, and soil quality), and ensuring that potential waste minimisation-related solutions are recognised in regional council policy responses.

Territorial Authorities

- Work with a TA (and its contractor) to trial best practice waste collection systems. This could cover all kerbside collection systems including organic waste. The trial could cover either a whole district or a specific area. The regional councils could assist with obtaining funding, providing expertise and resources to develop the systems, and monitoring, analysis, reporting and dissemination of outcomes.
- Economic modelling of organic waste collection and processing system options. The study could incorporate the outcomes of recent organic waste trials in Putaruru and Raglan, and would address questions around the use of centralised versus local organic processing options. The results could be presented in such a way as to be adaptable for use by all TAs.
- Quantify the costs and benefits of different charging systems and service levels for kerbside refuse collections. This would include assessing the costs and benefits of user-pays vs. rates-funded (with restricted 'free' volume) systems and the effects of extending kerbside services to rural areas.
- Investigate differential charging and separation of recoverable materials at transfer stations and establish and disseminate information on best practice
- Investigate and disseminate best practice information around residual waste collection options including charging, supply of bags, containment, and frequency of collections.
- Investigate the potential for diversion of biosolids and other wastes from TA operations currently landfilled to beneficial use
- Undertake further work on council procurement policies to quantify opportunities for use of recovered materials by council operations and develop common policies and measures. This could potentially boost markets for these materials and lead to higher levels of recovery.

- Promote and support adoption of programmes such as Agrecovery, RCN e-Cycle, and consistent provision of hazardous waste collection facilities across the regions.

E.3.2 Regulatory Tools to Improve Waste Management

Bylaw actions:

- promote to TAs the option of requiring the provision of data and implementation of waste management and minimisation options through bylaws (under the WMA 2008)
- work together to establish the legality and options for initiating 'disposal bans' for recoverable materials and/or limiting the size of kerbside containers that are provided by private waste collectors
- monitor and measure the effectiveness of bylaw actions aimed at incentivising waste minimisation
- establishing a cross-regional working party (for example a sub-committee of the Waste Liaison Group) to identify how drafting and implementation of bylaws can be made consistent across the TAs, particularly with regard to gathering consistent information from the waste industry.

Resource Management Act 1991 (RMA) actions:

- work internally to establish how the provision of data and implementation of waste management and minimisation options through resource consents (under the RMA) can be most effectively taken forward. This could include ways in which the objectives of the RMA and WMA could be aligned, particularly with regards to the consenting of land disposal sites.
- work directly with those controlling key wastes to voluntarily address issues with monitoring and management.
- communication of internal links between waste minimisation objectives as established by the regional council plans and policies and the issuing of consents for specific facilities.

E.3.3 Infrastructure

Disposal

- Investigate strategic long-term waste transport and disposal options for eastern Bay of Plenty and districts with small and potentially uneconomic landfills. A coordinated approach would seek to identify long-term demand, and how this could be met cost-effectively without creating disincentive for resource recovery in these areas. Identification of potential sites, technologies and waste flows would need to be considered. The investigation would also seek to address whether ownership of these facilities is best vested in the public or private sectors or delivered through some form of partnership arrangement.

Cleanfills

- Investigate options for collaboration around introducing a common bylaw across the districts to monitor and manage cleanfill resources more effectively.
- Investigate strategic long-term cleanfill disposal options for eastern Bay of Plenty and the eastern Waikato region. A coordinated approach would seek to identify long-term demand, and how this could be met cost-effectively without creating disincentive for resource recovery in these areas. Identification of potential sites, the types of facility, conditions imposed, and current and future waste flows would need to be considered. The investigation would also seek to address whether ownership of these facilities is best vested in the public or private sectors or delivered through some form of partnership arrangement.

Organic Wastes

- Establish a working group to communicate directly with the organic waste processing sector and identify barriers and issues to providing cost-effective organic waste processing options, for example for food waste.

E.3.4 Data

There are a range of potential actions which are discussed in section 5.0. Key actions include:

- establishing standard waste stream definitions for the purposes of monitoring and reporting of waste data
- introducing consistent waste operator licensing schemes (or some appropriate variant) across the regions that include mandatory reporting by waste collectors and waste facilities
- improving controls on cleanfills and managed fills, including reporting requirements, through upgrading of consent conditions or introduction of a 'cleanfill bylaw'
- developing a structured programme of waste audits at facilities throughout the region to provide accurate meaningful time series data on key waste streams
- introducing site waste management plans for construction and demolition sites to help track construction and demolition (C&D) waste
- focusing targets on key metrics which are measurable. The key metrics ultimately are the quantity of waste (per capita) to landfill and the composition of this waste. If good quality data can be gathered around these measures, then determining quantities of material diverted may not be necessary in terms of formulating and monitoring waste policy and strategy in the two regions.
- establishing a centralised waste data management system with clear lines of reporting and responsibility
- working with the Ministry for the Environment (MfE) to help establish a national tracking system for all hazardous waste
- collaborating with MfE on the national system for waste data reporting that is currently being discussed
- establishing annual reporting (to be aggregated at regional level) from key recovered material processing facilities

E.3.5 Collaboration

Procurement

- facilitate discussions between councils where joint working and shared services have potential to yield improved performance and efficiencies
- hold discussions with the Local Authority Shared Services organisation in each region to assess the suitability of these vehicles for engaging in joint working and procurement
- hold workshops where the experiences of councils, such as the east Waikato councils, which are currently in the process of procuring shared services, can be shared and lessons passed on

Communications and education

- work to develop a cross-regional strategy for education and communication around waste minimisation
- establish a working group to examine how TAs could more effectively procure and deliver common education programmes (e.g. home composting education programmes)

- facilitate workshops to explore options for collaboration where common systems and programmes are in place. Standardised communications materials may be developed which can then be tailored for each locality.

Lobbying Central Government

- Conduct workshops to establish key areas of concern where TAs and regional councils consider there is value in presenting a common voice on an issue to central government. Key concerns noted from this stocktake include product stewardship and priority products, data, information, and reporting. The Waste Liaison Group and the Regional Waste and Contaminated Land Forum are logical forums for this. A common policy position would need to be agreed through the workshops which could be presented to central government on behalf of the councils.

Community sector

- Engage with the Community Recycling Network and other community sector representatives to determine how a coordinated approach could facilitate enhanced service delivery by the community sector, particularly in relation to key waste streams where the community sector has traditionally operated (e.g. e-waste, reuse, home composting promotion, education, nappies, zero waste events etc), and in smaller communities.

Research and information

- work with industry sectors to explore research needs to support opportunities to reduce waste such as clean technologies, alternative materials use, and beneficial reuse options
- commission a study to explore the links between waste generation and management and other sectors, with a view to quantifying potential economic environmental and social benefits from a more holistic approach
- commission a report that focuses on identifying potential future issues related to wastes that may cause environmental harm and that could be avoided. This information would support further studies to be undertaken in collaboration with relevant agencies or sectors. The issue of farm waste management practices should be examined as part of this research.

Funding

- Waste Minimisation Fund (WMF) – This stocktake has identified a number of potential priority areas for collaboration and action. If these areas can be further refined and agreed to, the regional councils could have a vital role to play in collaborating to secure WMF support for projects that will clearly deliver on these objectives. It may be worthwhile to engage with the WMF managers to discuss how this may be facilitated to maximise the chances of success in applications to the Fund and optimise and coordinate efforts from within the regions. While the regional councils may identify certain projects themselves, if priority areas can be agreed then the regional councils could signal their intentions to potentially support private or TA-initiated WMF applications that clearly assist in the delivery of the regional strategic objectives.
- investigate other funding mechanisms that can be utilised for waste minimisation initiatives in the region, for example, Envirolink funding and Ministry of Business Innovation and Enterprise research funding.

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1.0 Introduction

The Bay of Plenty and Waikato Regional Councils engaged Eunomia Research & Consulting Ltd (Eunomia) and Waste Not Consulting Ltd (Waste Not) to update the 2007 stocktakes of waste infrastructure and associated strategic assessment in the two regions². As part of this stocktake update, the two regional councils requested a review of all territorial authority (TA) waste assessments and waste management and minimisation plans (WMMPs) for the two regions, and an assessment of strategic opportunities for TAs and private industry to reduce waste and to work collaboratively within and/or across the regions.

In 2012, Waikato Regional Council released *Waste to Resource: Waikato Waste and Resource Efficiency Strategy 2012-2015*. Undertaking this stocktake was one of the priority actions identified in the strategy.

The Bay of Plenty Regional Council is planning to review its regional waste strategy during 2013, and this report will provide valuable background information and data for this review.

The objective of the project has been to provide a comprehensive picture of waste management in the regions, including a snapshot of the current situation, and highlight key gaps and opportunities. Key areas include:

- a review and assessment of all waste assessments and WMMPs, existing services, and bylaws
- a summary of territorial authority waste to landfill figures, *Solid Waste Analysis Protocol 2002* (SWAP) composition data, and recycling quantities
- aggregated annual waste figures to Waikato and Bay of Plenty landfills
- a review of Ministry for the Environment (MfE) waste data
- a summary of waste information and data gaps, issues, and opportunities
- a summary of advice and assistance supporting waste minimisation in the region
- waste collection, processing, and disposal infrastructure
- existing capability for processing materials both in the regions and in other locations
- flow of materials within, outside of and into the region
- an assessment of regulatory barriers to better waste minimisation and regulatory opportunities.

1.1 Overview of Regions

Waikato and Bay of Plenty regions are adjacent to each other in the upper central North Island as shown in the map on the following page.

² Sinclair Knight Merz Ltd (2007) “*Environment Waikato Technical Report 2007/44: Waikato Regional Waste Infrastructure Stocktake and Strategic Assessment*” available on www.waikatoregion.govt.nz; and Sinclair Knight Merz Ltd (2007), “*Waste Infrastructure Review and Strategic Assessment*” available from the Bay of Plenty Regional Council.



Map 1 – Territorial Authority Boundaries for Waikato and Bay of Plenty Regions

1.1.1 Waikato Region

Waikato region occupies a strategic location south of the main centre of Auckland, meaning that materials (and waste) transiting in and out of Auckland from the south must pass through the region. Key economic activities in the Waikato region include farming (in particular dairy farming), forestry, and tourism.

Waikato has a population of approximately 416,000 (Statistics NZ 2011 population projections). The largest urban centre is Hamilton with a population of approximately 145,500 in the greater urban area. Hamilton is home to the University of Waikato and the Waikato Institute of Technology, which provide access to research resources.

The region is divided into eleven TAs spread across a large geographical area of approximately 25,000 km² or 2.5 million hectares.

1.1.2 Bay of Plenty

Bay of Plenty is one of the country's primary fruit growing regions, and also has important forestry and tourism industries. It is home to the Port of Tauranga, the country's largest and fastest growing container port, which places Bay of Plenty in a strategic position.

The region has a population of approximately 279,600 (Statistics NZ 2011 population projections). The largest urban centre is Tauranga with a population of approximately 117,100 in the greater urban area. There are no other centres of significant size in the region.

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

1.2 Key National Drivers

1.2.1 Central Government Policy

1.2.1.1 The New Zealand Waste Strategy

The New Zealand Waste Strategy (NZWS) was released in October 2010, and contains two main goals:

1. reducing the harmful effects of waste
2. improving the efficiency of resource use

The intent of the 2010 strategy is to enable TAs to take a flexible approach to waste management, encourage development of targets and solutions that are appropriate to local needs, and to efficiently allocate waste management and minimisation effort and resources.

The NZWS identifies regional council responsibilities as follows:

“Under the Resource Management Act, regional councils regulate the environmental effects of waste disposal facilities by granting and monitoring resource consents. Regional councils can also play an important role in facilitating a collaborative approach to waste management and minimisation planning amongst territorial authorities.”

The NZWS recognises that regional councils have a role in promoting coordination and collaboration in respect of waste management and minimisation.

1.2.2 National Legislation

There are a number of important pieces of legislation that impact on the management of waste in New Zealand. These are discussed briefly below.

1.2.2.1 The Waste Minimisation Act 2008

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 TAs under previous legislation, including Local Government Act 1974, Local Government Amendment Act (No 4) 1996, and Local Government Act 2002 (LGA). The purpose of the WMA is to encourage a reduction in the amount of waste disposed of in New Zealand.

In summary, the WMA:

- Puts a levy on all waste disposed of in a landfill. The levy was set initially at \$10 per tonne and came into effect from July 2009. Half of the funds collected are provided to TAs to be spent on the implementation of their WMMPs. The remainder, less any administration costs, goes into a contestable fund for waste minimisation initiatives.
- Provides powers for the development of producer responsibility schemes. If industry sectors do not make adequate provision for producer responsibility the Government, under the WMA, has the power to introduce mandatory schemes.
- Allows for regulations making it mandatory for certain groups (for example, landfill operators) to report on waste to improve information on waste minimisation. This will impact on councils owning or operating landfills.
- Clarifies the roles and responsibilities of TAs with respect to waste minimisation e.g. updating WMMPs and administering levy funding for waste minimisation projects.
- Introduces a Waste Advisory Board to give independent advice to the Minister for the Environment on waste minimisation issues.

1.2.2.2 Emissions Trading Scheme (ETS) & Amendments

The Climate Change (Emissions Trading) Amendment Act 2008 in its current form will require landfill owners to surrender emission units to cover methane emissions generated from the landfill. Should any future solid waste incineration plants be constructed, the Act would also require emission units to be surrendered to cover carbon dioxide, methane and nitrous oxide emissions from the incineration of household wastes.

The Climate Change (Unique Emissions Factors) Amendment Regulations 2010 requires landfill operators to surrender New Zealand Emissions Units (NZUs) from January 2013 for carbon-dioxide equivalent gases (CO₂-e) generated and released into the atmosphere. Landfill operators are required to surrender units only for methane that is released not for CO₂, as CO₂ generated aerobically in landfills is considered biogenic (part of the natural carbon cycle).

Under recent amendments³ each tonne of waste landfilled is assumed by default to generate methane equivalent to 1.31 tonnes of CO₂-e. Therefore at a carbon price of \$25 per tonne

³ Climate Change Response (Emissions Trading and Other Matters) Amendment Act 8 Nov 2012 & <http://www.climatechange.govt.nz/emissions-trading-scheme/ets-amendments/questions-answers.html>

for example (the price cap currently imposed by the Government) a landfill operator would have to pay an additional \$32.75 for each tonne of waste disposed of⁴.

The Regulations, however, allow for landfill operators to reduce their liabilities by applying for a Unique Emissions Factor (UEF) on the basis of the proportion of landfill methane that they capture and destroy and/or on the quantity of methane generated relative to a default standard. There are two types of UEFs:

- If a landfill captures and destroys methane generated in a landfill through a gas capture system the operators can reduce their liabilities in proportion to the amount of methane captured and destroyed by applying for a methane capture and destruction UEF (up to 90% capture and destruction is allowed to be claimed under the Regulations).
- The other method to reduce liabilities is by showing that the landfill accepts less biodegradable waste than is assumed by the default emissions factor and applying for a waste composition UEF.

The ability of landfill operators to reduce their exposure to ETS costs through applying for a UEF (in particular for gas capture, which all landfills over 1 million tonnes capacity have in place due to a need to comply with the National Environmental Standard for Air Quality), means that the financial impact of the ETS is potentially significantly reduced. In addition, recent amendments to the ETS that introduce a transitional two for one arrangement for carbon emissions (one NZU must be surrendered for every two units of carbon emitted) and a price cap of \$25 per tonne significantly reduce the potential ETS costs. No end date is specified in the legislation. This means that the transition phase will continue until at least the next ETS review, which the Government has signalled will take place in 2015.

This is compounded by a recent global crash in the price of carbon which has seen the cost fall to in the order of \$2.50 per tonne.

Under scheme costs and carbon prices current at the time of writing, a landfill that was capturing and destroying 75% of methane generated would be liable for ETS costs in the order of \$0.40 per tonne of waste (excluding administration costs).

While these costs are unlikely to drive significant change, if the transitional provisions were to be removed and carbon prices were to rise significantly in the future, the ETS may still become an important price driver. At present this seems unlikely to occur in the short to medium-term.

1.2.2.3 Local Government Act 2002

Key requirements of the LGA relate to the decision-making process TAs must follow when considering present and future social, economic, environmental, and cultural wellbeing. The implications of a decision regarding waste management should be assessed according to this requirement.

The LGA also sets out the consultative process that must be followed when a Waste Management Plan, and now a WMMP, is reviewed. Minor amendments are possible through the annual or other planning processes, but a 'significant' review requires that a special consultative process is carried out.

⁴ It is worth noting that under the current regulations there does not appear to be any exemption for cover material entering a landfill. This means that NZUs would need to be surrendered for cover material used unless this is designated as a different class of waste. This issue may require further investigation.

1.2.2.4 Local Government Act 2002 Amendment Act 2012⁵

The Act amends the LGA to improve the operation of local government by focusing councils on operating more efficiently. A key aspect of the Act is that Section 10b replaces the previous purpose of the Act (considering present and future social, economic, environmental, and cultural wellbeing) with “to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.”

Also of importance in this context, the Act aims to streamline local authority reorganisation procedures, give the Local Government Commission more flexibility to develop reorganisation proposals put forward by individuals, organisations, or communities, and make it easier and faster for proposals to proceed. In other words, the Act aims to foster greater levels of amalgamation, joint working, and collaboration, with efficiency as the key driver.

The impacts of this Act on regional council functions, on local authority amalgamations, and on the degree of consideration which councils might seek to give to issues of sustainability in formulating and delivering services remains to be seen.

1.2.2.5 The Resource Management Act 1991

The Resource Management Act 1991 (RMA) provides guidelines and regulations for the 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 onto 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 recovered 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; and the allocation and use of water.

Under the RMA, TAs’ responsibilities include 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.

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 Relating to Certain Air Pollutants, Dioxins, and Other Toxics) Regulations 2004 (NES for Air Quality). This NES for Air Quality requires landfills 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. The result is increased infrastructure and

⁵ <http://www.legislation.govt.nz/act/public/2012/0093/latest/whole.html>

operational costs for qualifying landfills, although with some costs potentially offset by the harnessing of captured emissions for energy generation.

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 the operation of high-temperature hazardous waste incinerators. These prohibitions limit the range of waste treatment/disposal options available within New Zealand with the aim of protecting air quality.⁶

1.2.3 Waste Minimisation Fund

As provided for by the WMA, the Waste Minimisation Fund (WMF) has been set up by the MfE 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.

Published criteria for the WMF are as follows:

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 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.*

(Source: MfE website)

⁶ Taken from: Ministry for the Environment (2009), *Waste Minimisation in Waste Management and Minimisation Planning - Guidance for Territorial Authorities*, Wellington. Available at www.mfe.govt.nz.

Assessment criteria

The broad assessment criteria established for the WMF are as follows:

Project Benefits

1. Preference will be given to projects that collectively give the largest net benefit over time. The assessment of the effectiveness of projects will include the extent to which the projects can demonstrate:
 - likelihood of success;
 - reduction of harm to the environment;
 - reduction in the volume of waste disposed of;
 - economic, environmental, social or cultural benefits;
 - longer-term benefits after the completion of the project.
2. Projects will be assessed for their strategic value in achieving the purpose of the fund. Strategic value means the likely ability of projects to act as catalysts that enhance and extend the uptake of waste minimisation.
3. The degree of partnership and cross-sectoral collaboration will be taken into account in assessing the strategic value of proposals.
4. The level of funding from other sources will be taken into account. Shared funding is preferred.

Project Delivery

The applicant must demonstrate:

1. ability to deliver the project
2. how the project will achieve its goals
3. how the effectiveness of the project will be monitored, evaluated and reported
4. if and how the project will be used to promote waste minimisation to the wider public
5. if and how the project will continue after funding ends and become self sustaining, particularly if the funding is for the establishment phase of a longer term project.

There have been a wide range of projects successfully applying for funding under the scheme. However, it does not appear that the projects funded have conformed to a clear strategic direction, and although there have been some informal indications from the Ministry that future funding rounds may be more targeted, this is, at the time of writing, yet to be made explicit. Clear direction from the Ministry regarding the types of projects that are likely to be favoured would assist regional and TAs in focussing future applications to the fund.

1.3 Key Regional Drivers

1.3.1 Waikato Region

1.3.1.1 Waikato Regional Policy Statement

The *Waikato Regional Policy Statement* contains the following objective in respect of waste:

The efficient use of resources and a reduction in the quantities of wastes requiring disposal in the Waikato region, and the adverse effects associated with their generation and disposal.

1.3.1.2 Regional Waste Management Plan

The Waikato Regional Council has adopted a waste and resource efficiency strategy – *Waste to Resource: Waikato Waste and Resource Efficiency Strategy 2012-2015*. The strategy sets out a broad action plan across six focus areas:

- improve waste data and information management
- review regulatory environment governing waste
- reduce the harmful impacts of waste
- increase resource efficiency and beneficial reuse
- stimulate research and innovation
- foster partnerships collaboration and funding

One of the actions arising from the strategy has been to provide for a review of the regional waste stocktake and infrastructure study, which the current report is being undertaken to fulfil.

1.3.1.3 Future Proof Strategy

Future Proof is the Waikato region's growth strategy and implementation plan relating to growth in the region to 2050. The strategy recognises that local authorities in the Waikato region have limited control over the solid waste stream, and also have limited ability to obtain the information required to enable informed decision-making. The strategy outlines several approaches to addressing waste management issues:

- promoting waste reduction
- liaising more closely with communities
- providing incentives to encourage good practice and to discourage inappropriate practices.

The strategy requires “all partner councils to establish effective waste minimisation strategies to reduce waste disposal to landfill”.

1.3.2 Bay of Plenty Region

1.3.2.1 Waste Strategy

The *Bay of Plenty Regional Waste Strategy* dates from June 2004 and the council intends to update this document in 2013. This stocktake report will feed into the development of a revised regional strategy for waste. The 2004 strategy contained a vision of zero waste to landfill and a sustainable Bay of Plenty, and set out a range of programmes as associated targets covering waste minimisation, contaminated sites, hazardous waste, and cleanfills. The target dates set out in the strategy have now all passed.

1.3.2.2 Regional Land & Water Plan

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

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

- a) *diversion of organic materials from landfills by composting, reuse of organic materials where opportunities are available, and land application of organic materials*

b) *limiting the volume of liquid or sludge wastes disposed to landfills*

1.3.2.3 Ten Year Plan 2012-2022

Waste-related objectives contained in the Bay of Plenty Regional Council's *Ten Year Plan 2012-2022* potentially fall under a number of headings. These are noted below.

Community Engagement Including:

- Implementing the sustainable schools programme including Enviroschools

Sustainable Land Management Including:

- Work with industry to develop policies and approaches to promote soil-health best-management practices, reduce sediment, forest debris and erosion, and improve the region's resilience to climate change

Resource Regulation Including:

- Raise awareness, and provide advice and guidance to the public, tangata whenua, industry, and business on ways to prevent pollution, minimise waste production, and enable sustainable management of the region's natural resources.
- Review the Regional Waste Strategy;
- Develop and finalise regional Guidelines for Landfill and Cleanfill Management (Years One to Two);

1.4 Summary of Key Drivers

While there are a range of high-level policy drivers that all stand to have an influence on shaping action within the regions, one underlying driver that is likely to gain in importance over time is the need to move towards higher levels of efficiency. The need to seek new and more efficient and effective ways of operating are associated with:

- increased efforts at collaboration between TAs, regional councils, and industry
- recognition of the benefits from sharing knowledge, systems, and processes
- potential for increased costs from the ETS
- a growing recognition that waste represents inefficient use of resources – as reflected in Waikato Regional Council's *Waste to Resource: Waikato Waste and Resource Efficiency Strategy 2012-15*
- the potential opportunities for the regions if waste is viewed as a resource
- the current Government's strong indication of seeking greater efficiency from the public sector through the reformation of the LGA.

While there may sometimes be seen to be a natural antagonism between the need to protect our natural resources and the desire on the part of government to restrain spending, there is in fact a clear intersection of these different considerations in the area of efficiency. For this type of synergy to be realised, however, it is important for a longer-term rather than a shorter-term view of the potential costs and benefits to be taken into account.

2.0 Methodology

The collection of waste and recycling data is a challenging task. There are a wide range of organisations involved and much of the data that is collected is commercially-sensitive. Issues with the definition of waste (when considering which recovered or diverted materials should be included) and the ease of movement of waste across local and regional boundaries makes the task of collating meaningful data more difficult.

One of the objectives of this project has been to assess readily-available information in order to determine the movement of waste and diverted materials into, around, and out of the Waikato and Bay of Plenty regions. Collection and processing of by-products has been identified where possible but not necessarily quantified due to the lack of meaningful data - examples include the creation of wood waste and subsequent use for biofuel within a single operation, and the diversion of food processing waste for use as stock food. Organic waste processed via home composting and waste disposed of to on-farm sites have not been quantified.

The project also aims to identify common strategic issues for TAs, and identify opportunities for collaboration and joint working to address these issues.

Information regarding waste flows and quantities has been aggregated at a regional level and was collected from a wide range of sources including:

- existing reports on waste management in the two regions, including previous waste stocktake reports
- waste assessments from the relevant local authorities
- searching web databases such as Yellow Pages, UBD and Finda for listings for waste and recycling companies
- reviewing overview information on industry and services in the two regions – EECA Heat Plant Database, and websites for major waste and recycling companies
- questionnaires issued to TAs within regions (refer Appendix A.14.0)
- telephone calls with local authorities, key waste sector organisations, and a selection of major businesses operating in the two regions (see Appendix A.1.0 for acknowledgements).

It is important to note that while some data is known to be accurate, other parts of the dataset are, by necessity, based on estimates. Reasonably reliable data was collected regarding:

- the quantity of waste disposed of by councils to sanitary landfills
- the quantity of commodities collected and recycled by councils
- in some instances, the composition of waste collected by councils
- in some instances, the composition of waste disposed of to sanitary landfill. ;

Quantities for the following waste streams were estimated based on the information sources above:

- the quantity of diverted materials other than commodities
- the quantity of waste disposed of to cleanfills

The methodology was further influenced by the desire to ensure that a strategic approach was taken, so as to provide a meaningful basis on which to prioritise waste streams to target and the actions that need to follow. This is important for Bay of Plenty region, which is shortly to begin the process of reviewing its regional waste strategy, and for the Waikato region in identifying and prioritising potential projects to deliver its Waste to Resource strategy.

Strategic issues were identified by:

- reviewing all waste assessments and WMMPs published by TAs in the two regions
- reviewing relevant previous reports
- reviewing the policy context at local, regional, and national levels.

The aim was to take into account the key drivers and establish priorities, and also to provide a strategic analysis of the findings of the study that can lead to the development of a clear programme of action.

Specific areas of the methodology are described in more detail below.

2.1 Identifying Waste Streams

This project element built up a picture of waste flows in the two regions and identified where opportunities exist to divert material for beneficial use. The following steps were undertaken.

- Collation and summarising of the existing information, including information from the *Waste Infrastructure Review and Strategic Assessment* for both regions⁷, SWAP audits, TA waste assessments, particularly waste data, and other publicly available information.
- Information was updated and supplemented through interviews and contact with waste producers, waste processors and disposers, and key stakeholders. Given an initial focus on identifying waste streams that presented opportunities to be diverted for beneficial use, more time was dedicated to identifying those wastes that were being sent for landfill disposal, or being disposed of in some other way that was less than optimal. A list of those contacted is provided in Appendix A.1.0. This list was compiled by referring to regional phone directories, internet searches (such as UBD and Finda), and by following up on suggestions provided during earlier interviews with territorial authority and private sector contacts.
- Data gaps were identified.

Extrapolations and estimates were undertaken to build up a coherent picture. The main areas where data gaps existed, and where extrapolations and estimates were required, were regarding disposal to cleanfills, monofills, and other land disposal sites and diversion of commercial and industrial wastes.

⁷ Sinclair Knight Merz Ltd (2007), *Environment Waikato Technical Report 2007/44: Waikato Regional Waste Infrastructure Stocktake and Strategic Assessment*, available on www.waikatoregion.govt.nz; and Sinclair Knight Merz Ltd (2007), *Waste Infrastructure Review and Strategic Assessment*, available from the Bay of Plenty Regional Council.

2.2 Key data sources

2.2.1 Waste Disposed of to Landfill

Data on waste disposed of to landfill within each region was collected from the following sources.

2.2.1.1 Quantity of waste from the Bay of Plenty and Waikato Regions to landfill:

- TA waste assessments
- Waikato Regional Council (for Hampton Downs and Tirohia Landfills)
- MfE (waste to landfill for Bay of Plenty and Waikato regions, based on data from the MfE's Online Waste Levy System)
- data provided by TA waste officers in response to a survey. The results of the survey are presented in a separate, confidential addendum.

2.2.1.2 Quantity of waste from Bay of Plenty and Waikato Regions to cleanfills and monofills:

- estimate based on available information on 76 land disposal sites, including consented limits for major disposal sites

2.2.1.3 Composition of waste disposed of to landfill:

- composition of waste to landfill from SWAP survey results from various districts within the regions
- composition of waste to landfill for specific facilities.

2.2.2 Quantity of Diverted Materials

- discussions with key materials aggregators/processors providing indicative quantities
- data from territorial authority waste assessments.

To supplement this data, estimates of various waste streams for the regions or parts of the regions were obtained from various waste management companies that operate in the region, such as New Zealand Remediation, EcoCast Ltd, EnviroFert, Transpacific Industries Group (NZ) Ltd (TPI Waste Management), and Lowe Corporation.

From all data sources given above, total estimates for diverted materials and potential diverted materials have been made.

2.3 Conclusions and Recommendations

A strategic evaluation of the opportunities for waste diversion options has been undertaken, taking into account key priorities and drivers, opportunities for cooperation and collaboration between TAs and across regions, key stakeholders, the potential for public-private partnerships and central government support, planned and existing services and facilities, and any other significant issues or constraints.

3.0 Territorial Authority Waste Assessments and WMMPs

3.1 Introduction

Every territorial authority (TA) was required by the Waste Minimisation Act 2008 (WMA) to carry out a formal review of its existing waste management plan, and ensure that it has a waste management and minimisation plan (WMMP) in place that fulfils the criteria of the WMA by July 2012. As a preliminary step to the review and (if necessary) preparation of the WMMP, TAs were also required to carry out a waste assessment. The waste assessment is intended to provide the information necessary to identify the key issues and priority actions that will be included in a draft WMMP.

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

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

Waste assessments can vary in scope as to whether they include solid, liquid, or gaseous wastes. These documents are also required to consider waste and recovered material streams (including services applying to those waste streams) beyond those in the immediate control of the TA. Waste assessments should include all current commercial and industrial waste and recovered material streams, all relevant services provided by the private sector, a forecast of future demand across all waste and recovered material streams, consideration of options to meet forecast demand, and the TA's intended role in meeting that demand. The MfE's document *Waste Management and Minimisation Planning: Guidance for Territorial Authorities*⁸ recognises that in many cases it is difficult for TAs to carry out a detailed assessment of waste that is not in their direct control, however, a reasonable level of effort should be made to comply with this requirement, and barriers should be addressed to ensure that a detailed assessment can be carried out in future.

The WMA also sets out requirements for WMMPs, including;

- 1) consideration of the waste hierarchy
- 2) ensuring waste does not become a nuisance
- 3) having regard to the New Zealand Waste Strategy and other key government policies
- 4) considering the outcomes of the waste assessment
- 5) following the special consultative procedure set out in the LGA.

Waste assessments and WMMPs can be carried out jointly across more than one TA.

⁸ Ministry for the Environment (2009), *Waste Management and Minimisation Planning: Guidance for Territorial Authorities*, Wellington. Available on www.mfe.govt.nz.

The dates of adoption for the TA waste assessments and WMMPs and the key issues from the WMMPs are shown in Appendix A.3.0.

3.1.1 Commentary on WMMPs and Key Issues

All of the TAs in the Bay of Plenty and Waikato regions have completed a waste assessment and adopted a new WMMP.

Common themes in the WMMPs include:

- concerns around the ETS and rising disposal costs
- the ongoing presence of recyclables in the residual waste stream, even with recycling services in place
- lack of appropriate or sufficient facilities for waste and diverted materials within the districts or regions
- lack of data, both for council-controlled waste streams and those managed by the private sector
- opportunities to save costs and/or increase efficiency and effectiveness through collaboration
- significant proportions of organic waste in the residual waste stream
- addressing specific waste types, such as hazardous and agricultural wastes.

There are few notable differences between the two regions, although slightly more councils in the Bay of Plenty region have highlighted issues related to the distance to landfill disposal.

3.2 Waste Assessments

3.2.1 Scope

The scope of waste assessments was focused on solid waste, with liquid and gaseous wastes excluded. In some cases, liquid or gaseous wastes were considered where there was a direct impact on solid waste management – for example, landfill disposal being used for biosolids.

3.2.2 Waste Data

The quality and quantity of information relating to waste and diverted material streams varies greatly between TAs. The best data is available from TAs that own or control the transfer stations and/or landfill facilities in their area. Examples of this include Rotorua DC, which owns its own landfill, and the east Waikato councils where a significant proportion of waste and diverted materials pass through council-owned refuse transfer stations (RTSs).

There are no specific guidelines as to what data should be included in waste assessments, and so TAs may choose not to include data they believe is not directly relevant or that is commercially-sensitive. As it was expected that there was more data available from the TAs than had been included in their waste assessments, a survey form was sent to each of the TAs. The survey form requested a wide range of information on waste flows, both council-controlled and non-council controlled, and tonnage data on approximately twenty different waste streams. The results of the survey are presented in a separate confidential addendum.

Table 1 presents, for each TA, the types of data that were included in their waste assessment.

Table 1: Waste Data in TA Waste Assessments.

