

# **SOUTH WAIRARAPA DISTRICT COUNCIL**

**20 FEBRUARY 2013**

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## **AGENDA ITEM C8**

### **KERBSIDE REFUSE SURVEY WAIRARAPA**

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#### **Purpose of Report**

To report the conclusions of the November 2012 kerb-side refuse survey undertaken jointly by the three Wairarapa Councils.

#### **Recommendations**

Officers recommend that the Council:

1. *Receive the information.*

## **1. Executive Summary**

In line with the Waste Minimisation Act (2008) and the joint WWMP adopted by the Councils in the Wellington Region and the Regional Action Plan, the three Councils as part of the need to improve waste composition data arranged for a kerb side survey to be undertaken across the three Districts.

The survey was conducted by Waste Not Consulting, an Auckland based firm specialising in the delivery of a wide range of waste audit and reduction programmes across New Zealand.

This firm conducted a waste for South Wairarapa in January 2011 prior to the introduction of the comprehensive kerbside recycling service in June 2011.

The November 2011 survey sought to identify what take-up of the service had occurred since the new service was introduced. In addition the survey identifies what opportunities exist for additional diversion from the general waste-stream.

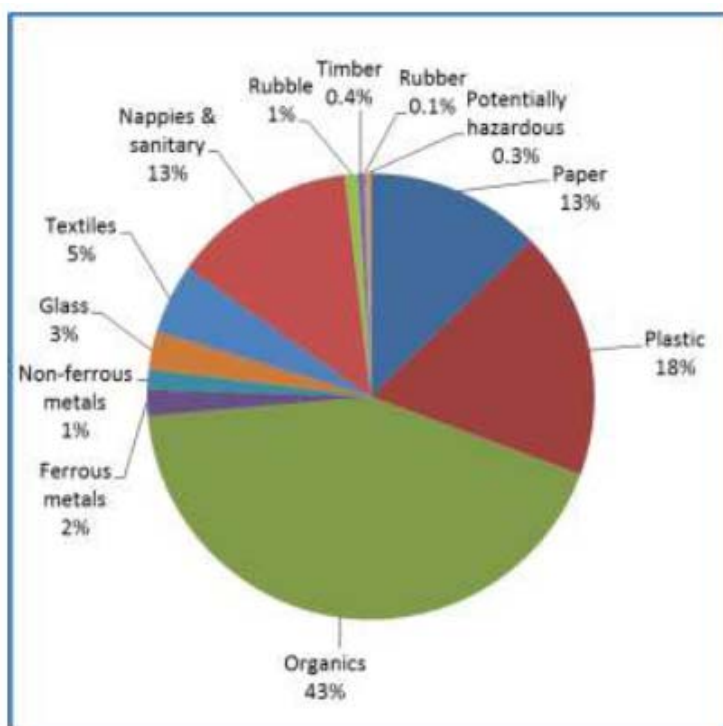
The officer report seeks only to offer up generalised post survey commentary. The attached advisory report (Appendix 1) contains a high level of detail around kerbside bag and domestic wheelie bin (MGB) weights and waste composition.

The report indicates that there remains potential for further diversion of recyclable items using existing systems and services. These areas will be reviewed and strategies put in place over the next 6 months with any budget implications highlighted in the next annual plan.

## 2. Background

### 2.1 Kerbside Bagged Refuse Primary Composition

As per the chart the November 2011 audit primary composition of kerbside domestic refuse bags is as depicted. Note that the Martinborough has not been included in either survey (2011 and 2012) as it was considered it was best to get a larger sample from two towns than three smaller samples.



**Figure 5.1 – Primary composition of South Wairarapa domestic kerbside refuse bags**

Organic matter at 43% of the weight was comprised mostly of “kitchen waste” at 88% of the organic material. Paper and plastic were the other main components of the surveyed domestic refuse bag.

## 2.2 Private Domestic Wheelie Bins Primary Composition

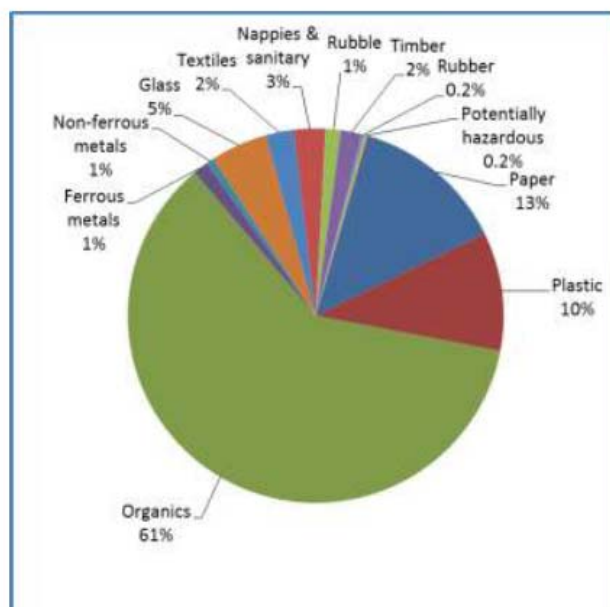


Figure 5.5 – Primary composition of South Wairarapa private domestic MGBs

Organic material not surprisingly was the largest single component of the domestic MGB shared by kitchen waste (43%) and green waste (51%) with some 6% of other miscellaneous organic waste.

## 2.3 Composition Comparison 2011 /2012

For South Wairarapa domestic bagged refuse component pre and post the introduction of the comprehensive kerb side service are as follows.

Note: whilst there are some increases in some of the secondary categories these do not negatively influence what is shown as an overall reduction in mean weight per household.

**Table 6.3 – Comparison of composition of South Wairarapa domestic bagged refuse, 2010 to 2012**

South Wairarapa District Council kerbside bagged refuse		2011		2012		% change 2010- 2012
		%	Mean wt. per HH	%	Mean wt. per HH	
<b>Paper</b>	Recyclable paper	13.6%	1.00 kg	9.6%	0.63 kg	-37%
	Cardboard	0.2%	0.02 kg	0.7%	0.05 kg	150%
	Multimaterial/other	4.0%	0.30 kg	2.4%	0.16 kg	-47%
	<b>Subtotal</b>	<b>17.8%</b>	<b>1.31 kg</b>	<b>12.7%</b>	<b>0.84 kg</b>	<b>-36%</b>
<b>Plastics</b>	# 1 to 7 containers	2.0%	0.15 kg	3.1%	0.20 kg	33%
	All other plastics	12.4%	0.91 kg	14.9%	0.98 kg	8%
	<b>Subtotal</b>	<b>14.4%</b>	<b>1.06 kg</b>	<b>18.0%</b>	<b>1.19 kg</b>	<b>12%</b>
<b>Organics</b>	Kitchen waste	38.3%	2.82 kg	37.9%	2.50 kg	-11%
	Greenwaste	3.4%	0.25 kg	2.4%	0.16 kg	-36%
	Multimaterial/other	3.2%	0.24 kg	2.6%	0.17 kg	-29%
	<b>Subtotal</b>	<b>44.8%</b>	<b>3.31 kg</b>	<b>42.9%</b>	<b>2.83 kg</b>	<b>-15%</b>
<b>Ferrous metals</b>	Steel cans	1.7%	0.12 kg	1.3%	0.09 kg	-25%
	Multimaterial/other	0.6%	0.04 kg	0.6%	0.04 kg	0%
	<b>Subtotal</b>	<b>2.3%</b>	<b>0.17 kg</b>	<b>1.9%</b>	<b>0.13 kg</b>	<b>-24%</b>
<b>Non ferrous metals</b>	Aluminium cans	0.3%	0.02 kg	0.3%	0.02 kg	0%
	Multimaterial/other	0.7%	0.05 kg	1.2%	0.08 kg	60%
	<b>Subtotal</b>	<b>1.0%</b>	<b>0.07 kg</b>	<b>1.5%</b>	<b>0.10 kg</b>	<b>43%</b>
<b>Glass</b>	Bottles/jars	4.8%	0.36 kg	2.1%	0.14 kg	-61%
	Multimaterial/other	0.5%	0.04 kg	0.7%	0.04 kg	0%
	<b>Subtotal</b>	<b>5.3%</b>	<b>0.39 kg</b>	<b>2.8%</b>	<b>0.18 kg</b>	<b>-54%</b>
<b>Textiles</b>		<b>4.0%</b>	<b>0.29 kg</b>	<b>5.0%</b>	<b>0.33 kg</b>	<b>14%</b>
<b>Nappies and sanitary</b>		<b>6.2%</b>	<b>0.46 kg</b>	<b>13.4%</b>	<b>0.88 kg</b>	<b>91%</b>
<b>Rubble</b>		<b>1.7%</b>	<b>0.12 kg</b>	<b>1.0%</b>	<b>0.06 kg</b>	<b>-50%</b>
<b>Timber</b>		<b>0.8%</b>	<b>0.06 kg</b>	<b>0.4%</b>	<b>0.03 kg</b>	<b>-50%</b>
<b>Rubber</b>		<b>0.2%</b>	<b>0.01 kg</b>	<b>0.1%</b>	<b>0.01 kg</b>	<b>0%</b>
<b>Potentially hazardous</b>		<b>1.5%</b>	<b>0.11 kg</b>	<b>0.3%</b>	<b>0.02 kg</b>	<b>-82%</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>7.38 kg</b>	<b>100.0%</b>	<b>6.60 kg</b>	<b>-11%</b>

### 3. Discussion

#### Survey Accuracy

MFe's Solid waste Analysis Protocol 2002 (SWAP) Precision of Results defines a margin of  $\pm 20\%$  as being a reasonable level of accuracy.

Precision levels for paper, plastics and organics in domestic bags fall within the definition but in the MGB audit none of the primary categories had

precision levels less than the margin. This is due in part to the relatively small sample size and the high variability of materials within MGBs.

#### Diversion Potential of South Wairarapa Domestic Refuse

As extracted from the report and the survey data, the potential for additional diversion from the existing collection for both bags and MGBs is clear with the balance potentially able to be captured with the introduction of a composting service.

#### Further audits

Council is currently discussing the possibility of carrying out further audits through the use of Local College students as part of a local initiative. This is in preliminary discussions at present and been positively received by Kuranui School Principal Geoff Shepard and Earthcare Environmental.

Further discussions will take place once the school year has commenced with a view to start during the first term.

**Table 5.4 – Diversion potential of South Wairarapa domestic refuse**

<b>Kerbside recyclable materials</b>	<b>Refuse bags - per household set out</b>	<b>MGBs - per MGB</b>
<b>Recyclable materials</b>		
<b>Paper - Recyclable</b>	0.63 kg	1.57 kg
<b>Cardboard</b>	0.05 kg	0.31 kg
<b>Plastics - #1 to 7</b>	0.20 kg	0.38 kg
<b>Ferrous metals - Steel cans</b>	0.09 kg	0.17 kg
<b>Non-ferrous metals - aluminium cans</b>	0.02 kg	0.04 kg
<b>Glass - Bottles/jars</b>	0.14 kg	0.69 kg
<b>Reusable textiles</b>	0.23 kg	0.20 kg
<b>Subtotal</b>	<b>1.36 kg</b>	<b>3.37 kg</b>
<b>Compostable materials</b>		
<b>Organics - Kitchen waste</b>	2.50 kg	4.12 kg
<b>Organics - Greenwaste</b>	0.16 kg	4.89 kg
<b>Subtotal</b>	<b>2.66 kg</b>	<b>9.01 kg</b>
<b>Total divertible</b>		
<b>Weight of divertible materials</b>	<b>4.02 kg</b>	<b>12.38 kg</b>
<b>Divertible materials as % of total</b>	<b>60.9%</b>	<b>78.8%</b>

Twenty-one per cent of the materials in both the refuse bags and the MGBs could have been recycled through the existing kerbside recycling collection. A further 40% of the waste in the refuse bags could have been composted and 57% of the MGB waste. In total, about 61% of council's kerbside bagged refuse collection could be diverted from landfill disposal through recycling and composting and 79% of the private MGB collection could be diverted. The weight of divertible material per MGB is more than three times the quantity of divertible material in each household set out of refuse bags.

#### District Comparisons

The report analyses the differences in divertible materials in refuse bags across the three Councils from survey to survey (Page 51 of the report) plus changes that have occurred between audits.

In addition there is a comparison of domestic bag composition, house hold set out and domestic MGB weights with other districts outside of the Wairarapa (Page 52 and 54).

South Wairarapa results indicate an outcome somewhere near midpoint in all cases.

## **4. Appendices**

Appendix 1 – Waste Not Consulting “Survey of Kerbside Refuse December 2012”

Contact Officer: Bill Sloan, Asset Manager

Reviewed By: Mark Allingham, Group Manager Infrastructure Services

**Appendix 1 – Waste Not  
Consulting “Survey of  
Kerbside Refuse December  
2012**

# Survey of Kerbside Refuse in Wairarapa

Prepared for  
Masterton District Council  
Carterton District Council  
South Wairarapa District Council

December 2012





## Document quality control

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Date	Status	Written by	Approved by	Distributed to
11 December 2012	Draft 0.1	SY	BM	JL, GB, BS
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# 1 Introduction

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Under the Waste Minimisation Act (2008) and, previously, the Local Government Act (2002), local territorial authorities are responsible for promoting effective and efficient waste management and waste reduction practices within their districts. The Waste Minimisation Act stipulates that councils must have adopted a Waste Management and Minimisation Plan (WMMP) by 2012.

In line with the legislation, the councils in the Wellington region prepared a joint WMMP, which was adopted in late 2011. These councils include Masterton, Carterton, South Wairarapa, and Kapiti District Councils and Upper Hutt, Hutt, Porirua and Wellington City Councils.

The region's goals and objectives for solid waste management and minimisation, as outlined in the WMMP, are:

- achieving waste minimisation through reduction, reuse, recycling and recovery where it is effective and efficient to do so;
- achieving effective and efficient waste management through highly cost-effective council and/or privately-provided waste management services;
- minimising the harmful effects of waste wherever practical;
- providing economic benefit by using resources more efficiently;
- protecting public health; and
- gaining better information upon which to base future decisions regarding waste management and minimisation.

The WMMP's Regional Action Plan includes the following activity:

- improved data collection – e.g. joint commissioning of Solid Waste Analysis Protocols (SWAPs)

Masterton, Carterton and South Wairarapa district councils also have an existing sub-regional joint Waste Management Plan (Waste Management Wairarapa). Waste Management Wairarapa does not propose any new actions other than those outlined in the Regional Action Plan.

In April 2012, South Wairarapa, Carterton and Masterton District Councils contracted Waste Not Consulting to undertake a joint sort-and-weigh audit of the composition of domestic kerbside refuse from each councils' kerbside collections of refuse bags and privately-collected Mobile Garbage Bins (MGBs).

The methodology for the project is based on that recommended by the Ministry for the Environment's Solid Waste Analysis Protocol 2002 (SWAP).

Previously SWAP audits have been undertaken for South Wairarapa District Council in February 2011, and a SWAP audit of Masterton and Carterton domestic waste was commissioned by Earthcare Environmental in November 2010.

## **1.1 Waste management services in Wairarapa**

Masterton, Carterton and South Wairarapa Districts are part of the Greater Wellington Region, but are geographically separated from the other councils in the region by the Rimutaka and Tararua ranges, which run along the western side of the area known as Wairarapa.

The three councils of Wairarapa have shared the same waste and recycling services since 2012.

### **1.1.1 Waste services for the residential sector**

Through its contracted service provider, Earthcare Environmental, Masterton, Carterton and South Wairarapa District Councils offer a weekly kerbside collection of bagged refuse and recyclables in crates to households within defined, mainly urban, areas. The councils' bagged refuse collection is disposed of at the Bonny Glen landfill in Marton.

In Masterton, council provides a domestic user pays refuse bag service, with bags costing \$2.90 each and a maximum set out of two bags per week per household. In Carterton user-pays refuse bags are available for purchase for \$2.50 per bag. Each household may place as many bags as they want at the kerb. In South Wairarapa residents can place two council refuse bags at kerbside per week and two recycling crates. The refuse bag service is rates funded. The kerbside recycling collection is rates-funded in all areas.

The weekly council kerbside recycling collection is provided to urban residential properties in Masterton, Carterton and South Wairarapa. All households in the collection areas are provided with two recycling collection crates – a red crate for the collection of paper, cardboard and textiles, and a green crate for the collection of plastic containers, steel and aluminium cans, and glass bottles and jars. Each of the councils has information listed on their website as to what materials can be recycled in the council kerbside collection. However, the materials listed differ from council to council. The website information from each council is presented in Appendix 1.

Prior to the waste audit, Waste Not Consulting approached the recycling contractor, Earthcare Environmental, and ascertained which materials were, in fact, acceptable to be placed into the two crates for recycling. These materials are also listed in Appendix 1, and were used throughout the waste audits.

A number of transfer stations throughout Wairarapa that accept waste, recycling and greenwaste are listed in Table 1.1 on the following page.

**Table 1.1 – Transfer stations in Wairarapa**

District	Transfer Station	Materials accepted
Masterton	Masterton	Refuse, recycling and greenwaste
	Castlepoint	Refuse, recycling and greenwaste
	Riversdale	Refuse, recycling and greenwaste
	Mauriceville	Refuse, recycling and greenwaste
Carterton	Carterton	Refuse, recycling and greenwaste
South Wairarapa	Greytown	Recycling and greenwaste
	Martinborough	Refuse, recycling and greenwaste
	Featherston	Recycling and greenwaste
	Pirinoa	Recycling and greenwaste

Earthcare Environmental uses compactor trucks to collect the council bagged refuse and private MGBs concurrently, and the contents of the recycling crates are sorted at kerbside into a specifically designed recycling truck.

Earthcare Environmental also offers gantry skip bin services to householders for occasional disposal of large quantities of waste. Different sizes of bins are available, with specific bins being available for dense materials such as hard fill and soil.

## 2 Methodology

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### 2.1 Survey design

The kerbside refuse audit methodology used by Waste Not Consulting is based on Procedure One of the Ministry for the Environment's Solid Waste Analysis Protocol 2002 (SWAP).

#### 2.1.1 Sampling strategy

Over six weekdays, from Monday 26 November to Monday 3 December 2012 inclusive, a total of 100 bags of domestic refuse and the contents of 36 MGBs were collected from the kerbside within each district. The collection schedule is presented below in Table 2.1.

**Table 2.1 – Sample collection schedule**

Collection date	District/Area
Monday 26 November	Carterton
Tuesday 27 November	Greytown (Sth Wairarapa)
Wednesday 28 November	Masterton
Thursday 29 November	Featherston (Sth Wairarapa)
Friday 30 November	Masterton
Monday 3 December	Carterton

Waste collected each day was transported to the Masterton Recycling Centre in Nursery Road for sorting on that day.

Only refuse from residential properties was included in the samples. The composition and quantity of kerbside refuse from residential properties varies according to a number of factors, including the socio-economic status and ethnicity of the householder, the nature of the housing stock, and the range of disposal and recycling services available. To obtain a representative sample of the kerbside refuse collections, the sample was collected from as wide a geographic area as possible and included a range of housing types.

A single refuse bag was taken from each dwelling selected for the sample, resulting in council refuse bags from 100 households in each district being collected. Only dwellings to which a distinct quantity of refuse bags could be attributed were chosen for the refuse bag sample. Refuse was not taken, for example, from beside shared driveways as it may have represented the refuse output of several households.

When a refuse bag was taken from a dwelling, the total number of bags set out by that dwelling was recorded. This has allowed the calculation of the average number of bags set out per household, which, when combined with an average bag weight, provides data on the average weight of refuse set out per household. This does not necessarily equate to an average weekly household waste generation, as not all households set out refuse each week.

The sample from each District included the contents of 36 MGBs. All of the MGBs collected were MGBs supplied to households by Wairarapa Environmental, a subsidiary of Earthcare Environmental. The private bins are collected in the same vehicles and at the same time as

the council bags. The contents of both 120 and 240-litre MGBs were emptied into large plastic bags for the sampling.

The streets from which the sample was collected are listed in Table 2.2.

**Table 2.2 – Kerbside refuse collection schedule**

Collection day	Collection Streets	Collection day	Collection Streets
<b>Monday 26 November</b>	<b>Carterton</b> <ul style="list-style-type: none"> <li>Fairbrother Street</li> <li>Deller Drive</li> <li>Kind Street</li> <li>Diamond Street</li> <li>Clifton Avenue</li> <li>High Street South</li> <li>Victoria Street</li> <li>Carrington Street</li> </ul>	<b>Thursday 29 November</b>	<b>Featherston</b> <ul style="list-style-type: none"> <li>Waite Street</li> <li>Woodward Street</li> <li>Wallace Street</li> <li>Revan Street</li> <li>Lyon Street</li> <li>Renall Street</li> <li>Watts Street</li> <li>Bell Street</li> <li>Harrison Street</li> <li>Totara Grove</li> <li>Churchill Crescent</li> <li>Kereru Grove</li> <li>Titoki Grove</li> </ul>
<b>Tuesday 27 November</b>	<b>Greytown</b> <ul style="list-style-type: none"> <li>East Street</li> <li>Reading Street</li> <li>Jellicoe Street</li> <li>Kuratawhiti Street</li> <li>West Street</li> <li>Awhina Drive</li> <li>Humphries Street</li> <li>Cotter Street</li> </ul>	<b>Friday 30 November</b>	<b>Masterton</b> <ul style="list-style-type: none"> <li>Coradine Street</li> <li>Perry Street</li> <li>Villa Street</li> <li>Bannister Street</li> <li>Worksop Road</li> <li>Sussex Street</li> <li>Dixon Street</li> <li>Norris Way</li> <li>Ashwood Grove</li> <li>Herbert Street</li> </ul>
<b>Wednesday 28 November</b>	<b>Masterton</b> <ul style="list-style-type: none"> <li>Daniel Street</li> <li>Fleet Street</li> <li>York Street</li> <li>Plunket Street</li> <li>Liverpool Street</li> <li>Manchester Street</li> <li>Solway Street</li> <li>Surrey Crescent</li> <li>Derby Street</li> <li>South Street</li> <li>Millard Avenue</li> </ul>	<b>Monday 3 December</b>	<b>Carterton</b> <ul style="list-style-type: none"> <li>Seddon Street</li> <li>Fairbrother Street</li> <li>Deller Drive</li> <li>Kind Street</li> <li>Costley Street</li> <li>Hughan Place</li> <li>Rexwood Street</li> <li>Pembroke Street</li> <li>Taylor Street</li> <li>Wyndam Street</li> </ul>



### **2.1.2 Audit execution**

At the Masterton Recycling Centre the sample of council domestic kerbside bagged refuse was sorted in sampling units of five bags. The MGB sample was sorted in units of two MGBs. The sample of refuse from 120-litre MGBs was not sorted separately from the sample of refuse from 240-litre MGBs. The audit results represent, therefore, the contents of an average MGB, rather than the contents of an MGB of a specific size.

Each of the bags in the sample unit were weighed in, one bag at a time, and then opened. The contents of all five bags in the sample unit were spread on a sorting table, and the individual items sorted into the appropriate categories. When all of the items in the sample unit were sorted, the individual classifications were weighed out and the material disposed of. The MGB refuse was sorted in a similar manner, with the contents of two bins comprising a sample unit.

The refuse was sorted into the 23 secondary categories described in Appendix 2. These categories are based on the 12 primary categories recommended by the SWAP. The secondary classifications were chosen to identify the different types of recyclable materials present in the refuse, with 'recyclability' being based on the information provided by Earthcare Environmental.

### **2.1.3 Staff training and OSH issues**

The refuse was sorted by a team of four, comprising three Earthcare Environmental workers, and a Waste Not staff member. Prior to the start of the audit, all team members received the requisite training on the requirements of the audit process and on occupational health and safety procedures. As sensitive documents are occasionally present in domestic refuse, the importance of confidentiality was emphasised to all team members.

## 3 Kerbside refuse – Masterton

### 3.1 Sampling schedule

The sort and weigh audit of kerbside refuse from Masterton took place on 28 and 30 November 2012. On each of these days the contents of a total of 50 council refuse bags and 18 privately-serviced MGBs were sampled.

### 3.2 Primary composition – Masterton domestic kerbside refuse bags

The primary composition of the Masterton domestic kerbside refuse bags is presented in Table 3.1 below and Figure 3.1 on the following page. The composition is shown in terms of percentage, mean weight per refuse bag, and mean (average) weight per household set out. The secondary composition, which includes all 23 categories, and a statistical analysis are given in Appendix 3. An analysis of the precision of the results is given in Section 3.9.

The average weight of a Masterton kerbside refuse bag was found to be 5.04 kg. Bag weights are analysed in greater detail in Section 3.4.

The mean weight per household presented in the table has been calculated from an average number of bags set out per household, based on data collected during the sample collection, and an average bag weight from the audit data. An analysis of household bag set out is given in Section 3.5. As not all households put refuse out every week, the average household set out weight cannot be regarded as equivalent to an average weekly refuse generation.

**Table 3.1 – Primary composition of Masterton domestic kerbside refuse bags**

Primary category	Proportion of total	Mean wt. per bag	Mean wt. per household set out
<b>Paper</b>	12.1%	0.61 kg	0.69 kg
<b>Plastics</b>	18.6%	0.94 kg	1.06 kg
<b>Organics</b>	45.7%	2.30 kg	2.60 kg
<b>Ferrous metals</b>	2.2%	0.11 kg	0.12 kg
<b>Non-ferrous metals</b>	0.7%	0.03 kg	0.04 kg
<b>Glass</b>	1.5%	0.08 kg	0.09 kg
<b>Textiles</b>	4.9%	0.25 kg	0.28 kg
<b>Nappies and sanitary</b>	10.7%	0.54 kg	0.61 kg
<b>Rubble</b>	1.1%	0.06 kg	0.06 kg
<b>Timber</b>	1.1%	0.05 kg	0.06 kg
<b>Rubber</b>	0.1%	0.01 kg	0.01 kg
<b>Potentially hazardous</b>	1.3%	0.06 kg	0.07 kg
<b>Total</b>	<b>100.0%</b>	<b>5.04 kg</b>	<b>5.70 kg</b>

Organic material, primarily kitchen waste, was the largest single component of the domestic bagged refuse, comprising 46% of the total. 'Plastics' represented 19% of the total, and

'Paper' a further 12%. The next largest component was 'Nappies and sanitary' at 11%. The compositions of the major primary categories are discussed in the following sections.

