

## WASTE INFRASTRUCTURE REVIEW AND STRATEGIC ASSESSMENT

- 2.2
- September 2007





**SKM**



## WASTE INFRASTRUCTURE REVIEW AND STRATEGIC ASSESSMENT

- 2.2
- September 2007

Sinclair Knight Merz  
Level 12, Mayfair House  
54 The Terrace  
PO Box 10-283  
Wellington New Zealand  
Tel: +64 4 473 4265  
Fax: +64 4 473 3369  
Web: [www.skmconsulting.com](http://www.skmconsulting.com)

**COPYRIGHT:** The concepts and information contained in this document are the property of Sinclair Knight Merz Limited. Use or copying of this document in whole or in part without the written permission of Sinclair Knight Merz constitutes an infringement of copyright.

**LIMITATION:** This report has been prepared on behalf of and for the exclusive use of Sinclair Knight Merz Limited's Client, and is subject to and issued in connection with the provisions of the agreement between Sinclair Knight Merz and its Client. Sinclair Knight Merz accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

## Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Project Background and Key Questions	1
1.2	Structure of the Report	2
<b>2</b>	<b>Methodology</b>	<b>3</b>
<b>3</b>	<b>Waste in the Bay of Plenty – The Big Picture</b>	<b>5</b>
<b>4</b>	<b>Current Recycling and Recovery Infrastructure in the Bay of Plenty</b>	<b>9</b>
4.1	Waste Disposal and Recovery Facilities in the Bay of Plenty	9
4.2	Waste and Recovered Materials Movements	16
4.3	Materials Diversion Summary	18
4.4	Processing of Organic Waste Materials	18
4.4.1	Green Waste	18
4.4.2	Other Putrescible Wastes	19
4.4.3	Pulp and Paper and Wood Processing Waste	21
4.5	Construction and Demolition Waste	21
4.6	Commodities (Glass, Paper, Card, Plastics, Cans)	22
4.6.1	Sorting and Consolidation	22
4.6.2	Utilisation of Recycling Commodities	23
4.7	Management of Special Wastes	23
4.7.1	Waste Electronic Equipment (E-waste)	24
4.7.2	Tyres	24
4.7.3	Liquid and Hazardous Wastes	25
4.7.4	Used oil	26
4.7.5	Agricultural plastics	26
4.7.6	Unwanted Paint and Paint tins	26
4.8	Other Diversion and Reuse in the Bay of Plenty	27
4.9	The Leaders in Waste Minimisation	27
<b>5</b>	<b>Disposal and Recovery Estimates</b>	<b>28</b>
5.1	Waste Disposed to landfill	28
5.1.1	General Comments	28
5.1.2	Estimates of Waste Quantities Disposed to Landfill	29
5.1.3	Waste composition	31
5.2	Waste Diverted from Landfill and Cleanfill Disposal	31
5.3	Diversion Performance	34
5.4	Summary of disposal and recovery data	36
<b>6</b>	<b>The Current and Future Context</b>	<b>37</b>



6.1	<b>Important Decision Points</b>	<b>37</b>
6.2	<b>Waste Minimisation (Solids) Bill</b>	<b>38</b>
6.3	<b>Climate Change and Energy Policy</b>	<b>39</b>
6.4	<b>EurepGap</b>	<b>40</b>
6.5	<b>Compost NZ/Compost Standard</b>	<b>40</b>
6.6	<b>Construction and Demolition Waste Initiative</b>	<b>40</b>
6.7	<b>New Zealand Waste Sector Consolidation and Investment</b>	<b>41</b>
6.8	<b>Hazardous Waste Management in New Zealand</b>	<b>42</b>
6.9	<b>Current Approaches to Waste Management in NZ</b>	<b>43</b>
6.9.1	Waste Disposal	43
6.9.2	Waste and Recycling Collection Services	43
6.9.3	Industry	44
6.9.4	Waste Generators	44
<b>7</b>	<b>Gaps and opportunities</b>	<b>45</b>
7.1	<b>Recoverable Materials</b>	<b>45</b>
7.1.1	Overview of Recoverable Materials	45
7.1.2	Green Waste	47
7.1.3	Other Organic Waste	47
7.1.4	Construction and Demolition Waste	48
7.1.5	Waste Paper/Cardboard	49
7.1.6	Scrap Metal	50
7.1.7	Waste Glass	50
7.1.8	Waste Plastics	50
7.1.9	Other Wastes	51
7.2	<b>Implementing Best Practice in the Bay of Plenty</b>	<b>53</b>
7.2.1	Waste Minimisation	53
7.2.2	Collection and Logistics	53
7.2.3	Waste and Recovered Materials Processing	54
7.3	<b>Opportunities for Minimising Waste in the Bay of Plenty Region</b>	<b>55</b>
7.3.1	Opportunity 1 – Organic Waste Processing	56
7.3.2	Opportunity 2 – Ongoing Market Development	<b>Error! Bookmark not defined.</b>
7.3.3	Opportunity 3 – A Waste Infrastructure Investment Plan	58
7.3.4	Opportunity 4 – Providing Waste Minimisation Information	59
7.3.5	Opportunity 5 – Working with Businesses and Other Regions	62
<b>8</b>	<b>Conclusions and Recommendations</b>	<b>64</b>
8.1	<b>Conclusions</b>	<b>64</b>
8.2	<b>Recommendations</b>	<b>65</b>





# 1 Introduction

## 1.1 Project Background and Key Questions

Environment Bay of Plenty engaged Sinclair Knight Merz Limited (SKM) to undertake a stocktake of waste and recovered materials flows and facilities in the Bay of Plenty Region. The stocktake updates and builds on information collected by Responsible Resource Recovery Limited in 2005 that was largely focussed on local authority activities in waste management and resource recovery in the Region. In addition to the stocktake of the existing situation, Environment Bay of Plenty requested an assessment of strategic, or long term and collaborative, opportunities.

The objective of the project is to provide a comprehensive picture of waste management in the region with a view to identifying key gaps and opportunities for improvements both now and as contracts expire, infrastructure requires renewal and new technology becomes available. There is also an opportunity to consider the current framework for managing waste in the Bay of Plenty in light of industry trends, government and community expectations and local government's strategic planning requirements. The focus is on active participation of all key stakeholders including local authorities, waste and recycling companies and the broader business community. Key questions include:

- How much waste is going to landfill from the Bay of Plenty Region?
- Does activity in the waste management area reflect the waste hierarchy – reduce, reuse, recycle and only then consider disposal of waste?
- How much waste is being diverted and what are the diversion routes currently available?
- What waste streams could be relatively easily diverted and what role could local authorities either individually or collectively play to help this happen?
- Are the interests of individual councils and local authorities in the region in general better served by owning one or more landfills or utilising commercial available landfill space in the region or in neighbouring regions?
- Should local authorities in the Bay of Plenty Region coordinate or combine to procure waste management services?
- Are there opportunities for local authorities to work with the waste sector and other businesses in the region to improve service availability and outcomes?

It is important to note that with decreasing active involvement of local authorities in providing waste management services, the importance of the policy framework increases. In the context of this report, a key question is how local authorities can work together and with industry to improve waste minimisation. For local authorities this is likely to involve a mix of active (contracts, service provision) and policy development actions.





## 1.2 Structure of the Report

The structure of this report follows the data collection and analysis process used for the project as outlined below:

- Section 2 provides an overview of the methodology adopted;
- Section 3 provides an overview of waste management in the Bay of Plenty;
- Sections 4 to 6 provide more detail on the current situation with respect to the way waste is managed in the Bay of Plenty. These sections provide an estimate of the quantity of materials disposed of to landfill and diverted through recycling, composting, bioenergy and other re-use options. The information presented is factual, opportunities and recommendations are developed in Section 7;
- Section 7 discusses key opportunities made apparent by the analysis presented in the previous sections; and.
- Section 8 provides key conclusions and recommendations.





## 2 Methodology

The collection of comprehensive data on waste and recycling is an inherently challenging task. This is related to the wide range of organisations involved, commercial sensitivity of much of the data, issues with the definition of waste (when considering what recovered or diverted materials should be included in the analysis) and the ease of movement of waste across local and regional boundaries.

The intent of this project has been to assess reasonably readily available information in order to determine the movement of waste and recovered materials into, around and out of the Bay of Plenty Region. The focus has been on waste disposed of to landfill/cleanfill, recycling commodities (glass bottles/jars, metal cans, paper/cardboard and plastics code 1 & 2), scrap metal and organic waste composting or processed for biofuel. Other collection and processing of by-products has been identified but not necessarily quantified. Examples include the use of wood waste for biofuel within a single operation and the production of ethanol from whey. Organic waste processed via home composting and waste disposed of to on-farm sites has not been quantified.

Information regarding waste flows and quantities was collected from a wide range of sources including:

- existing reports on waste management in the Bay of Plenty Region;
- 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 Bay of Plenty Region - Export Bay of Plenty, Priority One (economic development initiative), Local Authority websites; and
- telephone calls and/or site visits with local authorities, other key waste sector organisations and a selection of major businesses operating in the Bay of Plenty region (Port of Tauranga, Carter Holt Harvey, Norske Skog, Sanfords, Fulton Hogan, Hexion Fine Chemicals).

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

- the quantity of waste disposed of to landfill (via weighbridge records)
- the quantity of commodities recycled (via trading/weighbridge records)
- The composition of waste disposed of to municipal waste landfills
- the quantity of organic waste composted





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

- the quantity of wood waste utilised for boiler fuel (based on published data from EECA and discussions with boiler fuel suppliers)
- the quantity of commercially sourced scrap metal recycled (based on estimates from the Scrap Metal Recycling Association of NZ)
- the quantity of waste disposed of to unconsented and consented cleanfills (based on consent quantity and composition limits)
- the composition of waste disposed of to unconsented and consented cleanfills (based on consent quantity and composition limits)





### 3 Waste in the Bay of Plenty – The Big Picture

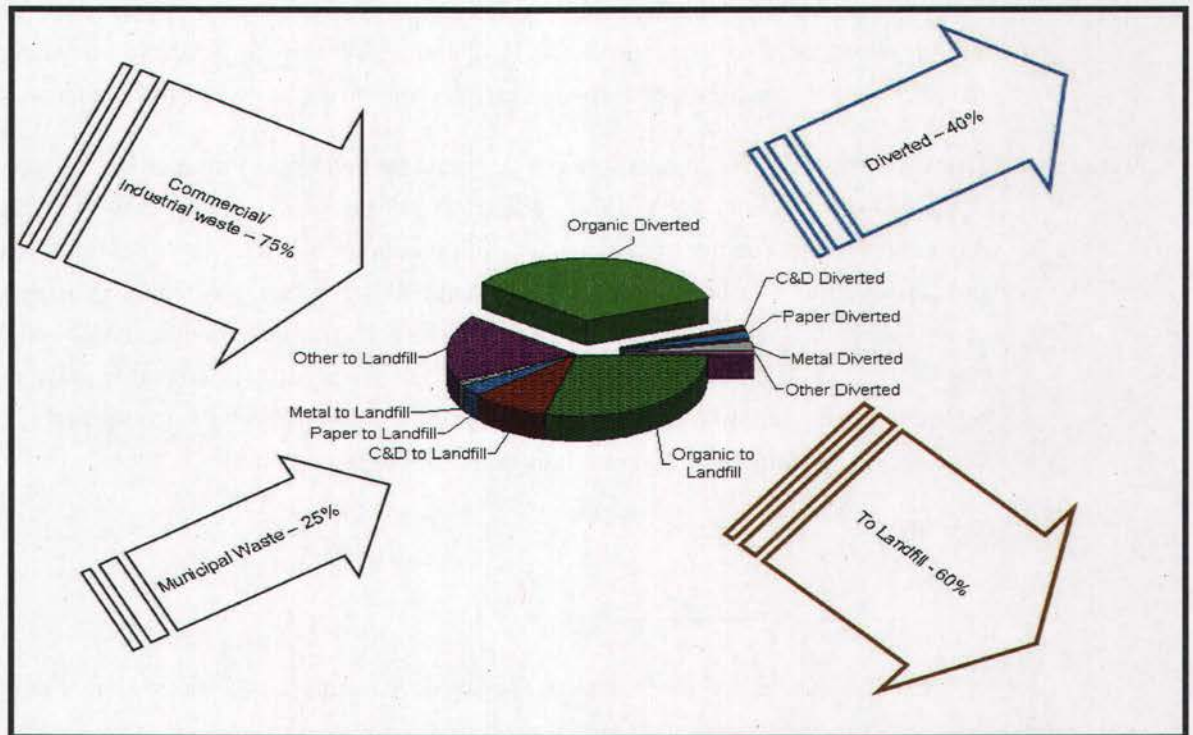
#### 3.1 A Regional View

As shown in Figure 1 around three quarters of waste in the Bay of Plenty Region is generated through industrial or commercial activity. Around 60 % of all waste generated in the region is disposed of to landfill (including cleanfills and industrial waste landfills). Major components of the waste stream going to landfill are organic waste (garden waste, food processing waste, wood processing waste – 280,000 tonnes per annum), construction/demolition waste (timber, metal, concrete - 95,000 tonnes per annum) and paper/cardboard (30,000 tonnes per annum).

Around 40 % of the total waste stream, almost 400,000 tonnes per annum, is diverted. Diversion is through local authority collections, commercial recycling collections, or most significantly, through commercial transactions involving wastes such as wood waste (boiler fuel), bark (composting, boiler fuel), scrap metal and food processing waste.

There are challenges in defining what constitutes a diverted waste stream where there is a well established use for a particular material. A good example of this is the use of tall oil (a by-product of the pulp making process) for the manufacture of high value products for use in New Zealand and export markets.

■ **Figure 1 Summary of Waste disposal and Diversion in the Bay of Plenty**







Major service providers operating in the Bay of Plenty Region include Waste Management NZ Ltd<sup>1</sup>, EnviroWaste Services Ltd, Materials Processing Ltd, Perry Environmental Limited and AllBrite Industries Ltd. Key council contracts are held by Waste Management (Rotorua, Whakatane), Materials Processing (Rotorua) and Perry Environmental (Tauranga).

National, regional and local policy impacts on waste management and minimisation in the Bay of Plenty. Introduction of a waste levy and regulatory support for product stewardship schemes in the government supported Waste Minimisation (Solids) Bill is likely to provide additional funding for waste minimisation activities in the Region. A reviewed New Zealand Waste Strategy Action Plan will make use of these tools and amend the targets in the NZ Waste Strategy to reflect current data and waste minimisation opportunities.

There have been moves in the Bay of Plenty to improve coordination of local government waste policy – reflected in territorial Waste Management Plans, the Regional Policy Statement, Long Term Community and Council Plans and the Regional Waste Strategy. Major waste generators are becoming increasingly aware of the costs and opportunities related to their waste. In this context they are looking for service providers who will work collaboratively with them to reduce overall waste management costs.

The increasing focus on sustainability as an overarching framework for action at a central government level means considering waste as an isolated issue is no longer appropriate. To successfully access government funding and support for waste minimisation activities in the future initiatives will need to consider parallel issues such as energy (efficiency, renewables, security), economic development, climate change and the framework for water management.

There are leaders in waste management at a national level based in the Bay of Plenty. They include Opotiki District Council (one of the leading Zero Waste Councils), the Bay of Plenty Sustainable Business Network (equipping businesses with practical tools to reduce their environmental impact) and Ohiwa Family Holiday Park (winners of the 2004 National Sustainable Business Awards). Scion Research is undertaking research into novel uses for unwanted materials and waste streams (the Waste 2 Gold initiative). Tauranga City Council has established constructive relationships with key players in the waste management sector including Perry Environmental (Transfer Stations, composting) and AllBrite Industries Limited (recycling).

---

<sup>1</sup> Owners of Wastecare and Environmental Green Bins, participants in a joint venture with AllBrite Industries Ltd.





### 3.2 Local Authority Activity

While local authorities in the Bay of Plenty Region approach their waste management responsibilities in a variety of ways, this has not preclude collaboration and alignment. Examples include working with EBoP to provide waste minimisation advice to businesses and Tauranga City Council and Western Bay of Plenty District developing a combined waste management plan.

