WasteNot Consulting

Composition of Waitomo District Kerbside Waste

Prepared for
Waitomo District Council

July 2018 and February 2019

Document quality control

Date	Status	Written by	Distributed to
11 March 2019	Draft 0.1	BM	DB - WDC
30 March 2019	Final 1.0	BM	DB - WDC

Contact details

Waitomo District Council
Les Clarke
Manager - Operational Services
Waitomo District Council
Ph: (07) 878 0800

Waste Not Consulting Ltd.
Bruce Middleton
Director
PO Box 78372
Grey Lynn, Auckland 1245
Email: bruce@wastenot.co.nz

Contents

1 Introduction

This report presents the results of two sort-and-weigh audits, conducted in July 2018 and February 2019, of the composition of kerbside waste collected by Waitomo District Council (Council).

The Waste Minimisation Act 2008 requires that "A territorial authority must promote effective and efficient waste management and minimisation within its district". In accordance with the Act, in June 2018 Council adopted the *Solid Waste (Asset) Management and Minimisation Plan 2018-2028* (SWaMMP). The SWaMMP includes two strategic goals:

- Strategic Goal 1: To ensure the safe disposal of waste to protect our natural environment
- Strategic Goal 2: To minimise waste disposal within the district.

To achieve the strategic goal to minimise waste disposal, two of the performance measures included in the SWaMMP, shown in the table below, refer to the composition of kerbside rubbish bags.

Level of service	Performance measure
Reduce quantity of recyclables like paper and plastics in bag collection that goes to landfill.	Percentage reduction per annum achieved through continuing education (measured against the 2016 Waste Audit).
Reduce the quantity of organic waste like food scraps etc. in bag collection that goes to landfill.	Percentage reduction per annum achieved through continuing education and promotion of home composting (measured against the 2016 Waste Audit).

To identify changes in the composition of kerbside waste over time, Council has conducted biannual audits of the kerbside rubbish bag collection since 2008. The results of the 2016 waste audit are compared to the results of the 2018/2019 waste audits in section 6.2.

1.1 Waste services in Waitomo District

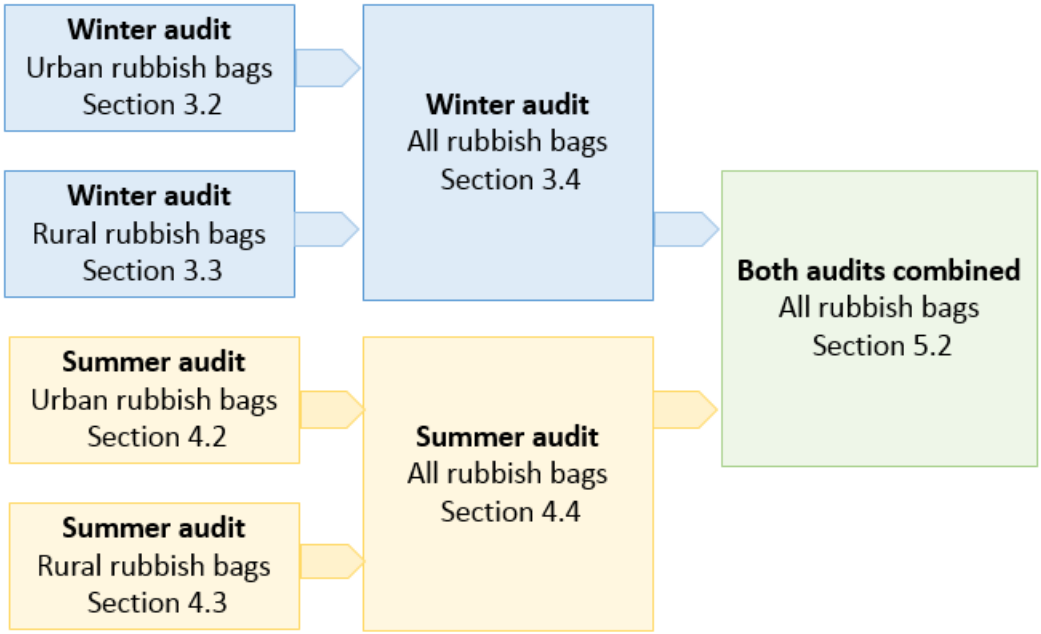
Council provides weekly collections of kerbside waste and recycling to designated properties in the District. These collections take place on Tuesday and Friday each week. The Tuesday collection takes place in Piopio, Mokau, Waitomo, and connecting roads and the Friday collection is in Te Kuiti.

The Council kerbside waste collection is based on user-pays rubbish bags, which residents may purchase from various outlets in the District. The weekly recycling collection uses 55-litre recycling crates. Council's recycling guide for residents is included in Appendix 9.

Subscription kerbside wheelie bin collections, offered by Vanders Bins, are used by some residents and businesses in the District.

1.2 Structure of report

In this report, the results of the waste audits for rural and urban rubbish bags are presented separately for the winter and summer audits. The combined compositions of the rural and urban rubbish bags are then presented separately for the winter and summer audits. Finally, the results of the winter and summer audits are combined. The structure of the report is shown in the diagram below.



2 Methodology

The kerbside waste 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 Sampling strategy

Two audits, one in winter and the other in summer, were undertaken to capture any seasonal differences in waste composition. The winter audit sample was collected on Friday 27 July and Tuesday 31 July 2018. The summer audit sample was collected on Tuesday 26 February and Friday 1 March 2019. For both audits, residential kerbside rubbish bags were collected from throughout the areas serviced by Council's kerbside waste collection services.

The winter sample included the contents of 190 rubbish bags, which contained a total of 1,188 kg of kerbside waste. The summer sample included the contents of 200 rubbish bags, which contained a total of 1,138 kg of waste.

The samples were collected from the kerbside in the areas of Waitomo District in which Council's kerbside collection was operating. The Friday collection was in Te Kuiti and the Tuesday collection in Waitomo, Piopio, Mokau, and connecting roadways. Collecting the sample on both days provided a wide geographic spread for the sample and ensured the sample included kerbside waste from a range of socio-economic areas and different types of housing.

2.2 Audit execution

Each day, the sample of kerbside waste was transported to Waitakere Refuse and Recycling Transfer Station in Auckland for sorting. The bags of kerbside waste were sorted in sampling units of ten bags.

Each of the rubbish bags in a sample unit was weighed in individually and then opened. The contents of all the 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 kerbside waste was sorted into the 23 secondary categories described in Appendix 1. These categories are based on the 12 primary categories recommended by the SWAP. The secondary classifications were chosen to identify the different types of recoverable materials present in the waste.

2.3 Staff training and OSH issues

The kerbside waste was sorted by a team of four, comprising three contract workers, employed by Waste Not, and a Waste Not staff member. Prior to the start of the audits, 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 kerbside waste, the importance of confidentiality was emphasised to all team members.

2.4 Photos from audit

One day's sample of Waitomo District rubbish bags

Sorting waste from Waitomo District rubbish bags

Sorted plastics from Waitomo District rubbish bags

Food waste from Waitomo District rubbish bags

3 Results of winter kerbside waste audit

3.1 Winter audit sampling schedule

The streets from which the winter kerbside sample was selected are shown in Table 3.1. The sample collection on all days was undertaken from the kerbside by Waste Not Consulting.

Table 3.1 - Winter kerbside waste collection schedule

Friday 27 July 2018	• Te Kumi Loop • Hospital • SH3 • George • Alisa • Duke • Edward • Hill • Ward • King West	• South • Bayne • Queen • Seddon • Lusk • Butler • Hinerangi • Stanton • Kiwi • ANZAC	• Ngarongo • Nettie • William • Blackman • Esplanade • Te Kuiti • Lawrence • Erroll
Tuesday 30 July 2018	• Te Puni Station • Oparure • Troopers • Tui • SH3	• Mangaotaki • Mairoa • Kuku • Kaka • Kawana	• Poto • Somerville • Hangatiki • Mangarino

Mokau village, which represents about 5% of the population of the District, was not included in the sample of kerbside rubbish bags.

The primary reason for Mokau not being included in the sample collection was the extra time that would have been required, due to Mokau's remoteness from the other population centres. Driving to Mokau would have added 1.5 hours of driving to the sample collection.

When a single vehicle is sampling kerbside waste from a large district that is serviced by multiple collection vehicles, it is important for the sampling vehicle to follow a schedule that allows it to collect the sample before a collection vehicle clears the streets. Should the collection vehicle 'get behind' the collection vehicles, there is no kerbside waste to sample and extra time is spent trying to 'get ahead' of the collection vehicles. During this extra time, the collection vehicles are clearing more of the streets in the area.

As Mokau represents 5% of the population of the District, about 10 bags would, ideally, have been collected there. The exclusion of ten bags from Mokau is not considered to have adversely affected the representativeness of the winter audit sample.

3.2 Winter audit - Urban rubbish bags

3.2.1 Winter - Composition of urban rubbish bags

The primary composition of rubbish bags collected in the winter sample of urban households in Waitomo District is presented in Table 3.2 below and Figure 3.1 on the following page. The secondary composition, which includes all 23 categories and a statistical analysis of the results, is given in Appendix 2.

The mean weight per household set out presented in the table has been calculated from the average number of bags set out per urban household using Council rubbish bags, based on data collected during the sample collection, and an average bag weight from the audit data. The average weight of an urban kerbside rubbish bag was 6.22 kg. The average household set out 1.07 bags, giving an average household set out weight of 6.64 kg. As not all households set out kerbside waste every week, the average household set out weight cannot be regarded as equivalent to an average weekly kerbside waste generation.

Bag weights are analysed in section 3.2.2. An analysis of urban household bag set out rates is given in section 3.2.3.

Table 3.2 - Primary composition of urban rubbish bags - Winter - 27-30 July 2018

Urban rubbish bags - Winter - 27-30 July 2018	Proportion of total	Mean wt. per urban rubbish bag	Mean wt. per household set out
Paper	13.0%	0.81 kg	0.87 kg
Plastics	13.7%	0.85 kg	0.91 kg
Organics	44.4%	2.76 kg	2.95 kg
Ferrous metals	1.5%	0.09 kg	0.10 kg
Non-ferrous metals	1.0%	0.06 kg	0.06 kg
Glass	1.5%	0.10 kg	0.10 kg
Textiles	4.7%	0.30 kg	0.31 kg
Sanitary paper	15.9%	0.99 kg	1.06 kg
Rubble	2.5%	0.16 kg	0.17 kg
Timber	0.2%	0.01 kg	0.01 kg
Rubber	0.2%	0.01 kg	0.01 kg
Potentially hazardous	1.3%	0.08 kg	0.09 kg
TOTAL	**100.0%**	**6.22 kg**	**6.64 kg**

Organic material, primarily kitchen waste, was the largest single component of Waitomo District urban rubbish bags in the winter sample, comprising 44.4% of the total or 2.76 kg in the average rubbish bag. Sanitary paper, representing 15.9% of the total, was the second largest component. Plastics was the third largest component, at 13.7%, and Paper the fourth largest, at 13.0%.

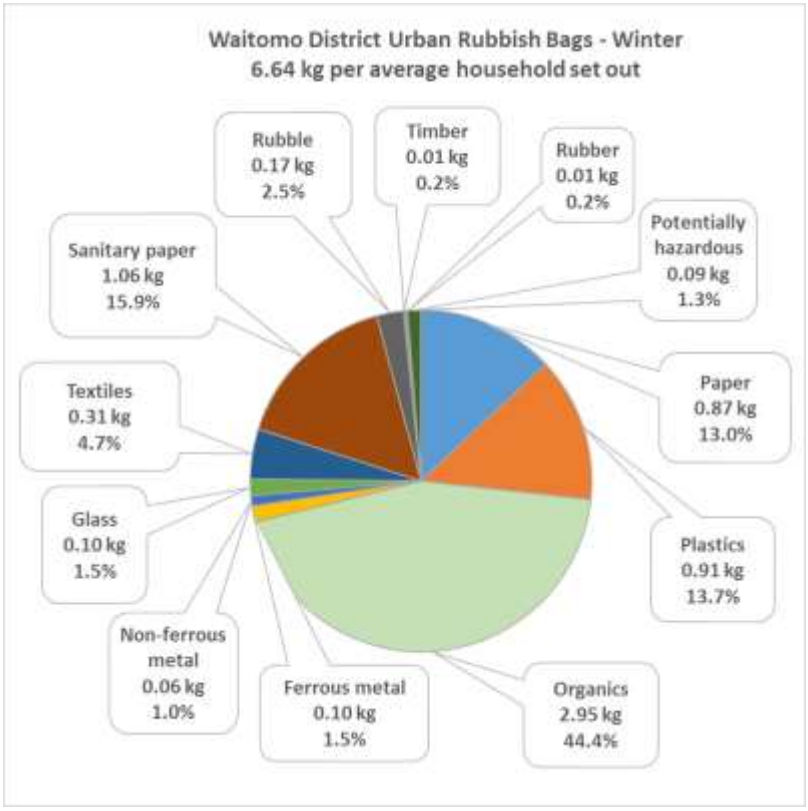


Figure 3.1 - Primary composition of urban rubbish bags - Winter - 27-30 July 2018

3.2.2 Winter - Distribution of urban rubbish bag weights

The average weight of waste in urban rubbish bags in the winter sample was 6.22 kg. The lightest bag was 1.56 kg and the heaviest 18.30 kg. The distribution of bag weights is shown in Figure 3.2.

Seventy-three percent of urban rubbish bags weighed between 2 and 8 kg. Twelve percent of urban rubbish bags weighed over 10 kg.