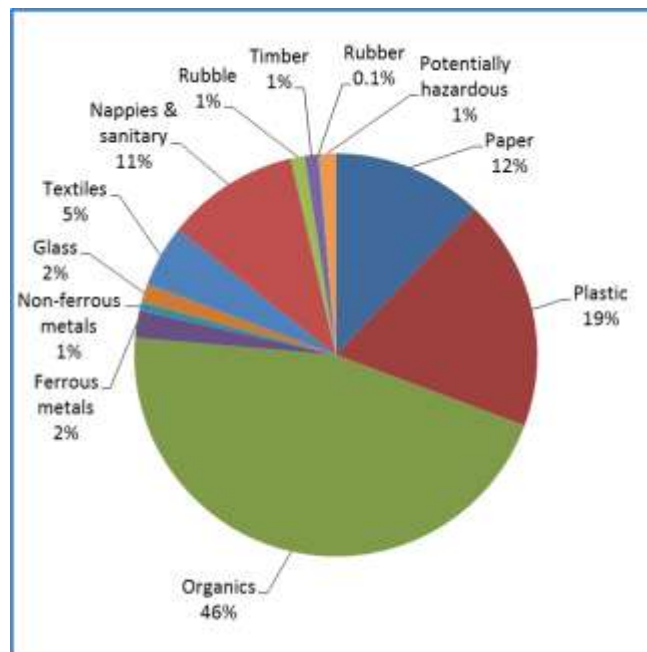


Figure 3.1 – Primary composition of Masterton domestic kerbside refuse bags

### 3.2.1 Organics

Organic matter comprised 46% of the weight of all domestic kerbside bagged refuse. The composition of the organic constituent of the refuse is shown in Figure 3.2.

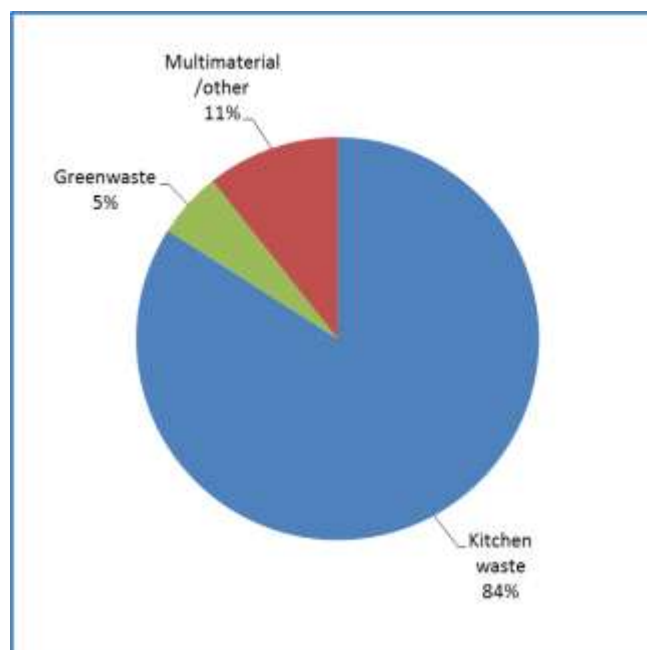


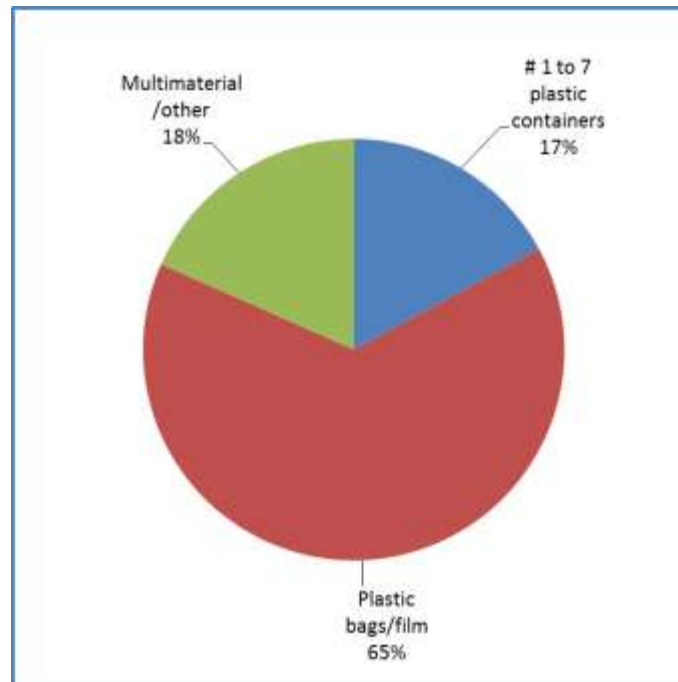
Figure 3.2 - Organic component of Masterton domestic kerbside refuse bags

'Kitchen waste' comprised 84% of the organic material. Kitchen waste included food preparation waste, left-over food waste, and substantial quantities of perished goods.

'Greenwaste', or garden matter, comprised 5% of the organic material. Most of the garden waste was leaves, weeds, and lawn clippings. The 'Other' material (11%) included vacuum cleaner dust, animal faeces, candles, fireplace ash, and human hair. Much of this material would be suitable for composting.

### 3.2.2 Plastics

Plastic materials comprised 19% of council's domestic kerbside refuse bags. The secondary components of the plastic waste are shown in Figure 3.3 below.

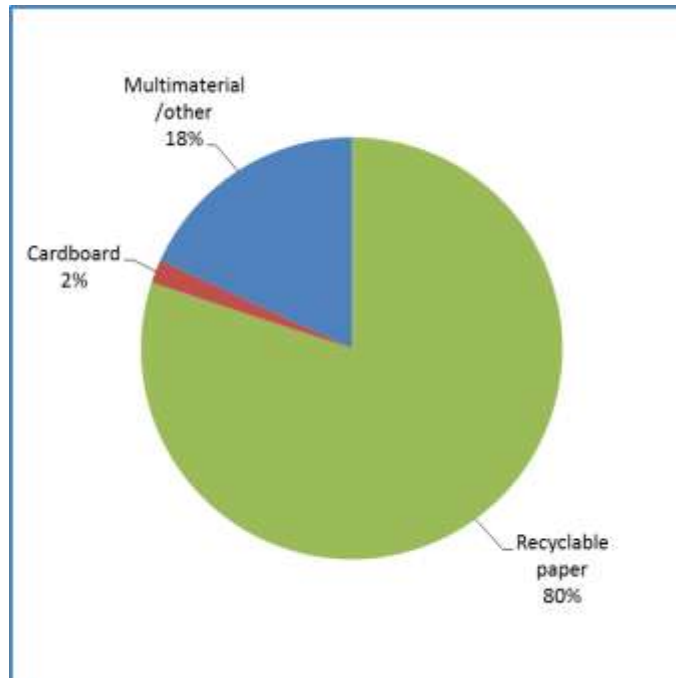


**Figure 3.3 - Plastic component of Masterton domestic kerbside refuse bags**

'Plastic bags and film' comprised 65% of the plastic waste, 'Multimaterial/other plastic' comprised 18%, and a further 17% of the plastic waste was '#1 to 7 plastic containers', which are accepted for kerbside recycling.

### 3.2.3 Paper

'Paper' comprised 12% of the council domestic kerbside refuse bag collection. The composition of the paper constituent of the refuse is shown in Figure 3.4 on the next page.



**Figure 3.4 – Paper component of Masterton domestic kerbside refuse bags**

The largest component of the paper was 'Recyclable paper', which comprised 80% of the paper. This component included office paper, newspapers, magazines, junk mail, paper packaging, and envelopes. 'Multimaterial other' paper comprised 18% of the paper waste. This category is not accepted for recycling by the council recycling collection and included Tetra Pak and gable top packaging, sand paper, wall paper, and food-contaminated paper.

A further 2% of the paper waste was composed of corrugated cardboard.

A significant proportion of households use newspaper or similar papers for bundling food waste prior to disposal. As well, a proportion of the recyclable paper and newspaper was from takeaway food wrapping. Heavily food-contaminated paper was classified as non-recyclable 'Multi-material other', but the less contaminated paper was considered to be recyclable for the purposes of this survey. Paper used for food wrapping is not likely to be available for recycling by the householder unless the wrapping behaviour can be altered. It would, however, be possible to include this paper mixed with organics in a composting stream.

### 3.3 Primary composition – Masterton private domestic MGBs

The primary composition of refuse collected in Masterton in MGBs from domestic premises by the private waste operator is presented in Table 3.2 below and Figure 3.5 on the following page. The secondary composition, which includes all 23 categories, and a statistical analysis are given in Appendix 4. An analysis of the precision of the results is given in Section 3.9.

**Table 3.2 – Primary composition of Masterton private domestic MGBs**

Primary category	Proportion of total	Mean wt. per MGB
Paper	11.2%	1.97 kg
Plastics	8.8%	1.54 kg
Organics	60.0%	10.51 kg
Ferrous metals	1.3%	0.23 kg
Non-ferrous metals	0.7%	0.13 kg
Glass	4.6%	0.81 kg
Textiles	3.0%	0.53 kg
Nappies and sanitary	8.0%	1.39 kg
Rubble	1.1%	0.20 kg
Timber	0.5%	0.10 kg
Rubber	0.4%	0.07 kg
Potentially hazardous	0.3%	0.05 kg
<b>Total</b>	<b>100.0%</b>	<b>17.52 kg</b>

Organic material was the largest single component of the domestic MGB refuse, comprising 60% of the total. 'Paper', representing 11% of the total, was the second largest component. 'Plastics' comprised a further 9% and 'Nappies and sanitary' 8%. The compositions of the major primary categories are discussed in the following sections.

The average bin weight of 17.52 kg can not necessarily be equated with an average weekly refuse generation. Although many householders do set out their MGB every week, some set them out fortnightly or less frequently.

While a random selection of both 120-litre and 240-litre MGBs was collected for the audit sample, it resulted in 18 120-litre MGBs and 18 240-litre MGBs.

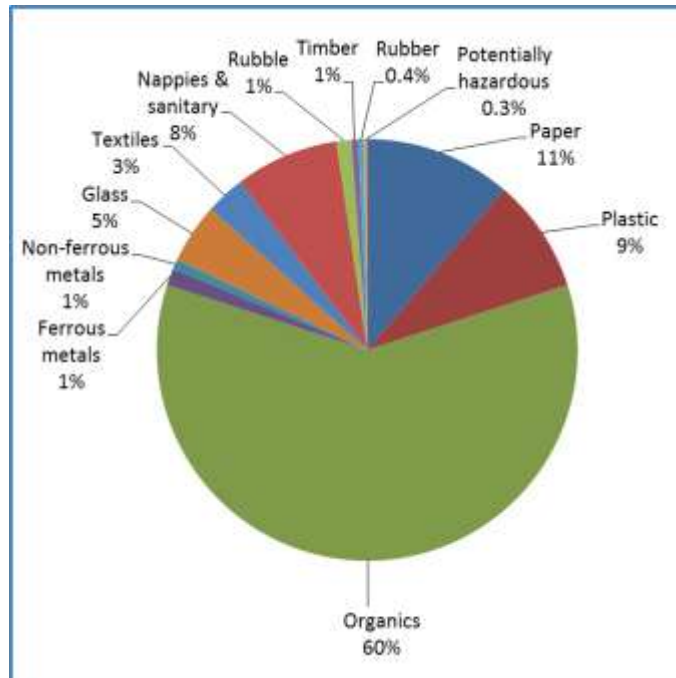


Figure 3.5 – Primary composition of Masterton private domestic MGBs

### 3.3.1 Organics

Organic matter comprised 60% of the weight of all domestic MGB refuse. The composition of the organic constituent of the refuse is shown in Figure 3.6 below.

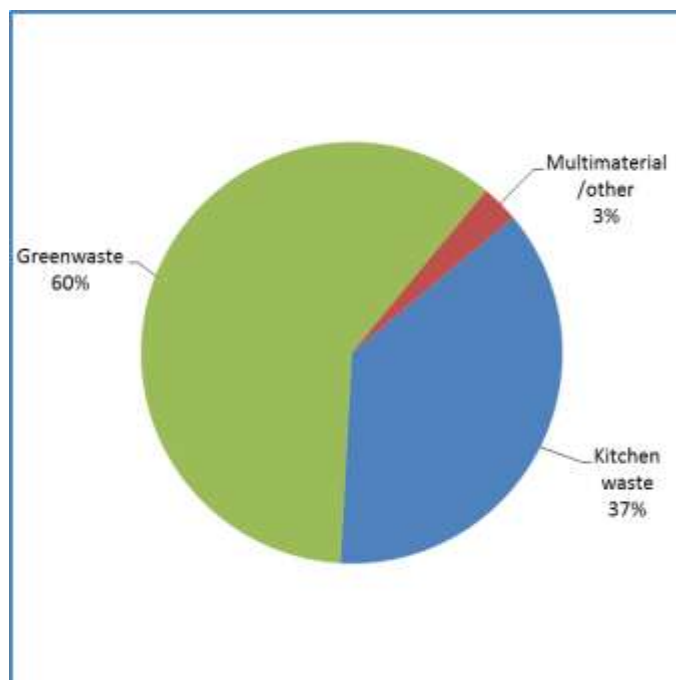


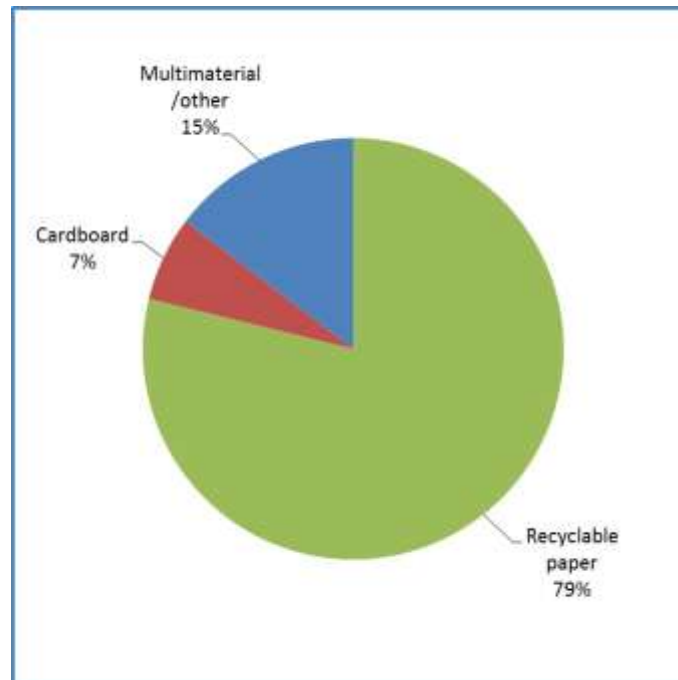
Figure 3.6 - Organics component of Masterton private domestic MGBs

‘Kitchen waste’ comprised 37% of the organic material. Kitchen waste included food preparation waste, left-over food waste, and substantial quantities of perished goods. ‘Greenwaste’, or garden matter, comprised 60% of the organic material. The garden waste

included tree and shrub prunings, leaves, weeds, and lawn clippings. The 'Other' material (3% of organic material) included vacuum cleaner dust, animal faeces, candles, fireplace ash, and human hair. Much of this material would be suitable for composting.

### 3.3.2 Paper

'Paper' comprised 11% of the private domestic MGBs. The composition of the paper constituent of MGB refuse is shown in Figure 3.7 below.



**Figure 3.7 – Paper component of Masterton private domestic MGBs**

The largest component of the paper was 'Recyclable paper', which comprised 79% of the paper. This component included office paper, newspapers, magazines, junk mail, paper packaging, and envelopes. 'Multimaterial other' paper comprised 15% of the paper waste. This category is not accepted for recycling by the council recycling collection and included Tetra Pak and gable top packaging, sand paper, wall paper, and food-contaminated paper.

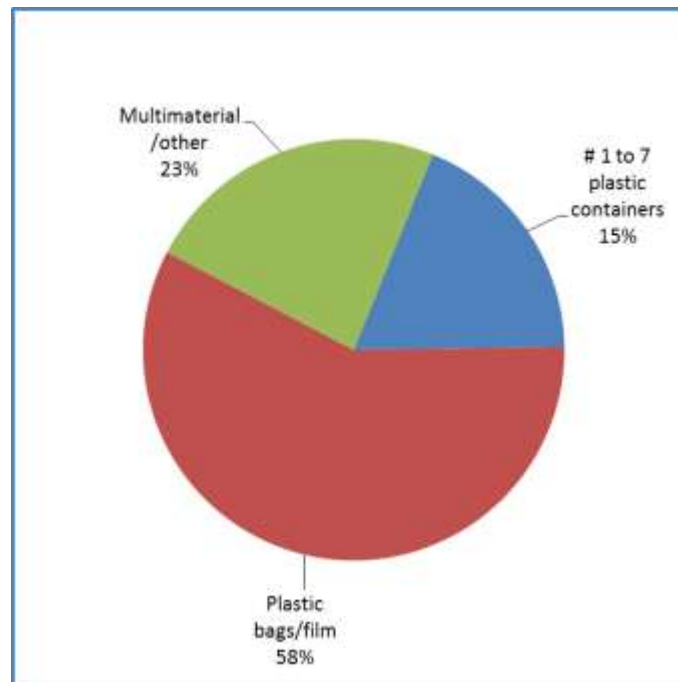
A further 7% of the paper waste was comprised of corrugated cardboard.

As with householders using refuse bags, a significant proportion of households with MGBs use newspaper or similar papers for bundling food waste prior to disposal, contaminating the paper with food waste. In addition, a proportion of the recyclable paper and newspaper was from takeaway food wrapping. Heavily food-contaminated paper was classified as non-recyclable 'Multi-material other', but the less contaminated paper was considered to be recyclable for the purposes of this survey. Paper used for food wrapping is not likely to be available for recycling by the householder unless the wrapping behaviour can be altered. It would, however, be possible to include this paper mixed with organics in a composting stream.



### 3.3.3 Plastics

'Plastics' comprised 9% of refuse in domestic kerbside MGBs. The secondary components of the plastic waste are shown in Figure 3.8.

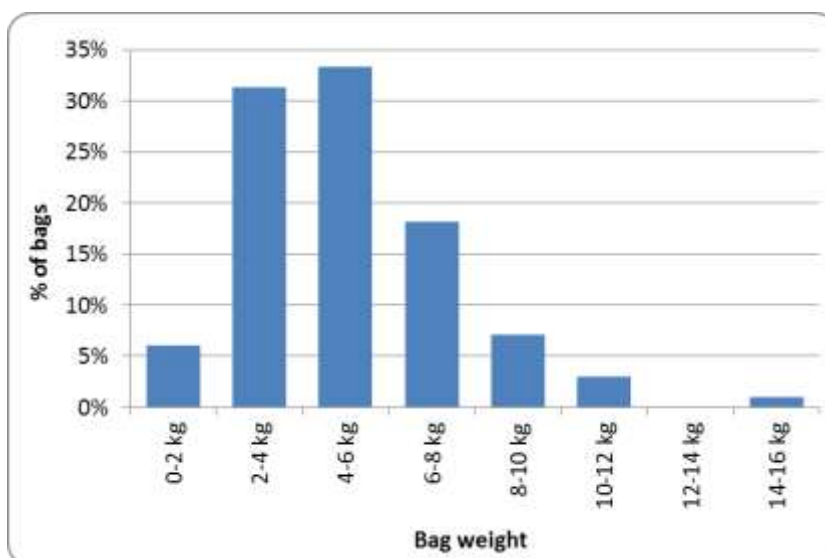


**Figure 3.8 – Plastic component of Masterton private domestic MGBs**

'Plastic bags/film' comprised 58% of the plastic waste, and 'Multimaterial/other' plastic comprised 23%. These materials are not accepted by the council's kerbside recycling collection. A further 15% was '#1 to 7 plastic containers', which are accepted for kerbside recycling.

### 3.4 Distribution of bag weight - Masterton

The average bag weight in Masterton was 5.04 kg. The lightest bag was 1.35 kg and the heaviest 14.90 kg. The distribution of the bag weights is shown in Figure 3.9 on the next page.

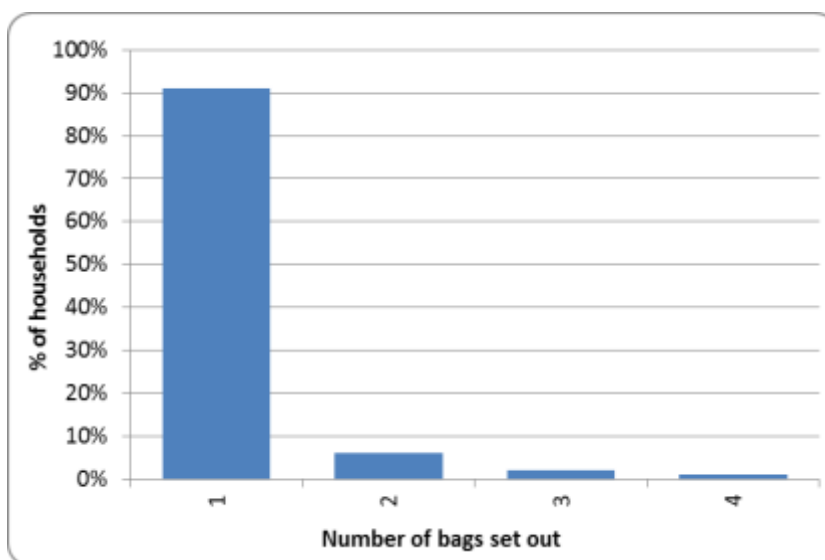


**Figure 3.9 – Distribution of Carterton domestic refuse bag weights**

89% of all bags weighed less than 8 kg.

### 3.5 Distribution of Council bag set out - Masterton

As the sample of domestic refuse bags was collected, the total number of bags set out by each household was recorded. The average household bag set out was 1.13 bags. Figure 3.10 below shows the distribution of the bag set outs.

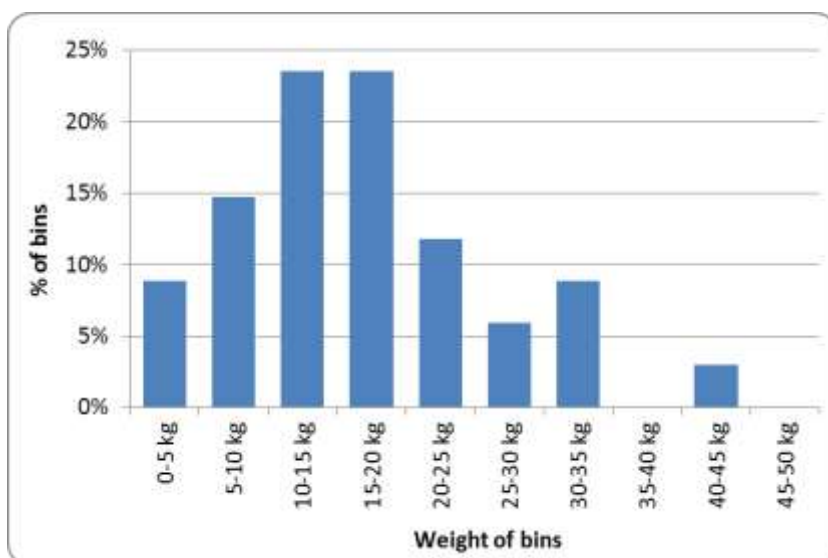


**Figure 3.10 – Distribution of Masterton domestic refuse bag set out**

Ninety-one per cent of all households that set out council refuse bags set out a single refuse bag. Three per cent of households set out more than two bags.

### 3.6 Distribution of private domestic MGB weights - Masterton

The distribution of the weights of the contents of the 36 MGBs included in the audit is shown in Figure 3.11 on the next page. The sample included both 120- and 240-litre MGBs.



**Figure 3.11 – Distribution of Masterton private domestic MGB weights**

The average MGB weight was 17.52 kg. The lightest MGB was 1.25 kg and the heaviest 41.80 kg. Over two-thirds of bins (71%) weighed less than 20 kg and 3% of bins weighed over 40 kg.

### 3.7 Comparison of refuse bag and MGBs composition - Masterton

A comparison of the primary composition of the domestic bagged refuse and MGB refuse in Masterton is given in Table 3.3. The secondary compositions for the 'Organics' category are also shown. The comparison is given in terms of both percentages and weight per household set out. The weight of material set out by each household is the more meaningful comparison. The household set out weight for households using council refuse bags has been calculated as described in Section 3.2, and is based on each household that set out refuse setting out 1.13 bags weighing an average of 5.04 kg each. The household set out weight for households using MGBs is considered to be the average weight of a single MGB.

**Table 3.3 – Comparison of bagged refuse and MGBs, Masterton**

Primary category	Proportion of total		Mean wt. per household set out	
	Bags	MGBs	Bags	MGBs
<b>Paper</b>	12.1%	11.2%	0.69 kg	1.97 kg
<b>Plastics</b>	18.6%	8.8%	1.06 kg	1.54 kg
<b>Organics subtotal</b>	45.7%	60.0%	2.60 kg	10.51 kg
<i>Comprised of: Kitchen waste</i>	38.4%	22.2%	2.19 kg	3.89 kg
<i>Greenwaste</i>	2.4%	36.1%	0.14 kg	6.32 kg
<i>Other</i>	4.9%	1.7%	0.28 kg	0.30 kg
<b>Ferrous metals</b>	2.2%	1.3%	0.12 kg	0.23 kg
<b>Non-ferrous metals</b>	0.7%	0.7%	0.04 kg	0.13 kg
<b>Glass</b>	1.5%	4.6%	0.09 kg	0.81 kg
<b>Textiles</b>	4.9%	3.0%	0.28 kg	0.53 kg
<b>Nappies and sanitary</b>	10.7%	8.0%	0.61 kg	1.39 kg
<b>Rubble</b>	1.1%	1.1%	0.06 kg	0.20 kg
<b>Timber</b>	1.1%	0.5%	0.06 kg	0.10 kg
<b>Rubber</b>	0.1%	0.4%	0.01 kg	0.07 kg
<b>Potentially hazardous</b>	1.3%	0.3%	0.07 kg	0.05 kg
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>5.70 kg</b>	<b>17.52 kg</b>

The average weight of the contents of an MGB (17.52 kg) was 3.1 times the average household set out weight for council refuse bags (5.70 kg). The difference may be associated with MGBs being chosen by larger households that generate larger quantities of refuse than households that use the council bagged refuse service.

The main difference in the composition of the bag and MGB waste, however, is due to larger quantities of greenwaste and recyclables in the MGBs. The MGBs contained on average 45 times more greenwaste than the bags. They also contained higher proportions of all recyclable materials than the bagged waste.

