



Yarra Ranges Council
Kerbside Waste Audit

May 2023



Education, Training, Research

Project Undertaken by



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Acknowledgments

EnviroCom would like to thank the staff at Yarra Ranges Council and also JJ's Waste & Recycling (JJs) for their valuable assistance and cooperation during the audit.

Executive Summary

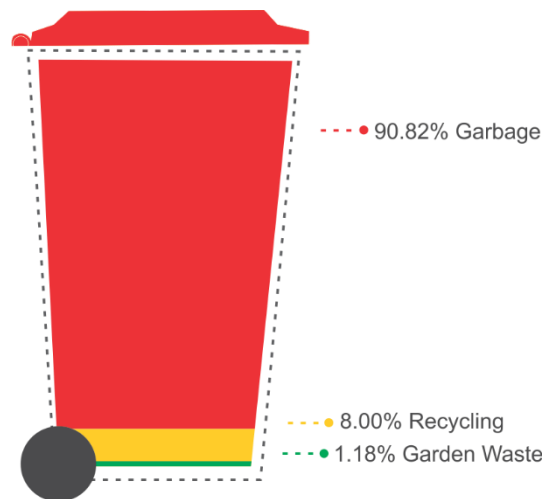
Over a one-week period from Monday 17th to Friday 21st April, EnviroCom Australia® (EnviroCom) undertook an audit of the Domestic Kerbside Garbage, Recycling and Garden Waste Streams within the Yarra Ranges Council area.

The aims of the audit were to:

- Provide a snapshot of the composition of the Total Waste Stream
- Estimate the Resource Loss Rate, Contamination Rate, Resource Recovery Rate and Generation Rate of the Domestic Kerbside Garbage, Recycling and Garden Waste Streams

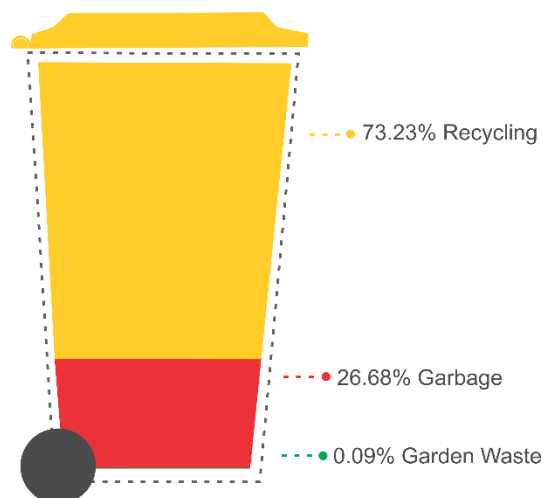
The results are summarised by stream as follows:

Garbage



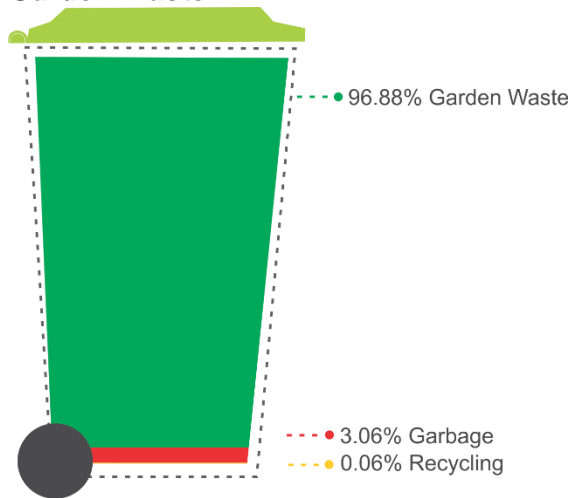
The **Resource Loss Rate** observed in the Garbage Stream was found to be **9.18%** (8.00% recyclables, 1.18% garden waste) when measured by mass.

Recycling



The **Contamination Rate** of the Recycling Stream was found to be **26.77%** (26.68% garbage, 0.09% garden waste) when measured by mass.

Garden Waste



The **Contamination Rate** observed in the Garden Waste Stream was found to be **3.12%** (3.06% garbage, 0.06% recyclables) when measured by mass.

Approximately 3.7 tonnes of material were examined across the Garbage, Recycling and Garden Waste Streams during the audit period. Detailed results, including estimated generation rates and the calculated 90% confidence intervals are included in the table below.