TA	Waste to Landfill (Quantities)	Diverted Materials (Quantities)	Composition	Comparative Quantities
Waikato Region				
Hamilton CC	Total waste to landfill	Total diverted materials	Kerbside refuse RTS	
Hauraki DC	Kerbside refuse RTS Landfill Private waste Total waste to landfill	Kerbside RTS Private diverted materials Total diverted materials	Waste to landfill Kerbside refuse	Kerbside – proportion of waste to landfill Per capita waste to landfill Per capita kerbside refuse Per capita diverted materials
Matamata-Piako DC	Kerbside refuse RTS Landfill Private waste Total waste to landfill	Kerbside RTS Private diverted materials Total diverted materials	Waste to landfill Kerbside refuse	Kerbside – proportion of waste to landfill Per capita waste to landfill Per capita kerbside refuse Per capita diverted materials
Otorohanga DC	Kerbside refuse Council-controlled total waste to landfill	Kerbside recycling RTS Council-controlled total diverted materials	Kerbside refuse	
South Waikato DC	RTS	RTS Drop-off	Waste to landfill Waste to landfill by activity	Per capita waste to landfill Per capita kerbside refuse
Taupo DC	Total waste to landfill	Council-controlled total diverted materials	Waste to landfill Council diverted materials	Per capita waste to landfill Per capita kerbside refuse
Thames-Coromandel DC	Kerbside refuse RTS Landfill Private waste Total waste to landfill	Kerbside RTS Private diverted materials Total diverted materials	Waste to landfill Kerbside refuse	Kerbside – proportion of waste to landfill Per capita waste to landfill Per capita kerbside refuse Per capita diverted materials
Waikato DC	Kerbside refuse RTS Council-controlled total waste to landfill	Kerbside recycling RTS Council-controlled total diverted materials	Waste to landfill Kerbside refuse	Per capita waste to landfill Per capita diverted materials

TA	Waste to Landfill (Quantities)	Diverted Materials (Quantities)	Composition	Comparative Quantities
	Estimates for private kerbside collections and general waste to landfill	Estimates for non-Council diverted materials and total diverted materials		
Waipa DC	Kerbside refuse RTS Council-controlled total waste to landfill		Waste to landfill	
Waitomo DC	Kerbside refuse Council-controlled total waste to landfill Total waste to landfill	Council-controlled total diverted materials	Kerbside refuse	
Bay of Plenty Region				
Kawerau DC	Council-controlled total waste to landfill	Council-controlled total diverted materials	Kerbside refuse	
Opotiki DC	Kerbside (council) RTS Landfill	Kerbside (council) RTS Council-controlled total diverted materials	RTS	
Rotorua DC	Kerbside refuse RTS Landfill Total waste to landfill	RTS	Waste to landfill	
Tauranga CC and Western BOP DC	RTS	RTS	Waste to landfill RTS	
Whakatane DC	Kerbside refuse RTS Landfill (total)	Kerbside recycling RTS Council-controlled total diverted materials	Waste to landfill Waste to landfill by activity Kerbside refuse	Per capita waste to landfill Per capita kerbside refuse Per capita diverted materials

3.2.3 Commentary on Waste Assessments

The TA waste assessments provide information on the council services provided, quantities and types of waste materials in council control (where this information is available), quantify future demand, and set out options for addressing this demand.

The most notable issue with the waste assessments is that, in most cases, consideration of wastes and diverted materials that are not directly managed by the TAs was not extensive. This is likely to do with difficulty in accessing data relating to the quantities and types of wastes not in direct council control and with councils' traditional focus on their own services rather than on the overall waste 'landscape'. However, a few waste assessments included

data on private waste and recycling services that was obtained by approaching the private operators directly. Other areas such as private waste management services and facilities have been only briefly covered in many waste assessments.

Many of the waste assessments are lacking detail in areas such as:

- description of services (both council and private)
- description of facilities (mainly private)
- detailed description of services and council contract arrangements
- assessment of demand and addressing demand relating to waste streams outside council control.

The WMA states that the level to which this information is provided should be appropriate when considering:

- the significance of the information
- the costs of, and difficulty in, obtaining the information
- the extent of the TA's resources
- the possibility that the TA may be directed under the Health Act 1956 to provide the services referred to in that Act
- the impact on the completeness of the assessment, particularly the forecast of future demands and options assessed.

While many TAs highlighted the difficulty in gathering data and information relating to non-council controlled waste streams and activities, not all carried this issue forward from their waste assessment to their WMMPs and action plans.

Of particular importance with regards to the lack of waste data is the inability of many councils to assess their share of the kerbside refuse market. Private waste operators collect domestic waste from the kerbside in all areas, but in many areas councils are not able to determine the extent of these collections. From the information available, the proportion of kerbside refuse collected privately varies considerably between districts, often related to the proportion of properties that the council services.

As many of the waste minimisation initiatives introduced by TAs are directed at the residential domestic waste stream, this lack of information seriously affects councils' ability to assess the effectiveness of these initiatives.

3.3 WMMPs

3.3.1 Vision, Goals, and Objectives

Most WMMPs set out the council's vision for waste management and minimisation, with associated goals and objectives. These are shown in Appendix A.4.0.

3.3.1.1 Commentary on Vision, Goals, and Objectives

'Zero Waste' is a common theme for many councils' visions, with five councils reflecting this aspiration in their visions. The remainder are split between visions that are carried over from the LTP, or are implied as such, and vision statements that reflect the New Zealand Waste Strategy goals. Some TAs have chosen not to include specific visions, goals, or objectives, or have expressed these in different terminology. Generally however, it is clear what the overall

aims of the WMMPs are and that these are consistent with both national and regional waste policies.

3.3.2 Targets

About two thirds of the TAs in the regions have set specific targets in their WMMPs. These are shown in Table 2. Hamilton City Council, and Kawerau, Otorohanga, South Waikato, and Waipa District Councils have not set specific targets.

Table 2: Summary of Targets from WMMPs

TA	Timeframe	Kerbside Recycling	Total diverted material	C&D recycling	Nappy composting	Organic waste	Residual
Waikato Region							
Matamata-Piako DC	2022						Reduce to 258kg per capita per year
Thames-Coromandel DC	2022						Reduce to 349kg per capita per year
Waikato DC	2022						Reduce to 338kg per capita per year
Waitomo DC	2016						Reduction of 30%
Taupo DC	2018 (2010 baseline)						Reduce by 24%
Bay of Plenty Region							
Opotiki DC	2018 (2011 baseline)		Increase by 10%				Reduce by 10%
Rotorua DC	2020 (2010 baseline)		Increase tonnes pa by 2370 (by 2015)	30% reduction in C&D to landfill		80% reduction in organic to landfill	
Tauranga CC and WBOP DC	2015 (2010 baseline)		40% diversion (council facilities)			20% reduction (council facilities)	Reduce by 20kg per capita per annum (477 baseline)
Whakatane DC	2025 or 2015 (09/10 baseline)	90% glass recovery, 80% paper/card recovery				Increase diversion by 50% by 2015 (4,500 tonnes baseline)	Reduce by 80% - 30% by 2015 and 30% from RTS by 2015

3.3.2.1 Commentary on Targets

There is considerable variation in the type and number of targets set, including a number of TAs with no targets. Some TAs that have set targets have not provided a baseline date or quantity.

The data required to measure and monitor progress towards these targets is discussed in detail in section 5.4.

3.3.3 Action Plans

All TAs have set out action plans in their WMMPs.

A summary of the actions identified by all TAs is shown in Appendix A.5.0. There is a wide variation in the exact type of actions put forward in WMMPs, and so these actions have been categorised to assist with presentation of the information. Where possible, any waste streams or target markets specified in the WMMP action plan have been shown.

Common action areas include:

- recycling and refuse collections – increasing diversion of recyclables from residual waste streams (all but one of the councils highlighted increased diversion of recyclables as an area requiring action of some kind)
- organic waste – collections, diversion from RTS and landfills (10 of the 14 councils highlighted organic waste collections as an area they would investigate)
- RTS management – pricing and operation
- data – SWAPs, quantities, waste streams that are not controlled by council
- bylaws – introducing, improving, or implementing bylaws
- infrastructure – for most materials and at most levels of the hierarchy
- collaboration – at most levels, and to increase effectiveness of lobbying to central government⁹
- communications/promotion/education – every TA identified at least one area that they would like to address through new or expanded activities
- reuse – many TAs identified reusable material as a potential target for diversion from landfill
- biosolids – quantifying, alternative management strategies
- resourcing – having necessary staff resources and skills.

3.3.3.1 Commentary on Action Plans

All TAs provided detailed action plans, which generally addressed the key issues highlighted in waste assessments and in the WMMPs.

The notable exception is the lack of control, data, and information relating to non-council controlled waste streams and activities. While some action plans did highlight potential regulatory tools such as bylaw amendments, the general absence of a full assessment of these issues by TAs would suggest that this needs to be addressed in the majority of districts.

⁹ 8 out of 16 councils identified lobbying for increased levels of product stewardship as a potential action in their WMMPs

There is a significant level of duplication in action plans between the TAs. This suggests there are ample opportunities for collaboration and joint working in some areas. However, some actions relate to areas of operation that vary widely between TAs (such as RTS operation) and so may not lend themselves so readily to this approach.

The possibilities presented by these actions plans for joint working and collaboration, leading to increased efficiency and effectiveness, are discussed further in section 7.0.

3.3.4 Current TA Services

A detailed description of waste management services provided by each TA is included in a separate confidential addendum. The information is summarised below in Table 3. Waste contracts are discussed separately in section 3.3.5. For a full list of facilities available within the districts refer to Section 4.0 and Appendices A.8.0 - A.12.0.

Table 3: TA Refuse and Diverted Material Services

TA	Kerbside Refuse	Kerbside Recycling	Food/green waste	Inorganic	Drop-off Facilities (1)	RTS	Landfill
Waikato Region							
Hamilton CC	Weekly	Weekly				One	
Hauraki DC	Weekly	Weekly		Annual in Franklin legacy area		Two	
Matamata-Piako DC	Weekly	Weekly				Three	
Otorohanga DC	Weekly	Weekly Public place recycling			One	Two	
South Waikato DC	Weekly	Fortnightly	Putaruru food waste trial		Three	One	One Tokoroa
Taupo DC	Weekly	Weekly Public place recycling				Six	One Broadlands
Thames-Coromandel DC	Weekly (more in summer)	Weekly (more in summer)			Three	Seven	
Waikato DC	Weekly	Weekly	Raglan food waste trial	Annual		Three	
Waipa DC	No council service	Weekly urban, fortnightly rural					
Waitomo DC	Weekly	Weekly			One	Five	One Waitomo
Bay of Plenty Region							
Kawerau DC	Weekly	Weekly	Fortnightly greenwaste			One	

TA	Kerbside Refuse	Kerbside Recycling	Food/green waste	Inorganic	Drop-off Facilities (1)	RTS	Landfill
Opotiki DC	Weekly	Weekly (urban)				Three	
Rotorua DC	Weekly	No council service			One	Four	One Atiamuri
Tauranga CC	Weekly	No council service				Two	
Western BOP DC	No council service	No council service			Four		
Whakatane DC	Weekly	Weekly	Fortnightly greenwaste			Four	

(1) Only includes drop-off facilities that are not associated with a RTS

Fourteen of the sixteen TAs in Bay of Plenty and Waikato regions provide a kerbside refuse service to a proportion of residential properties. Seven out of the 14 operate on a user charge basis for refuse collection while a further two operate on a part charge basis (supplying the equivalent of one bag free per week and charging for additional bags). Charges range from \$1.00 to \$3.30. A.9.0 shows the services provided and the charges applied.

Thirteen of the TAs provide a kerbside recycling collection. Only one TA provides neither; both services are provided in the district by private service providers. A.10.0 shows the types of collections and recyclable materials collected.

Two TAs provide a greenwaste collection and two have trialled food waste collections. All except one of the TAs either own transfer stations that accept commodities for recycling or provide drop-off facilities for commodities.

3.3.4.1 Commentary on TA Services

Kerbside collections of both refuse and recycling are available to households in all districts, mostly through services provided by the TAs. Drop-off facilities (including at RTS) for refuse and recycling are available in all districts, with recycling drop-offs often provided for those residents who may not be served by kerbside recycling collections. While the service configurations may not provide optimal waste minimisation, the councils have all provided residents with reasonable service levels for household refuse and recycling disposal.

The kerbside refuse configurations provided by TAs in Bay of Plenty and Waikato regions generally incentivise waste reduction by users of the systems. The systems either rely on user-pays bags or, if not, on systems that limit the volume of waste that can be set out by householders (Waikato DC limits each household to two bags per week, Kawerau DC provides small wheelie bins for refuse). The available evidence indicates that systems that either charge for refuse collection or limit the volume of waste result in higher recycling and lower disposal rates.

There are, however, aspects of the TAs' kerbside refuse systems that do not result in optimal waste reduction by residents. Many TAs do not provide kerbside refuse and recycling services to all properties in their district due to their rural nature. Some TAs only service urban properties and two do not provide any kerbside refuse collection.

In areas where TAs do not provide a kerbside refuse service, private waste service providers usually do. This has resulted in TAs having widely-differing levels of control of the kerbside refuse stream. Council control of kerbside refuse is discussed in 6.5.2.

In many instances, private waste collectors offer collections of 240-litre wheelie bins. Residential users of 240-litre wheelie bins have repeatedly been found, through audits of kerbside refuse, to dispose of larger quantities of recyclable materials and, in particular, greenwaste than users of refuse bags or smaller wheelie bins. By ‘opening up the market’ to the private sector by not providing a kerbside service, councils are not encouraging waste reduction. In areas where private collectors compete directly with council services, this has the effect of raising the unit cost of council services, as it is more expensive on a per household basis to collect kerbside refuse that is more widely dispersed.

To a lesser extent, the use of crates for kerbside recycling rather than wheelie bins also produces sub-optimal results. Evidence shows that households that use wheelie bins for recycling set out more material than households that use crates. The subsequent reduction in kerbside refuse is, however, mitigated somewhat by the quality of kerbside recycled material declining when wheelie bins are used.

While two of the TAs have been involved with food waste collection trials, no councils have committed to providing a long-term kerbside food waste collection. As waste composition data for kerbside refuse routinely shows that food waste comprises 40%-50% of kerbside refuse, this is one of the most significant waste minimisation opportunities that has yet to be addressed by TAs.

3.3.5 Current TA Contracts

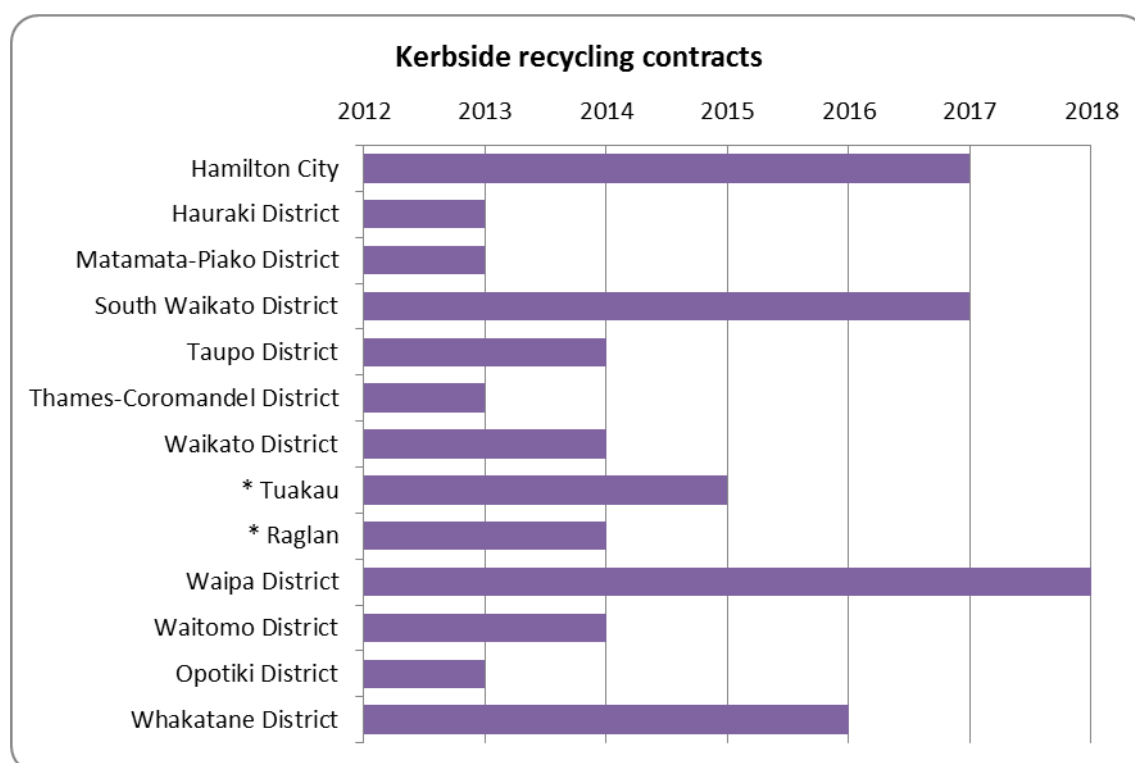
A list of council contractors for major waste services is provided in Appendix A.6.0. Timelines for the expiry of major contracts is shown in Table 4 and Table 5.

Table 4: TA Kerbside Refuse Contract Expiry Timeline ¹⁰



¹⁰ No data was available from Otorohanga District Council. Rotorua District Council kerbside refuse collections are undertaken by a council unit and the contract is not tendered. Waipa and Western Bay of Plenty District Councils do not provide kerbside refuse collections.

Table 5: TA Kerbside Recycling Contract Expiry Timeline¹¹



3.3.5.1 Commentary on TA Contracts

Most TAs hold contracts for the provision of kerbside waste services. Kerbside refuse collections are not provided by Waipa and Western Bay of Plenty District Councils. Rotorua District Council does not tender out its kerbside refuse collection, which is undertaken by a council unit.

Kerbside recycling collections are not provided by Western Bay of Plenty and Rotorua District Councils and Tauranga City Council. Kawerau District Council does not tender out its kerbside recycling collection.

It can be seen from the information above that the east Waikato councils (Hauraki, Matamata-Piako, and Thames-Coromandel) have aligned their current contract expiry dates. This reflects their partnership working approach and decision to carry out a joint procurement process for waste services and disposal. This is described in more detail in section 3.5.2.

There are no clear synergies between the other council contract expiry dates that would facilitate collaboration on contracts in the immediate future. In the distinct geographical groupings of small councils, where collaboration may be most likely, existing expiry dates are not well-aligned. These groupings could include Opotiki, Whakatane, and Kawerau Districts and Otorohanga, Waitomo, and Waipa Districts.

Existing contract expiry dates do not favour collaboration through joint tendering in the short-term. Joint tendering may be more likely in the future if the councils were to enter into discussions in the near-term about aligning contract expiry dates.

¹¹ No data was available from Otorohanga District Council. Kawerau District Council kerbside recycling collections are undertaken by council staff. Rotorua and Western Bay of Plenty District Councils and Tauranga City Council do not provide kerbside recycling collections.

3.4 Bylaws

Most TAs in Bay of Plenty and Waikato regions have a solid waste bylaw in place, with the exceptions of Otorohanga DC and Waikato DC. Waikato DC currently administers the bylaw passed by the previous Franklin DC, which only applies to the parts of Waikato District that were formerly part of Franklin District. Waikato DC has a public places bylaw, which deals briefly with solid waste placement issues.

All bylaws cover basic solid waste management issues, such as general collection arrangements, and prohibited materials (whether in the definitions or in the body text of the bylaw). Other issues vary. Appendix A.7.0 sets out when the relevant bylaw was adopted, the stated purpose, and the areas the bylaw covers (in addition to collection arrangements and prohibited materials).

Many of the bylaws also include provisions that, if enacted, could further the TA's waste minimisation objectives. Some of these provisions, and the councils that have included these provisions (or similar), are shown in Table 6.

3.4.1 Commentary on Bylaws

TA bylaws fall into two categories; those which are generic and are based largely on a standard bylaw template, and those that contain much more detail and address issues relating to non-council controlled services and waste streams. More than half of the councils set out a licensing system (or similar) and associated requirements for licensing in their bylaws. Despite having the regulatory tools in place, many TAs have not collected information and provided an assessment of non-council services, waste quantities and composition, and facilities in their waste assessments.

It appears that the issue with using bylaws as a regulatory and information-gathering tool is not so much with the presence of an appropriate bylaw, but more with the administration and enforcement processes that support this aspect of the bylaw. This area is discussed in more detail in section 7.4.

There is considerable scope for collaboration between councils with regards to standardising the licensing and reporting requirements included in waste bylaws. A standardised reporting system for waste collectors and facility operators would provide uniform data from all areas and facilitate reporting by licensed operators. Such a reporting system would ideally be consistent with any national standard that is developed (such work may be undertaken this year) or, in the absence of a national standard, could be aligned with the reporting system being developed by Auckland Council.

Table 6: Bylaws with Waste Reduction Provisions

TAs	Bylaw controls										
	No specific waste bylaw	No controls affecting waste minimisation	Council may make & amend policy governing collection of refuse & recyclables by or for council	Any person using a kerbside collection service must comply with correct separation of materials	Disposal of refuse on land or premises set aside by council for such shall be subject to conditions council may impose	Disposal of waste at transfer facilities subject to conditions council may decide in respect of nature of waste to be disposed of & nature of waste to be recycled	Materials entering a waste management facility which are designated as recyclables shall be deposited in such places as directed by a Supervisor or Council Officer	Council may prohibit certain materials from being deposited in an approved container or at a council waste collection point or in a recyclable materials bin or a litter bin	Recyclable materials prohibited from refuse collection	Licensing of waste collection contractors	Can only deposit waste from within district
Waikato	Hamilton	✓									
	Hauraki		✓			✓					
	Matamata-Piako					✓	✓	✓		✓	
	Otorohanga	✓									
	South Waikato			✓	✓	✓				✓	
	Taupo			✓							
	Thames-Coromandel			✓		✓					
	Waikato	✓									
	Waipa									✓	
	Waitomo				✓			✓		✓	
Bay of Plenty	Kawerau							✓	✓		
	Opotiki		✓								
	Rotorua										✓
	Tauranga									✓	
	Western Bay Of Plenty						✓				
	Whakatane		✓								

3.5 Existing Collaboration

Several TAs in the Bay of Plenty and Waikato regions already work closely together. Some of these initiatives are described in the following sections.

3.5.1 Tauranga City Council and Western Bay of Plenty District Councils

These councils have been collaborating on waste management issues for many years. Their approach to waste and diverted material services are very similar; with the councils relying on the private sector to provide kerbside recycling services.

The two councils prepared a joint waste assessment and a joint WMMP. There is, however, no formal agreement in place for joint working.

3.5.2 East Waikato Councils (Thames-Coromandel, Matamata-Piako, and Hauraki District Councils)

These three councils have considered joint working for some time, with a feasibility assessment for a shared waste contract being commissioned in 2009. The three councils hold separate contracts for kerbside refuse and recycling collections and RTS operations with the same company.

The east Waikato councils prepared a joint waste assessment and WMMP, and have established a Joint Committee to oversee joint waste management and minimisation initiatives. At the time of writing, the councils are in the process of jointly procuring waste management and disposal services.

3.5.3 Waitomo, Waipa, and Otorohanga District Councils

Collaboration between these councils has evolved as a result of having the same refuse and recycling contractor (EnviroWaste Services Limited) operating across the three councils. The collaboration has resulted in some alignment of services to take account of collection efficiencies across the districts and enhanced levels of ongoing communication between the districts with respect to waste management.

3.5.4 Waikato and Waipa District Councils and Hamilton City Council

While no practical or formal collaboration exists between these councils at present in respect of waste management, these three councils do have joint working arrangements across other services and the possibility of a shared service arrangement for waste services has been discussed at an officer level.

3.5.5 Other Collaboration Initiatives

In addition to the formal and informal collaboration taking place at the TA level, there are several initiatives in place that currently foster collaboration at a regional and cross regional level. Some of these initiatives are discussed in the following sections.

3.5.5.1 Waikato and Bay of Plenty Waste Liaison Group

This group has been in existence since 2002 and brings together waste management staff from local authorities in the Waikato and Bay of Plenty regions to share information and experience on waste issues and identify potential initiatives and collaborative opportunities. The group currently meets three times a year. The role of this group includes:

- sharing technical and policy information and advice relating to waste education, minimisation, management, and recycling issues

- developing relationships within the sector including with central government, industry sectors, private companies, not-for-profits, and consultants
- identifying potential joint projects that would benefit from regional or inter-regional coordination, including co-funding

3.5.5.2 Waikato Regional Council Waste Strategy Advisory Group

This group includes representation from industry, local authorities, community enterprises, Auckland Council, Waikato and Bay of Plenty Regional Councils, and the MfE. Its role is to:

- monitor and review the effectiveness of *Waste to Resource: Waikato Waste and Resource Efficiency Strategy 2012-15*
- provide feedback and advice and recommend changes to the strategy to Waikato Regional Council
- report back, at a political or senior management level, to their respective organisations.

Waikato Regional Council coordinates both of the above groups. Costs of the Waste Liaison Group are shared with Bay of Plenty Regional Council and TAs.

3.5.5.3 Upper North Island Strategic Alliance (UNISA)

Regional and metropolitan councils in the upper North Island (Auckland Council, Northland Regional Council, Bay of Plenty Regional Council, Waikato Regional Council, Hamilton City Council, Tauranga City Council, and Whangarei District Council) agreed to collaborate for responding to, and managing, a range of inter-regional and inter-metropolitan issues. UNISA had its first formal meeting and a signing ceremony on 8 October 2011. First- and second-order issues have been set out in the agreement, with waste being recognised as a first-order issue.

3.5.5.4 Waikato and Bay of Plenty Local Authority Shared Services (LASS)¹²

The Waikato and Bay of Plenty LASS are council-controlled organisations (CCOs) owned by the Waikato and Bay of Plenty Region local authorities respectively. The objective of the companies is to provide the councils in their region with a vehicle to develop shared services that demonstrate a benefit to taxpayers.

While none of the initiatives undertaken to date relate to waste, there exists the potential to use this vehicle for the development of shared waste services.

3.5.5.5 Regional Waste and Contaminated Land Forum

The key objectives of the forum are:

- liaison, communication and exchange of technical and policy information relating to waste minimisation and contaminated sites issues between regional council officers
- prepare recommendations to the regional councils' Chief Executives, via the Resource Managers' Group, that reflect the collective agreement of regional council technical officers on significant waste management and contaminated sites issues

¹² <http://www.boplans.co.nz/home.aspx>,
<http://www.waikatoregion.govt.nz/PageFiles/19535/2141904.pdf>

- provide more uniformity between regional councils and unitary authorities in their approach to waste and contaminated sites
- facilitate co-ordination with other agencies.

3.6 Waste Minimisation Support

Many of the TAs have either initiated, or support, programmes that provide education or other motivational tools for their residents to reduce waste. Other agencies also provide similar programmes. These initiatives are described in Table 7 and Table 8.

Table 7: Waste Minimisation Support Offered in each District

TA	Support	Target Audience
Waikato Region		
Hamilton CC	Sort It Out Sustainable Living Campaign Events Recycling Sustainable business programme (part funding) Waste Exchange (part funding) EERST Paper for Trees (funded by MfE) Cross-regional waste liaison group Para Kore (involvement) Waikato Environment Centre and HCC Café Organics Report (part funding)	Kerbside recycling collection users General Event organisers Hamilton businesses Region waste producers/users schools TAs and regional councils Marae Cafes - organic waste options for cafes in the CBD
Waipa DC	Sustainable business programme (part funding) Sustainable Living Campaign Para Kore (part funding)	Waipa businesses General Marae and Māori communities
Waikato DC	Sustainable business programme	Waikato businesses
Thames-Coromandel DC	Paper for Trees Sea week - coast clean up	Schools General
Hauraki DC	Enviroschools Zero Waste Education Agrecovery – Paeroa	Schools Schools Agricultural containers & wrap
Matamata-Piako DC	Agrecovery – Matamata	Agricultural containers & wrap
Otorohanga DC	Paper for Trees Pare Kore	Schools Marae
South Waikato DC	'Biff it in the bin'	General
Taupo DC	Paper for Trees Enviroschools – facilitate General print/radio campaign	Schools Schools General
Bay of Plenty Region		
Whakatane DC	Waste Exchange	Region waste producers/users
Opotiki DC	Schools Zero Waste Programme	Schools
Tauranga CC and Western BOP DC	Education in schools - council funded Home composting and worm composting Cleaner production	Schools Householders Businesses

TA	Support	Target Audience
	Events recycling Supporting community projects National advocacy Information/support for waste minimisation community groups Cloth nappy workshop and subsidy for trial packs Paper for Trees Worm composting in schools Worm composting seminar	Event organisers General General General Schools and community creative projects Households Schools Schools Retirement village
Kawerau DC	Paper for Trees	Schools
Cross-regional	Waste Exchange	Waste producers and users

Table 8: Waste Minimisation Support from Other Agencies

TA	Support	Target Audience
Waikato Region		
Waikato Regional Council	Para Kore Programme – zero waste on marae (ongoing support & support WMF application)	Marae and Māori communities
	Agrecovery Programme – agrichemicals collections (part funding)	Rural
	Enviroschools Programme (ongoing support)	Schools
	Cross-regional Waste Liaison Group (ongoing support)	General
	Dunstan Nutrition Ltd – packaging reduction project (support WMF application)	Rural
	Lite Foot Programme - waste minimisation in sports clubs (support WMF application)	Sports clubs
	Waste Exchange – businesses and community groups (ongoing support)	General
	Adding Sustainable Value Programme – based on the Natural Step Framework (collaborative funding)	Business
	Eco Smart Business Programme – EMS/Eco Warranty (collaborative funding)	Business
	Conscious Consumers Programme (part-funding)	Cafés
Hamilton Environment Centre	General waste minimisation information	General – Waikato focused
Bay of Plenty Region		
Bay of Plenty Regional Council	Agrecovery Programme – agrichemicals collections	Rural
	Enviroschools Programme (ongoing support)	Schools
	Cross-regional Waste Liaison Group (ongoing support)	General

TA	Support	Target Audience
	Lite Foot Programme - waste minimisation in sports clubs (support WMF application)	Sports clubs
	Waste Exchange (www.nothrow.co.nz) – businesses and community groups (ongoing support)	General
	Cleaner Production/Business Waste Minimisation Programmes (ongoing support)	Business
	Online Waste and Recycling Directory	General
	Hydrohub - portable water dispensing unit, compostable cups or for refilling bottles.	General
	LoveNZ programme	General
Zespri	General waste minimisation and management advice and research into alternative technologies	Zespri kiwifruit growers
Tauranga Environment Centre	Link to waste-related sustainability information	General but mainly householders

3.6.1 Commentary on Waste Minimisation Support

There are a wide range of waste minimisation support services offered by the TAs, with only a small number being offered in more than a few districts. There would appear to be an opportunity for the councils (both territorial and regional) to collaboratively investigate the current model for providing these services. In general, such services are provided with little initial study or follow-up on the cost/benefits that they provide. It is possible that a small number of support services provided across several districts could deliver more cost-effective results than the current arrangements.

4.0 Waste and Recovery Services and Facilities

4.1 Role of Local Government

The management, diversion, and disposal of waste in Bay of Plenty and Waikato regions involves local authorities (Bay of Plenty and Waikato Regional Councils, city and district councils), the private sector, and the community sector. While organisations in each of these categories undertake discrete activities, there is also collaboration on specific issues and in some cases in providing services.

TAs control strategic waste infrastructure assets to a widely-varying degree, albeit with a recent trend towards reliance on the private sector. TAs still play a major role in the regions' waste markets however, due largely to the magnitude of the waste and recycling contracts controlled by local government, the councils' role as a regulator, and the statutory obligations placed upon the TAs by the WMA.

TAs have responsibilities under the WMA and LGA to provide for the management of waste in their city/district. This includes the responsibility to have a WMMP and the ability to provide services and/or regulate waste management through bylaws. TAs also issue land use consents under the RMA for waste transfer, processing, and disposal facilities.

Bay of Plenty and Waikato Regional Councils set policy on a wide range of environmental issues through their Regional Policy Statements (RPS). The RPS provide policy on issues including impacts of urban growth on the environment, which includes waste generation (in the case of the Waikato RPS), disposal and processing in the region. The regional councils also monitor and enforce resource consent conditions that apply to the operation of waste facilities.

4.2 Community Sector Involvement

Community sector involvement tends to be unevenly spread across the regions, with pockets of activity that have grown out of local initiatives – generally in smaller communities. Initiatives that aim to directly minimise waste include Xtreme Waste in Raglan, Seagull Centre in Thames, CILT in Coromandel township, Funky Junk in Tauranga, and CREW in Whakatane. In addition to these, there are local education-focussed centres such as the Tauranga and Hamilton Environment Centres, and more far-reaching community-based education programmes such as Paper for Trees, Para Kore Programme (zero waste on marae), and EnviroSchools.

While the community sector can and does play a vital role in waste management and minimisation in some communities, because community initiatives by their nature grow out of the vision and energy of a few individuals in a given locality, their spread and ability to have a wider impact tends to be constrained. There may be a role for organisations such as the Community Recycling Network to work with local communities to foster greater collaboration and the development of local community initiatives. There may also be a role for regional councils to facilitate and foster greater community activity in this area with a focus on community economic development opportunities within the regions.

4.3 The Waste Management Industry in Bay of Plenty and Waikato Regions

The following sections provide an overview of the waste management sector in Bay of Plenty and Waikato regions. There are many small private operators, in both the waste and recycling industries, and it is not considered practical, or necessary, to include all of these

separately in such an inventory. Second-hand businesses (e.g. antique dealers, second-hand car yards etc) have been excluded from consideration.