Neither the average weight of an MGB nor the average household refuse bag set out weight can be considered equivalent to a weekly household weight generation. Not all users of refuse bags or MGBs set out refuse every week.

### 3.8 Diversion potential - Masterton

A common means of diverting domestic refuse materials from landfill disposal is through the kerbside collection of recyclable and compostable materials. Masterton District Council provides a kerbside collection of recyclable paper and cardboard, recyclable plastic containers #1 to 7, aluminium and steel cans, glass bottles, and reusable textiles to households in the District. Kitchen waste and garden waste can be composted by residents or garden waste can be taken to the transfer stations where it is composted. A garden waste collection is offered by a private service provider in Masterton District.

Table 3.4 on the next page shows the proportion of the Masterton domestic kerbside refuse collections that could have been diverted using these diversion methods.

**Table 3.4 – Diversion potential of Masterton domestic refuse**

Kerbside recyclable materials	Refuse bags - per household set out	MGBs - per MGB
<b>Recyclable materials</b>		
Paper - Recyclable	0.55 kg	1.55 kg
Cardboard	0.01 kg	0.13 kg
Plastics - #1 to 7	0.18 kg	0.29 kg
Ferrous metals - Steel cans	0.09 kg	0.20 kg
Non-ferrous metals - aluminium cans	0.01 kg	0.03 kg
Glass - Bottles/jars	0.05 kg	0.79 kg
Reusable textiles	0.17 kg	0.18 kg
<b>Subtotal</b>	<b>1.06 kg</b>	<b>3.17 kg</b>
<b>Compostable materials</b>		
Organics - Kitchen waste	2.19 kg	3.89 kg
Organics - Greenwaste	0.14 kg	6.32 kg
<b>Subtotal</b>	<b>2.32 kg</b>	<b>10.21 kg</b>
<b>Total divertible</b>		
<b>Weight of divertible materials</b>	<b>3.39 kg</b>	<b>13.38 kg</b>
<b>Divertible materials as % of total</b>	<b>59.5%</b>	<b>76.3%</b>

Nineteen per cent of the materials in the refuse bags could have been recycled through the existing kerbside recycling collection and 18% of the MGB waste. A further 41% of the waste in the refuse bags could have been composted and 58% of the MGB waste. In total, about 60% of council's kerbside bagged refuse collection could be diverted from landfill disposal through recycling and composting and 76% of the private MGB collection could be diverted. The weight of divertible material per MGB is approximately four times the quantity of divertible material in each household set out of refuse bags.

### 3.9 Precision of results of kerbside refuse audits - Masterton

The MfE's Solid Waste Analysis Protocol 2002 (SWAP) defines a precision level (margin of error/mean) of  $\pm 20\%$  as being a "reasonable level of accuracy". The precision level of a result is directly related to the standard variation of the samples – in this case, how much the quantity of a particular material varies amongst the different samples. A material that is present in roughly similar quantities in all samples, such as "Plastic bags & film", will have a better precision level than a material that is not common in household refuse, such as timber, or is present in highly variable amounts, such as rubble.

Precision levels for the primary categories in the Masterton refuse bag and MGB surveys are given in Table 3.5.

**Table 3.5 – Precision level of primary categories**

Precision level	Council domestic refuse bags	Private domestic MGBs
<b>Paper</b>	<b>17%</b>	40%
<b>Plastics</b>	<b>12%</b>	22%
<b>Organics</b>	<b>13%</b>	21%
<b>Ferrous metals</b>	38%	47%
<b>Non-ferrous metals</b>	44%	71%
<b>Glass</b>	60%	106%
<b>Textiles</b>	42%	60%
<b>Nappies &amp; sanitary</b>	25%	63%
<b>Rubble, concrete, etc.</b>	79%	73%
<b>Timber</b>	111%	102%
<b>Rubber</b>	122%	123%
<b>Potentially hazardous</b>	42%	109%

In the refuse bag audit, the results for three of the primary categories (Paper, Plastics, Organics) fell within the SWAP definition of a “reasonable level of accuracy”. In the MGB audit, none of the primary categories had precision levels less than  $\pm 20\%$ .

With regards to the secondary categories, two categories in the refuse bag audit had results with a precision level of less than  $\pm 20\%$ , and none of the secondary categories in the MGB audit had precision levels less than  $\pm 20\%$ .

The precision levels for the bagged refuse are good, as in an audit of 500 refuse bags it is uncommon to obtain “reasonable levels of accuracy” for more than four of the primary categories.

The lack of low precision levels in the MGB audit is not uncommon due to the small sample size and the high variability of materials within MGBs. MGBs tend to have a higher standard deviation of materials than refuse bags.

## 4 Kerbside refuse – Carterton

### 4.1 Sampling schedule

The sort and weigh audit of kerbside refuse from Carterton took place on 26 November and 3 December 2012. On each of these days the contents of a total of 50 council refuse bags and 18 privately-serviced MGBs were sampled.

### 4.2 Primary composition – Carterton domestic kerbside refuse bags

The primary composition of the Carterton domestic kerbside refuse bags is presented in Table 4.1 below and Figure 4.1 on the following page. The composition is shown in terms of percentage, mean weight per refuse bag, and mean (average) weight per household set out. The secondary composition, which includes all 23 categories, and a statistical analysis are given in Appendix 3. An analysis of the precision of the results is given in Section 4.9.

The average weight of a Carterton kerbside refuse bag was found to be 6.56 kg. Bag weights are analysed in greater detail in Section 4.4.

The mean weight per household presented in the table has been calculated from an average number of bags set out per household, based on data collected during the sample collection, and an average bag weight from the audit data. An analysis of household bag set out is given in Section 4.5. As not all households put refuse out every week, the average household set out weight cannot be regarded as equivalent to an average weekly refuse generation.

**Table 4.1 – Primary composition of Carterton domestic kerbside refuse bags**

Primary category	Proportion of total	Mean wt. per bag	Mean wt. per household set out
<b>Paper</b>	10.9%	0.72 kg	0.87 kg
<b>Plastics</b>	15.4%	1.01 kg	1.22 kg
<b>Organics</b>	52.8%	3.46 kg	4.19 kg
<b>Ferrous metals</b>	2.0%	0.13 kg	0.16 kg
<b>Non-ferrous metals</b>	1.0%	0.06 kg	0.08 kg
<b>Glass</b>	2.4%	0.16 kg	0.19 kg
<b>Textiles</b>	3.0%	0.20 kg	0.24 kg
<b>Nappies and sanitary</b>	9.6%	0.63 kg	0.76 kg
<b>Rubble</b>	1.4%	0.09 kg	0.11 kg
<b>Timber</b>	0.6%	0.04 kg	0.04 kg
<b>Rubber</b>	0.1%	0.01 kg	0.01 kg
<b>Potentially hazardous</b>	0.9%	0.06 kg	0.07 kg
<b>Total</b>	<b>100.0%</b>	<b>6.56 kg</b>	<b>7.93 kg</b>

Organic material, primarily kitchen waste, was the largest single component of the domestic bagged refuse, comprising 53% of the total. ‘Plastics’ represented 15% of the total, and

'Paper' a further 11%. The next largest component was 'Nappies and sanitary' at 10%. The compositions of the major primary categories are discussed in the following sections.

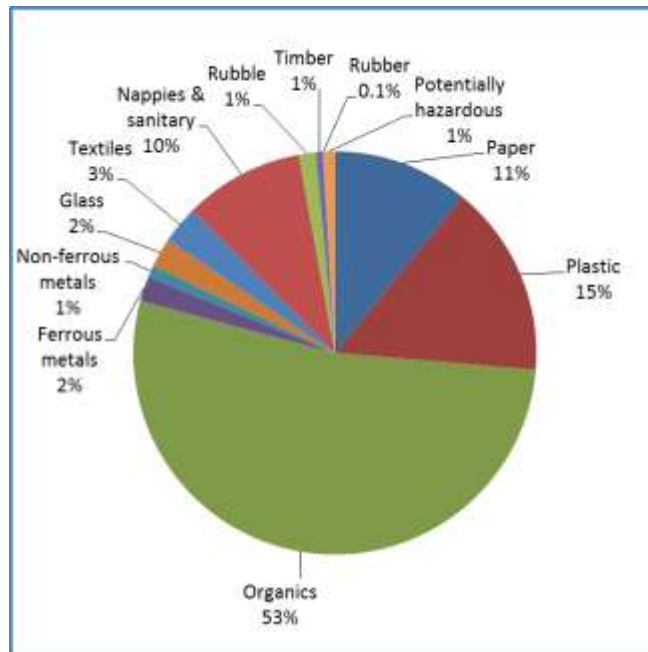


Figure 4.1 – Primary composition of Carterton domestic kerbside refuse bags

#### 4.2.1 Organics

Organic matter comprised 53% of the weight of all domestic kerbside bagged refuse. The composition of the organic constituent of the refuse is shown in Figure 4.2.

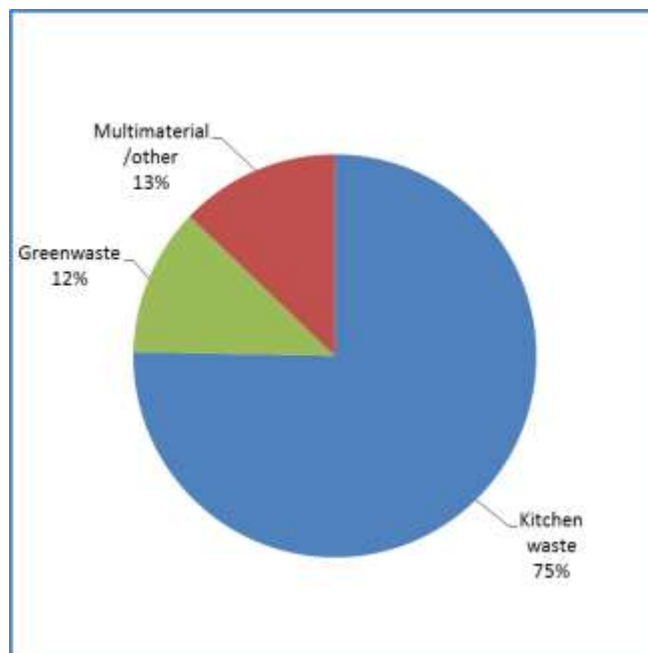


Figure 4.2 - Organic component of Carterton domestic kerbside refuse bags

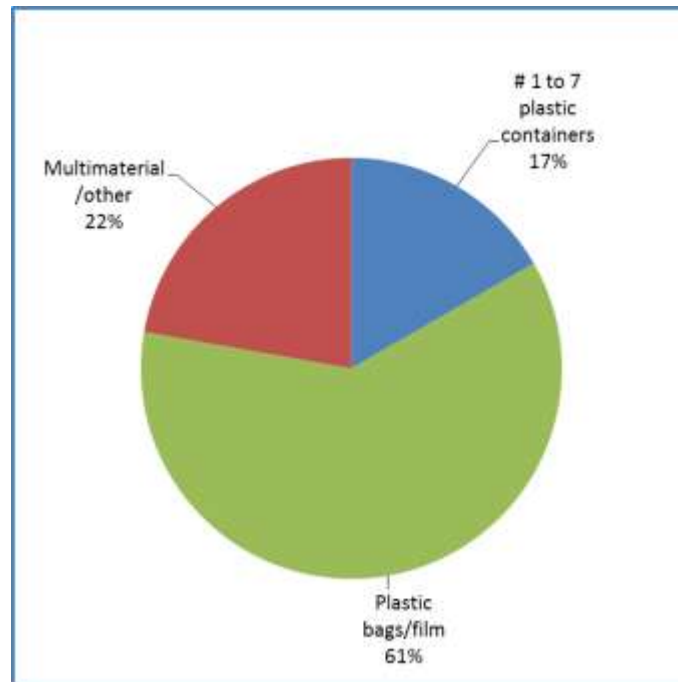
'Kitchen waste' comprised 75% of the organic material. Kitchen waste included food preparation waste, left-over food waste, and substantial quantities of perished goods.



‘Greenwaste’, or garden matter, comprised 12% of the organic material. Most of the garden waste was leaves, weeds, and lawn clippings. The ‘Other’ material (13%) included vacuum cleaner dust, animal faeces, candles, fireplace ash, and human hair. Much of this material would be suitable for composting.

#### 4.2.2 Plastics

Plastic materials comprised 15% of council’s domestic kerbside refuse bags. The secondary components of the plastic waste are shown in Figure 4.3 below.

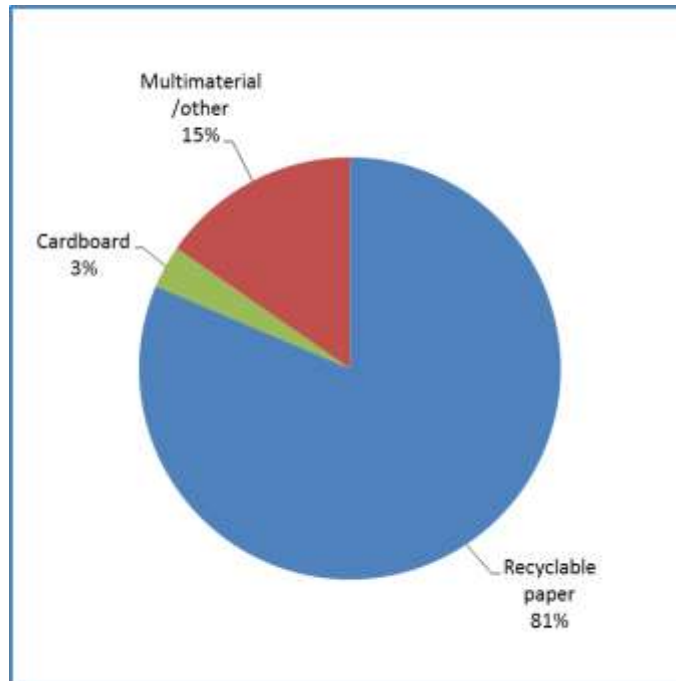


**Figure 4.3 - Plastic component of Carterton domestic kerbside refuse bags**

‘Plastic bags and film’ comprised 61% of the plastic waste, ‘Multimaterial/other plastic’ comprised 22%, and a further 17% of the plastic waste was ‘#1 to 7 plastic containers’, which are accepted for kerbside recycling.

#### 4.2.3 Paper

‘Paper’ comprised 11% of the council domestic kerbside refuse bag collection. The composition of the paper constituent of the refuse is shown in Figure 4.4 on the next page.



**Figure 4.4 – Paper component of Carterton domestic kerbside refuse bags**

The largest component of the paper was 'Recyclable paper', which comprised 81% of the paper. This component included office paper, newspapers, magazines, junk mail, paper packaging, and envelopes. 'Multimaterial other' paper comprised 15% of the paper waste. This category is not accepted for recycling by the council recycling collection and included Tetra Pak and gable top packaging, sand paper, wall paper, and food-contaminated paper.

A further 3% of the paper waste comprised corrugated cardboard.

A significant proportion of households use newspaper or similar papers for bundling food waste prior to disposal. As well, a proportion of the recyclable paper and newspaper was from takeaway food wrapping. Heavily food-contaminated paper was classified as non-recyclable 'Multi-material other', but the less contaminated paper was considered to be recyclable for the purposes of this survey. Paper used for food wrapping is not likely to be available for recycling by the householder unless the wrapping behaviour can be altered. It would, however, be possible to include this paper mixed with organics in a composting stream.

### 4.3 Primary composition – Carterton private domestic MGBs

The primary composition of refuse collected in Carterton in MGBs from domestic premises by the private waste operator is presented in Table 4.2 below and Figure 4.5 on the following page. The secondary composition, which includes all 23 categories, and a statistical analysis are given in Appendix 4. An analysis of the precision of the results is given in Section 4.9.

**Table 4.2 – Primary composition of Carterton private domestic MGBs**

Primary category	Proportion of total	Mean wt. per MGB
<b>Paper</b>	13.2%	2.32 kg
<b>Plastics</b>	10.6%	1.86 kg
<b>Organics</b>	54.3%	9.50 kg
<b>Ferrous metals</b>	1.3%	0.23 kg
<b>Non-ferrous metals</b>	0.8%	0.14 kg
<b>Glass</b>	4.7%	0.82 kg
<b>Textiles</b>	3.7%	0.65 kg
<b>Nappies and sanitary</b>	8.6%	1.50 kg
<b>Rubble</b>	1.6%	0.28 kg
<b>Timber</b>	0.8%	0.14 kg
<b>Rubber</b>	0.0%	0.00 kg
<b>Potentially hazardous</b>	0.3%	0.05 kg
<b>Total</b>	<b>100.0%</b>	<b>17.51 kg</b>

Organic material was the largest single component of the domestic MGB refuse, comprising 54% of the total. 'Paper', representing 13% of the total, was the second largest component. 'Plastics' comprised a further 11% and 'Nappies and sanitary' 9%. The compositions of the major primary categories are discussed in the following sections.

The average bin weight of 17.51 kg can not necessarily be equated with an average weekly refuse generation. Although many householders do set out their MGB every week, some set them out fortnightly or less frequently.

A random selection of both 120-litre and 240-litre MGBs was collected for the audit sample, resulting in 13 120-litre MGBs and 23 240-litre MGBs.

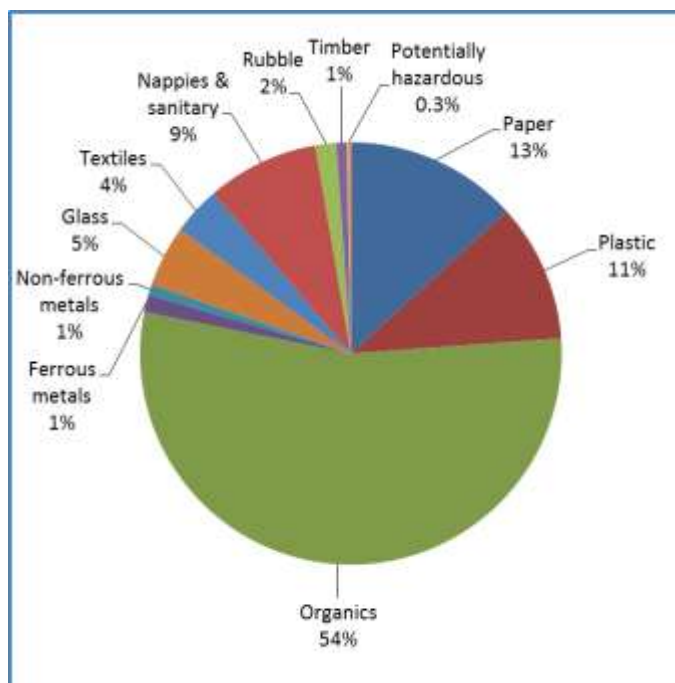


Figure 4.5 – Primary composition of Carterton private domestic MGBs

#### 4.3.1 Organics

Organic matter comprised 54% of the weight of all domestic MGB refuse. The composition of the organic constituent of the refuse is shown in Figure 4.6 below.

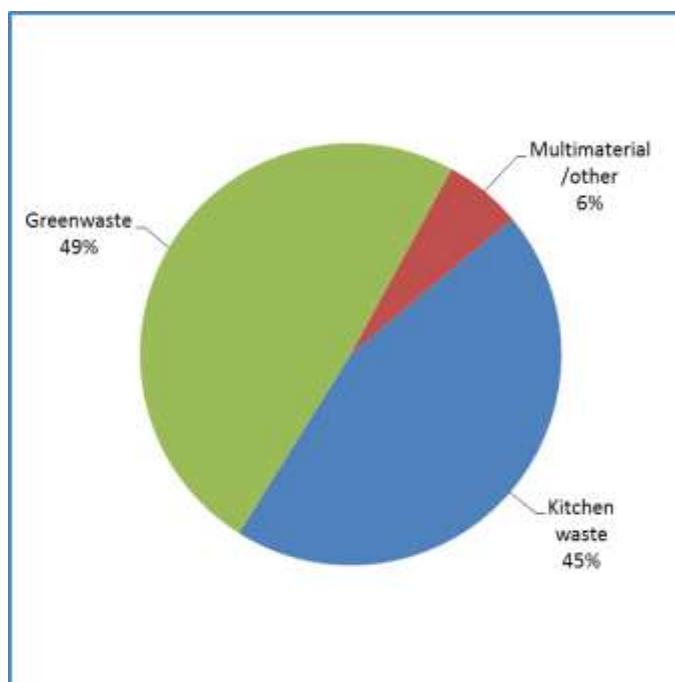


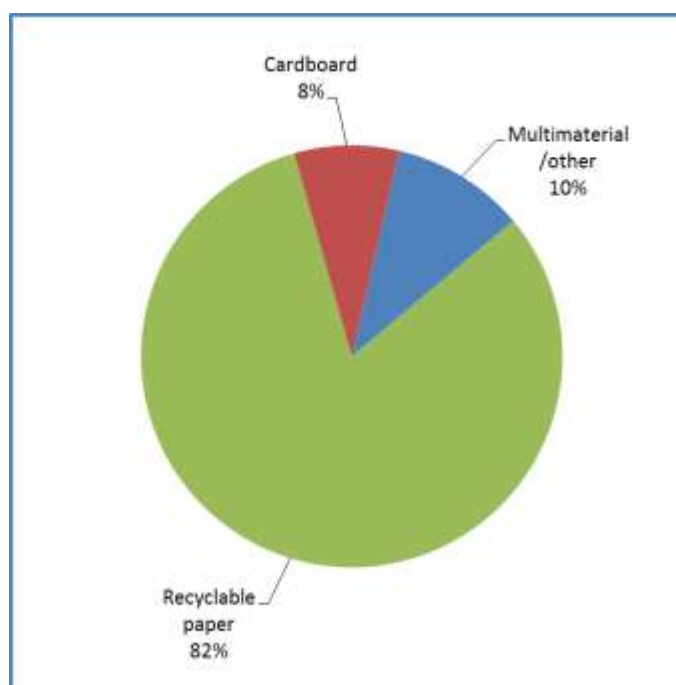
Figure 4.6 - Organics component of Carterton private domestic MGBs

‘Kitchen waste’ comprised 45% of the organic material. Kitchen waste included food preparation waste, left-over food waste, and substantial quantities of perished goods. ‘Greenwaste’, or garden matter, comprised 49% of the organic material. The garden waste

included tree and shrub prunings, leaves, weeds, and lawn clippings. The 'Other' material (6% of organic material) included vacuum cleaner dust, animal faeces, candles, fireplace ash, and human hair. Much of this material would be suitable for composting.

### 4.3.2 Paper

'Paper' comprised 13% of the private domestic MGBs. The composition of the paper constituent of MGB refuse is shown in Figure 4.7 below.



**Figure 4.7 – Paper component of Carterton private domestic MGBs**

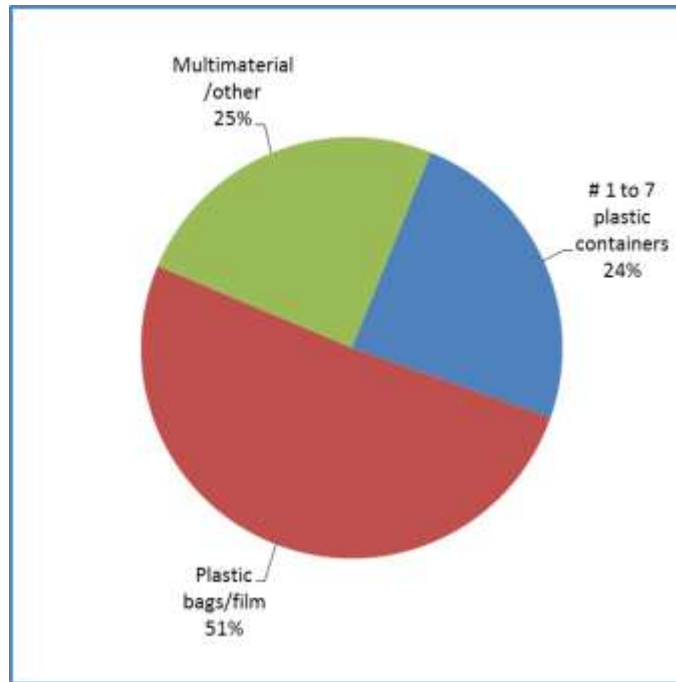
The largest component of the paper was 'Recyclable paper', which comprised 82% of the paper. This component included office paper, newspapers, magazines, junk mail, paper packaging, and envelopes. 'Multimaterial other' paper comprised 10% of the paper waste. This category is not accepted for recycling by the council recycling collection and included Tetra Pak and gable top packaging, sand paper, wall paper, and food-contaminated paper.

A further 8% of the paper waste was comprised of corrugated cardboard.

As with householders using refuse bags, a significant proportion of households with MGBs use newspaper or similar papers for bundling food waste prior to disposal, contaminating the paper with food waste. In addition, a proportion of the recyclable paper and newspaper was from takeaway food wrapping. Heavily food-contaminated paper was classified as non-recyclable 'Multi-material other', but the less contaminated paper was considered to be recyclable for the purposes of this survey. Paper used for food wrapping is not likely to be available for recycling by the householder unless the wrapping behaviour can be altered. It would, however, be possible to include this paper mixed with organics in a composting stream.

### 4.3.3 Plastics

'Plastics' comprised 11% of refuse in domestic kerbside MGBs. The secondary components of the plastic waste are shown in Figure 4.8.

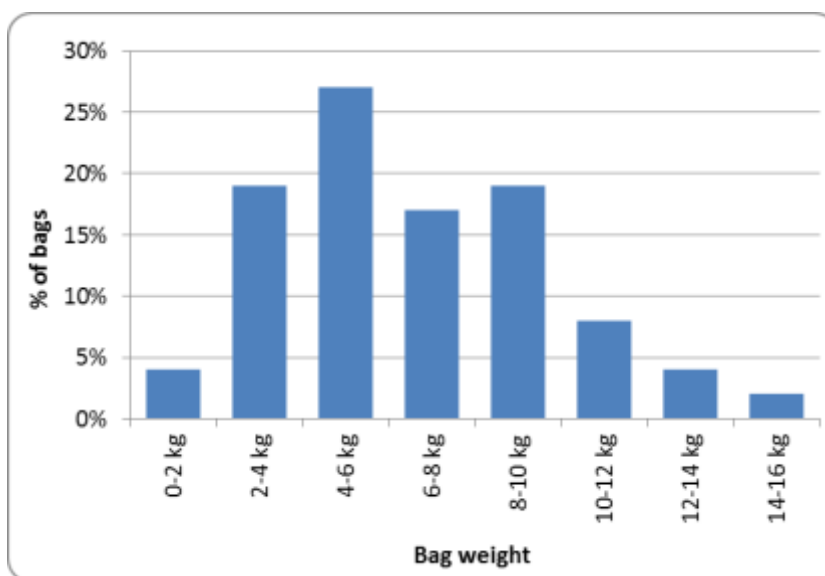


**Figure 4.8 – Plastic component of Carterton private domestic MGBs**

'Plastic bags/film' comprised 51% of the plastic waste, and 'Multimaterial/other' plastic comprised 25%. These materials are not accepted by the council's kerbside recycling collection. A further 24% was '#1 to 7 plastic containers', which are accepted for kerbside recycling.