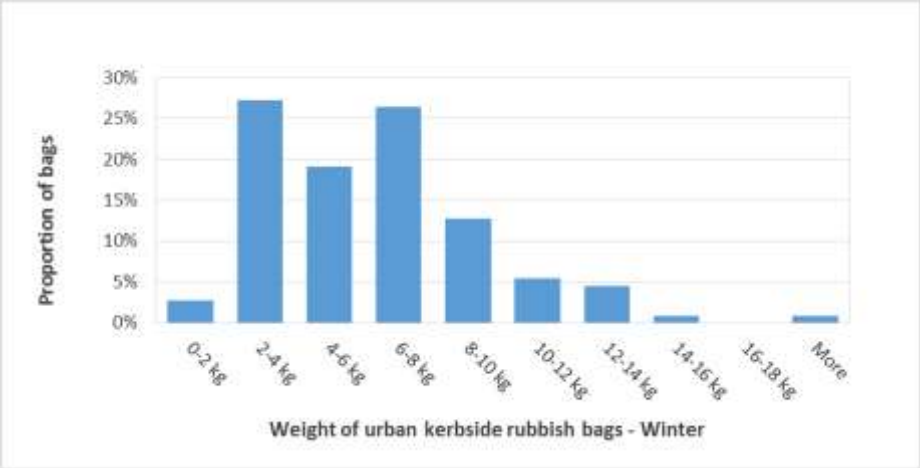


Figure 3.2 - Distribution of urban rubbish bags weights - Winter - 27-30 July 2018

3.2.3 Winter - Distribution of urban rubbish bag set out

As the winter sample of urban rubbish bags was being collected, the total number of rubbish bags set out by each household was recorded. The average household bag set out was 1.07 bags. Figure 3.3 below shows the distribution of the bag set outs.

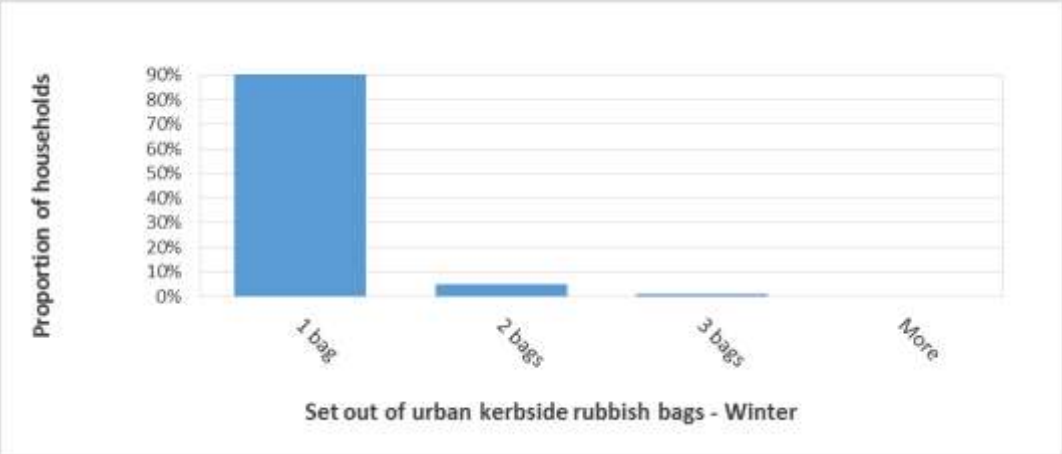


Figure 3.3 - Distribution of urban rubbish bag set out - Winter - 27-30 July 2018

Ninety-four percent of all urban households that set out rubbish bags set out a single bag. No urban households were recorded as setting out more than three bags.

3.3 Winter audit - Rural rubbish bags

3.3.1 Winter - Composition of rural rubbish bags

The primary composition of rural rubbish bags collected in the winter sample is presented in Table 3.3 below and Figure 3.4 on the next page. The secondary composition, which includes all 23 categories and a statistical analysis of the results, is given in Appendix 3.

The mean weight per household set out presented in the table has been calculated from the average number of bags set out per rural household using Council rubbish bags, based on data collected during the sample collection, and an average bag weight from the audit data. The average weight of a rural kerbside rubbish bag was 6.30 kg. The average household set out 1.18 bags, giving an average household set out weight of 7.41 kg. As not all households set out kerbside waste every week, the average household set out weight cannot be regarded as equivalent to an average weekly kerbside waste generation.

Rubbish bag weights are analysed in section 3.3.2. An analysis of rural household bag set out rates is given in section 3.3.3.

Table 3.3 - Primary composition of rural rubbish bags - Winter - 27-30 July 2018

Rural rubbish bags - Winter - 27-30 July 2018	Proportion of total	Mean wt. per rural rubbish bag	Mean wt. per household set out
Paper	7.9%	0.50 kg	0.59 kg
Plastics	16.1%	1.01 kg	1.19 kg
Organics	36.4%	2.29 kg	2.70 kg
Ferrous metals	2.2%	0.14 kg	0.17 kg
Non-ferrous metals	1.1%	0.07 kg	0.08 kg
Glass	4.0%	0.25 kg	0.30 kg
Textiles	6.2%	0.39 kg	0.46 kg
Sanitary paper	19.9%	1.26 kg	1.48 kg
Rubble	4.8%	0.30 kg	0.36 kg
Timber	0.2%	0.01 kg	0.01 kg
Rubber	0.4%	0.02 kg	0.03 kg
Potentially hazardous	0.9%	0.06 kg	0.07 kg
TOTAL	**100.0%**	**6.30 kg**	**7.41 kg**

Organic material, primarily kitchen waste, was the largest single component of Waitomo District rural rubbish bags in the winter sample, comprising 36.4% of the total or 2.70 kg in the average household set out. Sanitary paper, representing 19.9% of the total, was the second largest component. Plastics was the third largest component, at 16.1%, and Paper the fourth largest, at 7.9%.

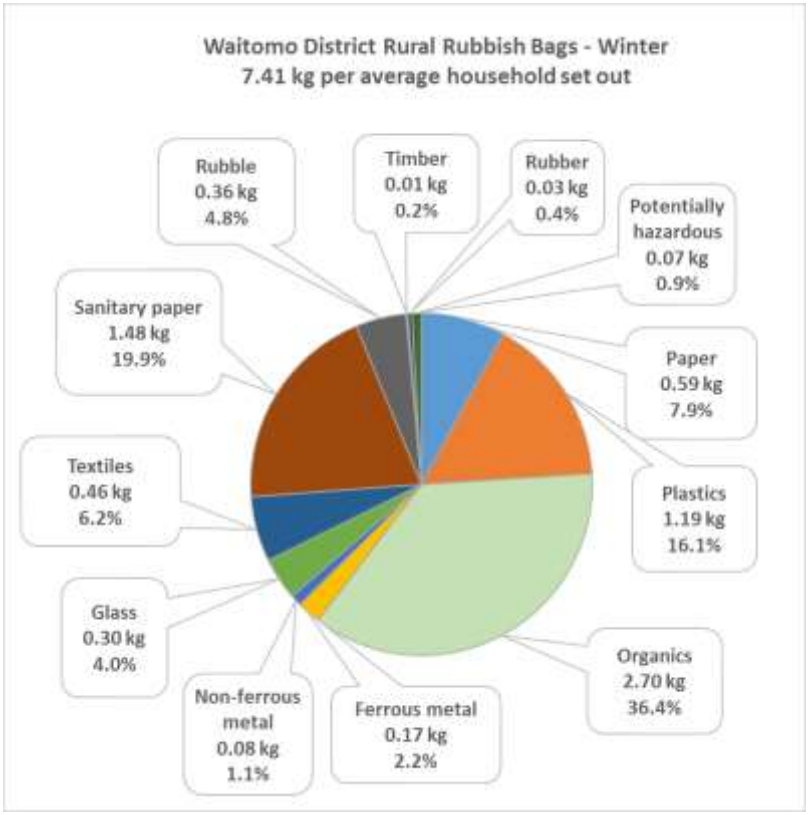


Figure 3.4 - Primary composition of rural rubbish bags - Winter - 27-30 July 2018

3.3.2 Winter - Distribution of rural rubbish bag weights

The average weight of waste in rural rubbish bags in the winter sample was 6.30 kg. The lightest bag was 0.84 kg and the heaviest 22.94 kg, which contained wet ash. The distribution of bag weights is shown in Figure 3.5.

Seventy-four percent of rural rubbish bags weighed between 2 and 8 kg. Thirteen percent of rural rubbish bags weighed over 10 kg.

Figure 3.5 - Distribution of rural rubbish bags weights - Winter - 27-30 July 2018

3.3.3 Winter - Distribution of rural rubbish bag set out

As the winter sample of rural rubbish bags was being collected, the total number of bags set out by each household was recorded. The average household bag set out was 1.18 bags. Figure 3.6 below shows the distribution of the bag set outs.

Figure 3.6 - Distribution of rural rubbish bag set out - Winter - 27-30 July 2018

Ninety percent of all rural households that set out rubbish bags set out a single bag. One percent of rural households were recorded as setting out more than three bags.

3.4 Winter audit - All kerbside rubbish bags

3.4.1 Winter - Calculation of composition of all kerbside rubbish bags

The composition of all kerbside rubbish bags collected by Waitomo District Council in winter has been calculated by averaging the composition of urban bags, presented in section 3.2, and the composition of rural rubbish bags, as presented in section 3.3. The weighted average of the two compositions has been based on tonnage records for July 2018, which were provided by Council. The calculations are shown in Table 3.4

Table 3.4 - Calculation of composition of all kerbside rubbish bags - Winter

Calculation of composition of all kerbside rubbish bags - Winter	Tonnes collected - July 2018	# of collections in July 2018	Mean tonnes/week	Proportion of total
Urban collections (Fridays)	15.64 tonnes	4	3.91 T/week	63.6%
Rural collections (Tuesdays)	11.18 tonnes	5	2.24 T/week	36.4%
TOTAL	-	-	**6.15 T/week**	**100.0%**

In the month of July 2018, Council's contractor reported disposing of 15.64 tonnes of waste from urban collections (Fridays) and 11.18 tonnes of waste from rural collections (Tuesdays). As there were five Tuesdays and four Fridays in July 2018, it was necessary to divide the monthly tonnages by five and four to calculate weekly tonnages, respectively, for rural and urban collections.

In total, Council's collections of kerbside waste in winter averaged 6.15 tonnes/week. Urban collections averaged 3.91 tonnes/week, or 63.6% of kerbside waste collected. Rural collections averaged 2.24 tonnes/week, or 36.4% of kerbside waste collected.

3.4.2 Winter - Composition of all kerbside rubbish bags

The primary composition of all kerbside rubbish bags in winter is presented in Table 3.5 and Figure 3.7 on the next page. The secondary composition, which includes all 23 categories, is given in Appendix 4.

Table 3.5 - Primary composition of all kerbside rubbish bags - Winter - July 2018

All kerbside rubbish bags - Winter - July 2018	Proportion of total	Mean wt. per kerbside rubbish bag	Mean wt. per household set out	Mean tonnes/week
Paper	11.2%	0.70 kg	0.77 kg	0.69 T/week
Plastics	14.6%	0.91 kg	1.01 kg	0.89 T/week
Organics	41.5%	2.59 kg	2.87 kg	2.55 T/week
Ferrous metals	1.8%	0.11 kg	0.12 kg	0.11 T/week
Non-ferrous metals	1.0%	0.06 kg	0.07 kg	0.06 T/week
Glass	2.4%	0.15 kg	0.17 kg	0.15 T/week
Textiles	5.3%	0.33 kg	0.36 kg	0.32 T/week
Sanitary paper	17.4%	1.08 kg	1.20 kg	1.07 T/week
Rubble	3.4%	0.21 kg	0.23 kg	0.21 T/week
Timber	0.2%	0.01 kg	0.01 kg	0.01 T/week
Rubber	0.2%	0.02 kg	0.02 kg	0.02 T/week
Potentially hazardous	1.1%	0.07 kg	0.08 kg	0.07 T/week
TOTAL	**100.0%**	**6.25 kg**	**6.92 kg**	**6.15 T/week**

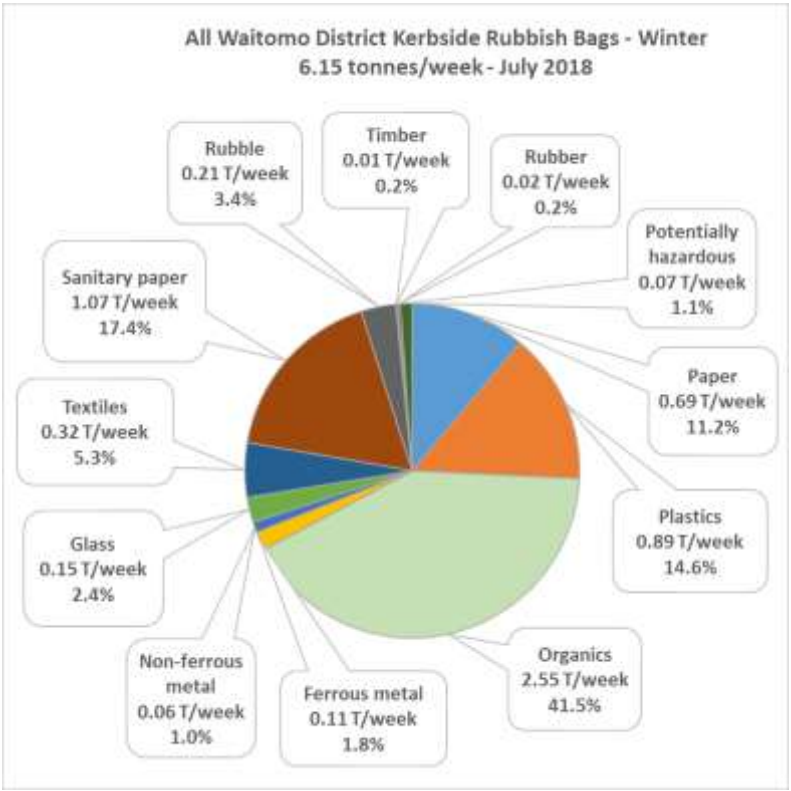


Figure 3.7 - Primary composition of all kerbside rubbish bags - Winter - July 2018

Organic material, primarily kitchen waste, was the largest single component of kerbside rubbish bags in winter, comprising 41.5% of the total or 2.55 T/week. Sanitary paper, representing 17.4% of the total, was the second largest component. Plastics was the third largest, at 14.6%, and Paper the fourth largest, at 11.2%.