The waste and recovered materials market in Waikato and Bay of Plenty regions varies widely in ownership of the infrastructure (transfer stations, materials recovery facilities, cleanfills, and landfills) and in the number and types of waste management facilities across the regions. Some parts of the regions are physically very isolated from other population centres (such as the eastern Bay of Plenty) while others are close to the largest city in New Zealand (such as Waikato District).

Many New Zealand waste markets feature strong territorial authority involvement in infrastructure ownership, generally with single landfills serving geographically distinct waste catchments. The waste disposal market in Bay of Plenty and Waikato regions follows this pattern in some areas, with district councils such as Rotorua, South Waikato and Taupo owning their own landfills. However, many other TAs own their own transfer stations but make use of one of the two large privately-owned landfills in the Waikato region (Tirohia and Hampton Downs). Ownership of transfer stations most commonly stands with TA, although there are a number of privately-owned transfer stations. Recycling and reprocessing facilities are generally privately-owned.

This situation has developed primarily over the last decade, with three main factors resulting in most of the changes – the privatisation of publicly-owned assets, the increasing establishment and use of material recovery facilities by contractors (to varying degrees), and the closures of older landfills, such as Horotiu near Hamilton and Burma Road in Whakatane, largely due to the introduction of the RMA.

The waste management industry in the region, including landfills, is currently dominated by three private sector companies - TPI Waste Management, EnviroWaste Services Ltd (EnviroWaste), and H G Leach Ltd, with Smart Environmental Ltd also playing a significant role in the east Waikato.

4.3.1 Sanitary Landfills

Sanitary landfills ('disposal facilities' as defined in the Section 7 of WMA) within or near Bay of Plenty and Waikato regions are listed in

Table 9 on the next page and shown in Map 2. There are six facilities in total, with four council owned facilities and two large private regional facilities. The table lists the sources of residual waste where these are known. Not all information is publicly available for all landfills; e.g. for privately owned landfills, gate fees are usually only set out in commercially sensitive contracts with clients.

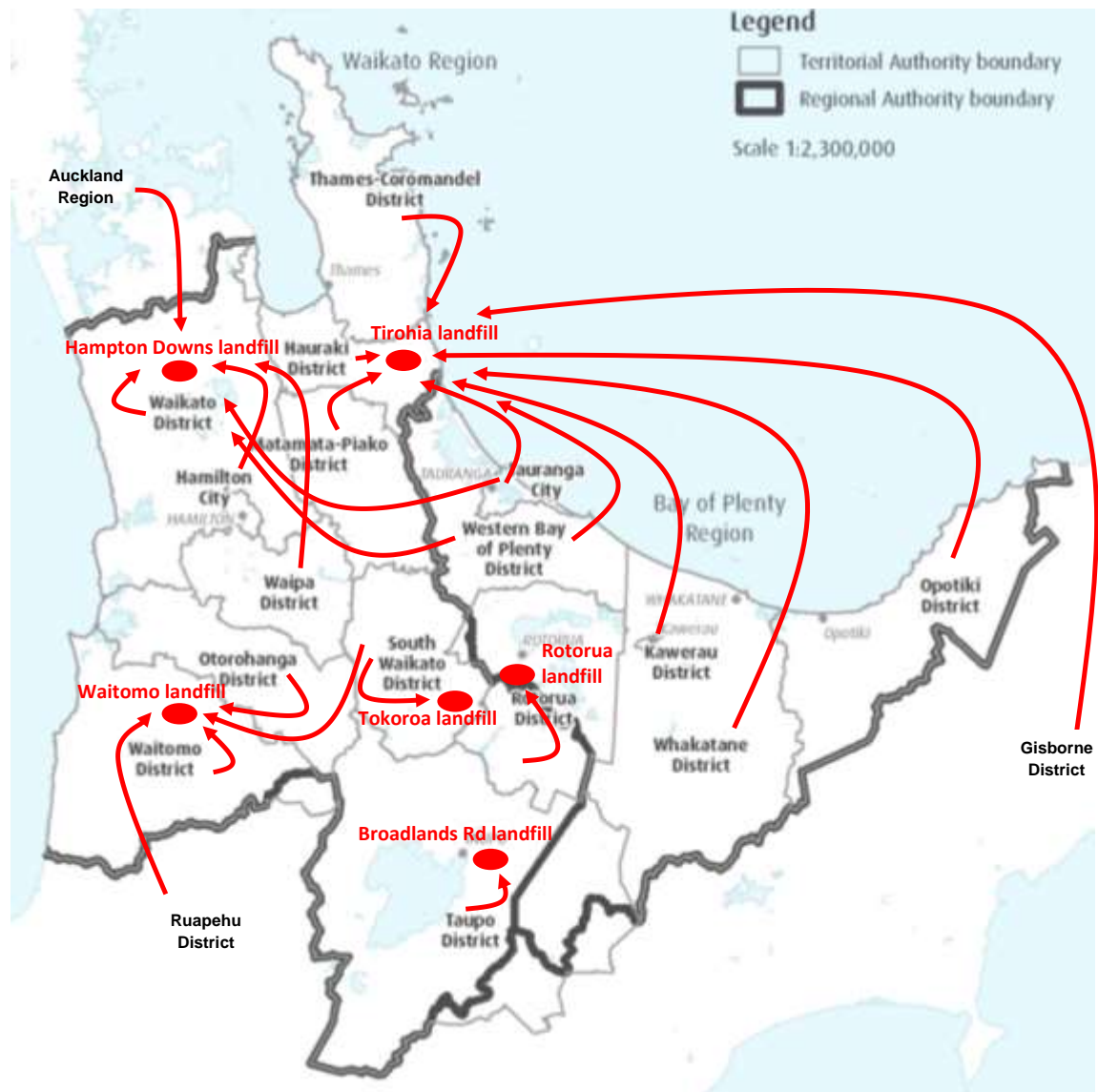
Table 9: Sanitary Landfills

Owner and Location (District)	Name of Facility	Description and Consent	Waste Sources from the Regions
H G Leach, Hauraki District	Tirohia Municipal Landfill	Non-hazardous residential, commercial and industrial solid waste, including special wastes. Also has Vertical Composting Unit on site. Consented to 2035. Has a landfill methane capture and destruction system in place, therefore less vulnerable to ETS.	Opotiki DC, Whakatane DC, Kawerau DC, east Waikato councils Waste from Tauranga and WBOP may be disposed of at Tirohia. Waste from Gisborne District (out of region).
Rotorua District Council, Rotorua District	Rotorua Municipal Landfill (Atiamuri landfill)	Non-hazardous residential, commercial and industrial waste, including special wastes (although bylaw may be reviewed to exclude these in future). Recycling facilities Consented to 2030. Does not accept waste from outside the District on an ongoing basis.	Council and non-Council waste from within Rotorua District.
South Waikato District Council, South Waikato District	Tokoroa Landfill	Municipal waste landfill. Landfill and recycling drop-off. Gate fee \$138-\$143 per tonne. No gas capture system in place.	South Waikato Council and non-Council wastes,
Taupo District Council, Taupo District	Broadlands Road landfill, Taupo	MSW. Gate fee \$125-\$130 per tonne. No gas capture system in place. Consented to 2027.	Taupo Council and non-Council wastes
EnviroWaste Waikato District	North Waikato Regional Landfill (Hampton Downs)	Non-hazardous residential, commercial and industrial solid waste, including special wastes. Sludges with less than 20% solid by weight are prohibited. Consented to 2030. Capacity to at least 2045. Has a landfill methane capture and destruction system in place, therefore less vulnerable to ETS.	Waikato DC, Hamilton CC, Waipa DC. Also wastes from Tauranga and Western BOP Districts through arrangement with TPI Waste Management.
Waitomo District Council, Waitomo District	Waitomo District Landfill	Also has a recycling station Council; consented capacity of 232,000 tonnes. Physical capacity at present 350,000m ³ (263,000 tonnes roughly, 70,000 tonnes used, 192,000 tonnes remaining) = 20 years of capacity at current rates.	Waitomo District Council and non-Council wastes. Also receives 3500 tpa from South Waikato DC (private waste – TPI Waste Management – Pete’s Bins)

4.3.1.1 Other Strategic Disposal Facilities

In addition to the regional facilities in the above table there are a number of disposal facilities that are situated outside of the region which do not currently receive waste from the region, but which could be viewed as strategic assets in the (unlikely) event of temporary or permanent premature closure of one or more of the key regional disposal facilities. These

out-of-region facilities include Redvale landfill, north of Auckland, Whitford Landfill, in the Auckland region, and Bonny Glen landfill, in the Manawatu.



Map 2 – Landfill Locations and Waste Flows

4.3.1.2 Commentary on Waste Disposal Market

The location and ownership of landfills has a significant impact on the drivers and opportunities for waste reduction within each district.

For the four district councils that own landfills (Rotorua, South Waikato, Taupo, and Waitomo), there are competing drivers at work. On the one hand, the council has a statutory responsibility, under the WMA, to minimise waste to landfill. On the other, a reduction in waste to landfill means the landfill is potentially less profitable, or even uneconomic, to continue operating.

For those councils that do not own landfills and are a considerable distance from the nearest landfill, reducing waste is the primary driver, as this would reduce both transport and disposal costs to council.

Districts which are in close proximity to a privately-owned landfill, or where the transfer stations are privately-owned, have less opportunity to reduce waste being disposed of to landfill. Councils in this situation include Matamata-Piako District Council and Hamilton City Council. In both areas, a substantial proportion of the waste stream is taken directly to landfill without council having access to it at any time.

Due to ongoing high costs required to gain and comply with resource consents, and the potential additional impact of the ETS, many smaller landfills in New Zealand have closed or are likely to do so over the next ten years. Several TAs in Bay of Plenty and Waikato regions have indicated in their waste assessments that the ongoing reduction in waste volumes being received at their landfills is making it increasingly uneconomic to operate these facilities.

The cost of operating the smaller facilities (in Taupo, Rotorua, Tokoroa and Waitomo Districts) may be a more important factor in their operating life than available air-space and resource consent conditions. The situation in Rotorua may be exacerbated if a planned private transfer station is granted the necessary resource consents and re-routes a significant proportion of waste currently being disposed of at the council's Atiamuri facility.

Given the capacity still available in these smaller landfills, and the anticipated life span of the large commercial sanitary landfills (Tirohia and Hampton Downs), it seems unlikely that additional landfill facilities will open in the near future. Whakatane District Council, for example, has repeatedly examined the cost-benefit of developing a new landfill following the closure of Burma Road, and has instead negotiated a long-term disposal arrangement with Tirohia.

Given that Rotorua District Council does not accept waste from outside of the District on an ongoing basis, the options for landfill disposal in the south-eastern section of Bay of Plenty region are much reduced compared to the rest of the regions. For example, the closest landfills to the Opotiki DC RTS are (in order) Tokoroa (188km), Broadlands Road, Taupo (215km), and Tirohia (233km). As a large commercial landfill, it is likely that Tirohia is able to compete sufficiently on gate fees to ensure they are competitive with smaller, more distant facilities, even with the additional cost in transport. Whakatane and Kawerau DCs are in much the same situation, although the transport distances involved are somewhat shorter.

Smaller councils in the south of the Waikato region also have some difficult choices in the future as they debate continuing to operate their own landfills, or to close these facilities and instead use one of the larger commercial sanitary landfills. Although the current price of carbon and the transitional provisions costs associated with the ETS are presently low, the potential future implications of the ETS are a key consideration for these councils in this decision. The need for landfills to maintain sufficient 'flow control' to remain economic has resulted in price competition and waste from at least one district with a landfill is now being transported to another TA's landfill that is further away.

A potential opportunity for collaboration between TAs could be to aim towards tendering joint contracts for bulk transport and disposal of waste. Such combined contracts might prove most cost-effective in natural 'waste catchments', which would allow transport service providers to achieve a reasonable economy of scale. Another option might be for the smaller landfills to negotiate to accept residual waste from adjoining districts. This would result in better economies of scale for the landfill's operation at the expense of shortening its lifespan.

One emerging possibility that needs to be taken into consideration when analysing long-term disposal options is new disposal facilities that are not sanitary landfills. There are currently a number of potential 'waste to energy' facilities proposed in Bay of Plenty region. The most

advanced of these would involve a proprietary process that is capable of extracting energy in a gaseous form from all types of non-inert waste, including waste collected by TAs. As of writing (February 2013), full feasibility studies have been completed, stakeholder negotiations have been completed, and relevant contracts are expected to be finalised by April 2013. Further details are considered to be commercially-sensitive.

4.3.2 Transfer Stations

Transfer stations in the regions vary from RTSs that accept a wide range of waste and recyclables; to collection and bulking points specifically for certain materials. The latter are usually associated with national or cross-regional product stewardship programmes. Sixty-three of the 65 transfer stations are council-controlled, with private transfer stations currently operating in two districts. Appendix A.11.0 lists the locations of all RTSs and recycling centres and drop-offs in each district and summarises the materials that are accepted at each facility.

4.3.2.1 Commentary on Refuse Transfer Station Market

In general the two regions appear to be well-supplied with refuse transfer sites or similar facilities. No TAs identified a need for additional RTSs in their WMMPs, although in many cases these facilities are ear-marked for further development with wider ranges of materials for diversion and the potential for expanding reuse options.

There are private transfer stations currently operating in Hamilton City and Waipa District and another is currently planned for Rotorua. While the private transfer stations in Waipa District are necessary because the council does not own that type of infrastructure, the private facility in Hamilton and planned facility in Rotorua compete directly with council facilities. This could be having the effect of increasing the disposal of waste to landfill, if the private facilities do not facilitate waste recovery to the same extent as the council facilities, and making the council facilities less economically-viable by reducing their waste volumes. These private facilities could also reduce the TAs' ability to monitor and manage waste, as the councils may not have access to disposal tonnages.

Several RTSs now have reuse centres in, or nearby, such as Xtreme Waste in Raglan, the Seagull Centre in Thames, and the CREW Reuse Centre in Whakatane. There is also an increasing number of collection points for various product stewardship schemes such as the RCN e-Cycle and Paintwise schemes (see section 4.3.3).

One issue with RTS provision is the lack of services for household hazardous waste in some districts. Many TAs noted that the HazMobile service was provided in their district. Due to funding issues, this service no longer operates and there appears to have been a lag in TAs putting in place alternative arrangements. It may also be that there is a lack of clarity on responsibility for managing household hazardous waste – some TAs have identified this as an issue in their waste assessments and WMMPs, but not all have included an action to address this issue.

Rural TAs have frequently highlighted agricultural waste as an area that needs to be addressed more effectively through RTS service provision.

Council-owned transfer stations represent a proven method for taking direct action to reduce waste to landfill. This can be done through regulatory measures (such as banning the disposal of particular materials), differential pricing to encourage separation of recoverable materials, improving the facility layout to facilitate material separation, and establishing operating contracts that incentivise waste reduction by the contractor.

While specific research into the operation of transfer stations was not conducted for this study, anecdotal evidence suggests that TAs do not generally take full advantage of the

available waste reduction opportunities. This may represent an opportunity for the TAs and regional councils to cooperate in finding ways for the TAs to more fully realise the waste reduction potential of their facilities.

4.3.3 Product Stewardship Programmes

The key product stewardship programmes that have a presence in the Bay of Plenty and Waikato regions are shown in Table 10.

Table 10: Product Stewardship Facilities in the Regions

Material	Agency	Number of Locations
E-waste	RCN e-Cycle www.e-cycle.co.nz	16 collection points
Waste paint	3R and Resene Paints www.resene.co.nz/paintwise	8 collection points
Agricultural waste chemicals and plastics	3R and Agrecovery www.agrecovery.co.nz	Check on www.agrecovery.co.nz or phone

4.3.4 Residual Waste and Greenwaste Disposal Fees

The advertised gate charges for the disposal of residual waste and greenwaste are shown in Table 11.

Table 11: Residual Waste and Greenwaste Disposal Fees

TA	Location	Residual refuse	Greenwaste
Waikato Region			
Hamilton City	Lincoln Street RTS	\$136/tonne	-
	Sunshine Ave RTS	\$139.50/tonnes	\$116.50/tonne
Hauraki District	Paeroa and Waihi RTS	\$154.50/tonne	\$108.20/tonne
Matamata-Piako District	Matamata, Morrinsville, and Waihou RTS	\$145/tonne	\$62/tonne
Otorohanga District	Otorohanga and Kawhia RTS	\$45/m ³	\$30/m ³
South Waikato District	Tokoroa Landfill and Putaruru RTS	\$134.50/tonne	\$73/tonne
Taupo District	Broadlands Rd Landfill and all RTS	\$100/tonne	\$50/tonne
Thames-Coromandel District	All RTS	\$155/tonne or \$45/m ³	\$78/tonne or \$22/m ³
Waikato District	Raglan RTS	\$41/ m ³	\$10/ m ³
	Te Kauwhata and Huntly RTS	\$150/tonne	\$110/tonne
Waipa District	All RTS	\$171/tonne	\$149.50/tonne
Waitomo District	Waitomo District Landfill	\$147/tonne	\$106/tonne

TA	Location	Residual refuse	Greenwaste
	All RTS	Charges are per refuse item	-
Bay of Plenty Region			
Kawerau District	Kawerau RTS	\$200/tonne	\$5/m ³
Opotiki District	All RTS	\$35/1-2 m ³	\$10/m ³
Rotorua District	Rotorua landfill and all RTS	\$138/tonne	\$17.25/tonne
Tauranga City	Te Maunga and Maleme Street RTS	\$177.60/tonne	\$90.50/tonne
Whakatane District	Whakatane RC and all RTS	\$220/tonne	\$50/tonne

The gate charges given in the table are the 'advertised' gate charges, which are charged to casual customers. Private waste collectors and large-scale waste generators are often able to negotiate substantial discounts to these charges.

The advertised gate charges for residual waste disposal in the different areas of Waikato region are generally similar, with most being in the region of \$135-155/tonne (average of \$152). Charges in Taupo District are markedly lower than in the other areas, at \$100/tonne, and highest in Whakatane (\$220/tonne) and in Waipa District (at the privately-owned transfer stations), at \$171/tonne. Charges in the different districts in Waikato region do not seem related to whether the council owns a landfill.

The gate charges in Bay of Plenty region are generally higher than in Waikato region, particularly in those districts that need to transport waste a considerable distance to a landfill. The exception to these higher charges is Rotorua district, where the council owns the landfill.

Greenwaste disposal charges, on the other hand, vary significantly between the districts, from a low of \$17.25 in Rotorua to a high of \$149.50 in Waipa District (where the disposal facilities are privately-owned). The charge of \$30/m³ in Otorohanga District is potentially higher again, depending on the density of the greenwaste. Greenwaste charges at council-owned facilities are typically 50% of the refuse charges, while at private facilities there is only a small differential of 14%. This most likely is because council facilities charge less so as to incentivise waste reduction, while private facility charges reflect the actual costs of the service.

4.3.4.1 Commentary on Disposal Fees

For councils that control disposal facilities, gate charges can be an important tool to incentivise waste generators to divert waste to more beneficial purposes. With the exception of Taupo District, disposal charges for residual waste in both regions are comparable to charges in most other parts of the country.

It is uncertain, however, as to whether landfill disposal charges in the \$150/tonne range are effective at incentivising waste reduction. A few areas in the country are charging substantially higher disposal charges, such as Christchurch where the council facilities charge \$230/tonne and Westland District, which charges up to \$327/tonne. There is little information available upon which to determine if higher disposal charges reduce waste or whether higher charges also result in an increase in associated problems, such as fly tipping.

The other important factor relating to gate charges and incentivising diversion is the differential between the charges for residual waste and for greenwaste. The charge for

greenwaste disposal as a proportion of the charge for residual waste disposal varies considerably between the districts. In Rotorua, greenwaste disposal costs 13% of the cost of landfill disposal. This is the lowest greenwaste disposal cost in the regions. In Waipa District, on the other hand, greenwaste disposal costs 87% of the cost of landfill disposal and at Sunshine Avenue transfer station in Hamilton the greenwaste cost is 84% of the landfill cost. It should be noted that the two highest relative greenwaste disposal costs are at the privately-owned facilities in Waipa District and Hamilton.

On an individual basis, TAs could consider whether their gate charges for landfill disposal and greenwaste disposal are optimal for incentivising the diversion of waste to landfill, although it is recognised that there are many other factors that need to be taken into consideration when setting charges.

There is some scope for collaboration between the councils on assessing the effects of the relativity of residual waste and greenwaste charges. By collating data from facilities across the region, it might be possible to determine the optimal relationship between charges for incentivising the separate disposal of greenwaste by facility users.

4.3.5 Cleanfills, Monofills and Other Disposal Facilities

There are a number of facilities for the disposal of waste to land other than 'sanitary landfills' (disposal facilities, as defined by the WMA) in the two regions, including cleanfills (consented or permitted) and monofills.

Consented cleanfills accept waste in accordance with their consents as granted by the Bay of Plenty or Waikato Regional Councils. In many cases, consents allow for the disposal of materials that do not meet MfE's criteria for 'cleanfill' (provided below). Where the land disposal of 'cleanfill' is a permitted activity, the waste acceptance criteria are in accordance with the relevant District Plan which may, again, permit the land disposal of materials that do not meet the MfE criteria.

'Monofills' are land disposal facilities that handle a restricted range of waste products, which generally originate from a single or small number of industrial manufacturers. Monofills are likely, in all instances, to require a resource consent to operate.

The MfE's 2002 guide to cleanfills defines 'cleanfill' as:

"Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:

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

Bay of Plenty Regional Council's *Regional Water and Land Plan* defines cleanfill as:

"...natural materials such as clay, soil, rock and such other materials as concrete, brick or demolition products that are free of:

- (a) combustible or putrescible components (including green waste) apart from up to 10 percent by volume untreated timber in each load*

(b) hazardous substances or materials (such as municipal waste) likely to create leachate by means of biological or chemical breakdown

(c) any products or materials derived from hazardous waste treatment, stabilisation or disposal processes.”

The Waikato Regional Council’s policy on cleanfills is that land disposal of up to 2,500 m³ per annum is a permitted activity. Resource consent is required for any cleanfill exceeding this volume and for any facility that intends to accept material other than cleanfill.

The *Waikato Regional Plan* defines cleanfill as:

“Material that when discharged to the environment will have no adverse effect on people or the environment. This includes natural materials such as clay, soil and rock and other inert materials such as concrete and brick, or mixtures of any of the above.

Cleanfill excludes for example:

- a. material that has combustible, putrescible or degradable components,*
- b. materials likely to create leachate by means of biological or chemical breakdown*
- c. any products or materials derived from hazardous waste treatment, hazardous waste stabilisation or hazardous waste disposal practices,*
- d. materials such as medical and veterinary waste, asbestos or radioactive substances that may present a risk to human health,*
- e. soils or other materials contaminated with hazardous substances or pathogens*
- f. hazardous substances.”*

There are a large number of ‘cleanfill’ facilities in the regions along with several monofills and similar activities, but the exact number is impossible to determine. Not all cleanfills can be identified, particularly in Waikato region where they may be a permitted activity. Anecdotal evidence also suggests that, particularly in rural areas, there are a number of unofficial cleanfill operations on farmland or in other isolated locations.

Ownership of the cleanfill market is much more fragmented than the sanitary landfill market, with quarry and mine owners, transport operators, and private developers all featuring in the data provided by Bay of Plenty and Waikato Regional Councils (although some cleanfills do qualify as permitted activities in Waikato region, resource consents may be needed for mining activities and associated overburden). Known involvement of major waste operators in the cleanfill/monofill market includes Envirofert’s operation in Tuakau in Waikato District and the EnviroLandfill operation in Waikato District.

Appendix A.8.0 lists consented or known permitted facilities, excluding cleanfills that are only for temporary use and not open to the public (such as those associated with roading projects). Over fifty sites have been excluded for these reasons.

4.3.5.1 Commentary on ‘Cleanfill’, Monofill, and ‘Other’ Market

‘Cleanfill’ operations in Bay of Plenty and Waikato regions are in direct competition with the sanitary landfills and resource recovery operators for disposal of the portion of the waste stream that complies with the MfE’s definition of cleanfill and whatever other materials the facilities may be consented to accept for disposal. A substantial, but unknown, proportion of this material is generated by construction and demolition activity.

The cost of entry into the ‘cleanfill’ market is substantially lower than into the sanitary landfill market. ‘Cleanfills’ require much lower levels of engineering investment to prevent discharges into the environment and have very low, or negligible, compliance costs. Because

of these differing cost structures, 'cleanfills' charge markedly less for disposal than sanitary landfills, often on the order of 10% of landfills' advertised gate charges.

Despite the differences in cost structures, sanitary landfills often compete with 'cleanfills' on the basis of price to retain flow control, as 'cleanfill' tonnages are so large. As the marginal cost per tonne of landfilling is very low, a landfill could potentially still make a profit accepting 'cleanfill' material at a price competitive with 'cleanfills' gate charges. This is particularly the case for the disposal of natural, virgin excavated soil, which landfills can use for cover material or for site engineering purposes.

'Cleanfills' also compete with resource recovery operators for materials such as, for example, waste concrete. Resource recovery operators that process waste concrete into aggregate compete against the cost of cleanfill disposal to maintain flow control over their supply of material.

In environmental terms, the most important aspect of the competition between cleanfills and sanitary landfills for flow control relates to the disposal of contaminated soils. Most landfills need to either excavate or import material for engineering purposes, such as daily and final cover. Landfills are not, however, able to use contaminated soils for engineering purposes as readily as they can clean soils, and as a result gate charges for contaminated soils at landfills may be higher than for cleanfill materials. As there are no rigorous regulatory systems in place for the identification and tracking of materials from contaminated sites in Bay of Plenty or Waikato regions, the possibility exists for 'cleanfills' to be used illegally for the disposal of contaminated soils as a cost-saving measure by the waste generator.

The July 2009 introduction of the waste levy had the potential to exacerbate this problem. Section 3 of the WMA provides for a waste levy of \$10/tonne to be imposed on all wastes deposited in disposal facilities. This levy applies only to waste disposed of at landfills accepting household waste, and not to waste disposed of at cleanfills. At the time of writing (December 2012), the MfE is still considering whether the levy will apply to material used solely as face cover on sanitary landfills. The 2009 MfE document, *Calculation and Payment of the Waste Disposal Levy - Guidance for Waste Disposal Facility Operators*, states:

The situation regarding the use of discarded material for daily cover is complex, and the Ministry will provide a more complete assessment once policy work is complete.

The levy applies to material or waste that is disposed of or discarded at the facility. If soil or other material brought to a facility is not reused at the facility, for instance as cover material, it may in fact be disposed of at the facility, in which case it may be subject to the levy.

If the levy is applied to contaminated soils and materials suitable for use as engineering materials or cover materials by landfills, this may increase considerably the cost of landfill disposal of these materials, and provide a greater incentive for their improper disposal at cleanfills.

Parts of Bay of Plenty and Waikato regions, particularly Tauranga and Waikato district, have an unusually large number of facilities that are consented to accept materials that do not meet the MfE definition of 'cleanfill'. While the facilities in Waikato District presumably accept a significant proportion of their material from Auckland, the facilities in Tauranga would, also presumably, be accepting most of their waste from local sources. In Tauranga, these facilities compete directly with the council-owned transfer stations, which have considerably higher gate charges than the 'cleanfills', incentivising the separation and recovery of waste materials such as greenwaste and concrete.

Issuing resource consents that allow the land disposal of non-cleanfill compliant material appears to be an ongoing matter.

It is worth noting that the WMA, by defining a disposal facility as one that accepts 'household waste', has perhaps inadvertently created a new class of facility. Only facilities that are classed as disposal facilities under the WMA attract the waste levy, and are included in the ETS. This means that, by not accepting household waste, facilities can avoid these charges and offer lower cost disposal. For example in May 2012, Bay of Plenty Regional Council issued a resource consent (65360) that permits the land disposal of materials that include:

- Plastics (wrapping, pipe, spouting, strapping bands)
- Packing paper and cardboard (sourced from construction sites)
- Ferrous metals (non-recyclable) including wire
- Wallboards consisting of plaster, MDF or hardboard products
- Timber offcuts (non-treated).
- Bulky tree wastes (such as stumps)
- Bark and soil mixtures from yards (subject to analysis)
- Sawdust (non-treated)
- Grit and sediment from street sweeping, road sump cleaning and truck washes
- Tyres (quartered/shredded)
- Boiler ash (subject to analysis)
- Abrasive blasting sand (subject to analysis).

While the other resource consent conditions might mitigate the environmental effects of the land disposal of these materials, any possibility of putting the materials to a more beneficial use will be lost.

Conversely, the second issue with the land disposal market in the Waikato and Bay of Plenty regions is the lack of consented cleanfill facilities in some parts of the regions; such as the east Waikato and eastern Bay of Plenty. The eastern Bay of Plenty is one of the regions that is furthest from sanitary landfills. While the lack of an easy disposal option for cleanfill material may encourage the development of positive alternative management options (such as reuse), anecdotal evidence suggests that there is also a significant amount of illegal disposal of cleanfill material and stockpiling.

An important issue relating to cleanfill-type facilities is the effect they have on a council's ability to monitor waste flows and measure the effects of waste minimisation initiatives. As few of these facilities are required to report the volume of materials being deposited, councils are unable to determine with any accuracy the amount of waste being disposed of to land.

4.3.6 Recycling Centres and Drop-off Facilities

There are a number of recycling centres and drop-off facilities in Waikato and Bay of Plenty regions. These are listed in Appendix A.11.0, along with the refuse transfer stations.

4.3.6.1 Commentary on Drop-off and Recycling Centres

Drop-off and recycling centres are more commonly provided by TAs in large districts with areas of sparse population. The exception to this is Rotorua DC, which provides drop-off recycling facilities for its residents but no kerbside collection. The level of provision appears to be sufficient and few issues with provision of these services were highlighted in waste assessments or WMMPs.

4.3.7 Processing Facilities – Dry Recyclables/Commodities and Organic Waste

This section discusses all recyclables processing facilities, ranging from material recovery facilities (MRFs) where dry recyclables/commodities are sorted and bulked for transport and facilities outside the regions where recyclables are processed. These are listed in Table 12. This section also considers facilities for processing organic wastes, the availability of which is summarised in Table 13. A full list of organic waste processing facilities is provided in Appendix A.12.0.

Table 12: Dry Recyclables/Commodities Processing Facilities

TA	Provider	Description	Detail
Waikato Region			
Hamilton City	CHH Fullcircle	Commodities sort line	
Waikato District	Recover NZ, Huntly RTS	Basic MRF	
	Metrowaste Waikato Ltd, Huntly RTS	Initial processing and baling of recyclables	
	Xtreme Waste, Raglan RTS	Initial processing and baling of recyclables	
Waipa District	Smart Environmental Ltd	Basic MRF for kerbside recycling, bulked and taken to Visy	
South Waikato	WastePro Recycling Depot (Kinleith)	Basic recycling drop-off, recycling commodities sort line	
Bay of Plenty Region			
Rotorua District	Materials Processing Ltd	Processes wood waste, and concrete at Atiamuri landfill	
Tauranga City	TPI Waste Management MRF	Takes commingled/general recycling from BOP and Hamilton, exports some materials	Opened 2009
Out of Regions			
Out of regions	Streetsmart	Auckland MRF	
	Visy	MRF processing recyclables from Auckland and Tuakau	70,000 tpa approx.
	Reclaim	Auckland recycling commodities and paper and kraft	Additional capacity
	O-I NZ Ltd	Auckland glass	Additional capacity
	SIMS Pacific	Ferrous metals recycling	Additional capacity
	CMA	Scrap metals recycling	Additional capacity
	CHH Fullcircle	Paper & kraft card	Additional capacity
	Ward Resource Recovery Ltd (Auckland)	Reuse and recycle C&D waste	
	Nikau Contractors (Auckland)	Reuse and recycle C&D waste	
	J J Loughton (Auckland)	Strip and shred tyres	
	TPI Allbrite Ltd (Auckland)	Process recyclables from kerbside and commercial collections	
	Interwaste (Auckland)	Hazardous waste treatment & recycling	

Table 13: Availability of Organic Waste Processing Facilities

TA	Greenwaste	Food waste	Other putrescibles	Scrap wood/ sawdust/ bark	Wood processing waste	Meat	Fish	Manure	Bio-solids
Waikato Region									
Hamilton CC	✓								
Hauraki DC	✓		✓						
Matamata-Piako DC			✓	✓					
Otorohanga DC									
South Waikato DC	✓				✓✓				
Taupo DC	✓								
Thames-Coromandel DC									
Waikato DC	✓✓	✓		✓		✓			
Waipa DC									
Waitomo DC									
Bay of Plenty Region									
Kawerau DC					✓				✓
Opotiki DC									
Rotorua DC	✓			✓	✓				
Tauranga CC	✓								
Western BOP DC							✓		
Whakatane DC									
Auckland Region									
Auckland Region	✓	✓		✓		✓	✓		

4.3.7.1 Commentary on Processing Facilities

Some 'vertical integration' is starting to become apparent in the processing facilities market, with waste and recycling collectors also establishing basic MRFs and recycling facilities (such as TPI Waste Management in the Bay of Plenty and Smart Environmental Ltd in Waipa).

While MRFs that accept and conduct primary processing handle a wide range of materials, processing facilities for dry recyclables/commodities are divided into distinct markets according to materials types - paper/cardboard, glass, metal, and plastics. The major local processors of the different material types, such as O-I NZ for glass, tend to have a dominant position in each marketplace.

Also unlike the waste market, the recovered materials market is integrated with an international market. As virtually all waste generated in Bay of Plenty and Waikato regions is disposed of in sanitary landfills, the only competition for disposal is between the landfill operators. Many local collectors and processors of recovered materials are, on the other hand, able to enter the international secondary materials market for sale of their materials. While low-volume, high-value materials such as metals and plastics have been exported for many years, the increase in the secondary materials market (up until the global financial crisis of August 2008) resulted more recently in high-volume, lower-value materials such as paper and glass being exported as well. This is particularly apparent in Bay of Plenty region, with TPI Waste Management exporting large quantities of diverted materials that have been collected in Opotiki, Whakatane, Kawerau, Tauranga and the Western Bay of Plenty.