The Opotiki District Council adopted a zero waste strategy in 1998 and has backed this up with investment in resource recovery infrastructure (Opotiki Resource Recovery Centre, Waihou Bay Resource Recovery Centre and Te Kaha Resource Recovery Centre). The Opotiki Landfill was closed in 2004 and waste is currently transported to Tirohia Landfill (Paeroa). Council waste management activities are funding by a mix of rates and user charges. These services include the resource recovery centres, refuse collection and kerbside recycling.

The Whakatane District Council have a zero waste policy with reduction largely delivered as a result of their contract with Waste Management Ltd to provide kerbside recycling, green waste collection and refuse collection services across the district as well as run the Whakatane Recycling Park. Waste is currently disposed of at the Burma Rd Landfill in Whakatane, this site is due to close in 2009. Council waste management activities are largely funded by target rates although there are user charges at the resource recovery park. In addition to the services provided by Waste Management Ltd under contract, the councils provides waste minimisation advice to businesses in the District with funding assistance from Environment Bay of Plenty.

The Kawerau District Council has a zero waste policy with key initiatives including a kerbside recycling service, providing a green waste collection service and developing a resource recovery centre at the old Kawerau Landfill site. Waste is currently transported to the Tirohia Landfill (Paeroa) for disposal. Council waste management activities are funded through rates (a mix of uniform annual charges and general rates). The council employs a zero waste officer to promote the concept of zero waste to businesses and schools in the District with some funding assistance from Environment Bay of Plenty.

The Rotorua District Council provide refuse collection services, transfer stations in rural areas, operates the Rotorua Landfill (for refuse from the district only) and contracts for the operation of the in town recycling centre. There are disposal charges at the landfill and transfer station but refuse collection and recycling at the transfer stations, landfill and the in town recycling centre are funded through targeted rates. The council provides cleaner production advice to businesses with funding assistance from Environment Bay of Plenty.





The Tauranga City Council offers a fully user pays refuse collection service (Operated by Environmental Green Bins) and leases the Te Maunga and Maleme St Transfer Station to Perry Environmental Ltd. Kerbside recycling services are available from commercial providers (AllBrite Industries and Environmental Green Bins), AllBrite run a free paper/cardboard collection service. The council provides cleaner production advice to businesses with funding assistance from Environment Bay of Plenty.

Western Bay of Plenty District Council provides recycling and greenwaste drop off centres in Athenree and Katikati as well as greenwaste only drop off centre in Omokoroa. Residents are referred to commercial collection companies for kerbside refuse and recycling collections or refuse transfer stations in Tauranga (owned by Tauranga City Council and operated by Perry Environmental) and Waihi (owned by Hauraki District Council). The council provides cleaner production advice to businesses with funding assistance from Environment Bay of Plenty.





## 4 Current Recycling and Recovery Infrastructure in the Bay of Plenty

An important aspect of considering waste management activity in the Bay of Plenty Region is identifying what processing of materials is currently undertaken in the Region. It is also important to include options available for the processing of materials out of the region. This section provides an overview of existing services available for waste generated in the Bay of Plenty, Section 7 outlines where opportunities lie for increasing diversion.

Sections 4.4 to 4.8 outline key information relating to the management of recovered materials in the Bay of Plenty. Each subsection concludes with an assessment of current capacity and capability. In this context capacity refers to how much material can be handled/processed i.e. the physical capacity of collection, sorting or reprocessing operations serving the Bay of Plenty Region. Capability refers to the level of expertise and technology available for collection, sorting or processing of materials. For example there is good capability in the processing of recycling commodities – most commodities can be processed with existing technology and expertise. The capacity for processing commodities is good with the recent completion of the AllBrite Industries sorting facility in Tauranga.

### 4.1 Waste Disposal and Recovery Facilities in the Bay of Plenty

The tables on the following pages outline services and facilities for waste disposal, recovery and recycling in the Bay of Plenty Region. Identification of services, and more importantly material flows, enables data collection to be focussed on key aggregators of materials and avoids the potential for double counting of materials as they move through collection, transport, processing to final disposal or recovery.

Table 1 presents a summary of services and facilities for the management, recycling, recovery and processing of waste materials in and for the Bay of Plenty Region. Section 4 Current Recycling and Recovery Infrastructure in the Bay of Plenty discusses recycling and resource recovery infrastructure in the Bay of Plenty Region in more detail.



Table 1 Disposal and Recovery Facilities in the Bay of Plenty Region - Landfills and Transfer Stations

	General Refuse/Industrial refuse	Green waste	Aluminium & steel cans	Paper and card	Scrap steel	Plastics 1 & 2	Timber/firewood	Glass	White ware	Car bodies	Furniture	Waste oil	Tyres	Household Hazardous	Construction & Demolition	Cleanfill
<b>Opotiki District</b>																
<b>Drop off</b>																
Opotiki Resource Recovery Centre	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Waihou Bay Resource Recovery Centre	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Te Kaha Resource Recovery Centre	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Processing</b>																
Opotiki District Council	Consolidating recyclables															
Opotiki District Council	Mulching green waste for sale															
<b>Whakatane District</b>																
<b>Drop off</b>																
Murapara Transfer Station	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
Whakatane Resource Recovery Centre		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
<b>Processing</b>																
Whakatane Resource Recovery Centre			✓	✓		✓										
Whakatane Landfill																
Waste Management NZ Ltd		✓		✓		✓										
Worm Tech NZ Limited																
Fonterra Edgecombe				✓												
Pig manure, waste wood fibre, green waste vermi-composting																
Converting whey to ethanol																

SINCLAIR KNIGHT MERZ Error! Unknown document property name. Error! Unknown document property name.







Waste Infrastructure Review and Strategic Assessment

	General Refuse/Industrial refuse	Green waste	Aluminium & steel cans	Paper and card	Scrap steel	Plastics 1 & 2	Timber/firewood	Glass	Whiteware	Car bodies	Furniture	Waste oil	Tyres	Household Hazardous	Construction & Demolition	Cleanfill
Reporoa Transfer Station	✓		✓	✓	✓	✓		✓		✓						
Tarawera Transfer Station	✓		✓	✓	✓	✓		✓								
Okere Transfer Station	✓		✓	✓	✓	✓		✓								
In town recycling centre (Rotorua)			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Rotorua Landfill Resource Recovery		✓	✓	✓	✓	✓	✓	✓	✓	✓						
<b>Processing</b>																
Materials Processing			✓	✓		✓		✓								
Waste Management NZ Ltd			✓	✓		✓		✓								
Materials Processing																
Various																
Rotorua District Council																
<b>Disposal</b>																
Rotorua Landfill																
93 Paradise Valley Rd																
Pool Brothers Ltd																
<b>Western Bay of Plenty District</b>																
<b>Drop off</b>																
Katikati Recycling Centre		✓	✓	✓	✓	✓										✓

SINCLAIR KNIGHT MERZ

Error! Unknown document property name. Error! Unknown document property name.







Waste Infrastructure Review and Strategic Assessment

	General Refuse/Industrial refuse	Green waste	Aluminium & steel cans	Paper and card	Scrap steel	Plastics 1 & 2	Timber/tirewood	Glass	White ware	Car bodies	Furniture	Waste oil	Tyres	Household Hazardous	Construction & Demolition	Cleanfill
<b>Disposal</b>																
70 Waimapu Pa Rd	Cleanfill, construction waste, treated timber															
Ranginui Rd	Cleanfill															
Mathers Rd Landfill (Tauranga City Council)	Consent for municipal solid waste disposal, site not developed															
Waugh	Cleanfill															
<b>Liquid and Hazardous Waste Collection and Processing</b>																
<b>Collection Services</b>																
Transpacific Industries (Allens United, Alpine Oil)	Waste oil															
Tankman	Septic tank and other sludge															
Pete's Takeways	Septic tank and other sludge															
<b>Processing</b>																
New Zealand Marine Services (Mt Maunganui)	Refining waste oil 'slops' from ships															
Tankman (Whakatane)	Polymer based solid separation															
Pete's Takeways (Tauranga)	Polymer based solid separation															
<b>Out of Bay of Plenty Region</b>																
<b>Processing</b>																
HG Leach, Paeroa	Green waste from Western Bay district															
Daltons, Matamata	Bark from Port of Tauranga															

SINCLAIR KNIGHT MERZ

Error! Unknown document property name. Error! Unknown document property name.



Waste Infrastructure Review and Strategic Assessment

		General Refuse/Industrial refuse	
		Green waste	
		Aluminium & steel cans	
		Paper and card	
		Scrap steel	
		Plastics 1 & 2	
		Timber/firewood	
		Glass	
		White ware	
		Car bodies	
		Furniture	
		Waste oil	
		Tyres	
		Household Hazardous	
		Construction & Demolition	
		Cleanfill	
	PVL Proteins, Auckland Perry Environmental	Processing fish processing waste Vermicomposting biosolids	
	<b>Disposal</b> HG Leach (Tirohia Landfill), Paeroa	Municipal solid waste	

SINCLAIR KNIGHT MERZ

Error! Unknown document property name. Error! Unknown document property name.





### 4.2 Waste and Recovered Materials Movements

The figures below present an overview of waste and recovered materials movements within and out of the Bay of Plenty Region. Figure 2 General Waste and Recycling Commodity Flows notes movements for waste destined for landfill and recycling commodity flows while Figure 3 Organic Waste Processing and Flows notes the movement of organic waste diverted from landfill.

■ Figure 2 General Waste and Recycling Commodity Flows

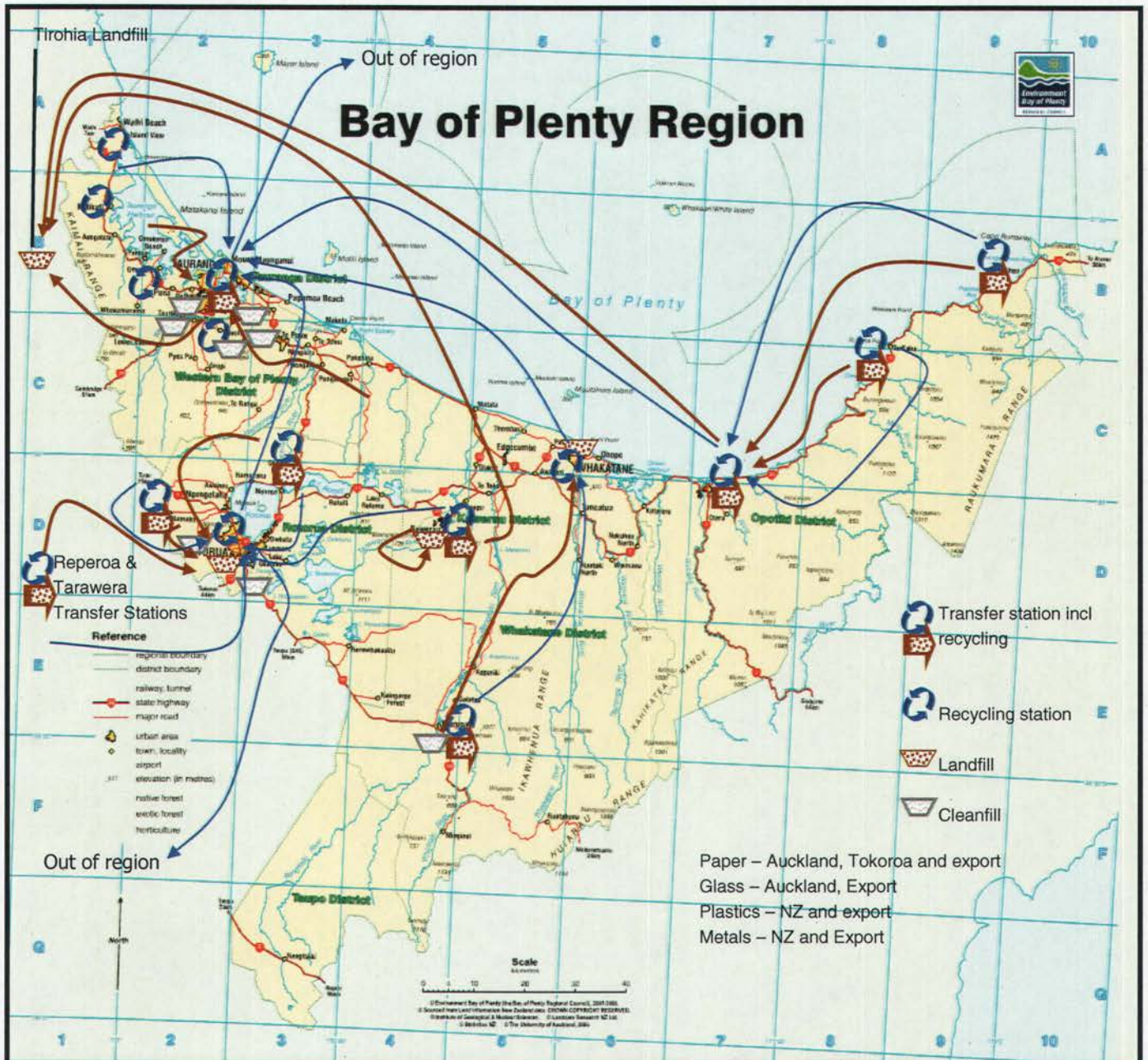
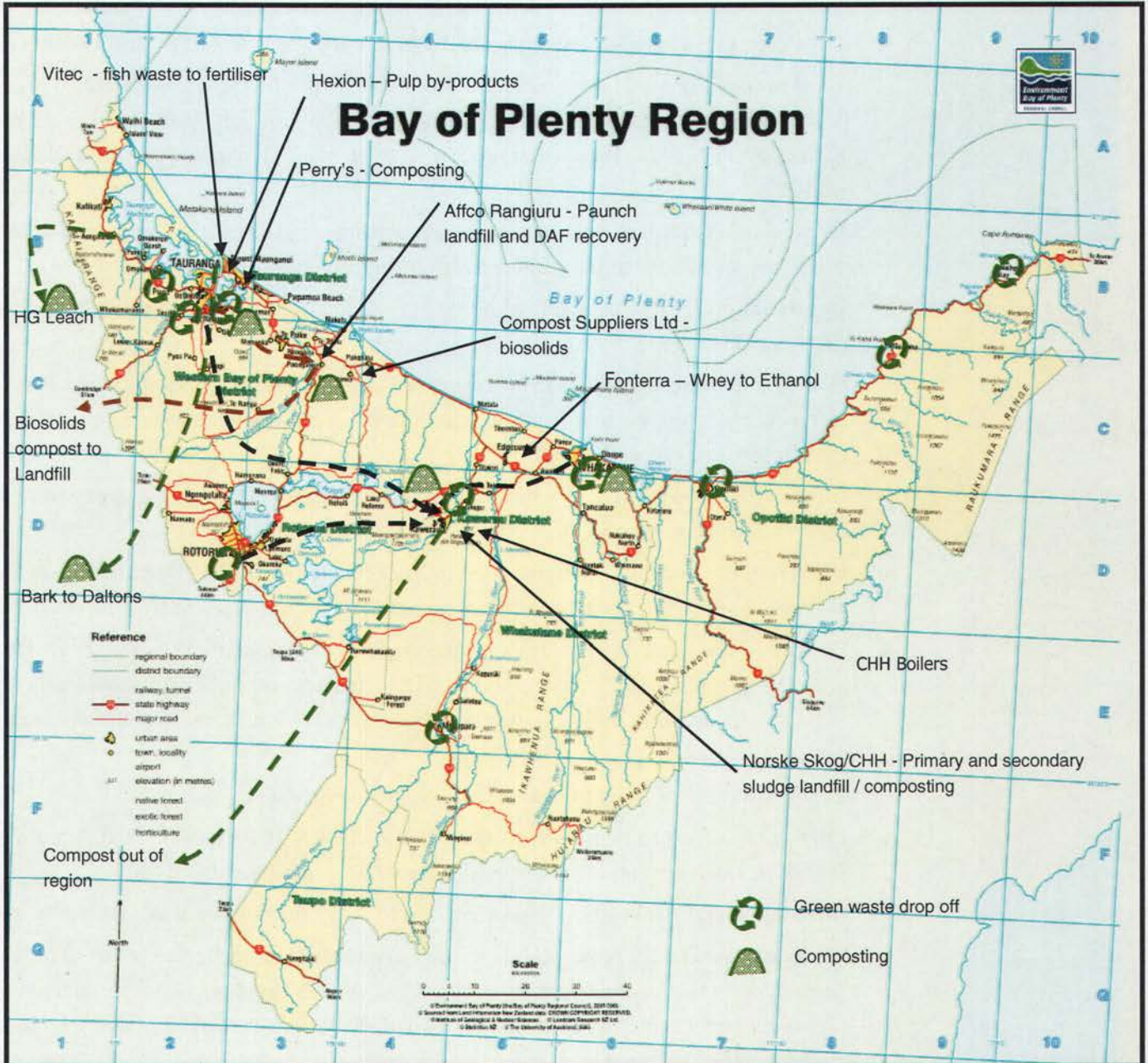