3.5 Winter - Diversion potential of kerbside rubbish bags

To reduce waste to landfill, Council provides households in Waitomo District with a weekly kerbside recycling collection, using a 55-litre plastic crate for containers, paper, and cardboard. Residents may also dispose of recyclable items at Council's landfill and transfer stations for no charge. Council's guide to recycling is included in Appendix 9. To further reduce waste to landfill, residents are able to home-compost kitchen waste and greenwaste. Alternatively, residents are able to dispose of greenwaste at transfer stations in the District.

Table 3.6 shows the proportion of waste in kerbside rubbish bags in the winter sample that could have been diverted using these methods. Separate percentages are shown for urban, rural, and all kerbside rubbish bags. Weekly tonnages of each divertable material are also shown.

Table 3.6 - Diversion potential of Waitomo District rubbish bags - Winter - 27-30 July 2018

Divertible materials in Waitomo District rubbish bags - Winter - 27-30 July 2018	Urban rubbish bags	Rural rubbish bags	All kerbside rubbish bags	Tonnes per week
RECYCLABLE MATERIALS				
Paper - Recyclable	11.1%	6.1%	9.3%	0.57 T/week
Plastic - #1-2 containers	1.6%	1.8%	1.6%	0.10 T/week
Steel cans	0.8%	1.1%	0.9%	0.05 T/week
Aluminium cans	0.3%	0.3%	0.3%	0.02 T/week
Glass - Bottles/jars	0.9%	3.4%	1.8%	0.11 T/week
Subtotal	**14.7%**	**12.7%**	**14.0%**	**0.86 T/week**
COMPOSTABLE MATERIALS				
Kitchen waste	37.2%	34.5%	36.2%	2.22 T/week
Greenwaste	3.5%	0.4%	2.4%	0.15 T/week
Subtotal	**40.7%**	**34.9%**	**38.6%**	**2.37 T/week**
TOTAL DIVERTIBLE	**55.3%**	**47.6%**	**52.5%**	**3.23 T/week**

Approximately 14.7% of the materials in urban rubbish bags and 12.7% of rural rubbish bags in the winter sample could have been recycled through Council's kerbside recycling collection or at transfer stations. Urban rubbish bags contained substantially more recyclable paper than rural rubbish bags, but rural rubbish bags contained more recyclable glass. Much of the extra paper in urban rubbish bags was newspapers and junk mail. Approximately 0.86 tonnes per week of recyclable material were disposed of in kerbside rubbish bags.

Urban and rural rubbish bags contained similar proportions of kitchen waste, but urban bags contained more greenwaste. Overall, the kerbside waste collection contained about 2.37 tonnes per week of compostable organic material, 38.6% of the total weight. In total, 52.5% of kerbside waste, or 3.23 tonnes per week, could have been diverted from landfill disposal.

4 Results of summer kerbside waste audit

4.1 Summer audit sampling schedule

The streets from which the summer kerbside sample was selected are shown in Table 4.1. The sample collection on all days was undertaken from the kerbside by Waste Not Consulting.

Table 4.1 - Summer kerbside waste collection schedule

Tuesday 26 February 2019	• State Hiway 3 • Tainui, Mokau • Beach, Mokau • Point, Mokau • Aria, Mokau • Oha, Mokau	• Ye Old Mill • Kawana, Piopio • Kaka, Piopio • Kea, Piopio • Tui, Piopio • Troopers	• Oparure • Te Kumi Stn. • Hangatiki East • Mangarino
Friday 1 March 2019	• Te Kumi Loop • Te Kumi Side • Rora • Alexandra • Hinerangi • Tawa • Te Kuiti • William • Esplanade	• Lawrence • Nettie • Awakino • Seddon • Lusk • Queen • South • Bayne • King West	• John • Tawhana • Hikaka • Duke • Edward • George • Eketone • Eketone Loop • Colin Brook

4.2 Summer audit - Urban rubbish bags

4.2.1 Summer - Composition of urban rubbish bags

The primary composition of rubbish bags collected in the summer sample from urban households in Waitomo District is presented in Table 4.2 below and Figure 4.1 on the following page. The secondary composition, which includes all 23 categories and a statistical analysis of the results, is given in Appendix 5.

The mean weight per household set out presented in the table has been calculated from the average number of bags set out per urban household using Council rubbish bags, based on data collected during the sample collection, and an average bag weight from the audit data. The average weight of an urban kerbside rubbish bag in the summer sample was 6.21 kg. The average household set out 1.17 bags, giving an average household set out weight of 7.27 kg. As not all households set out kerbside waste every week, the average household set out weight cannot be regarded as equivalent to an average weekly kerbside waste generation.

Bag weights are analysed in section 4.2.2. An analysis of urban household bag set out rates from the summer sampling is given in section 4.2.3.

Table 4.2 - Primary composition of urban rubbish bags - Summer - 26 Feb. - 1 March 2019

Urban rubbish bags - Summer - 26 Feb - 1 March 2019	Proportion of total	Mean wt. per urban rubbish bag	Mean wt. per household set out
Paper	10.8%	0.67 kg	0.78 kg
Plastics	13.3%	0.83 kg	0.97 kg
Organics	46.8%	2.90 kg	3.40 kg
Ferrous metals	0.7%	0.05 kg	0.05 kg
Non-ferrous metals	0.6%	0.04 kg	0.04 kg
Glass	1.6%	0.10 kg	0.12 kg
Textiles	6.4%	0.40 kg	0.46 kg
Sanitary paper	17.1%	1.06 kg	1.24 kg
Rubble	0.7%	0.04 kg	0.05 kg
Timber	0.3%	0.02 kg	0.02 kg
Rubber	0.1%	0.00 kg	0.00 kg
Potentially hazardous	1.7%	0.11 kg	0.13 kg
TOTAL	**100.0%**	**6.21 kg**	**7.27 kg**

Organic material, primarily kitchen waste, was the largest single component of Waitomo District urban rubbish bags in the summer sample, comprising 46.8% of the total or 2.90 kg in the average rubbish bag. Sanitary paper, representing 17.1% of the total, was the second largest component. Plastics was the third largest component, at 13.3%, and Paper the fourth largest, at 10.8%.

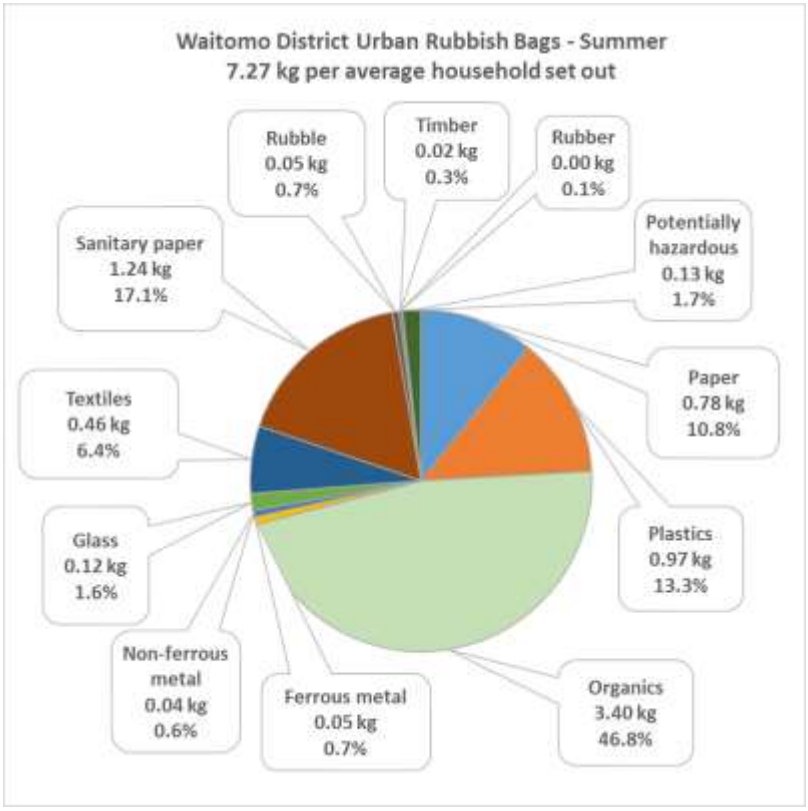


Figure 4.1 - Primary composition of urban rubbish bags - Summer - 26 Feb. - 1 March 2019

4.2.2 Summer - Distribution of urban rubbish bag weights

The average weight of waste in urban rubbish bags in the summer sample was 6.21 kg. The lightest bag was 1.32 kg and the heaviest 19.47 kg. The distribution of bag weights is shown in Figure 4.2.

Seventy-seven percent of urban rubbish bags weighed between 2 and 8 kg. Sixteen percent of urban rubbish bags weighed over 10 kg.

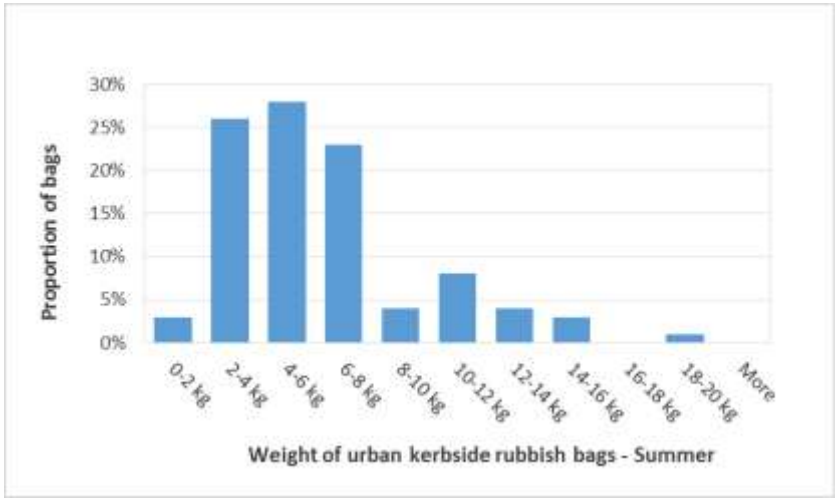


Figure 4.2 - Distribution of urban rubbish bags weights - Summer - 26 Feb. - 1 March 2019

4.2.3 Summer - Distribution of urban rubbish bag set out

As the summer sample of urban rubbish bags was being collected, the total number of rubbish bags set out by each household was recorded. The average household bag set out was 1.17 bags. Figure 4.3 below shows the distribution of the bag set outs.

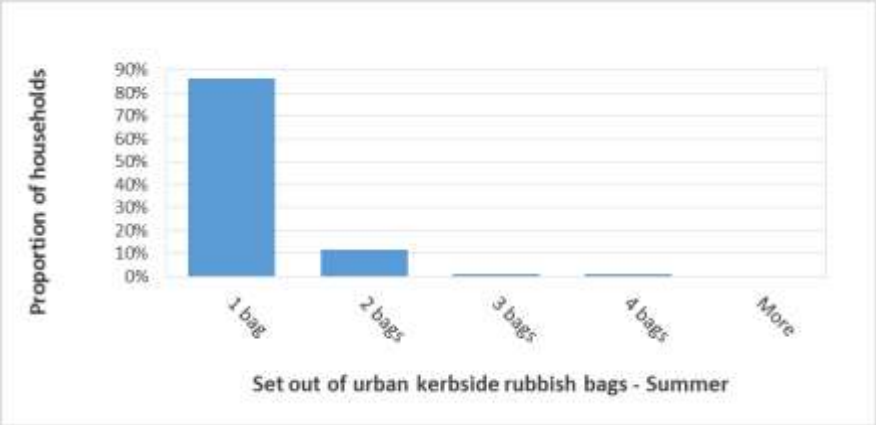


Figure 4.3 - Distribution of urban rubbish bag set out - Summer - 26 Feb. - 1 March 2019

Eighty-six percent of all urban households that set out rubbish bags set out a single bag. No urban households were recorded as setting out more than four bags.

4.3 Summer audit - Rural rubbish bags

4.3.1 Summer - Composition of rural rubbish bags

The primary composition of rural rubbish bags collected in the summer sample is presented in Table 4.3 below and Figure 4.4 on the next page. The secondary composition, which includes all 23 categories and a statistical analysis of the results, is given in Appendix 6.

The mean weight per household set out presented in the table has been calculated from the average number of bags set out per rural household using Council rubbish bags, based on data collected during the summer sample collection, and an average bag weight from the audit data. The average weight of a rural kerbside rubbish bag was 6.05 kg. The average household set out 1.13 bags, giving an average household set out weight of 6.96 kg. As not all households set out kerbside waste every week, the average household set out weight cannot be regarded as equivalent to an average weekly kerbside waste generation.

Rubbish bag weights are analysed in section 4.3.2. An analysis of rural household bag set out rates is given in section 4.3.3.

Table 4.3 - Primary composition of rural rubbish bags - Summer - 26 Feb. - 1 March 2019

Rural rubbish bags - Summer - 26 Feb - 1 March 2019	Proportion of total	Mean wt. per rural rubbish bag	Mean wt. per household set out
Paper	11.4%	0.69 kg	0.79 kg
Plastics	15.6%	0.94 kg	1.07 kg
Organics	37.3%	2.26 kg	2.56 kg
Ferrous metals	2.3%	0.14 kg	0.16 kg
Non-ferrous metals	0.7%	0.04 kg	0.05 kg
Glass	4.9%	0.30 kg	0.34 kg
Textiles	6.0%	0.36 kg	0.41 kg
Sanitary paper	15.7%	0.95 kg	1.08 kg
Rubble	3.1%	0.19 kg	0.21 kg
Timber	0.8%	0.05 kg	0.06 kg
Rubber	0.3%	0.02 kg	0.02 kg
Potentially hazardous	1.7%	0.11 kg	0.12 kg
TOTAL	**100.0%**	**6.05 kg**	**6.86 kg**

Organic material, primarily kitchen waste, was the largest single component of rural rubbish bags in the summer sample, comprising 37.3% of the total or 2.26 kg in the average household set out. Sanitary paper, representing 15.7% of the total, was the second largest component. Plastics was the third largest component, at 15.6%, and Paper the fourth largest, at 11.4%.