	Garbage		Recycling		Garden	
	Mass	90% CI	Mass	90% CI	Mass	90% CI
Landfill Materials	90.82%	+/- 2.5%	26.68%	+/- 11.2%	3.06%	+/- 5.4%
Recyclable Materials	8.00%	+/- 0.8%	73.23%	+/- 11.3%	0.06%	+/- 0.1%
Garden Materials	1.18%	+/- 2.1%	0.09%	+/- 0.2%	96.88%	+/- 5.5%
Generation Rate	9.81 kg/bin/wk		5.40 kg/bin/wk		13.16 kg/bin/wk	
Resource loss/Contamination Rate	9.18%		26.77%		3.12%	

The **Resource Recovery Rate** of recyclables calculated from the Total Waste Stream was estimated at **83%**.

The **Resource Recovery Rate** of garden waste calculated from the Total Waste Stream was estimated at **99%**.

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1.0. Introduction

A waste segregation audit of the Yarra Ranges Council Domestic Kerbside Garbage, Recycling and Garden Waste Streams was conducted by EnviroCom Australia® (EnviroCom) during the period of Monday 17th to Friday 21st April.

Yarra Ranges Council (Council) currently provides residents with a comprehensive mobile garbage bin (MGB) collection service for three waste streams; Garbage, Recycling and Garden Waste. This service incorporates:

- An 80L or 120L MGB for garbage collected weekly
- A 240L MGB for recycling – collected fortnightly
- An optional 240L MGB for garden waste – collected fortnightly. Residents are also able to place bundled garden waste out for collection. Only the optional 240L garden waste bins were included in this audit.

Table One provides a summary of services and acceptable materials for each waste stream.

Table One. Summary of Council waste collection services provided to residents

Waste Stream	Collection	Mobile Garbage Bin Capacity	Acceptable Materials
Garbage (dark green lid)	Weekly	80L or 120L	<ul style="list-style-type: none"> • Household garbage, • Food waste, meat, fish, poultry, scraps and bones, • Nappies (wrapped), • Polystyrene and foam meat trays, • Plastic packaging, food wrappers and cling film (soft plastics), • Window glass, glassware, mirrors and pyrex
Recycling (yellow lid)	Fortnightly	240L	<ul style="list-style-type: none"> • Cardboard boxes, • Milk & juice cartons, • Plastic bottles and lids, containers, trays, plant pots, cd & dvd covers, • Glass bottles & jars (including lids), • Steel cans including aerosol & aluminium cans, clean aluminium foil & pie trays, • Books, envelopes, brochures, newspapers & magazines, • Plastic Toys, • Pots & pans, • Paint tins (dry/empty).
Garden Waste (light green lid)	Fortnightly (alternate to recycling service)	240L	<ul style="list-style-type: none"> • Grass clippings and weeds • Flowers • Garden prunings • Rose clippings • Leaves • Bark • Small branches & timber offcuts

2.0. Terminology

Waste management has developed unique terminology. In this study terminology used reflects that provided in AS/NZS 3831:1998 Waste Management - Glossary of Terms. Specific terms of interest are additionally described below.

Total Waste Stream – the total of all materials presented at the kerbside for collection – in this case (for the purpose of this analysis) material of the Garbage Stream plus the material of the Recycling and Garden Waste Streams.

Garbage Stream – materials presented for collection in the garbage MGB.

Recycling Stream – materials presented for collection in the recycling MGB.

Garden Waste Stream – materials presented for collection in the garden MGB.

Contamination Rate - refers to the proportion of non-recoverable materials observed in either the Recycling Stream or the Garden Waste Stream. It is calculated as follows:

$$CR = \frac{[\sum C_r]}{[\sum T_r]} \times 100$$

When
CR = Contamination Rate
C_r = Non-recoverable resources presented to the Stream being investigated
T_r = All materials presented to that Stream

Resource Loss Rate – the proportion of divertible resources (recyclables and/or garden waste) presented in the Garbage Stream. It is calculated as follows:

$$RLR = \frac{[\sum R_g]}{[\sum T_g]} \times 100$$

When
RLR = Resource Loss Rate
R_g = Recoverable resources presented to the Garbage Stream
T_g = All materials presented to the Garbage Stream