While there is a wide range of processing options available for many waste streams, these do tend to be located closer to large population centres. As a result, the northern Waikato region is well-served with a wide range of options that also serve the Auckland region. Some other areas, such as those in the southern Waikato region, have options for some diverted materials (paper/card) but not others (glass).

In general, the collection and processing of dry recyclables/commodities from commercial premises is a mature market, with limited opportunity for expansion. As one industry participant put it:

From a general commercial standpoint I would suggest there is now competition across most of the heavily populated areas so there is unlikely to be too much opportunity for massive gains from the Commercial and Industrial sectors.

The recovered metals industry is strong through the Bay of Plenty and Waikato regions, reflecting the relatively high value and low volume of metals, particularly non-ferrous metals. There are a large number of small participants in the scrap metal industry. These small scrap metal collectors and processors collect from industry or operate scrap metal yards open to the public. While some may on-sell to larger local organisations, others bale and export their processed product.

Bay of Plenty and Waikato regions have the benefit of a particularly wide range of recovered materials processing facilities, particularly for organic wastes, including wood wastes, and to a lesser extent, C&D materials such as concrete. The organic processing options have been developed in conjunction with the large horticultural and wood processing industries, but are also available for other wastes. Other organic processing facilities in Waikato region have been principally developed to service the Auckland market, but, again, also serve the northern Waikato region.

The most recent organic waste processing facility to open in the regions is important enough to consider in some detail. Noke Ltd has been granted a resource consent to operate a vermicomposting operation in Kinleith, in South Waikato District. The consent allows 140,000 tonnes per annum to be processed on site as follows:

- 45,000 tonnes/year dewatered primary and secondary solids from the Kinleith pulp and paper mill
- 13,000 tonnes/year in total of recycled paper solids from the Kinleith pulp and paper mill and/or the Penrose paper recycling mill
- 30,000 tonnes/year sediments, bark fines, wood ash and lime from the Kinleith pulp and paper mill
- 13,000 tonnes/yr municipal biosolids from Hamilton wastewater treatment plant
- 10,000 tonnes/year of municipal biosolids from Rotorua wastewater treatment plant

- 5,000 tonnes/year of municipal biosolids from other Waikato or Bay of Plenty wastewater treatment plants
- 10,000 tonnes/year of DAF sludge from dairy factories
- 12,000 tonnes/year biomass from dairy factory activated sludge treatment plants
- 8,000 tonnes/year of kiwifruit packing wastes
- 1,000 tonnes/year of dairy farm effluent (liquid and solids).

The substantial capacity of this operation has the potential to significantly reduce the quantity of organic waste from Bay of Plenty and Waikato regions that is being landfilled or otherwise being disposed of in a sub-optimal manner. Several smaller, similar operations have also been established in recent years, processing similar organic waste streams.

In general, it appears that market forces are now effectively diverting a substantial proportion of 'problem' organic waste that have been landfilled until recently. While the Noke operation could be viewed as a development from the Bay of Plenty Regional Council-initiated Kawerau vermicomposting trial, which demonstrated the potential for vermicomposting primary and secondary solids together with biosolids and kiwifruit wastes, there has been no direct council involvement in this latest operation. Enhanced recovery by the private sector has happened therefore, with a few notable exceptions, without significant public sector involvement or incentives. While there are therefore encouraging signs that market drivers are leading to increased recovery, regional councils may still have a potential role to look at ways they can provide incentives to support industry in the future. It is noted that, Waikato Regional Council's waste strategy has a strong focus on beneficial reuse and working with industry to encourage this kind of activity.

With well-established organic waste processors in the regions, there is now an opportunity for TAs to collaborate with each other and these processors to reduce one of the last major organic waste streams currently being landfilled – food waste from domestic premises.

5.0 Evaluation of Waste Data

5.1 Introduction

This section considers the wider question of the types of waste data that are required to monitor and manage waste and to establish policy and strategy directions in Bay of Plenty and Waikato regions. It looks at how these requirements match up with the data that is currently available, provides an analysis of the gaps, and makes recommendations as to how these gaps may be most effectively addressed.

Improving waste data and information management is an area of focus for Waikato Regional Council. Intended initiatives outlined under Focus Area A of the council's *Waste to Resource: Waikato Waste and Resource Efficiency Strategy 2012-15* include implementing a waste data and information network and supporting waste feasibility options and infrastructure studies.

It is also worth noting that waste data is becoming an area of focus at a national level with the MfE signalling their intention to work with Statistics New Zealand, the waste industry through WasteMINZ, and Local Government New Zealand (LGNZ) to determine waste data requirements and initiate the development of a consistent national approach.

5.2 Uses of Waste Data

There are a number of purposes for gathering and analysing waste data. These include:

- setting national, regional, or local policy
- monitoring and measuring policy effectiveness and the achievement of targets or specific objectives
- identifying opportunities for waste reduction
- designing and implementing new services and monitoring the adequacy of existing services
- providing information for the ongoing delivery of waste management services.

The information that is required for each of these purposes differs. In general, the detail and specificity of the data needs increases as you move down the list of purposes. Setting policy will generally only require aggregated high-level data on quantities and composition to landfill as well, possibly, as information on material diverted. By contrast, quite detailed operational data is required to facilitate the delivery of waste management services (for example information down to the level of individual premises serviced).

This section is primarily concerned with bringing together and analysing information that is important for the setting of policy, the monitoring of targets, and identifying opportunities for waste reduction. It has been assumed that data needs for operational management of waste services is met adequately by the TA's own internal systems and that case-specific data would be collected for designing new services.

Supporting data may enable consideration of factors that are considered to influence the generation of waste, and could include:

- a measure of construction activity, such as number of building consents issued
- a measure of economic activity, such as regional or national GDP
- population and/or household numbers

- participation, set out rates, and other survey information.

5.3 Waste Data Issues

5.3.1 Definition of Waste

One of the inherent difficulties in generating waste information lies in the fact that it is difficult to produce an accurate definition of 'waste'. This is essentially because waste is a perception of value rather than an actual physical material, and that perception of value can change throughout the lifecycle of a material as well as according to different parties involved. This means that, at the boundaries, the question of when something becomes waste is blurred¹³ (for example, whether a manufacturing by-product is a 'recovered material'). Defining what is included in an analysis of waste (and waste data) can therefore be problematic.

Waste streams can be classified in a number of ways, for example: by material (e.g. paper, plastic, glass, etc); by source (e.g. C&D, retail); by some inherent property (e.g. hazardous, putrescible); by function (e.g. packaging); or by some combination of these (e.g. household plastic packaging). Although there are some common conventions, these waste stream classifications are not clearly defined or universally used, and definitions will vary according to the party generating the information and the purpose for which it is intended. Even apparently straightforward classifications can be blurred at the edges, for example multi-material packaging products could be a combination of paper, plastic and metal, or certain materials may be contaminated with other substances.

5.3.2 Measures for Waste

The most widely accepted measure for waste is weight – this is because the weight of a material is constant, whereas its volume will change according to the amount of compaction applied and whether the material is broken down or whole. However, obtaining accurate weights for waste materials can generally only be done where there is a weighbridge - which is usually only at transfer stations, processing facilities, or disposal facilities (and not at all of them). This limits the points at which waste data can be accurately captured. This means that, in practice, measures of waste often involve using estimates (average weights of bins of known volume or bulk densities of materials), or sampling of loads. Other measures that are commonly used for waste include the numbers of customers/pickups (households, businesses etc), participation (how many people use a service in total), set out (how many people use a service each collection), composition by material type, number of vehicle loads, geographic data, and source and destination information. This may involve surveys or sampling, or measures taken at static points in time – all of which introduce at least some level of inaccuracy or uncertainty.

5.3.3 Proprietary Data

One of the key difficulties in generating data for waste management and minimisation policy and strategy purposes is that much of the data required to assemble a picture of waste management at a regional level (in any region) is not in the public domain. In the context of a market where waste collection, recycling, and disposal companies are actively competing for collection and disposal/processing business, much of the information is considered commercially-sensitive. Commercial sensitivity can in part be addressed by presenting data

¹³ The Waste Minimisation Act 2008 (5[1]) defines waste as "Any thing disposed of or discarded".

in aggregated form that prevents company-level information being identified¹⁴. In the Bay of Plenty and Waikato regions, the most important impact of this factor relates to difficulties in obtaining waste tonnage and composition information for waste and recovered materials that are collected and managed by the private sector with no reference to council services or facilities or locally-consented facilities.

5.3.4 Limited Standard Reporting Protocols

A further issue that introduces additional complexity to the waste data picture is the fact that virtually all agencies, including local and central government, report waste data in slightly differing ways (depending usually on what the information is intended for). A diversion rate, for example, could refer to all household waste or just household-collected waste, it could include transfer station material, it may or many not include commercial waste streams, and it may or may not account for cleanfill material or industrial waste disposed of to monofills.¹⁵

5.3.5 Potential Double Counting

When compiling waste data, care needs to be taken to ensure that material is not double-counted. Waste and recycled materials are commonly bulked, stored, and transferred a number of times on their way to their final destination, and a number of different operators may handle the same material. Simply adding up the quantities of materials handled by individual operators therefore risks double- (or triple-) counting material.

5.3.6 Impact of Cleanfill and Unregulated Disposal

While one of the main impediments to the free flow of waste data in areas such as landfilling and materials recovery is commercial sensitivity, with regards to cleanfills and similar land disposal sites the primary issue is the near-complete lack of any data being available to TAs.

As is said in the New Zealand Waste Strategy – *“The lack of data about waste hampers our ability to plan appropriate activities to improve waste management and minimisation”*. Reliable information of the volume of waste to landfill has only been available to MfE since the introduction of the waste levy. There is, however, virtually no reliable information on the volume of waste being disposed of at non-levied sites, such as cleanfills. This lack of reliable data makes accurate monitoring of many waste minimisation initiatives, particularly those related to C&D waste, if not impossible then highly problematic.

This situation has largely evolved in response to the changing legislative environment over the last twenty years. Regional rules relating to cleanfill disposal, and supporting material released by government, such as the MfE’s cleanfill guidelines, are based on the RMA’s objectives to reduce the environmental harm of land disposal. With regards to this objective, there has been little motivation for local government to require land disposal facilities to provide data, and reporting requirements are not often included in resource consents.

The purpose of the WMA, however, is to reduce waste. The WMA does not differentiate between reducing waste to landfills (‘disposal facilities’ as defined by the WMA) and reducing waste disposed of in other ways. To measure the success of the WMA in achieving this purpose, and of TAs in meeting the targets of their WMMPs, data on all types of disposal is required, including cleanfills and monofills.

¹⁴ This strategy has been employed in seeking proprietary data from waste disposal companies and processors of materials (recycling and composting) for this report.

¹⁵ It should be noted however that a number of these issues are being addressed by MfE with protocols in place around reporting of landfill data (for the purposes of the Landfill Levy) and waste composition data.

In a study commissioned by MfE in 2008¹⁶, an estimate was made that 6,000,000 tonnes of waste per annum were being disposed of at cleanfill-type land disposal sites. This was greater than the quantity of waste being disposed of at sanitary landfills.

With cleanfill volumes being so high, without having an understanding of the quantity and composition of materials being disposed of to cleanfills and other similar sites, councils can not fully understand waste flows in their areas. While this may not be of great significance for materials such as natural, virgin excavated soil, a major component of waste disposed of in cleanfills, it is important when considering inert, cleanfill materials such as concrete. It is of yet greater importance for non-inert materials, such as greenwaste and timber that are consented to be disposed of in some 'cleanfill' facilities in Bay of Plenty and Waikato regions.

In both regions, there are consented disposal sites that are consented to accept a wide range of materials other than inert cleanfill. There is, for example, a disposal site close to central Tauranga that is consented to accept greenwaste and other non-inert materials¹⁷. Without reliable information on waste flows into that site, Tauranga City Council is unable to gauge the effectiveness of its own initiatives to reduce the disposal of organic waste to landfill.

The only area in the country with reliable data on cleanfill disposal is Christchurch City¹⁸. The council's waste bylaw requires cleanfills to be licensed and the reporting of disposal tonnages is one of the licensing requirements. Where cleanfill data of this quality is not available, it must be recognised that any data relating to waste disposal is not complete.

5.3.7 Comment on Waste Data Issues

The above issues sound a note of caution in respect of waste data. It is important, therefore, when reviewing waste data that care is taken in understanding how it has been generated, what it refers to, and how it can be properly and usefully applied.

5.4 Priorities, Targets, and Associated Data Requirements

A high level analysis was undertaken to determine the key data that is required to manage and monitor progress towards WMMP targets and high level objectives in Bay of Plenty and Waikato regions. The results are presented below.

5.4.1 Targets

A complete list of targets in WMMPs is provided in 3.3.2. Table 14 provides a summary of the WMMP targets and an analysis of the key high-level data that is required to be able to measure progress in respect to the targets.

¹⁶ SKM (2008) Waste Facilities Survey – Methodology and Summary of Results, prepared for MfE

¹⁷ This consent expires in 2014

¹⁸ Only the pre-earthquake data can be considered reliable at this point in time.

Table 14: Key Data Required to Monitor Targets

Targets from WMMPs	Data required to monitor targets						
	Quantity to landfill council ¹⁹	Quantity to landfill Commercial & other ²⁰	Population	Composition	Quantity recovered materials (private & other)	Quantity recovered materials (council)	
Reduce landfill to 338kg per capita by 2022	✓	✓	✓				
207kg per capita per year by 2022	✓	✓	✓				
258kg per capita per year by 2022	✓	✓	✓				
30% reduction in C&D to landfill by 2020 on 2010 baseline	✓	✓		✓			
349kg per capita per year by 2022	✓	✓	✓				
40% diversion for council-owned or associated facilities	✓						
40% reduction in the amount of waste to landfill by 2020 compared to the 2010 baseline data	✓	✓					
80% reduction in organic waste to landfill by 2020 on 2010 baseline	✓	✓		✓			
Increase diversion by 50% by 2015 (4,500 tonnes per annum baseline) AND increase collected from householders by 50% by 2012	✓	✓		✓	✓	✓	
Increase glass recovery to 90% by 2015, increase paper/cardboard to 80% by 2015	✓	✓		✓	✓	✓	
Increase quantity of diverted materials by 10% by 2018 on 2011 baseline					✓	✓	
Increase quantity of diverted materials by 2370 tonnes by 2015 on 2010 baseline					✓	✓	
Reduce by 20kg per capita per annum (477 baseline)	✓	✓	✓				
Reduce by 80% (404kg per person per year baseline), 30% by 2015 AND reduce waste to landfill from RTS by 30% (4200 tonnes) by	✓	✓	✓				

¹⁹ Council data is assumed to include quantities from kerbside collection, RTS, and other facilities including wastewater treatment plants.

²⁰ Commercial and other data is assumed to include quantities from private kerbside collections, collections from businesses, private RTS data and data from other facilities e.g. MRF rejects etc.

Targets from WMMPs	Data required to monitor targets					
	Quantity to landfill council ¹⁹	Quantity to landfill Commercial & other ²⁰	Population	Composition	Quantity recovered materials (private & other)	Quantity recovered materials (council)
2015						
Reduce organic waste to landfill through council facilities by 20%	✓			✓		
Reduce quantity of disposal by 10% by 2018 on 2011 baseline	✓	✓				
Reduction of waste to landfill by 30% by 2016 (no baseline?)	✓	✓				
Reduction of waste to landfill by 24% by 2018 (2010 baseline?)	✓	✓				
Grand Total – targets requiring this type of data to monitor	16	14	6	5	4	4

The table shows that, across the target measures, quantities of material to landfill from council-controlled streams and from privately-controlled streams are the most common datasets required. While most TAs will have access to good quality data in respect of their own waste streams, unless they own the landfill or all RTSs in the district through which all material goes to landfill, access to data from private sources is likely to be more problematic. This does not mean that TAs are not able to access this data, as data from private sources was provided to many TAs for the preparation of their waste assessments. What it does mean is that the TAs do not have automatic access to this data and may not be able to check on its accuracy.

A number of targets also require composition or source information in order to be measured. These types of targets are where reduction of the quantity of a certain type of material to landfill is specified e.g. organic waste, C&D waste, etc.

Finally, there are a number of targets that relate to the quantities of materials that are diverted. While there are a number of key materials and sources where this target will be easy to measure (e.g. kerbside-collected paper), other materials and sources may be more problematic as issues of waste definitions come into play – organic waste is a particular case in point where there may be a range of waste streams that are moved between private operators without ever necessarily being officially recognised as waste (e.g. bark chips from timber processing, manure that is used as fertiliser etc).

Using the same types of data as shown in Table 14, a breakdown of data requirements for each TA is given in Table 15.

Table 15: Numbers of Targets by TA Requiring Key Monitoring Data

Council	Data required to monitor targets					
	Quantity to landfill council	Quantity to landfill commercial & other	Population	Composition	Quantity recovered materials (private & other)	Quantity recover materials (council)
Waikato Region						
Hamilton CC						
Hauraki DC	1	1	1			
Matamata-Piako DC	1	1	1			
Thames-Coromandel DC	1	1	1			
Rotorua DC	3	3		2	1	1
South Waikato DC						
Taupo DC	1	1				
Waikato DC	1	1	1			
Waipa DC						
Waitomo DC	1	1				
Bay of Plenty Region						
Kawerau DC						
Opotiki DC	1	1			1	1
Otorohanga DC						
Tauranga CC & WBOPDC	3	1	1	1		
Whakatane DC	3	3	1	2	2	2
Grand Total	16	14	6	5	4	4
Number of TAs requiring data type (out of 15)	10	10	6	3	3	3

The table shows that the most common types of data required to monitor targets are the quantity of material landfilled by council and the quantity of material landfilled by the private sector (two-thirds of councils require this data). Other waste data such as composition and the quantity of recovered materials is required for a minority of the targets that are in place (3 out of 15 councils).

5.4.2 WMMP Objectives

As was done for targets, a high-level meta-analysis was conducted in respect of the key objectives from TAs' WMMPs. These objectives are presented in Appendix A.4.0. The results of the analysis are shown in Table 16.

Table 16: Information and Data Required to Monitor and Report on Objectives

Council	Data required to monitor objectives													
	Landfill quantities (all sources)	Composition to landfill	Quantity recovered (by material)	Participation and education data	Life cycle assessment data	Full cost of services	Collaboration and partnership	H&S, Consent, & ops data	Private sector data (incl bylaws)	Proportion of user pays services	Business Participation in cleaner production etc	Information on local facilities and markets	Employment	Other data and information
East Waikato councils	1	1			1	2	3	1	2		1	1		
Hamilton CC	2	1	1	1				1						
Kawerau DC				1							1			1
Opotiki DC	2		1	2	1		1	1			1			
Otorohanga DC	3	3	1	1					1	1				
Rotorua DC	1							1						
South Waikato DC				1				1				1	1	
Tauranga CC & WBOP DC	2	1	1				2		1	1				
Waikato DC	2		5		1	1	1					1	1	
Waipa DC	1		1											
Waitomo DC	4	1	3				1			1				1
Whakatane DC					1		1					1		
Taupo DC	1		1				2	1						
Grand Total –TA objectives requiring data type	19	7	14	6	4	3	11	6	4	3	3	4	2	2

The measures and the types of information required to monitor and measure WMMP objectives are more numerous and diverse than are required to report on targets.

The most common types of information required to report on objectives are quantities of material landfilled and quantities of material recovered. Reporting on collaboration initiatives is also relatively common. Data on waste composition and participation in services and education programmes are also commonly required.

5.4.3 Discussion

While the simple meta-analysis undertaken here reveals a range of commonalities – and differences – between the data requirements of each of the TAs to be able to monitor their WMMPs, it also highlights two other related issues:

There are a wide range of types of targets and objectives, many of which in reality will be difficult to measure. There are significant issues with gathering the data necessary for a number of different types of measures. Measures around quantity of recovered materials may be problematic across all sources of material – in particular non-council controlled material. Similarly a measure as seemingly simple as quantity of waste to landfill may be problematic where council does not control the landfill or all waste streams entering landfill. Private sector material will flow directly into landfill and material may also enter and leave the district. On the other hand, the wording of a number of objectives is such that they may not lend themselves to any sort of measurement. Delivering social, cultural and economic benefits, while clearly desirable, may not in many instances be able to be accurately measured as the benefits are not necessarily clearly defined or are so diffuse as to be difficult or impossible to separate from other influences.

What this suggests is that, in reviewing data requirements, there may be a need to better consider how outcomes will be measured in developing the targets and objectives in the first place; in the future, rather than develop a range of targets and objectives and then try and figure out data and measuring systems, perhaps there is more logic to first figuring out what can actually be measured and which data can be adequately gathered, and developing and expressing targets and objectives in those terms. In other words, if there were common, agreed standards developed around certain measures, these could then realistically and easily be adopted by all TAs. This would not only see greater consistency in data gathering but would see greater commonality in setting of objectives and targets, which in turn might help focus effort in key areas that will drive greater waste minimisation.

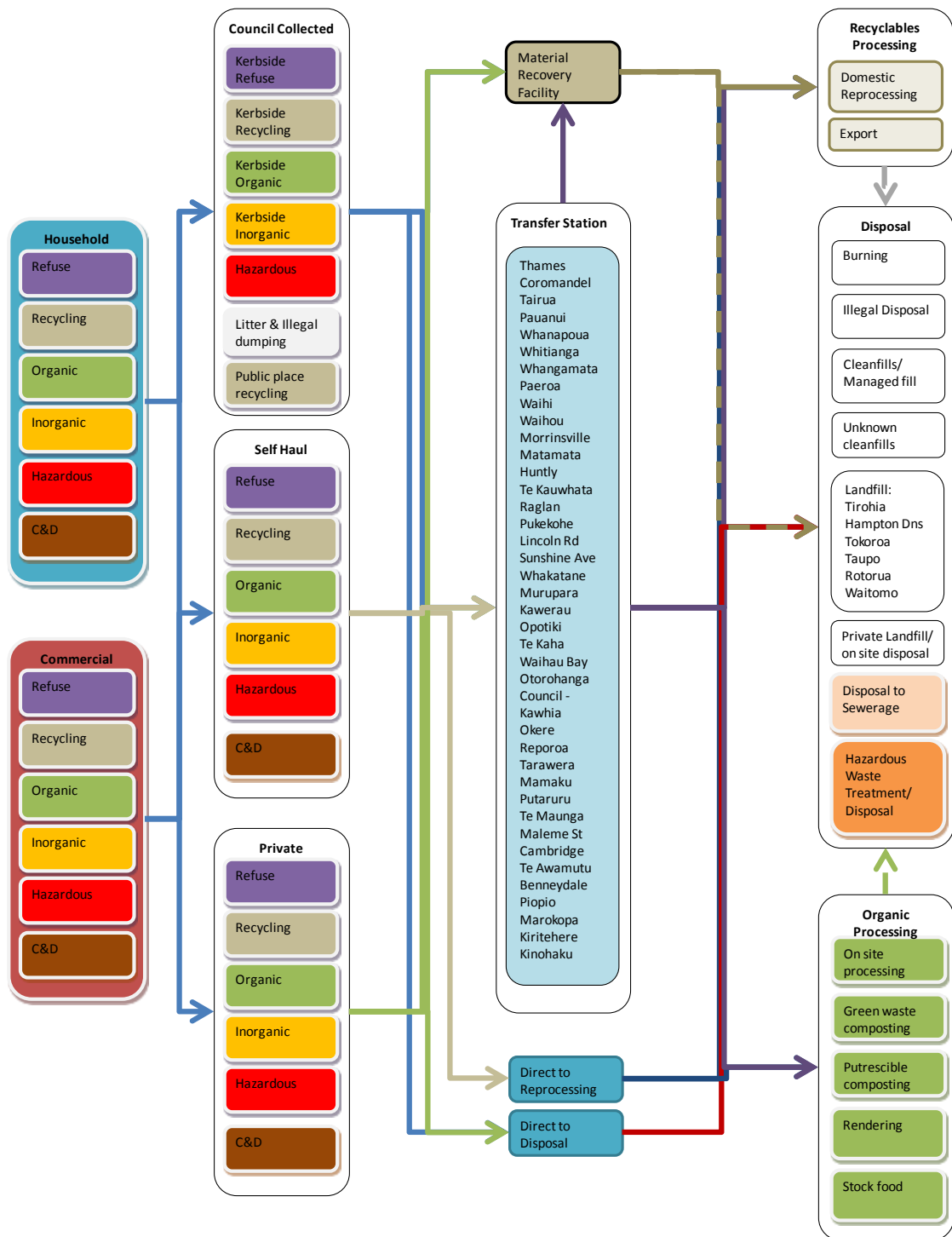
5.5 Assessment of Available Waste Data

The purpose of this section is to consider in general terms what waste and recycling data might be available in Bay of Plenty and Waikato regions, who it might be available to, and the quality, reliability and usefulness of the information.

Figure E. 2 provides a simplified illustration of key waste streams and their major flows. Even in a simplified form it can be seen that the waste flows are very complex. When material and location-specific flows are accounted for, the level of complexity expands almost exponentially. It is not practical therefore (nor would it necessarily be useful) to detail all waste flows in this section.

Figure E. 2: Generic Waste Flows in Waikato and Bay of Plenty Regions

Generic Flows



5.5.1 Waste Flow Data Analysis

The waste flows shown in Figure E. 2 have been analysed in terms of what information could be effectively captured at each juncture in the flow of materials. In conducting the analysis, the quality of the information was broadly grouped according to whether the information that is captured was adequate for the purposes of monitoring and measuring policy effectiveness and the achievement of targets or specific objectives. This analysis shows that the quantity and quality of information is highly variable by waste stream and across each of the major flows. In brief the following was found:

Adequate information in the public domain

- council-collected kerbside refuse
- council-collected kerbside recycling and recycling drop-off points
- council-operated transfer stations
- council-owned landfills

Limited information in the public domain

- privately-owned landfills (those operating under Waikato Regional Council/Bay of Plenty Regional Council resource consents)
- in some cases, litter, illegal dumping, and biosolids
- solid waste disposed of to trade waste

Adequate information not in the public domain

- privately-collected refuse
- privately-collected recycling
- commercial sources of waste
- privately-owned transfer stations
- recyclable and organic processing, other than in council-controlled facilities
- hazardous waste processing

Little or poor quality information

- self-haul activity
- on-site disposal
- cleanfill and monofill disposal

In summary, adequate information in the public domain generally exists where councils control the activities. There is limited information in the public domain on private sector collection or disposal activities, except in cases where the private sector chooses to release this information to councils. Commercial operators have adequate information, not necessarily in the public domain, on the quantities of material to landfill, transfer station, and reprocessing activities. There is a lack of adequate quality information on self-haul activity, on-site disposal, and cleanfill disposal in particular.

5.6 Analysis of Available Waste Data by Waste Stream

The approach used to take this analysis forward was to examine key material flows in terms of the quality, reliability, and usefulness of the data that is able to be obtained. In order to do this effectively, the available waste data in relation to key targets and potential waste

management objectives identified in sections 5.4.1 and 5.4.2 was analysed. A summary of this analysis is provided below.

5.6.1 Organic Waste

Apart from tonnages and composition of household collected waste, there is limited adequate quality information in the public domain in respect of what would be required to manage the region's organic waste streams. The key gaps in the data are:

- tonnages and composition of organic material to landfill, other than in TA-owned landfills where SWAP audits have been undertaken
- a lack of ongoing information on food waste collected, and limited data on commercial waste collections, including collections of garden waste, catering waste, food manufacturing waste, and organic processing wastes
- limited information in the public domain on material deposited at privately-owned transfer stations and other resource recovery facilities
- limited information in the public domain regarding the generation and disposal of organic wastes by large-scale generators, particularly the primary industries
- participation of households in commercially-provided organic waste collection services.

5.6.2 Construction and Demolition Waste

There is little adequate quality information in the public domain on C&D wastes. Key gaps in the data include:

- poor definition of C&D waste
- quantities and composition of C&D materials collected
- quantities of C&D material to cleanfills and other land disposal sites
- limited information on site practices
- limited information in the public domain about quantities and types of C&D material diverted
- limited information in the public domain about quantities and composition of C&D material disposed of to transfer stations and landfill, other in TA-owned facilities that have undertaken SWAP audits.

5.6.3 Special Wastes (sludges, road sweepings, pond and sump residues etc)

There is some information about the composition and quantities of specials generated by TAs, but in general the information on special wastes is limited. Key gaps in the data include:

- the composition of special wastes sent to transfer stations, monofills, and landfills
- the types and quantities of special wastes diverted
- data on special waste generators.

5.6.4 Hazardous Waste (including chemicals, oil, tyres, end-of-life vehicles, batteries etc.)

There are adequate levels of information on household hazardous waste in terms of the amounts found in household collections and the quantities of material being collected through the RTSs. There are, however, a number of significant gaps in the available data on other types of hazardous waste. These include the following:

- the amounts of hazardous materials illegally disposed of
- the quantities of hazardous materials in the commercial waste streams
- the quantities and types of hazardous materials diverted from landfill disposal
- quantities and composition of hazardous material disposed of to landfill.

5.6.5 Inorganics

Apart from information on quantities of material collected through council inorganic collections (in Waikato, Hauraki and Waitomo DCs) there is limited information on this waste stream. To properly manage this stream, better information would be required on the following:

- the composition of collected inorganic material (in particular information about how much is 'reusable')
- participation data on inorganic collections
- composition and tonnages of inorganic-type material deposited at transfer stations and landfills,

5.6.6 Residual wastes

While the quantities of waste going to landfill in the regions are accurately measured (via weighbridge data) there are issues with monitoring and reporting on this information at a regional level. The biggest constraint on residual waste information is the difficulty in obtaining information on the quantity of waste to landfill actually originating in the region – principally as a result of Hampton Downs and Tirohia accepting out-of-region wastes. There is also limited information on the sources of material landfilled due to consolidation of loads at private transfer stations before transport to landfill resulting in a loss of source information. In particular, information in the public domain on the quantity of privately-collected material going directly to landfill is poor, except in those instances where the collectors or landfill voluntarily provide the data to TAs.

5.6.7 Litter and illegal dumping

There is some information on litter and illegal dumping as clean-up of this is controlled through councils. In many instances, councils do not keep detailed records of these waste streams, though. In addition, not all illegal dumping is reported and there is limited information on the composition of illegally disposed material and litter.

5.6.8 Contaminated soil

While most, if not all, significantly contaminated sites are noted in land-use information held by councils, low-level contaminated sites are generally not tracked. In addition, there is no system in place for tracking where materials removed from a site are taken to.

5.7 Gaps and Barriers

The previous analysis has shown that the quality of information, overall, is patchy and the current level of data is likely to be insufficient for properly managing Waikato and Bay of Plenty regions' waste streams into the future.

5.7.1 Gaps

The key gaps include the following:

- detailed identification of cleanfills, monofills, and other consented and unconsented land disposal sites
- composition and tonnage data for cleanfills, monofills, and other land disposal sites
- detailed data for private sector recycling, composting, organic processing, and other resource recovery activities
- access to tonnage and composition information on material disposed of or processed out of the regions
- the composition of special wastes sent to landfill
- the types and quantities of special wastes diverted from disposal to land
- limited information in the public domain on the origin of materials disposed of in the regions' landfills
- limited information in the public domain about quantities and types of C&D material diverted
- limited information in the public domain about quantities and composition of C&D material disposed of to landfill, cleanfills, and other land disposal sites.

5.7.2 Barriers

There are a number of barriers to obtaining the necessary information. These include the following:

- an absence of solid waste bylaw reporting requirements for licensed operators being implemented by TAs
- poor or inconsistent definitions of certain waste streams including 'C&D waste', 'inorganic' wastes, and 'special' wastes
- limited access to data on privately-collected waste streams, other than through voluntary reporting
- a lack of a coordinated central repository for gathering, analysing, and disseminating waste data
- the absence of standardised waste reporting protocols or infrastructure
- the transportation of diverted materials and residual waste streams outside of the regions for disposal or processing
- a large number of small operators (particularly in respect of collections) with a relatively high historic turnover
- the designation of some cleanfilling as a 'permitted activity' in the Waikato region resulting in an amount of cleanfilling activity taking place outside of the regulatory framework and limiting the opportunity for data capture
- the absence of reporting requirements in resource consents for cleanfills, monofills, and other land disposal sites

5.8 Towards Regional Waste Data Strategies

It is suggested that the work undertaken in this report could lay the ground work for developing a waste data strategy for the regions. A regional waste data strategy would clearly identify the information that is needed to manage waste in the region and plot a way forward that would ensure this information is available to the necessary parties.

Available techniques for improving data quality and availability in Waikato and Bay of Plenty regions include:

- establishing standard waste stream definitions for the purposes of monitoring and reporting of waste data
- introducing consistent waste operator licensing schemes (or some appropriate variant) across the regions that include mandatory reporting by waste collectors and waste facilities
- initiatives to gather data from privately-owned transfer stations. This could take the form of inclusion of waste facilities in a licensing scheme, review of the terms of resource consents to require reporting of data, or some other method such as public sector entry into strategic partnerships with transfer station owners
- improving controls on cleanfills and managed fills, including reporting requirements, through upgrading of consent conditions or introduction of a 'cleanfill bylaw'
- conducting regular participation surveys for key services
- developing a structured programme of waste audits at facilities throughout the region to provide accurate meaningful time series data on key waste streams
- introducing site waste management plans for construction and demolition sites to help track C&D waste
- focusing targets on key metrics which are measurable. The key metrics ultimately are the quantity of waste (per capita) to landfill and the composition of this waste. If good quality data can be gathered around these measures, then determining quantities of material diverted may not be necessary in terms of formulating and monitoring waste policy and strategy in the two regions.
- establishing a centralised waste data management system with clear lines of reporting and responsibility
- working with MfE to help establish a national tracking system for all hazardous waste
- collaborating with MfE on the national system for waste data reporting that is currently being discussed
- with regards to contaminated soil, developers should have a requirement for any contaminated soil removed from a site to be shown to have been taken to a licensed facility. Waste Track is an MfE tool for tracking transportation of liquid and hazardous wastes, which could be adopted to include contaminated sites.
- established annual reporting (to be aggregated at regional level) from key recovered material processing facilities.