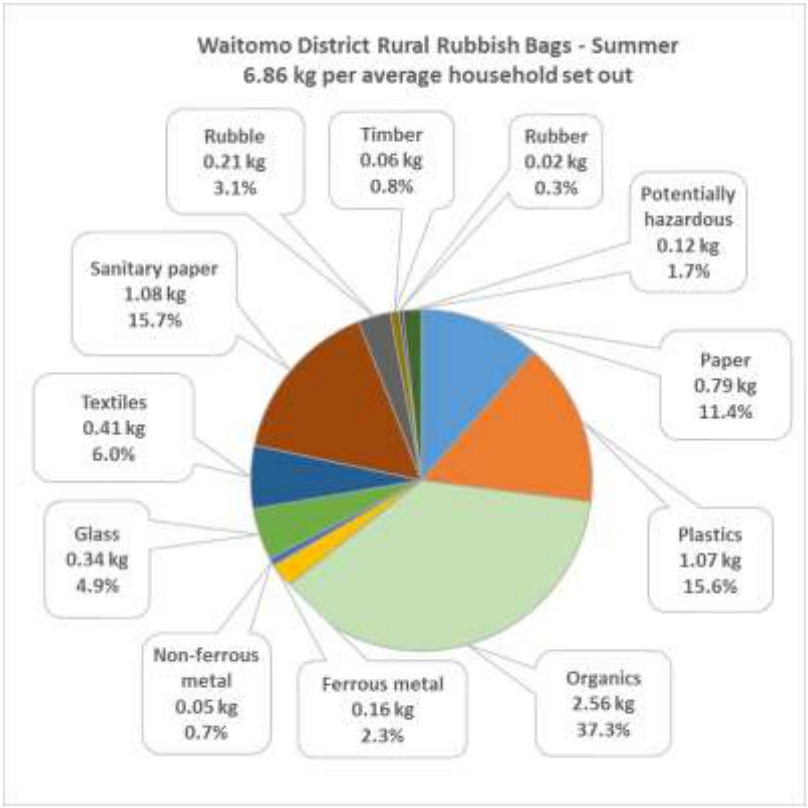


Figure 4.4 - Primary composition of rural rubbish bags - Summer - 26 Feb. - 1 March 2019

4.3.2 Summer - Distribution of rural rubbish bag weights

The average weight of waste in rural rubbish bags in the summer sample was 6.05 kg. The lightest bag was 1.80 kg and the heaviest 14.22 kg. The distribution of bag weights is shown in Figure 4.5.

Eighty-three percent of rural rubbish bags weighed between 2 and 8 kg. Nine percent of rural rubbish bags weighed over 10 kg.

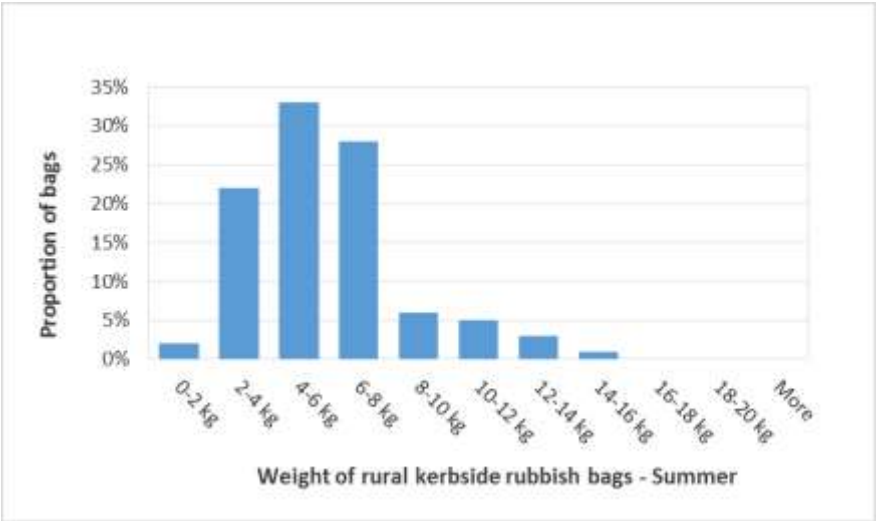


Figure 4.5 - Distribution of rural rubbish bags weights - Summer - 26 Feb. - 1 March 2019

4.3.3 Summer - Distribution of rural rubbish bag set out

As the summer sample of rural rubbish bags was being collected, the total number of bags set out by each household was recorded. The average household bag set out was 1.13 bags. Figure 4.6 below shows the distribution of the bag set outs.

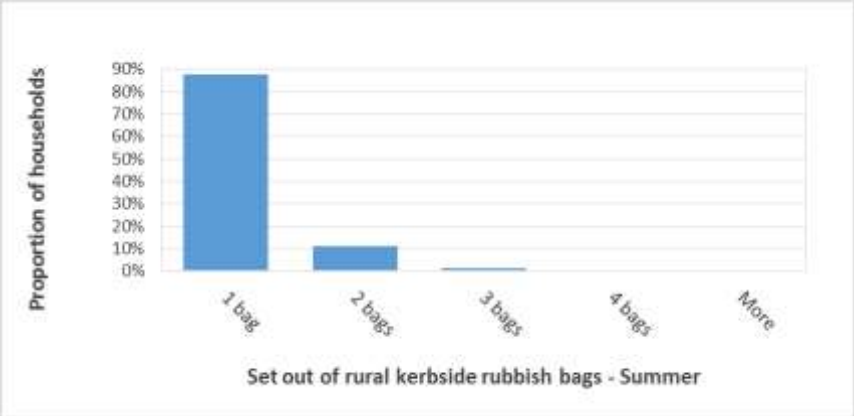


Figure 4.6 - Distribution of rural rubbish bag set out - Summer - 26 Feb. - 1 March 2019

Eighty-eight percent of all rural households that set out rubbish bags set out a single bag. No rural households were recorded as setting out more than three bags.

4.4 Summer audit - All kerbside rubbish bags

4.4.1 Summer - Calculation of composition of all kerbside rubbish bags

The composition of all kerbside rubbish bags collected by Waitomo District Council in summer has been calculated by averaging the composition of urban bags, presented in section 4.2, and the composition of rural rubbish bags, as presented in section 4.3. The weighted average of the two compositions has been based on tonnage records for January and February 2019, which were provided by Council. The calculations are shown in Table 4.4

Table 4.4 - Calculation of composition of all kerbside rubbish bags - Summer

Calculation of composition of all kerbside rubbish bags - Summer	Tonnes collected - Jan/Feb 2019	# of collections in Jan/Feb 2019	Mean tonnes/week	Proportion of total
Urban collections (Fridays)	32.65 tonnes	8	4.08 T/week	57.9%
Rural collections (Tuesdays)	26.69 tonnes	9	2.97 T/week	42.1%
TOTAL			**7.05 T/week**	**100.0%**

In January and February 2019, Council's contractor reported disposing of 32.65 tonnes of waste from urban collections (Fridays) and 26.69 tonnes of waste from rural collections (Tuesdays). As there were nine Tuesdays and eight Fridays in January/February 2019, it was necessary to divide the monthly tonnages by nine and eight to calculate weekly tonnages, respectively, for rural and urban collections.

In total, Council's collections of kerbside waste in summer averaged 7.05 tonnes/week. Urban collections averaged 4.08 tonnes/week, or 57.9% of kerbside waste collected. Rural collections averaged 2.97 tonnes/week, or 42.1% of kerbside waste collected.

4.4.2 Summer - Composition of all kerbside rubbish bags

The primary composition of all kerbside rubbish bags in summer is presented in Table 4.5 and Figure 4.7 on the next page.

Table 4.5 - Primary composition of all kerbside rubbish bags - Summer - Jan/Feb 2019

All kerbside rubbish bags - Summer - Jan/Feb 2019	Proportion of total	Mean wt. per kerbside rubbish bag	Mean wt. per household set out	Mean tonnes/week
Paper	11.1%	0.68 kg	0.78 kg	0.78 T/week
Plastics	14.3%	0.88 kg	1.01 kg	1.01 T/week
Organics	42.8%	2.63 kg	3.04 kg	3.02 T/week
Ferrous metals	1.4%	0.09 kg	0.10 kg	0.10 T/week
Non-ferrous metals	0.6%	0.04 kg	0.05 kg	0.04 T/week
Glass	3.0%	0.18 kg	0.21 kg	0.21 T/week
Textiles	6.2%	0.38 kg	0.44 kg	0.44 T/week
Sanitary paper	16.5%	1.01 kg	1.17 kg	1.16 T/week
Rubble	1.7%	0.10 kg	0.12 kg	0.12 T/week
Timber	0.5%	0.03 kg	0.04 kg	0.04 T/week
Rubber	0.2%	0.01 kg	0.01 kg	0.01 T/week
Potentially hazardous	1.7%	0.11 kg	0.12 kg	0.12 T/week
TOTAL	**100.0%**	**6.14 kg**	**7.10 kg**	**7.05 T/week**

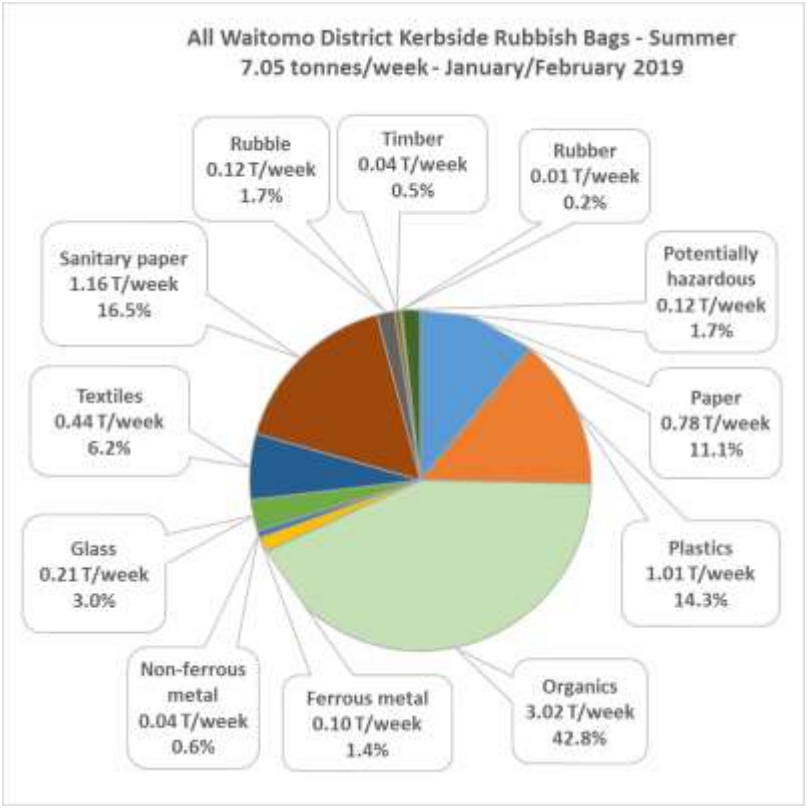


Figure 4.7 - Primary composition of all kerbside rubbish bags - Summer - Jan/Feb 2019

Organic material, primarily kitchen waste, was the largest single component of kerbside rubbish bags in summer, comprising 42.8% of the total or 3.02 T/week. Sanitary paper,

representing 16.5% of the total, was the second largest component. Plastics was the third largest, at 14.3%, and Paper the fourth largest, at 11.1%.

4.5 Summer - Diversion potential of kerbside rubbish bags

To reduce waste to landfill, Council provides households in Waitomo District with a weekly kerbside recycling collection, using a 55-litre plastic crate for containers, paper, and cardboard. Residents may also dispose of recyclable items at Council's landfill and transfer stations for no charge. Council's guide to recycling is included in Appendix 9. To further reduce waste to landfill, residents are able to home-compost kitchen waste and greenwaste. Alternatively, residents are able to dispose of greenwaste at transfer stations in the District.

Table 4.6 below shows the proportion of waste in kerbside rubbish bags in the summer sample that could have been diverted using these methods. Separate percentages are shown for urban, rural, and all kerbside rubbish bags. Weekly tonnages of each divertable material are also shown.

Table 4.6 - Diversion potential of Waitomo District rubbish bags - Summer - Jan/Feb 2019

Divertible materials in Waitomo District rubbish bags - Summer - Jan/Feb 2019	Urban rubbish bags	Rural rubbish bags	All kerbside rubbish bags	Tonnes per week
RECYCLABLE MATERIALS				
Paper - Recyclable	8.6%	8.0%	8.4%	0.59 T/week
Plastic - #1-2 containers	1.5%	1.3%	1.4%	0.10 T/week
Steel cans	0.5%	1.8%	1.0%	0.07 T/week
Aluminium cans	0.5%	0.4%	0.4%	0.03 T/week
Glass - Bottles/jars	1.1%	3.8%	2.2%	0.16 T/week
Subtotal	**12.2%**	**15.2%**	**13.4%**	**0.95 T/week**
COMPOSTABLE MATERIALS				
Kitchen waste	40.6%	34.2%	37.9%	2.67 T/week
Greenwaste	4.9%	2.2%	3.8%	0.27 T/week
Subtotal	**45.5%**	**36.4%**	**41.7%**	**2.94 T/week**
TOTAL DIVERTIBLE	**57.7%**	**51.6%**	**55.1%**	**3.88 T/week**

Approximately 12.2% of the materials in urban rubbish bags and 15.2% of rural rubbish bags in the summer sample could have been recycled through Council's kerbside recycling collection or at transfer stations. Rural rubbish bags contained more steel cans and recyclable glass than urban rubbish bags. Approximately 0.95 tonnes per week of recyclable material were disposed of in kerbside rubbish bags.

Urban rubbish bags contained more kitchen waste and more greenwaste than rural rubbish bags. Overall, the kerbside rubbish collection contained about 2.94 tonnes per week of compostable organic material, 41.7% of the total weight. In total, 55.1% of kerbside waste, or 3.88 tonnes per week, could have been diverted from landfill disposal.