Resource Recovery Rate – the proportion of divertible resources presented to the Recycling or Garden Waste Stream compared to the total amount of the divertible resources within the Recycling, Garbage and Garden Waste Streams. It is calculated as follows:

$$RRR = \frac{[\sum R_r]}{[\sum R_g] + [\sum R_r]} \times 100$$

When
RRR = Resource Recovery Rate
R_r = Recoverable resources presented to the Recycling Stream or Garden Waste Stream
R_g = Recoverable resources presented to the Garbage Stream

Other Fine Material – material that is less than 25mm in size is deemed other fine material and consists mainly of broken glass, but also stones, dirt and other small

particles. However, due to the small particle size of these materials, detailed segregation was not possible.

Bagged Recycling – recyclable materials presented in plastic bags or otherwise encased so as to render them non-recoverable. The mechanical and manual sorting processes of a modern Materials Recovery Facility (MRF) are such that materials are highly segregated prior to their recovery. As such, the manual recovery points are specialised areas for specific product types, e.g. glass recovery, plastic recovery, paper recovery. This level of specialisation, combined with the speed at which a modern MRF processes materials and occupational health and safety risks, results in the potential loss of encased resources. These materials have been treated as contamination in considering the overall results but shown separately as ‘potentially recoverable’ in the discussion at Section 7.1 (Figure Three) when considering the recycling composition.

3.0. Study Aims

The aims of this waste segregation audit were to identify:

- The composition of the Total Waste Stream;
- The rate and composition of contaminants in the Recycling Stream;
- The rate and composition of resource loss in the Garbage Stream;
- The rate and composition of contaminants in the Garden Waste Stream;
- The Resource Recovery Rates of the combined waste streams (estimated);
- To provide a baseline of results for upcoming waste service changes and any future audits.

4.0. Audit Methodology

The following research methodologies ensure accurate collection and extrapolation of information gathered from the audit. The methodologies supplied ensure a reliable representation of the materials presented for collection at the time of the assessment, accounting for specific variables such as population parameters, nature, frequency, and the type of the waste service provided.

The samples were collected by JJ's Waste and Recycling (JJs) staff and deposited in a safe and clean sorting area at the Coldstream Transfer Station.

4.1. Sample Period

The audit was conducted over a five-day sampling period; encompassing one garbage collection cycle, one recycling collection cycle and one garden waste collection cycle (separate areas to the recycling and garbage sample).

4.2. Sample Selection and Collection

The samples were collected from 125 garbage bins, 100 recycling bins and 54 garden waste bins¹ from households across the Yarra Ranges Council (Council) area. Sample collection suburbs were provided by JJs and approved by Council, with households randomly selected on each day of collection by the JJ's drivers. EnviroCom recorded the streets where each stream was collected from.

Samples were collected using a JJ's side lift truck. In each case the aggregated Garbage, Recycling and Garden Waste Stream samples were collected in separate vehicles and delivered to the audit site at Coldstream Transfer Station. Once the samples had been collected, they could not be identified back to a specific household.

4.3. Segregation and Analysis

All materials contained within the samples were hand-segregated by experienced auditing personnel. Material composition (by mass) was determined by the material categories provided in the Australian Waste Database (AWD) and Guidelines for Auditing Kerbside Waste in Victoria.

EnviroCom also included, as agreed with Council, additional categories to those supplied by the AWD. These additional categories were applied to all waste streams. The additional material categories were used to improve the description of the recoverability of recyclable/recoverable materials, for example, through the proposed introduction of a container deposit scheme in Victoria in 2023 and the likely introduction of a Food Organics, Garden Organics (FOGO) service by Council this year, as well as existing recovery processes. See Table Two below for details of the segregation categories and their recoverability status.

¹ As Council are aware, the recycling sample collected on Thursday 20th April was found to contain asbestos and so no segregation result was obtained on that day. Additionally, on the 17th April, 14 garden waste bins were collected (instead of 10) due to a communication error between EnviroCom and the JJs driver.

During segregation, the mass of each material category was recorded on hard copy forms. The mass of each material category was generated to the nearest 0.01 kg by suitably serviced electronic scales. The data was entered into an electronic database for interrogation as soon as practical after completion of the segregation.

The following table (Table Two) details the AWD sorting categories and further includes the additional categories identified above.