In terms of delivery structures, it would make most sense for a central agency to have responsibility for gathering and analysing waste data, as this would provide an opportunity for standardisation of how data is reported and would minimise confusion caused by reporting to multiple agencies.

In many ways the optimum structure for gathering and analysis of waste data will be as simple as possible and gather only that information which is genuinely needed to manage waste flows. This type of approach imposes the minimum burden on waste operators and avoids the inefficiencies of having to manage large quantities of unnecessary data. In developing a waste data strategy for Waikato and Bay of Plenty regions, it is recommended that emphasis is placed on accurately and correctly targeting the information required.

As noted in the gap analysis, improving data in a few key areas will enable the development of credible estimates of waste quantity and composition for the Waikato and Bay of Plenty regions. It is likely that an element of judgement will remain in developing an overall picture of waste management in the region at any point in time. This is due to the movement of waste in and out of the region, the difficulty in identifying and quantifying all waste from business activities, and the 'informal' nature of the cleanfill disposal market.

5.9 Tools for Improving Waste Data

Regional councils and territorial authorities have a number of tools available to assist in assembling data on waste in the region. These include:

- requiring the provision of data through bylaws (under the WMA)
- requiring the provision of data through resource consents (under the RMA)
- working with commercial operators to share data (potentially on a confidential basis).

The implementation of the levy component of the WMA has resulted in the collection of data at waste disposal facilities. Any reporting requirements under bylaws and/or resource consents should look to align with the requirements under the WMA and underlying regulations.

The data presented in this report draws on information obtained through the use of these approaches as well as information in the public domain. This has resulted in a series of estimates for key waste streams but has also highlighted some areas where a statutory requirement to provide data could improve the accuracy and relevance of the data collected.

5.9.1 Bylaws

There are a range of solid waste by-laws in place in the Waikato and Bay of Plenty regions.

Key considerations for the implementation of a bylaw include

- interaction with any resource consent requirements
- weighing up the cost (to businesses and the community) of implementing the bylaw with the benefits to be gained
- for reporting requirements, how to handle commercially-sensitive information.

These issues have been considered in some detail in the supporting analysis for the new waste bylaw in Auckland as well as similar work for other councils in other parts of New Zealand (particularly Christchurch City Council).

A cross-region solid waste bylaw would ideally:

- license transporters of waste
- license disposal facilities (managed fill, cleanfill, and landfill)
- license waste processing facilities (transfer stations, sorting facilities, processing sites)
- align reporting requirement with those for resource consents (where relevant)

5.9.2 Resource Consents

Waste disposal facilities require resource consent from the regional councils. All of the major facilities are required to provide information on quantity of materials accepted but the brief review of consent records suggests that for cleanfills this data is not always provided. Landfills in the area are not required to undertake waste composition surveys. There is

potential to introduce this requirement and potentially extend it to consented cleanfill sites, most logically with a simplified methodology based on a reduced number of categories.

Consents for waste disposal facilities in the regions would ideally

- require regular reporting of waste quantity, including identifying any out of region waste
- require periodic reporting on waste composition
- align reporting requirements with those for bylaws (where relevant).

6.0 Estimates of Waste and Diverted Materials

6.1 Availability of Data to Territorial Authorities

Table 1 lists the data that is contained in each of the TA's waste assessments and WMMPs. The data in that table comprises solely what the councils' chose to present in these documents, and may not represent, in all cases, all of the data that is available to councils. To determine what types of data are available to the TAs, and to update the data from the waste assessments and WMMPs, a survey form was sent to each of the councils (refer to Appendix A.14.0 for a copy of the form).

The survey form requested data on 16 separate waste streams. Table 17 lists eight of these waste streams, and indicates whether or not each territorial authority is able to access reasonably complete data on that waste stream. For a council to have a reasonable understanding of waste flows in its district, data on eight of these waste streams could be considered essential. The data from these eight waste streams would provide information on three important metrics for the district:

- 1) the quantity of waste collected from the kerbside, both by council and privately
- 2) the quantity of 'dry recyclables' collected, both by council and privately
- 3) the total quantity of waste to landfill.

It is acknowledged that the data in the table would not provide comprehensive data, as several waste streams are not included. These include kerbside organic collections, recycling to RTSs and drop-off points and waste to land disposal sites other than landfills.

Table 17: Availability of Data to Territorial Authorities

TA (N/A =Not Applicable)	Council's kerbside refuse collection	Private kerbside refuse collection	Council's kerbside recycling collection	Private kerbside recycling collection	Private recycling from commercial premises	Waste to landfill from council RTSs	Waste to landfill from private RTSs	Waste from district direct to landfill
Waikato Region								
Hamilton City	Yes	Not known	Yes	Not known	Not known	Yes	Not known	Not known
Hauraki District	Yes	Yes (1)	Yes	N/A	Yes (1)	Yes	N/A	Yes (1)
Matamata-Piako District	Yes	Yes (1)	Yes	N/A	Yes (1)	Yes	N/A	Yes (1)
Otorohanga District	Yes	No	Yes	N/A	No	Yes	N/A	No
South Waikato District								
Taupo District	Yes	Yes	Yes	N/A	Not known	Yes	N/A	Yes

TA (N/A =Not Applicable)	Council's kerbside refuse collection	Private kerbside refuse collection	Council's kerbside recycling collection	Private kerbside recycling collection	Private recycling from commercial premises	Waste to landfill from council RTSS	Waste to landfill from private RTSS	Waste from district direct to landfill
Thames- Coromandel District	Yes	Yes (1)	Yes	N/A	Yes (1)	Yes	N/A	Yes (1)
Waikato District	Yes	Yes (1)	Yes	N/A	Yes (1)	Yes	N/A	Yes (1)
Waipa District	N/A	Not known	Yes	Not known	Not known	N/A	Yes (1)	Not known
Waitomo District	Yes	Not known	Yes	Not known	Not known	Yes	N/A	Yes
Bay of Plenty Region								
Kawerau District	Yes	Yes	Yes	N/A	Not known	Yes	N/A	Yes
Opotiki District	Yes	Yes	Yes	N/A	Not known	Yes	N/A	Yes
Rotorua District	Yes	Yes	N/A	Yes	Yes	N/A	N/A	Yes
Tauranga City	Yes	Yes	N/A	Yes	Not known	Yes	N/A	Yes
Western Bay of Plenty District	N/A	Yes (2)	N/A	Yes (2)	Yes (2)	N/A	N/A	Yes (2)
Whakatane District	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Not known

(1) Provided voluntarily by private industry, usually specifically for waste assessment

(2) Data provided to council through bylaw licensing provisions

The range of waste data to which councils have access varies considerably. TAs have been found to have access to data through a number of sources, including:

- data voluntarily provided by private operators, often for a specific purpose such as the preparation of a waste assessment
- data extracted from weighbridge records at council disposal facilities, either by council itself or during the course of a SWAP audit. This type of data may be considered to be commercially-sensitive.
- council contractor tonnage records or extrapolation of data such as refuse bag sales and average bag weights
- bylaw provisions for licensed waste collectors and waste facilities
- provisions of leases for council-owned land by private waste facilities

The reliability of data available to councils varies, but data reliability is not necessarily related to the source of the data. Through discussions with councils and other sources, data that has

not been considered to be reliable has originated from voluntary reporting, council contractor reporting, and licensed operator reporting.

6.2 Tonnage of Waste to Landfill

6.2.1 Waste Originating in the Regions

Table 18 provides an estimate of the total annual tonnage of waste originating from Bay of Plenty and Waikato regions that is disposed of to landfills. It does not include waste disposed of in the regions that originates from outside of the regions. The data used to calculate the estimate has primarily been drawn from the information provided by TAs as, in their role as owners of landfills and transfer stations, councils control a large percentage of the overall waste market. In those instances where kerbside refuse data is not available, surrogate data based on per capita disposal rates in the other districts has been substituted.

The total tonnage of waste to landfill has been divided into three waste streams – kerbside refuse, ‘general waste’, and special wastes. ‘Kerbside refuse’ includes all refuse collected from both residential and commercial properties by both council and private waste collections. ‘Special’ wastes include biosolids and road sweepings from council sources and, where identification is possible, large industrial waste streams. ‘General’ waste is all waste to landfill that is neither kerbside refuse nor a special waste. The data does not include significant amounts of cleanfill or similar materials that are used for engineering purposes (such as daily cover material) within the landfills.

In waste audits done for several of the TAs in the regions, general waste is further broken down into four types of waste – C&D waste, industrial/commercial/institutional waste (ICI), residential waste (excluding kerbside refuse), and landscaping waste. These waste types are shown as subsets of the ‘General waste’ category in the table.

To preserve the confidentiality of some of the data provided by the individual TAs, only aggregated data for the regions, separately and combined, is presented.

Table 18: Tonnage of Waste to Landfill from Bay of Plenty & Waikato

Waste stream	Bay of Plenty	Waikato	Total	% of overall waste stream
Kerbside refuse	48,192	78,929	127,121 T/annum	35.9%
<i>C&D waste</i>	13,879	26,700	40,578 T/annum	11.5%
<i>ICI waste</i>	43,346	83,389	126,735 T/annum	35.8%
<i>Landscaping waste</i>	7,514	14,456	21,971 T/annum	6.2%
<i>Residential waste</i>	10,688	20,561	31,248 T/annum	8.8%
Subtotal - General waste	75,427	145,105	220,532 T/annum	62.3%
Special waste	3,574	2,853	6,427 T/annum	1.8%
Total	127,193	226,887	354,080 T/annum	100.0%

It is estimated that a total of 354,080 tonnes of waste are disposed of to landfill annually from Bay of Plenty and Waikato regions. As the tonnage data has been taken from a number of different sources, no specific year has been attached to the figure.

Of the total amount disposed of to landfill, just over one third (35.9%) was kerbside refuse, and a further third was ICI. C&D waste made up nearly 12% while less than 2% was special waste. The figure for special waste, which includes primarily biosolids, is the least reliable, as the smallest dataset was used for its calculation.

Using population figures from Stats NZ 2011 sub-national population estimates, per capita disposal rates can be calculated. The results of the calculation are shown in Table 19.

Table 19: Per Capita Disposal of Waste to Landfill from Bay of Plenty & Waikato

Waste stream	Bay of Plenty	Waikato	Total
Population	239,131	454,540	693,671
Tonnes of kerbside refuse per annum to landfill	48,192	78,929	127,121
Tonnes/capita/annum of kerbside refuse	0.202	0.174	0.183
Tonnes of overall waste per annum to landfill	127,193	226,887	354,080
Tonnes/capita/annum of overall waste	0.532	0.499	0.510

Approximately 0.510 tonnes of waste is disposed of to landfill for every resident of Bay of Plenty and Waikato regions. Of this total, approximately 0.183 tonnes are kerbside refuse. Both per capita figures for Bay of Plenty region are slightly higher than for Waikato region, but the difference is minor.

6.2.2 Out-of-Region Waste Disposed of in Waikato and Bay of Plenty Regions

In addition to material originating from within the regions, material is imported into the regions for disposal. This includes significant tonnages from Auckland region deposited at Hampton Downs, waste from Gisborne which is disposed of at Tirohia, and waste from Ruapehu that is taken to Waitomo. Information supplied by MfE from the Online Waste Levy System (OWLS), and from resource consent data indicate that in the order of 300,000 tonnes per annum of residual waste is disposed of that originates from outside of the regions²¹,

6.2.3 Tonnage of Waste to Other Land Disposal Sites

In this section, 'other land disposal sites' refers to sites where waste is disposed of to land but the site does not meet the WMA's definition of a 'disposal facility'. This means that waste disposed of at these sites is not subject to the waste levy. 'Other land disposal sites' include cleanfills (that accept only MfE-compliant 'cleanfill' materials), monofills (that accept a small number of industrial by-products), C&D fills, B-class landfills, non-municipal landfills, and non-compliant cleanfills (that accept wastes that do not comply with the MfE cleanfill guidelines).

Both quantitative and qualitative data relating to other land disposal sites are scarce and, in many instances, non-existent. As with 'Other diverted materials', compiling data on other disposal sites will yield an estimate of the order of magnitude of the quantity involved but little more. Whereas for 'Other diverted materials' the data is likely to exist in some form,

²¹ OWLS data indicates that approximately 630,000 tonnes of material is disposed of into levied landfills in the regions, while resource

waste disposed of at other land disposal sites may not even be measured, making precise estimates impossible.

An estimate of the quantity of waste materials disposed of at other land disposal sites in Bay of Plenty and Waikato regions is contained in Table 20. An estimate of the quantity of waste material that is *other* than natural, virgin, excavated material (i.e. soil) has also been made. These estimates have been made through an analysis of 74 known sites in the regions.

To arrive at the estimates, an analysis was carried out by:

- Classifying all sites into one of four generic classifications based on size - 3000 T/annum, 20,000 T/annum, 60,000 T/annum, and 100,000 T/annum. The classifications were made on the basis of available information, including purpose and location of site. Sites in isolated locations were, for example, assumed to accept less waste than those close to major population centres. Consented sites were classified on the basis of resource consent conditions relating to maximum acceptable volume, where applicable.
- Classifying all sites according to an assumed proportion of the material that was not natural, virgin excavated material. Four classifications were used – 20%, 50%, 90%, and 100% not being natural, virgin excavated material. Again, the classification of each site was based on factors such as location and purpose of the site. A rural site used for disposal of slip material would, for example, be classified as having 20% of waste not being natural, virgin excavated materials whereas 100% of waste at a monofill would be classified as not being natural, virgin excavated materials.

Table 20: Other Land Disposal Sites – Bay of Plenty and Waikato Regions Combined

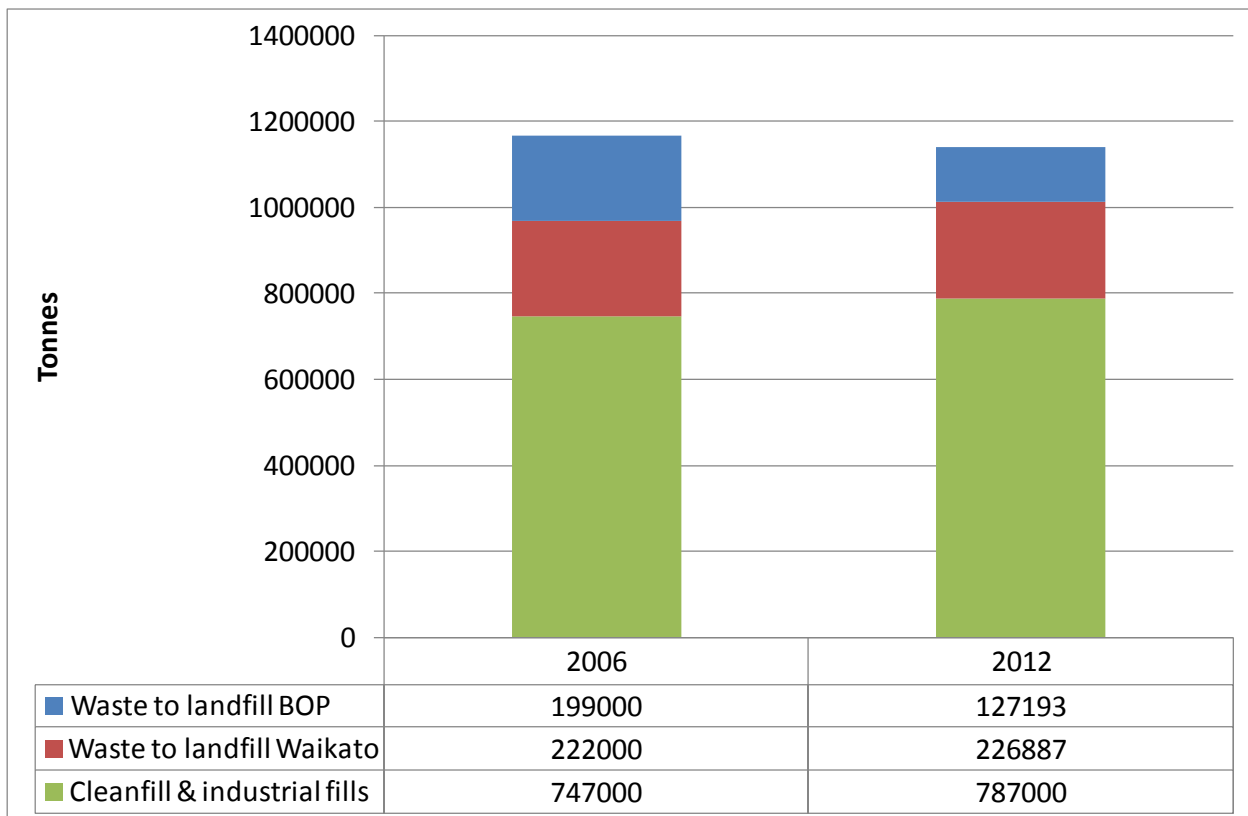
Other diverted materials	T/annum	T/capita/annum
All waste to other land disposal sites	787,000	1.13 tonnes
Waste other than natural, virgin, excavated material	411,300	0.59 tonnes

It has been estimated that 787,000 tonnes of material is disposed of at other land disposal sites annually. This is more than twice as much as is disposed of to landfills. Slightly more than half of this waste is other than natural, virgin, excavated materials.

6.2.4 Change in Waste Quantities Over Time

The chart below shows the estimated quantities of waste disposed of from the previous stocktake reports (based on 2006 data) compared with estimates from the current report.

Figure E. 3: Change in Waste Quantities over Time



Overall estimated quantities are very similar between the two periods. Estimates of cleanfill and industrial fills are subject to a significant margin of error, and so the apparent difference between the estimated quantities cannot be taken to be representative of any trend. The quantity of waste disposed of from Waikato appears essentially the same over time, while the quantities attributed to the Bay of Plenty appear to have declined in the order of 36%. While this may be attributable to waste minimisation (such as through a number of large waste streams being addressed), it is not possible to say if it is due to this, or to differences in the methodologies used to gather the data.

6.3 Composition of Overall Waste to Landfill

The composition of the overall waste stream disposed of to landfill from Waikato and Bay of Plenty regions has been calculated using the results of SWAP audits undertaken in eight of the 16 territorial authority areas in the past six years. These SWAP audits represent 58% of the 354,080 tonnes of waste disposed of annually to landfill from the two regions. While the results of SWAP audits are available for some of the other TAs, the data was considered too old to be reliable. As it is, some of the audits that have been used predate the global financial crisis of 2008, which has been found to have affected waste composition, particularly with regards to a decrease in C&D waste.

The results of this calculation are presented in Table 21. As the datasets for the individual regions are relatively small, separate compositions for the two regions have not been included. Only waste disposed of to landfill from the regions themselves have been included in the calculations; waste from outside the regions is not included. Cover material and other materials used for landfill site engineering have been excluded from the calculations.

Table 21: Composition of Overall Waste to Landfill from Bay of Plenty and Waikato Regions

Waste category	% of total	Tonnes per annum
Paper	12.2%	43,264 T/annum
Plastics	10.8%	38,093 T/annum
Organic	33.3%	117,811 T/annum
Ferrous metals	4.0%	14,253 T/annum
Non-ferrous metals	0.8%	2,857 T/annum
Glass	6.2%	21,884 T/annum
Textiles	4.6%	16,349 T/annum
Sanitary	4.9%	17,411 T/annum
Rubble & concrete	8.0%	28,414 T/annum
Timber	13.5%	47,638 T/annum
Rubber	0.5%	1,826 T/annum
Potentially hazardous	1.2%	4,279 T/annum
Total	100.0%	354,080 T/annum

It is calculated that 'Organic' waste is the largest single component of waste to landfill from Bay of Plenty and Waikato regions, comprising an estimated 33% of the total. 'Organic' waste consists primarily of food waste, from both domestic and commercial sources, and greenwaste. Close to half of the tonnage of 'Organic' material is food waste from kerbside refuse collections.

'Timber' is the second largest component of waste to landfill from Bay of Plenty and Waikato regions, comprising 14% of the total. 'Timber' includes both C&D waste timber and other types of timber (such as furniture and pallets) from residential, commercial, and industrial sources.

6.3.1 Diversion Potential of Overall Waste Stream

In the SWAP audits used to calculate the composition of the overall waste stream, secondary categories for classifying waste were used to differentiate between recoverable and non-recoverable materials (e.g. recyclable paper vs. non-recyclable paper). In this context, 'recoverable' is taken to mean materials for which there are ready markets in the district being analysed.

Using this data from the SWAP audits, the diversion potential of the overall waste stream has been calculated to be as shown in Table 22.

Table 22: Diversion Potential of Overall Waste to Landfill from Bay of Plenty and Waikato Regions

	% of total	Tonnes per annum
RECYCLABLE MATERIALS		
Recyclable paper	10%	36,855 T/annum
Recyclable plastic	1%	4,982 T/annum
Ferrous metal	4%	15,056 T/annum
Non-ferrous metal	1%	2,856 T/annum
Recyclable glass	5%	16,007 T/annum
Rubble & concrete	2%	5,581 T/annum
Unpainted, untreated timber	3%	9,582 T/annum
Subtotal - Recyclable	26%	90,918 T/annum
COMPOSTABLE MATERIALS		
Food waste	15%	53,554 T/annum
Greenwaste	10%	36,708 T/annum
Subtotal - Compostable	25%	90,261 T/annum
Total - Divertable	51%	181,180 T/annum
Residual	49%	172,900 T/annum
Total	100%	354,080 T/annum

Approximately half of the overall waste stream disposed of to landfill from Bay of Plenty and Waikato regions could be readily diverted either by recycling/recovering or by composting. Recyclable and compostable materials comprise similar proportions of the overall waste stream, about 25% each.

Recyclable paper is the largest recyclable component of the overall waste stream, comprising 10% of the total, with recyclable glass making up a further 5%.

Of the 25% of the waste stream that is compostable, 15% is food waste and 10% greenwaste.

It is noted that this analysis only considers materials that are commonly recycled, recovered, or composted. Some diversion of other materials is already occurring, but not all of such materials have been classified as 'divertable' in the above table (for example clothing or tyres).

6.3.2 Diversion Potential of Kerbside Refuse Stream

In the SWAP audits used to calculate the composition of kerbside refuse, secondary categories are also used for classifying waste were used to differentiate between recoverable and non-recoverable materials (e.g. recyclable paper vs. non-recyclable paper). In this context, 'recoverable' is taken to mean materials for which there are ready markets in the district being analysed.

Using this data from four SWAP audits of kerbside refuse conducted in Bay of Plenty and Waikato regions, the diversion potential of kerbside refuse has been calculated to be as shown in Table 23.

The diversion potential of kerbside refuse, as a proportion of the total, does not change significantly between the different types of receptacles used, but 240-litre wheelie bins commonly contain greater quantities of greenwaste, and to a lesser extent, recyclables, than refuse bags or smaller wheelie bins.

Table 23: Diversion Potential of Kerbside Refuse from Bay of Plenty and Waikato Regions

	% of total	Tonnes per annum
RECYCLABLE MATERIALS		
Recyclable paper	14%	17,214 T/annum
Recyclable plastic	3%	3,210 T/annum
Ferrous metal	3%	3,304 T/annum
Non-ferrous metal	1%	961 T/annum
Recyclable glass	6%	7,505 T/annum
Subtotal - Recyclable	25%	32,195 T/annum
COMPOSTABLE MATERIALS		
Food waste	30%	37,903 T/annum
Greenwaste	11%	14,116 T/annum
Subtotal - Compostable	41%	52,019 T/annum
Total - Divertable	66%	84,214 T/annum
Residual	34%	42,907 T/annum
Total	100%	127,121 T/annum

Approximately two-thirds (66%) of kerbside refuse from Bay of Plenty and Waikato regions could be readily diverted either by recycling/recovering or by composting. Recyclable paper is the largest single recyclable component, comprising 14% of all kerbside refuse. Recyclable glass comprises 6% of all kerbside refuse, based on the dataset used, but the actual figure would likely have been lower if data had been available for a wider range of kerbside refuse streams.

Food waste makes up 30% of the kerbside refuse stream, and nearly three-quarters of compostable materials. Greenwaste makes up 11% of the kerbside refuse stream, but this proportion varies considerably from district to district.

6.4 Composition of General Waste to Landfill

'General' waste is all waste to landfill that is neither kerbside refuse nor a special waste. In waste audits done for several of the TAs in the regions, general waste is further broken down into four types of waste – C&D waste, industrial/commercial/institutional waste, residential waste (excluding kerbside refuse), and landscaping waste.

The composition of the general waste stream and the four waste types are presented in the following sections.

6.4.1 General Waste

In five of the eight SWAP surveys used to calculate the composition of the overall waste stream shown in Table 21, a separate composition for the general waste stream was provided. Using a weighted average composition based on these five surveys and the tonnage of general waste as shown in Table 18, the composition and tonnages shown in Table 24 have been calculated.

Table 24: Composition of General Waste to Landfill from Bay of Plenty and Waikato Regions

General waste as proportion of overall waste to landfill	62%	220,532 T/annum
Waste category	% of total	Tonnes per annum
Paper	10.8%	23,819 T/annum
Plastics	11.0%	24,360 T/annum
Organic	23.5%	51,868 T/annum
Ferrous metals	5.2%	11,408 T/annum
Non-ferrous metals	0.7%	1,553 T/annum
Glass	4.5%	9,979 T/annum
Textiles	6.6%	14,558 T/annum
Sanitary	2.9%	6,291 T/annum
Rubble & concrete	12.1%	26,589 T/annum
Timber	21.4%	47,162 T/annum
Rubber	0.6%	1,368 T/annum
Potentially hazardous	0.7%	1,577 T/annum
Total	100.0%	220,532 T/annum

(N.B. Does not include kerbside refuse or special waste)

Of the 220,000 tonnes of general waste disposed of per annum from Bay of Plenty and Waikato regions, 'Organic' material and 'Timber' are the largest components, comprising 23% and 21% respectively. 'Paper', 'Plastic', and 'Rubble & concrete' each comprise about 11-12% of the total.

6.4.2 Construction and Demolition Waste

The proportion of C&D waste in the overall waste stream can vary significantly between locations and over time. C&D waste was measured separately in five of the eight SWAP audits that were used to determine the composition of the overall waste stream given in Table 21, and C&D waste varied between 3% and 13% of the overall waste stream. The proportion of C&D waste in the overall waste stream has also been found to vary over time, with the global financial crisis resulting in a major reduction in construction activity in most areas.

By combining the results of the five SWAP audits, the composition and tonnage of C&D waste shown in Table 25 has been calculated. The tonnage figure is based on the general waste tonnage calculated for this report and should be considered to be of an indicative nature only, given the size and age of the datasets used, but the composition can be considered

relatively reliable, as composition does not change substantially between locations of over time.

Table 25: Composition of C&D Waste to Landfill from Bay of Plenty and Waikato Regions

C&D waste as proportion of overall waste to landfill	11%	40,578 T/annum
Waste category	% of total	Tonnes per annum
Paper	2.8%	1,116 T/annum
Plastics	3.0%	1,207 T/annum
Organic	1.8%	743 T/annum
Ferrous metals	2.8%	1,147 T/annum
Non-ferrous metals	0.1%	55 T/annum
Glass	0.6%	252 T/annum
Textiles	3.6%	1,444 T/annum
Sanitary	0.0%	0 T/annum
Rubble & concrete	37.0%	15,011 T/annum
Timber	47.8%	19,387 T/annum
Rubber	0.3%	137 T/annum
Potentially hazardous	0.2%	78 T/annum
Total	100.0%	40,578 T/annum

On average, the overall waste stream to landfill has been found to include about 11% C&D waste. This equates to over 40,000 tonnes per annum. This figure may have changed over time or may have been different if data from other districts had been available.

Over 80% of the C&D waste stream is composed of two material types – ‘Rubble & concrete’ and ‘Timber’. ‘Rubble & concrete’ includes plasterboard. The composition of the C&D waste stream in Bay of Plenty and Waikato regions is similar to C&D waste in other parts of the country.

6.4.3 Industrial, Commercial, and Institutional Waste

Like C&D waste, the proportion of industrial, commercial, and institutional (ICI) waste in the overall waste stream varies between locations and over time. The degree of variability, however, tends to be lower than for C&D waste.

ICI waste was measured separately in five of the eight SWAP audits that were used to determine the composition of the overall waste stream given in Table 26, and ICI waste varied between 19% and 36% of the overall waste stream at the different localities. The proportion of ICI waste in the overall waste stream also varies over time, with the global financial crisis resulting in a reduction in ICI tonnages in most areas.

By combining the results of the five SWAP audits, the composition and tonnage of ICI waste shown in Table 26 has been calculated. The tonnage figure should be considered to be of an indicative nature only, given the size and age of the datasets used and also the localities that were audited. Data from Hamilton City has not been included in the analysis and, being the

largest urban area in the regions, Hamilton could be expected to have a higher proportion of ICI waste than the average. The composition of ICI waste varies more than that of C&D waste, with the range of industries in different locations resulting in different waste compositions.

Table 26: Composition of ICI Waste to Landfill from Bay of Plenty and Waikato Regions

ICI waste as proportion of overall waste to landfill	36%	126,735 T/annum
Waste category	% of total	Tonnes per annum
Paper	15.0%	18,988 T/annum
Plastics	15.5%	19,612 T/annum
Organic	24.3%	30,841 T/annum
Ferrous metals	5.3%	6,682 T/annum
Non-ferrous metals	1.0%	1,230 T/annum
Glass	6.3%	7,922 T/annum
Textiles	6.8%	8,561 T/annum
Sanitary	4.4%	5,574 T/annum
Rubble & concrete	3.9%	4,951 T/annum
Timber	15.9%	20,193 T/annum
Rubber	0.7%	910 T/annum
Potentially hazardous	1.0%	1,269 T/annum
Total	100.0%	126,735 T/annum

On average, ICI waste comprises 36%²² of the overall waste stream to landfill. This equates to 127,000 tonnes per annum. This figure may have changed since the data was collected or may have been different if data from other districts had been available.

ICI waste is relatively heterogeneous. 'Organic' materials comprise nearly a quarter of all waste, with food waste representing a majority of the organic waste. 'Paper', 'Plastics', and 'Timber' all represent about 15-16% of the total.

6.4.4 Landscaping Waste

Landscaping waste includes loads of greenwaste and other materials associated with landscaping activity. Landscaping waste was measured separately in five of the eight SWAP audits that were used to determine the composition of the overall waste stream given in Table 21, and landscaping waste varied between 2% and 17% of the overall waste stream at the different localities. The proportion of landscaping waste in the overall waste stream varies on a seasonal basis and on other factors, such as differential pricing structures for disposal facility gate charges.

²² This figure is higher than found in the results of the individual SWAP surveys because the proportion of general waste is higher in the calculations for this report than in the individual areas analysed for the SWAP surveys. This is largely due to a reduction in the quantities of special wastes disposed of to landfill.

By combining the results of the five SWAP audits, the composition and tonnage of landscaping waste shown in Table 27 has been calculated. The tonnage figure should be considered to be of an indicative nature only, given the size and age of the datasets used and also the localities that were audited.

Table 27: Composition of Landscaping Waste to Landfill from Bay of Plenty and Waikato Regions

Landscaping waste as proportion of overall waste to landfill	6%	21,971 T/annum
Waste category	% of total	Tonnes per annum
Paper	1.2%	259 T/annum
Plastics	1.1%	244 T/annum
Organic	66.1%	14,530 T/annum
Ferrous metals	0.9%	198 T/annum
Non-ferrous metals	0.1%	15 T/annum
Glass	0.3%	69 T/annum
Textiles	1.5%	327 T/annum
Sanitary	0.2%	39 T/annum
Rubble & concrete	24.3%	5,335 T/annum
Timber	4.3%	935 T/annum
Rubber	0.1%	15 T/annum
Potentially hazardous	0.0%	5 T/annum
Total	100.0%	21,971 T/annum

On average, landscaping waste comprises 6% of the overall waste stream to landfill. This equates to 22,000 tonnes per annum. This figure may have changed since the data was collected or may have been different if data from other districts had been available.

Landscaping waste is made up primarily of 'Organics', which comprises 66% of the total, and 'Rubble & concrete', mainly soil, which comprises a further 24%.

6.4.5 Residential Waste

Residential waste includes all waste generated by households that is not kerbside refuse. It is generally taken to transfer stations by householders themselves or by commercial waste operators in gantry bins.

The quantity of residential waste generated in a community appears, from the available evidence, to be related to the general level of affluence of the community and the economic climate. In an affluent environment, households tend to consume more household goods and dispose of correspondingly more as well.

Residential waste was measured separately in five of the eight SWAP audits that were used to determine the composition of the overall waste stream given in Table 21, and residential waste varied between 4% and 11% of the overall waste stream at the different localities.

By combining the results of the five SWAP audits, the composition and tonnage of residential waste shown in Table 28 has been calculated. The tonnage figure is based on the general waste tonnage calculated for this report, and should be considered to be of an indicative nature only, given the size and age of the datasets used and also the localities that were audited.