## 4.4 Distribution of bag weights - Carterton

The average bag weight in Carterton was 6.56 kg. The lightest bag was 0.35 kg and the heaviest 14.70 kg. The distribution of the bag weights is shown in Figure 4.9 on the following page.

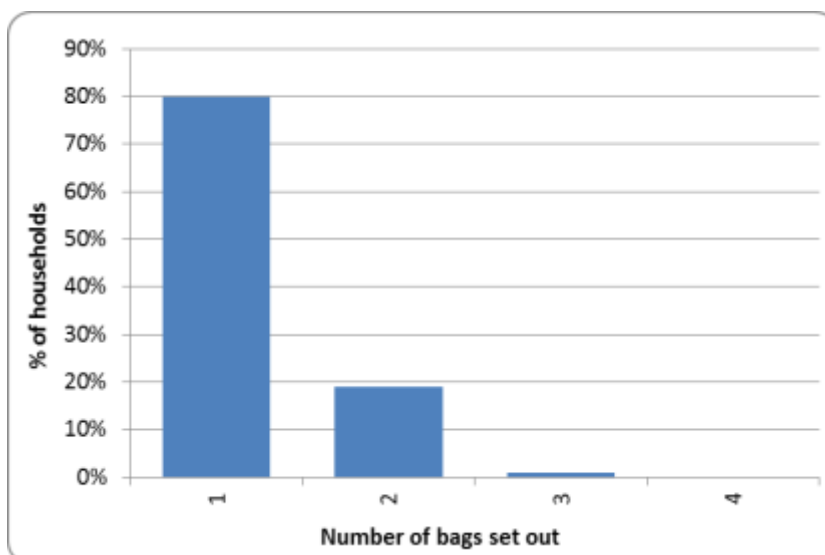


**Figure 4.9 – Distribution of Carterton domestic refuse bag weights**

67% of all bags weighed less than 8 kg. 6% weighed 12 kg or more.

#### 4.5 Distribution of Council bag set out – Carterton

As the sample of domestic refuse bags was collected, the total number of bags set out by each household was recorded. The average household bag set out was 1.21 bags. Figure 4.10 below shows the distribution of the bag set outs.

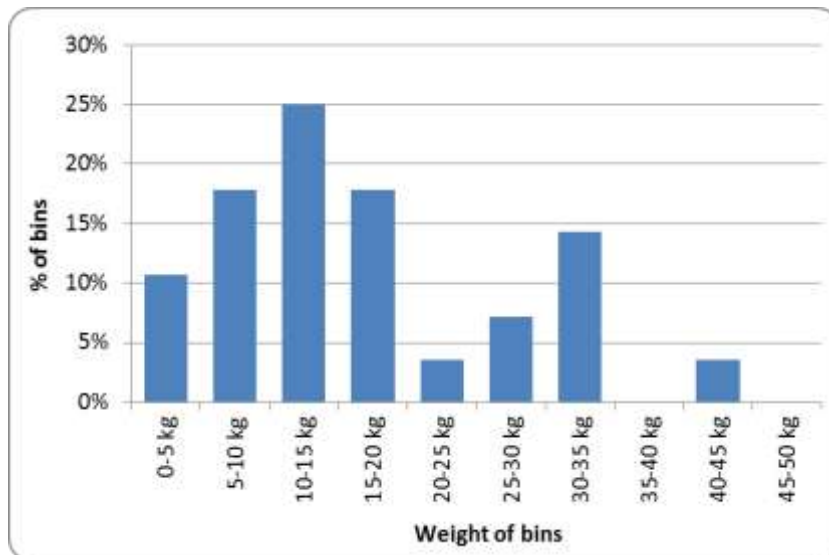


**Figure 4.10 – Distribution of Carterton domestic refuse bag set out**

Eighty per cent of all households that set out council refuse bags set out a single refuse bag. One per cent of households set out more than two bags.

#### 4.6 Distribution of private domestic MGB weights – Carterton

The distribution of the weights of the contents of the MGBs included in the audit is shown in Figure 4.11 below. The sample included both 120- and 240-litre MGBs.



**Figure 4.11 – Distribution of Carterton private domestic MGB weights**

The average MGB weight was 17.51 kg. The lightest MGB was 3.80 kg and the heaviest 43.00 kg. Over two-thirds of bins (71%) weighed less than 20 kg and 4% of bins weighed over 40 kg.

#### **4.7 Comparison of refuse bag and MGBs composition - Carterton**

A comparison of the primary composition of the domestic bagged refuse and MGB refuse in Carterton is given in Table 4.3 on the next page. The secondary compositions for the 'Organics' category are also shown. The comparison is given in terms of both percentages and weight per household set out. The weight of material set out by each household is the more meaningful comparison. The household set out weight for households using council refuse bags has been calculated as described in Section 4.2, and is based on each household that set out refuse setting out 1.21 bags weighing an average of 6.56 kg each. The household set out weight for households using MGBs is considered to be the average weight of a single MGB.



**Table 4.3 – Comparison of bagged refuse and MGBs, Carterton**

Primary category	Proportion of total		Mean wt. per household set out	
	Bags	MGBs	Bags	MGBs
<b>Paper</b>	10.9%	13.2%	0.87 kg	2.32 kg
<b>Plastics</b>	15.4%	10.6%	1.22 kg	1.86 kg
<b>Organics subtotal</b>	52.8%	54.3%	4.19 kg	9.50 kg
<i>Comprised of: Kitchen waste</i>	39.8%	24.4%	3.16 kg	4.28 kg
<i>Greenwaste</i>	6.3%	26.6%	0.50 kg	4.66 kg
<i>Other</i>	6.8%	3.2%	0.54 kg	0.56 kg
<b>Ferrous metals</b>	2.0%	1.3%	0.16 kg	0.23 kg
<b>Non-ferrous metals</b>	1.0%	0.8%	0.08 kg	0.14 kg
<b>Glass</b>	2.4%	4.7%	0.19 kg	0.82 kg
<b>Textiles</b>	3.0%	3.7%	0.24 kg	0.65 kg
<b>Nappies and sanitary</b>	9.6%	8.6%	0.76 kg	1.50 kg
<b>Rubble</b>	1.4%	1.6%	0.11 kg	0.28 kg
<b>Timber</b>	0.6%	0.8%	0.04 kg	0.14 kg
<b>Rubber</b>	0.1%	0.0%	0.01 kg	0.00 kg
<b>Potentially hazardous</b>	0.9%	0.3%	0.07 kg	0.05 kg
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>7.93 kg</b>	<b>17.51 kg</b>

The average weight of the contents of an MGB (17.51 kg) was 2.2 times the average household set out weight for council refuse bags (7.93 kg). The difference may be associated with MGBs being chosen by larger households that generate larger quantities of refuse than households that use the council bagged refuse service.

The main difference in the composition of the bag and MGB waste, however, is due to larger quantities of greenwaste and recyclables in the MGBs. The MGBs contained on average nine times more greenwaste than the bags. They also contained higher proportions of all recyclable materials than the bagged waste.

Neither the average weight of an MGB or the average household refuse bag set out weight can be considered equivalent to a weekly household weight generation. Not all users of refuse bags or MGBs set out refuse every week.

#### 4.8 Diversion potential - Carterton

A common means of diverting domestic refuse materials from landfill disposal is through the kerbside collection of recyclable and compostable materials. Carterton District Council provides a kerbside collection of recyclable paper and cardboard, recyclable plastic containers #1 to 7, aluminium and steel cans, glass bottles, and reusable textiles to households in the District. Kitchen waste and garden waste can be composted by residents or garden can be taken to the transfer stations where it is composted. A garden waste collection is offered by a private service provider in Carterton District.

Table 4.4 shows the proportion of Carterton domestic kerbside refuse collections that could have been diverted using these diversion methods.

**Table 4.4 – Diversion potential of Carterton domestic refuse**

Kerbside recyclable materials	Refuse bags - per household set out	MGBs - per MGB
<b>Recyclable materials</b>		
Paper - Recyclable	0.70 kg	1.89 kg
Cardboard	0.03 kg	0.19 kg
Plastics - #1 to 7	0.20 kg	0.45 kg
Ferrous metals - Steel cans	0.11 kg	0.18 kg
Non-ferrous metals - aluminium cans	0.01 kg	0.02 kg
Glass - Bottles/jars	0.15 kg	0.81 kg
Reusable textiles	0.16 kg	0.31 kg
<b>Subtotal</b>	<b>1.37 kg</b>	<b>3.85 kg</b>
<b>Compostable materials</b>		
Organics - Kitchen waste	3.16 kg	4.28 kg
Organics - Greenwaste	0.50 kg	4.66 kg
<b>Subtotal</b>	<b>3.66 kg</b>	<b>8.94 kg</b>
<b>Total divertible</b>		
<b>Weight of divertible materials</b>	<b>5.02 kg</b>	<b>12.79 kg</b>
<b>Divertible materials as % of total</b>	<b>63.3%</b>	<b>73.1%</b>

Seventeen per cent of the materials in the refuse bags could have been recycled through the existing kerbside recycling collection and 22% of the MGB waste. A further 46% of the waste in the refuse bags could have been composted and 51% of the MGB waste. In total, about 63% of council's kerbside bagged refuse collection could be diverted from landfill disposal through recycling and composting and 73% of the private MGB collection could be diverted. The weight of divertible material in each MGB is approximately 2.5 times the quantity of divertible material in each household set out of refuse bags.

#### 4.9 Precision of results of kerbside refuse audits – Carterton

The MfE's Solid Waste Analysis Protocol 2002 (SWAP) defines a precision level (margin of error/mean) of  $\pm 20\%$  as being a "reasonable level of accuracy". The precision level of a result is directly related to the standard variation of the samples – in this case, how much the quantity of a particular material varies amongst the different samples. A material that is present in roughly similar quantities in all samples, such as "Plastic bags & film", will have a better precision level than a material that is not common in household refuse, such as timber, or is present in highly variable amounts, such as rubble.

Precision levels for the primary categories in the Carterton refuse bag and MGB surveys are given in Table 4.5.

**Table 4.5 – Precision level of primary categories**

Precision level	Council domestic refuse bags	Private domestic MGBs
<b>Paper</b>	23%	29%
<b>Plastics</b>	<b>9%</b>	<b>18%</b>
<b>Organics</b>	21%	30%
<b>Ferrous metals</b>	30%	37%
<b>Non-ferrous metals</b>	32%	107%
<b>Glass</b>	43%	57%
<b>Textiles</b>	52%	67%
<b>Nappies &amp; sanitary</b>	41%	71%
<b>Rubble, concrete, etc.</b>	100%	131%
<b>Timber</b>	117%	74%
<b>Rubber</b>	93%	196%
<b>Potentially hazardous</b>	52%	78%

In both the refuse bag audit and the MGB audit, the results for one of the primary categories (Plastics) fell within the SWAP definition of a “reasonable level of accuracy”.

With regards to the secondary categories, four categories in the refuse bag audit had results with a precision level of less than  $\pm 20\%$ , and one of the secondary categories in the MGB audit had precision levels less than  $\pm 20\%$ .

The precision levels for the bagged refuse are satisfactory, as in an audit of 500 refuse bags it is uncommon to obtain “reasonable levels of accuracy” for more than four of the primary categories.

The precision levels for the MGB audit are satisfactory, due to the small sample size and the high variability of materials within MGBs. MGBs tend to have a higher standard deviation of materials than refuse bags.

## 5 Kerbside refuse – South Wairarapa

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### 5.1 Sampling schedule

The sort and weigh audit of kerbside refuse from South Wairarapa took place on 27 November in Greytown and 29 November in Featherston. On each of these days the contents of a total of 50 council refuse bags and 18 privately-serviced MGBs were sampled.

### 5.2 Primary composition – South Wairarapa domestic kerbside refuse bags

The primary composition of the South Wairarapa domestic kerbside refuse bags is presented in Table 5.1 below and Figure 5.1 on the following page. The composition is shown in terms of percentage, mean weight per refuse bag, and mean (average) weight per household set out. The secondary composition, which includes all 23 categories, and a statistical analysis are given in Appendix 3. An analysis of the precision of the results is given in Section 5.9. Separate results for Greytown and Featherston are provided in Appendix 5. These separate samples are too small for statistical analysis, and should be considered a snapshot of the waste composition only.

The average weight of a South Wairarapa kerbside refuse bag was found to be 4.52 kg. Bag weights are analysed in greater detail in Section 5.4.

The mean weight per household presented in the table has been calculated from an average number of bags set out per household, based on data collected during the sample collection, and an average bag weight from the audit data. An analysis of household bag set out is given in Section 5.5. As not all households put refuse out every week, the average household set out weight cannot be regarded as equivalent to an average weekly refuse generation.

**Table 5.1 – Primary composition of South Wairarapa domestic kerbside refuse bags**

Primary category	Proportion of total	Mean wt. per bag	Mean wt. per household set out
Paper	12.7%	0.57 kg	0.84 kg
Plastics	18.0%	0.81 kg	1.19 kg
Organics	42.9%	1.94 kg	2.83 kg
Ferrous metals	1.9%	0.09 kg	0.13 kg
Non-ferrous metals	1.5%	0.07 kg	0.10 kg
Glass	2.8%	0.13 kg	0.18 kg
Textiles	5.0%	0.23 kg	0.33 kg
Nappies and sanitary	13.4%	0.60 kg	0.88 kg
Rubble	1.0%	0.04 kg	0.06 kg
Timber	0.4%	0.02 kg	0.03 kg
Rubber	0.1%	0.01 kg	0.01 kg
Potentially hazardous	0.3%	0.01 kg	0.02 kg
<b>Total</b>	<b>100.0%</b>	<b>4.52 kg</b>	<b>6.60 kg</b>

Organic material, primarily kitchen waste, was the largest single component of the domestic bagged refuse, comprising 43% of the total. 'Plastics' represented 18% of the total, and 'Paper' and 'Nappies and sanitary' both represented 13% of the total. The compositions of the major primary categories are discussed in the following sections.

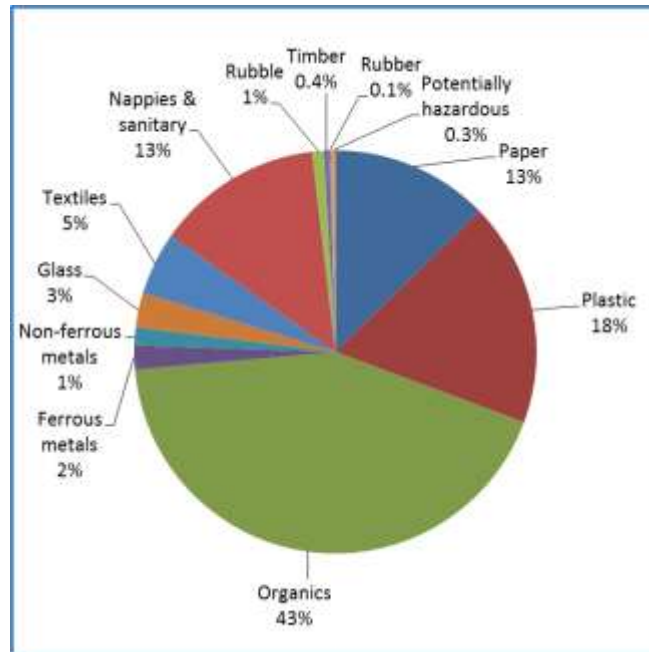


Figure 5.1 – Primary composition of South Wairarapa domestic kerbside refuse bags

### 5.2.1 Organics

Organic matter comprised 43% of the weight of all domestic kerbside bagged refuse. The composition of the organic constituent of the refuse is shown in Figure 5.2.

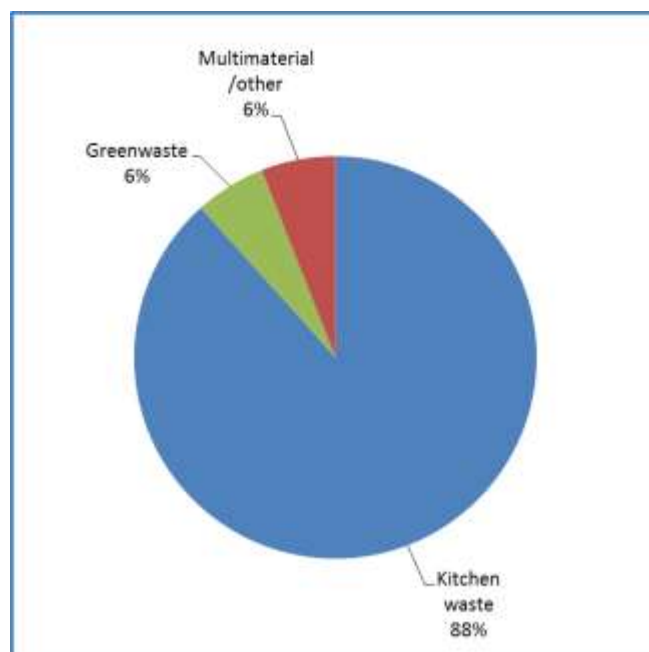
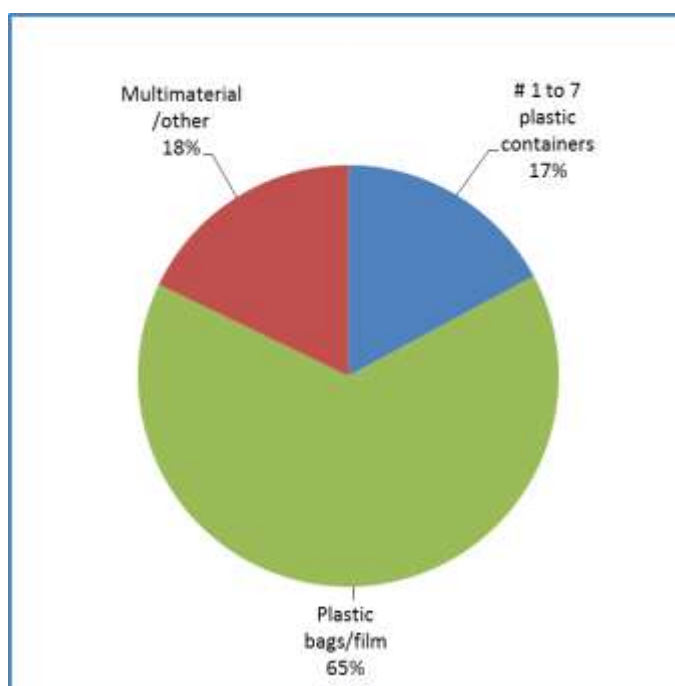


Figure 5.2 - Organic component of South Wairarapa domestic kerbside refuse bags

'Kitchen waste' comprised 88% of the organic material. Kitchen waste included food preparation waste, left-over food waste, and substantial quantities of perished goods. 'Greenwaste', or garden matter, comprised 6% of the organic material. Most of the garden waste was leaves, weeds, and lawn clippings. The 'Other' material (6%) included vacuum cleaner dust, animal faeces, candles, fireplace ash, and human hair. Much of this material would be suitable for composting.

### 5.2.2 Plastics

Plastic materials comprised 18% of council's domestic kerbside refuse bags. The secondary components of the plastic waste are shown in Figure 5.3 below.

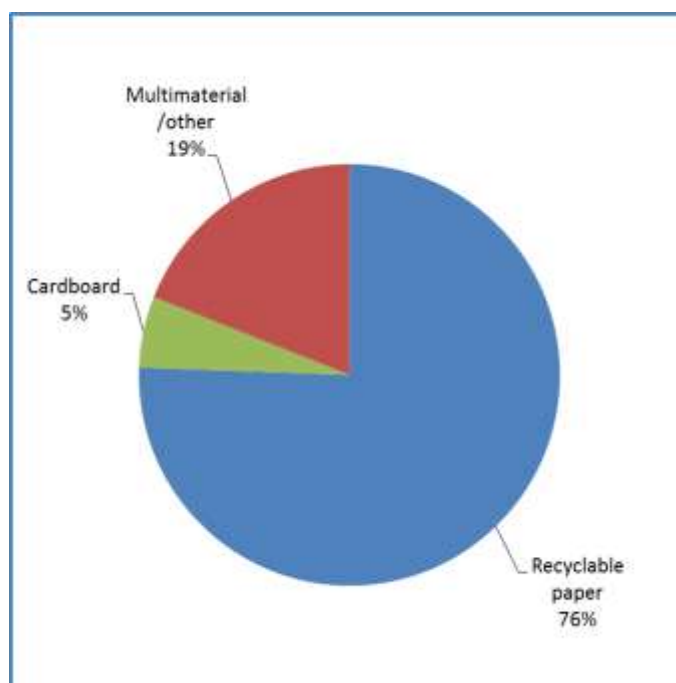


**Figure 5.3 - Plastic component of South Wairarapa domestic kerbside refuse bags**

'Plastic bags and film' comprised 65% of the plastic waste, 'Multimaterial/other plastic' comprised 18%, and a further 17% of the plastic waste was '#1 to 7 plastic containers', which are accepted for kerbside recycling.

### 5.2.3 Paper

'Paper' comprised 13% of the council domestic kerbside refuse bag collection. The composition of the paper constituent of the refuse is shown in Figure 5.4 on the next page.



**Figure 5.4 – Paper component of South Wairarapa domestic kerbside refuse bags**

The largest component of the paper was 'Recyclable paper', which comprised 76% of the paper. This component included office paper, newspapers, magazines, junk mail, paper packaging, and envelopes. 'Multimaterial other' paper comprised 19% of the paper waste. This category is not accepted for recycling by the council recycling collection and included Tetra Pak and gable top packaging, sand paper, wall paper, and food-contaminated paper.

A further 5% of the paper waste was composed of corrugated cardboard.

A significant proportion of households use newspaper or similar papers for bundling food waste prior to disposal. As well, a proportion of the recyclable paper and newspaper was from takeaway food wrapping. Heavily food-contaminated paper was classified as non-recyclable 'Multi-material other' paper, but the less contaminated paper was considered to be recyclable for the purposes of this survey. Paper used for food wrapping is not likely to be available for recycling by the householder unless the wrapping behaviour can be altered. It would, however, be possible to include this paper mixed with organics in a composting stream.

### 5.3 Primary composition – South Wairarapa private domestic MGBs

The primary composition of refuse collected in South Wairarapa in MGBs from domestic premises by the private waste operator is presented in Table 5.2 below and Figure 5.5 on the following page. The secondary composition, which includes all 23 categories, and a statistical analysis are given in Appendix 4. An analysis of the precision of the results is given in Section 5.9.

Separate results for Greytown and Featherston are provided in Appendix 5. These separate samples are too small for statistical analysis, and should be considered a snapshot of the waste composition only.

**Table 5.2 – Primary composition of South Wairarapa private domestic MGBs**

Primary category	Proportion of total	Mean wt. per MGB
Paper	13.3%	2.09 kg
Plastics	10.3%	1.61 kg
Organics	60.8%	9.55 kg
Ferrous metals	1.3%	0.20 kg
Non-ferrous metals	0.7%	0.10 kg
Glass	4.9%	0.77 kg
Textiles	2.4%	0.38 kg
Nappies and sanitary	2.7%	0.42 kg
Rubble	1.3%	0.21 kg
Timber	1.8%	0.28 kg
Rubber	0.2%	0.04 kg
Potentially hazardous	0.2%	0.04 kg
<b>Total</b>	<b>100.0%</b>	<b>15.71 kg</b>

Organic material was the largest single component of the domestic MGB refuse, comprising 61% of the total. 'Paper', representing 13% of the total, was the second largest component. 'Plastics' comprised a further 10%. The compositions of the major primary categories are discussed in the following sections.

The average bin weight of 15.71 kg can not necessarily be equated with an average weekly refuse generation. Although many householders do set out their MGB every week, some set them out fortnightly or less frequently.

A random selection of both 120-litre and 240-litre MGBs was collected for the audit sample, resulting in 8 120-litre MGBs and 28 240-litre MGBs.



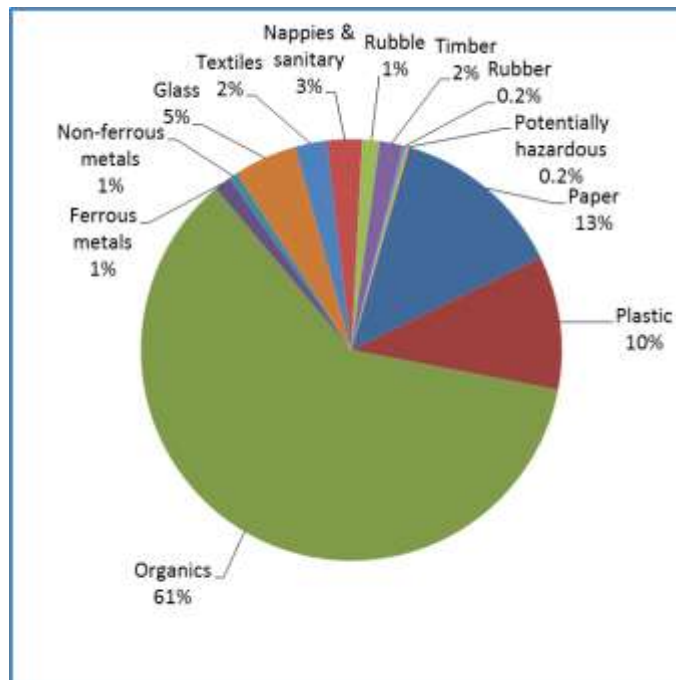


Figure 5.5 – Primary composition of South Wairarapa private domestic MGBs

### 5.3.1 Organics

Organic matter comprised 61% of the weight of all domestic MGB refuse. The composition of the organic constituent of the refuse is shown in Figure 5.6 below.