5 Summer and winter audits combined

5.1 Aggregating summer and winter audits

Metrics for the combined results of the summer and winter audits were calculated as follows:

- **Annual tonnage and average weekly tonnage of kerbside waste** - Monthly tonnages of kerbside waste for March 2018 - February 2019 were provided by Council. Separate tonnages were provided for the urban and rural collections. The annual tonnages were converted to average weekly tonnages.
- **Average weight per rubbish bag and per household set out** - The average weights per rubbish bag and per household set out have been calculated using a weighted average of the winter rural, winter urban, summer rural, and summer urban results. The weighting is based on the average weekly tonnages of each.
- **Composition of kerbside waste** - The average composition of kerbside waste has been based on a weighted average of the composition results of the winter audit and summer audit, as presented in Table 3.5 and Table 4.5.

5.2 Combined summer and winter audits - Composition of rubbish bags

The primary composition of rubbish bags collected in Waitomo District is presented in Table 5.1 below and Figure 5.1 on the next page. The secondary composition, which includes all 23 categories, is given in Appendix 8.

Table 5.1 - Primary composition of rubbish bags - - March 2018 - February 2019

Waitomo District rubbish bags - March 2018 - Feb. 2019	Proportion of total	Mean wt. per rubbish bag	Mean wt. per household set out	Average tonnes/week	Tonnes per annum
Paper	11.1%	0.69 kg	0.78 kg	0.76 T/week	40 T/annum
Plastics	14.4%	0.89 kg	1.01 kg	0.99 T/week	52 T/annum
Organics	42.2%	2.61 kg	2.95 kg	2.90 T/week	151 T/annum
Ferrous metals	1.6%	0.10 kg	0.11 kg	0.11 T/week	6 T/annum
Non-ferrous metals	0.8%	0.05 kg	0.06 kg	0.06 T/week	3 T/annum
Glass	2.7%	0.17 kg	0.19 kg	0.19 T/week	10 T/annum
Textiles	5.8%	0.36 kg	0.40 kg	0.40 T/week	21 T/annum
Sanitary paper	16.9%	1.05 kg	1.18 kg	1.16 T/week	61 T/annum
Rubble	2.5%	0.15 kg	0.17 kg	0.17 T/week	9 T/annum
Timber	0.4%	0.02 kg	0.03 kg	0.02 T/week	1 T/annum
Rubber	0.2%	0.01 kg	0.01 kg	0.01 T/week	1 T/annum
Potentially hazardous	1.5%	0.09 kg	0.10 kg	0.10 T/week	5 T/annum
TOTAL	**100.0%**	**6.19 kg**	**7.00 kg**	**6.88 T/week**	**359 T/annum**

Organic material, primarily kitchen waste, was the largest single component of Waitomo District rubbish bags, comprising 42.2% of the total weight. Sanitary paper, representing

16.9% of the total, was the second largest component. Plastics was the third largest component, at 14.4%, and Paper the fourth largest, at 11.1%.

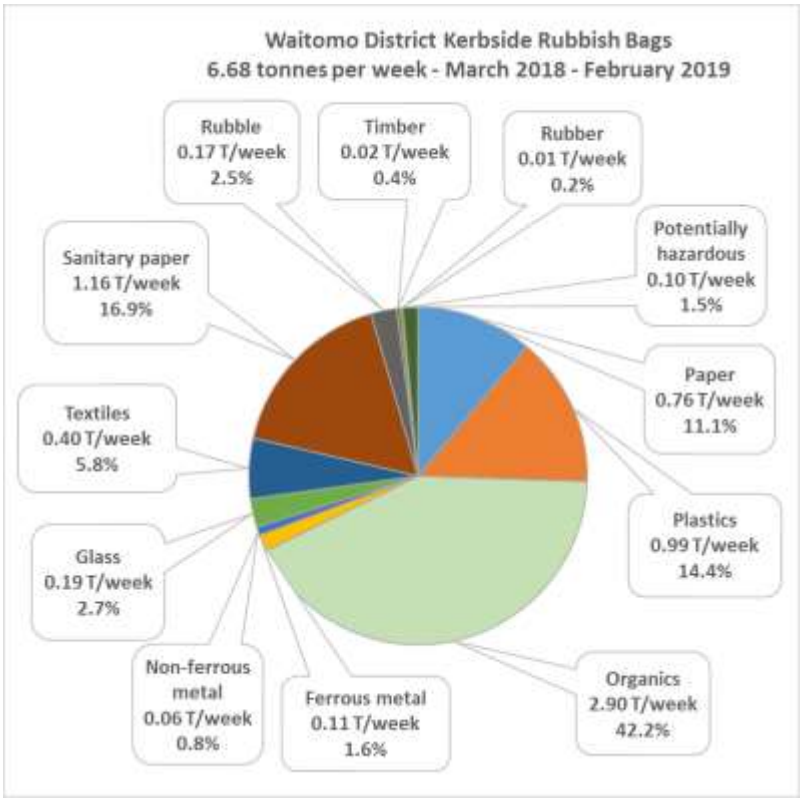


Figure 5.1 - Primary composition of rubbish bags - March 2018 - February 2019

5.2.1 Organics

Organic matter comprised 42.2% of the weight of Waitomo District rubbish bags. The composition of the organic constituent of the kerbside waste is shown in Figure 5.2.

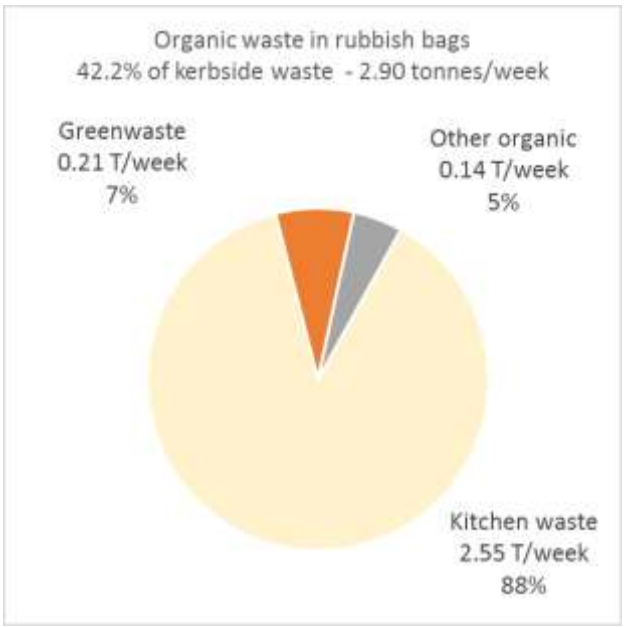


Figure 5.2 - Organic component of kerbside rubbish bags - March 2018 - February 2019

Kitchen waste compromised 88% of the organic material in Waitomo District rubbish bags, or 2.55 tonnes per week. Kitchen waste included food preparation waste, left-over food waste, and substantial quantities of both perished goods and wasted food, which would have been fit for consumption.

Greenwaste, or garden matter, comprised 7% of the organic material. Most of the garden waste was prunings, leaves, and weeds.

The Other organic material (5%) included vacuum cleaner dust, dead animals, animal faeces, candles, and human hair. Much of this material would be suitable for composting.

5.2.2 Plastics

Plastic materials comprised 14.4% of the contents of Waitomo District rubbish bags. The secondary components of the plastic waste are shown in Figure 5.3.

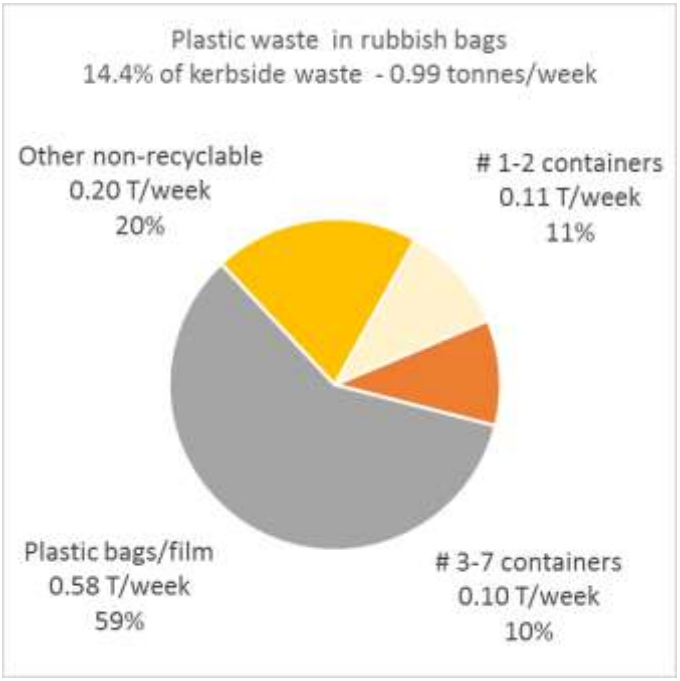


Figure 5.3 - Plastic component of kerbside rubbish bags - March 2018 - February 2019

Plastic bags/film comprised 59% of the plastic waste in rubbish bags, or 0.58 tonnes per week. This material is not accepted by the Waitomo District Council kerbside recycling collection.

A further 11% of plastic waste in urban rubbish bags was #1-2 containers. These containers are accepted by Council's kerbside recycling collection and at Council's recycling centres.

Neither #3-7 containers (10%) nor Other non-recyclable plastics (20%) are accepted by Council's kerbside recycling collection or at Council's recycling centres.

5.2.3 Paper

Paper comprised 11.1% of the contents of Waitomo District rubbish bags. The composition of the paper constituent of the rubbish bags is shown in Figure 5.4.

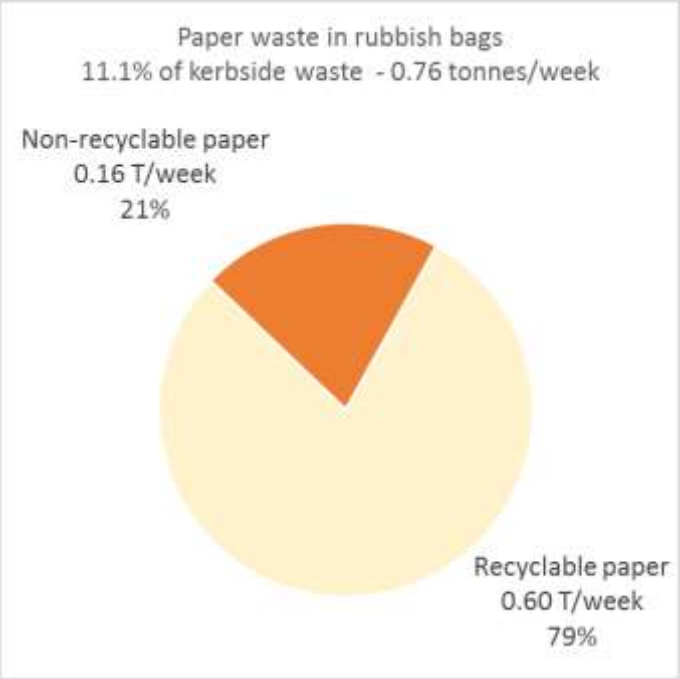


Figure 5.4 - Paper component of kerbside rubbish bags - March 2018 - February 2019

The largest component of Paper waste in rubbish bags was Recyclable paper, which comprised 79% of the paper, or 0.60 tonnes per week. This component included packaging, office paper, newspapers, magazines, paper board, and cardboard and could have been recycled through Council's kerbside recycling collection.

Non-recyclable paper comprised 21% of Paper. These types of paper are not accepted for recycling by the kerbside recycling collection, and included laminated paper, Tetra Pak containers, aseptic beverage containers, and multi-material and food-contaminated packaging. Heavily food-contaminated paper was classified as Non-recyclable paper, but lightly-contaminated paper was considered to be recyclable.

5.3 Combined summer and winter audits - Diversion potential

To reduce waste to landfill, Council provides households in Waitomo District with a weekly kerbside recycling collection, using a 55-litre plastic crate for containers, paper, and cardboard. Residents may also dispose of recyclable items at Council's landfill and transfer stations for no charge. Council's guide to recycling is included in. To further reduce waste to landfill, residents are able to home-compost kitchen waste and greenwaste. Alternatively, residents are able to dispose of greenwaste at transfer stations in the District.

Table 5.2 below shows the proportion of waste in kerbside rubbish bags that could have been diverted using these methods. Weekly and annual tonnages of each divertable material are also shown.

Table 5.2 - Diversion potential of rubbish bags - March 2018 - February 2019

Divertible materials in Waitomo District rubbish bags - March 2018 - February 2019	% of total	Tonnes per week	Tonnes per annum
RECYCLABLE MATERIALS			
Paper - Recyclable	8.8%	0.60 T/week	32 T/annum
Plastic - #1-2 containers	1.5%	0.11 T/week	5 T/annum
Steel cans	1.0%	0.07 T/week	3 T/annum
Aluminium cans	0.4%	0.03 T/week	1 T/annum
Glass - Bottles/jars	2.0%	0.14 T/week	7 T/annum
Subtotal	**13.7%**	**0.94 T/week**	**49 T/annum**
COMPOSTABLE MATERIALS			
Kitchen waste	37.1%	2.55 T/week	133 T/annum
Greenwaste	3.1%	0.21 T/week	11 T/annum
Subtotal	**40.2%**	**2.77 T/week**	**144 T/annum**
TOTAL DIVERTIBLE	**53.9%**	**3.71 T/week**	**193 T/annum**

Approximately 13.7% of the materials in Waitomo District rubbish bags could have been recycled through Council's kerbside recycling collection or at transfer stations. This equates to 0.94 tonnes per week or 49 tonnes per annum.

The kerbside rubbish collection contained approximately 40.2% compostable material. Over 90% of compostable material was kitchen waste. Waitomo District Council's kerbside rubbish collections contain approximately 2.77 tonnes per week or 144 tonnes per annum of compostable materials.

Overall, approximately 53.9% of kerbside waste could have been diverted from landfill disposal. This is a theoretical maximum, as recovery systems are not capable of diverting 100% of a material.