Table 28: Composition of Residential Waste to Landfill from Bay of Plenty and Waikato Regions

Residential waste as proportion of overall waste to landfill	9%	31,248 T/annum
Waste category	% of total	Tonnes per annum
Paper	11.1%	3,455 T/annum
Plastics	10.5%	3,296 T/annum
Organic	18.4%	5,755 T/annum
Ferrous metals	10.8%	3,381 T/annum
Non-ferrous metals	0.8%	253 T/annum
Glass	5.6%	1,736 T/annum
Textiles	13.5%	4,226 T/annum
Sanitary	2.2%	678 T/annum
Rubble & concrete	4.1%	1,292 T/annum
Timber	21.3%	6,646 T/annum
Rubber	1.0%	307 T/annum
Potentially hazardous	0.7%	224 T/annum
Total	100.0%	31,248 T/annum

On average, residential waste comprises 9% of the overall waste stream to landfill. This equates to over 31,000 tonnes per annum. This figure may have changed since the data was collected or may have been different if data from other districts had been available.

'Timber' comprised over 20% of residential waste, with 'Organics' representing a further 18%.

6.5 Council Access to Waste to Landfill

TAs have a range of methods through which waste to landfill can be minimised. These include regulatory control, such as through bylaws and resource consents, education, and direct action, through initiatives that directly reduce the waste stream. For a council to directly affect a waste stream, at some point the waste must be able to be accessed by council. This 'access' can be in the form of waste collected through a council-contracted kerbside collection, waste that passes through a council-controlled transfer station, or waste that is disposed of at a council-owned landfill.

Waste that is totally controlled by the private sector includes waste that goes from a privately-owned transfer station to a privately-owned landfill or waste that goes directly to a landfill that is owned privately or in another district.

6.5.1 Council Access to Overall Waste Stream

Using the data provided by councils and collected from other sources, an approximate degree of 'access' has been calculated for each of the TAs in Bay of Plenty and Waikato regions. These estimates are presented in Table 29, and are based on the best information available at the time of writing.

In this context 'council access' to the waste stream means that the territorial authority physically controls the waste at any point between collection and disposal and would therefore be able to effect some sort of change to that waste. If, for example, a council owns only the landfill in a district and all waste from the district is disposed of at that landfill, council has access to 100% of the waste. While a council that controls waste from collection, through bulking, and through to landfill disposal has more options, a council that only owns the landfill could still introduce, for example, mechanical/biological treatment to the entire waste stream.

'Private control', on the other hand, means that council cannot physically access the waste at any point between collection and disposal.

Table 29: Council Access to Overall Waste Stream

TA	% of Overall Waste Stream Accessible	Elements Accessible by Council
Waikato Region		
Hamilton City	No data provided by council%	Kerbside refuse, transfer station
Hauraki District	51%	Kerbside refuse, transfer stations
Matamata-Piako District	52%	Kerbside refuse, transfer stations
Otorohanga District	14%	Kerbside refuse, transfer stations
South Waikato District	75%	Kerbside refuse, transfer station, landfill
Taupo District	100%	Kerbside refuse, transfer station, landfill
Thames-Coromandel District	83%	Kerbside refuse, transfer stations
Waikato District	62%	Kerbside refuse, transfer stations
Waipa District	0% (1)	No council services or infrastructure
Waitomo District	100%	Kerbside refuse, landfill
Bay of Plenty Region		
Kawerau District	100%	Kerbside refuse, landfill
Opotiki District	100%	Kerbside refuse, transfer station
Rotorua District	100%	Kerbside refuse, landfill
Tauranga City	100%	Kerbside refuse, transfer stations
Western Bay of Plenty District	0% (1)	No council services or infrastructure
Whakatane District	100%	Kerbside refuse, transfer stations

(1) Does not include municipal waste streams such as litter or waste from council facilities

Council access to the overall waste stream varies considerably. Two of the TAs can access minimal amounts of waste, while seven control virtually all of the waste stream through their ownership of the complete transfer station network or a landfill.

It is recognised that the figures given are approximations, as there are likely to be trans-boundary movements of waste of which councils are not aware.

6.5.2 Council Access to Kerbside Refuse

Using the data provided by councils and collected from other sources, an approximate degree of 'access' to the kerbside refuse stream has been calculated for each of the TAs in Bay of Plenty and Waikato regions. The 'kerbside refuse stream' includes collections of wheelie bins and bags from both residential and commercial premises. These estimates are presented in Table 30, and are based on the best information available at the time of writing.

Table 30: Council Control of Kerbside Refuse Stream

TA	% of Overall Waste Stream Accessible
Waikato Region	
Hamilton City	Unknown
Hauraki District	51%
Matamata-Piako District	38%
Otorohanga District	Unknown (~15%)
South Waikato District	55%
Taupo District	33%
Thames-Coromandel District	81%
Waikato District	87%
Waipa District	0%
Waitomo District	Unknown (~50%)
Bay of Plenty Region	
Kawerau District	91%
Opotiki District	51%
Rotorua District	62%
Tauranga City	12%
Western Bay of Plenty District	0%
Whakatane District	59%

The council access to kerbside refuse varies from a low of 0% in Waipa and Western Bay of Plenty Districts, where the councils do not provide a kerbside refuse collection, to over 80% in three of the districts. The degree of access is associated with a number of factors, with one of the most important being the proportion of properties that receive the council service.

6.6 Diverted Materials

'Diverted materials' is defined by the WMA as:

any thing that is no longer required for its original purpose and, but for commercial or other waste minimisation activities, would be disposed of or discarded.

Whereas waste disposed of to landfill is a discrete, quantifiable material flow, originating from a wide range of sources but being disposed of at a relatively small number of locations, it is much more difficult to define and quantify diverted materials.

For strategically planning waste minimisation, data that quantifies diverted materials is less important than data on waste that is landfilled. Diverted materials represent successful waste minimisation, and the priority for these materials becomes finding more beneficial uses, rather than diverting the materials from landfill disposal.

Data on diverted materials can be classified according to how difficult it is to attain and analyse:

- 1) The most straightforward, easy to collate data on diverted materials relates to kerbside recycling and drop-off points for dry recyclable/commodities such as glass, cans, plastics, and paper and card. For the most part, kerbside recycling collections and drop-off points are controlled by TAs and data is generally reliable. When kerbside recycling collections are provided privately and transfer stations are privately owned, data is more difficult to obtain as it may be considered commercially-sensitive.
- 2) Commercial collections of dry recyclables/commodities from commercial properties are more difficult to quantify, as there are more service providers and the data is usually considered commercially-sensitive and only released in response to official requests from councils. The boundaries of commercial collections are not distinct, as business-to-business transactions, such as the reprocessing of plastic manufacturing scrap, can be considered a part of normal business operations and not be seen as 'recycling'.
- 3) Commercial recycling and recovery of other materials, such as scrap metal and C&D waste such as concrete, is yet more difficult to quantify. The number of service providers is greater than for dry recyclables/commodities, data-gathering methods may not be as reliable, and the boundaries are more difficult to define. Second-hand goods, for example, while fitting the definition of 'diverted materials', are rarely quantified by tonnage, as are most other materials. In addition, commercial recycling and recovery operators may not process materials in a given region, and will act solely as collectors and haulers.
- 4) Large-scale diversion of industrial by-products, such as timber and pulp processing waste and horticultural waste, is particularly difficult to quantify. 'Diversion' of these wastes can take many forms, from using wood waste as hog fuel to the rendering of meat by-products, making the boundaries difficult to establish. Data on quantities diverted is not always collected in a form that is straightforward to analyse and data is usually considered to be commercially-sensitive. On the positive side, large-scale processing is often centred on consented processing sites, and some quantity data on these sites may be available through resource consent conditions.

In the following sections, diverted materials are quantified as being either dry recyclables/commodities or other diverted materials.

6.6.1 Dry Recyclables/Commodities

'Dry recyclables/commodities' includes kerbside recycling (both by councils and privately), drop-off points at transfer stations and recycling depots, and commodities collected from commercial premises. The data in Table 31 is based largely on information provided by TAs and through discussions with industry operators. Population data is based on Stats NZ 2011 subnational population estimates.

Table 31: Dry recyclables/commodities – Bay of Plenty and Waikato Regions Combined

Dry recyclables/ commodities	T/annum	T/capita/annum
Kerbside recycling and drop-offs	67,325 tonnes	0.097 tonnes
Collections from commercial premises	24,667 tonnes	0.036 tonnes
Total	91,992 tonnes	0.133 tonnes

The dataset for the calculation of kerbside recycling and drop-offs of dry recyclables/commodities included data from most of the TAs. The per capita recycling rate is relatively constant throughout the country, and the calculated rate of 0.097 T/capita/annum is in line with figures from other areas.

The dataset for the calculation of commercial recycling included a relatively small number of TAs, but was able to be compared to data from a large commercial recycler. The per capita recycling rate for commercial recycling varies considerably between communities, depending on the levels and types of economic activity in the area. The calculated rate of 0.036 T/capita/annum is consistent with data from similar areas, but markedly lower than a calculated rate for the Auckland region.

6.6.2 Other Diverted Materials

Quantitative data on the diversion of materials other than dry recyclables/commodities is incomplete, and, even were the data to be exhaustive, would be of limited strategic value.

The available data was obtained from several sources, including published material, resource consents, and discussions with waste generators and recovery operators. A large number of requests for data from recovery operators were not successful.

The data shown in Table 32 does not represent all other diverted materials in the Bay of Plenty and Waikato regions, and is indicative only of the order of magnitude of the resource recovery industry.

Table 32: Other Diverted Materials – Bay of Plenty and Waikato Regions Combined

Other diverted materials	T/annum	T/capita/annum
Available data only	241,200 tonnes	0.348 tonnes

Given the limitations of the available data, all that can be usefully be said relating to diverted materials is that the quantity is of a similar order of magnitude to the quantity of waste disposed of to landfill.

7.0 Opportunities for Waste Reduction and Collaboration

7.1 Introduction

When considering the gaps and opportunities for improving waste management and minimisation arising from the data considered in this report, it is worth briefly restating the context of this report.

The Waikato Regional Council has just released its *Waste to Resource: Waikato Waste and Resource Efficiency Strategy 2012-15*. The Bay of Plenty Regional Council is intending to review its regional waste strategy in 2013. A revised New Zealand Waste Strategy was released in 2010 and the WMA has been passed.

As required by the WMA, all TAs have prepared waste assessments and adopted waste management and minimisation plans for the first time. The waste levy is now in effect, and the ETS has started to make its presence felt, even if the initial costs are not significant.

Collectively these developments present some significant changes, but also a corresponding set of opportunities. This section considers some of the key gaps and issues that have become clear from analysis of the information gathered in this stocktake, and the related opportunities for both collaboration amongst councils and waste reduction by individual TAs.

The process of preparing the stocktake data and analysing TA's WMMPs, and in particular their action plans, should ensure that the opportunities and actions recommended here reflect the general priorities of TAs in the Bay of Plenty and Waikato regions. However this is not intended to be an exhaustive list and there will be actions for many TAs that are still best taken forward individually.

7.2 Waste Flows Summary

An analysis of waste flows for the two regions shows that significant amounts of various waste and diverted materials move around within the regions and between, in, and out of the two regions. Significant waste flows include the following.

7.2.1 Residual Wastes

- residual waste from the eastern and central Bay of Plenty region (and through this area from Gisborne District) moving to Tirohia Municipal Landfill
- residual waste from the central Waikato region to Hampton Downs Landfill;
- residual waste from Auckland to Hampton Downs landfill
- a smaller quantity of residual waste moving from Otorohanga, South Waikato, and Ruapehu districts into Waitomo District
- cleanfill materials moving from Auckland region to Waikato district

7.2.2 Diverted Materials – Dry Recyclables

- glass, plastics, and recyclable metals moving from the southern Waikato region to the central Waikato region
- glass, plastics, paper/card and recyclable metals moving from the Bay of Plenty region and the northern Waikato region to Auckland

- glass, plastics, and paper/card moving offshore from the eastern and central Bay of Plenty.

7.2.3 Diverted Materials – Other

- greenwaste moving from the western Bay of Plenty to Tirohia Landfill (for composting)
- greenwaste moving from Whakatane district to Kawerau district
- greenwaste and other organic wastes moving from Auckland to processing facilities in Waikato district
- various organic wastes from the Bay of Plenty and the south/central Waikato district moving to large processing facilities in the northern Waikato and Auckland
- cleanfill moving from the eastern Bay of Plenty to the central Bay of Plenty.

7.3 Increasing Waste Diversion

Analysis of waste composition data of kerbside refuse and waste flows to transfer stations and landfills shows that there are still considerable quantities of materials going to landfill disposal that could be recovered through existing services and/or processing options.

The data in section 6.0 shows that:

- 51% (179,625 tonnes per annum) of the overall waste stream disposed of to landfill from the regions could be diverted from landfill disposal. Of this approximately half is recyclable materials while half is organic. The key recyclable materials are paper and glass, while the food waste makes up approximately 60% of the organic material
- 66% (84,000 tonnes per annum) of the kerbside refuse stream could be diverted from landfill disposal. Of this 45% is food waste, 20% is paper and a further 17% is greenwaste.
- Of the ICI waste (127,000 tonnes per annum) 30,000 tonnes (25%) is organic waste while there is in the order 20,000 tonnes each of paper, plastic, and timber.
- 411,000 tonnes per annum of waste that is not natural, virgin excavated material is disposed of to 'cleanfills', monofills, and other land disposal sites. An unknown proportion of this would be divertable from land disposal.

7.3.1 'Low-Hanging Fruit' and Working with Industry Sectors

One feature of the research that was undertaken for this project was the cataloguing of resource recovery enterprises that had started up since the previous studies of the regions were conducted. Particularly with regards to organic wastes, the regions are now well-served with processing facilities and many of the large waste streams from single generators have now been (or soon will be) diverted from landfill disposal. Some of the large-scale waste generators in the regions are catalogued in Appendix A.13.0.

While the research for this study has not been exhaustive, it may now be that there are few large 'low-hanging fruit' that can be readily diverted, with or without the assistance of government. Whatever factors in the regulatory or economic environments have caused this is difficult to determine, but, at any rate, private enterprise has greatly assisted the TAs waste minimisation objectives in recent years.

With many large-scale waste streams having already been diverted towards more beneficial uses, waste reduction opportunities become more diffuse. A logical next step is for TAs and the regional councils to consider industry-wide waste reduction initiatives, such as in the C&D

sector. One possible method of addressing waste reduction would be for the regional councils to gauge the interest in a cross-sector working group that might include representatives of the construction industry, resource recovery service providers, material suppliers, architects, and TAs.

7.3.2 Diversion of Waste from Council Kerbside Services

As discussed in greater detail in section 3.3.4.1, although most of the TAs in Bay of Plenty and Waikato regions provide kerbside refuse and recycling services to residents, for the most part the services configurations and levels are not conducive to maximum waste reduction.

With regards to kerbside refuse services, the most important factor is the profusion of private waste operators in some districts offering 240-litre wheelie bins to residents. Particularly in areas where the council has a relatively low share of the kerbside refuse market (see section 6.5.2), the widespread use of 240-litre bins can greatly increase the landfill disposal of recyclable materials and easily divertable organic materials, such as greenwaste.

With regards to kerbside recycling services, none of the TAs in Bay of Plenty and Waikato regions provide householders with large capacity bins such as wheelie bins for recycling. Experience elsewhere has shown that increasing the capacity available to householders for recycling increases the diversion of recyclable material by householders.

Most importantly, none of the TAs in the Bay of Plenty and Waikato regions provide kerbside collections of food wastes (two trials are currently underway). As shown in Table 23, kerbside refuse from the two regions contains almost 50,000 tonnes per annum of compostable material, which is primarily food waste.

While discussions of food waste processing in the regions have often centred on the need for regional facilities, small, low-tech local facilities, possibly shared by a few TAs, could warrant investigation. This is discussed further in section 7.5.3.

Although TAs have traditionally tendered individually for kerbside collections, the joint tendering by the east Waikato councils may show that waste reduction objectives are better achieved through joint endeavours. This may particularly prove to be the case with regards to organic collections, as there may be a need to achieve economies of scale in order to facilitate the establishment of the necessary processing facilities.

7.3.3 Diversion of Waste from Council Facilities

Council-owned transfer stations represent a proven method for taking direct action to reduce waste to landfill. This can be done through regulatory measures (such as banning the disposal of particular materials), differential pricing to encourage separation of recoverable materials, improving the facility layout and or increasing staffing levels to facilitate material separation, and establishing operating contracts that incentivise waste reduction by the contractor.

While specific research into the operation of transfer stations was not conducted for this study, anecdotal evidence suggests that TAs do not generally take full advantage of the available waste reduction opportunities. This may represent an opportunity for the TAs and regional councils to cooperate in finding ways for the TAs to more fully realise the waste reduction potential of their facilities.

While potential markets for any further recovered materials must be considered, the resource recovery industry in the regions has shown a high degree of enterprise in processing and marketing recovered materials. It is not likely that the lack of markets would prove a hindrance to TAs seeking to increase resource recovery at their transfer stations and landfills, although markets may be an issue for some marginal value materials such as concrete and timber.

7.3.4 Diversion of Waste from Council Operations

In the course of providing essential services to residents, TAs can generate considerable quantities of waste materials. These materials include biosolids and milliscreenings from wastewater treatment plants and road sweepings and cesspit cleanings from road maintenance.

Table 33 shows the annual tonnages and disposal methods for two of the generally larger waste streams generated by councils – biosolids and road sweepings. The information has been taken, for the most part, from the survey of TAs undertaken for this stocktake report.

Table 33: Waste from Council Operations

TA	Biosolids		Road sweepings	
	Tonnes/annum	Disposal method	Tonnes/annum	Disposal method
Waikato Region				
Hamilton City	~12,700	Vermicomposted, as of Feb 2013	No information provided	No information provided
Hauraki District	17	Tirohia landfill	No information provided	No information provided
Matamata-Piako District	2,500	Tirohia landfill	No information provided	Tirohia landfill
Otorohanga District	No information provided	Land-spread at WWTP	50	Designated tip heads
South Waikato District	1,000	Tokoroa landfill	No information available	No information available
Taupo District	2,000 (wet)	Applied to farmland	Small quantities	Broadlands landfill
Thames-Coromandel District	1,400	Tirohia landfill	No information provided	No information provided
Waikato District	No information provided	Tirohia landfill	No information provided	Tirohia landfill
Waipa District	No information provided	Spread on land or buried at WWTP	156	Private land
Waitomo District	No information provided	WWTP	No information provided	No information provided
Bay of Plenty Region				
Kawerau District	1,000	Vermicomposted, at WWTP	No information provided	No information provided
Opotiki District	14	In sewage effluent pond	50	Use as yard and base-of-road aggregate
Rotorua District	~8,800	400 to Atiamuri landfill. Remainder temporarily	858	Atiamuri landfill

	Biosolids		Road sweepings	
TA	Tonnes/annum	Disposal method	Tonnes/annum	Disposal method
		vermicomposted ²³		
Tauranga City	No information provided	Hampton Downs landfill	1,000	TPI processing plant
Western Bay of Plenty District	1,160	Vermicomposting or land disposal	150	Toxic waste dump Hamilton Tirohia landfill
Whakatane District	No information provided	Stored at WWTP	90	Tirohia landfill

About half of the TAs report that some or most of the biosolids produced by their wastewater treatment plants are diverted from landfill disposal and put to a beneficial use. A significant proportion of biosolids generated in the regions are now vermicomposted at one of several facilities, with the newly-opened Noke vermicomposting operation in Kinleith being consented to accept 28,000 tonnes per annum of biosolids. A number of TAs dispose of their biosolids to landfill, indicating there may be potential for further diversion of these potentially-beneficial materials.

Few councils were able to provide specific information relating to the generation and disposal of road sweepings. The MfE cleanfill guidelines consider road sweepings to be unacceptable material for cleanfill disposal, due to the various metal and organic contaminants. TAs, therefore, need to ensure that their road sweepings are being disposed of in an appropriate manner. The potential for composting road sweepings from the Auckland motorway network was investigated in a recent study and this suggests that beneficial uses for road sweepings might be possible.²⁴

7.3.5 Council Procurement Policies for Recovered Materials

Facilitating markets for recovered materials is a key element in driving higher recovery rates and fostering their viability. One clear mechanism that is open to councils to achieve this is through their procurement policies, particularly around the specifications for civil works type projects. A study conducted by Waste Not in 2009²⁵ for Waikato Regional Council found that most councils do not have a sustainability or procurement strategy that mandates the use of recovered materials. The study also identified opportunities for the potential to increase the use of recovered concrete, glass, organics (mulch), and timber, through council procurements.

²³ Rotorua DC has been working with Scion Research in development of the Terax hydrothermal deconstruction process for treatment of their biosolids. The process promises cost savings over conventional disposal options and the production on useful byproducts. The council has recently been awarded a WMF grant of \$4.7 million to develop a commercial scale plant.

²⁴ Opus International Consultants Ltd (2010) Auckland Motorway Alliance Road Derived Sediments and Vegetative Material Reuse Feasibility Study. Report for NZ Transport Agency

²⁵ Waste Not Consulting (2009) Recycled Materials in Civil Works and Energy Efficient Street Lighting: A Review of Waikato Territorial Authorities' Procurement Practices. Report for Environment Waikato

Further work at a regional or cross-regional level to quantify these opportunities and develop common policies and measures could potentially boost markets for these materials and lead to higher levels of recovery.

7.3.6 Diversion of Non-Council Controlled Waste

While there are fewer opportunities for TAs to directly influence wastes that are outside of their control, opportunities do still exist. Waste minimisation support and education services, particularly those aimed at the commercial and industrial sector, have had a limited degree of success in some areas. These initiatives have been discussed in section 3.6.1.

With the fragmented nature of current service delivery by TAs, regional councils, and other organisations, there is room for a collaborative approach to examining the overall situation and looking for ways to produce the most cost-effective results. This approach could ultimately lead towards a regional educational and promotional strategy for waste minimisation.

7.4 Regulatory Tools to Improve Waste Management

Regulatory barriers have been highlighted in two areas; firstly in relation to increased monitoring and management of non-council controlled wastes, and secondly in relation to gaining consents for new waste management facilities.

7.4.1 Data on Non-Council Controlled Wastes

A number of TAs across both Bay of Plenty and Waikato regions have difficulties in gathering data and information on wastes outside of their direct control, and in taking action to improve the management and minimisation of these wastes.

Potential actions to improve this situation include:

- requiring the provision of data and implementation of waste management and minimisation options through bylaws (under the WMA);
- requiring the provision of data and implementation of waste management and minimisation options through resource consents (under the RMA); and
- working directly with those controlling these wastes to voluntarily address issues with monitoring and management.

There are a range of bylaws in place across Bay of Plenty and Waikato regions, with arguably the most comprehensive being those applying to Taupo district, and the former Franklin district now administered by Waikato District Council. Many bylaws include requirements for waste operators to be licensed and to provide information to the TA.

However, it is apparent from the data provided in waste assessments, and the issues raised in WMMPs (as set out in section 3.0) that most TAs still do not consider that they have a reasonable picture of how waste is managed by the private sector, nor the ability to influence this sector to achieve better waste management and minimisation.

This being the case, the regulatory barrier here doesn't appear to be the lack of bylaws – but rather the way in which these bylaws are administered and enforced.

There is an opportunity for the TAs across Bay of Plenty and Waikato regions to review the way bylaws are used, and work together to implement a more effective administration and enforcement system of these as a tool. The private sector would also benefit from this as bylaw requirements and administration could be made consistent across districts and regions, and aligned with the requirements for reporting under the WMA and any applicable resource consents.

TAs would need to also review any necessary amendments to existing bylaws or adoption of new bylaws, which may require a consideration of the costs of implementing a bylaw system of this kind compared to the benefits to businesses and the community.

A bylaw system for the two regions would ideally achieve:

- licensing of waste transporters, disposal sites, and processing facilities
- data provision to enable TA's responsibilities under the WMA to be met
- consistent reporting requirements across the two regions and aligned with WMA and resource consent requirements (where applicable)
- alignment with any national waste data system that may be developed through ongoing discussions with government,

7.4.2 Incentivising Waste Minimisation

In addition to establishing reporting requirements for operators and facilities, bylaws also have the capacity to be used to encourage waste minimisation. Options that have been included in some bylaws around the country include:

- limiting the size of bins for refuse disposal
- restricting the materials that can be placed in refuse bins (such as garden waste)
- requiring private operators offering refuse collection services to also offer recycling services.

The effectiveness of these measures should be monitored and measured and where there is evidence that their wider use could enhance waste minimisation, a regionally-consistent approach could be taken.

7.4.3 Consents for New Waste Processing Facilities

A number of organisations interviewed for this study commented that they may have extended their existing waste management activities, or instigated new projects, were the consenting process more straightforward. Some of those involved in waste management nationally have a view that Bay of Plenty region, in particular, is one in which it is more difficult and time-consuming to gain consents for waste processing facilities; however it is worth noting that this view was, in general, formed over the last 18 months to two years, and is not based on recent consent applications. Recent performance data for the Bay of Plenty regional consents team suggests that this issue has largely been resolved.

While it is not being suggested that the regional councils should be more lenient on those who intend to develop facilities that offer an alternative to landfill disposal, it does seem that there is potential for a more proactive and expedient approach to the consenting process, where facilities are planned that are in line with the regions' strategic waste management objectives.

Having confidence that there is available waste and/or divertible materials, and a desire for alternative management options, would also give the waste management sector added security when considering whether to proceed with new infrastructure projects. WMMPs help in this regard to an extent, but having clear regional or cross-regional priorities for new infrastructure projects would also be beneficial to the sector.

Closer working between those involved in consents at the regional councils and the waste management officers would help to achieve more efficient outcomes in the consenting process.

However, it would also be beneficial for TAs to work in a more general way with the private waste management sector, particularly in those districts where the sector is prominent, such as Waikato district.

7.5 Infrastructure

The analysis of waste streams and available infrastructure in the two regions has highlighted several gaps in infrastructure provision, while also highlighting some areas where infrastructure provision is an asset. There are a wide range of resource recovery facilities in the regions, including some large-scale and innovative projects such as vermicomposting and energy recovery from waste. However there are also a number of land disposal facilities that operate as 'cleanfills' which do not align with the MfE's guidelines for cleanfill acceptance criteria.

7.5.1 Residual Waste Disposal Options

There is currently a lack of disposal facilities for municipal waste in the eastern Bay of Plenty and the smaller landfills in both regions are facing rising costs that may make continued use of their facilities uneconomic. Several TAs in this area have highlighted this as an issue in current WMMPs and in previous waste management plans. Some, such as Whakatane District Council, have gone so far as to propose new landfill projects; however the regulatory and financial requirements have prevented these projects from going ahead.

Those TAs in the eastern Bay of Plenty affected, along with Gisborne District Council and Bay of Plenty Regional Council, could benefit from taking a strong strategic approach to this issue to ensure alternatives become available sooner rather than later. If alternative disposal options are not viable, the councils could consider investigating methods of achieving economies of scale leading to reduced transport and disposal charges through cooperation.

Future cooperation in residual waste disposal could also be of value for those TAs faced with potential closure of uneconomic landfills due to high unit operating costs. These include Taupo, Tokoroa, and Waitomo landfills and, potentially Rotorua landfill, particularly if the planned private transfer station in Rotorua significantly reduces the quantity of waste disposed of at the council facility.

There are currently a number of 'waste to energy' projects proposed in the regions that might have the potential to provide an alternative to the current disposal options, but there is considerable uncertainty about these projects.

7.5.2 Cleanfill and Other Non-Levied Disposal

There are two key issues with cleanfill and other non-levied disposal in the regions; firstly, alignment between the objectives of regional councils in issuing resource consents for land disposal sites with TAs' waste minimisation objectives and, secondly, a lack of compliant cleanfill facilities in some parts of the regions.

7.5.2.1 Existing Cleanfills and Other Land Disposal Facilities e.g. C&D Fills, Non-Sanitary Fills, and On-Farm waste Disposal

As discussed in section 4.3.4, there are 'cleanfills' in both regions that are currently consented to be used for the disposal of waste that does not fit the MfE's criteria for 'cleanfill'. In particular, there are several of these facilities in Tauranga city, Western Bay of Plenty district, and Waikato district.

The issuing of resource consents for the land disposal of materials not compliant with MfE cleanfill guidelines is current, as well as historic. For example, although it is not classed as a cleanfill, in May 2012, Bay of Plenty Regional Council issued a resource consent (65360) that

permits the land disposal of a range of materials that are non-compliant with the MfE cleanfill guidelines. Because it does not accept 'household waste' the facility is not classed as a 'disposal facility' under the act and so it will not attract levy or ETS charges, enabling it to offer lower disposal costs compared to a 'disposal facility'. Therefore while the conditions of the resource consents for the facility may mitigate the environmental effects of the disposal of these materials, land disposal of these materials is in effect encouraged, and this may work counter to the territorial authority's waste minimisation objectives.

Issuing consents for these land disposal facilities, which are not subject to the waste levy, to accept non-cleanfill materials means that these facilities are in direct competition for these materials with resource recovery operators, transfer stations, and landfills. The low cost structure of these alternative disposal sites results in the disposal to land of significant quantities of materials that could be diverted.

Even when regional councils set waste acceptance criteria that are in alignment with the MfE cleanfill guidelines, 'cleanfills' still have a competitive advantage for gaining flow control over materials like concrete and rubble. The viable resource recovery industry that has been established in the regions is able to compete on cost with landfill disposal, but not with cleanfill disposal. Again, these materials are being disposed of to land rather than being diverted to more beneficial purposes.

While it is acknowledged that it would be a lengthy and involved process for TAs and regional councils to work together to align their objectives relating to the land disposal of waste, the sheer volume of the materials involved would indicate that the effort could be worthwhile in the long term.

Anecdotal evidence also suggests there are a number of illegal land disposal facilities operating in the two regions, resulting in material that could be recovered or that should be disposed of in a consented landfill (such as contaminated soils) instead of being disposed of illegally to land.

One contributing factor to the current lack of information regarding most land disposal facilities, including these illegal sites, is the status of many Waikato region sites as 'permitted' activities, meaning that there is little or no information regarding these facilities and little active monitoring or management. This situation could become exacerbated as landfill disposal costs rise.

There are a number of avenues by which cleanfills can potentially be more closely managed. One of these is for TAs to include cleanfill management in their bylaws. Tauranga's 2012 bylaw includes provisions for managing 'cleanfills', but these provisions do not affect previously-consented facilities.

There is an opportunity for all TAs that have concerns regarding cleanfill management to collaborate on devising a bylaw system to manage and monitor these facilities, and to coordinate the administration of this system to ensure maximum effectiveness and efficiency. This collaboration could also involve engaging with the regional councils to attempt to more closely align the regional council's RMA objectives for cleanfill regulation with the WMA objectives of the TAs.

There is a notable lack of data and information regarding on-farm waste disposal, and farm waste management practices generally. While there has been some work undertaken around the issue of farm waste in other areas, there is clearly a need to better understand the impacts and potential issues and solutions within the Waikato and Bay of Plenty regions. It is worth noting that Environment Canterbury (ECan) is currently undertaking an investigation

farm waste disposal²⁶. Collaboration with ECan could lead to a better national picture of farm waste management practices.

7.5.2.2 Lack of Compliant Cleanfill Facilities

There is also a lack of publicly-accessible compliant cleanfill facilities in some parts of the regions, such as the east Waikato districts and the eastern Bay of Plenty region. This lack further exacerbates the concern that wastes may be disposed of in illegal disposal sites, leading to potential detrimental environmental and waste management outcomes.

This lack in facilities could be addressed in a similar way as the lack in residual waste disposal facilities.

7.5.3 Organic Waste Collections and Processing

As mentioned earlier, nearly every WMMP highlighted the large amounts of organic waste going to landfill as an opportunity to make a significant difference in waste management and minimisation and reducing environmental impacts. Food waste, from both residential and commercial premises, is a major concern. There are two trials of organic waste collections currently occurring (Raglan and Putaruru), a vermicomposting project carried out in Kawerau, and Whakatane District Council did co-collect food waste in the fortnightly greenwaste collection for a short time (this latter collection has now ceased, reportedly due to odour complaints relating to the Whakatane RTS).

There is a lack of waste processing facilities with sufficient capacity to manage food wastes in almost the entire Bay of Plenty and Waikato regions, with the exception of the northern Waikato area.

Two key steps in resolving this issue are the establishment of appropriate collection, bulking and transport systems by TAs, and ensuring that there will be sufficient processing capability for the food wastes. Given that this is such a wide-ranging issue and progress might best be obtained through all involved parties working together, a positive step would be for the TAs involved to establish a working group that can communicate directly with the organic waste processing sector. This working group should also research the existing information available regarding organic waste collections and processing systems, existing trials and services, and potentially commissioning some specialist advice on costing and modelling various options.

As an alternative to regional processing systems, small, low-tech local facilities, possibly shared by a few TAs, would also warrant investigation. Transport costs for organic wastes to regional processing facilities may prove prohibitively expensive, and reducing the transport costs by relying on local facilities may substantially improve the cost/benefit ratio for organic waste collection and processing by TAs.

7.6 Data

As has been noted in section 5.0, there are clear opportunities for enhancing the quality and availability of waste data in the regions through greater cooperation. This can be brought about through the following:

- establishing clear consistent standards for the gathering and calculation of key waste measures. This should be undertaken in collaboration with recent and future initiatives to establish waste data standards nationally

²⁶ <http://www.radionz.co.nz/news/rural/129121/farm-waste-disposal-to-be-reviewed>

- establishing consistent operator licensing bylaws across all districts in the regions which require licensed operators (including facility operators) to provide waste data in line with established standards
- reviewing how targets and objectives are set in WMMPs and providing guidance to ensure they are expressed in a manner that is possible to monitor and measure outcomes (i.e. utilising established standard data measures).

7.7 Other Opportunities for Collaboration

7.7.1 Waste Services Procurement

Procuring new waste service contracts is a costly and time-consuming exercise. The outcomes can be more effective and efficient if several TAs carry out joint procurement processes, such as is currently happening in the east Waikato.

More detailed examination of contract lengths and expiry dates is required before a full assessment of the potential for collaboration in this area could be completed, however new services such as organic waste collections and processing would seem a logical area to explore collaboration opportunities.