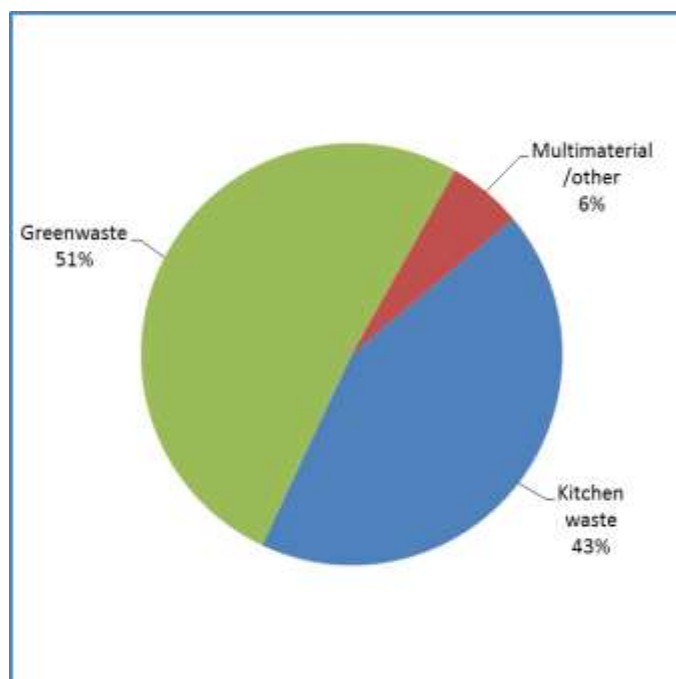


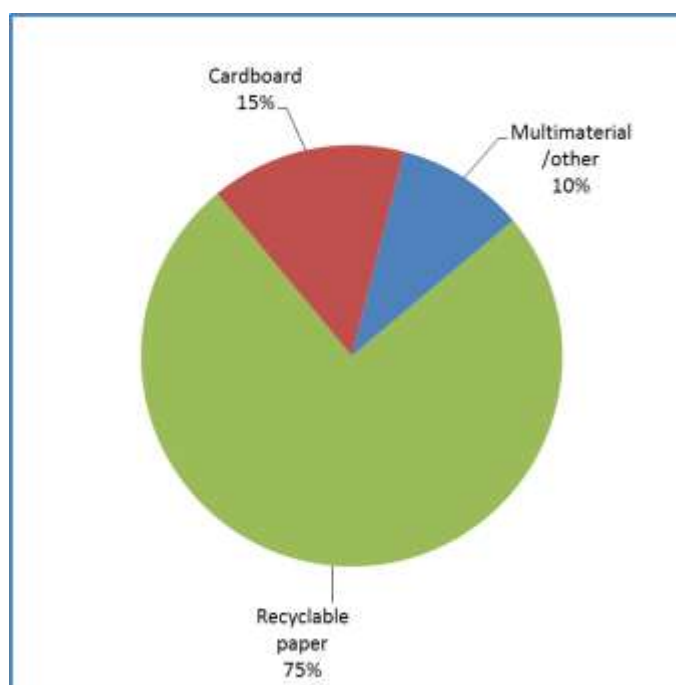
Figure 5.6 - Organics component of South Wairarapa private domestic MGBs

‘Kitchen waste’ comprised 43% of the organic material. Kitchen waste included food preparation waste, left-over food waste, and substantial quantities of perished goods. ‘Greenwaste’, or garden matter, comprised 51% of the organic material. The garden waste

included tree and shrub prunings, leaves, weeds, and lawn clippings. The 'Other' material (6% of organic material) included vacuum cleaner dust, animal faeces, candles, fireplace ash, and human hair. Much of this material would be suitable for composting.

### 5.3.2 Paper

'Paper' comprised 13% of the private domestic MGBs. The composition of the paper constituent of MGB refuse is shown in Figure 5.7 below.



**Figure 5.7 – Paper component of South Wairarapa private domestic MGBs**

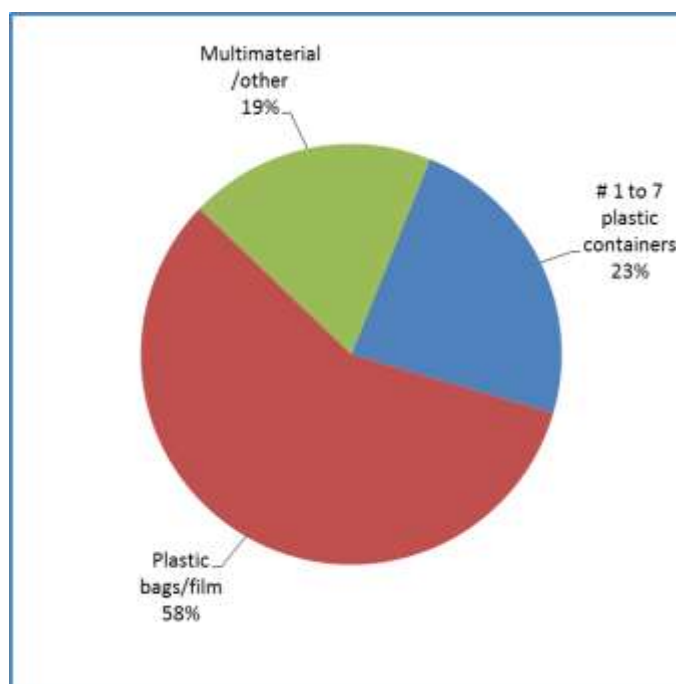
The largest component of the paper was 'Recyclable paper', which comprised 75% of the paper. This component included office paper, newspapers, magazines, junk mail, paper packaging, and envelopes. 'Multimaterial other' paper comprised 10% of the paper waste. This category is not accepted for recycling by the council recycling collection and included Tetra Pak and gable top packaging, sand paper, wall paper, and food-contaminated paper.

A further 15% of the paper waste was composed of corrugated cardboard.

As with householders using refuse bags, a significant proportion of households with MGBs use newspaper or similar papers for bundling food waste prior to disposal, contaminating the paper with food waste. In addition, a proportion of the recyclable paper and newspaper was from takeaway food wrapping. Heavily food-contaminated paper was classified as non-recyclable 'Multi-material other', but the less contaminated paper was considered to be recyclable for the purposes of this survey. Paper used for food wrapping is not likely to be available for recycling by the householder unless the wrapping behaviour can be altered. It would, however, be possible to include this paper mixed with organics in a composting stream.

### 5.3.3 Plastics

'Plastics' comprised 10% of refuse in domestic kerbside MGBs. The secondary components of the plastic waste are shown in Figure 5.8.



**Figure 5.8 – Plastic component of South Wairarapa private domestic MGBs**

'Plastic bags/film' comprised 58% of the plastic waste, and 'Multimaterial/other' plastic comprised 19%. These materials are not accepted by the council's kerbside recycling collection. A further 23% was '#1 to 7 plastic containers', which are accepted for kerbside recycling.

## 5.4 Distribution of bag weights – South Wairarapa

The average bag weight in South Wairarapa was 4.52 kg. The lightest bag was 1.25 kg and the heaviest 13.70 kg. The distribution of the bag weights is shown in Figure 5.9 below.

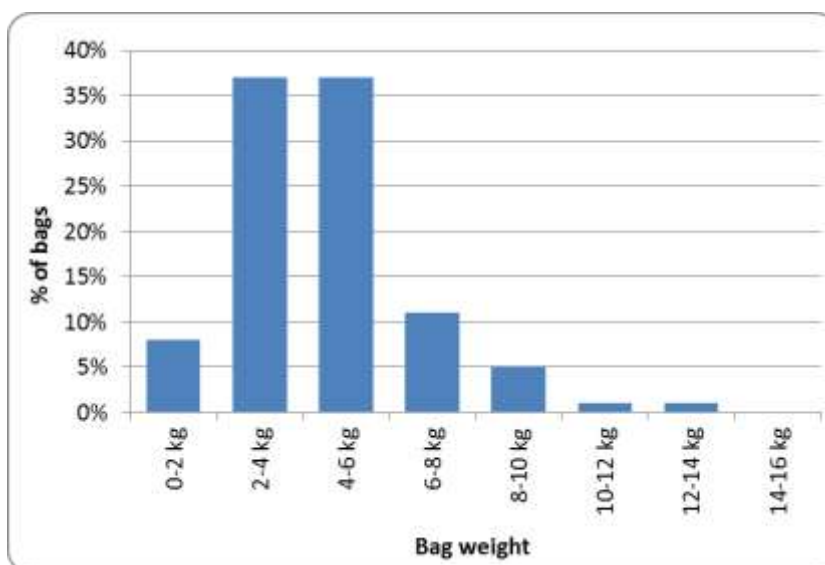


Figure 5.9 – Distribution of South Wairarapa domestic refuse bag weights

93% of all bags weighed less than 8 kg.

## 5.5 Distribution of Council bag set out – South Wairarapa

As the sample of domestic refuse bags was collected, the total number of bags set out by each household was recorded. The average household bag set out was 1.46 bags. Figure 5.10 below shows the distribution of the bag set outs.

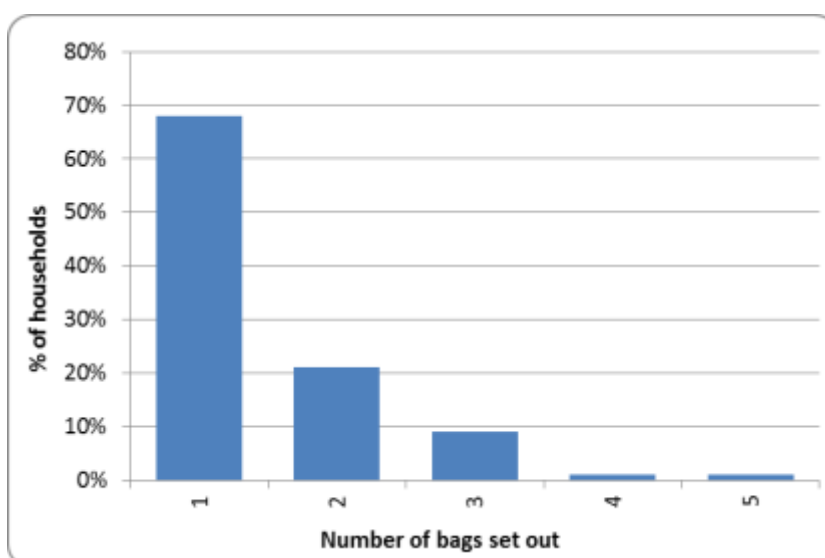
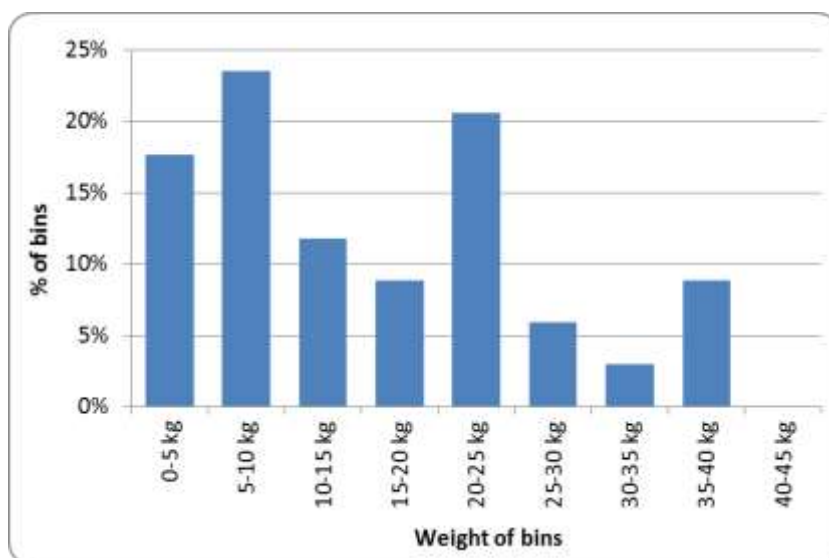


Figure 5.10 – Distribution of South Wairarapa domestic refuse bag set out

Sixty-eight per cent of all households that set out council refuse bags set out a single refuse bag. Eleven per cent of households set out more than two bags.

## 5.6 Distribution of private domestic MGB weights – South Wairarapa

The distribution of the weights of the contents of the 36 MGBs included in the audit is shown in Figure 5.11 below. The sample included both 120- and 240-litre MGBs.



**Figure 5.11 – Distribution of South Wairarapa private domestic MGB weights**

The average MGB weight was 15.71 kg. The lightest MGB was 0.1 kg and the heaviest 36.10 kg. Almost two-thirds of bins (62%) weighed less than 20 kg and none of the bins weighed over 40 kg.

## 5.7 Comparison of refuse bag and MGB composition – South Wairarapa

A comparison of the primary composition of the domestic bagged refuse and MGB refuse in South Wairarapa is given in Table 5.3 on the next page. The secondary compositions for the 'Organics' category are also shown. The comparison is given in terms of both percentages and weight per household set out. The weight of material set out by each household is the more meaningful comparison. The household set out weight for households using council refuse bags has been calculated as described in Section 5.2, and is based on each household that set out refuse setting out 1.46 bags weighing an average of 4.52 kg each. The household set out weight for households using MGBs is considered to be the average weight of a single MGB.

**Table 5.3 – Comparison of bagged refuse and MGBs, South Wairarapa**

Primary category	Proportion of total		Mean wt. per household set out	
	Bags	MGBs	Bags	MGBs
<b>Paper</b>	12.7%	13.3%	0.84 kg	2.09 kg
<b>Plastics</b>	18.0%	10.3%	1.19 kg	1.61 kg
<b>Organics subtotal</b>	42.9%	60.8%	2.83 kg	9.55 kg
<i>Comprised of: Kitchen waste</i>	37.9%	26.2%	2.50 kg	4.12 kg
<i>Greenwaste</i>	2.4%	31.1%	0.16 kg	4.89 kg
<i>Other</i>	2.6%	3.5%	0.17 kg	0.55 kg
<b>Ferrous metals</b>	1.9%	1.3%	0.13 kg	0.20 kg
<b>Non-ferrous metals</b>	1.5%	0.7%	0.10 kg	0.10 kg
<b>Glass</b>	2.8%	4.9%	0.18 kg	0.77 kg
<b>Textiles</b>	5.0%	2.4%	0.33 kg	0.38 kg
<b>Nappies and sanitary</b>	13.4%	2.7%	0.88 kg	0.42 kg
<b>Rubble</b>	1.0%	1.3%	0.06 kg	0.21 kg
<b>Timber</b>	0.4%	1.8%	0.03 kg	0.28 kg
<b>Rubber</b>	0.1%	0.2%	0.01 kg	0.04 kg
<b>Potentially hazardous</b>	0.3%	0.2%	0.02 kg	0.04 kg
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>6.60 kg</b>	<b>15.71 kg</b>

The average weight of the contents of an MGB (15.71 kg) was 2.4 times the average household set out weight for council refuse bags (6.60 kg). The difference may be associated with MGBs being chosen by larger households that generate larger quantities of refuse than households that use the council bagged refuse service.

The main difference in the composition of the bag and MGB waste, however, is due to larger quantities of greenwaste and recyclables in the MGBs. The MGBs contained on average 30 times more greenwaste than the bags. They also contained higher proportions of all recyclable materials than the bagged waste.

Neither the average weight of an MGB or the average household refuse bag set out weight can be considered equivalent to a weekly household weight generation. Not all users of refuse bags or MGBs set out refuse every week.

## 5.8 Diversion potential – South Wairarapa

A common means of diverting domestic refuse materials from landfill disposal is through the kerbside collection of recyclable and compostable materials. South Wairarapa District council provides a kerbside collection of recyclable paper and cardboard, recyclable plastic containers #1 to 7, aluminium and steel cans, glass bottles, and reusable textiles to households in the District. Kitchen waste and garden waste can be composted by residents or garden waste can be taken to the transfer stations where it is composted. A garden waste collection is offered by a private service provider in South Wairarapa District.

Table 5.4 on the next page shows the proportion of South Wairarapa domestic kerbside refuse collection that could have been diverted using these diversion methods.

**Table 5.4 – Diversion potential of South Wairarapa domestic refuse**

Kerbside recyclable materials	Refuse bags - per household set out	MGBs - per MGB
<b>Recyclable materials</b>		
Paper - Recyclable	0.63 kg	1.57 kg
Cardboard	0.05 kg	0.31 kg
Plastics - #1 to 7	0.20 kg	0.38 kg
Ferrous metals - Steel cans	0.09 kg	0.17 kg
Non-ferrous metals - aluminium cans	0.02 kg	0.04 kg
Glass - Bottles/jars	0.14 kg	0.69 kg
Reusable textiles	0.23 kg	0.20 kg
<b>Subtotal</b>	<b>1.36 kg</b>	<b>3.37 kg</b>
<b>Compostable materials</b>		
Organics - Kitchen waste	2.50 kg	4.12 kg
Organics - Greenwaste	0.16 kg	4.89 kg
<b>Subtotal</b>	<b>2.66 kg</b>	<b>9.01 kg</b>
<b>Total divertible</b>		
<b>Weight of divertible materials</b>	<b>4.02 kg</b>	<b>12.38 kg</b>
<b>Divertible materials as % of total</b>	<b>60.9%</b>	<b>78.8%</b>

Twenty-one per cent of the materials in both the refuse bags and the MGBs could have been recycled through the existing kerbside recycling collection. A further 40% of the waste in the refuse bags could have been composted and 57% of the MGB waste. In total, about 61% of council's kerbside bagged refuse collection could be diverted from landfill disposal through recycling and composting and 79% of the private MGB collection could be diverted. The weight of divertible material per MGB is more than three times the quantity of divertible material in each household set out of refuse bags.

## 5.9 Precision of results of kerbside refuse audits – South Wairarapa

The MfE's Solid Waste Analysis Protocol 2002 (SWAP) defines a precision level (margin of error/mean) of  $\pm 20\%$  as being a "reasonable level of accuracy". The precision level of a result is directly related to the standard variation of the samples – in this case, how much the quantity of a particular material varies amongst the different samples. A material that is present in roughly similar quantities in all samples, such as "Plastic bags & film", will have a better precision level than a material that is not common in household refuse, such as timber, or is present in highly variable amounts, such as rubble.

Precision levels for the primary categories in the South Wairarapa refuse bag and MGB surveys are given in Table 5.5.

**Table 5.5 – Precision level of primary categories**

Precision level	Council domestic refuse bags	Private domestic MGBs
<b>Paper</b>	<b>16%</b>	36%
<b>Plastics</b>	<b>13%</b>	22%
<b>Organics</b>	<b>15%</b>	27%
<b>Ferrous metals</b>	27%	46%
<b>Non-ferrous metals</b>	83%	54%
<b>Glass</b>	38%	50%
<b>Textiles</b>	33%	62%
<b>Nappies &amp; sanitary</b>	52%	47%
<b>Rubble, concrete, etc.</b>	105%	95%
<b>Timber</b>	149%	131%
<b>Rubber</b>	141%	124%
<b>Potentially hazardous</b>	65%	105%

In the refuse bag audit, the results for three of the primary categories (Paper, Plastics, Organics) fell within the SWAP definition of a “reasonable level of accuracy”. In the MGB audit, none of the primary categories had precision levels less than  $\pm 20\%$ .

With regards to the secondary categories, four categories in the refuse bag audit had results with a precision level of less than  $\pm 20\%$ , and none of the secondary categories in the MGB audit had precision levels less than  $\pm 20\%$ .

The precision levels for the bagged refuse are good, as in an audit of 500 refuse bags it is uncommon to obtain “reasonable levels of accuracy” for more than four of the primary categories.

The lack of low precision levels in the MGB audit is not uncommon due to the small sample size and the high variability of materials within MGBs. MGBs tend to have a higher standard deviation of materials than refuse bags.



## 6 Comparisons with previous audits

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### 6.1 Comparison of composition of bagged refuse

In 2010, Waste Not Consulting was contracted by Earthcare Environmental to undertake an audit of domestic kerbside refuse generated in Masterton and Carterton.

The audit was undertaken on 2 and 3 December 2010, and included 147 bags of domestic refuse from Masterton and 90 bags of domestic refuse from Carterton.

In February 2011, a similar survey was contracted by South Wairarapa District Council, and included 144 bags of domestic waste, including 72 bags of refuse from Greytown and 72 bags of refuse from Featherston.

During both audits a small sample of private MGBs were also collected. However, the size of the samples (12 MGBs in Masterton and 16 MGBs in South Wairarapa) prohibited any statistical analysis, and provided only an approximate snapshot of the composition of private MGBs.

Both audits were undertaken at Earthcare Environmental's depot at the Masterton Recycling Centre.

The results of the audit of bagged waste from Masterton, Carterton and South Wairarapa are compared with the results of the current waste audit results in Tables 6.1 to 6.3 on the following pages.

As different secondary classifications were used in the audits, all of the categories are not directly comparable.

Table 6.1 – Comparison of composition of Masterton domestic bagged refuse, 2010 to 2012

Masterton District Council kerbside bagged refuse		2010		2012		% change 2010- 2012
		%	Mean wt. per HH	%	Mean wt. per HH	
Paper	Recyclable paper	13.4%	0.90 kg	9.7%	0.55 kg	-39%
	Cardboard	0.3%	0.02 kg	0.2%	0.01 kg	-50%
	Multimaterial/other	2.3%	0.16 kg	2.2%	0.12 kg	-25%
	<b>Subtotal</b>	<b>16.0%</b>	<b>1.07 kg</b>	<b>12.1%</b>	<b>0.69 kg</b>	<b>-36%</b>
Plastics	# 1 to 7 containers	3.9%	0.26 kg	3.2%	0.18 kg	-31%
	Plastic bags/film	9.5%	0.64 kg	12.0%	0.69 kg	8%
	Multimaterial/other	4.2%	0.28 kg	3.4%	0.19 kg	-32%
	<b>Subtotal</b>	<b>17.5%</b>	<b>1.18 kg</b>	<b>18.6%</b>	<b>1.06 kg</b>	<b>-10%</b>
Organics	Kitchen waste	33.6%	2.25 kg	38.4%	2.19 kg	-3%
	Greenwaste	2.8%	0.18 kg	2.4%	0.14 kg	-22%
	Multimaterial/other	1.9%	0.13 kg	4.9%	0.28 kg	115%
	<b>Subtotal</b>	<b>38.3%</b>	<b>2.56 kg</b>	<b>45.7%</b>	<b>2.60 kg</b>	<b>2%</b>
Ferrous metals	Steel cans	2.0%	0.13 kg	1.6%	0.09 kg	-31%
	Multimaterial/other	0.4%	0.03 kg	0.5%	0.03 kg	0%
	<b>Subtotal</b>	<b>2.3%</b>	<b>0.16 kg</b>	<b>2.2%</b>	<b>0.12 kg</b>	<b>-25%</b>
Non ferrous metals	Aluminium cans	0.4%	0.03 kg	0.1%	0.01 kg	-67%
	Multimaterial/other	0.9%	0.06 kg	0.6%	0.03 kg	-50%
	<b>Subtotal</b>	<b>1.3%</b>	<b>0.09 kg</b>	<b>0.7%</b>	<b>0.04 kg</b>	<b>-56%</b>
Glass	Bottles/jars	2.7%	0.18 kg	0.8%	0.05 kg	-72%
	Multimaterial/other	0.8%	0.06 kg	0.7%	0.04 kg	-33%
	<b>Subtotal</b>	<b>3.6%</b>	<b>0.24 kg</b>	<b>1.5%</b>	<b>0.09 kg</b>	<b>-63%</b>
Textiles	Reusable textiles	4.2%	0.28 kg	3.0%	0.17 kg	-39%
	Multimaterial/other	0.2%	0.01 kg	1.9%	0.11 kg	1000%
	<b>Subtotal</b>	<b>4.4%</b>	<b>0.29 kg</b>	<b>4.9%</b>	<b>0.28 kg</b>	<b>-3%</b>
Nappies and sanitary		13.8%	0.92 kg	10.7%	0.61 kg	-34%
Rubble		1.0%	0.06 kg	1.1%	0.06 kg	0%
Timber		0.2%	0.01 kg	1.1%	0.06 kg	500%
Rubber		0.2%	0.02 kg	0.1%	0.01 kg	-50%
Potentially hazardous	Household	1.0%	0.07 kg	1.1%	0.07 kg	0%
	Other	0.3%	0.02 kg	0.1%	0.01 kg	-50%
	<b>Subtotal</b>	<b>1.4%</b>	<b>0.09 kg</b>	<b>1.3%</b>	<b>0.07 kg</b>	<b>-22%</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>6.70 kg</b>	<b>100.0%</b>	<b>5.70 kg</b>	<b>-15%</b>

Table 6.2 – Comparison of composition of Carterton domestic bagged refuse, 2010 to 2012

Carterton District Council kerbside bagged refuse		2010		2012		% change 2010- 2012
		%	Mean wt. per HH	%	Mean wt. per HH	
<b>Paper</b>	Recyclable paper	10.2%	0.73 kg	8.9%	0.70 kg	-4%
	Cardboard	0.1%	0.00 kg	0.4%	0.03 kg	-
	Multimaterial/other	1.3%	0.09 kg	1.7%	0.13 kg	44%
	<b>Subtotal</b>	<b>11.5%</b>	<b>0.83 kg</b>	<b>10.9%</b>	<b>0.87 kg</b>	<b>5%</b>
<b>Plastics</b>	# 1 to 7 containers	3.5%	0.25 kg	2.6%	0.20 kg	-20%
	Plastic bags/film	9.8%	0.70 kg	9.4%	0.75 kg	7%
	Multimaterial/other	3.3%	0.24 kg	3.4%	0.27 kg	13%
	<b>Subtotal</b>	<b>16.6%</b>	<b>1.19 kg</b>	<b>15.4%</b>	<b>1.22 kg</b>	<b>3%</b>
<b>Organics</b>	Kitchen waste	40.1%	2.88 kg	39.8%	3.16 kg	10%
	Greenwaste	3.8%	0.27 kg	6.3%	0.50 kg	85%
	Multimaterial/other	6.4%	0.46 kg	6.8%	0.54 kg	17%
	<b>Subtotal</b>	<b>50.2%</b>	<b>3.61 kg</b>	<b>52.8%</b>	<b>4.19 kg</b>	<b>16%</b>
<b>Ferrous metals</b>	Steel cans	1.5%	0.11 kg	1.4%	0.11 kg	0%
	Multimaterial/other	0.6%	0.04 kg	0.6%	0.05 kg	25%
	<b>Subtotal</b>	<b>2.1%</b>	<b>0.15 kg</b>	<b>2.0%</b>	<b>0.16 kg</b>	<b>7%</b>
<b>Non ferrous metals</b>	Aluminium cans	0.2%	0.02 kg	0.2%	0.01 kg	-50%
	Multimaterial/other	0.7%	0.05 kg	0.8%	0.06 kg	20%
	<b>Subtotal</b>	<b>1.0%</b>	<b>0.07 kg</b>	<b>1.0%</b>	<b>0.08 kg</b>	<b>14%</b>
<b>Glass</b>	Bottles/jars	2.2%	0.16 kg	1.9%	0.15 kg	-6%
	Multimaterial/other	0.8%	0.06 kg	0.5%	0.04 kg	-33%
	<b>Subtotal</b>	<b>2.9%</b>	<b>0.21 kg</b>	<b>2.4%</b>	<b>0.19 kg</b>	<b>-10%</b>
<b>Textiles</b>	Reusable textiles	1.9%	0.14 kg	2.0%	0.16 kg	14%
	Multimaterial/other	0.9%	0.07 kg	1.0%	0.08 kg	14%
	<b>Subtotal</b>	<b>2.8%</b>	<b>0.20 kg</b>	<b>3.0%</b>	<b>0.24 kg</b>	<b>20%</b>
<b>Nappies and sanitary</b>		<b>11.4%</b>	<b>0.82 kg</b>	<b>9.6%</b>	<b>0.76 kg</b>	<b>-7%</b>
<b>Rubble</b>		<b>0.4%</b>	<b>0.03 kg</b>	<b>1.4%</b>	<b>0.11 kg</b>	<b>267%</b>
<b>Timber</b>		<b>0.2%</b>	<b>0.02 kg</b>	<b>0.6%</b>	<b>0.04 kg</b>	<b>100%</b>
<b>Rubber</b>		<b>0.1%</b>	<b>0.00 kg</b>	<b>0.1%</b>	<b>0.01 kg</b>	<b>-</b>
<b>Potentially hazardous</b>	Household	0.7%	0.05 kg	0.7%	0.06 kg	20%
	Other	0.1%	0.01 kg	0.1%	0.01 kg	0%
	<b>Subtotal</b>	<b>0.8%</b>	<b>0.06 kg</b>	<b>0.9%</b>	<b>0.07 kg</b>	<b>17%</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>7.18 kg</b>	<b>100.0%</b>	<b>7.93 kg</b>	<b>10%</b>