Figure 3 Organic Waste Processing and Flows







### 4.3 Materials Diversion Summary

In general recovered or divertable materials from the Bay of Plenty Region are handled as follows:

- **Green waste** is composted, shredded and sold as mulch or shredded for use as boiler fuel.
- **Food processing waste** is recovered to varying degrees – fish processing waste (re-processed in Tauranga and Auckland), off specification kiwifruit (stock feed in region, Kiwi crush in Auckland) and meat processing waste (landfill in region, fat/DAF sludge recovery).
- **Biosolids** are landfilled with some areas composting (with disposal of product to landfill), vermicomposting and trialling alternatives to landfill.
- **Industrial sludges** are generally disposed of in dedicated or municipal waste landfill following dewatering.
- **Wood processing waste** is in many cases used as boiler fuel at processing sites. Wet wood or processing waste is landfilled (in some cases used as intermediate cover for landfill at municipal waste landfills).
- **Concrete** is disposed of at cleanfill sites around the region and in some cases crushed for use as base-course or sub-base.
- **Glass** is either stockpiled or transported to Auckland for recycling. Due to the low value of recycled glass as a raw material for transport to Auckland is generally subsidised.
- **Plastics** (Code 1 and 2) are sorted and baled for movement out of the region, either for processing within New Zealand or export. The remainder are landfilled although there is trend throughout New Zealand towards collected codes 3-7 with most collected material destined for export.
- **Paper** is sorted and baled for use in New Zealand or exported.
- **Card** is sorted and baled for recycling in New Zealand (CHH Kinlieth, CHH Penrose) or export. A small amount of card is used at the CHH Whakatane Board Mill.
- **Aluminium and steel cans** are baled and moved out of the region for recycling.
- **Scrap steel and non ferrous metals** are moved out of the region for recycling in New Zealand or trading internationally. Steel and non ferrous metal prices are currently strong.
- **Car bodies** are handled by local authorities and local scrap metal dealers and are crushed prior to transport to Auckland.

### 4.4 Processing of Organic Waste Materials

#### 4.4.1 Green Waste

Composting operations serving the Bay of Plenty Region are noted below. Compost is marketed for use in the Region (domestic gardens, horticulture, commercial landscaping) and transported to other parts of New Zealand.

- Perry Environmental (Te Maunga)

SINCLAIR KNIGHT MERZ

Error! Unknown document property name. Error! Unknown document property name.





- Compost Supplies Ltd (Paengaroa)
- Whakatane District Council - limited to shredding for landfill regeneration. (Burma Rd Landfill)
- Daltons (Matamata) – taking bark waste from the Port of Tauranga
- HG Leach (Tirohia Landfill, Paeroa) – taking green waste from Western Bay of Plenty District Council
- Rotorua District Council – composting a portion of biosolids from wastewater treatment plant.
- Plateau Bark (Kawerau)

#### 4.4.2 Other Putrescible Wastes

There are a range of examples of alternatives to composting or energy recovery implemented in the Bay of Plenty Region. These include:

- Opotiki District Council - green waste mulch for sale
- Kawerau District Council - green waste mulch for sale
- Perry Environmental (materials transported out of region) – biosolids vermi-composting
- Various – waste kiwifruit for stock feed
- Worm Tech NZ Limited – vermi-composting green waste, pig manure and recovered wood fibre

Of significance for the Bay of Plenty Region is the pending closure of the Whakatane Landfill and tightening of waste acceptance criteria at the Rotorua Landfill. This will result in increased costs for transport and disposal of putrescible wastes, sludges (from the treatment of grease trap waste and septage) and dead animals.

A small quantity of Biosolids from Te Puke is processed via vermi-composting and a portion of the biosolids produced by the Tauranga City Council are composted in Paeangaroa with the product reported to be disposed of at the Tirohia Landfill. The remainder of biosolids are currently landfilled directly (Tauranga, Rotorua) or 'stored' in oxidation ponds around the region. Pete's Takeways have a consent pond/drying system for the sludge from their polymer treatment system for septage and grease trap waste.

Capacity <sup>2</sup> :	Adequate for green waste and boiler fuel, minimal for other organic wastes
Capability:	Good, existing expertise could be applied to other organic

---

<sup>2</sup> Capacity – how much material can be handled/processed, Capability – how well is the material handled /processed





wastes



#### 4.4.3 Pulp and Paper and Wood Processing Waste

There are significant quantities of waste materials generated in the wood processing sector in the Bay of Plenty Region. Much of this is used – for boiler fuel, raw materials (wood pellets, MDF, particle board, chemical manufacturing) and compost/soil conditioner. There are also significant quantities of waste from this sector currently landfilled or stockpiled.

Examples of energy recovery from wood processing waste in the Bay of Plenty Region are noted below. Wood chip is also exported out of the Region for wood products manufacturing, the market for a specific waste/product stream is dependant on factors such as transport distance and chip quality.

- Materials Processing (Rotorua, Kawerau) - chipping greenwaste, waste paper and waste timber
- WastePro (Rotorua) – chipping log ends for biofuel
- EnergyCo (Kawerau) - operators of CHH/Norske Skog boilers
- Mamaku Sawmilling (Mamaku) – wood waste fired boiler
- Claymark (Katikati) – wood waste fired boiler
- Pukepine (Te Puke) – wood waste fired boiler
- Tachikawa (Rotorua) – wood waste fired boiler
- Red Stag (Rotorua) – wood waste fired boiler
- KLC Lumber (Kaiangaroa) – wood waste fired boiler

Capacity: Adequate for sawdust, bark and chip, limited options for recovered wood fibre

Capability: Good for boiler fuel, limited for wet wastes

#### 4.5 Construction and Demolition Waste

Construction and demolition is a significant waste stream (estimate around 100,000 tonnes each year to landfill and cleanfill) in the Bay of Plenty Region and in particular in the Western Bay of Plenty. There is a currently a large amount of material disposed of to landfill/cleanfill with costs as high as \$50-60/tonne around Tauranga. There is a ready market for untreated timber (Boiler fuel, firewood, mulch) and several organisations are producing/using recycled aggregate from waste concrete and asphalt pavement<sup>3</sup>. It is possible that one or more C&D waste landfills will be developed in the eastern Bay of Plenty once the Whakatane Landfill closes in 2009.

Section 7.1.4 discusses opportunities for increasing the diversion and recovery of construction and demolition waste in the Bay of Plenty Region.

---

<sup>3</sup> Material Processing Ltd (Rotorua), Port of Tauranga (Tauranga), Fulton Hogan Bay of Plenty





Capacity:	Limited – current processing capacity well committed
Capability:	Good – concrete crushing, untreated timber and scrap metal all well catered for in the Bay of Plenty

#### 4.6 Commodities (Glass, Paper, Card, Plastics, Cans)

##### 4.6.1 Sorting and Consolidation

Collection and processing of the recycling commodities (plastics code 1 & 2, paper, card, glass and cans) is well established in the Bay of Plenty Region. Households throughout the region have access to recycling services through either user pays collections (Western Bay of Plenty District and Tauranga City), rates funded drop off centres (rural areas, Rotorua District) or rates funded kerbside recycling collections (Opotiki, Whakatane and Kawerau districts). Businesses have access to recycling through commercial collections or drop-off centres at transfer stations throughout the region.

AllBrite Industries operate a modern materials recovery facility in Tauranga. This site processes materials from throughout the region and the recent announcement of a joint venture between All Brite Industries and Trans Pacific Industries (owners of Waste Management NZ Ltd) will increase the portion of the total recycling stream from the Region processed through this site.

Other, smaller scale, processing/baling sites in the region include the Whakatane Resource Recovery site (operated by Waste Management NZ Ltd), the Rotorua In-Town Recycling Centre (operated by Materials Processing Ltd), the Waste Management depot in Rotorua and smaller council run operations in Kawerau and Opotiki. All of these sites are limited in their ability to handle large volumes of materials and in many cases send consolidated materials to AllBrite Industries.

With the current high world prices for scrap steel and non ferrous metals there is a thriving market for scrap metal across the Bay of Plenty Region. There are a large number of operators with key companies including Industrial Traders (Rotorua), MetalMan (Tauranga) and Mount Metal Recyclers. Materials are generally sent to Auckland for processing / further trading or exported.

Capacity <sup>4</sup> :	Good
Capability:	Good

---

<sup>4</sup> Capacity – how much material can be handled/processed, Capability – how well is the material handled /processed





#### 4.6.2 Utilisation of Recycling Commodities

Almost all materials leave the Bay of Plenty following sorting and baling for use in other parts of New Zealand or are exported for recycling. The Carter Holt Harvey Whakatane Boardmill uses a small percentage of recycled cardboard but is limited by quality and process requirements.

While there are markets for most types of materials currently collected by councils and through commercial collections there are still significant quantities of plastics and metals disposed of to landfill from the region. The waste composition data available doesn't provide sufficient detail to identify the types of plastics disposed to landfill. It is likely they are a mix of recoverable (1 and 2) and plastics where there is no market. As noted above, international markets for resin codes 3-7 are emerging and it is likely that it will become viable to collect these materials in the Bay of Plenty.

There may be a role for the region's economic development agencies in developing additional sorting, recovery and/or processing capability around materials where there is no existing market. This could include the plastics that cannot be re-processed in New Zealand, sorting or processing technology to recover valuable metals or processing of waste paper and cardboard that is unsuitable for conventional recycling due to contamination.

Capacity <sup>5</sup> :	Adequate - Relies on out of region processing for plastics and metals, no existing options for Type 3-7 plastics.
Capability:	Good except for types 3-7 plastics

#### 4.7 Management of Special Wastes

There are a number of waste streams that present challenges beyond those for general municipal waste, these are often referred to as special wastes. Some special wastes are a national issue and are dealt with at this level, others are specific to the Bay of Plenty or are amenable to local or regional solutions. The following sections note 'special wastes' that have the potential to be addressed at a local or regional level including:

- Waste electronic equipment (or e-waste)
- Pulp and paper and wood processing waste

Special wastes where local authority/community participation in national initiatives is important include:

- Tyres
- Liquid and hazardous wastes

---

<sup>5</sup> Capacity – how much material can be handled/processed, Capability – how well is the material handled /processed





Capacity and capability are addressed in the following subsections.

#### 4.7.1 Waste Electronic Equipment (E-waste)

E-waste is generally described as 'anything with a plug or a cord' but the focus is generally on electronic waste such as mobile phones and computers. Both Vodafone and Telecom accept old or unwanted mobile phones. Where possible these are reused in New Zealand with the balance exported for disassembly and recycling (Telecom in Malaysia, Vodafone in Singapore).

The Ministry for the Environment has worked with computer retailers on examining e-waste issues and pilot collection schemes. The recent Dell E-day in Wellington was a successful example of an e-waste collection. The model adopted was similar in concept to that for the HazMobile household hazardous waste collections involving a single drop-off point available for a specified period of time.

There is no general e-waste collection or management service available in the Bay of Plenty Region, Computer Recyclers and ReCell do provide limited services on a commercial basis.

Capacity <sup>6</sup> :	Limited (good for phones)
Capability:	Limited in Bay of Plenty for general e-waste

#### 4.7.2 Tyres

Several local authorities noted waste tyres as a problematic waste stream. The Motor Trade Association operates Tyretrack, a system for locating tyre transporters and recording the movement of tyres around New Zealand. There are 51 suppliers listed on the TyreTrack website. This suggests good participation from tyre retailers in the Region with local and out of region companies offering collection and disposal services.

Tyres are generally disposed of to landfill although alternative uses have been implemented or are being actively considered around New Zealand including

- landfill drainage/leachate collection systems, for example at the Kate Valley and Rotorua Landfills.
- holding down silage pit covers
- Energy recovery (boiler fuel)

Capacity <sup>7</sup> :	Adequate – landfill is still the predominant option throughout New Zealand
-------------------------	--

<sup>6</sup> Capacity – how much material can be handled/processed, Capability – how well is the material handled /processed

<sup>7</sup> Capacity – how much material can be handled/processed, Capability – how well is the material handled /processed





Capability: Basic options (chipping/quartering for landfill) predominate

#### 4.7.3 Liquid and Hazardous Wastes

The management of hazardous waste in New Zealand is covered by a range of regulatory tools. These include the Resource Management Act 1991 (RMA), Hazardous Substances and New Organisms Act 1996 (HSNO), the Local Government Act 1974 and 2002 (LGA), the Health Act 1956, various Group Standards under HSNO and Trade Waste By-laws under the LGA.

The Ministry for the Environment has been working with the Liquid and Hazardous Waste Special Interest Group of the New Zealand Water and Wastes Association on the development of a waste tracking system known as WasteTRACK. WasteTRACK is a web-based system run by the waste transporters and linked in many parts of New Zealand with trade waste by-laws. The Ministry is also exploring the development of a Group Standard under hazardous substances legislation to require the use of WasteTRACK for hazardous wastes.

The system is in early stages of implementation, however data to date provides the following information about liquid and hazardous wastes generated and transported in the Bay of Plenty Region. This data was entered into WasteTRACK by two of the main operators in the region.

#### ■ Table 2 Liquid and Hazardous Waste Transported in the Region – WasteTRACK data

Waste type	Quantity Recorded
General bulk liquid waste	1,226,509 litres
Septic	429, 760 litres

There are no Bay of Plenty based general hazardous waste treatment companies, however TransPacific Technical Services, Medi-Chem Waste Services and Chemwaste Industries service the region from Auckland. Medical and Quarantine waste can be handled by Medi-Chem and TransPacific's MediSmart.

Liquid wastes such as septic tank sludge are processed by Tankman in Whakatane and Pete's Takeaways in Tauranga with sludge disposed of to landfill.

Capacity<sup>8</sup>: Adequate

Capability: Treatment for hazardous waste out of region

<sup>8</sup> Capacity – how much material can be handled/processed, Capability – how well is the material handled /processed





#### 4.7.4 Used oil

Used oil is collected from commercial premises under the national used oil collection programme operated on behalf of major suppliers throughout New Zealand. Several councils in the Region offer used oil collection at transfer stations and through the periodic Hazmobile Collections. NZ Marine Services (owned by TransPacific Industries) collects waste oil from ships at the Port of Tauranga for re-processing and sale.

Data from Environment Bay of Plenty incident response records does not indicate there is a major issue with the illegal dumping of used oil in the Region.

Capacity:	Adequate
Capability:	Majority of waste oil transported out of the region for processing

#### 4.7.5 Agricultural plastics

Agricultural plastics (chemical containers, silage wrap) pose disposal and management challenges throughout New Zealand. In response a collection system (AgRecovery) is being set up with an initial focus on agrichemical containers. The scheme has been set up with the participation of chemical manufacturers/suppliers, local authorities and the farming community. The system relies on collection depots being set up at landfills, transfer stations and/or rural supply depots with regular servicing by mobile shredding plant.