7.7.2 Communications, Education and Promotion

Every TA in the two regions included some actions relating to waste minimisation communication, education, and promotion in their WMMP Action Plans.

There is potential to identify the common issues across the two regions, or at least a group of TAs – such as hazardous waste management, e-waste, Waste Exchange, general waste minimisation education, and school programmes such as Envirowise and Paper 4 Trees. These areas could be addressed consistently across a number of TAs, resulting in a more effective and efficient campaign, and more consistent information being provided to the public.

7.7.3 Lobbying Central Government

Many TAs identified this as an issue in their WMMP action plans, particularly around issues such as product stewardship and priority products. Several mentioned that they felt relatively ineffective lobbying as a single council.

Where there are common issues amongst groups of TAs, this lobbying could be carried out in partnership making it easier for the TAs involved and potentially making their voice stronger in the process. To an extent, this is already happening effectively through the Waste Liaison Group.

An immediate opportunity for a cooperative approach to be taken to lobbying central government relates to MfE's current investigations into a standardised collection and reporting system for waste data.

7.7.4 Links with Other Long Term Plan and Regional Plan Outcomes

There are a range of potential synergies between waste-related outcomes as identified in this stocktake report and outcomes identified in the Waikato and Bay of Plenty regional plans. These include:

- resource use
- energy
- water quality

- air quality
- soil fertility
- transport
- climate change
- local economic development

Waste does not occur in isolation from other economic and natural activity. Reducing waste generation means more efficient resource use, and less energy being expended in extraction, processing, and disposal of materials. Similarly waste can have negative impacts on soil water and air quality, while the use of compost type products derived from waste can potentially improve soil and water quality²⁷. There are also links with transport not only through the movement of waste and recovered materials across increasingly large distances, but through the potential for waste derived fuels to provide a local, low carbon alternative to fossil fuels. These last two points also provide a clear link with climate change with waste-derived fuels potentially reducing climate impacts and with the potential for mitigation of climate impacts through the use of composts and biochar to achieve carbon sequestration in soils. Finally where there can be value derived from the recovery of materials this has the potential to generate local jobs, support local industry, and foster local economic development.

While it is outside the scope of this stocktake report to develop these links there is likely to be benefit in exploring these types of connections further future strategy documents.

8.0 Conclusions

8.1 Summary

A number of common themes have emerged from this analysis of waste data and TA waste assessments and waste management and minimisation plans.

There are clear opportunities for TAs to achieve greater effectiveness and efficiency by working together more collaboratively on actions they have listed in their WMMP action plans.

There are also a number of strategic issues that it will be important for the regional councils to take forward at a higher level, particularly those relating to infrastructure. There appears to be a general desire on the behalf of the TAs to introduce new services or expand existing services, assuming that the facilities will be there to ensure that the targeted waste streams can be processed to more beneficial use than they are currently.

It is worth noting that drivers and costs are not uniform across the different parts of the regions. For example where council owns the landfill, there are competing objectives to operate an economically-viable landfill (while maintaining low rates to attract business) and to minimise waste. Those councils faced with high transport costs for disposal, on the other hand, have a clear financial incentive to reduce waste, while vertically-integrated landfill owners, who have a very low marginal cost of landfilling, have little incentive for reducing waste as collection and disposal is likely to represent the most economically viable option for them.

²⁷ A good example of the potential for drawing stronger internal links is in regard to the recent agreement between farmers and the Bay of Plenty Regional Council to reduce nutrients entering Lake Rotorua (see: <http://www.rotorudailypost.co.nz/news/milestone-agreement-between-farmers-and-regional-c/1759337/>). Use of compost type soil amendments can potential reduce fertiliser use and improve water retention in soils, thereby reducing runoff. Promotion of these types of options could form a part of this type of agreement.

The ongoing lack of facilities for certain waste streams (such as food waste) in parts of the regions indicates that the private sector either does not see the demand for these services, and/or is not sufficiently confident that these facilities will be used to instigate the development process themselves. Given the advances that have been made in recent years by the private sector in developing processing facilities for other organic wastes, it is more likely to be the latter reason that is curtailing further development.

Overall, given the current vibrancy of the resource recovery sector in the regions, cooperation between TAs, the regional councils, and the private sector can only assist the TAs with achieving their waste minimisation objectives. There are two straightforward ways in which TAs can assist and work with the resource recovery sector. The first is by increasing the diversion of council-controlled wastes from landfill disposal. The second is by working with regional councils to reduce the continued disposal of readily-divertable materials into cleanfills and other land disposal sites.

The significant lack of data and actions relating to non-council controlled wastes in the TA waste assessments and WMMPs is going to make it difficult to monitor any improvements in waste management and minimisation across the regions. Before these documents are next reviewed, the regional councils will need to ensure that actions are taken to enable this area to be more thoroughly addressed in subsequent waste assessments and WMMPs.

8.2 Strategic Overview

The *Waste to Resource: Waikato Waste and Resource Efficiency Strategy 2012-2015* has as its vision 'Working towards a Zero Waste Region'. The *Bay of Plenty Regional Council Waste Strategy 2004*, (which is due for revision) contains a vision of zero waste to landfill and a sustainable Bay of Plenty. For the purposes of this report, it has been assumed that the vision of a revised Bay of Plenty Regional Council waste strategy will remain similar to the 2004 zero waste philosophy.

Viewed in this context, therefore, the outcomes of the stocktake should inform, in a practical way, how the overarching intent of the strategies may be advanced in both regions. In the case of Waikato Regional Council it needs to clearly feed into the current strategy while for Bay of Plenty Regional Council it should inform the development of a strategic approach.

When viewed from a zero waste perspective, waste is not simply about managing and mitigating the effects of wasted materials. It is about addressing the fundamental ways in which materials flow through and are utilised in the economy and working to maximise the value of these materials for local economic, environmental, and social benefit.

In zero waste terms, issues of product design, waste minimisation in production and use, integration of resources into cyclical systems, and establishing linkages between waste and other outcomes such as local economic development, climate change, soil, water, and air quality, all become relevant.

A strategic approach needs to consider the appropriate roles for the public, private and community sectors in delivering the desired outcomes. In a cyclical economy where all resources are viewed as having value, the private sector will have a natural incentive to minimise waste production and to work to achieve the highest value uses from discarded materials. In this hypothetical perfect world the private sector would, with minimal regulation, achieve optimum waste minimisation outcomes.

However, we are clearly not operating in a cyclical economy where resources are necessarily highly valued. In the current situation, the level of value placed on resources varies considerably over time and depends on their source and quality. In order to advance waste minimisation objectives there is a need for direction and input from public sector. From this

perspective each sector has valid roles in terms of what is required now and what must be done to work towards the ultimate vision of zero waste. Key roles are set out below:

Public Sector:

- gathering information for monitoring and reporting purposes
- setting and reviewing policy and strategy
- setting a regulatory framework that facilitates intended outcomes
- operating, funding, and/or contracting delivery of services where the market is not able to meet objectives without intervention
- providing or funding education
- facilitating collaboration and joint working
- undertaking, funding, or facilitating research

Private Sector:

- delivery of waste management and minimisation services, both under contract to the public sector and direct to private clients
- undertaking, funding, or collaborating in research
- participating in collaboration and joint working
- providing data and information
- input into public sector policy and strategy

Community Sector:

- delivery of waste management and minimisation services, in particular where such services may be marginal for the private sector to deliver, and where social and local economic development outcomes are a key consideration
- delivery of education and engagement with community
- undertaking or collaborating in research

The above analysis of the potential roles of key sectors provides a framework to identify and develop potential actions from the stocktake, and this analysis has been used to inform the identification of recommended potential actions.

9.0 Recommendations

It is recommended that Waikato Regional Council and Bay of Plenty Regional Council consider the actions set out in the following subsections in order to further their strategic objectives.

9.1 Increasing Waste Diversion

9.1.1 Private Sector

- Investigate the development of industry-wide waste reduction and resource efficiency initiatives. Councils could begin with the C&D sector. One possible method of addressing waste reduction would be for the regional councils to gauge the interest in a cross-sector working group that might include representatives of the construction industry, resource recovery service providers, material suppliers, architects, and TAs.

- The regional councils and TAs should engage with the private sector to discuss voluntary measures for restricting quantities of recoverable materials that are collected via private kerbside residual waste collections. This could include, for example, voluntary restrictions on recoverable materials that can be placed in private kerbside refuse collections as part of the operators' terms of service.
- Undertake a project to jointly investigate markets for recovered materials, including those from kerbside recycling, where either the markets do not function effectively across the regions or where there is a need to develop new markets (for example, textiles, plastic bags, timber, compost products, etc). The regional councils' role in assisting market development could include establishing clearer more consistent links with other programme outcomes (such as air, water and soil quality), and ensuring that potential waste minimisation-related solutions are recognised in regional council policy responses.

9.1.2 Territorial Authorities

- Work with a TA (and its contractor) to trial best practice waste collection systems. This could cover all kerbside collection systems including organic waste. The trial could cover either a whole district or a specific area. The regional councils could assist with obtaining funding, providing expertise and resources to develop the systems, and monitoring, analysis, reporting, and dissemination of outcomes
- Economic modelling of organic waste collection and processing system options. The study could incorporate the outcomes of recent organic waste trials in Putaruru and Raglan, and would address questions around the use of centralised versus local organic processing options. The results could be presented in such a way as to be adaptable for use by all TAs.
- Quantify the costs and benefits of different charging systems and service levels for kerbside refuse collections. This would include assessing the costs and benefits of user-pays vs. rates-funded (with restricted 'free' volume) systems and the effects of extending kerbside services to rural areas.
- Investigate differential charging and separation of recoverable materials at transfer stations and establish and disseminate information on best practice
- Investigate and disseminate best practice information around residual waste collection options including charging, supply of bags, containment, and frequency of collections
- Investigate the potential for diversion of biosolids and other wastes from TA operations currently landfilled to beneficial use
- Undertake further work on council procurement policies to quantify opportunities for use of recovered materials by council operations and develop common policies and measures could potentially boost markets for these materials and lead to higher levels of recovery
- Promote and support adoption of programmes such as Agrecovery, RCN e-Cycle, and consistent provision of hazardous waste collection facilities across the regions

9.2 Regulatory Tools to Improve Waste Management

9.2.1 Bylaw actions:

- Promote to TAs the option of requiring the provision of data and implementation of waste management and minimisation options through bylaws (under the WMA)

- Work together to establish the legality and options for initiating 'disposal bans' for recoverable materials and/or limiting the size of kerbside containers that are provided by private waste collectors
- Monitor and measure the effectiveness of bylaw actions aimed at incentivising waste minimisation
- Establishing a cross regional working party (for example a sub-committee of the Waste Liaison Group) to identify how drafting and implementation of bylaws can be made consistent across the TAs, particularly with regards to the gathering of consistent information from the waste industry

9.2.2 RMA actions:

- Work internally to establish how the provision of data and implementation of waste management and minimisation options through resource consents (under the RMA) can be most effectively taken forward. This could include ways in which the objectives of the RMA and WMA could be aligned, particularly with regards to the consenting of land disposal sites.
- Work directly with those controlling key wastes to voluntarily address issues with monitoring and management
- Communication of internal links between waste minimisation objectives as established by the regional council plans and policies and the issuing of consents for specific facilities

9.3 Infrastructure

9.3.1 Disposal

- Investigate strategic long-term waste transport and disposal options for eastern Bay of Plenty and districts with small and potentially uneconomic landfills. A coordinated approach would seek to identify long-term demand, and how this could be met cost-effectively without creating disincentive for resource recovery in these areas. Identification of potential sites, technologies and waste flows would need to be considered. The investigation would also seek to address whether ownership of these facilities is best vested in the public or private sectors or delivered through some form of partnership arrangement.

9.3.2 Cleanfills

- Investigate options for collaboration around introducing a common bylaw across the districts to monitor and manage cleanfill resources more effectively
- Investigate strategic long-term cleanfill disposal options for eastern Bay of Plenty and the eastern Waikato region. A coordinated approach would seek to identify long-term demand, and how this could be met cost-effectively without creating disincentive for resource recovery in these areas. Identification of potential sites, the types of facility, conditions imposed, and current and future waste flows would need to be considered. The investigation would also seek to address whether ownership of these facilities is best vested in the public or private sectors or delivered through some form of partnership arrangement.

9.3.3 Organic Wastes

- Establish a working group to communicate directly with the organic waste processing sector and identify barriers and issues to providing cost-effective organic waste processing options, for example, for food waste

9.4 Data

There are a range of potential actions which are discussed in section 49. Key actions include:

- Establishing standard waste stream definitions for the purposes of monitoring and reporting of waste data
- Introducing consistent waste operator licensing schemes (or some appropriate variant) across the regions that include mandatory reporting by waste collectors and waste facilities
- Improving controls on cleanfills and managed fills, including reporting requirements, through upgrading of consent conditions or introduction of a 'cleanfill bylaw'
- Developing a structured programme of waste audits at facilities throughout the region to provide accurate meaningful time series data on key waste streams
- Introducing site waste management plans for construction and demolition sites to help track C&D waste
- Focusing targets on key metrics which are measurable. The key metrics ultimately are the quantity of waste (per capita) to landfill and the composition of this waste. If good quality data can be gathered around these measures, then determining quantities of material diverted may not be necessary in terms of formulating and monitoring waste policy and strategy in the two regions.
- Establishing a centralised waste data management system with clear lines of reporting and responsibility.
- Working with MfE to help establish a national tracking system for all hazardous waste.
- Collaborating with MfE on the national system for waste data reporting that is currently being discussed
- Establishing annual reporting (to be aggregated at regional level) from key recovered material processing facilities

9.5 Collaboration

9.5.1 Procurement

- Facilitate discussions between councils where joint working and shared services have potential to yield improved performance and efficiencies
- Hold discussions with the LASS in each region to assess the suitability of these vehicles for engaging in joint working and procurement
- Hold workshops where the experiences of councils such as the east Waikato councils, which are currently in the process of procuring shared services, can be shared and lessons passed on

9.5.2 Communications & Education

- Work to develop a cross-regional strategy for education and communication around waste minimisation
- Establish a working group to examine how TAs could more effectively procure and deliver common education programmes (e.g. home composting education programmes)
- Facilitate workshops to explore options for collaboration where common systems and programmes are in place. Standardised communications materials may be developed which can then be tailored for each locality.

9.5.3 Lobbying Central Government

- Conduct workshops to establish key areas of concern where TAs and regional councils consider there is value in presenting a common voice on an issue to central government. Key concerns noted from this stocktake include product stewardship and priority products, data, information, and reporting. The Waste Liaison Group and the Regional Waste and Contaminated Land Forum are logical forums for this. A common policy position would need to be agreed through the workshops which could be presented to central government on behalf of the councils.

9.5.4 Community Sector

- Engage with the Community Recycling Network and other community sector representatives to determine how a coordinated approach could facilitate enhanced service delivery by the community sector, particularly in relation to key waste streams where the community sector has traditionally operated (e.g. e-waste, reuse, home composting promotion, education, nappies, zero waste events etc), and in smaller communities.

9.5.5 Research and information

- Work with industry sectors to explore research needs to support opportunities to reduce waste, for example, clean technologies, alternative materials use, beneficial reuse options
- Commission a study to explore the links between waste generation and management and other sectors, with a view to quantifying potential economic environmental and social benefits from a more holistic approach
- Commission a report that focuses on identifying potential future issues related to wastes that may cause environmental harm and that could be avoided. This information would support further studies to be undertaken in collaboration with relevant agencies or sectors. The issue of farm waste management practices should be examined as part of this research.

9.5.6 Funding

- Waste Minimisation Fund – This stocktake has identified a number of potential priority areas for collaboration and action. If these areas can be further refined and agreed, then the regional councils could have a vital role to play in collaborating to secure WMF support for projects that will clearly deliver on these objectives. It may be worthwhile to engage with the WMF managers to discuss how this may be facilitated to maximise the chances of success in applications to the fund and optimise and coordinate efforts from within the regions. While the regional councils may identify certain projects themselves, if priority areas can be agreed then the

regional councils could signal their intentions to potentially support private or TA-initiated WMF applications that clearly assist in the delivery of the regional strategic objectives.

- Investigate other funding mechanisms that can be utilised for waste minimisation initiatives in the region, for example, Envirolink funding, Ministry of Business Innovation and Enterprise research funding

A.1.0 Acknowledgements and Contacts

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Steven Hill	HG Leach

The authors would like to apologise for the inadvertent omission from this list of any person who contributed to this study.

A.2.0 Glossary

Biosolids	Solids from waste water treatment – including those from settling ponds and septic tanks.
C&D Waste	Waste materials from the construction or demolition of a building, including the preparation and / or clearance of the property or site.
Cleanfill	<p>(From the MfE Guide to the Management of Cleanfills, MfE, 2002) Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:</p> <ul style="list-style-type: none">■ combustible, putrescible, degradable or leachable components■ hazardous substances■ products or materials derived from hazardous waste treatment, hazardous waste stabilisation or hazardous waste disposal practices■ materials that may present a risk to human or animal health such as medical and veterinary waste, asbestos or radioactive substances■ liquid waste. <p>A cleanfill is any landfill that accepts only cleanfill material as defined above.</p>
Diverted materials	means any thing 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 households.
Domestic Kerbside Refuse Collections	Kerbside refuse collections offered by councils or private waste operators to householders and small businesses
Greenwaste	See explanation for 'organic waste'.
Hazardous Wastes	<p>The most common types of hazardous wastes include:</p> <ul style="list-style-type: none">■ 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.

Industrial/commercial/institutional waste (ICI)	Waste materials from a commercial, institutional, or industrial source – as opposed to domestic (householder) waste.
Landfill/Sanitary landfill	A disposal facility as defined in s7 of the Waste Minimisation Act (2008), excluding incineration
Local Authority	A regional council or territorial authority
Monofill	The deposition on land of material of a single uniform composition. Monofills are commonly the outputs of an industrial process.
Municipal Solid Waste	Waste disposed of to landfill comprising domestic waste and council collected waste from commercial activities.
Organic waste	The term “organic waste” in the context of this report refers to the putrescible waste category used in the Solid Waste Analysis Protocol ²⁸ (SWAP). This includes garden waste (more commonly known as “greenwaste”), food scraps and commercial organic wastes such as food-processing waste. Some other wastes may biodegrade in landfill but are identified separately in SWAP audits. This includes paper, cardboard and untreated wood. For the purposes of this study, wood waste has been included. Paper and cardboard has generally been excluded, as recycling this material is generally a better management option than any kind of composting.
Recovery	(a) means extraction of materials or energy from waste or diverted material for further use or processing; and (b) includes making waste or diverted material into compost
Recycling	means the reprocessing of waste or diverted material to produce new materials
Refuse Transfer station (RTS)	A general term for a facility where waste is consolidated, possibly processed to some degree, and transported to another facility for disposal, recovery or reuse.
Territorial Authority (TA)	A city council or a district council
Waste	Waste means: (a) means any thing 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 C&D waste); and (c) to avoid doubt, includes any component or element of diverted material, if the component or element is disposed of or discarded

²⁸ Ministry for the Environment Solid Waste Analysis Protocol, 2002

A.3.0 Summary of Waste Assessments

TA	Waste Assessment Adoption	WMMP Adoption	Key issues
Waikato Region			
East Waikato councils (Thames-Coromandel, Matamata-Piako and Hauraki District Councils)	Dec-11	Feb-12	<ul style="list-style-type: none"> Rising landfill disposal costs Reducing waste and taking responsibility for waste Recyclables in the residual waste stream even with recycling services available Market dynamics for recyclable materials Organic waste forms a large proportion of waste going to landfill More and improved facilities needed within the districts Varying demand - summer visitors, rural customers, businesses Lack of data on waste flows and composition - particularly with respect to waste and diverted materials managed by the private sector Opportunities to target materials such as e-waste, C&D, and re-usable items.
Hamilton City Council	Apr-11	Apr-12	<ul style="list-style-type: none"> Data management ETS implications Diverted material infrastructure Waste hierarchy and community engagement Collaboration Also: C&D waste quantities to landfill On-property storage for diverted materials and waste Access for collections Litter management
Otorohanga District Council	Sep-11	Jun-12	<ul style="list-style-type: none"> Amount of waste going to landfill that could be recycled High cost for refuse and recycling in lower-populated rural areas Lack of waste tracking and waste breakdown data Cost of disposal increasing. Transport to landfill increasing - distance increased Lack of compliant household hazardous waste and agricultural hazardous waste facilities Disposal options for agricultural waste e.g. silage wrap Events recycling protocol needed.
South Waikato District Council	Apr-11	Feb-12	<ul style="list-style-type: none"> Relationship with the SW Achievement Trust, need to improve health and safety, improve recycling yields, funding, drop-off centres and the food waste trial. Refuse collection issues - loss of market share for official bags to commercial wheelie bin services, rating equity, funding and options around user pays. Refuse disposal issues - mainly reduced tonnages and the effect on landfill business, the impacts of ETS, whether to extend or exit the landfill site after 2020.
Taupo District Council	Mar-11	2012	<ul style="list-style-type: none"> Increasing demand for kerbside collection services Council-owned landfill - runs risk of suffering 'waste flight' to large privately-owned landfills, with resulting loss in operational revenue Varying demand - summer peak and low resident numbers at other times Significant proportion of 'out of district' property ownership -

TA	Waste Assessment Adoption	WMMP Adoption	Key issues
			user pays difficult to operate ETS Restricted funds for additional waste minimisation initiatives
Waikato District Council	2011	May-12	Council and community need to work more closely together Increasing landfill disposal costs - need to reduce waste to landfill Recyclables still in the residual waste stream Organic waste is large proportion of waste to landfill Information collection Council needs to work with the waste sector Council needs to use regulatory tools to help manage issues
Waipa District Council	Nov-10	Oct-11	Waste from businesses, industry and the agricultural sector Wastes that can be diverted from landfill - organic and recyclable materials Resources limited for waste minimisation education Need greater control of the waste stream, improved Council planning, resourcing and coordination, to be more proactive, accurate data collection, illegal dumping, events recycling, cost and accessibility of transfer stations, diverting organic, inorganic and recyclable material from landfill, hazardous wastes, education and promotion, collaborative working, community involvement.
Waitomo District Council	2008	Mar-09	No key issues specifically identified in WMMP
Bay of Plenty Region			
Kawerau District Council	2012	Jul-12	Achieving further waste reduction that is affordable to the community Encouraging recycling - reduce recyclables going into residual waste Reducing the amount of putrescible material to landfill Finding a viable reuse option for composted greenwaste Discouraging fly tipping
Opotiki District Council	2011	Jun-12	Lack of landfill facility for the district's residual waste that is closer or cheaper Potential for recyclable materials entering the residual waste stream without continued council monitoring and involvement
Rotorua District Council	Mar-10	Jun-10	No key issues specifically identified in WMMP
Tauranga City Council and Western BOP District Council	Jun-10	Sep-10	Councils' low level of involvement in waste collection and no operational landfill sites Cleanfill sites operating that reduce recovery of materials in the waste streams Servicing rural areas for waste and recycling collections Lack of influence in national product stewardship schemes
Whakatane District Council	Aug-10	Nov-10	Too much waste being sent to a landfill far from the District; Recyclables still in residual waste despite recycling services Large proportion of residual waste is organic Few facilities for managing waste within the District Varying demand - summer visitors, rural customers, businesses

A.4.0 Visions, Goals and Objectives from TA WMMPs

TA	Vision	Goals	Objectives
Waikato Region			
East Waikato councils (Thames-Coromandel, Matamata-Piako and Hauraki District Councils)	Minimise waste to landfill, maximise community benefit	<p>Actively promote waste reduction</p> <p>Work together to optimise opportunities</p> <p>Manage waste services in the most cost-effective manner</p> <p>Increase economic benefit by using materials more efficiently</p> <p>Minimise harm to the environment</p> <p>Protect public health</p> <p>Collect information to enable informed decision making</p>	<p>Work at a national level with other organisations, including territorial and regional councils, to actively promote waste reduction</p> <p>Work with local businesses and organisations to actively promote waste reduction at a local level</p> <p>Investigate and develop joint working and co-operation across territorial and regional councils including shared services</p> <p>Investigate and develop private and community sector partnerships and arrangements which contribute positively to the WMMP's vision and goals including delivering beneficial economic, environmental, social and cultural outcomes</p> <p>Work with service providers to identify efficiencies while maintaining or improving service levels</p> <p>Consider both short and long term cost impacts of all actions</p> <p>Identify opportunities to reduce waste generation and recover materials from the waste stream</p> <p>Look for opportunities to recover the value of waste materials locally</p> <p>Consider the environmental impact of all options and ensure that the overall environmental impact is taken into account in decision making</p> <p>Consider the public health impacts of all waste management options and seek to choose options which effectively protect human health</p> <p>Take actions that will improve information on waste and recovered material activities in the districts, including both council-contracted and private sector activities</p> <p>Align data collection and reporting systems across the three districts</p>
Hamilton City Council	Hamilton City becomes recognised as a national leader in the minimisation of waste and ensure that innovative and sound waste management	Improve the efficiency of resource use, and reduce the harmful effects of waste	<p>Within Hamilton City, there are safe, effective and affordable services for the collection, processing, marketing and beneficial reuse of waste and diverted material</p> <p>Reduce the amount of waste generated</p> <p>While maintaining the quality, maximise the quantity of diverted material</p> <p>The community and its visitors will be informed about waste minimisation and</p>

TA	Vision	Goals	Objectives
	practices underpin the City's environmental, social, economic and cultural well-being.		<p>their responsibilities in improving the efficiency of resource use and reducing the harmful effects of waste</p> <p>Any adverse public health and environmental effects resulting from the collection, treatment, storage, handling and disposal of solid waste will be avoided or mitigated.</p> <p>Recognise cultural values and ensure they are provided for in respect to sustainable waste management issues</p>
Otorohanga District Council	(General Vision) To be the best small rural council in NZ		<p>Promote the concept of waste minimisation, and encourage individuals, households and businesses to take responsibility for their waste, and to provide leadership, information and support to all groups.</p> <p>Actively encourage community participation in all waste reduction activities</p> <p>Target specific components of the waste stream in all sectors of the community and achieve optimum reduction, re-use and recycling of them</p> <p>Understand our waste stream to enable measurement of changes and the effectiveness of reduction initiatives</p> <p>Progressively extend the range of waste stream components targeted and facilitate their reduction, re-use or diversion to recycling</p> <p>Ensure that the costs of waste disposal are progressively apportioned to those who generate the waste</p>
South Waikato District Council	No specific vision – linked to LTP	<p>Council encourages individuals and businesses to take greater responsibility for waste minimisation</p> <p>Council and the waste industry provide collection and processing facilities for the reuse and recovery of waste materials</p> <p>Council and the waste industry provide collection and disposal services for residual waste within urban areas</p> <p>Council provides environmentally sound residual waste disposal facilities/services.</p>	<p>A safe, vibrant district where environmental damage resulting from waste disposal is minimised, where both rural and urban communities benefit from managing waste streams more cost effectively, and where the real costs of disposal are recovered.</p>
Taupo District Council	To protect and safeguard the Taupo district environment by ensuring refuse and recycling is managed in	<p>(Policy) Council will provide and support waste minimisation where appropriate</p> <p>(Policy) Council will continue to provide waste education to enable waste minimisation in the District and will endeavour to work with</p>	<p>Reduce the total quantity of waste to landfill</p> <p>Increase the quantity of diverted material through reduction, reuse, recycling and recovery</p> <p>Use council influence to advocate waste minimisation and for increased or</p>

TA	Vision	Goals	Objectives
	a safe, efficient and sustainable manner that maintains natural and aesthetic values.	the regional councils to maximise opportunities (Policy) Council will lobby central government on a district or regional basis or through LGNZ, WasteMINZ and/or appropriate partners regarding waste management and minimisation issues	mandatory product stewardship (producer responsibility) Support waste minimisation initiatives in the community Utilise appropriate pricing methods to incentivise waste minimisation
Waikato District Council	Working towards zero waste for the Waikato district	Managing waste locally wherever possible and working with the community Reduce the amount of waste sent to landfill or other disposal Lower the total cost of waste management to our community as a whole, while increasing economic benefit through new initiatives and infrastructure Reduce the risk of environmental damage	Work in partnership with the local community to develop and expand waste management initiatives Build the capacity of our community wherever possible when delivering our action plan Reflects the waste hierarchy, by emphasising and prioritising reduction, reuse, recycling and recovery in our action plan Improve information collection and analysis to ensure we know what waste is in the district, and where it is going Use resources more efficiently Work with the waste sector to increase the range of reuse, recycling and recovery options available in the district, maximising the economic benefit to the community To look for opportunities to recover the value of waste materials locally Consider the total cost to our community when choosing waste management options Consider the environmental impact of all options and seek to choose options with the least overall environmental impact
Waipa District Council	Progress towards zero waste and a sustainable Waipa	Reduce the harmful effects of waste generation and disposal improve the efficiency of resource use	Promote and encourage cost effective, efficient and sustainable waste management practices with the Waipa District Minimise the quantity of waste being generated and disposed of within the Waipa District by providing strategies and tactics to encourage waste reduction, reuse, recycling, and recovery before residual disposal
Waitomo District Council	Community outcomes from LTP - minimise the creation of waste within the District, ensure environmentally safe disposal of waste	Quantity of residual waste generated in the District is reduced by 30% by 2016 Educational and pricing strategy is developed to achieve the 2016 target Programmes are put in place to promote sustainable management and protect the	Align council's waste management strategies and programmes with national and regional strategic directions Ensure (as far as is practicable) that waste generators meet the cost of waste they produce Meet the requirements of all relevant legislation including LGA, WMA.

TA	Vision	Goals	Objectives
		<p>environment and public health by 2016</p> <p>Waitomo District Landfill is positioned and managed to secure viability and strategic advantage as a sub-regional waste disposal asset</p> <p>Council supports and encourages individuals and businesses to take greater responsibility for waste management and minimisation</p>	<p>Provide a practical guide to the management of waste in the Waitomo District</p> <p>Promote cost effective, efficient and equitable waste management services to the community</p> <p>Minimise the quantity of waste being generated and disposed of in order to promote the sustainable use of natural and physical resources</p> <p>Encourage and support the principles of cleaner production and the waste hierarchy</p> <p>Follow council's LTP, district, strategic plan</p> <p>Reduce the total amount of waste generated in the District requiring disposal, having regard to the NZ waste strategy and the Waikato RC policy statement</p> <p>Identify and pursue opportunities for local business and communities to implement their waste reduction and resource recovery initiatives and help secure the economic advantages of the District's green image</p> <p>Lead by example to assess the potential for waste reduction through integrated waste management principles</p> <p>Take pride in its achievements in waste minimisation through voluntary initiatives as well as promoting economic efficiency and sustainable management of the environment.</p>
Bay of Plenty Region			
Kawerau District Council	Working towards zero waste	Reduce the volume of waste going to landfill, primarily by increasing the amount of material diverted into the recycling and greenwaste collections.	<p>Increase information provision and community education</p> <p>Encourage businesses to recycle more of their waste</p> <p>Keep abreast of new developments and investigate the use of new technology which may reduce the volume of waste from the district going to landfill.</p>
Opotiki District Council	Towards Zero Waste	<p>A community which is committed to reducing reusing and recycling products and materials</p> <p>A community which is committed to the minimisation of waste sent to landfill for disposal</p> <p>A community that is committed to reducing the risk of environmental damage resulting from waste management methods</p> <p>A community that considers, and where appropriate implements, new initiatives and innovative ways to assist in reducing, reusing</p>	<p>Promote, encourage and emphasise reduction, reuse and recycling</p> <p>Reduce the amount of waste sent for disposal to landfill</p> <p>Operate the council's RRCs in a manner that encourages the community to reuse and recycle materials while accepting residual waste for disposal to landfill</p> <p>Encourage local businesses to minimise their waste</p> <p>Provide educational information about waste reduction, reuse and recycling of products and materials and provision of waste services</p> <p>Consider and seek to choose waste management options with the least overall harm to public health and the environment</p>

TA	Vision	Goals	Objectives
		and recycling wastes A community where litter in the town centre is managed and illegal dumping activities are addressed.	Work with the community to evaluate and where appropriate develop new initiatives and innovative ways to address waste management Provide litter collection services in the town Centre and clean up of illegal dumping sites, including removal of abandoned vehicles, in the District.
Rotorua District Council	A community which is committed to the minimisation of waste to landfill in a manner which provides for the community's environmental, economic, social and cultural wellbeing		(Objective) To achieve a 40% reduction in the amount of waste to landfill by 2020 compared to the 2010 baseline data (Objective) To manage the council's waste transfer and disposal sites in a manner which avoids, remedies or mitigates any significant adverse environmental effect.
Tauranga City Council and Western BOP District Council	To promote efficient waste management practices that minimise environmental harm by working towards minimal waste	No specific goals in WMMP	Reduce the total quantity of waste to landfill Reduce the quantity of harmful waste to landfill Increase diversion of waste that is currently disposed of to landfill for reuse, recovery or recycling Use council influence to advocate for increased or mandatory producer responsibility Improve reliability and completeness of waste data collected to enable the setting of specific targets in future WMMP Support waste minimisation initiatives in the community Apply a user pays philosophy and enable appropriate levels of service for waste and recycling activities
Whakatane District Council	Working towards zero waste	Managing our waste locally wherever possible rather than exporting out of the district and region Reduce the amount of waste we send to landfill or other disposal Lower the cost of waste management to the community as a whole, and conversely increase economic benefit to the community. Reduce the risk of environmental damage resulting from our waste management methods	Work with the community to build on, or develop, local initiatives wherever possible and build local skill capacity when delivering our action plan Emphasise and prioritise reduction, reuse and recycling in our action plan Use resources more efficiently and work with the community to develop new initiatives and, in particular, new infrastructure Consider the environmental impact of all proposals in the action plan and seek to choose options with the least overall environmental impact.