**Table 6.3 – Comparison of composition of South Wairarapa domestic bagged refuse, 2010 to 2012**

South Wairarapa District Council kerbside bagged refuse		2011		2012		% change 2010- 2012
		%	Mean wt. per HH	%	Mean wt. per HH	
<b>Paper</b>	Recyclable paper	13.6%	1.00 kg	9.6%	0.63 kg	-37%
	Cardboard	0.2%	0.02 kg	0.7%	0.05 kg	150%
	Multimaterial/other	4.0%	0.30 kg	2.4%	0.16 kg	-47%
	<b>Subtotal</b>	<b>17.8%</b>	<b>1.31 kg</b>	<b>12.7%</b>	<b>0.84 kg</b>	<b>-36%</b>
<b>Plastics</b>	# 1 to 7 containers	2.0%	0.15 kg	3.1%	0.20 kg	33%
	All other plastics	12.4%	0.91 kg	14.9%	0.98 kg	8%
	<b>Subtotal</b>	<b>14.4%</b>	<b>1.06 kg</b>	<b>18.0%</b>	<b>1.19 kg</b>	<b>12%</b>
<b>Organics</b>	Kitchen waste	38.3%	2.82 kg	37.9%	2.50 kg	-11%
	Greenwaste	3.4%	0.25 kg	2.4%	0.16 kg	-36%
	Multimaterial/other	3.2%	0.24 kg	2.6%	0.17 kg	-29%
	<b>Subtotal</b>	<b>44.8%</b>	<b>3.31 kg</b>	<b>42.9%</b>	<b>2.83 kg</b>	<b>-15%</b>
<b>Ferrous metals</b>	Steel cans	1.7%	0.12 kg	1.3%	0.09 kg	-25%
	Multimaterial/other	0.6%	0.04 kg	0.6%	0.04 kg	0%
	<b>Subtotal</b>	<b>2.3%</b>	<b>0.17 kg</b>	<b>1.9%</b>	<b>0.13 kg</b>	<b>-24%</b>
<b>Non ferrous metals</b>	Aluminium cans	0.3%	0.02 kg	0.3%	0.02 kg	0%
	Multimaterial/other	0.7%	0.05 kg	1.2%	0.08 kg	60%
	<b>Subtotal</b>	<b>1.0%</b>	<b>0.07 kg</b>	<b>1.5%</b>	<b>0.10 kg</b>	<b>43%</b>
<b>Glass</b>	Bottles/jars	4.8%	0.36 kg	2.1%	0.14 kg	-61%
	Multimaterial/other	0.5%	0.04 kg	0.7%	0.04 kg	0%
	<b>Subtotal</b>	<b>5.3%</b>	<b>0.39 kg</b>	<b>2.8%</b>	<b>0.18 kg</b>	<b>-54%</b>
<b>Textiles</b>		<b>4.0%</b>	<b>0.29 kg</b>	<b>5.0%</b>	<b>0.33 kg</b>	<b>14%</b>
<b>Nappies and sanitary</b>		<b>6.2%</b>	<b>0.46 kg</b>	<b>13.4%</b>	<b>0.88 kg</b>	<b>91%</b>
<b>Rubble</b>		<b>1.7%</b>	<b>0.12 kg</b>	<b>1.0%</b>	<b>0.06 kg</b>	<b>-50%</b>
<b>Timber</b>		<b>0.8%</b>	<b>0.06 kg</b>	<b>0.4%</b>	<b>0.03 kg</b>	<b>-50%</b>
<b>Rubber</b>		<b>0.2%</b>	<b>0.01 kg</b>	<b>0.1%</b>	<b>0.01 kg</b>	<b>0%</b>
<b>Potentially hazardous</b>		<b>1.5%</b>	<b>0.11 kg</b>	<b>0.3%</b>	<b>0.02 kg</b>	<b>-82%</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>7.38 kg</b>	<b>100.0%</b>	<b>6.60 kg</b>	<b>-11%</b>

## 6.2 Comparison of diversion potential

Recycling services across Wairarapa have changed since the previous waste audits. In 2010, Masterton and Carterton District Councils had just provided their urban residents with a new kerbside recycling system, including two recycling crates (as opposed to the previous one recycling crate). This new system is the same as at present, though residents have now had two years to get used to it.

In 2011, South Wairarapa District Council offered its urban residents a rates-funded weekly kerbside recycling collection. The recycling collection collected a different material each week, on a five-week cycle. Materials collected each week were:

- 1st week: plastic & scrap metal - clean food tins
- 2nd week: glass - bottles and jars
- 3rd week: paper & corrugated cardboard
- 4th week: glass - bottles and jars
- 5th week: anything not covered by the above (Inorganic Waste) - limited to one item only, which can be lifted by one person.

There was no official kerbside recycling container, and residents were instructed to place recyclable materials into cardboard or wooden boxes.

In June 2011 the South Wairarapa District Council kerbside recycling service was upgraded to a comprehensive service equivalent to that of Masterton and Carterton District Councils providing in effect identical service levels across the region. The current survey therefore reflects the new service levels for SWDC and also enables meaningful cross district comparisons to be made.

Table 6.4 shows the proportion of the kerbside bagged refuse collection that could have been diverted using existing diversion methods in 2010 and 2011, compared to during the latest 2012 audit. Kitchen waste and greenwaste are also included, as these could be diverted through home composting or a kerbside collection.

**Table 6.4 – Comparison of divertible materials in refuse bags - per household set out**

Divertible materials	Masterton		Carterton		South Wairarapa	
	2010	2012	2010	2012	2011	2012
Recyclable materials						
Recyclable paper	0.90 kg	0.55 kg	0.73 kg	0.70 kg	1.00 kg	0.63 kg
Cardboard	0.02 kg	0.01 kg	0.00 kg	0.03 kg	0.02 kg	0.05 kg
Plastics #1 to 7	0.26 kg	0.18 kg	0.25 kg	0.20 kg	0.15 kg	0.20 kg
Steel cans	0.13 kg	0.09 kg	0.11 kg	0.11 kg	0.12 kg	0.09 kg
Aluminium cans	0.03 kg	0.01 kg	0.02 kg	0.01 kg	0.02 kg	0.02 kg
Glass bottles/jars	0.18 kg	0.05 kg	0.16 kg	0.15 kg	0.36 kg	0.14 kg
Reusable textiles	0.28 kg	0.17 kg	0.14 kg	0.16 kg	NA	0.23 kg
Subtotal	1.80 kg	1.06 kg	1.40 kg	1.37 kg	1.67 kg	1.36 kg
% change 2010-2012	-41%		-2%		-19%	
Compostable materials						
Organics - Kitchen waste	2.25 kg	2.19 kg	2.88 kg	3.16 kg	2.82 kg	2.50 kg
Organics - Greenwaste	0.18 kg	0.14 kg	0.27 kg	0.50 kg	0.25 kg	0.16 kg
Subtotal	2.43 kg	2.32 kg	3.15 kg	3.66 kg	3.07 kg	2.66 kg
% change 2010-2012	-5%		16%		-13%	
Total divertible						
Weight of divertible materials	4.23 kg	3.39 kg	4.55 kg	5.02 kg	4.90 kg	4.02 kg
% change 2010-2012	-20%		10%		-18%	
Divertible materials as % of total	63.2%	59.5%	63.4%	63.3%	66.4%	60.9%

There has been a decrease in the amount of recyclable materials in the bagged refuse in the latest audit, in all three districts. The most significant reduction is in Masterton, where potentially recyclable materials have dropped from 1.8 kg per household set out to 1.06 kg. This is a 41% reduction. In South Wairarapa, there has been a 19% reduction in recyclable materials in the bagged refuse.

Carterton has seen a 2% reduction in recyclable materials.

The average quantity of compostable materials in bagged refuse has also dropped in Masterton and South Wairarapa, by 5% and 13% respectively.

Due to the relatively small sample sizes, the differences are not statistically significant. This does not mean that actual changes have not occurred, but, rather, that the changes are not greater than the margins of error.

## 7 Comparisons with other districts

### 7.1 Composition of domestic bagged refuse

Table 7.1 below compares, by percentage of total, the composition of Masterton, Carterton and South Wairarapa bagged refuse with that of four other councils' bagged refuse collections. As different secondary classifications were used in the other councils' audits, all of the categories are not directly comparable.

**Table 7.1 - Comparison of Wairarapa domestic bagged refuse with other districts  
– as percentage of total**

Primary category	Secondary category	Kāpiti Coast District	New Plymouth District	Waimak-ariri District	Masterton District	Carterton District	South Wairarapa District
Year of audit		2010	2012	2012	2012	2012	2012
Paper	Recyclable paper	12.8%	13.3%	6.4%	9.9%	9.2%	10.3%
	Multimaterial/other	1.9%	1.9%	1.9%	2.2%	1.7%	2.4%
	<b>Subtotal</b>	<b>14.7%</b>	<b>15.2%</b>	<b>8.3%</b>	<b>12.1%</b>	<b>10.9%</b>	<b>12.7%</b>
Plastics	Recyclable plastic	4.4%	3.4%	2.0%	3.2%	2.6%	3.1%
	Multimaterial/other	10.0%	12.0%	10.5%	15.4%	12.8%	14.9%
	<b>Subtotal</b>	<b>14.5%</b>	<b>15.3%</b>	<b>12.5%</b>	<b>18.6%</b>	<b>15.4%</b>	<b>18.0%</b>
Organics	Kitchen waste	38.8%	31.2%	38.8%	38.4%	39.8%	37.9%
	Greenwaste	2.9%	7.0%	8.6%	2.4%	6.3%	2.4%
	Multimaterial/other	3.4%	2.5%	5.5%	4.9%	6.8%	2.6%
	<b>Subtotal</b>	<b>45.1%</b>	<b>40.7%</b>	<b>52.9%</b>	<b>45.7%</b>	<b>52.8%</b>	<b>42.9%</b>
Metal ferrous	Steel cans	1.6%	1.9%	0.6%	1.6%	1.4%	1.3%
	Multimaterial/other	0.2%	0.4%	0.2%	0.5%	0.6%	0.6%
	<b>Subtotal</b>	<b>1.8%</b>	<b>2.3%</b>	<b>0.8%</b>	<b>2.2%</b>	<b>2.0%</b>	<b>1.9%</b>
Metal non-ferrous	Aluminium cans	0.1%	0.4%	0.4%	0.1%	0.2%	0.3%
	Multimaterial/other	1.0%	0.3%	1.0%	0.6%	0.8%	1.2%
	<b>Subtotal</b>	<b>1.1%</b>	<b>0.7%</b>	<b>1.4%</b>	<b>0.7%</b>	<b>1.0%</b>	<b>1.5%</b>
Glass	Glass bottles/jars	3.6%	5.7%	1.0%	0.8%	1.9%	2.1%
	Multimaterial/other	1.0%	0.4%	0.5%	0.7%	0.5%	0.7%
	<b>Subtotal</b>	<b>4.5%</b>	<b>6.1%</b>	<b>1.6%</b>	<b>1.5%</b>	<b>2.4%</b>	<b>2.8%</b>
Textiles	Clothing & textile	1.0%	1.8%	2.1%	3.0%	2.0%	3.5%
	Multimaterial/other	1.3%	0.9%	2.6%	1.9%	1.0%	1.5%
	<b>Subtotal</b>	<b>2.2%</b>	<b>2.7%</b>	<b>4.7%</b>	<b>4.9%</b>	<b>3.0%</b>	<b>5.0%</b>
Nappies and sanitary		12.3%	14.1%	12.2%	10.7%	9.6%	13.4%
Rubble		1.6%	1.3%	2.9%	1.1%	1.4%	1.0%
Timber		1.0%	0.5%	1.0%	1.1%	0.6%	0.4%
Rubber		0.2%	0.0%	0.2%	0.1%	0.1%	0.1%
Potentially hazardous	Household	0.9%	0.9%	0.9%	1.1%	0.7%	0.3%
	Other	0.1%	0.2%	0.6%	0.1%	0.1%	0.0%
	<b>Subtotal</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.4%</b>	<b>1.3%</b>	<b>0.9%</b>	<b>0.3%</b>
<b>Total</b>		<b>100%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

All of the councils in Table 7.1 have either a user-pays bag or sticker system. Residents in all of the council areas had a kerbside crate recycling collection. The audits were undertaken at different times of the year, with Kapiti Coast and Waimakariri completed in September 2010 and 2012, and the New Plymouth audit undertaken in March 2012.

The levels of greenwaste and glass are generally most affected by the weather preceding the audit and the season of the year, with highest greenwaste growth in spring and summer. However, levels of greenwaste in bagged refuse generally remain low.

Greenwaste from Carterton is higher than in Masterton and South Wairarapa, but this is due largely to two anomalous samples in Carterton with much higher-than-average levels of greenwaste.

The proportion of 'Nappies & sanitary' materials tends to vary between districts depending on the proportion of infants in the population. A higher proportion of elderly residents can also result in increased quantities of 'adult incontinence products', which are also classified as 'Nappies & sanitary'.

Table 7.2 on the next page presents the data for the same districts as Table 7.1, but in terms of mean weight per household set out. It must be noted that the mean household set out weight represents the quantity of refuse that is set out only on those occasions when a household does set out refuse for collection. Mean household set out weight does not necessarily equate to a weekly waste disposal figure, as not all households set out refuse for collection every week.

To determine a mean weekly household weight for kerbside refuse disposal, it is necessary to know the 'set out rate', the proportion of households that set out refuse for collection in any given week. As the set out rates for the different districts in Table 7.2 are not known, and so cannot be compared, care should be taken when comparing the data for household set out weights.

The mean household set out weight figures that are given are only for users of council refuse bags in each district. The mean household refuse set out weight is related to the proportion of households that use the council bag collection compared to private MGB refuse services. In districts where a high proportion of households use private MGB services, there would tend to be a higher proportion of households that generate small quantities of refuse using the council bag service. Households that generate large quantities of refuse would be incentivised to use a private MGB service, as the marginal cost of disposal is generally lower than using council bags.

Masterton and South Wairarapa have lower mean weights per household set out than the other Districts presented in the table. Carterton has a higher weight of 'Kitchen waste'.



**Table 7.2 - Comparison of Wairarapa domestic bagged refuse with other districts  
– as mean weight per household set out**

Primary category	Secondary category	Kāpiti Coast District	New Plymouth District	Waimak-ariri District	Masterton District	Carterton District	South Wairarapa District
Year of audit		2010	2012	2012	2012	2012	2012
<b>Paper</b>	Recyclable paper	0.97 kg	1.08 kg	0.46 kg	0.56 kg	0.73 kg	0.68 kg
	Multimaterial/other	0.14 kg	0.15 kg	0.14 kg	0.12 kg	0.13 kg	0.16 kg
	<b>Subtotal</b>	<b>1.12 kg</b>	<b>1.23 kg</b>	<b>0.59 kg</b>	<b>0.69 kg</b>	<b>0.87 kg</b>	<b>0.84 kg</b>
<b>Plastics</b>	Recyclable plastic	0.33 kg	0.27 kg	0.14 kg	0.18 kg	0.20 kg	0.20 kg
	Multimaterial/other	0.76 kg	0.97 kg	0.75 kg	0.88 kg	1.02 kg	0.98 kg
	<b>Subtotal</b>	<b>1.10 kg</b>	<b>1.24 kg</b>	<b>0.90 kg</b>	<b>1.06 kg</b>	<b>1.22 kg</b>	<b>1.19 kg</b>
<b>Organics</b>	Kitchen waste	2.95 kg	2.53 kg	2.78 kg	2.19 kg	3.16 kg	2.50 kg
	Greenwaste	0.22 kg	0.56 kg	0.62 kg	0.14 kg	0.50 kg	0.16 kg
	Multimaterial/other	0.26 kg	0.21 kg	0.40 kg	0.28 kg	0.54 kg	0.17 kg
	<b>Subtotal</b>	<b>3.43 kg</b>	<b>3.30 kg</b>	<b>3.79 kg</b>	<b>2.60 kg</b>	<b>4.19 kg</b>	<b>2.83 kg</b>
<b>Metal ferrous</b>	Steel cans	0.12 kg	0.15 kg	0.04 kg	0.09 kg	0.11 kg	0.09 kg
	Multimaterial/other	0.02 kg	0.04 kg	0.02 kg	0.03 kg	0.05 kg	0.04 kg
	<b>Subtotal</b>	<b>0.14 kg</b>	<b>0.19 kg</b>	<b>0.06 kg</b>	<b>0.12 kg</b>	<b>0.16 kg</b>	<b>0.13 kg</b>
<b>Metal non-ferrous</b>	Aluminium cans	0.01 kg	0.03 kg	0.03 kg	0.01 kg	0.01 kg	0.02 kg
	Multimaterial/other	0.08 kg	0.02 kg	0.07 kg	0.03 kg	0.06 kg	0.08 kg
	<b>Subtotal</b>	<b>0.08 kg</b>	<b>0.05 kg</b>	<b>0.10 kg</b>	<b>0.04 kg</b>	<b>0.08 kg</b>	<b>0.10 kg</b>
<b>Glass</b>	Glass bottles/jars	0.27 kg	0.46 kg	0.08 kg	0.05 kg	0.15 kg	0.14 kg
	Multimaterial/other	0.08 kg	0.03 kg	0.04 kg	0.04 kg	0.04 kg	0.04 kg
	<b>Subtotal</b>	<b>0.34 kg</b>	<b>0.49 kg</b>	<b>0.11 kg</b>	<b>0.09 kg</b>	<b>0.19 kg</b>	<b>0.18 kg</b>
<b>Textiles</b>	Clothing & textile	0.08 kg	0.15 kg	0.15 kg	0.17 kg	0.16 kg	0.23 kg
	Multimaterial/other	0.10 kg	0.07 kg	0.19 kg	0.11 kg	0.08 kg	0.10 kg
	<b>Subtotal</b>	<b>0.17 kg</b>	<b>0.22 kg</b>	<b>0.34 kg</b>	<b>0.28 kg</b>	<b>0.24 kg</b>	<b>0.33 kg</b>
<b>Nappies and sanitary</b>		<b>0.94 kg</b>	<b>1.14 kg</b>	<b>0.87 kg</b>	<b>0.61 kg</b>	<b>0.76 kg</b>	<b>0.88 kg</b>
<b>Rubble</b>		<b>0.12 kg</b>	<b>0.10 kg</b>	<b>0.21 kg</b>	<b>0.06 kg</b>	<b>0.11 kg</b>	<b>0.06 kg</b>
<b>Timber</b>		<b>0.08 kg</b>	<b>0.04 kg</b>	<b>0.07 kg</b>	<b>0.06 kg</b>	<b>0.04 kg</b>	<b>0.03 kg</b>
<b>Rubber</b>		<b>0.02 kg</b>	<b>0.00 kg</b>	<b>0.01 kg</b>	<b>0.01 kg</b>	<b>0.01 kg</b>	<b>0.01 kg</b>
<b>Potentially hazardous</b>	Household	0.07 kg	0.08 kg	0.06 kg	0.07 kg	0.06 kg	0.02 kg
	Other	0.01 kg	0.01 kg	0.04 kg	0.01 kg	0.01 kg	0.00 kg
	<b>Subtotal</b>	<b>0.08 kg</b>	<b>0.09 kg</b>	<b>0.10 kg</b>	<b>0.07 kg</b>	<b>0.07 kg</b>	<b>0.02 kg</b>
<b>Total</b>		<b>7.61 kg</b>	<b>8.10 kg</b>	<b>7.16 kg</b>	<b>5.70 kg</b>	<b>7.93 kg</b>	<b>6.60 kg</b>

## 7.2 Composition of private domestic MGB refuse

Waste Not Consulting has previously audited the contents of private waste operators' MGBs in several districts. As some of these audits have been undertaken on a confidential basis, the districts have not been identified. A comparison of the results of the audits is shown in Table 7.3 on the next page. In the table, the mean weight per bin is used for the comparison. This is done because most (though not all) households set out MGBs every week, so the mean bin weight is roughly equivalent to a weekly waste generation figure.

The following should be noted about the results from each district:

- The audit in Masterton District included 50% 120-litre MGBs, and 50% 240-litre MGBs.
- The audit in Carterton District included 36% 120-litre MGBs, and 64% 240-litre MGBs.
- The audit in South Wairarapa District included 22% 120-litre MGBs, and 78% 240-litre MGBs.
- The audit in District A included 12.5% 120-litre MGBs, and 87.5% 240-litre MGBs.
- The audit in District B included 15% 140-litre MGBs and 85% 240-litre MGBs.
- The audit in District C included approximately one-third 120-litre MGBs and two-thirds 240-litre MGBs.
- The audit of District D contained both 240-litre and a small number of 120-litre MGBs. Some of the MGBs are emptied on an 'as required' basis, being set out by the householder only when full. This would result in some of the bins containing more than one week's worth of refuse.
- At the time of the audits, council-funded kerbside recycling collection services were provided in all of the districts.

**Table 7.3 – Comparison of Wairarapa districts and other districts' domestic MGB refuse**

Primary category	Secondary category	District A	District B	District C	District D	Master-ton	Carter-ton	South Wairarapa
Year		2012	2010	2010	2010	2012	2012	2012
<b>Paper</b>	Recyclable paper	2.01 kg	2.53 kg	2.26 kg	1.89 kg	1.68 kg	2.08 kg	1.88 kg
	Multimaterial/other	0.18 kg	0.36 kg	0.35 kg	0.29 kg	0.29 kg	0.24 kg	0.21 kg
	<b>Subtotal</b>	<b>2.19 kg</b>	<b>2.89 kg</b>	<b>2.61 kg</b>	<b>2.18 kg</b>	<b>1.97 kg</b>	<b>2.32 kg</b>	<b>2.09 kg</b>
<b>Plastics</b>	Recyclable plastic	0.03 kg	0.50 kg	0.51 kg	0.51 kg	0.29 kg	0.45 kg	0.38 kg
	Multimaterial/other	1.14 kg	1.04 kg	0.93 kg	1.02 kg	1.25 kg	1.41 kg	1.24 kg
	<b>Subtotal</b>	<b>1.52 kg</b>	<b>1.54 kg</b>	<b>1.45 kg</b>	<b>1.54 kg</b>	<b>1.54 kg</b>	<b>1.86 kg</b>	<b>1.61 kg</b>
<b>Organics</b>	Kitchen waste	2.72 kg	5.04 kg	4.01 kg	5.41 kg	3.89 kg	4.28 kg	4.12 kg
	Greenwaste	9.78 kg	1.31 kg	3.34 kg	5.71 kg	6.32 kg	4.66 kg	4.89 kg
	Multimaterial/other	0.19 kg	0.77 kg	0.24 kg	0.59 kg	0.30 kg	0.56 kg	0.55 kg
	<b>Subtotal</b>	<b>12.68 kg</b>	<b>7.13 kg</b>	<b>7.60 kg</b>	<b>11.71 kg</b>	<b>10.51 kg</b>	<b>9.50 kg</b>	<b>9.39 kg</b>
<b>Metal ferrous</b>	Steel cans	0.21 kg	0.23 kg	0.23 kg	0.15 kg	0.20 kg	0.18 kg	0.17 kg
	Multimaterial/other	0.14 kg	0.02 kg	0.10 kg	0.29 kg	0.04 kg	0.06 kg	0.03 kg
	<b>Subtotal</b>	<b>0.35 kg</b>	<b>0.25 kg</b>	<b>0.33 kg</b>	<b>0.44 kg</b>	<b>0.23 kg</b>	<b>0.23 kg</b>	<b>0.20 kg</b>
<b>Metal non-ferrous</b>	Aluminium cans	0.06 kg	0.05 kg	0.03 kg	0.02 kg	0.03 kg	0.02 kg	0.04 kg
	Multimaterial/other	0.04 kg	0.09 kg	0.12 kg	0.10 kg	0.10 kg	0.12 kg	0.06 kg
	<b>Subtotal</b>	<b>0.10 kg</b>	<b>0.14 kg</b>	<b>0.15 kg</b>	<b>0.11 kg</b>	<b>0.13 kg</b>	<b>0.14 kg</b>	<b>0.10 kg</b>
<b>Glass</b>	Glass bottles/jars	1.33 kg	1.13 kg	0.65 kg	0.48 kg	0.79 kg	0.81 kg	0.69 kg
	Multimaterial/other	0.10 kg	0.04 kg	0.10 kg	0.03 kg	0.02 kg	<b>0.01 kg</b>	0.08 kg
	<b>Subtotal</b>	<b>1.43 kg</b>	<b>1.17 kg</b>	<b>0.74 kg</b>	<b>0.51 kg</b>	<b>0.81 kg</b>	<b>0.82 kg</b>	<b>0.77 kg</b>
<b>Textiles</b>	Clothing & textile	0.09 kg	0.24 kg	0.28 kg	0.58 kg	0.18 kg	0.31 kg	0.20 kg
	Multimaterial/other	0.18 kg	0.38 kg	0.21 kg	0.28 kg	0.35 kg	0.33 kg	0.18 kg
	<b>Subtotal</b>	<b>0.27 kg</b>	<b>0.62 kg</b>	<b>0.49 kg</b>	<b>0.86 kg</b>	<b>0.53 kg</b>	<b>0.65 kg</b>	<b>0.38 kg</b>
<b>Nappies and sanitary</b>		<b>1.43 kg</b>	<b>1.21 kg</b>	<b>0.97 kg</b>	<b>1.50 kg</b>	<b>1.39 kg</b>	<b>1.50 kg</b>	<b>0.42 kg</b>
<b>Rubble</b>		<b>0.61 kg</b>	<b>1.37 kg</b>	<b>0.48 kg</b>	<b>2.60 kg</b>	<b>0.20 kg</b>	<b>0.28 kg</b>	<b>0.21 kg</b>
<b>Timber</b>		<b>0.08 kg</b>	<b>0.11 kg</b>	<b>0.53 kg</b>	<b>0.78 kg</b>	<b>0.10 kg</b>	<b>0.14 kg</b>	<b>0.28 kg</b>
<b>Rubber</b>		<b>0.00 kg</b>	<b>0.01 kg</b>	<b>0.01 kg</b>	<b>0.01 kg</b>	<b>0.07 kg</b>	<b>0.00 kg</b>	<b>0.04 kg</b>
<b>Potentially hazardous</b>	Household	0.03 kg	0.12 kg	0.11 kg	0.08 kg	0.02 kg	0.05 kg	0.04 kg
	Other	0.33 kg	0.05 kg	0.02 kg	0.15 kg	0.03 kg	0.01 kg	0.00 kg
	<b>Subtotal</b>	<b>0.35 kg</b>	<b>0.17 kg</b>	<b>0.13 kg</b>	<b>0.23 kg</b>	<b>0.05 kg</b>	0.05 kg	0.04 kg
<b>Total</b>		<b>21.01 kg</b>	<b>16.62 kg</b>	<b>15.49 kg</b>	<b>22.47 kg</b>	<b>17.52 kg</b>	<b>17.51 kg</b>	<b>15.71 kg</b>
<b>Total less greenwaste + rubble</b>		<b>13.94 kg</b>	<b>10.80 kg</b>	<b>11.19 kg</b>	<b>14.16 kg</b>	<b>11.00 kg</b>	<b>12.84 kg</b>	<b>10.61 kg</b>

Overall, the comparison between the MGB audits shows a marked difference in the average MGB weights, with two of the averages being substantially higher (21-22 kg) and two being around 15 kg.