Capacity:	None (AgRecovery launch in early to mid 2007)
Capability:	Materials collected will be process out of the region

#### 4.7.6 Unwanted Paint and Paint tins

Waste paint is a small but potentially problematic waste stream in New Zealand with landfill disposal inappropriate due to the need to minimise liquid waste disposal to landfill. Many local authorities around New Zealand accept unwanted paint with various schemes to re-distribute unwanted paint for re-use. Resene Paints have set up a take back scheme (Paintwise) in parts of New Zealand accepting unwanted domestic quantities of Resene paint for free and commercial quantities or non Resene branded paint for a small fee. The Resene ColourShop in Waihi Rd, Tauranga is currently the only collection point for this scheme in the Bay of Plenty Region.

Capacity <sup>9</sup> :	Limited
Capability:	Good with re-processing out of the region

---

<sup>9</sup> Capacity – how much material can be handled/processed, Capability – how well is the material handled /processed





#### **4.8 Other Diversion and Reuse in the Bay of Plenty**

In addition to the processing of organic wastes there are several examples of by-products from one manufacturing process being used to create products with significant value. Examples include Hexion (Tauranga - producing specialty chemicals from tall oil – a by-product of the Kraft pulping process), Fonterra (Edgecumbe - producing several grades of ethanol from whey), Natures Flame (Rotorua - converting sawdust to wood pellets), Vitec (Tauranga - converting fish processing waste to liquid fertiliser), PVL Proteins Ltd (Auckland - converting fish processing waste into a range of products) and ReCell (Tauranga – rebuilding rechargeable batteries).

The local authorities in the region also fund the Waste Exchange service where organisations with unwanted materials can make these available at no cost to them or the receiver of the materials. The funding covers the costs of running a web based database and a coordinator to assist in the 'exchanges'.

#### **4.9 The Leaders in Waste Minimisation**

The Bay of Plenty Region is fortunate in having some real success stories relating to waste minimisation. Leaders in waste minimisation at a national level from the Region include:

- Opotiki District Council – particularly under the leadership of Don Reisterer as Mayor in adopting a vision of zero waste and making real progress towards that vision;
- Sustainable Business Network (SBN) Tauranga – creating real momentum in the Tauranga business community on implementing sustainability including waste minimisation;
- Ohiwa Family Holiday Park – winners of the 2004 National Sustainable Business Awards;
- Scion Research – undertaking research into novel uses for unwanted materials and waste streams – Waste 2 Gold initiative; and
- Tauranga City Council - establishing constructive contractual relationships with key players in the waste management sector including Perry Environmental (Transfer Stations, composting) and AllBrite Industries Limited (recycling).





## 5 Disposal and Recovery Estimates

### 5.1 Waste Disposed to landfill

#### 5.1.1 General Comments

There are two municipal solid waste landfills receiving general waste (Whakatane, Rotorua) in the Bay of Plenty, one municipal solid waste landfill utilised outside of the region (Tirohia Landfill), several disposal sites associated with the Tasman Mill in Kawerau and seven consented cleanfills of significant size.

The published cost of disposal for municipal solid waste ranges from \$40 per tonne to \$196 per tonne; this will vary for large quantities of waste and/or long term contractual arrangements and does not include the cost of transport to the disposal location (transfer station or landfill). Disposal costs and definitions for 'cleanfill' also vary around the region. Disposal charges for cleanfill range from free to over \$60 per tonne, reflecting local market conditions and costs of operation – some sites have simple liner and leachate collection systems in place.

There are several disposal sites around Tauranga (in Tauranga and Western Bay District) consented to receive a range of materials wider than the generally accepted definition of cleanfill<sup>10</sup> including green waste, timber (including treated), plastics and steel. These sites are actively used by waste transporters in the Western Bay of Plenty/Tauranga area to avoid disposal charges and/or transport costs associated with disposal at the Tirohia Landfill. This material is included in the estimates for cleanfill included in Table 4.

There is ongoing discussion about the potential for the development of one or more modern, high standard landfills in the Bay of Plenty Region. Tauranga City Council has consent for a landfill site at Mathers Rd, Kawerau District Council has consent for a site within the Kawerau District and several private sector organisations have indicated an interest in developing sites. There are no apparent moves to develop a general waste landfill in the Region in the short term. There is currently adequate airspace available for waste from the Region at the Tirohia and Hampton Downs Landfills in the Waikato as well as the Rotorua Landfill for waste from the Rotorua District.

---

<sup>10</sup> In the Bay of Plenty Region cleanfill is defined in the Water and Land Plan 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.

This definition is different from the Ministry for the Environment's definition in the Guide to The Management of Cleanfills (ME418, 2002).





Waste from the Gisborne District is currently transported through the Region to the Tirohia Landfill while they develop a landfill within the District which is unlikely to be operational prior to 2010. A bylaw prohibits the disposal of 'out of district' waste at the Rotorua Landfill precluding it's use as a regional facility.

### 5.1.2 Estimates of Waste Quantities Disposed to Landfill

Table 3 and Table 4 present estimates of quantities of waste generated in the Bay of Plenty that is disposed of to landfill. The 2006 estimate is based on data provided by, and discussions with, local authorities, waste collection and disposal companies and a selection of major waste generators. Estimates from earlier years were prepared by Responsible Resource Recovery Ltd and are based on information provided by local authorities only. The per capita figures are in the middle of the range for other regions, waste disposed to landfill increased by 27 % from 2002 to 2006.

**Table 3 Municipal Waste Disposed of to landfill from the Bay of Plenty Region**

	2002	2003	2004	2005	2006
Municipal Waste (T/yr)	152,000	148,000	156,000	180,000	193,000
Per capita (T/cap.yr)	0.617	0.592	0.615	0.700	0.740

Notes:

- Figures for 2002 – 2005 are largely based on data collected by Responsible Resource Recovery Limited.
- In this context, municipal waste excludes cleanfill, waste disposed of to dedicated industrial waste landfills and waste bypassing local authority waste management systems. The 2006 figure explicitly excludes material that bypasses local authority controlled waste management systems (landfills or transfer stations) to enable comparison with figures for earlier years. Table 4 Total Waste Disposed of to Landfill from the Bay of Plenty Region includes waste not controlled by local authorities.
- Population from Statistic NZ 2006 Census Usually Resident Population Count for 2001 and 2006, intervening figures estimated using straight-line interpolation.





■ **Table 4 Total Waste Disposed of to Landfill from the Bay of Plenty Region**

	2005 (T/yr)	2006 (T/yr)
Municipal waste (from Table 3)	180,000	193,000
Waste bypassing local authority services (direct to Tirohia Landfill)	-	6,000
Total Municipal waste	-	199,000 0.763 T/capita.yr
Waste to consented Cleanfills <sup>11</sup> and those operating as permitted activities.	-	180,000 0.690 T/capita.yr
Waste disposed of to dedicated industrial waste landfills	-	200,000
TOTAL	-	579,000

It is worth noting that there is a degree of commercial sensitivity around quantities of waste disposed of to landfill, particularly where a small number of operators are active in a given area. In this context waste disposal data can provide valuable commercial data on the size of the market and market share of the operators in the area. For this reason information in this document is reported at a regional rather than district level. The waste collection and disposal market is governed by landfill location and transport distance/cost rather than local authority boundaries. This means that reporting on territorial local authority basis does not reflect the reality of the market and in fact may misrepresent quantities of waste materials generated or managed in a particular district. For example very little materials are recorded as disposed or diverted in the Western Bay of Plenty District because most residents and businesses utilise services or facilities in Tauranga City.

The figures in Table 4 are based on discussion with:

- Environment Bay of Plenty – cleanfill consent details
- Opus International Consultants (acting for Whakatane District Council)
- Perry Environmental (operators of the two major Refuse Transfer Stations in Tauranga)
- H.G. Leach Ltd (Owners and operators of Tirohia Landfill)
- Rotorua District Council
- Norske Skog and Carter Holt Harvey Tasman

<sup>11</sup> Waste to cleanfill is a combination of soil and rock (consistent with EBoP Cleanfill definition) and construction waste materials where allowed by consent. This figure is an estimate only and for major sites includes around 30% construction waste comprising approximately 50,000 tonnes per year construction waste.





### 5.1.3 Waste composition

The table below present estimates of waste composition in 2006 based on surveys undertaken in 2004 in Tauranga and Rotorua (labelled as 2004 surveys in BoP) and throughout New Zealand (MfE national estimate). The figures are based on municipal waste only i.e. they exclude materials disposed of to cleanfill (some consents allow 10% green waste and 30% construction and demolition waste) and materials disposed of to industrial fills (over 90% putrescible).

■ **Table 5 Estimate of the Composition of Municipal Waste**

Category	2004 Surveys in BoP (%)	MfE National Estimate (%)
Putrescible waste	37.7%	24.7%
Paper waste	14.4%	15.3%
C&D waste (timber, rubble)	20.3%	25.1%
Metal	5.9%	6.3%
Plastics	7.4%	9.2%
Textiles	2.0%	3.8%
Glass	2.8%	2.5%
Other	9.7%	13.1%
TOTAL	100.0%	100.0%

Note: Putrescible waste includes garden waste and kitchen scraps  
BoP surveys were undertaken in Tauranga and Rotorua

The percentage of putrescible (green waste, food waste, commercial organic waste) disposed of at landfill is higher in SWAP studies undertaken in the Bay of Plenty compared to the national average. The reasons for this are not clear but the figures clear highlight the potential to significantly impact the quantity of waste disposed of to landfill using established processing options. These opportunities are discussed in Section 7.1.

### 5.2 Waste Diverted from Landfill and Cleanfill Disposal

There are some difficulties in identifying materials that have been diverted from landfill beyond 'traditional' recycling streams such as commodities (paper, plastics, glass, metal cans) and green waste due to challenges in delineating the boundary between wastes and by-products. In the course of collecting information a range of organisations processing by-products to create valuable products in the Bay of Plenty have been identified. Examples include:

- Vitec Fertilisers (Tauranga) – converting fish processing waste into a high value liquid fertiliser for the New Zealand and export market.





- Hexion Fine Chemicals (Mt Maunganui) – converting tall oil and turpentine (by products of pulp manufacture) into high value derivatives for the paper, ink, resin and adhesive markets in New Zealand and internationally.
- Fonterra (Edgecombe) – converting whey (by product of casein manufacturing) into ethanol for human consumption, biofuel and other applications.
- Natures Flame (Rotorua) – converting sawdust into wood pellets for pellet fires/boilers
- PVL Proteins (Auckland) – converting fish processing waste into a range of products.

There are also a range of reduction and reuse initiatives in place within the region including the re-use of asphalt pavement on log yards (Port of Tauranga) and the crushing of concrete for road and construction fill (Materials Processing, Rotorua and others).

Local authorities fund the provision of waste minimisation advice to businesses and in schools through QEC Ltd (Rotorua District Council /Environment Bay of Plenty) and EERST/Waste Watchers Ltd (Western Bay of Plenty, Tauranga City Council, Whakatane District Council, Kawerau District Council and Opotiki District Council).

In addition to a qualitative assessment of the movement of materials destined for landfill disposal into, around and out of the Bay of Plenty Region, estimates of the quantity of materials in the council controlled recycling streams have been made and are summarised in Table 6 below. Materials recovered by local authorities increased by 49 % from 2002 to 2006. Quantities moved through business to business transactions (e.g. commercial recycling collections) are commercially sensitive and therefore commodity data has been presented at a regional level to avoid issues with publishing this information. Sources of information have included:

- Commercial recycling companies
- Local authorities
- A selection of major waste generators in the Bay of Plenty Region
- Consultants active in the waste management area in the Bay of Plenty Region





■ **Table 6 Municipal Waste Quantities Diverted from Landfill Disposal**

	2002	2003	2004	2005	2006
T/yr	26,400	31,200	36,600	37,500	39,400
T/capita.yr	0.107	0.125	0.144	0.146	0.151
% (diverted/ diverted+landfill)	14.8%	17.4%	19.0%	17.7%	17.0%

Notes:

- The quantities presented above are materials collected on behalf of local authorities only including commodities (paper/card, plastic, glass, cans), concrete, timber and organic waste.
- Figures for 2002 – 2005 are largely based on data collected by Responsible Resource Recovery Limited.
- The percent diversion for 2006 is calculated using the municipal waste portion excluding materials not handled by local authority controlled infrastructure i.e. it is comparable to the earlier figures.

Table 7 shows the total amount of diverted materials in 2006, including municipal and non-municipal waste streams such as mill wastes.

■ **Table 7 Total Quantities of Diverted Materials in 2006**

	2006
Commodities (1 & 2 plastics, glass, Al and steel cans, paper, card)	25,400
Boiler fuel (Log ends, slivers, bark and waste paper - all for <u>Tasman Mill</u> only)	190,000
Compost (Green waste, biosolids, bark)	109,900
Other	
Timber	800
Crushed concrete	10,800
Stock feed	30,000
Commercial scrap metal (ferrous and non ferrous)	32,000
<b>TOTAL</b>	<b>398,900</b> (40.8% of total waste stream)

Note

- Percent diversion calculated using total disposal figure of 579,000 (industrial, cleanfill, municipal waste) from Table 4.
- The figure for municipal waste diverted in Table 6 comprises a portion of the total commodities, boiler fuel, compost, timber and crushed concrete noted above.





Waste composition (Solid Waste Analysis Protocol) surveys undertaken in Rotorua and Tauranga in 2004 indicated that a significant portion of the waste stream (almost 40%), was putrescible (garden and kitchen waste) and over 14% was paper. Note that these figures are for the landfilled waste stream only i.e. they do not include materials recovered for soil conditioners, energy recovery or recycling.

### 5.3 Diversion Performance

The table below presents an overview of diversion performance against the quantitative targets in the Bay of Plenty Regional Waste Strategy. These targets are consistent with those in the NZ Waste Strategy. The figures presented in Table 3 and Table 6 suggest municipal waste diversion is growing faster than waste disposal in the Bay of Plenty. It is also interesting to note that industrial waste diversion is significantly more than that for municipal waste. This is related to well defined wastes and large quantities of waste being generated in a small number of locations. There is also a clear financial benefit driving much of the waste minimisation activity in the commercial sector. The corresponding benefit at a domestic or small business level is often seen as insignificant or effectively hidden through rates funding.

It is not clear from the data collected for this project whether the interim (2005) target for garden waste was met. The 95% diversion target for organic wastes is a challenging aim and is likely to require more than the current initiatives to be met. Opportunities for increasing the diversion of organic waste are discussed in Section 7.3.1.

■ **Table 8 Performance Against Waste Strategy Targets**

Issue	Targets	Performance in 2006	
		Municipal	Total
Organic waste	Garden waste: 60 % by 2005, 95% by 2010 Commercial organic waste 95% by 2010	28 – 37 %	68 – 74 %
	Diversion of all organic waste from the Bay of Plenty	17 – 23 %	54 – 57 %
Construction waste	Construction waste 50% by 2008	19 – 23 %	10 – 11 %

Notes:

- Ranges are based on total waste composition estimates from surveys in the Bay of Plenty Region and from the Ministry for the Environment (Pers comm.) (Table 5).
- Municipal figures are based on diversion controlled by local authorities and the estimated quantity of green, organic or construction waste disposed of to municipal waste landfills from the Bay of Plenty Region from Table 7.
- Total figures are based on all materials diverted (compost, boiler fuel, stock feed, concrete crushing) and the estimated total quantity of green, organic or construction waste disposed of to cleanfill, industrial fill and municipal waste landfills from the Bay of Plenty Region from Table 7.
- Construction waste figures – 40-50,000 tonne/yr to municipal landfills, 50,400 tonnes/yr (30% of waste to major, consented cleanfills, remainder rock and soil)





- The diversion of construction waste in the 'Total' waste stream is lower than that for the 'Municipal' waste stream because all of the diversion identified is from the municipal waste stream (at transfer stations).
- Commercial scrap metal from construction activities has not been separately identified and is excluded from the construction waste diversion figures.





#### 5.4 Summary of disposal and recovery data

Table 9 provides a summary of the disposal and recovery data presented in the preceding sections.