A.5.0 Summary of Actions from TA WMMPs

(blue indicates the action area is included in the WMMP, with text showing additional detail where this is applicable)

Action Area	East Waikato Councils	Hamilton CC	Otorohanga DC	South Waikato DC	Taupo DC	Waikato DC	Waipa DC	Waikato Region	Waikato DC	Waiparo DC	Kawerau DC	Opoitiki DC	Rotorua DC	Tauranga CC	Western BOP DC	Whakatane DC	Bay of Plenty Region
Kerbside recycling – expand capacity, customer base and range of materials		Investigate	Rural	Sorting, contract	All plastics		Investigate, MGBs?				Investigate, improve sorting		Tyres		Farm plastics		
Recycling – increase through drop-offs and RTS actions		Investigate	Plastic waste	More drop-offs	Public place recycling						Investigate					Investigate	
Organic waste – collections	Investigate	Investigate				Investigate	Investigate, support regional projects				Food added to garden waste collection, investigate best practice	investigate	Depending on Waste to Gold outcomes	investigate	Investigate		
Organic waste - RTS		Review RTS				Material bans – by-law											

Action Area	East Waikato Councils	Hamilton CC	Otorohanga DC	South Waikato DC	Taupo DC	Waikato DC	Waipa DC	Waikato Region	Waikato DC	Waitemo DC	Waikato Region	Kawerau DC	Opotiki DC	Rotorua DC	Tauranga CC	Western BOP DC	Whakatane DC	Bay of Plenty Region
C&D waste		Investigate												Concrete/ asphalt, metals, tyres				
Biosolids																		
Reusable/inorganics																		
E-waste		investigate																
Liquid and hazardous wastes		Investigate													Agricultural chemicals		Agricultural chemicals	
Review residual collection systems					Remove 240L option													Reduce frequency
RTS							Investigate funding					Expand						

Action Area	East Waikato Councils	Hamilton CC	Otorohanga DC	South Waikato DC	Taupo DC	Waikato DC	Waipa DC	Waitemoa DC	Waikato DC	Waikato DC	Kawerau DC	Opotiki DC	Rotorua DC	Tauranga CC	Western BOP DC	Whakatane DC	Bay of Plenty DC
Take direction action, foster new ideas	Lobbying – product stewardship	Consider grants, specialist staff, lobbying			Lobbying – product stewardship	Lobbying – product stewardship, cleanfills	Community grants, recruitment, lobbying	Community grants				Lobbying – product stewardship		Lobbying – product stewardship, cleanfills	Lobbying – product stewardship, cleanfills	Recruitment, regional working on facilities	
Change the rules, monitor and feedback – restrictions on materials																	
Change the rules, monitor and feedback – bylaw issues																	
Change the rules, monitor and feedback – data																	
Infrastructure																	
Communication, Education, Promotion	Wide range of issues mentioned, including general waste prevention/reduction/minimisation, recycling, home composting, encouraging reuse, Secondhand Sundays, liquid & hazardous waste good practice, community partnerships, Waste Exchange, Sustainabiz, management of farm plastics																

A.6.0 TA Contracts for Refuse and Diverted Material Services

TA	Service	Contractor	Expiry Date (if known)
Waikato Region			
Hamilton City	Kerbside recycling and refuse collections	TPI Waste Management	2017
	Lincoln Rd RTS - MOU	TPI Waste Management	2017
	Hamilton Organic Centre	H G Leach	
Hauraki District	Kerbside refuse and recycling collections	Smart Environmental Ltd	Jun-13
	Recyclables transfer	Smart Environmental Ltd	NA
	Refuse transfer & disposal	H G Leach	2011
Matamata-Piako District	Kerbside recycling and refuse collections	Smart Environmental Ltd	Jun-13
	RTS operation	Smart Environmental Ltd	
	Refuse transfer, disposal	H G Leach	Jun-12
	Recyclables transfer	Smart Environmental Ltd	Jun-12
Otorohanga District	Kerbside recycling and refuse collections	EnviroWaste	
	Otorohanga and Kawhia RTS operation	EnviroWaste	
	Ngutunui RC operation	Ngutunui School	
	Arohena RC operation	Arohena Recycling Group	
South Waikato District	Kerbside recycling collection, drop-off points	South Waikato Achievement Trust	Jun-11
	Kerbside refuse collection, commercial kerbside refuse collection	Earthcare Environmental	
	1 year food waste trial MOU	Earthcare Environmental	
	Refuse transfer and disposal	Materials Processing Ltd	
Taupo District	Kerbside recycling and refuse collections	Budget Waste Removals Ltd. (Envirowaste)	
Thames-Coromandel District	RTS operation	Smart Environmental Ltd	Jun-13
	Kerbside recycling and refuse collections	Smart Environmental Ltd	Jun-13
	Drop-off point servicing	Smart Environmental Ltd	Jun-13
	Disposal	H G Leach	Jun-13
Waikato District	Tuakau kerbside refuse and recycling collection	EnviroWaste	Jul-13 (+1, +1)
	Raglan kerbside refuse and recycling collection	Xtreme Waste	Jul-14
	Kerbside refuse and recycling	Metrowaste Waikato	Jul-14

TA	Service	Contractor	Expiry Date (if known)
	collection, all other areas		
	Inorganic collections (ex Raglan)	Metrowaste Waikato	Annual
	Operation of RTS – Huntly and Te Kauwhata	Metrowaste Waikato	
	Operation of RTS – Raglan	Xtreme Waste	
	Waste transfer and disposal, hazardous waste (other than Raglan)	Metrowaste Waikato	Jul-14
	Raglan - waste transfer and disposal, hazardous waste	Xtreme Waste	Jul-14
	Drop-off facilities	Xtreme Waste	Jul-14
Waipa District	Kerbside recycling collection	Smart Environmental Ltd	
Waitomo District	Kerbside refuse and recycling collection	EnviroWaste	Jun-10
	Waitomo District Landfill Operation and Maintenance Contract	Inframax Construction Ltd	Jun-09
	RTS operation - Piopio	Lynn Braithwaite - council employee	NA
	RTS operation - Benneydale	Fred Matthews	No contract
	RTS operation - Marokopa	Supa Bins	No contract
Bay of Plenty Region			
Kawerau District	Kerbside refuse and recycling collection	TPI Waste Management	
	Greenwaste collection	Council	
	RTS operation - Kawerau	Council	
	Waste transfer	Hubbard Contracting	
Opotiki District	Kerbside refuse and recycling collection	Not specified	
	RTS operation	Council	
Rotorua District	Kerbside refuse collection	Castlecorp (a business unit of council)	
	RTS operation	Council	
Tauranga City	Kerbside refuse collection	Environmental Green Bins (TPI Waste Management)	
	RTS operation	EnviroWaste	
Whakatane District	Kerbside refuse and recycling collection, greenwaste collection, RTS operation - Whakatane	TPI Waste Management	May-16
	RTS operation - Murupara	Merrimans Ltd	Jun-13
	Waste Transfer	Priority Logistics	Jan-16
	Disposal	H G Leach	Jan-20

A.7.0 Solid Waste Bylaws for Bay of Plenty and Waikato TAs

TA	Date in effect	Purpose	Council waste facilities – times, charges etc	Ownership of waste	Licensing – requirements fees, etc	Cleanfills	Events	Restrictions on greenwaste to landfill	Supermarket Trolleys	Out of district Waste
Waikato Region										
Hamilton CC	01/07/12	To prohibit or regulate the deposit of waste, regulate the collection and transportation of waste, regulate disposal of dead animals, prescribe charges for use of WMM facilities of the TA, prohibit, restrict or control access to these facilities, prohibit the removal of waste intended for recycling other than by occupier or person authorise by TA	✓	✓	✓		✓			
Hauraki DC	01/03/08	To provide for collection and disposal of refuse in an efficient and cost effective manner, serving the interests of public health, enhancing the amenity of the residential and business environment and protecting the natural environment while at the same time ensuring that any impact on the road network in the district is kept to a minimum	✓	✓	Need written consent from council					
Matamata-Piako DC	11/06/08	To provide for collection and disposal of waste in an efficient and cost effective manner, serving the interests of public health, enhancing the amenity of the Residential and business environment and protecting the natural environment while at the same time ensuring that any impact on the road network in the district is kept to a minimum.	✓	✓	✓					✓
Otorohanga DC		No bylaw								
South	1/12/08	Promote the council Waste Strategy and New Zealand	✓	✓	✓		✓			

WRC & BOPRC Waste Stocktake

TA	Date in effect	Purpose	Council waste facilities – times, charges etc	Ownership of waste	Licensing – requirements fees, etc	Cleanfills	Events	Restrictions on greenwaste to landfill	Supermarket Trolleys	Out of district Waste
Waikato DC		Waste Strategy Ensure efficient and effective Waste management in accordance with legislative requirements Impose performance standards for the benefit of the public								
Taupo DC	01/09/12	To regulate waste management facilities and the collection, transportation and disposal of waste in Taupo District. From 1/9/2012 all collectors, transporters and disposers of waste in excess of 30 tpa and operators of waste management facilities are to be subject to a licensing system; to ensure that council can manage waste in a manner consistent with its statutory responsibilities and waste management objectives.	✓	✓	✓		✓	✓		✓
Thames-Coromandel DC	03/03/08	To ensure refuse is collected and disposed of in the interests of public health and in an efficient and cost effective manner, while at the same time ensuring that any obstruction of streets is kept to a minimum.		✓	Need written consent from council					
Waikato DC (Franklin district only)	10/08/09	To monitor and regulate the collection, transportation, disposal and management of waste in such a way as to encourage minimisation of waste being generated and disposed of in Franklin District. To promote council's waste minimisation and waste reduction objectives in accordance with the provision of the WMA 2008 To assist in the implementation of council's WMMP and the New Zealand Waste Strategy, To ensure effective and efficient waste management in the council's area, To impose specific performance standards and requirements for waste collection, transportation,	✓	✓	✓		✓	✓	✓	

TA	Date in effect	Purpose	Council waste facilities – times, charges etc	Ownership of waste	Licensing – requirements fees, etc	Cleanfills	Events	Restrictions on greenwaste to landfill	Supermarket Trolleys	Out of district Waste
		disposal and treatment services for the benefit of the public								
Waipa DC	01/11/12	To protect the health and safety of the public and persons involved in the collection and disposal of waste and/or diverted materials Ensure that any bylaw provisions relating to the collection and disposal of waste and/or diverted materials are consistent with council's WMMP ensure that any nuisances created from the collection and disposal of waste and/or diverted materials are minimal, provide for the appropriate collection, transportation and disposal of waste and/or diverted materials.			✓		✓			
Waitomo DC	01/07/09	To ensure household waste is reduced, collected and disposed of in the interests of public health and in an efficient and cost effective manner, and to provide for the efficient collection and recovery of recyclable waste, to ensure that the obstruction of streets and roads by waste for collection is minimised, to manage waste management facilities for the optimum disposal or recycling of waste.	✓	✓	✓		✓			
Bay of Plenty Region										
Kawerau DC	29/06/10	To ensure refuse is collected and disposed of in the interests of public health and in an efficient and cost effective manner, while at the same time ensuring that any obstruction of streets is kept to a minimum. Also covers general issues re. recycling, ownership of the waste stream, refuse storage, waste management.	✓	✓						
Opotiki DC	01/07/08	To promote the safe collection and disposal of rubbish and recyclables (solid waste) in the interest of public	✓	✓	✓					

TA	Date in effect	Purpose	Council waste facilities – times, charges etc	Ownership of waste	Licensing – requirements fees, etc	Cleanfills	Events	Restrictions on greenwaste to landfill	Supermarket Trolleys	Out of district Waste
		health and at the same time ensuring that any obstruction of streets is kept to a minimum.								
Rotorua DC	01/07/11	Promote the safe collection and disposal of waste material so that: waste does not accumulate to become offensive or harbour vermin, collection and disposal is complementary to the WMMP, and collection and disposal is not carried out by multiple service providers. Applies to private kerbside collections; not from private property or to public services			✓					
Tauranga CC	01/07/12	Promote waste minimisation and management objectives and support the implementation of the WMMP, particularly where TCC does not have direct control of the waste stream. To promote safe kerbside collection of waste, including recyclables		✓	✓	✓	✓			
Western BOP DC	01/07/08	Ensure effective and efficient collection of household and commercial waste including household waste, recyclable materials, commercial waste, waste disposal areas and waste management for special events.	✓		✓		✓			
Whakatane DC	01/07/08	Promote and ensure the safe collection and disposal of refuse and recyclables so that it does not accumulate and impact adversely on public health	✓							

A.8.0 Cleanfills, Monofills, and Other Disposal Facilities

TA	Location	Description	Detail
Waikato Region			
Hamilton City	D&T McDonald	Cleanfill, C&D reuse	Concrete crusher - has capacity
Matamata-Piako District	Turley Motors	Cleanfill, construction waste	
South Waikato District	CHH Kinleith - Sprinkler Quarry etc	Disposal - pulp and paper processing wastes, wood waste, boiler ash	23,000 tpa disposed of into Smythe Rd Landfill
	B&S Excavating	Cleanfill	
	Tirau Sands	Cleanfill open to public	Clean soil free, 'cleanfill' \$5.75 per m3, 'hardfill' \$11.50 per m3.
Taupo District	Bleakley Landfill	Wood processing waste	
Waikato District	Whangarata Quarry, Ridge Rd Quarry Ltd	Cleanfill and quarry	Up to 700,000 m3 consented to 2019
	Te Kowhai Sands	Cleanfill (preferably topsoil for rehabilitation)	Consented to 2021, but will likely be at capacity by end of 2012
	Wedding IH & Sons Ltd	Cleanfill, C&D waste, sand, subsoil, clay and compost	Up to 109,500 m3 per annum of cleanfill and C&D waste
	Perry Resources Ltd	Cleanfill disposal open to public (topsoil, clay, spoil)	Consented to 2030 \$5 plus GST per tonne in 2011, if taking sand \$4.50 plus GST, topsoil is free (later screened and sold)
	Bombay Quarry, Holcim	Cleanfill disposal for quarry customers only	Up to 500,000 m3 from late 2011, consented to 2025.
	S D Watson Ltd	Cleanfill (concrete, clay and topsoil) for land contouring	35,000 m3 per annum
	Charbert Holdings	Cleanfill	Up to 12,000 m3 per annum
	R X Plastics Ltd	Cleanfill (only clay, sand for site remediation)	78,800 m3 capacity, consented to 2022. nearly at capacity and only accepting good base material in 2011
	Enviro Landfill (Pukemiro mine)	Coal mine, cleanfill, end of life tyres, C&D waste	130,000m3 per annum, expected to close 2017 (cleanfill). 43632m3 for tyres.
	Envirofert	Cleanfill (clay, soil, rock, concrete, brick, demolition products).	Currently consented to 2019, but intend to extend.

TA	Location	Description	Detail
		(take other materials such as plasterboard but these are reprocessed) Composting facility (greenwaste, food waste, plasterboard, cleanfill material from Auckland and Waikato)	Additional capacity as long as consent conditions adhered to.
Waipa District	Land Cycle Quarry Group	Cleanfill, greenwaste processing. Open to public	8000m3 of cleanfill 11,200t/yr \$15 + GST greenwaste per m3, cleanfill \$4.80 +GST per m3, Concrete \$10 + GST per m3, also take large tree trunks and wood pallets/ timber packaging.
Bay of Plenty Region			
Tauranga City	Page Transport Cleanfill (Greerton)	Consent requires that only cleanfill that complies with the definition in the BOP Regional Land Management Plan is accepted (regional land and water plan states no combustible or putrescible apart from up to 10% by volume untreated timber in each load)	3,000 tonnes p.a.
	Jack Shaw Tauriko Cleanfill	Consented for cleanfill, greenwaste and construction waste, and also vermiculture leachate (although not active)	100,000 TPA
	EnviroWaste Transfer Station, Truman Road	Accepts solvents, concrete, timber, Flat and container Glass	
Western BOP District	Oahuiti Road, Oropi, Tauranga	Consented to accept a wide range of wastes including C&D wastes, glass cullet, timber, bulky tree wastes, grit/sediment, tyres (not whole), boiler ash. Cannot accept general domestic refuse and various other materials.	Consented to 30 April 2046
	Te Puna Cleanfill	Consented for cleanfill only	Expected to operate to 2018
	Pukepine Sawmills	Untreated wood waste	
Whakatane District	Carter Holt Harvey	Wood processing waste from CHH/Norske Skog Waste Joint Venture - primary and secondary solids, sludge from ponds	25 year consent for air and water discharge from regional council - 2010. Also land use consent from WDC.

A.9.0 Kerbside Refuse Collections and Charges

District	Provider	Container	Charge/Funding	Frequency
Waikato Region				
Hamilton City Council	Council contracted	Householder bag	Rates funded	weekly
Hauraki District Council	Council contracted	Council Bag	\$ 2.10	weekly
Matamata Piako District Council	Council contracted	1 bag free then pay	52 free bags a year then \$3.30	weekly
Otorohanga District Council	Council contracted	Council Bag	fee per bag	weekly
South Waikato District Council	Council contracted	1 bag free then pay	\$1.00	weekly
Thames Coromandel District Council	Council contracted	60L Council Bag 30L Council Bag	\$2.25 \$1.23	weekly
Taupo District Council	Council contracted	HH bag + sticker	\$1.50	weekly
Waikato District Council	Council contracted	Householder bag	\$173 per annum or 2.50 per bag in some areas	weekly
Waipa District Council	Private sector			
Waitomo District Council	Council contracted	Council Bag	52 free bags a year then \$2.30	weekly
Bay of Plenty Region				
Tauranga City Council	Private sector	Council Bag	\$10.01 (5pk)	weekly
Whakatane District Council	Council contracted	80 L bin	249-288 p/a	weekly
Western Bay Of Plenty District Council	Private sector			weekly
Rotorua District Council		Council Bag	\$ 1.10	weekly
Kawerau District Council	Council contracted	60L bin 120L bin	\$ 164.11 p/a Additional \$61 p/a	weekly
Opotiki District Council		Council Bag	Rates funded	weekly

A.10.0 Kerbside Recyclable Materials Collected in Council Collections

COUNCIL	Frequency	Containers	Paper	Card	Plastic 1-2	Plastic 3-7	Glass	Tin	Aluminium	Tetra Pak	Plastic Bags
Hamilton City Council	weekly	crate	✓	✓	✓		✓	✓	✓		
Hauraki District Council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		
Matamata Piako District Council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		
Otorohanga District Council	weekly	crate	✓	✓	✓		✓	✓	✓		
South Waikato District Council	fortnightly	2 crates	✓	✓	✓	✓	✓	✓	✓		
Thames Coromandel District Council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		
Waikato District Council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		
Waipa District Council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		
Waitomo District Council	weekly	crate	✓	✓	✓		✓	✓	✓		
Tauranga city council											
Whakatane district council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		✓
Western bay of plenty district council											
Rotorua district council											
Kawerau district council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		
Opotiki district council	weekly	crate	✓	✓	✓	✓	✓	✓	✓		
Taupo District Council	weekly	crate	✓	✓	✓		✓	✓	✓		
TOTAL	13	13	13	13	13	9	13	13	13	0	1

A.11.0 RTS and Recycling Centres and Drop-Offs

TA	Location	Residual refuse	Dry recyclables	Green waste	Timber	Cleanfill / concrete	Hazardous	Scrap metal	Car bodies	Tyres
Waikato Region										
Hamilton City	Lincoln Road RTS	✓	✓							
	Sunshine Ave RTS	✓	✓	✓						
Hauraki District	Paeroa RTS	✓	✓		✓				✓	✓
	Waihi RTS	✓	✓		✓				✓	✓
Matamata-Piako District	Matamata RTS	✓	✓	✓			✓		✓	
	Morrinsville RTS	✓	✓	✓			✓		✓	
	Waihou RTS	✓	✓	✓			✓		✓	✓
Otorohanga District	Otorohanga RTS	✓	✓	✓						
	Kawhia RTS	✓	✓	✓						
	Arohena RC		✓							
	Ngutunui RC		✓							
South Waikato District	Putaruru RTS	✓	✓	✓						
	Tirau RC		✓							
	Te Waotu RC		✓							
	Arapuni RC		✓							
Taupo District	Turangi RTS	✓	✓	✓	✓	✓		✓	✓	✓
	Mangakino RTS	✓	✓							
	Kinloch RTS	✓	✓	✓						

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TA	Location	Residual refuse	Dry recyclables	Green waste	Timber	Cleanfill / concrete	Hazardous	Scrap metal	Car bodies	Tyres
	Omori RTS	✓	✓	✓				✓		
	Whareroa RTS	✓	✓							
Thames-Coromandel District	Coromandel RTS	✓	✓	✓			✓	✓		
	Matarangi RTS	✓	✓	✓			✓	✓		
	Pauanui RTS	✓	✓	✓			✓	✓		
	Tairua RTS	✓	✓	✓			✓	✓		
	Thames RTS	✓	✓	✓			✓	✓		
	Whangamata RTS	✓	✓	✓			✓	✓		
	Whitianga RTS	✓	✓	✓			✓	✓		
	Whangapoua RC		✓							
	Opito Bay RC		✓							
Waikato District	Raglan RTS	✓	✓	✓	✓		✓	✓	✓	✓
	Huntly RTS	✓	✓	✓		✓	✓	✓		✓
	Te Kauwhata RTS	✓	✓	✓		✓	✓			✓
	Te Mata RC		✓							
	Te Uku RC		✓							
Waipa District	Cambridge RTS	✓	✓							
	Daphne St, Te Awamutu RTS	✓	✓							
	Paterangi Rd, Te Awamutu RTS	✓	✓							
Waitomo District	Benneydale RTS	✓	✓							

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TA	Location	Residual refuse	Dry recyclables	Green waste	Timber	Cleanfill / concrete	Hazardous	Scrap metal	Car bodies	Tyres
	Piopia RTS	✓	✓							
	Marokopa RTS	✓	✓							
	Kiritehere RTS	✓	✓							
	Kinohaku RTS	✓	✓							
	Awakino RTS	✓	✓							
Bay of Plenty Region										
Kawerau District Council	Kawerau RTS	✓	✓	✓		✓	✓			✓
Opotiki District	Opotiki RTS	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Te Kaha RTS	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Waihau Bay RTS	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Maraenui Pa Collection Depot	✓								
	Torere Collection Depot	✓								
Rotorua District	Okere RTS	✓	✓							
	Reporoa RTS	✓	✓							
	Tarawera RTS	✓	✓							
	Mamaku RTS	✓	✓							
	In-town RC		✓							
Tauranga City	Te Maunga RTS	✓	✓	✓		✓	✓	✓		✓
	Maleme Street RTS	✓	✓	✓		✓	✓	✓		✓

TA	Location	Residual refuse	Dry recyclables	Green waste	Timber	Cleanfill / concrete	Hazardous	Scrap metal	Car bodies	Tyres
Western BOP District	Te Puke RC		✓	✓						
	Wills Rd RC		✓	✓						
	Katikati RC		✓	✓						
	Steele Rd RC		✓	✓						
	Athrenree RC		✓	✓						
Whakatane District	Whakatane RC	✓	✓	✓					✓	✓
	Murupara RTS	✓	✓	✓					✓	✓
	Minginui RTS	✓	✓	✓					✓	✓
	Ruatahuna RTS	✓	✓							

A.12.0 Organic Waste Processing Facilities

TA	Provider	Description	Detail
Waikato Region			
Hauraki District	H G Leach - VCU	Greenwaste and putrescibles	
Matamata-Piako District	Daltons	Bark & putrescible waste composting	
South Waikato District	Kinleith	Recycled paper/fibre, vermicomposting.	Wood processing wastes and a wide range of other organic wastes processed through vermicomposting – up to 140,000 tonnes per annum
	Fonterra Tirau	Converting whey to ethanol, AD of organic wastes	
	Materials Processing Ltd Composting	Greenwaste composting facility, Kinleith	
	Materials Processing Ltd Kinleith	Converts pulp and paper mill waste into fuel	
Taupo District	Laminex/Noke	Vermicomposting (industrial process waste)	
Waikato District	Lowe Corp	Rendering - high-protein putrescible wastes from throughout Auckland and Waikato to produce stock feed and fertiliser	Capacity available
	Envirofert	Composting facility with some vermicomposting	Process greenwaste, food waste, some plasterboard from Auckland and Waikato regions.
Waipa District	Hamilton Organic Recycling Centre	Greenwaste composting	Consented to 2025; very limited capacity
Waipa District	Land Cycle Quarry Group	Greenwaste processing. Open to public - \$15 + GST greenwaste per m3, also take large tree trunks and wood pallets/timber packaging.	8000m3 of cleanfill 11,200t/yr
Bay of Plenty Region			
Kawerau District	Worm Tech	Takes pig manure for vermicomposting.	5,200 tpa, unable to accept more under consent conditions
	EcoCast	Takes a variety of organic wastes for vermicomposting	Numerous sites; capacity at most sites
	Kawerau Wastewater treatment plant	Kerbside collection of greenwaste disposed of at WTP for composting	

TA	Provider	Description	Detail
Rotorua District	Nature's Flame	Sawdust	54,000 tpa at present, and at capacity
	Materials Processing Ltd	Processes greenwaste, wood waste, and concrete at Atiamuri landfill	
	EcoCast	Takes a variety of organic wastes for vermicomposting	Numerous sites; capacity at most sites
	Scion Research	TERAX thermal deconstruction process for biosolids	Process in development
Tauranga City	NZ Remediation	Greenwaste composting Te Maunga	Some additional capacity; unclear how much
Western Bay of Plenty District	Vitec Fertilisers	Fish processing waste	At capacity (through choice) currently processing 300 tpa
Out of Regions			
Out of regions	Eco Stock supplies (Auckland)	Waste food from manufacturers and processors	Capacity available
Out of regions	Living Earth (Auckland)	Greenwaste	Limited additional capacity
Out of regions	PVL Proteins (Auckland)	Fish and meat processing waste into fertiliser & tallow products	Limited additional capacity
Out of regions	Reharvest Timber Products Ltd	Waste wood	Capacity available

A.13.0 Large-scale Waste Generators

TA	Large scale waste generators
Waikato Region	
Hamilton CC	Fonterra Te Rapa Affco Horotiu freezing works
Hauraki DC	Silver Fern Farms
Matamata-Piako DC	Greenlea Premium meats Fonterra - Waitoa and Morrinsville Wallace Corp in Waitoa Ingham Enterprises Waitoa Silverfern Waitoa and Te Aroha Open Country Dairy
Otorohanga DC	None reported by TA
South Waikato DC	Carter Holt Harvey Pulp and Paper (about 23,000 Tonnes) Downer Edi Works (Contractor for local road maintenance. About 150 Tonnes (2010)) RYH Contracting Ltd (Council's open space maintenance contractor, produced 120 Tonnes (2010)) Allan Wilson Builders Ltd (Landfilled approximately 110 Tonnes (2010)) Pacific Pine Industries Kiwi Lumber (Putaruru) Ltd NZ Quality Waters Ltd Coca Cola Amatil (NZ)
Taupo DC	None reported by TA
Thames- Coromandel DC	None reported by TA Mussel farming wastes are an intermittent issue & a solution is currently provided by the contractor
Waikato DC	Affco (Horotui) Brinks Chickens (Tuakau) Goodman Fielder Quality Bakers (Huntly)
Waipa DC	None reported by TA
Waitomo DC	None reported by TA
Bay of Plenty Region	
Kawerau DC	Norske Skog CHH Sequal Lumber SCA
Opotiki DC	None reported by TA
Rotorua DC	None reported by TA
Tauranga CC	Tauranga Hospital Port of Tauranga

TA	Large scale waste generators
	Kiwifruit growers Sealords. Fish by-products. (Processed by Vitec for fertiliser). Freezing Works and Butcheries. Meat by-products (Collected by Graeme Lowe Byproducts and sent to Tuakau to be processed).
Western BOP DC	Claymark Saw mill - Katikati - Jack Shaw - Tauriko Affco meat processors - Rangiora
Whakatane DC	None reported by TA

A.14.0 Territorial Authority Questionnaire

Local Authority Name	
Council-controlled waste streams	
KERBSIDE COLLECTION: General refuse	
Residential kerbside refuse	
Is there a council kerbside refuse collection from residential properties?	
What properties receive the service?	
What percentage of what number of properties are eligible for the service?	
What is the refuse receptacle and size?	
What is the frequency of collection?	
How is the collection funded?	
Who is the service provider?	
Where is the kerbside refuse disposed of?	
Commercial kerbside refuse	
Is there a council kerbside refuse collection from commercial properties?	
What properties receive the service?	
What is the refuse receptacle and size?	
What is the frequency of collection?	
How is the collection funded?	
Who is the service provider?	
KERBSIDE COLLECTION: Recyclables	
Is there a council kerbside collection of recyclables?	
What properties receive the service?	
What is the recycling receptacle and size?	
What is the frequency of collection?	
How is the collection funded?	
Who is the collection service provider?	
What recyclable materials are accepted?	
Where are the recyclables processed, and by what organisation?	
KERBSIDE COLLECTION: Organic waste	
Is there a council kerbside collection of organic waste?	
What properties receive the service?	

Local Authority Name	
What is the organic waste receptacle and size	
What is the frequency of collection?	
How is the collection funded?	
Who is the service provider?	
What organic materials are accepted?	
Where is the organic waste processed, and by what organisation?	
KERBSIDE COLLECTION: Inorganic refuse	
Is there a council kerbside collection of inorganic refuse?	
What properties receive the service?	
What is the frequency of collection?	
Who is the service provider?	
Where is the inorganic refuse disposed of?	
OTHER WASTE STREAMS	
Public place litter bins - Who is the service provider?	
Loose litter - Who is the service provider?	
Illegal dumping - Who is the service provider?	
Abandoned car recovery - Who is the service provider?	
Sewage sludge/ Biosolids - Where are biosolids from wastewater treatment plants disposed of?	
How many tonnes of biosolids are disposed of each year?	
Milliscreenings - Where are sewage and/or water treatment plant milliscreenings disposed of?	
How many tonnes of milliscreenings are disposed of each year?	
Road sweepings - Where are road sweepings disposed of?	
How many tonnes of road sweepings are disposed of each year?	
TRANSFER STATIONS	
What transfer stations does council own and where is the waste from each disposed of?	
What organisation operates council's transfer station(s)?	
RECYCLING CENTRES AND DROP-OFF FACILITIES	
Name(s) of recycling centres and drop-off facilities owned by council	
LANDFILL	
Name(s) of landfills owned by council	
OTHER LAND DISPOSAL SITES	
Name(s) of cleanfills etc. owned by council	

Local Authority Name	
MATERIAL RECOVERY FACILITIES (for recyclables)	
Description of MRF(s) owned by council	
MATERIAL RECOVERY FACILITIES (other than for recyclables)	
Description of other recovery facilities (e.g. composting plants, C&D recovery) owned by council	
Privately-controlled waste streams	
REFUSE AND RECYCLING OPERATORS	
Kerbside domestic/ commercial refuse - What companies collect kerbside refuse from residential and/or commercial properties, independent of council contracts?	
Kerbside recycling collections - What companies collect kerbside recycling from residential and/or commercial properties, independent of council contracts?	
Organic collections - What companies collect greenwaste and/or other organic waste from residential and/or commercial properties, independent of council contracts?	
Industrial/ commercial/ institutional refuse - What companies collect waste from industrial, commercial, and institutional customers?	
Industrial/ commercial/ institutional recycling - What companies collect recycling from industrial, commercial, and institutional customers?	
LARGE-SCALE WASTE GENERATORS	
What companies generate significant quantities of waste (e.g. meat processors, saw mills, food processors) and where is that waste disposed of (e.g. landfill, monofill)?	
TRANSFER STATIONS	
What transfer stations are privately owned and where is the waste from each disposed of?	
RECYCLING CENTRES AND DROP-OFF FACILITIES	
Name(s) of recycling centres and drop-off facilities that are privately-owned	
LANDFILLS	
What disposal facilities (as defined by WMA 2008) in the city/district are privately owned?	
OTHER DISPOSAL FACILITIES	
Other than disposal facilities as defined by WMA 2008, what land disposal sites in the city/district accept waste other than cleanfill (as defined by MfE guidelines)	
MATERIAL RECOVERY FACILITIES (for recyclables)	
Description of MRF(s) owned privately	
MATERIAL RECOVERY FACILITIES (other than for recyclables)	

Local Authority Name	
Description of other recovery facilities (e.g. composting plants, C&D recovery) that are privately-owned	
Tonnage Data	
What is the average annual tonnage collected by council's kerbside refuse collection (from both residential and commercial properties)?	
What is the average annual tonnage collected by council's kerbside organic collection (from both residential and commercial properties)?	
What is the average annual tonnage collected by council's kerbside inorganic collection (from both residential and commercial properties)?	
What is the average annual tonnage collected by council's kerbside recycling collection (from both residential and commercial properties)?	
What is the average annual tonnage collected by private operators' kerbside refuse collections (from both residential and commercial properties)?	
What is the average annual tonnage collected by private operators' organic collections (from both residential and commercial properties)?	
What is the average annual tonnage of recycling collected by private operators from residential properties?	
What is the average annual tonnage of recycling collected by private operators from all commercial properties?	
What is the average annual tonnage of waste disposed of to landfill from council-owned transfer stations in the city/district?	
What is the average annual tonnage of waste disposed of to landfill from privately-owned transfer stations in the city/district?	
What is the average annual tonnage of waste from the city/district disposed of directly to landfill? (i.e. does not pass through a transfer station)	
What is the average annual tonnage of waste disposed of at each of the landfills in the city/district? (separate tonnage figures for each landfill)	
What is the average annual tonnage of waste disposed of at each of the landfills in the city/district that does not originate from within the city/district?	
What is the average annual tonnage of material disposed of at each of the 'cleanfill's in the city/district?	
What is the average annual tonnage of material processed at each of the MRFs in the city/district?	