If the effect of seasonal and weather-related differences in gardening activity is taken into account by removing the greenwaste and rubble (which includes soil), as has been done in the bottom row, the difference between the weights is reduced considerably.

## Appendix 1 – Kerbside recyclable materials

### Masterton District Council website

#### What cannot be recycled?

Quite a bit actually so here goes:

- light bulbs, broken glass, mirrors, ceramics, plates, drinking glasses
- Plastic bags, murell bar wrappers, cereal box liners, coffee refills, oil containers, polystyrene and meat trays
- painted or waxed paper
- wrapping paper, drink cartons, Tetrapaks, dirty pizza boxes (clean ones yes!)
- nappies, foodscraps, flowers, paint, rope, toys, fibreboard
- hazardous material and containers like pesticides, oil or toxic chemicals

#### A new recycling centre we can all be proud of

Our new recycling centre is something we can all be proud of, so we'd like you to try to recycle everything possible. If you don't want it and someone else can use it, bring it down to the new centre because we've revolutionised the way we do things.

**Service with a smile**

If in doubt don't leave it out. Ask one of the staff at the recycling centre to confirm if it's recyclable or simply rubbish. Or call the Council Helpdesk on (06) 370 6300.





#### Thank you for recycling

We've revolutionised the way we do things around here! We now offer two recycling bins for easy sorting.

Plus... we now have a modern, new recycling centre that's one of the most advanced in New Zealand!



Masterton District Council and Earthcare Environmental have teamed up to offer solid waste services second to none. Clean, safe, bigger and better recycling facilities are now operating at Nursery Road Transfer Station.

#### The recycling centre is open the same hours as the transfer station:

Monday to Saturday	8:30am - 4:30pm
Sunday & Public Holidays	10:00am - 4:00pm
Anzac Day	1:00pm - 4:30pm

The Masterton Transfer Station is closed on Christmas Day, New Years Day & Good Friday.



www.earthcare.co.nz 1 800 200 520

The information has been produced in a PDF certified paper by Microsoft® 8.1.00

#### 20-30% of our household rubbish is recyclable under our existing system

10-15% of our household rubbish is still recyclable paper including newspapers, packaging material, office paper, magazines.

- Please try and ensure that you put ALL clean paper into your Maroon Recycling Bin
- 6-8% of our household rubbish is still recyclable containers
- Plastics #3-7, cans and glass bottles and jars are the next big areas for improvement
- 2-4% of our household rubbish is still textiles
- Clothing, manchester, old sheets and towels as well as good quality shoes are all recyclable

#### Two bins - one green, one maroon

A move to provide two bins for urban kerbside collection has paid off. Masterton now has the best recycling record in the Wellington region, with paper then plastics (1-7) filling bins the most.

Use your maroon bin for paper, cardboard, unwanted books and clothing and your green bin for clean glass bottles, plastics and cans - 'washed and squashed'.



#### Hot Tips for your recycling

- ✓ Please think of our contractors and reuse whatever is dirty before putting it in your bin
- ✓ Group items together so they are easier to sort and you'll also have more room in your bin
- ✓ Lids and bottle tops are NOW recyclable



#### Hot Tips for the home

- ✓ Please have your bins out on the kerb by 7:30am on the same day your rubbish is collected
- ✓ Please only recycle realistic amounts of cardboard, boxes, bottles etc. In other words bulk piles that are beyond your usual amount will need to go to the transfer station
- ✓ We can now accept clean clothing, books and even your old shoes if they still have life left in them for someone else
- ✓ If you move house please leave your bins behind unless they are bins you have purchased



## Carterton District Council website

### What You Can Recycle in your Kerbside Bin

#### Paper and corrugated cardboard

Paper, magazines etc can be tied in a bundle and placed on/under/beside your bin. Please flatten all corrugated cardboard.

#### Aluminium drink cans and metal food tins.

Please clean pet food, fish cans and others that smell. Wash and squash!

#### Plastic

All bottles marked with a '1' or a '2' (Look on the bottom of container for the number). Includes all milk and soft drink bottles, some ice cream containers, detergent and shampoo bottles (Please take tops off as they are not made of recyclable plastic, apart from milk bottle tops which are ok to leave on).

#### Glass

Beer bottles, wine bottles, jam jars, etc. Please remove tops. NB: All glass must be placed in your green bin, if you leave glass in cardboard boxes or outside the bin it will not be picked up as it has been known to cause injury to the recycling workers. No broken drinking glasses, window/mirror glass, crystal, ceramics, pottery or light bulbs please as these items can contaminate whole loads.

To view more information about kerbside recycling, click on the link below:

[Kerbside recycling flyer](#)



What You Can Recycle			What is not recyclable (at kerbside)	
<b>Paper</b> <ul style="list-style-type: none"> <li>Newspapers</li> <li>'junk' mail</li> <li>Magazines</li> <li>Refill paper</li> <li>Office type paper</li> </ul> Paper can be tied in a bundle and placed on/under/beside your bin	<b>Metal</b> <ul style="list-style-type: none"> <li>Aluminium cans</li> <li>Beer cans</li> <li>Canned fruit tins</li> <li>Food tins</li> <li>Pet food cans</li> </ul> Please clean pet food, fish cans and others that smell.	<b>Plastic</b> ① ② <ul style="list-style-type: none"> <li>All drink bottles ①</li> <li>All milk bottles ②</li> </ul> <b>Please remove tops.</b> Other bottles with ② these include some; <ul style="list-style-type: none"> <li>Cleaning product bottles</li> <li>Dishwashing liquid</li> <li>Shampoo bottles</li> <li>Ice cream containers</li> <li>Detergent bottles</li> </ul>	<b>PAPER/CARD</b> <ul style="list-style-type: none"> <li>Milk Cartons</li> <li>Egg Cartons</li> <li>Cereal Cartons</li> <li>Toilet roll cores</li> <li>Unflattened boxes</li> <li>Washing powder boxes</li> <li>Painted or waxed paper</li> <li>Wrapping paper</li> </ul>	<b>PLASTICS</b> <ul style="list-style-type: none"> <li>Plastic films and bags</li> <li>Yoghurt containers</li> <li>Muesli bar wrappers</li> <li>Cereal liners</li> <li>Coffee refills</li> <li>Oil containers</li> </ul>
			<b>GLASS</b> <ul style="list-style-type: none"> <li>Light bulbs</li> <li>Broken glass</li> <li>Window glass</li> <li>Mirrors</li> <li>Ceramics</li> <li>Drinking glasses</li> </ul>	<b>OTHERS</b> <ul style="list-style-type: none"> <li>Nappies</li> <li>Foodscraps</li> <li>Flowers</li> <li>Paint and rope</li> <li>Cups, plates, saucers</li> <li>Toys</li> <li>Fibreboard</li> </ul>

## South Wairarapa

### GREEN BIN

GLASS	<p>Bottles and jars only (no window panes)</p> <ul style="list-style-type: none"> <li>• remove all tops &amp; labels where possible</li> <li>• please rinse out all food and unpleasant smelling odours</li> <li>• please separate into colours and place in different bags</li> </ul>
SCRAP METAL	<p>Any clean steel cans used for food, pet food or aerosol sprays (no cans still containing liquid)</p> <ul style="list-style-type: none"> <li>• please make sure can is completely empty</li> <li>• fold lid inside</li> <li>• washed and squashed</li> </ul> <p>Other scrap metal can be taken to a Recycling Station</p>
ALUMINIUM CANS	<p>Soft drink and beer cans</p> <p>Aluminium trays and foil will be accepted if clean</p> <ul style="list-style-type: none"> <li>• make sure the cans are completely empty</li> </ul>
PLASTICS	<p>(Types 1 - 7 only, no other plastics)</p> <p>Soft drink, milk, dishwasher detergent bottles (no food trays or margarine containers)</p> <ul style="list-style-type: none"> <li>• remove all tops</li> <li>• rinse the bottles thoroughly</li> <li>• squash the bottles flat</li> </ul>

### RED BIN

PAPER & CARDBOARD	<p>Newspapers, Corrugated Cardboard, Cardboard boxes, Brown &amp; White Paper, Magazines, Books &amp; Pamphlets</p> <ul style="list-style-type: none"> <li>• clean dry paper only</li> <li>• bundle newspapers</li> <li>• flatten &amp; group cardboard</li> </ul>
TEXTILES	<p>Clean Clothing, Towels, Sheets etc.</p> <ul style="list-style-type: none"> <li>• place in plastic bags</li> </ul> <p>Good shoes</p> <ul style="list-style-type: none"> <li>• tied in pairs, in plastic bags</li> </ul>

## Earthcare Environmental

ACCEPTED	NOT-ACCEPTED
<b>Paper</b> – office paper, newspapers, magazines, paper packaging (e.g. cereal boxes), clean paper bags, clean pizza boxes, washing powder boxes	<b>Paper</b> - wall paper, sand paper, laminated paper, food contaminated paper, waxed paper, painted paper, drink cartons, Tetra Paks, dirty pizza boxes
<b>Cardboard</b> – all flattened cardboard	
<b>Plastic</b> – all plastic containers with a #1 to #7, as well as their lids	<b>Plastic</b> - All plastics without a #1 to #7 symbol, meat trays, polystyrene, soft plastics (plastic bags, wrappers, glad wrap), oil containers, toys and other non-containers
<b>Aluminium cans</b>	
<b>Steel cans</b>	
<b>Glass</b> – all glass bottles and jars, as well as their separate lids	<b>Glass</b> – light bulbs, broken glass, mirrors, drinking glasses

## Appendix 2 – Waste classifications

### KERBSIDE REFUSE AUDIT CLASSIFICATIONS

Primary category	Secondary category	Definition
<b>Paper</b>	Recyclable paper	Office paper, newspapers, magazines, paper packaging (e.g. cereal boxes), clean paper bags, clean pizza boxes, washing powder boxes
	Cardboard	All corrugated cardboard
	Multimaterial/ other	Wall paper, sand paper, laminated paper, food contaminated paper, waxed paper, painted paper, drink cartons, Tetra Paks, dirty pizza boxes
<b>Plastics</b>	#1-2 bottles and jars	All plastic containers # 1 to #7, including drink and janitorial bottles, plastic food jars, ice cream containers, milk and cream bottles
	Plastic bags/film	All plastic bags and film
	Multimaterial/ other	Non-recyclable plastic packaging (without a #), polystyrene meat trays, and other plastic meat trays, paint, engine oil and chemical containers. All other non-packaging materials made primarily of plastic
<b>Organics</b>	Kitchen waste	All kitchen waste
	Greenwaste	All organic garden waste
	Multimaterial/ other	All other primarily organic items – includes cat tray litter, hair, vacuum cleaner bags
<b>Ferrous metals</b>	Steel cans	All steel cans, including aerosol cans
	Multimaterial/ other	All other items made primarily of ferrous metal
<b>Non-ferrous metals</b>	Aluminium cans	All aluminium cans
	Multimaterial/ other	All other items made primarily of non-ferrous metal
<b>Glass</b>	Glass bottles/jars	All bottles and jars, emptied with the lids and contents removed
	Multimaterial/ other	All other items made primarily of glass, includes light bulbs, drinking glasses, and window glass
<b>Textiles</b>	Reusable textiles	All clean, reusable clothes and Manchester
	Multimaterial/other	Includes shoes, backpacks, handbags, rugs, dirty or ripped clothes
<b>Nappies &amp; sanitary</b>		Includes disposable nappies, paper towels, tissues
<b>Rubble, concrete</b>		All concrete, rubble and soil
<b>Timber</b>		All items made primarily of timber
<b>Rubber</b>		All items made primarily of rubber (e.g. kitchen gloves)
<b>Potentially hazardous</b>	Household	Batteries, aerosol cans, medicines and cosmetics, cleaning agents
	Other	Potentially hazardous items not associated with domestic activity, such as used oil and garden chemicals.

## Appendix 3 – Council kerbside refuse bags

Masterton District Council domestic kerbside refuse bags		%		Mean wt. per bag Margins of error for 95% confidence level	Mean wt. per household set out Margins of error for 95% confidence level
Paper	Recyclable paper	9.7%	(±2.1%)	0.49 kg (±0.10 kg)	0.55 kg (±0.12 kg)
	Cardboard	0.2%	(±0.2%)	0.01 kg (±0.01 kg)	0.01 kg (±0.01 kg)
	Multimaterial/other	2.2%	(±0.5%)	0.11 kg (±0.03 kg)	0.12 kg (±0.03 kg)
	<b>Subtotal</b>	<b>12.1%</b>	<b>(±2.0%)</b>	<b>0.61 kg (±0.10 kg)</b>	<b>0.69 kg (±0.11 kg)</b>
Plastics	# 1 - 7 containers	3.2%	(±0.7%)	0.16 kg (±0.03 kg)	0.18 kg (±0.04 kg)
	Plastic bags/film	12.0%	(±1.6%)	0.61 kg (±0.08 kg)	0.69 kg (±0.09 kg)
	Multimaterial/other	3.4%	(±0.7%)	0.17 kg (±0.04 kg)	0.19 kg (±0.04 kg)
	<b>Subtotal</b>	<b>18.6%</b>	<b>(±2.2%)</b>	<b>0.94 kg (±0.11 kg)</b>	<b>1.06 kg (±0.13 kg)</b>
Organics	Kitchen waste	38.4%	(±4.8%)	1.93 kg (±0.24 kg)	2.19 kg (±0.27 kg)
	Greenwaste	2.4%	(±2.6%)	0.12 kg (±0.13 kg)	0.14 kg (±0.15 kg)
	Multimaterial/other	4.9%	(±2.5%)	0.25 kg (±0.13 kg)	0.28 kg (±0.14 kg)
	<b>Subtotal</b>	<b>45.7%</b>	<b>(±6.0%)</b>	<b>2.30 kg (±0.30 kg)</b>	<b>2.60 kg (±0.34 kg)</b>
Ferrous metals	Steel cans	1.6%	(±0.8%)	0.08 kg (±0.04 kg)	0.09 kg (±0.04 kg)
	Multimaterial/other	0.5%	(±0.6%)	0.03 kg (±0.03 kg)	0.03 kg (±0.03 kg)
	<b>Subtotal</b>	<b>2.2%</b>	<b>(±0.9%)</b>	<b>0.11 kg (±0.04 kg)</b>	<b>0.12 kg (±0.05 kg)</b>
Non ferrous metals	Aluminium cans	0.1%	(±0.1%)	0.00 kg (±0.00 kg)	0.01 kg (±0.01 kg)
	Multimaterial/other	0.6%	(±0.3%)	0.03 kg (±0.01 kg)	0.03 kg (±0.02 kg)
	<b>Subtotal</b>	<b>0.7%</b>	<b>(±0.3%)</b>	<b>0.03 kg (±0.01 kg)</b>	<b>0.04 kg (±0.02 kg)</b>
Glass	Bottles/jars	0.8%	(±0.5%)	0.04 kg (±0.02 kg)	0.05 kg (±0.03 kg)
	Multimaterial/other	0.7%	(±0.6%)	0.04 kg (±0.03 kg)	0.04 kg (±0.03 kg)
	<b>Subtotal</b>	<b>1.5%</b>	<b>(±0.9%)</b>	<b>0.08 kg (±0.05 kg)</b>	<b>0.09 kg (±0.05 kg)</b>
Textiles	Reusable textiles	3.0%	(±1.6%)	0.15 kg (±0.08 kg)	0.17 kg (±0.09 kg)
	Multimaterial/other	1.9%	(±1.1%)	0.10 kg (±0.06 kg)	0.11 kg (±0.06 kg)
	<b>Subtotal</b>	<b>4.9%</b>	<b>(±2.1%)</b>	<b>0.25 kg (±0.10 kg)</b>	<b>0.28 kg (±0.12 kg)</b>
Nappies and sanitary		<b>10.7%</b>	<b>(±2.6%)</b>	<b>0.54 kg (±0.13 kg)</b>	<b>0.61 kg (±0.15 kg)</b>
Rubble		<b>1.1%</b>	<b>(±0.9%)</b>	<b>0.06 kg (±0.04 kg)</b>	<b>0.06 kg (±0.05 kg)</b>
Timber		<b>1.1%</b>	<b>(±1.2%)</b>	<b>0.05 kg (±0.06 kg)</b>	<b>0.06 kg (±0.07 kg)</b>
Rubber		<b>0.1%</b>	<b>(±0.2%)</b>	<b>0.01 kg (±0.01 kg)</b>	<b>0.01 kg (±0.01 kg)</b>
Potentially hazardous	Household	1.1%	(±0.5%)	0.06 kg (±0.03 kg)	0.07 kg (±0.03 kg)
	Other	0.1%	(±0.3%)	0.01 kg (±0.01 kg)	0.01 kg (±0.01 kg)
	<b>Subtotal</b>	<b>1.3%</b>	<b>(±0.5%)</b>	<b>0.06 kg (±0.03 kg)</b>	<b>0.07 kg (±0.03 kg)</b>
<b>TOTAL</b>		<b>100.0%</b>		<b>5.04 kg (±0.37 kg)</b>	<b>5.70 kg (±0.42 kg)</b>



Carterton District Council domestic kerbside refuse bags		%		Mean wt. per bag Margins of error for 95% confidence level	Mean wt. per household set out Margins of error for 95% confidence level
Paper	Recyclable paper	8.9%	(±2.4%)	0.58 kg (±0.16 kg)	0.70 kg (±0.19 kg)
	Cardboard	0.4%	(±0.3%)	0.02 kg (±0.02 kg)	0.03 kg (±0.02 kg)
	Multimaterial/other	1.7%	(±0.5%)	0.11 kg (±0.03 kg)	0.13 kg (±0.04 kg)
	<b>Subtotal</b>	<b>10.9%</b>	<b>(±2.5%)</b>	<b>0.72 kg (±0.17 kg)</b>	<b>0.87 kg (±0.20 kg)</b>
Plastics	# 1 - 7 containers	2.6%	(±0.4%)	0.17 kg (±0.03 kg)	0.20 kg (±0.03 kg)
	Plastic bags/film	9.4%	(±1.1%)	0.62 kg (±0.07 kg)	0.75 kg (±0.08 kg)
	Multimaterial/other	3.4%	(±0.4%)	0.22 kg (±0.03 kg)	0.27 kg (±0.03 kg)
	<b>Subtotal</b>	<b>15.4%</b>	<b>(±1.3%)</b>	<b>1.01 kg (±0.09 kg)</b>	<b>1.22 kg (±0.11 kg)</b>
Organics	Kitchen waste	39.8%	(±7.8%)	2.61 kg (±0.51 kg)	3.16 kg (±0.62 kg)
	Greenwaste	6.3%	(±5.9%)	0.41 kg (±0.39 kg)	0.50 kg (±0.47 kg)
	Multimaterial/other	6.8%	(±4.7%)	0.44 kg (±0.31 kg)	0.54 kg (±0.37 kg)
	<b>Subtotal</b>	<b>52.8%</b>	<b>(±11.2%)</b>	<b>3.46 kg (±0.74 kg)</b>	<b>4.19 kg (±0.89 kg)</b>
Ferrous metals	Steel cans	1.4%	(±0.4%)	0.09 kg (±0.03 kg)	0.11 kg (±0.03 kg)
	Multimaterial/other	0.6%	(±0.5%)	0.04 kg (±0.04 kg)	0.05 kg (±0.04 kg)
	<b>Subtotal</b>	<b>2.0%</b>	<b>(±0.6%)</b>	<b>0.13 kg (±0.04 kg)</b>	<b>0.16 kg (±0.05 kg)</b>
Non ferrous metals	Aluminium cans	0.2%	(±0.1%)	0.01 kg (±0.01 kg)	0.01 kg (±0.01 kg)
	Multimaterial/other	0.8%	(±0.3%)	0.05 kg (±0.02 kg)	0.06 kg (±0.03 kg)
	<b>Subtotal</b>	<b>1.0%</b>	<b>(±0.3%)</b>	<b>0.06 kg (±0.02 kg)</b>	<b>0.08 kg (±0.02 kg)</b>
Glass	Bottles/jars	1.9%	(±0.9%)	0.13 kg (±0.06 kg)	0.15 kg (±0.07 kg)
	Multimaterial/other	0.5%	(±0.4%)	0.03 kg (±0.02 kg)	0.04 kg (±0.03 kg)
	<b>Subtotal</b>	<b>2.4%</b>	<b>(±1.0%)</b>	<b>0.16 kg (±0.07 kg)</b>	<b>0.19 kg (±0.08 kg)</b>
Textiles	Reusable textiles	2.0%	(±1.5%)	0.13 kg (±0.10 kg)	0.16 kg (±0.12 kg)
	Multimaterial/other	1.0%	(±0.5%)	0.07 kg (±0.03 kg)	0.08 kg (±0.04 kg)
	<b>Subtotal</b>	<b>3.0%</b>	<b>(±1.6%)</b>	<b>0.20 kg (±0.10 kg)</b>	<b>0.24 kg (±0.12 kg)</b>
Nappies and sanitary		<b>9.6%</b>	<b>(±3.9%)</b>	<b>0.63 kg (±0.26 kg)</b>	<b>0.76 kg (±0.31 kg)</b>
Rubble		<b>1.4%</b>	<b>(±1.4%)</b>	<b>0.09 kg (±0.09 kg)</b>	<b>0.11 kg (±0.11 kg)</b>
Timber		<b>0.6%</b>	<b>(±0.6%)</b>	<b>0.04 kg (±0.04 kg)</b>	<b>0.04 kg (±0.05 kg)</b>
Rubber		<b>0.1%</b>	<b>(±0.1%)</b>	<b>0.01 kg (±0.01 kg)</b>	<b>0.01 kg (±0.01 kg)</b>
Potentially hazardous	Household	0.7%	(±0.4%)	0.05 kg (±0.03 kg)	0.06 kg (±0.03 kg)
	Other	0.1%	(±0.2%)	0.01 kg (±0.01 kg)	0.01 kg (±0.01 kg)
	<b>Subtotal</b>	<b>0.9%</b>	<b>(±0.4%)</b>	<b>0.06 kg (±0.03 kg)</b>	<b>0.07 kg (±0.04 kg)</b>
<b>TOTAL</b>		<b>100.0%</b>		<b>6.56 kg (±0.93 kg)</b>	<b>7.93 kg (±1.12 kg)</b>