■ **Table 9 Summary of Disposal and Recovery Data**

	2002	2003	2004	2005	2006
Municipal waste (T/yr)	152,000	148,000	156,000	180,000	193,000
Municipal waste (T/cap.yr)	0.617	0.592	0.615	0.700	0.740
Waste bypassing local authority services (direct to Tirohia Landfill) (T/yr)					6,000
Cleanfill (estimate only) (T/yr)					180,000
Waste disposed of to dedicated industrial waste landfills (T/yr)					200,000
<b>TOTAL DISPOSAL (T/yr)</b>					<b>579,000</b>
<b>Local Authority Controlled Diversion</b>					
Municipal waste diverted T/yr (commodities, boiler fuel, timber, concrete from local authority waste management services)	26,400	31,200	36,600	37,500	39,400
<b>All Diversion</b>					
Commodities (1 & 2 plastic, glass, cans, paper/card)					25,400
Boiler fuel (Log ends, slivers, bark and waste paper - all for <u>Tasman Mill only</u> )					190,000
Compost (Green waste, biosolids, bark)					109,900
Other					
Timber					800
Crushed concrete					10,800
Stock feed					30,000
Commercial scrap metal					32,000
<b>TOTAL DIVERSION (T/yr)</b>					<b>398,900</b>





## 6 The Current and Future Context

There are a range of external factors and initiatives that impact on waste management in the Bay of Plenty Region that are important to consider. These include the Waste Minimisation (Solids) Bill currently with the Local Government and Environment Select Committee, the New Zealand Energy Strategy currently out for consultation, the impact of EurepGap standards on the horticultural practice in the region, the influence of the recently promulgated New Zealand Standard for compost, the national construction and demolition waste reduction initiative (REBRI) and the ongoing consolidation of the waste sector in New Zealand. There are also several important decisions on waste management issues to be made in the next 10 years that are of relevance to the Region.

### 6.1 Important Decision Points

As noted above, there are several important decisions on waste management issues to be made in the next 10 years. These include

- Waste Minimisation (Solids) Bill (to be reported back to Parliament in late 2007)
- Renewable energy policy (finalised mid 2007)
- The review of several waste by-laws
- Gisborne Landfill development (2008-09)
- Whakatane Landfill closure (2009)
- Tasman mill boiler replacement
- Tauranga City Council transfer station lease arrangements renegotiation (2011)
- Tasman industrial landfills lease and consent expiry (2012/2013)

Waste Management Plans prepared by the territorial authorities in the region have reviews scheduled as outlined below. It is likely that plans will be reviewed once the Waste Minimisation (Solids) Bill is finalised, probably some time in 2008.

- Opotiki District Council – no review scheduled
- Whakatane District Council – April 2007 (Whakatane District LTCCP 2006-2016)
- Kawerau District Council – no review scheduled
- Rotorua District Council - Review undertaken in 2004
- Western Bay of Plenty District Council – Review scheduled for 2007/08
- Tauranga City Council - Review scheduled for 2007/08

Once the Waste Minimisation (Solids) Bill is finalised there will be an opportunity to undertake a region wide review of waste management plans in concert with a review of the Regional Waste Strategy. Areas for consideration could include increased focus on ‘non municipal’ waste streams and the role of the private sector in providing waste management and minimisation services.





## 6.2 Waste Minimisation (Solids) Bill

The Waste Minimisation (Solids) Bill is a members bill sponsored by Nandor Tanczos (Green Party) and supported in part by the government. The Bill has been referred to the Local Government and Environment Select Committee for consideration and following consultation is to be reported back to parliament in 31 October 2007 (recently extended from June 2007). It is possible that the Select Committee will elect to undertake further consultation should the Bill be significantly changed as a result of submissions to date and government policy development.

The Bill includes a wide range of provisions with measures likely to be retained including the imposition of a levy on waste disposed to landfill and the development of a regulatory backstop for product stewardship schemes such as the New Zealand Packaging Accord, TyreTrack and AgRecovery. As recently as late June 2007 the Minister for the Environment has indicated to the Select Committee that he is likely to propose additional initiatives under the auspices of the Bill. Initiatives could include bans on specific materials (green waste, hazardous materials) and introducing container deposit legislation. The Green Party and the government appear to agree that substantial re-drafting of the Bill is required to ensure it achieves the intended outcomes.

With waste issues being at the forefront due to the debate regarding the details of the Bill, a review of the actions proposed in the New Zealand Waste Strategy is possible and probably timely. The tools proposed in the Bill would provide government with power to focus on specific waste streams (using product stewardship) while also providing funding for broad initiatives where appropriate.

The government's recent announcements on sustainability have included clear messages around waste management and minimisation. The Prime Minister has been clear on the need for a legislative backstop to support product stewardship schemes and additional funding, through a levy on waste, to increase the scope and effectiveness of local and national waste minimisation initiatives.

The levy and product stewardship aspects of the Bill are likely to become law providing additional funding for waste minimisation activities. Models proposed have included a contestable fund and/or allocation of funds to local authorities. Further development of product stewardship schemes effectively involves investment of resources from product manufacturers/importers and retailers to address specific waste streams. In this context local authorities and other organisations with a clear understanding of investment needs and opportunities will be well placed to work with funding agencies and product stewardship organisations to progress waste minimisation in their area of influence.

Wastes that may be addressed through product stewardship schemes in New Zealand include:

- Tyres;
- Used oil;
- Cars;





- Electronic waste;
- Packaging;
- Farm chemicals; and
- Farm plastics.

Recent policy announcements by parties outside government represent increasing alignment of objectives around waste management and minimisation. This means that there is likely to be ongoing support for national policy supporting waste minimisation and resource efficiency regardless of the government of the day.

### **6.3 Climate Change and Energy Policy**

The Government released the draft New Zealand Energy Strategy for consultation in December 2006. Of relevance to waste management in the Bay of Plenty Region is the emphasis on renewable transport fuels, heat and power. The Bay of Plenty region is well placed in this regard with extensive use of wood processing residues for power and heat generation and the processing of whey to ethanol with potential application as a transport biofuel. As government policy is refined and finalised through 2007<sup>12</sup> it is possible that there will be further opportunities to recover energy from 'waste' materials building on regional expertise including researchers at Scion Research.

As climate change has become an increasingly important issue politically in New Zealand the policy direction has become clearer. Of note is current policy development work intended to encourage lines companies to invest in renewable generation (hydro, wind, biomass) and the clear intention to develop an emissions trading scheme.

Partly in response to New Zealand policy on biofuels (introduction of a 3.4 % sales target) Argent Energy have recently announced their intention to build a 75,000 tonne per annum biodiesel plant in Tauranga. The plant will utilise tallow and waste cooking oil as feedstock and represents a significant investment in renewable energy policy by the private sector in New Zealand.

Emerging opportunities that are worth further consideration include:

- Utilising excess fermentation capacity in or near to the region to manufacture bioethanol from alternative feedstocks such as waste fruit and cellulosic wastes (following pre-treatment) such as contaminated paper wastes and wood processing residue.
- Using additional waste streams for boiler fuel – waste timber, contaminated paper/card.
- Adopting waste to energy technology where there is a need for industrial heat or power.

---

<sup>12</sup> In a recent speech on Climate Change Judith Tizard indicated the Energy Strategy would be finalised in September 2007 and the revised National Energy Efficiency and Conservation Strategy in October 2007.





#### **6.4 EurepGap**

EurepGap is a European based private sector body that sets voluntary standards for the certification of agricultural products from around the globe on behalf of European food retailers. The standards currently impact predominantly on horticultural produce from New Zealand but standards exist for integrated farm quality assurance and are likely to become increasingly important for all New Zealand agricultural products exporters.

EurepGap is of relevance to waste management in the Bay of Plenty Region due to auditors showing an active interest in the storage, use and disposal of agricultural chemicals and the wording of the relevant standards relating to the use of compost and soil conditioner products. There are also limitations on the use of 'organic fertiliser' products with particular mention of those containing human waste (sewage sludge, wastewater) although the standards are unclear on the status of treated wastes such as biosolids compost.

Given the significance of horticulture as a market for compost produced in the Bay of Plenty Region, any utilisation of biosolids in compost should be kept separate from products destined for the horticultural market and not provided as an additional feedstock for existing products. There may be opportunities to consider alternatives to composting for biosolids including energy recovery for power / heat or drying.

#### **6.5 Compost NZ/Compost Standard**

The composting industry in New Zealand has recently established an industry body (Compost NZ) under the umbrella of the Waste Management Institute of New Zealand (WasteMINZ). Key activities for Compost NZ include the promotion of the recently completed NZ Standard for Compost (NZ4454:2005) and building technical capacity with the industry. The group has recently received funding from the Ministry for the Environment's Sustainable Management Fund to implement NZ4454:2005. Compost NZ has provided training for compost producers, facilitates research on compost production and use and is working with Regional Councils on Resource Management Act issues.

Perry Environmental Limited (operators of the Te Maunga composting site) are active in Compost NZ and it is likely that there will be a strong push to promote the NZ Standard for compost to horticulturalists and other potential users in the Region. In this context smaller compost producers may benefit from assistance or advice with respect to meeting the requirements of the standard.

#### **6.6 Construction and Demolition Waste Initiative**

Local authorities, the construction industry, the waste sector and the Ministry for the Environment have worked together to develop a suite of guidance material that aims to assist in reducing construction and demolition waste. Target audiences for the guidance material include local government planners, engineers, architects, recyclers, building product suppliers, construction and demolition companies, renovators and developers. The guidelines are promoted under the banner of REBRI (Resource Efficiency in Building and Related Industries) with local authorities and the





Ministry for the Environment working with selected projects to document their application and build capability with the construction and waste sector to divert construction waste from landfill disposal.

Given the significant quantity of construction and demolition waste material from the Bay of Plenty Region disposed of to landfill, particularly from the western Bay of Plenty area, there is an opportunity to build on research work undertaken on behalf of Tauranga City Council / Environment Bay of Plenty in 2004 and the trend for local waste operators to separate construction waste materials to avoid the cost of disposal at municipal waste landfills. The wide range of acceptance criteria for cleanfill in the region represents a challenge to increased diversion of construction waste. Increasing costs for disposal of construction waste to cleanfill and the development of cost effective alternatives to disposal will have an impact on management of this waste stream.

#### **6.7 New Zealand Waste Sector Consolidation and Investment**

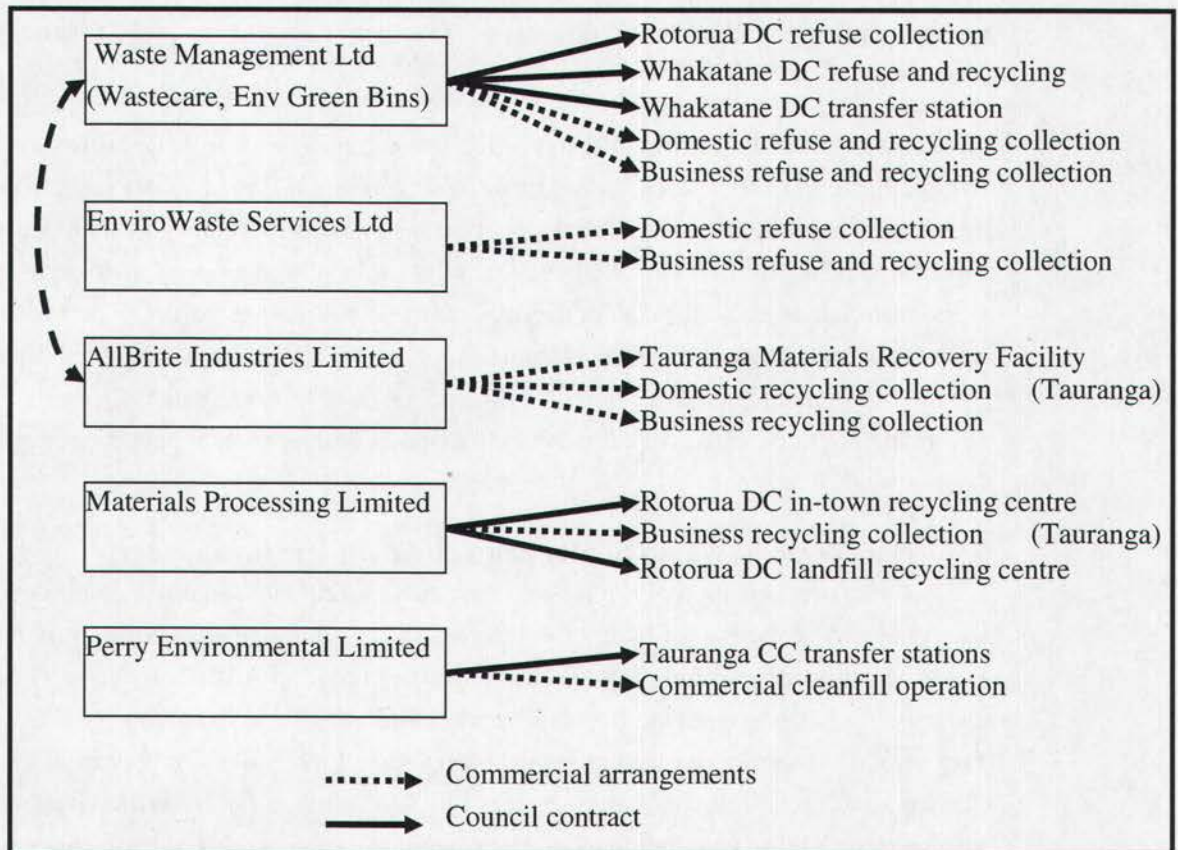
The ongoing consolidation of the waste sector in New Zealand has already had some impact on the waste industry in the Bay of Plenty Region with the recently announced joint venture between Waste Management NZ Ltd (Transpacific Industries Ltd) and AllBrite Industries Ltd ensuring the majority of recycling commodities will be processed at AllBrite Industries' new facility in Tauranga. It remains to be seen how the new owners of the two major players at a national level (Ironbridge Capital – EnviroWaste Services Ltd and Transpacific Industries Group – Waste Management NZ Ltd) will approach the waste minimisation aspects of the businesses. In recent media statements Ironbridge Capital have highlighted the value of the collaborative and comprehensive waste minimisation and management services offered to local authorities by EnviroWaste Services Ltd.

In a commercial environment characterised by several large players and a large number of very small operators, local authorities need to consider carefully how to structure contractual and regulatory arrangements to ensure that all involved have an incentive to reduce waste and appropriately manage residual waste. Contracts need to recognise the realities of disposal and diversion costs (including logistics) and include flexibility to account for changing markets and improving technology.





■ **Figure 4 Key Waste Industry Participants in the Bay of Plenty**



### 6.8 Hazardous Waste Management in New Zealand

As noted in Section 4.7.3, the Ministry for the Environment is working with hazardous waste transporters and local government on the implementation of WasteTRACK, a system for the tracking of liquid and hazardous wastes. Local authorities around New Zealand are moving towards requiring the use of WasteTRACK for liquid wastes disposed of in municipal wastewater treatment plants and requiring the use of WasteTRACK for materials entering private treatment plants through consent conditions. The Ministry for the Environment is also developing group standards (under HSNO) for hazardous waste that are likely to require the use of WasteTRACK by transporters and treatment plant operators. Local authorities in the region can assist this industry led initiative by requiring that contractors using disposal facilities (wastewater treatment plants) and providing services use WasteTRACK.

With the pending closure of Whakatane Landfill and restrictions on the acceptance out-of-district wastes at the Rotorua Landfill disposal of dewatered liquid wastes from the Bay of Plenty Region will rely on almost exclusively on out of region landfills. Medical, quarantine and most hazardous wastes are already transported to Auckland for treatment and disposal and as treatment standards improve costs are likely to increase. This is not an uncommon scenario outside of the major urban centres.