6 Analysis

6.1 Comparison with kerbside waste from other areas

Table 6.1 compares kerbside waste metrics of Waitomo District kerbside waste with those of four other areas previously audited by Waste Not Consulting. The metrics are for council and private kerbside waste collections combined in those areas where both have a significant market share.

Table 6.1 - Comparison of kerbside waste metrics to other areas

Comparison to other areas - Weight per household set out	Hamilton City	Tauranga City	Former Auckland City	Undisclosed North Island district	Waitomo District
Date of audit(s)	June & Nov. 2017	2016-17	Dec-10	Mar-18	July 2018 & Feb 2019 combined
Kerbside waste services audited	Rates-funded bags - 2/week max	User-pay bags and bins	Rates-funded weekly 120-L bins	User-pays bags and 120-litre bins	User-pays bags
Kerbside recycling services available	Rates-funded weekly 45-L crate	User-pays bins or crates	Rates-funded fortnightly 240-L bin	Rates-funded fortnightly crates	Rates-funded weekly crates
Average household set out weight	8.45 kg	12.21 kg	9.91 kg	8.99 kg	**7.00 kg**
Recyclable materials					
Recyclable paper	0.76 kg	1.09 kg	0.98 kg	0.72 kg	0.62 kg
Recyclable plastic	0.16 kg	0.23 kg	0.23 kg	0.22 kg	0.17 kg
Steel cans	0.08 kg	0.11 kg	0.09 kg	0.11 kg	0.07 kg
Aluminium cans	0.01 kg	0.05 kg	0.02 kg	0.02 kg	0.03 kg
Bottles/jars	0.14 kg	0.55 kg	0.26 kg	0.21 kg	0.14 kg
Subtotal	**1.15 kg**	**2.03 kg**	**1.59 kg**	**1.28 kg**	**0.96 kg**
Compostable materials					
Kitchen waste	3.11 kg	4.28 kg	3.71 kg	3.57 kg	2.60 kg
Greenwaste	0.77 kg	2.07 kg	0.90 kg	0.14 kg	0.22 kg
Subtotal	**3.87 kg**	**6.35 kg**	**4.62 kg**	**3.71 kg**	**2.82 kg**
TOTAL DIVERTABLE	**5.03 kg**	**8.39 kg**	**6.20 kg**	**4.99 kg**	**3.77 kg**
% recyclable	13.7%	16.7%	16.0%	14.3%	13.7%
% compostable	45.8%	52.1%	46.6%	40.9%	40.2%
Total divertable	**59.5%**	**68.7%**	**62.6%**	**55.3%**	**53.9%**

The average household set out weight of Waitomo District kerbside waste is substantially lower than in the other areas. However, as there is no data available on how frequently each household sets out kerbside waste, this analysis on its own does not necessarily indicate that Waitomo District householders set out less waste than in other areas.

The weight of recyclable materials per household set out is lower in areas that use rubbish bags rather than wheelie bins. The lowest weight of recyclables per household set out is in Waitomo District. Waitomo District also has the lowest weights of compostable materials, per household set out.

6.2 Comparison with previous kerbside waste audits

The Waste Assessment incorporated in Council's SWaMMP includes the results of three previous audits of kerbside waste. Of the three kerbside waste audits (2012, 2014, and 2016), only the data from the 2016 waste audit is considered sufficiently reliable to be usefully compared with the results of the July 2018 and February 2019 audits.

In Table 6.2, the results of the 2016 audit are compared with those from the July 2018 and February 2019 audits. No information is provided in the Waste Assessment as to the size of the 2016 audit or the season in which it was conducted. Note that different classifications were used for plastics in the 2016 audit than in the 2018 and 2019 audits. The secondary classifications used in the 2018 and 2019 audits have been aggregated to match those of the 2016 audit.

Table 6.2 - Comparison of 2016 and winter 2018 and summer 2019 kerbside waste audits

Comparison of 2016 and July 2018 and February 2019 kerbside waste audits	July 2018 Winter	February 2019 Summer	2016
Paper	11.2%	11.1%	12.8%
Plastics - Film & bags	8.4%	8.5%	9.9%
Plastics - All others	6.2%	5.9%	10.5%
Plastics - Subtotal	**14.6%**	**14.4%**	**20.4%**
Organics	41.5%	42.2%	39.1%
Ferrous metals	1.8%	1.6%	1.1%
Non-ferrous metals	1.0%	0.8%	0.4%
Glass	2.4%	2.7%	4.1%
Textiles	5.3%	5.8%	4.9%
Sanitary paper	17.4%	16.9%	16.1%
Rubble	3.4%	2.5%	0.5%
Timber	0.2%	0.4%	0.1%
Rubber	0.2%	0.2%	0.3%
Potentially hazardous	1.1%	1.5%	0.3%
TOTAL	**100.0%**	**100.0%**	**100.0%**

The results for most of the classifications were similar in the three audits. The substantial difference in the proportions of Plastics may be anomalous and could be related to the 2016 sample size. Silage wrap, in particular, has the potential to skew audit results in rural areas. The difference in the proportions of rubble could be seasonal or could be related to the classification of materials. A high proportion of the rubble in the July 2018 winter audit was fireplace ash, which was not present in the February 2019 summer audit.

Two of the performance measures in Council's SWaMMP relate to reductions in the *quantity* of recyclable and compostable materials in the kerbside waste collection, as compared to the 2016 waste audit. While the *proportions* of the different materials can be compared, as in Table 6.2, *quantities* of materials cannot be compared without tonnage data.

In addition, the performance measures relating to divertable materials cannot be assessed reliably on the basis of the 2016 data available. To monitor the performance measures would require more granular data from the 2016 waste audit than was published in the Waste Assessment. The 2016 data does not differentiate between recyclable and non-recyclable components of paper, plastic, glass, ferrous metal, or non-ferrous metal. As such, it is not possible to determine whether the quantities of, for example, recyclable plastics has changed as recyclable plastics are aggregated with non-recyclable plastics.

6.3 Per capita disposal of kerbside waste

The per capita per annum disposal of kerbside waste for Waitomo District is calculated in Table 6.3. The annual tonnage figure for kerbside waste is the same as that used in Table 5.1. There is not sufficient data to calculate a disposal rate solely for domestic kerbside waste (i.e. kerbside waste solely from residential, not commercial, sources). Commercial kerbside waste typically constitutes 5-10% of kerbside waste.

Table 6.3 - Per capita disposal of kerbside waste

Waitomo District - Calculation of per capita disposal of kerbside waste	**2018/19**
Population Waitomo District 2018	9,810 [1]
Kerbside waste collected by Waitomo District Council	359 tonnes/annum
Kg per capita per annum	**37 kg/capita/annum**

The 395 tonnes of kerbside waste collected through Council's kerbside waste service from March 2018 to February 2019 equates to 37 kg per capita per annum. This figure is compared to that of other districts previously measured by Waste Not Consulting in Table 6.4 on the next page.

[1] http://www.waitomo.govt.nz/Documents/computerschool/Council%20Agenda%207%20June%202017%20-20File%201/Council%20Agenda%2027%20June%202017/Supporting%20Information%20for%20the%202018-2028%20Long%20Term%20Plan/07%20-%20Financial%20Strategy%202018-28%20LTP%20Consultation%20Document%20Supporting%20Information.pdf

Table 6.4 - Comparison of kerbside waste disposal rate with other districts

District and year of survey	Kg/capita/ annum	Kerbside waste services used
Waitomo District	**37**	User-pays rubbish bags + private wheelie bins
Ashburton District 2015	93	User-pays rubbish bags + private wheelie bins
Christchurch City 2011	110	Fortnightly 140-litre refuse wheelie bins. Weekly organic collection
Gisborne District 2017	122	Rates-funded rubbish bag stickers
Whangarei District 2017	153	User-pays rubbish bags + private wheelie bins
Auckland Council 2016	156	Range of legacy council services.
Southland Region 2016/17	169	Rates-funded wheelie bins
Tauranga and WBoP 2017	178	User-pays rubbish bags + private wheelie bins in Tauranga. Private MGBs + bags in WBoP.
Hamilton City 2017	197	Rates-funded rubbish bags, max. 2 per week
Hastings / Napier 2016	202	User-pays rubbish bags (Hastings) & rates-funded bags max. 2 bags/week(Napier) + private bins
Wellington region 2014/15	206	User-pays rubbish bags + private wheelie bins
Taupo District 2017	243	User-pays rubbish bags + private wheelie bins

The calculated per capita disposal rate of kerbside waste for Waitomo District is substantially lower than for any other district previously measured. There is no obvious reason for the Waitomo District rate to be markedly different to other areas. Local authorities in the other areas all provide kerbside recycling services to householders, as Waitomo District does, most of the areas have a user-pays kerbside waste collection service, as in Waitomo District, and both urban and rural districts are represented in the table.

While there is some use of private, subscription wheelie bin services in Waitomo District, the proportion of users in the urban areas and rural areas serviced by the Council collection was not observed to be significant during the collection of the kerbside waste audit samples.

The very low per capita disposal rate of kerbside waste could be associated with the proportion of households serviced by kerbside collections in Waitomo District. About 60-70% of properties in Waitomo District are estimated to be eligible for the Council kerbside collection services. However, this situation is similar to Ashburton District, which has the second lowest disposal rate in the table, where 65% of the population is serviced by Council's kerbside waste collection.

Other options that are available to households for the disposal of household waste include burning and burying of waste, particularly on rural properties, and delivery to one of Council's waste drop-off facilities. The effects of these on per capita disposal rates have not been calculated.

Appendix 1 - Waste classifications

Primary category	Secondary category	Definition
Paper	Recyclable paper	Cardboard packaging, newspapers, brochures, office paper, magazines, books,
	Non-recyclable paper	Non-recyclable paper packaging (wet-strength, food contaminated), photographic paper, playing cards, laminated paper, Tetra Pak, gabletop, pizza boxes
Plastics	# 1 & 2 containers	Household plastic containers with recycling # 1 or 2. No lids
	# 3-7 containers	Household plastic containers with recycling number 3, 4, 5, 6, or 7
	Plastic bags & film	All plastic bags and film
	Other non-recyclable	Non-recyclable plastic packaging, including polystyrene meat trays, paint, engine oil and chemical containers. All other non-packaging materials made primarily of plastic
Organics	Kitchen waste	All kitchen waste
	Greenwaste	All organic garden waste
	Other organic	All other primarily organic items – includes cat tray litter, hair, vacuum cleaner bags
Ferrous metals	Steel cans	All steel cans
	Other steel	All other items, including aerosol cans, made primarily of ferrous metal
Non-ferrous metals	Aluminium cans	All aluminium cans, plates, and trays.
	Other non-ferrous	All other items, including aerosol cans, made primarily of non-ferrous metal
Glass	Bottles/jars	All bottles and jars, emptied with the lids and contents removed
	Other glass	All other items made primarily of glass, includes light bulbs, drinking glasses, and window glass
Textiles	Clothing & rags	All items primarily made of a fabric, such as clothes, curtains, suitable for rags
	Other textile	Includes shoes, backpacks, handbags, rugs, not suitable for rags
Sanitary paper		Includes disposable nappies, paper towels, tissues
Rubble		All concrete, rubble and soil
Timber		All items made primarily of timber
Rubber		All items made primarily of rubber (e.g. kitchen gloves)
Potentially hazardous	Household hazardous	Batteries, aerosol cans, medicines and cosmetics, cleaning agents
	Other hazardous	Potentially hazardous items not associated with domestic activity, such as used oil and garden chemicals.

Appendix 2 - Winter - Urban rubbish bags

Waitomo District Urban rubbish bags Winter - 27-30 July 2018 (Margins of error for 95% confidence level)		**% of total**	**Mean wt. per bag**	**Mean wt per household set out**
Paper	Recyclable paper	11.1% (±3.5%)	0.69 kg (±0.22 kg)	0.74 kg (±0.23 kg)
	Non-recyclable paper	1.9% (±0.2%)	0.12 kg (±0.01 kg)	0.13 kg (±0.02 kg)
	Subtotal	**13.0% (±3.4%)**	**0.81 kg (±0.21 kg)**	**0.87 kg (±0.23 kg)**
Plastics	# 1 2 containers	1.6% (±0.6%)	0.10 kg (±0.04 kg)	0.10 kg (±0.04 kg)
	# 3-7 containers	1.4% (±0.4%)	0.09 kg (±0.02 kg)	0.09 kg (±0.02 kg)
	Plastic bags/ film	7.7% (±0.7%)	0.48 kg (±0.04 kg)	0.51 kg (±0.05 kg)
	Other non-recyclable	3.0% (±0.7%)	0.19 kg (±0.04 kg)	0.20 kg (±0.04 kg)
	Subtotal	**13.7% (±1.3%)**	**0.85 kg (±0.08 kg)**	**0.91 kg (±0.08 kg)**
Organics	Kitchen waste	37.2% (±4.5%)	2.31 kg (±0.28 kg)	2.47 kg (±0.30 kg)
	Greenwaste	3.5% (±3.4%)	0.22 kg (±0.21 kg)	0.23 kg (±0.22 kg)
	Other organic	3.7% (±2.4%)	0.23 kg (±0.15 kg)	0.25 kg (±0.16 kg)
	Subtotal	**44.4% (±6.6%)**	**2.76 kg (±0.41 kg)**	**2.95 kg (±0.44 kg)**
Ferrous metals	Steel cans	0.8% (±0.2%)	0.05 kg (±0.01 kg)	0.05 kg (±0.01 kg)
	Other steel	0.8% (±0.4%)	0.05 kg (±0.02 kg)	0.05 kg (±0.02 kg)
	Subtotal	**1.5% (±0.3%)**	**0.09 kg (±0.02 kg)**	**0.10 kg (±0.02 kg)**
Non ferrous metals	Aluminium cans	0.3% (±0.1%)	0.02 kg (±0.01 kg)	0.02 kg (±0.01 kg)
	Other non-ferrous	0.7% (±0.4%)	0.04 kg (±0.03 kg)	0.04 kg (±0.03 kg)
	Subtotal	**1.0% (±0.5%)**	**0.06 kg (±0.03 kg)**	**0.06 kg (±0.03 kg)**
Glass	Bottles/jars	0.9% (±0.5%)	0.06 kg (±0.03 kg)	0.06 kg (±0.03 kg)
	Other glass	0.6% (±0.3%)	0.04 kg (±0.02 kg)	0.04 kg (±0.02 kg)
	Subtotal	**1.5% (±0.6%)**	**0.10 kg (±0.04 kg)**	**0.10 kg (±0.04 kg)**
Textiles	Clothing & rags	3.7% (±1.7%)	0.23 kg (±0.10 kg)	0.24 kg (±0.11 kg)
	Other textile	1.1% (±0.4%)	0.07 kg (±0.02 kg)	0.07 kg (±0.02 kg)
	Subtotal	**4.7% (±1.7%)**	**0.30 kg (±0.10 kg)**	**0.31 kg (±0.11 kg)**
Sanitary paper		**15.9% (±6.6%)**	**0.99 kg (±0.41 kg)**	**1.06 kg (±0.44 kg)**
Rubble		**2.5% (±1.8%)**	**0.16 kg (±0.11 kg)**	**0.17 kg (±0.12 kg)**
Timber		**0.2% (±0.2%)**	**0.01 kg (±0.01 kg)**	**0.01 kg (±0.01 kg)**
Rubber		**0.2% (±0.1%)**	**0.01 kg (±0.01 kg)**	**0.01 kg (±0.01 kg)**
Potentially hazardous	Household hazardous	1.2% (±0.7%)	0.08 kg (±0.04 kg)	0.08 kg (±0.05 kg)
	Other hazardous	0.1% (±0.1%)	0.00 kg (±0.01 kg)	0.00 kg (±0.01 kg)
	Subtotal	**1.3% (±0.8%)**	**0.08 kg (±0.05 kg)**	**0.09 kg (±0.05 kg)**
TOTAL		**100.0%**	**6.22 kg (±0.59 kg)**	**6.64 kg (±0.63 kg)**