South Wairarapa District Council domestic kerbside refuse bags		%		Mean wt. per bag Margins of error for 95% confidence level	Mean wt. per household set out Margins of error for 95% confidence level
<b>Paper</b>	Recyclable paper	9.6%	(±1.6%)	0.43 kg (±0.07 kg)	0.63 kg (±0.10 kg)
	Cardboard	0.7%	(±0.5%)	0.03 kg (±0.02 kg)	0.05 kg (±0.03 kg)
	Multimaterial/other	2.4%	(±1.2%)	0.11 kg (±0.06 kg)	0.16 kg (±0.08 kg)
	<b>Subtotal</b>	<b>12.7%</b>	<b>(±2.0%)</b>	<b>0.57 kg (±0.09 kg)</b>	<b>0.84 kg (±0.13 kg)</b>
<b>Plastics</b>	# 1 - 7 containers	3.1%	(±0.6%)	0.14 kg (±0.03 kg)	0.20 kg (±0.04 kg)
	Plastic bags/film	11.7%	(±1.7%)	0.53 kg (±0.08 kg)	0.77 kg (±0.12 kg)
	Multimaterial/other	3.2%	(±0.8%)	0.14 kg (±0.04 kg)	0.21 kg (±0.05 kg)
	<b>Subtotal</b>	<b>18.0%</b>	<b>(±2.4%)</b>	<b>0.81 kg (±0.11 kg)</b>	<b>1.19 kg (±0.16 kg)</b>
<b>Organics</b>	Kitchen waste	37.9%	(±6.3%)	1.71 kg (±0.28 kg)	2.50 kg (±0.42 kg)
	Greenwaste	2.4%	(±2.2%)	0.11 kg (±0.10 kg)	0.16 kg (±0.15 kg)
	Multimaterial/other	2.6%	(±1.1%)	0.12 kg (±0.05 kg)	0.17 kg (±0.07 kg)
	<b>Subtotal</b>	<b>42.9%</b>	<b>(±6.4%)</b>	<b>1.94 kg (±0.29 kg)</b>	<b>2.83 kg (±0.43 kg)</b>
<b>Ferrous metals</b>	Steel cans	1.3%	(±0.3%)	0.06 kg (±0.01 kg)	0.09 kg (±0.02 kg)
	Multimaterial/other	0.6%	(±0.4%)	0.03 kg (±0.02 kg)	0.04 kg (±0.03 kg)
	<b>Subtotal</b>	<b>1.9%</b>	<b>(±0.5%)</b>	<b>0.09 kg (±0.02 kg)</b>	<b>0.13 kg (±0.03 kg)</b>
<b>Non ferrous metals</b>	Aluminium cans	0.3%	(±0.2%)	0.01 kg (±0.01 kg)	0.02 kg (±0.01 kg)
	Multimaterial/other	1.2%	(±1.2%)	0.05 kg (±0.05 kg)	0.08 kg (±0.08 kg)
	<b>Subtotal</b>	<b>1.5%</b>	<b>(±1.2%)</b>	<b>0.07 kg (±0.05 kg)</b>	<b>0.10 kg (±0.08 kg)</b>
<b>Glass</b>	Bottles/jars	2.1%	(±1.1%)	0.10 kg (±0.05 kg)	0.14 kg (±0.07 kg)
	Multimaterial/other	0.7%	(±0.5%)	0.03 kg (±0.02 kg)	0.04 kg (±0.03 kg)
	<b>Subtotal</b>	<b>2.8%</b>	<b>(±1.0%)</b>	<b>0.13 kg (±0.05 kg)</b>	<b>0.18 kg (±0.07 kg)</b>
<b>Textiles</b>	Reusable textiles	3.5%	(±1.5%)	0.16 kg (±0.07 kg)	0.23 kg (±0.10 kg)
	Multimaterial/other	1.5%	(±1.1%)	0.07 kg (±0.05 kg)	0.10 kg (±0.07 kg)
	<b>Subtotal</b>	<b>5.0%</b>	<b>(±1.7%)</b>	<b>0.23 kg (±0.07 kg)</b>	<b>0.33 kg (±0.11 kg)</b>
<b>Nappies and sanitary</b>		<b>13.4%</b>	<b>(±7.0%)</b>	<b>0.60 kg (±0.32 kg)</b>	<b>0.88 kg (±0.46 kg)</b>
<b>Rubble</b>		<b>1.0%</b>	<b>(±1.0%)</b>	<b>0.04 kg (±0.05 kg)</b>	<b>0.06 kg (±0.07 kg)</b>
<b>Timber</b>		<b>0.4%</b>	<b>(±0.6%)</b>	<b>0.02 kg (±0.03 kg)</b>	<b>0.03 kg (±0.04 kg)</b>
<b>Rubber</b>		<b>0.1%</b>	<b>(±0.2%)</b>	<b>0.01 kg (±0.01 kg)</b>	<b>0.01 kg (±0.01 kg)</b>
<b>Potentially hazardous</b>	Household	0.3%	(±0.2%)	0.01 kg (±0.01 kg)	0.02 kg (±0.01 kg)
	Other	0.0%	(±0.0%)	0.00 kg (±0.00 kg)	0.00 kg (±0.00 kg)
	<b>Subtotal</b>	<b>0.3%</b>	<b>(±0.2%)</b>	<b>0.01 kg (±0.01 kg)</b>	<b>0.02 kg (±0.01 kg)</b>
<b>TOTAL</b>		<b>100.0%</b>		<b>4.52 kg (±0.49 kg)</b>	<b>6.60 kg (±0.72 kg)</b>

## Appendix 4 – Private domestic MGBs

Masterton District Council Private domestic MGBs		%		Mean wt. MGB Margins of error for 95% confidence level	
Paper	Recyclable paper	8.9%	(±3.9%)	1.55 kg	(±0.68 kg)
	Cardboard	0.7%	(±0.5%)	0.13 kg	(±0.09 kg)
	Multimaterial/other	1.6%	(±0.9%)	0.29 kg	(±0.16 kg)
	<b>Subtotal</b>	<b>11.2%</b>	<b>(±4.5%)</b>	<b>1.97 kg</b>	<b>(±0.79 kg)</b>
Plastics	# 1 to 7 containers	1.6%	(±0.4%)	0.29 kg	(±0.07 kg)
	Plastic bags/film	5.1%	(±1.2%)	0.89 kg	(±0.20 kg)
	Multimaterial/other	2.1%	(±0.8%)	0.36 kg	(±0.13 kg)
	<b>Subtotal</b>	<b>8.8%</b>	<b>(±1.9%)</b>	<b>1.54 kg</b>	<b>(±0.34 kg)</b>
Organics	Kitchen waste	22.2%	(±7.0%)	3.89 kg	(±1.22 kg)
	Greenwaste	36.1%	(±15.9%)	6.32 kg	(±2.79 kg)
	Multimaterial/other	1.7%	(±1.3%)	0.30 kg	(±0.23 kg)
	<b>Subtotal</b>	<b>60.0%</b>	<b>(±12.8%)</b>	<b>10.51 kg</b>	<b>(±2.23 kg)</b>
Ferrous metals	Steel cans	1.1%	(±0.6%)	0.20 kg	(±0.10 kg)
	Multimaterial/other	0.2%	(±0.2%)	0.04 kg	(±0.04 kg)
	<b>Subtotal</b>	<b>1.3%</b>	<b>(±0.6%)</b>	<b>0.23 kg</b>	<b>(±0.11 kg)</b>
Non ferrous metals	Aluminium cans	0.2%	(±0.1%)	0.03 kg	(±0.02 kg)
	Multimaterial/other	0.6%	(±0.5%)	0.10 kg	(±0.09 kg)
	<b>Subtotal</b>	<b>0.7%</b>	<b>(±0.5%)</b>	<b>0.13 kg</b>	<b>(±0.09 kg)</b>
Glass	Bottles/jars	4.5%	(±4.9%)	0.79 kg	(±0.86 kg)
	Multimaterial/other	0.1%	(±0.1%)	0.02 kg	(±0.02 kg)
	<b>Subtotal</b>	<b>4.6%</b>	<b>(±4.9%)</b>	<b>0.81 kg</b>	<b>(±0.86 kg)</b>
Textiles	Reusable textiles	1.0%	(±0.8%)	0.18 kg	(±0.13 kg)
	Multimaterial/other	2.0%	(±1.4%)	0.35 kg	(±0.25 kg)
	<b>Subtotal</b>	<b>3.0%</b>	<b>(±1.8%)</b>	<b>0.53 kg</b>	<b>(±0.32 kg)</b>
Nappies and sanitary		<b>8.0%</b>	<b>(±5.0%)</b>	<b>1.39 kg</b>	<b>(±0.88 kg)</b>
Rubble		<b>1.1%</b>	<b>(±0.8%)</b>	<b>0.20 kg</b>	<b>(±0.15 kg)</b>
Timber		<b>0.5%</b>	<b>(±0.6%)</b>	<b>0.10 kg</b>	<b>(±0.10 kg)</b>
Rubber		<b>0.4%</b>	<b>(±0.5%)</b>	<b>0.07 kg</b>	<b>(±0.09 kg)</b>
Potentially hazardous	Household	0.1%	(±0.1%)	0.02 kg	(±0.02 kg)
	Other	0.1%	(±0.3%)	0.03 kg	(±0.04 kg)
	<b>Subtotal</b>	<b>0.3%</b>	<b>(±0.3%)</b>	<b>0.05 kg</b>	<b>(±0.05 kg)</b>
<b>TOTAL</b>		<b>100.0%</b>		<b>17.52 kg</b>	<b>(±2.26 kg)</b>

<b>Carterton District Council Private domestic MGBs</b>		<b>%</b>		<b>Mean wt. MGB</b> Margins of error for 95% confidence level	
<b>Paper</b>	Recyclable paper	10.8%	(±3.6%)	1.89 kg	(±0.64 kg)
	Cardboard	1.1%	(±0.5%)	0.19 kg	(±0.08 kg)
	Multimaterial/other	1.4%	(±0.5%)	0.24 kg	(±0.09 kg)
	<b>Subtotal</b>	<b>13.2%</b>	<b>(±3.9%)</b>	<b>2.32 kg</b>	<b>(±0.68 kg)</b>
<b>Plastics</b>	# 1 to 7 containers	2.6%	(±0.5%)	0.45 kg	(±0.08 kg)
	Plastic bags/film	5.4%	(±1.1%)	0.95 kg	(±0.20 kg)
	Multimaterial/other	2.6%	(±1.3%)	0.46 kg	(±0.24 kg)
	<b>Subtotal</b>	<b>10.6%</b>	<b>(±1.9%)</b>	<b>1.86 kg</b>	<b>(±0.33 kg)</b>
<b>Organics</b>	Kitchen waste	24.4%	(±7.2%)	4.28 kg	(±1.26 kg)
	Greenwaste	26.6%	(±14.9%)	4.66 kg	(±2.60 kg)
	Multimaterial/other	3.2%	(±2.8%)	0.56 kg	(±0.49 kg)
	<b>Subtotal</b>	<b>54.3%</b>	<b>(±16.2%)</b>	<b>9.50 kg</b>	<b>(±2.84 kg)</b>
<b>Ferrous metals</b>	Steel cans	1.0%	(±0.2%)	0.18 kg	(±0.04 kg)
	Multimaterial/other	0.3%	(±0.4%)	0.06 kg	(±0.07 kg)
	<b>Subtotal</b>	<b>1.3%</b>	<b>(±0.5%)</b>	<b>0.23 kg</b>	<b>(±0.09 kg)</b>
<b>Non ferrous metals</b>	Aluminium cans	0.1%	(±0.1%)	0.02 kg	(±0.01 kg)
	Multimaterial/other	0.7%	(±0.9%)	0.12 kg	(±0.15 kg)
	<b>Subtotal</b>	<b>0.8%</b>	<b>(±0.9%)</b>	<b>0.14 kg</b>	<b>(±0.15 kg)</b>
<b>Glass</b>	Bottles/jars	4.6%	(±2.7%)	0.81 kg	(±0.48 kg)
	Multimaterial/other	0.1%	(±0.1%)	0.01 kg	(±0.02 kg)
	<b>Subtotal</b>	<b>4.7%</b>	<b>(±2.7%)</b>	<b>0.82 kg</b>	<b>(±0.47 kg)</b>
<b>Textiles</b>	Reusable textiles	1.8%	(±1.8%)	0.31 kg	(±0.31 kg)
	Multimaterial/other	1.9%	(±1.2%)	0.33 kg	(±0.22 kg)
	<b>Subtotal</b>	<b>3.7%</b>	<b>(±2.5%)</b>	<b>0.65 kg</b>	<b>(±0.43 kg)</b>
<b>Nappies and sanitary</b>		<b>8.6%</b>	<b>(±6.1%)</b>	<b>1.50 kg</b>	<b>(±1.06 kg)</b>
<b>Rubble</b>		<b>1.6%</b>	<b>(±2.1%)</b>	<b>0.28 kg</b>	<b>(±0.37 kg)</b>
<b>Timber</b>		<b>0.8%</b>	<b>(±0.6%)</b>	<b>0.14 kg</b>	<b>(±0.10 kg)</b>
<b>Rubber</b>		<b>0.0%</b>	<b>(±0.0%)</b>	<b>0.00 kg</b>	<b>(±0.01 kg)</b>
<b>Potentially hazardous</b>	Household	0.3%	(±0.2%)	0.05 kg	(±0.04 kg)
	Other	0.0%	(±0.1%)	0.01 kg	(±0.01 kg)
	<b>Subtotal</b>	<b>0.3%</b>	<b>(±0.2%)</b>	<b>0.05 kg</b>	<b>(±0.04 kg)</b>
<b>TOTAL</b>		<b>100.0%</b>		<b>17.51 kg</b>	<b>(±3.17 kg)</b>

South Wairarapa District Council Private domestic MGBs		%		Mean wt. MGB Margins of error for 95% confidence level	
Paper	Recyclable paper	10.0%	(±3.9%)	1.57 kg	(±0.61 kg)
	Cardboard	2.0%	(±1.5%)	0.31 kg	(±0.24 kg)
	Multimaterial/other	1.3%	(±0.5%)	0.21 kg	(±0.08 kg)
	<b>Subtotal</b>	<b>13.3%</b>	<b>(±4.8%)</b>	<b>2.09 kg</b>	<b>(±0.76 kg)</b>
Plastics	# 1 to 7 containers	2.4%	(±0.8%)	0.38 kg	(±0.12 kg)
	Plastic bags/film	5.9%	(±1.4%)	0.93 kg	(±0.22 kg)
	Multimaterial/other	1.9%	(±0.8%)	0.31 kg	(±0.13 kg)
	<b>Subtotal</b>	<b>10.3%</b>	<b>(±2.2%)</b>	<b>1.61 kg</b>	<b>(±0.35 kg)</b>
Organics	Kitchen waste	26.2%	(±7.7%)	4.12 kg	(±1.20 kg)
	Greenwaste	31.1%	(±15.9%)	4.89 kg	(±2.50 kg)
	Multimaterial/other	3.5%	(±3.0%)	0.55 kg	(±0.47 kg)
	<b>Subtotal</b>	<b>60.8%</b>	<b>(±16.5%)</b>	<b>9.55 kg</b>	<b>(±2.60 kg)</b>
Ferrous metals	Steel cans	1.1%	(±0.5%)	0.17 kg	(±0.09 kg)
	Multimaterial/other	0.2%	(±0.2%)	0.03 kg	(±0.03 kg)
	<b>Subtotal</b>	<b>1.3%</b>	<b>(±0.6%)</b>	<b>0.20 kg</b>	<b>(±0.09 kg)</b>
Non ferrous metals	Aluminium cans	0.3%	(±0.2%)	0.04 kg	(±0.03 kg)
	Multimaterial/other	0.4%	(±0.3%)	0.06 kg	(±0.04 kg)
	<b>Subtotal</b>	<b>0.7%</b>	<b>(±0.4%)</b>	<b>0.10 kg</b>	<b>(±0.06 kg)</b>
Glass	Bottles/jars	4.4%	(±2.3%)	0.69 kg	(±0.37 kg)
	Multimaterial/other	0.5%	(±0.6%)	0.08 kg	(±0.09 kg)
	<b>Subtotal</b>	<b>4.9%</b>	<b>(±2.4%)</b>	<b>0.77 kg</b>	<b>(±0.38 kg)</b>
Textiles	Reusable textiles	1.3%	(±1.5%)	0.20 kg	(±0.24 kg)
	Multimaterial/other	1.1%	(±0.6%)	0.18 kg	(±0.10 kg)
	<b>Subtotal</b>	<b>2.4%</b>	<b>(±1.5%)</b>	<b>0.38 kg</b>	<b>(±0.24 kg)</b>
Nappies and sanitary		<b>2.7%</b>	<b>(±1.3%)</b>	<b>0.42 kg</b>	<b>(±0.20 kg)</b>
Rubble		<b>1.3%</b>	<b>(±1.3%)</b>	<b>0.21 kg</b>	<b>(±0.20 kg)</b>
Timber		<b>1.8%</b>	<b>(±2.4%)</b>	<b>0.28 kg</b>	<b>(±0.37 kg)</b>
Rubber		<b>0.2%</b>	<b>(±0.3%)</b>	<b>0.04 kg</b>	<b>(±0.04 kg)</b>
Potentially hazardous	Household	0.2%	(±0.3%)	0.04 kg	(±0.04 kg)
	Other	0.0%		0.00 kg	
	<b>Subtotal</b>	<b>0.2%</b>	<b>(±0.3%)</b>	<b>0.04 kg</b>	<b>(±0.04 kg)</b>
<b>TOTAL</b>		<b>100.0%</b>		<b>15.71 kg</b>	<b>(±2.72 kg)</b>

## Appendix 5 – Greytown and Featherston results

Greytown Domestic bagged refuse		%	Mean wt. per bag	Mean wt. per household set out
<b>Paper</b>	Recyclable paper	10.3%	0.48 kg	0.66 kg
	Cardboard	0.3%	0.01 kg	0.02 kg
	Multimaterial/other	2.4%	0.11 kg	0.15 kg
	<b>Subtotal</b>	<b>13.0%</b>	<b>0.60 kg</b>	<b>0.83 kg</b>
<b>Plastics</b>	# 1 to 7 containers	3.1%	0.14 kg	0.20 kg
	Plastic bags/film	13.3%	0.62 kg	0.85 kg
	Multimaterial/other	3.8%	0.18 kg	0.24 kg
	<b>Subtotal</b>	<b>20.1%</b>	<b>0.93 kg</b>	<b>1.29 kg</b>
<b>Organics</b>	Kitchen waste	39.2%	1.82 kg	2.51 kg
	Greenwaste	3.8%	0.17 kg	0.24 kg
	Multimaterial/other	2.6%	0.12 kg	0.17 kg
	<b>Subtotal</b>	<b>45.6%</b>	<b>2.12 kg</b>	<b>2.92 kg</b>
<b>Ferrous metals</b>	Steel cans	1.2%	0.06 kg	0.08 kg
	Multimaterial/other	0.9%	0.04 kg	0.06 kg
	<b>Subtotal</b>	<b>2.1%</b>	<b>0.10 kg</b>	<b>0.13 kg</b>
<b>Non ferrous metals</b>	Aluminium cans	0.2%	0.01 kg	0.01 kg
	Multimaterial/other	1.8%	0.08 kg	0.11 kg
	<b>Subtotal</b>	<b>2.0%</b>	<b>0.09 kg</b>	<b>0.13 kg</b>
<b>Glass</b>	Bottles/jars	1.7%	0.08 kg	0.11 kg
	Multimaterial/other	0.6%	0.03 kg	0.04 kg
	<b>Subtotal</b>	<b>2.3%</b>	<b>0.11 kg</b>	<b>0.15 kg</b>
<b>Textiles</b>	Reusable textiles	4.1%	0.19 kg	0.26 kg
	Multimaterial/other	1.0%	0.04 kg	0.06 kg
	<b>Subtotal</b>	<b>5.0%</b>	<b>0.23 kg</b>	<b>0.32 kg</b>
<b>Nappies and sanitary</b>		<b>8.6%</b>	<b>0.40 kg</b>	<b>0.55 kg</b>
<b>Rubble</b>		<b>0.4%</b>	<b>0.02 kg</b>	<b>0.03 kg</b>
<b>Timber</b>		<b>0.7%</b>	<b>0.03 kg</b>	<b>0.05 kg</b>
<b>Rubber</b>		<b>0.1%</b>	<b>0.00 kg</b>	<b>0.00 kg</b>
<b>Potentially hazardous</b>	Household	0.2%	0.01 kg	0.01 kg
	Other	0.0%	0.00 kg	0.00 kg
	<b>Subtotal</b>	<b>0.2%</b>	<b>0.01 kg</b>	<b>0.01 kg</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>4.65 kg</b>	<b>6.41 kg</b>

Featherston Domestic bagged refuse		%	Mean wt. per bag	Mean wt. per household set out
Paper	Recyclable paper	8.9%	0.39 kg	0.53 kg
	Cardboard	1.1%	0.05 kg	0.07 kg
	Multimaterial/other	2.5%	0.11 kg	0.15 kg
	<b>Subtotal</b>	<b>12.4%</b>	<b>0.55 kg</b>	<b>0.74 kg</b>
Plastics	# 1 to 7 containers	3.1%	0.14 kg	0.18 kg
	Plastic bags/film	10.0%	0.44 kg	0.59 kg
	Multimaterial/other	2.6%	0.11 kg	0.15 kg
	<b>Subtotal</b>	<b>15.7%</b>	<b>0.69 kg</b>	<b>0.93 kg</b>
Organics	Kitchen waste	36.5%	1.60 kg	2.17 kg
	Greenwaste	1.0%	0.05 kg	0.06 kg
	Multimaterial/other	2.5%	0.11 kg	0.15 kg
	<b>Subtotal</b>	<b>40.1%</b>	<b>1.76 kg</b>	<b>2.38 kg</b>
Ferrous metals	Steel cans	1.4%	0.06 kg	0.09 kg
	Multimaterial/other	0.3%	0.01 kg	0.02 kg
	<b>Subtotal</b>	<b>1.7%</b>	<b>0.07 kg</b>	<b>0.10 kg</b>
Non ferrous metals	Aluminium cans	0.4%	0.02 kg	0.02 kg
	Multimaterial/other	0.6%	0.03 kg	0.04 kg
	<b>Subtotal</b>	<b>0.9%</b>	<b>0.04 kg</b>	<b>0.06 kg</b>
Glass	Bottles/jars	2.5%	0.11 kg	0.15 kg
	Multimaterial/other	0.8%	0.03 kg	0.04 kg
	<b>Subtotal</b>	<b>3.3%</b>	<b>0.14 kg</b>	<b>0.19 kg</b>
Textiles	Reusable textiles	2.9%	0.13 kg	0.17 kg
	Multimaterial/other	2.1%	0.09 kg	0.13 kg
	<b>Subtotal</b>	<b>5.0%</b>	<b>0.22 kg</b>	<b>0.30 kg</b>
Nappies and sanitary		<b>18.5%</b>	<b>0.81 kg</b>	<b>1.10 kg</b>
Rubble		<b>1.5%</b>	<b>0.07 kg</b>	<b>0.09 kg</b>
Timber		<b>0.1%</b>	<b>0.01 kg</b>	<b>0.01 kg</b>
Rubber		<b>0.2%</b>	<b>0.01 kg</b>	<b>0.01 kg</b>
Potentially hazardous	Household	0.4%	0.02 kg	0.03 kg
	Other	0.0%	0.00 kg	0.00 kg
	<b>Subtotal</b>	<b>0.4%</b>	<b>0.02 kg</b>	<b>0.03 kg</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>4.39 kg</b>	<b>5.93 kg</b>

Greytown Private domestic MGBs		%	Mean wt. per MGB
Paper	Recyclable paper	9.6%	1.46 kg
	Cardboard	1.2%	0.18 kg
	Multimaterial/other	1.4%	0.22 kg
	<b>Subtotal</b>	<b>12.1%</b>	<b>1.86 kg</b>
Plastics	# 1 to 7 containers	2.3%	0.36 kg
	Plastic bags/film	5.6%	0.86 kg
	Multimaterial/other	2.6%	0.40 kg
	<b>Subtotal</b>	<b>10.6%</b>	<b>1.62 kg</b>
Organics	Kitchen waste	25.7%	3.93 kg
	Greenwaste	32.4%	4.95 kg
	Multimaterial/other	4.6%	0.70 kg
	<b>Subtotal</b>	<b>62.7%</b>	<b>9.58 kg</b>
Ferrous metals	Steel cans	0.9%	0.14 kg
	Multimaterial/other	0.1%	0.01 kg
	<b>Subtotal</b>	<b>1.0%</b>	<b>0.16 kg</b>
Non ferrous metals	Aluminium cans	0.3%	0.05 kg
	Multimaterial/other	0.4%	0.06 kg
	<b>Subtotal</b>	<b>0.7%</b>	<b>0.11 kg</b>
Glass	Bottles/jars	3.1%	0.47 kg
	Multimaterial/other	0.7%	0.11 kg
	<b>Subtotal</b>	<b>3.8%</b>	<b>0.58 kg</b>
Textiles	Reusable textiles	0.7%	0.11 kg
	Multimaterial/other	1.1%	0.17 kg
	<b>Subtotal</b>	<b>1.9%</b>	<b>0.28 kg</b>
Nappies and sanitary		<b>2.0%</b>	<b>0.31 kg</b>
Rubble		<b>1.9%</b>	<b>0.28 kg</b>
Timber		<b>2.7%</b>	<b>0.41 kg</b>
Rubber		<b>0.1%</b>	<b>0.02 kg</b>
Potentially hazardous	Household	0.4%	0.06 kg
	Other	0.0%	0.00 kg
	<b>Subtotal</b>	<b>0.4%</b>	<b>0.06 kg</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>15.27 kg</b>



Featherston Private domestic MGBs		%	Mean wt. per MGB
Paper	Recyclable paper	10.4%	1.80 kg
	Cardboard	2.8%	0.49 kg
	Multimaterial/other	1.2%	0.21 kg
	<b>Subtotal</b>	<b>14.5%</b>	<b>2.50 kg</b>
Plastics	# 1 to 7 containers	2.5%	0.42 kg
	Plastic bags/film	6.2%	1.07 kg
	Multimaterial/other	1.3%	0.22 kg
	<b>Subtotal</b>	<b>9.9%</b>	<b>1.72 kg</b>
Organics	Kitchen waste	26.7%	4.61 kg
	Greenwaste	29.9%	5.16 kg
	Multimaterial/other	2.4%	0.41 kg
	<b>Subtotal</b>	<b>59.0%</b>	<b>10.17 kg</b>
Ferrous metals	Steel cans	1.3%	0.22 kg
	Multimaterial/other	0.3%	0.05 kg
	<b>Subtotal</b>	<b>1.5%</b>	<b>0.26 kg</b>
Non ferrous metals	Aluminium cans	0.3%	0.05 kg
	Multimaterial/other	0.4%	0.06 kg
	<b>Subtotal</b>	<b>0.6%</b>	<b>0.11 kg</b>
Glass	Bottles/jars	5.7%	0.98 kg
	Multimaterial/other	0.3%	0.05 kg
	<b>Subtotal</b>	<b>6.0%</b>	<b>1.03 kg</b>
Textiles	Reusable textiles	1.8%	0.32 kg
	Multimaterial/other	1.1%	0.20 kg
	<b>Subtotal</b>	<b>3.0%</b>	<b>0.51 kg</b>
Nappies and sanitary		<b>3.3%</b>	<b>0.58 kg</b>
Rubble		<b>0.8%</b>	<b>0.14 kg</b>
Timber		<b>0.9%</b>	<b>0.16 kg</b>
Rubber		<b>0.3%</b>	<b>0.06 kg</b>
Potentially hazardous	Household	0.1%	0.02 kg
	Other	0.0%	0.00 kg
	<b>Subtotal</b>	<b>0.1%</b>	<b>0.02 kg</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>17.26 kg</b>