## 6.9 Current Approaches to Waste Management in New Zealand

### 6.9.1 Waste Disposal

There is a mix of local authority controlled and private sector landfills around New Zealand. Older sites are generally owned by local authorities while newer sites are a mix of local authority, public-private partnerships and private sector controlled. Examples in New Zealand include:

- Local authority developed and owned landfills e.g. Taupo, Rotorua, Wellington, Hutt/Upper Hutt, Timaru, Dunedin.
- Local Authority – Private sector shared ownership and management of landfills e.g. Whitford (Auckland) and Kate Valley (Canterbury).
- Private sector owned/operated landfills, local authority purchasing airspace with a wide range of contractual arrangements e.g. Tirohia (Paeroa), Hampton Downs (North Waikato), Bonny Glenn (Rangitikei), AB Lime (Southland) and Redvale Landfill (Auckland).

All of these arrangements have advantages and reflect local conditions and community aspirations. The key to success for any arrangement is a realistic assessment of limitations and putting in place systems or initiatives to address these.

### 6.9.2 Waste and Recycling Collection Services

In general, households have access to the following services:

- Refuse collection - mobile garbage bin (funded through rates or commercial service) or bag (funded through rates or sale of bags);
- Recycling collection – rates funded crate based kerbside recycling collection with a trend towards mobile bins due to efficiency and health and safety benefits; and
- Drop off facilities for recyclables (free), re-usable items (free) and green waste (charges from \$0 to \$60/tonne).

Emerging trends in local authority provided services include the introduction of mobile bins for recycling, domestic putrescible waste (food/kitchen and green waste) collection, investment in enclosed composting for putrescible waste and biosolids (Wellington City Council, Selwyn District Council, Christchurch City Council, Waitakere City Council and MacKenzie District Council). Local authorities often provide minimisation education including cleaner production, schools, and general information pamphlets. There are unresolved concerns about the impact on the quality of recovered materials from mobile bins, particularly glass and paper.<sup>13</sup>

---

<sup>13</sup> Issues of concern include reports of increased glass breakage and contamination of paper by broken/crushed glass.





Businesses are able to access commercial collections for refuse and recycling from a range of suppliers with a trend towards integrated services (waste, recycling, hazardous waste, liquid waste). An example is Transpacific Industries Ltd move to offer it's commercial clients recycling (Recycle NZ, All Brite Industries), waste collection (Waste Management NZ Ltd) and liquid/hazardous waste services (Onyx, Nuplex Environmental, Allens United).

### **6.9.3 Industry**

As noted above, the waste industry in New Zealand is characterised by several large companies and a large number of small operators. Smaller operators may provide collection services to rural councils and individual clients while the large companies dominate urban council services and provide services to companies operating on a national level for example Fonterra, Progressive Enterprises and Foodstuffs.

There is a trend towards companies working in partnership with major waste generators and councils with examples including AllBrite Industries – Gisborne District Council, EnviroWaste Services – Timaru District Council and Fonterra – EnviroWaste Services/Waste Management. There is also a trend to seek economies of scale for both disposal and processing of recyclable materials. The development of the Kate Valley Landfill and the joint venture between Transpacific Industries/Waste Management NZ Ltd and AllBrite Industries Ltd are examples of this.

### **6.9.4 Waste Generators**

Major companies are becoming increasingly savvy about recycling commodity markets, technology available for dealing with their various waste streams and the range of contractual arrangements on offer. Many materials that were considered waste are now converted to materials with significant value, examples from within the Bay of Plenty Region include fish processing waste, whey and wood processing residues.

Companies are increasingly prepared to spend money to divert waste from landfill disposal but in doing so are looking for a return on a purely financial basis and in some cases through leveraging good environmental practice for market advantage. Initiatives such as EnviroSmart, EnviroMark, Environmental Choice, the Sustainable Business Network and the NZ Business Council for Sustainable Development are tapping into this trend.





## 7 Gaps and opportunities

Identification of gaps in the current waste management system in the Bay of Plenty Region has been done in three ways.

- a) Considering the information presented in the preceding sections in light of existing and proposed law and policy framework in New Zealand and the Bay of Plenty.
- b) Waste composition data provides an indication of materials currently landfilled that could be recovered using existing technology.
- c) Comparison of the existing waste management infrastructure serving the region with facilities and developing technology available in other parts of New Zealand and to a lesser degree internationally provides some insight into potential areas for investment by the public or private sector.

Sections 7.1 and 7.2 outline some of the opportunities while Section 0 discusses how these opportunities could be realised.

### 7.1 Recoverable Materials

#### 7.1.1 Overview of Recoverable Materials

Significant and potentially recoverable waste streams from the Bay of Plenty Region that are currently landfilled or stockpiled include biosolids, paper/card, putrescible wastes (green waste and food waste), wood processing wastes (slivers, recovered fibre, treatment sludge) and construction and demolition wastes (timber, concrete, plasterboard). Figure 5 Existing and Potential Diversion Opportunities provides an overview of existing diversion and opportunities, these are discussed further below.

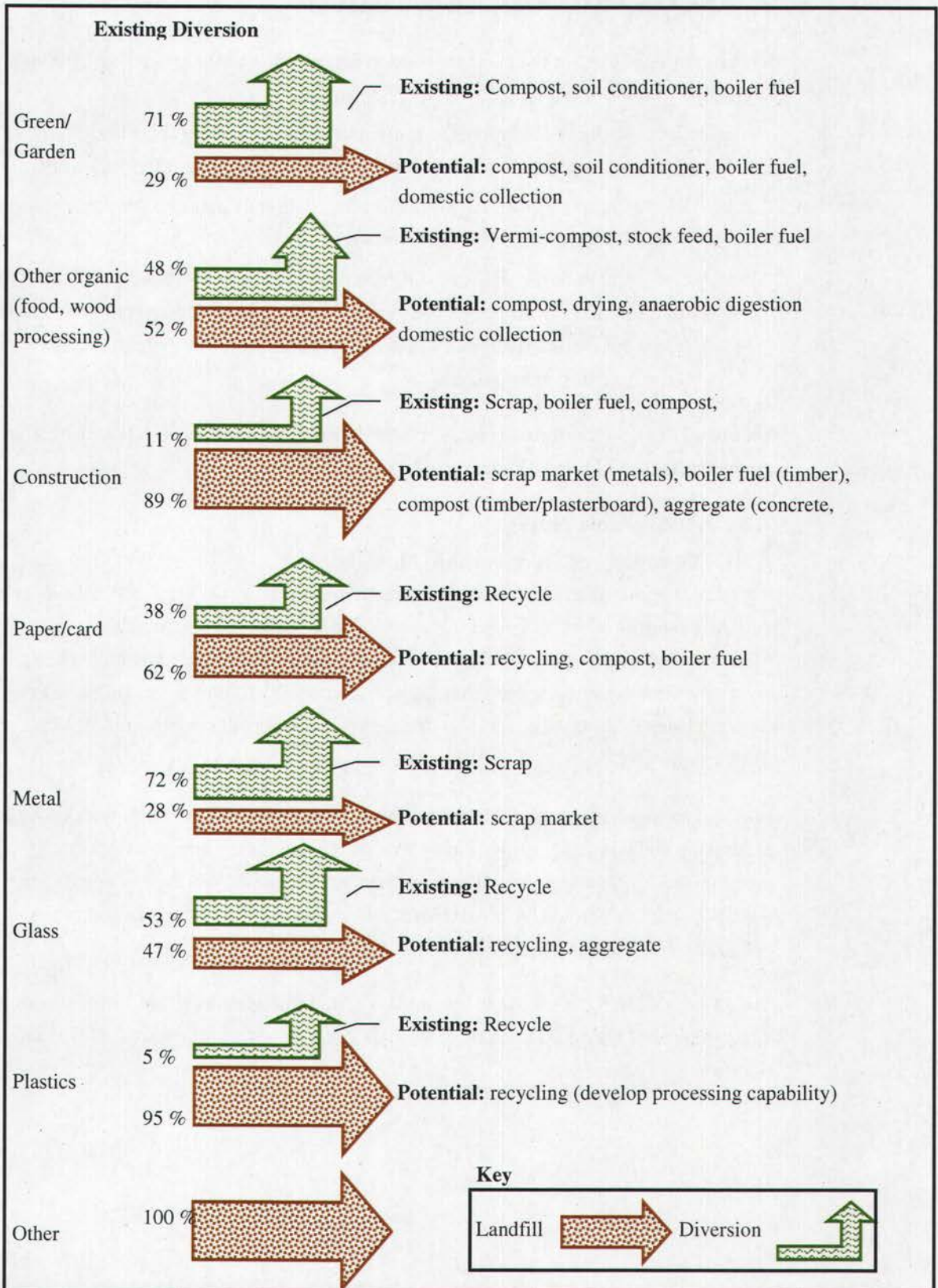
Many of these materials could technically be used as soil conditioners, with or without further processing such as composting. Energy recovery may be an option where energy content, contaminant levels and potential users of heat and/or power can be managed. Scion Research with their Waste 2 Gold initiative are exploring the concept of extracting or producing high value products from waste materials.

The key question for each waste stream is whether alternatives to landfill have not been adopted due to technical barriers or whether there are other issues of relevance. This is discussed below for each waste stream.





■ Figure 5 Existing and Potential Diversion Opportunities for the Bay of Plenty Region







### 7.1.2 Green Waste

While a significant amount of green waste from the Bay of Plenty Region is diverted the data assembled for this report suggests there are still opportunities for further diversion. For diverted materials there is a range of processing/use options available. The relatively high diversion rate reflects action by some of the key waste generators (Port of Tauranga – bark from log yards) and the availability of green waste collection services across the Region.

Garden wastes and similar materials such as waste bark from the wood processing industry are becoming an important material in the context of both composting and bioenergy. The trend to compost putrescible wastes means there is a need for bulking agent such as green waste or bark. Increased use of wood waste as boiler fuel means the bark and woody green waste have some value in this context as well. Organisations producing or collecting significant quantities of these wastes streams make decisions on their long term management based on cost and logistics considerations. For materials currently diverted there is potential for consideration of the 'best' beneficial use at a regional level or given the nature of the bioenergy and compost markets, across the Bay of Plenty and Waikato Regions. In this context there is potential for a regional, or cross region assessment of technology and waste options for each part of the waste stream

An important challenge in the context of producing compost is developing and maintaining sustainable markets for the product(s). Compost NZ, an emerging industry association, is working on market development, drawing on NZ and international research as well as the expertise of the compost industry in New Zealand. Local authorities and other major land owners have the potential to support the diversion of materials to composting through purchase of waste derived compost.

It is possible that the Waste Minimisation (Solids) Bill will be altered to include allowance for materials bans. If this is the case green waste is a possible candidate for action, this will impact the quantity of material available for processing. Removal of landfill as an option for green waste would also remove the relationship between landfill charges and charges for accepting green waste, potentially improving the economics of compost production and other options for green waste.

Opportunity: Organic waste options study including consideration of technology, materials availability and market development.

### 7.1.3 Other Organic Waste

The issues for other organic waste materials are similar to those for green waste. There are several options for processing and beneficial use but decisions are made at a company or council level without reference to the potential for synergies at district or regional level. A regional or cross regional consideration of processing and waste stream opportunities would identify synergies and opportunities.





**Biosolids** – Options for diversion of biosolids include composting and drying (for land application, landfill or energy recovery). On site energy recovery is also an option in some cases. Key issues include achieving appropriate economies of scale, the regulatory framework for land application and community (including iwi) perceptions of the approach(es) adopted. There are potential synergies with other putrescible waste materials

**Putrescible waste** – Options for processing putrescible wastes include processing (including composting) as soil conditioner or energy recovery (depending on energy content). Key issues to be considered include ways to separate material (council provided collection, encouraging commercial collections, regulatory options – by-laws), markets for compost and energy, the regulatory framework for composting and energy recovery facilities and the impact on landfill gas collection schemes.

**Wood Processing waste** – wood processing waste materials currently landfilled or stockpiled are generally unsuitable for boiler fuel due to moisture and/or ash content. Alternatives currently being explored include land application (in some cases following processing such as composting) and use as feedstock for bioethanol or bio-composite production (currently at early stages of investigation). Key issues include the regulatory framework for land application, markets for compost/soil amendments and research/product development support for innovative processing.

There is potential for local authorities to work with the wood processing sector, researchers and other stakeholders to explore options for beneficially re-using this material, options may include:

- Additional compost and soil conditioner manufacture
- Additional energy recovery
- Utilising waste material as feed stock for chemical or other product manufacturing

Challenges in this context include the current regional planning framework (application of industrial sludge to land), creating markets for soil conditioner product, product/process development timelines and comparative energy costs (including capital requirements).

Opportunity: Organic waste options study including consideration of technology, materials availability and market development.

#### **7.1.4 Construction and Demolition Waste**

Data collected for this project indicates that a significant quantity of construction and demolition waste is disposed of to landfill from the Bay of Plenty Region. Several companies have the capability to process timber (for boiler fuel and mulch) and concrete and there has been some initial work on options for waste plasterboard. Key issues for construction and demolition waste in the Bay of Plenty Region include the availability of low cost disposal, rapid urban development in the Western Bay of Plenty/Tauranga districts, logistics for sorting materials, imperfect information on the quantity of waste disposed of at cleanfill sites and markets for recovered materials.





There are opportunities for local authorities to work with the waste and construction sectors to divert and utilise materials. Recycled aggregates (crushed concrete/rubble), gypsum plasterboard and untreated timber provide potential for significant reductions in waste materials disposed of to landfill. Initiatives involving waste planning, waste management contracts, building consent processing/information and construction tendering/contract management may all have a role to play in this context.

There are several construction waste landfills in the Bay of Plenty Region consented to receive a wide range of materials including green waste and waste construction materials including steel, plastics and treated timber. These sites may have the potential to act as sorting sites but are unlikely to do so unless cost effective alternatives and/or other incentives are in place. Existing processors are generally busy – there is a need for additional processing capacity in the Region. It is reasonable to assume that the private sector will provide capacity if there are drivers such as limited disposal options or strong markets for materials.

Treated timber is a national issue with no viable alternatives to landfill currently implemented. Wood processors are introducing reduced toxicity treatments for many applications but there is still a significant amount of treated timber in the waste stream that is not always easy to identify. The allowance for treated timber disposal at construction waste landfills is pragmatic given the likelihood of small quantities of treated timber in mixed loads of construction sites. Consent conditions should be reviewed with reference to site management procedures and leachate collection systems at each site to ensure risks associated with treated timber are being adequately managed.

Other regions have initiated a general audit of cleanfills to determine compliance with permitted activity rules. Given the range of consent conditions in place for cleanfill type operations in the Bay of Plenty and permitted activity rule in place for smaller operations, an audit programme would be a useful initiative.

Opportunity:           Market development for recycled aggregate and mulch  
                               Active enforcement of regional plan requirements and consent conditions for construction waste landfills and cleanfills  
                               Implement green construction practice on construction projects – materials, design, waste management.

#### **7.1.5 Waste Paper/Cardboard**

It is likely that a significant portion of the landfilled paper/card is contaminated making it unsuitable for conventional recycling. Options for this material may include composting and energy recovery – Materials Processing Ltd already process waste paper into boiler fuel for the Tasman Mill. An option that may become available in the medium term is conversion to ethanol, technology in the early stages of commercialisation internationally. Key issues requiring





consideration include ways to encourage further separation at source and the impact of increased diversion on existing recycling, composting and energy markets.

There may also be potential to increase the diversion of paper/cardboard before it becomes contaminated. This is discussed further in Section 7.2.1 - Waste Minimisation.

Opportunity: Increased diversion of clean paper – waste minimisation advice through business associations  
Market development for contaminated paper/card – composting, energy

#### **7.1.6 Scrap Metal**

Diversion of metal from landfill disposal is success story in most parts of New Zealand driven by high world prices and an established network of scrap metal dealers. The amount of material landfilled is still high (around 12,500 tonnes per annum in the Bay of Plenty) and represents both a waste of materials and foregone income. There may be potential for increased diversion of materials before they enter the waste stream through providing containers for significant generators of scrap metals.

An alternative or parallel option is to increase recovery of metals as they pass through refuse transfer stations. Recovery is occurring now, opportunities for increasing recovery include adopting improved technology and contractual or financial incentives for diversion.