Appendix 3 - Winter - Rural rubbish bags

Waitomo District Rural rubbish bags Winter - 27-30 July 2018 (Margins of error for 95% confidence level)		**% of total**	**Mean wt. per bag**	**Mean wt per household set out**
Paper	Recyclable paper	6.1% (±1.3%)	0.38 kg (±0.08 kg)	0.45 kg (±0.09 kg)
	Non-recyclable paper	1.8% (±0.4%)	0.12 kg (±0.03 kg)	0.14 kg (±0.03 kg)
	Subtotal	**7.9% (±1.3%)**	**0.50 kg (±0.08 kg)**	**0.59 kg (±0.10 kg)**
Plastics	# 1 2 containers	1.8% (±0.5%)	0.11 kg (±0.03 kg)	0.13 kg (±0.03 kg)
	# 3-7 containers	1.2% (±0.4%)	0.08 kg (±0.03 kg)	0.09 kg (±0.03 kg)
	Plastic bags/ film	9.5% (±1.1%)	0.60 kg (±0.07 kg)	0.70 kg (±0.08 kg)
	Other non-recyclable	3.6% (±0.8%)	0.23 kg (±0.05 kg)	0.27 kg (±0.06 kg)
	Subtotal	**16.1% (±1.7%)**	**1.01 kg (±0.11 kg)**	**1.19 kg (±0.13 kg)**
Organics	Kitchen waste	34.5% (±9.7%)	2.18 kg (±0.61 kg)	2.56 kg (±0.72 kg)
	Greenwaste	0.4% (±0.5%)	0.02 kg (±0.03 kg)	0.03 kg (±0.03 kg)
	Other organic	1.5% (±1.3%)	0.10 kg (±0.08 kg)	0.11 kg (±0.09 kg)
	Subtotal	**36.4% (±10.5%)**	**2.29 kg (±0.66 kg)**	**2.70 kg (±0.78 kg)**
Ferrous metals	Steel cans	1.1% (±0.4%)	0.07 kg (±0.02 kg)	0.08 kg (±0.03 kg)
	Other steel	1.1% (±1.4%)	0.07 kg (±0.09 kg)	0.08 kg (±0.10 kg)
	Subtotal	**2.2% (±1.2%)**	**0.14 kg (±0.08 kg)**	**0.17 kg (±0.09 kg)**
Non ferrous metals	Aluminium cans	0.3% (±0.2%)	0.02 kg (±0.01 kg)	0.03 kg (±0.01 kg)
	Other non-ferrous	0.7% (±0.4%)	0.05 kg (±0.03 kg)	0.05 kg (±0.03 kg)
	Subtotal	**1.1% (±0.5%)**	**0.07 kg (±0.03 kg)**	**0.08 kg (±0.03 kg)**
Glass	Bottles/jars	3.4% (±2.0%)	0.21 kg (±0.12 kg)	0.25 kg (±0.15 kg)
	Other glass	0.6% (±0.6%)	0.04 kg (±0.04 kg)	0.05 kg (±0.05 kg)
	Subtotal	**4.0% (±1.8%)**	**0.25 kg (±0.11 kg)**	**0.30 kg (±0.13 kg)**
Textiles	Clothing & rags	2.0% (±0.7%)	0.12 kg (±0.05 kg)	0.14 kg (±0.05 kg)
	Other textile	4.2% (±3.3%)	0.27 kg (±0.21 kg)	0.31 kg (±0.24 kg)
	Subtotal	**6.2% (±3.5%)**	**0.39 kg (±0.22 kg)**	**0.46 kg (±0.26 kg)**
Sanitary paper		**19.9% (±9.0%)**	**1.26 kg (±0.57 kg)**	**1.48 kg (±0.67 kg)**
Rubble		**4.8% (±7.0%)**	**0.30 kg (±0.44 kg)**	**0.36 kg (±0.52 kg)**
Timber		**0.2% (±0.2%)**	**0.01 kg (±0.01 kg)**	**0.01 kg (±0.01 kg)**
Rubber		**0.4% (±0.3%)**	**0.02 kg (±0.02 kg)**	**0.03 kg (±0.03 kg)**
Potentially hazardous	Household hazardous	0.9% (±0.4%)	0.06 kg (±0.02 kg)	0.07 kg (±0.03 kg)
	Other hazardous	0.0%	0.00 kg	0.00 kg
	Subtotal	**0.9% (±0.4%)**	**0.06 kg (±0.02 kg)**	**0.07 kg (±0.03 kg)**
TOTAL		**100.0%**	**6.30 kg (±0.95 kg)**	**7.41 kg (±1.12 kg)**

Appendix 4 - Winter - All kerbside rubbish bags

Waitomo District Kerbside rubbish bags Winter - 27-30 July 2018		% of total	Mean wt. per bag	Mean wt per household set out	Tonnes/week
Paper	Recyclable paper	9.3%	0.58 kg	0.64 kg	0.57 T/week
	Non-recyclable paper	1.9%	0.12 kg	0.13 kg	0.12 T/week
	Subtotal	**11.2%**	**0.70 kg**	**0.77 kg**	**0.69 T/week**
Plastics	# 1 2 containers	1.6%	0.10 kg	0.11 kg	0.10 T/week
	# 3-7 containers	1.3%	0.08 kg	0.09 kg	0.08 T/week
	Plastic bags/ film	8.4%	0.52 kg	0.58 kg	0.51 T/week
	Other non-recyclable	3.2%	0.20 kg	0.22 kg	0.20 T/week
	Subtotal	**14.6%**	**0.91 kg**	**1.01 kg**	**0.89 T/week**
Organics	Kitchen waste	36.2%	2.26 kg	2.51 kg	2.22 T/week
	Greenwaste	2.4%	0.15 kg	0.16 kg	0.15 T/week
	Other organic	2.9%	0.18 kg	0.20 kg	0.18 T/week
	Subtotal	**41.5%**	**2.59 kg**	**2.87 kg**	**2.55 T/week**
Ferrous metals	Steel cans	0.9%	0.06 kg	0.06 kg	0.05 T/week
	Other steel	0.9%	0.06 kg	0.06 kg	0.05 T/week
	Subtotal	**1.8%**	**0.11 kg**	**0.12 kg**	**0.11 T/week**
Non ferrous metals	Aluminium cans	0.3%	0.02 kg	0.02 kg	0.02 T/week
	Other non-ferrous	0.7%	0.04 kg	0.05 kg	0.04 T/week
	Subtotal	**1.0%**	**0.06 kg**	**0.07 kg**	**0.06 T/week**
Glass	Bottles/jars	1.8%	0.11 kg	0.13 kg	0.11 T/week
	Other glass	0.6%	0.04 kg	0.04 kg	0.04 T/week
	Subtotal	**2.4%**	**0.15 kg**	**0.17 kg**	**0.15 T/week**
Textiles	Clothing & rags	3.1%	0.19 kg	0.21 kg	0.19 T/week
	Other textile	2.2%	0.14 kg	0.15 kg	0.14 T/week
	Subtotal	**5.3%**	**0.33 kg**	**0.36 kg**	**0.32 T/week**
Sanitary paper		**17.4%**	**1.08 kg**	**1.20 kg**	**1.07 T/week**
Rubble		**3.4%**	**0.21 kg**	**0.23 kg**	**0.21 T/week**
Timber		**0.2%**	**0.01 kg**	**0.01 kg**	**0.01 T/week**
Rubber		**0.2%**	0.02 kg	**0.02 kg**	**0.02 T/week**
Potentially hazardous	Household hazardous	1.1%	0.07 kg	0.08 kg	0.07 T/week
	Other hazardous	0.0%	0.00 kg	0.00 kg	0.00 T/week
	Subtotal	**1.1%**	**0.07 kg**	**0.08 kg**	**0.07 T/week**
TOTAL		**100.0%**	**6.25 kg**	**6.92 kg**	**6.15 T/week**

Appendix 5 - Summer - Urban rubbish bags

Urban rubbish bags Summer - 26 Feb - 1 March 2019 (Margins of error for 95% confidence level)		**% of total**	**Mean wt. per bag**	**Mean wt per household set out**
Paper	Recyclable paper	8.6% (±2.0%)	0.53 kg (±0.12 kg)	0.62 kg (±0.14 kg)
	Non-recyclable paper	2.2% (±0.6%)	0.14 kg (±0.03 kg)	0.16 kg (±0.04 kg)
	Subtotal	**10.8% (±1.9%)**	**0.67 kg (±0.12 kg)**	**0.78 kg (±0.14 kg)**
Plastics	# 1 2 containers	1.5% (±0.3%)	0.10 kg (±0.02 kg)	0.11 kg (±0.02 kg)
	# 3-7 containers	1.4% (±0.3%)	0.08 kg (±0.02 kg)	0.10 kg (±0.02 kg)
	Plastic bags/ film	8.1% (±0.9%)	0.50 kg (±0.06 kg)	0.59 kg (±0.07 kg)
	Other non-recyclable	2.4% (±0.5%)	0.15 kg (±0.03 kg)	0.17 kg (±0.04 kg)
	Subtotal	**13.3% (±1.3%)**	**0.83 kg (±0.08 kg)**	**0.97 kg (±0.09 kg)**
Organics	Kitchen waste	40.6% (±5.6%)	2.52 kg (±0.35 kg)	2.95 kg (±0.41 kg)
	Greenwaste	4.9% (±4.1%)	0.31 kg (±0.25 kg)	0.36 kg (±0.30 kg)
	Other organic	1.2% (±0.7%)	0.08 kg (±0.04 kg)	0.09 kg (±0.05 kg)
	Subtotal	**46.8% (±6.4%)**	**2.90 kg (±0.40 kg)**	**3.40 kg (±0.47 kg)**
Ferrous metals	Steel cans	0.5% (±0.2%)	0.03 kg (±0.01 kg)	0.03 kg (±0.01 kg)
	Other steel	0.3% (±0.2%)	0.02 kg (±0.01 kg)	0.02 kg (±0.01 kg)
	Subtotal	**0.7% (±0.2%)**	**0.05 kg (±0.01 kg)**	**0.05 kg (±0.02 kg)**
Non ferrous metals	Aluminium cans	0.5% (±0.3%)	0.03 kg (±0.02 kg)	0.03 kg (±0.02 kg)
	Other non-ferrous	0.1% (±0.1%)	0.01 kg (±0.01 kg)	0.01 kg (±0.01 kg)
	Subtotal	**0.6% (±0.2%)**	**0.04 kg (±0.01 kg)**	**0.04 kg (±0.02 kg)**
Glass	Bottles/jars	1.1% (±0.7%)	0.07 kg (±0.04 kg)	0.08 kg (±0.05 kg)
	Other glass	0.5% (±0.4%)	0.03 kg (±0.02 kg)	0.04 kg (±0.03 kg)
	Subtotal	**1.6% (±0.6%)**	**0.10 kg (±0.04 kg)**	**0.12 kg (±0.05 kg)**
Textiles	Clothing & rags	4.2% (±1.4%)	0.26 kg (±0.09 kg)	0.31 kg (±0.10 kg)
	Other textile	2.2% (±1.3%)	0.14 kg (±0.08 kg)	0.16 kg (±0.09 kg)
	Subtotal	**6.4% (±2.0%)**	**0.40 kg (±0.12 kg)**	**0.46 kg (±0.14 kg)**
Sanitary paper		**17.1% (±9.0%)**	**1.06 kg (±0.56 kg)**	**1.24 kg (±0.66 kg)**
Rubble		**0.7% (±0.8%)**	**0.04 kg (±0.05 kg)**	**0.05 kg (±0.06 kg)**
Timber		**0.3% (±0.2%)**	**0.02 kg (±0.01 kg)**	**0.02 kg (±0.02 kg)**
Rubber		**0.1% (±0.0%)**	**0.00 kg (±0.00 kg)**	**0.00 kg (±0.00 kg)**
Potentially hazardous	Household hazardous	1.7% (±0.8%)	0.11 kg (±0.05 kg)	0.13 kg (±0.06 kg)
	Other hazardous	0.0% -	0.00 kg -	0.00 kg -
	Subtotal	**1.7% (±0.8%)**	**0.11 kg (±0.05 kg)**	**0.13 kg (±0.06 kg)**
TOTAL		**100.0%**	**6.21 kg (±0.37 kg)**	**7.27 kg (±0.43 kg)**