Opportunity: Mechanisms for increased recovery including scrap bins for small businesses and incentives and equipment for recovery at refuse transfer stations.

#### **7.1.7 Waste Glass**

The data collected for this project suggest over 50% diversion of waste glass from landfill. Barriers to further diversion are likely to include suitability of waste glass for existing recycling options (Owens Illinois glass furnace, Tasman Insulation) and the current value of recovered glass. Opportunities for increasing diversion are likely to be focussed around the use of glass as a component of roading or general construction aggregate.

Opportunity: Market development for glass as aggregate.

#### **7.1.8 Waste Plastics**

Plastics diversion is often a key focus for domestic recycling services and the experience in the Bay of Plenty and other parts of New Zealand is of increasing volumes of plastic collected at the kerbside. Markets for all plastics are expanding internationally although processing options in New Zealand are still predominantly limited to resin codes 1 and 2. Many major generators of waste plastic now understand the management cost and in some cases potential value of their waste materials. This has encouraged innovation amongst waste collectors and processors but has yet to result in much impact at the general commercial and household collection level.





Plastics collected for recycling in the Bay of Plenty Region are sent out of the region for recycling, only resin codes 1 and 2 have strong markets although other plastics can be processed in Asia. There may be potential to develop processing capability in the Bay of Plenty Region with a focus on plastics currently disposed of to landfill or exported for minimal return with emphasis on attracting recovered plastics from other parts of the North Island. Key issues include access to plastic for feedstock, technical feasibility of processing, financial viability of processing and markets for products.

With the Bay of Plenty acting as a significant logistics hub for materials moving off-shore (through the Port of Tauranga) there is potential to look at encouraging the development of processing capability for plastic waste streams not well catered for in New Zealand such as Polyvinyl Chloride (PVC - 3), PolyPropylene (PP - 5) and Polystyrene (PS – 6).

Opportunity: Encouraging establishing process capability in the Region;  
Consider extending range of materials collected – Resin codes 3-7.

#### 7.1.9 Other Wastes

**E-waste** - The management and disposal of unwanted electrical equipment is an emerging issue in New Zealand and internationally. The NZ Ministry for the Environment has worked with the Computer Access Trust of New Zealand (CANZ) and Dell on a pilot 'e-day' to collect unwanted computer equipment in Wellington. Several local authorities, companies and community waste enterprises collect unwanted electronic equipment for refurbishment or disassembly and there are initial discussions around a broader and coordinated approach to managing e-waste. There is potential for local authorities in the Bay of Plenty Region to work with electronic equipment suppliers and local re-processors (Computer Recyclers NZ and ReCell) to develop and implement local collection and/or reprocessing systems.

Opportunity: Local authorities and electronics suppliers provide an e-waste collection "Bay of Plenty E-Day";  
Local authorities and major business ensure e-waste disposal is through reputable service providers.

**Tyres** – The management of tyres in New Zealand is tracked but not managed through TyreTrack. Options for tyre disposal centred around quartering or shredding with a small proportion diverted for beneficial use. There is potential to use tyres as a fuel replacement and as a component in aggregate and both of these options have been trialled in New Zealand. The use of waste tyres in these contexts are likely to follow full uptake of other fuel options (wood waste, waste paper/ cardboard) and sources of alternative aggregates (recycle crushed concrete and rubble).

Opportunity: Local authorities and major business ensure waste tyre disposal is tracked using TyreTrack;





Product and market development for re-use of tyres – fuel users, roading/  
construction.

**Liquid and Hazardous Waste** – The tracking of liquid and hazardous waste using the WasteTRACK system is increasing across New Zealand. Uptake in the Bay of Plenty Region can be increased through trade waste by-law requirements and generators of liquid and hazardous waste making the use of WasteTRACK a condition of contract.

Opportunity: Local authorities and major business ensure liquid and hazardous waste management is tracked using WasteTRACK;  
Local authorities adopt and enforce trade waste by-laws requiring the use of WasteTRACK.

**Used Oil** – commercial quantities of waste oil are generally collected through arrangements with oil suppliers or as a purely commercial arrangement. Local authorities and businesses should ensure that their waste oil is collected by reputable companies and is recycled or disposed of appropriately.

Opportunity: Local authorities and major business ensure waste oil disposal is through reputable service providers;

**Agricultural Plastics** – The recently launched AgRecovery programme has yet to impact on agricultural plastics in the region and is likely to take some time to reach it's full potential. Local authorities and other organisations in regular contact with the farming community should continue to support this programme including providing information on drop-off locations and encouraging companies to participate in the scheme.

Opportunity: Local authorities and relevant business provide assistance in locating drop-off depots for AgRecovery;  
Product and market development for recycled content products – procurement policy for local authorities and businesses.

**Paint** – The Resene PaintWise scheme has government support and some profile nationally. Unfortunately there is only one drop-off location in the Bay of Plenty (Tauranga PaintShop). Local authorities could work with Resene and their contractors to explore opportunities to provide further options for unwanted paint disposal either as part of the Paintwise scheme or in parallel as appropriate.

Opportunity: Local authorities consider providing assistance to establish additional drop off locations for unwanted paint;

**Special Waste Initiatives – General Comments.** Most special wastes of concern in the Bay of Plenty Region are subject to action at a national level, often with central government involvement

SINCLAIR KNIGHT MERZ

Error! Unknown document property name. Error! Unknown document property name.





and/or support. This is likely to continue and strengthen should the product stewardship aspects of the Waste Minimisation (Solids) Bill become law. Both local authorities and businesses in the Region are likely to have the most impact on improving the management of special wastes by actively participating in national initiatives. As noted above this could take the form of providing drop-off locations for waste materials, promoting services and using collection/processing services where available.

## **7.2 Implementing Best Practice in the Bay of Plenty**

### **7.2.1 Waste Minimisation**

It is clear from the information presented in Figure 5 Existing and Potential Diversion Opportunities for the Bay of Plenty Region that there are still significant quantities of recoverable materials from the Bay of Plenty Region disposed of to landfill. The local authorities in the Region have explored a range of ways to encourage businesses to avoid waste where possible with success at an individual business level. The challenge has been in creating change across the business community.

There is increasing attention paid to environmental sustainability as a result of publicity around climate change. Traditional business advocacy organisations such as Chambers of Commerce and Manufacturing Associations are showing an interest in this area. There is potential for organisations that have traditionally been involved in promoting waste minimisation and other sustainable business practice to work together with key business advocacy organisations in the Region to promote practical waste minimisation.

Waste generators working together may be able to achieve economies of scale for specific materials recovery initiatives and also represent an attractive market for existing service providers. Innovation focussed organisations such as Scion Research also have a role to play.

Opportunity: For local authorities to work with business associations throughout the bay to promote waste minimisation and disseminate practical information.

### **7.2.2 Collection and Logistics**

There are a number of companies providing waste management and recycling services in the Region. Materials are moved around the region for sorting and consolidation and in some cases are subject to further sorting out of the region. Arrangements are on a company or local authority specific basis with synergies only occurring where service providers achieve scale through winning multiple contracts within the region or in neighbouring areas. The joint venture arrangement between Waste Management NZ Ltd and AllBrite Industries means most material is processed through the AllBrite facility in Tauranga.

The emerging trend to increase the range of plastics materials being collected has yet to result in changes in the Bay of Plenty. Major waste generators are working with the service providers to increase diversion of specific waste streams from their operations. There is potential for waste





generators (including local authorities where they contract for the collection of waste and recyclable materials) to work together to encourage the implementation of best practice collection and logistics in the region. This could involve broadening the range of materials collected (where there are viable markets) and ensuring businesses and households are given consistent information.

**Opportunity:** Local authorities work together with key service providers to explore broadening the range of recyclable materials collected in the Bay of Plenty; and Local authorities work and key service providers develop consistent information on recycling services across the Region.

### 7.2.3 Waste Disposal and Recovered Materials Processing

A large percentage of materials landfilled from the Region pass through refuse transfer stations of varying design. Both private and local authority owned sites are recovering materials prior to dispatch to landfill. There may be opportunities to extend these activities with improved equipment, extending markets for contaminated materials and changing procedures. Examples could include incentives for people dropping off scrap metal and diverting contaminated paper/card for boiler fuel and/or composting.

Many of the waste materials from construction activities are recoverable and with support from local authorities and other procurers of construction services and materials markets will expand. An issue in many parts of New Zealand is the availability of cheap disposal for construction and demolition waste at cleanfill. In the Bay of Plenty, as in other areas, cleanfills operate under consents or permitted activity rules, effective enforcement is an important part of ensuring that recoverable materials are not inappropriately disposed.

As noted above, local authorities and others have the ability to increase diversion and expand markets for materials, for example:

- By specifying recycled crushed concrete for backfill or base-course instead of virgin aggregate;
- Specifying compost and mulch (green waste, untreated timber) for landscaping projects

One of the questions raised in the introduction is whether local authority controlled or commercial landfills are preferable. The discussion of drivers, gaps and opportunities in this report highlights that decisions on procuring waste management services and developing infrastructure are complex. In this context the answer is that the appropriate ownership structure (fully public, fully private or a mix) will depend. Key factors to consider will include:

- Major sources of waste (local authority collections/services, major single source, commercial collection services)
- Contractual arrangements on offer – incentives for reduction, risk sharing, allowance for changes in technology and/or waste stream characteristics
- Community expectations





- Willingness of the private sector to invest, either in isolation or in partnership with local authorities

Opportunity: Local authorities work with local materials recovery companies to build uses for recovered materials.

#### **7.2.4 Aligning Waste Management Plans Across The Region**

As noted in Section 6.1 all of the waste management plans in the Region are likely to be reviewed once the final form of the Waste Minimisation (Solids) Bill becomes clear. This presents an opportunity to work towards alignment between the plans and underlying actions through a coordinated review. This does not mean that the plans become homogeneous, but rather that the range of initiatives and approaches adopted now and into the future across the Bay of Plenty mesh together to reduce waste in all communities. A coordinated review may show that certain activities are better left to a sub set of the local authorities in the Region or the private sector.

In the context of this review and other significant changes such as the closure of the Whakatane Landfill there may be opportunities to consider closer alignment with respect to procurement of services. Examples could include jointly contracting with disposal or recycling contractors or creating a jointly owned council controlled organisation to manage the provision of waste management services for parts of the Region.

Opportunity: Local authorities coordinate reviews of waste management plans and the Regional Waste Strategy once the final form of the Waste Minimisation (Solids) Bill is known.

#### **7.3 Opportunities for Minimising Waste in the Bay of Plenty Region**

Based on the information presented in Sections 4 to 6 and the discussion in Section 7, there are a range of opportunities to minimise waste from the Region. Key opportunities that become apparent when considering recoverable materials currently landfilled or best practice are outlined in Table 10. The 13 opportunities identified need to be prioritised based on how achievable they are, the likely impact on the waste stream and costs. Opportunities considered high priority on this basis are marked with \* in Table 10. These options are discussed in more detail in the following pages.

Actions taken under one opportunity will often effect another, for example processing increasing amounts of organic waste is unlikely to be as successful without ongoing market development covering compost and bioenergy.

Increasing collaboration between the private sector and local authorities is reflected in all of the opportunities discussed. This reflects a shift from the general business community being passive procurers of waste management services to active participants in the management of their waste. Waste management and recycling business are at the coal face of waste minimisation and will





respond to opportunities provided, facilitated or highlighted by waste generators and local authorities.

■ **Table 10 Opportunities for Minimising Waste in the Bay of Plenty Region**

Waste	Opportunities
Green waste	* Undertake a regional organic waste options study
Other organic wastes	* Major producers and/or collectors of high strength organic wastes work together on processing – end use options - a regional organic waste options study
Construction and Demolition Waste	Develop markets for recovered materials – concrete, mulch * Active enforcement of consents for cleanfills Implement 'green contracts' on building projects
Waste Paper/Cardboard	Trial waste contaminated waste paper/cardboard as feedstock for composting Trial waste contaminated waste paper/cardboard as boiler fuel
Scrap Metal	
Waste Glass	
Waste Plastic	Major producers and/or collectors of plastic wastes work together on logistics and markets
Other Wastes	Continue to support national initiatives
Best Practice	* Work with business advocacy organisations to promote waste minimisation and coordinated procurement activity. Local authorities work with service providers on broadening the range of recyclable materials collected in the region and developing consistent information. Explore options for integrated or coordinated procurement of services involving local authorities and major waste generators. Work with recovered materials processors to increase and expand markets for recovered materials in the Bay of Plenty * Coordinate the review of Waste Management Plans and the Regional Waste Strategy once the form of the Waste Minimisation (Solids) Bill is known.

Note \* means key opportunity

### 7.3.1 Opportunity 1 – Organic Waste Processing

**Justification** – Organic waste makes up a large portion of both the landfilled and diverted waste stream in the Bay of Plenty. Local authorities to work with key waste producers (the kiwifruit industry, food processors, wood processors) and other key stakeholders (Scion/Waste 2 Gold, composters, Fonterra ethanol) to increase the diversion of organic waste materials.

**Comment** - Given the large quantity of putrescible waste disposed of to landfill and possible processing synergies with biosolids, some wood processing wastes and contaminated paper/card there is potential for combined facility or system in the Bay of Plenty Region. There are a large number of enclosed composting systems available and given the relatively short transport distances in the region a single, centralised facility may be economically viable. Local authorities in other parts of New Zealand have examined possibilities in this area using simple Net Present Value (NPV) analysis. Key issues for putrescible waste processing include determining optimal scale for





a processing site, markets for compost/soil amendment products, logistics of waste collection and the regulatory framework for processing sites.

Green waste collections in Kawerau and Whakatane districts reflect an emerging trend in local authority provided services throughout New Zealand while commercial green waste collection services in the western Bay of Plenty demonstrate that where processing capability exists (Perry Environmental composting operation at Te Maunga) waste generators will use it provided it is cost competitive with landfill disposal.

One option for local authorities is to work towards establishing additional putrescible waste processing capability within the region with a focus on waste streams not well catered for such as biosolids, food waste and waste treatment sludge (septage, grease traps). Processing options in this context include composting, anaerobic digestion and vermi-composting. Local authorities could achieve this by a range of approaches. Options include:

- Direct funding by local authorities – existing examples include MacKenzie District Council establishing and operating a Vertical Composting Unit (VCU) for green and food waste and Dunedin City Council's green waste composting operation at the Green Island Landfill.
- Formal collaboration with the private sector – existing examples include Tauranga City Council providing land for the Perry Environmental Ltd composting operation and Wellington City Council's joint venture with Living Earth to process green waste and biosolids in an enclosed composting plant.
- Commitment via contracts for processing of local authority controlled materials – an existing example is Gisborne District Council's arrangement with AllBrite Industries Ltd for municipal waste controlled by the council.

It is likely, given the high cost of landfill disposal for waste generators in most parts of the Bay of Plenty Region, that commercial waste collectors will make use of any additional disposal options in a similar way to existing green waste collection services. A committed quantity of material (with associated income) from local authorities combined with the potential for attracting further quantities through commercial collection and disposal may provide the basis for a commercially viable system regardless of funding model.

**Making it happen** – with the range of waste streams and processing options available as well a large number of waste generators (including local authorities) there would be benefit in looking at options at a regional level. In Table 10 this has been referred to as an Organic Waste Options Study. Key objectives would be to involve all major producers of organic waste, identify potential processing options, consider funding models and to rank the range of potential solutions.





### 7.3.2 Opportunity 2 – Aligning Waste Management Planning

**Justification** –With waste management plans and the Regional Waste Management Strategy all likely to be reviewed once the Waste Minimisation (Solids) Bill is finalised there is an opportunity to closely align policy and action plans across the Region. Key areas with potential for improved alignment are coordinating local authority and private sector investment in waste management infrastructure, joint procurement of services and collaborating on providing information to business and the wider community on waste minimisation.