Appendix 6 - Summer - Rural rubbish bags

Rural rubbish bags Summer - 26 Feb - 1 March 2019 (Margins of error for 95% confidence level)		**% of total**	**Mean wt. per bag**	**Mean wt per household set out**
Paper	Recyclable paper	8.0% (±1.2%)	0.49 kg (±0.07 kg)	0.55 kg (±0.08 kg)
	Non-recyclable paper	3.4% (±1.6%)	0.21 kg (±0.10 kg)	0.23 kg (±0.11 kg)
	Subtotal	**11.4% (±1.6%)**	**0.69 kg (±0.10 kg)**	0.79 kg **(±0.11 kg)**
Plastics	# 1 2 containers	1.3% (±0.5%)	0.08 kg (±0.03 kg)	0.09 kg (±0.03 kg)
	# 3-7 containers	2.0% (±0.4%)	0.12 kg (±0.03 kg)	0.13 kg (±0.03 kg)
	Plastic bags/ film	9.4% (±0.6%)	0.57 kg (±0.04 kg)	0.65 kg (±0.04 kg)
	Other non-recyclable	2.9% (±0.7%)	0.18 kg (±0.04 kg)	0.20 kg (±0.05 kg)
	Subtotal	**15.6% (±0.6%)**	**0.94 kg (±0.04 kg)**	1.07 kg **(±0.04 kg)**
Organics	Kitchen waste	34.2% (±6.5%)	2.07 kg (±0.40 kg)	2.35 kg (±0.45 kg)
	Greenwaste	2.2% (±1.2%)	0.13 kg (±0.07 kg)	0.15 kg (±0.08 kg)
	Other organic	1.0% (±1.0%)	0.06 kg (±0.06 kg)	0.07 kg (±0.07 kg)
	Subtotal	**37.3% (±7.4%)**	**2.26 kg (±0.45 kg)**	2.56 kg **(±0.51 kg)**
Ferrous metals	Steel cans	1.8% (±0.2%)	0.11 kg (±0.01 kg)	0.12 kg (±0.02 kg)
	Other steel	0.6% (±0.3%)	0.03 kg (±0.02 kg)	0.04 kg (±0.02 kg)
	Subtotal	**2.3% (±0.3%)**	**0.14 kg (±0.02 kg)**	0.16 kg **(±0.02 kg)**
Non ferrous metals	Aluminium cans	0.4% (±0.2%)	0.02 kg (±0.01 kg)	0.02 kg (±0.01 kg)
	Other non-ferrous	0.4% (±0.5%)	0.02 kg (±0.03 kg)	0.03 kg (±0.03 kg)
	Subtotal	**0.7% (±0.5%)**	**0.04 kg (±0.03 kg)**	0.05 kg **(±0.03 kg)**
Glass	Bottles/jars	3.8% (±1.8%)	0.23 kg (±0.11 kg)	0.26 kg (±0.12 kg)
	Other glass	1.1% (±0.7%)	0.07 kg (±0.04 kg)	0.08 kg (±0.05 kg)
	Subtotal	**4.9% (±1.8%)**	**0.30 kg (±0.11 kg)**	0.34 kg **(±0.12 kg)**
Textiles	Clothing & rags	3.8% (±2.1%)	0.23 kg (±0.13 kg)	0.26 kg (±0.14 kg)
	Other textile	2.2% (±1.0%)	0.13 kg (±0.06 kg)	0.15 kg (±0.07 kg)
	Subtotal	**6.0% (±2.8%)**	**0.36 kg (±0.17 kg)**	0.41 kg **(±0.19 kg)**
Sanitary paper		**15.7% (±4.5%)**	**0.95 kg (±0.27 kg)**	1.08 kg **(±0.31 kg)**
Rubble		**3.1% (±2.1%)**	**0.19 kg (±0.12 kg)**	0.21 kg **(±0.14 kg)**
Timber		**0.8% (±0.8%)**	**0.05 kg (±0.05 kg)**	0.06 kg **(±0.05 kg)**
Rubber		**0.3% (±0.3%)**	**0.02 kg (±0.02 kg)**	0.02 kg **(±0.02 kg)**
Potentially hazardous	Household hazardous	1.7% (±0.6%)	0.10 kg (±0.03 kg)	0.12 kg (±0.04 kg)
	Other hazardous	0.1% (±0.1%)	0.00 kg (±0.01 kg)	0.00 kg (±0.01 kg)
	Subtotal	**1.7% (±0.6%)**	**0.11 kg (±0.03 kg)**	0.12 kg **(±0.04 kg)**
TOTAL		**100.0%**	**6.05 kg (±0.40 kg)**	**6.86 kg (±0.45 kg)**

Appendix 7 - Summer - All kerbside rubbish bags

Kerbside rubbish bags Summer - Jan/Feb 2019		% of total	Mean wt. per bag	Mean wt per household set out	Tonnes/week
Paper	Recyclable paper	8.4%	0.51 kg	0.59 kg	0.59 T/week
	Non-recyclable paper	2.7%	0.17 kg	0.19 kg	0.19 T/week
	Subtotal	**11.1%**	**0.68 kg**	**0.78 kg**	**0.78 T/week**
Plastics	# 1 2 containers	1.4%	0.09 kg	0.10 kg	0.10 T/week
	# 3-7 containers	1.6%	0.10 kg	0.11 kg	0.11 T/week
	Plastic bags/ film	8.6%	0.53 kg	0.61 kg	0.61 T/week
	Other non-recyclable	2.6%	0.16 kg	0.19 kg	0.18 T/week
	Subtotal	**14.3%**	**0.88 kg**	**1.01 kg**	**1.01 T/week**
Organics	Kitchen waste	37.9%	2.33 kg	2.69 kg	2.67 T/week
	Greenwaste	3.8%	0.23 kg	0.27 kg	0.27 T/week
	Other organic	1.1%	0.07 kg	0.08 kg	0.08 T/week
	Subtotal	**42.8%**	**2.63 kg**	**3.04 kg**	**3.02 T/week**
Ferrous metals	Steel cans	1.0%	0.06 kg	0.07 kg	0.07 T/week
	Other steel	0.4%	0.02 kg	0.03 kg	0.03 T/week
	Subtotal	**1.4%**	**0.09 kg**	**0.10 kg**	**0.10 T/week**
Non ferrous metals	Aluminium cans	0.4%	0.03 kg	0.03 kg	0.03 T/week
	Other non-ferrous	0.2%	0.01 kg	0.02 kg	0.02 T/week
	Subtotal	**0.6%**	**0.04 kg**	**0.05 kg**	**0.04 T/week**
Glass	Bottles/jars	2.2%	0.14 kg	0.16 kg	0.16 T/week
	Other glass	0.8%	0.05 kg	0.06 kg	0.05 T/week
	Subtotal	**3.0%**	**0.18 kg**	**0.21 kg**	**0.21 T/week**
Textiles	Clothing & rags	4.0%	0.25 kg	0.29 kg	0.29 T/week
	Other textile	2.2%	0.13 kg	0.15 kg	0.15 T/week
	Subtotal	**6.2%**	**0.38 kg**	**0.44 kg**	**0.44 T/week**
Sanitary paper		**16.5%**	**1.01 kg**	**1.17 kg**	**1.16 T/week**
Rubble		**1.7%**	**0.10 kg**	**0.12 kg**	**0.12 T/week**
Timber		**0.5%**	**0.03 kg**	**0.04 kg**	**0.04 T/week**
Rubber		**0.2%**	**0.01 kg**	**0.01 kg**	**0.01 T/week**
Potentially hazardous	Household hazardous	1.7%	0.11 kg	0.12 kg	0.12 T/week
	Other hazardous	0.0%	0.00 kg	0.00 kg	0.00 T/week
	Subtotal	**1.7%**	**0.11 kg**	**0.12 kg**	**0.12 T/week**
TOTAL		**100.0%**	**6.14 kg**	**7.10 kg**	**7.05 T/week**

Appendix 8 - Combined summer and winter audits

Waitomo District All kerbside rubbish bags March 2018 - February 2019		% of total	Mean wt. per bag	Mean wt per household set out	Tonnes/week	Tonnes/annum (Indicative only)
Paper	Recyclable paper	8.8%	0.54 kg	0.62 kg	0.60 T/week	32 T/annum
	Non-recyclable paper	2.3%	0.14 kg	0.16 kg	0.16 T/week	8 T/annum
	Subtotal	**11.1%**	**0.69 kg**	**0.78 kg**	**0.76 T/week**	**40 T/annum**
Plastics	# 1 2 containers	1.5%	0.09 kg	0.11 kg	0.11 T/week	5 T/annum
	# 3-7 containers	1.5%	0.09 kg	0.10 kg	0.10 T/week	5 T/annum
	Plastic bags/ film	8.5%	0.53 kg	0.60 kg	0.58 T/week	30 T/annum
	Other non-recyclable	2.9%	0.18 kg	0.20 kg	0.20 T/week	10 T/annum
	Subtotal	**14.4%**	**0.89 kg**	**1.01 kg**	**0.99 T/week**	**52 T/annum**
Organics	Kitchen waste	37.1%	2.30 kg	2.60 kg	2.55 T/week	133 T/annum
	Greenwaste	3.1%	0.19 kg	0.22 kg	0.21 T/week	11 T/annum
	Other organic	2.0%	0.12 kg	0.14 kg	0.14 T/week	7 T/annum
	Subtotal	**42.2%**	**2.61 kg**	**2.95 kg**	**2.90 T/week**	**151 T/annum**
Ferrous metals	Steel cans	1.0%	0.06 kg	0.07 kg	0.07 T/week	3 T/annum
	Other steel	0.6%	0.04 kg	0.04 kg	0.04 T/week	2 T/annum
	Subtotal	**1.6%**	**0.10 kg**	**0.11 kg**	**0.11 T/week**	**6 T/annum**
Non ferrous metals	Aluminium cans	0.4%	0.02 kg	0.03 kg	0.03 T/week	1 T/annum
	Other non-ferrous	0.4%	0.03 kg	0.03 kg	0.03 T/week	2 T/annum
	Subtotal	**0.8%**	**0.05 kg**	**0.06 kg**	**0.06 T/week**	**3 T/annum**
Glass	Bottles/jars	2.0%	0.13 kg	0.14 kg	0.14 T/week	7 T/annum
	Other glass	0.7%	0.04 kg	0.05 kg	0.05 T/week	3 T/annum
	Subtotal	**2.7%**	**0.17 kg**	**0.19 kg**	**0.19 T/week**	**10 T/annum**
Textiles	Clothing & rags	3.6%	0.22 kg	0.25 kg	0.25 T/week	13 T/annum
	Other textile	2.2%	0.14 kg	0.15 kg	0.15 T/week	8 T/annum
	Subtotal	**5.8%**	**0.36 kg**	**0.40 kg**	**0.40 T/week**	**21 T/annum**
Sanitary paper		**16.9%**	**1.05 kg**	**1.18 kg**	**1.16 T/week**	**61 T/annum**
Rubble		**2.5%**	**0.15 kg**	**0.17 kg**	**0.17 T/week**	**9 T/annum**
Timber		**0.4%**	**0.02 kg**	**0.03 kg**	**0.02 T/week**	**1 T/annum**
Rubber		**0.2%**	**0.01 kg**	**0.01 kg**	**0.01 T/week**	**1 T/annum**
Potentially hazardous	Household hazardous	1.4%	0.09 kg	0.10 kg	0.10 T/week	5 T/annum
	Other hazardous	0.0%	0.00 kg	0.00 kg	0.00 T/week	0 T/annum
	Subtotal	**1.5%**	**0.09 kg**	**0.10 kg**	**0.10 T/week**	**5 T/annum**
TOTAL		**100.0%**	**6.19 kg**	**7.00 kg**	**6.88 T/week**	**359 T/annum**

Appendix 9 - Council recycling guide

A Guide to Transfer Station fees and recycling

Waitomo District Council provides a range of waste management services to the community, including five Waste Transfer Stations located at Marokopa, Kinohaku, Piopio, Benneydale and Mokau.

Transfer Station Disposal fees

Charges are per refuse item: Van (each). If the amount of general refuse is over and above the standard item, additional charges will be applied.

Disposal of Unofficial rubbish bags	$9.00
Wheelie Bin	$25.00
Car boot	$28.00
Van	$52.00
Ute	$59.00
Trailer	$59.00
Special Refuse (E.g. Whiteware)	$17.50
Televisions – each	$25.80
Computer – each	$15.50
Toaster/ kettle/ video recorder	$5.20

You can recycle the following:

Plastic (types 1 and 2)

Any plastics types 1 and 2 will be accepted for recycling.

This can include soft drink bottles, milk bottles, ice cream containers and food packets such as biscuit trays or salad domes.

Remove the lids from all containers. Rinse all items thoroughly in warm water. Flatten as much as possible these can be placed in the plastic collection containers at all transfer Stations.

Remember, not all plastic items are types 1 and 2. The recycling number is printed on the underside of the bottle/ container.

Plastic items such as icecream containers and milk bottle lids cannot be re-used but can make great great craft materials.

Tin and Aluminium Cans

Tin and aluminium cans will be accepted at all transfer Stations.

Paper and cardboard

- Newspapers
- Household paper and card
- Packaging cardboard
- Food boxes, ie: cereal boxes
- Egg cartons and trays
- Corrugated cardboard

Do not include paper items that have food contamination, ie: fish and chip wrappers, pizza boxes.

Large amounts of cardboard can be recycled at the Waitomo District Landfill for free.

Glass

The Transfer Stations will accept glass bottles and jars. This includes clear, green and brown coloured glass.

DO NOT INCLUDE: light bulbs, glass plates or bowls, drinking or beer handles, ash trays, or broken glass.

Broken glass should be well wrapped in newspaper and put in a WDC Rubbish Bag.