**Comment** - A useful step in aligning policy and action on waste management is to consider planned investment (including the private sector where possible) across the Region, Table 11 presents a summary of information on planned investment key milestones or decision points for waste management issues in the Bay of Plenty. This information is drawn from the Ten Year Plans (Long Term Community Plans or LTCCP) for all of the local authorities in the Region and discussions with other key stakeholders. There is potential for local authorities to work with private sector developers where development of infrastructure (processing sites, cleanfill/landfill) or collection services are of regional significance.

Creating capacity in recycling and recovery can present commercial opportunities, for example the emergence of green waste collection services feeding local authority or private sector composting operations throughout New Zealand. There are also examples where the private sector has responded to local authority request for processing capacity i.e. a commitment to supply materials has resulted in private sector investment in infrastructure to service local authority needs as well as commercial customers. AllBrite Industries' investment in their transfer station in Gisborne and Perry Environmental Ltd's investment in Tauranga are good examples of this approach in action.

An issue for consideration is the role that local authorities, individually or collectively, should take in working to realise some of the opportunities for the Region. Businesses involved in this project are open to working with local authorities and may be better placed to access investment funding, materials from beyond the region and expertise. A clear message from several organisations during this study was that local authorities should be setting the direction and framework while allowing business to develop and implement solutions.

In the context of the Waste Minimisation (Solids) Bill and the potential for funding for waste minimisation activities through a waste levy or product stewardship schemes an investment plan covering both planned and aspirational investment will provide a sound basis for funding applications.





■ **Table 11 Local Authority Investment in Waste Management – 2006-2016 (from LTCCP)**

Year	Investment	Events/Decision Points
2007	Te Kaha Resource Recovery Centre (Opotiki DC) Rotorua Landfill next cell development Gisborne District council commence development of in-district landfill	Waste Minimisation (Solids) Bill reported back to Parliament National energy policy
2008	Whakatane DC Transfer Station Rotorua Landfill next cell development WBoPDC Te Puke recycling and green waste site	
2009	Rotorua Landfill next cell development Review of WBoPDC/TCC Waste Management Plan/Strategy Whakatane Landfill Closure	Review of WBoPDC/TCC Waste Management Plan/Strategy Whakatane Landfill Closure
2010		
2011	Tauranga CC Transfer Stations lease agreement with Perry Env Ltd expires	
2012	Tasman Mill landfill consent expires	
2013	Tasman Mill landfill lease expires	

**Making it Happen** – Once the final form of the Waste Minimisation (Solids) Bill is known, a coordinated review of waste management plans across the Region and Regional Waste Strategy should be undertaken. In addition to producing a series of documents aligned at a policy level this should aim to create a region wide action plan drawing on actions in the individual waste management plans. In the context of creating infrastructure for waste management and minimisation planned private sector investment should be considered as well. This project has identified potential for coordinated investment in organic waste and region-wide market development activity. An investment plan will look at funding options and business models for important investments as well as identifying other investment needs.

### 7.3.3 Opportunity 3 – Ongoing Market Development

**Justification** - The diversion of materials from landfill through recycling collection services (local authority or commercially provided), drop-off at transfer stations or composting is unlikely to be successful in the long term without sustainable markets for the diverted materials. Contractual arrangements vary with respect to ownership of materials and products, but all involved in the waste management process have an interest in developing and sustaining markets for recovered materials.

**Comment** - It is of note that the major waste generators and local authorities are also likely to be some of the key purchasers of products and services in the Region. In this context procurement policy and practice within these organisations has the ability to support environment and waste management policy by 'closing the loop'. Councils also have a regulatory role that can support





'best' uses for materials<sup>14</sup>. The follow paragraphs discuss some of the opportunities for increasing waste diversion by creating profitable uses for recovered materials.

**Waste to Energy** - As noted previously in this report, there is considerable use of wood processing wastes for heat and power in the wood processing sector in the Bay of Plenty. There is also some limited use of materials from the municipal waste stream (woody garden waste, timber) for heat/power in the wood processing sector. There is potential for increased diversion of materials via this route where energy content and contamination levels make energy recovery appropriate.

Internationally recovery of energy from mixed waste is common and there is a wide range of technology available at development stages ranging from pre-commercial to well established. With some significant users (and clusters of users) of industrial heat in the Region there is potential to avoid the need for costly and inefficient conversion of heat energy to electricity by selecting an appropriate location for any waste to energy plant. Key issues for waste to energy are likely to include financial viability (economies of scale, logistics), technical feasibility, characterisation of the waste stream/feedstock and consenting process including community consultation. For biomass based wastes (green waste, food waste, timber) government renewable energy targets provide additional support for energy recovery initiatives.

In the short term the key opportunity is likely to continue to be the use of wood processing wastes and waste with similar characteristics (woody green waste, waste timber, paper/card) in existing waste wood fired boilers. Local authorities in the region should be working with the major wood processing sites and existing fuel suppliers (Materials Processing Ltd, WastePro) in the region to identify fuel specifications, map out investment planned in the short-medium term and opportunities for expanding the diversion of appropriate wastes for fuel.

In the medium to long term there are a wide range of technically feasible options for recovering energy from specific waste streams and mixed municipal waste that could be considered in the context of managing waste from the Region. These include:

- Processing putrescible wastes for ethanol recovery (building on Fonterra Edgecombe technical know-how and processing capacity).
- Anaerobic digestion of putrescible wastes to produce heat/power (using methane) and dried product that can be used for soil conditioner and/or fuel.
- Recovery of energy from waste plastics – either mixed or polymer specific.
- Recovery of energy from municipal waste. Technology employed internationally includes incineration, pyrolysis and gasification.

---

<sup>14</sup> E.g. through active enforcement at cleanfills reducing the inappropriate disposal of construction waste





**Construction and Demolition Waste** - Given the large quantities of construction waste going to landfill from the Region consideration should be given to working with developers, construction companies and the waste sector to reduce waste from construction activities. This could take the form of targeted assistance (as for the Ministry for the Environment case study initiative), assistance with logistic/sites for sorting and/or marketing of recovered materials. There are also regulatory options (under the RMA and LGA) for limiting the disposal of waste from construction and demolition to landfill.

Existing local authority influence over the construction and demolition waste stream is limited due to the dominance of cleanfill sites – often classed as permitted activities and therefore subject to limited controls. The experience throughout New Zealand is that an increased focus on compliance monitoring at cleanfills will reduce the disposal of inappropriate materials (treated timber, putrescible wastes). Given the large quantity of material disposed of to cleanfill from the Bay of Plenty Region an increased focus on this area should be considered.

There may be an argument for regulatory intervention through the RMA consent process or by laws under the LGA but this is unlikely to be successful unless all stakeholders are given an opportunity to be involved in the process. Increased capacity for composting or waste to energy may result in increased diversion provided disposal/processing costs are set at an appropriate level and waste generators and transporters are made aware of alternatives to disposal.

Progress in this area relies on active participation of all stakeholders. A logical way forward would be to develop a cross sector initiative addressing the issue from several perspectives. This could build on national level initiatives and link to local authority building procurement and asset management as a tool for influencing the regional construction market.

One aspect of market development is ensuring that local authorities and others committed to waste minimisation are reflecting this commitment in their purchasing decisions. This requires good information for those involved in the procurement process and in some cases support for research and product development utilising recovered materials. Developing an integrated approach to market development involving key organisations purchasing materials and considering interactions between different products and competing objectives (cost, waste minimisation and product performance). Actions could include:

- Green procurement – recycled materials, green energy, model contract conditions
- Product development – realistic applications for recovered materials

**Making it Happen** – there are several actions that could be taken to develop markets for recovered materials in the Bay of Plenty Region. An increased regulatory focus on cleanfills is likely to reduce inappropriate disposal of some construction waste materials. A combined council commitment to ‘sustainable procurement’ including specifying recycled content will support materials recovery.





#### **7.3.4 Opportunity 4 – Providing Waste Minimisation Information**

**Justification** – Despite there being recycling services available throughout the Bay of Plenty, waste composition surveys indicate that there is still significant quantities of recyclable materials disposed of to landfill each year. Provide practical and simple information on waste minimisation to businesses, producers of most waste in the Region, will help to promote these services and increase materials diverted.

**Comment** - As noted in several places in this report, local authorities and businesses have an equal role to play in increasing the diversion of materials from landfill disposal in the Bay of Plenty. The opportunities outlined above highlight specific examples of opportunities that are relevant for local authorities and businesses including developing processing capability for organic waste and recycling commodities, expanding markets for recovered materials and coordinating or sharing investment in waste infrastructure.

There are a large number of small businesses in the Region and the opportunities discussed above have focused on working with major waste generators. Small businesses make a large contribution to the waste stream collectively but are difficult for service providers or policy makers to work with effectively. There is an emerging trend in New Zealand for traditional business organisations such as Chambers of Commerce and Manufacturers Associations to provide information and services relating to waste and other environmental issues.

**Making it Happen** – Business associations may be interested in promoting waste minimisation to their members through providing information, hosting seminars or assisting in developing pilot studies. Rather than creating new programmes links should be strengthened and established with existing initiatives such as the Sustainable Business Network, EnviroSmart and the NZ Business Council for Sustainable Development (NZBCSD). There may also be opportunities to offer coordinated waste minimisation services to members in the same way that stationary, travel or other services deals are negotiated by business associations.

#### **7.3.5 Opportunity 5 – Working with Businesses and Other Regions**

**Justification** - The private sector is significant for waste management in the Bay of Plenty Region as waste generators and providers of services to local authorities, households and the business community. In this context investment and advocacy initiatives need to be coordinated with private sector activity. For example the diversion of construction waste is unlikely to be successful unless waste transporters, materials processors, the construction sector and cleanfill operators have an opportunity to assist in defining messages and creating alternatives to landfill.

**Comment** - Given the predominance of private sector waste services in the region it is possible that local authorities are not aware of key waste management issues for the business community in the Region. Working with waste generators and providers of waste management and waste minimisation services will help to ensure all key issues are identified and addressed.





As noted previously in this report waste markets are unlikely to correlate with local authority boundaries. Landfills and processing of high value recycling commodities rely on materials from 'waste catchments' likely to cover several regions. Examples include Tirohia Landfill (waste from Gisborne, Bay of Plenty, Waikato) and Owens Illinois (glass from throughout the North Island). In the short term areas of common interest are likely to include landfill location and capacity (Eastern Bay of Plenty, Gisborne, Wairoa), processing of plastics and markets for compost or soil conditioner products. This also applies to inappropriate management of waste, construction waste and hazardous wastes are to waste streams where waste movement has the potential to undermine local or regional initiatives.

Collaborating with neighbouring local authorities on enforcing standards (for example at cleanfills) will support diversion initiatives noted above. Working with businesses (including retailers) and other government bodies on product stewardship initiatives is likely to be the most cost effective way of addressing special wastes of relevance to the region. Examples could include:

- Promoting mobile phone recycling
- Continuing to provide used oil drop off facilities at refuse transfer stations
- Exploring a regional e-waste collection event (with electronics goods retailers)
- Requiring the use of WasteTRACK for liquid and hazardous waste through by-laws and conditions of contract
- Requiring the use of TyreTrack for tyre transport, processing and disposal through waste acceptance criteria and conditions of contract.

**Making it Happen** – The officer level collaboration on waste issues between local authorities in the Bay of Plenty and Waikato Regions should be supported by higher level engagement. Key businesses and the local authorities in the region should collectively engage with the various product stewardship initiatives currently in place and consider how best to operate under the likely regulated framework. Action in this area could form part of, or be appended to, a revised regional waste strategy with input from local authorities and business in the region.





## 8 Conclusions and Recommendations

### 8.1 Conclusions

Because the market for waste management and minimisation services in the Bay of Plenty Region is effectively unrelated to local authority boundaries, collaboration across these boundaries is required to successfully influence the market. The variation in approaches to waste management planning and service provision has not precluded collaboration to date and should not do so in the future.

Several key questions were set out in the introduction of this report. Sections 4 to 6 provide a discussion on the 'factual' questions. These include how much waste is going to landfill, what is the policy and general context and what diversion routes are available. Current and future opportunities were discussed in Section 7.

There are several areas where local authorities should work together on waste issues in the Bay of Plenty Region. There is also willingness on the part of the private sector to work with local authorities to find ways to provide cost effective and innovative solutions to districts and the region as a whole. The participation of individual councils will depend on their current role, ability to finance investment and issues of concern in each area. The likelihood of councils taking different roles as they work together does not preclude improved waste management occurring through increased collaboration.

It is likely that waste management plans and the Regional Waste Strategy will be reviewed once the Waste Minimisation (Solids) Bill is finalised. This presents a unique opportunity to align policy and underlying actions across the Region, ideally with involvement from key companies in the waste industry and the broader business community.

There are other areas where opportunities are apparent, based on the information collected for this study. They include:

- Taking a regional approach to organic waste management (organic waste accounts for over 60% of the total waste stream);
- Improving the waste minimisation information available to all businesses in the region by distributing information through business associations;
- Improving enforcement at cleanfills in the region ('cleanfills' currently accepting around 30% of materials disposed of landfill); and
- Building markets for recovered materials through sustainable purchasing (by councils and other major purchasers).





## 8.2 Recommendations

Based on the information set out in the report, discussions with key stakeholders including the waste sector, major waste generators and local authorities and reference common practice in New Zealand and internationally, it is recommended that councils consider the following actions:

- 1) Local authorities and major organic waste generators in the Bay of Plenty undertake a review of options for managing the range of organic waste streams generated in the region. This review should focus on real opportunities for beneficially using organic waste with reference to major organic waste streams, applicable technology and markets for end products.
- 2) Local authorities undertake a coordinated review of waste management plans and the Regional Waste Strategy once the final form of the Waste Minimisation (Solids) Bill is known.
- 3) Local authorities and major waste generators in the Bay of Plenty take an active role in developing markets for recovered materials with an initial focus on construction waste (rubble/concrete), organic waste (compost, energy) and waste paper/cardboard (increased recycling, compost, energy).
- 4) Local authorities and waste and recycling service providers work with local business associations to promote waste minimisation and provide practical waste minimisation tools. Practical examples include co-sponsoring events drawing on existing initiatives and involving groups such as the Sustainable Business Network, EnviroSmart and the New Zealand Business Council for Sustainable Development (NZBCSD).
- 5) Local authorities in the Bay of Plenty work with the waste sector and neighbouring local authorities to identify and exploit collaborative opportunities. This should start with information sharing at a senior level and may involve collaboration on market development, coordinating investment planning and forming common views on national policy initiatives such as the Waste Minimisation (Solids) Bill and the National Energy Strategy.





## Acknowledgements

The following people have provided assistance in forming a picture of waste management in the Bay of Plenty Region and emerging opportunities.

- Marty Hoffart - EERST
- Miljenko Pavlinic, Andre Ribeiro – HG Leach Ltd
- Alan Foote - Materials Processing Ltd
- Theo Grayling – WastePro Solutions Ltd
- Rob Donald, Henare Kapa – Norske Skog Tasman
- Bill Telford, Nick Eynon-Richards – Carter Holt Harvey
- Tom McDowall – Kawerau District Council
- David Reece, Ian Castles – Opotiki District Council
- Wendy Gaisford - Environment Bay of Plenty
- Peter Askey – Opus International Consultants
- Russell Stewart – Waste Management NZ Ltd
- Roselyn Sievers, Peter Dine – Rotorua District Council
- Trevor Suthbridge – Scion Research
- Cathryn Combes, Tim Combes – AllBrite Industries Ltd
- Lynne Kenny, Trinda Purchase – Duffill Watts Ltd
- Mike Lord, Kim Willoughby, Jeff McLachan, Malcolm Taylor – Perry Environmental
- Terry James – Port of Tauranga
- Jack van Selm – Hexion Specialty Chemicals
- Hendrick Metz – Fulton Hogan
- Steve Keeves – Sanford Ltd
- Murray Kliskey, Nik Roosenburg, Heidi Pettersen– Tauranga City Council
- Peter Harford – Pete’s Takeaways Ltd
- Scrap Metal Recycling Association of New Zealand
- Energy Efficiency and Conservation Authority