Table Two. Segregation categories and recoverability status

Code	Material Type	Material Detail
A01	Paper	Newspaper
A02		Magazine
A03		Misc. packaging
A04		Corrugated cardboard
A05		Package board
A06		CDS liquid paper containers
A06		Liquid paper containers
		Disposable coffee cups
		Compostable disposable paper product
A07		Disposable paper product
A08		Printing & writing paper (incl. books)
A09		Composite, mostly paper
A10		Nappies - infant
		Nappies - adult
		Nappies – sanitary items
B01	Organic Compostable	Food / Kitchen - Avoidable
		Food / Kitchen - Unavoidable
		Food / Kitchen- containerised
		Food / Kitchen - containerised Liquids
B02		Garden Waste
		Garden - oversized
B03		Other putrescible
C011	Other Organic	Wood - furniture
C012		Wood - packaging, off cuts
		Clothing textiles
		Non-clothing textiles
		Footwear
C03		Leather
C041		Rubber
C042		Rubber - tyres, tubes
C051		Oils - engine lubricating
C052		Oils - cooking oil
D011	Glass	CDS packaging glass / containers
D011		Packaging glass / containers/ broken
D011A		Glass fines
D021		Misc / other glass - plate glass
D022		Other glass
E011	Plastic	CDS 1 PET - package
E011		1 PET - package
E021		CDS 2 HDPE - package
E021		2 HDPE - package
E031		3 PVC - package
E041		4 LDPE - package
E051		5 Polypropylene - package
E061		6 Polystyrene - rigid
E061A		6 Polystyrene - expanded
E071		Other plastic - foam
E073		Other plastic - film (carry bags, sacks & liners)
		Other plastic - packaging film (food packaging, lolly wrappers)
		Other plastic - non packaging film (e.g. dust sheet for painters)
E074		Other plastic
E08		Composite, mostly plastic
F011	Ferrous	CDS steel packaging - cans
F011		Steel packaging - cans
F012		Other - aerosols, paint cans

Code	Material Type	Material Detail
		Pots and pans
F022		Other appliances
		E-waste
F023		Other - ferrous
F031		Composite, mostly ferrous
F032		Other - specify
G011	Non-Ferrous	CDS aluminium - cans
G011		Aluminium - cans
G011		Aluminium - aerosols
G012		Other packaging - foil
G013		Composites
G021		Other - copper
G022		Other - non ferrous
G03		Composite, non aluminium
H01	Household Hazardous	Paint
H02		Fluorescent globes
H03		Dry cell batteries
H04		Car batteries
H051		H'hold chemicals - pharmaceuticals
H052		H'hold chemicals - other
I042		Other special pathogenic, infectious
I01	Others	Ceramics
I02		Dust / dirt / rock / inert/ concrete
I03		Ash
I041		Special - other inert building materials
		Other fine material <25mm
		Bagged recycling (recycling stream only)
		Bagged garbage (recycling and garden streams only)
		Bagged garden (garden stream only)

Legend:

Recycling	
Garbage	
CDS containers	
Garden	
Food waste / compostable	

4.4. Study Limitations

The methodologies, while generating statistical confidence, were delivered with the following limitations:

(a) Snapshot Assessment Limitations – This audit was conducted from a single collection cycle (i.e. one fortnight for the Recycling, one fortnight for the Garden and one week for the Garbage Waste Streams). The data was then extrapolated to generate an average overview of waste generated throughout the municipality.

It should be noted that this method does not account for seasonal trends or the impacts of unpredictable weather events that would otherwise alter the presentation of waste, and therefore, these factors need to be taken into consideration when comparing the results of this audit with previous audits or utilising the data for decision making process.

(b) On Monday 17th April the Recycling sample presented an anomaly when segregation and weighing had been completed. An Amount of 22.94kg was recorded against 'ceramic' material type. This amounted to 5.96% of the sample for that day. In addition, on Friday 21st April an amount of 42.43kg was recorded against 'bagged

garbage' material type. This amounted to 16.04% of the sample for that day. Each of these anomalies can be considered to be the result of an unusual event – likely from one or two individual households. The exclusion of both these anomalies from the result decreases the Contamination Rate in the Recycling Stream from 26.68% to 21.96%. This difference (4.81 percentage points) should be noted when considering the remainder of this report.

(c) On Friday 17th April the Garden Waste sample presented an anomaly when segregation and weighing had been completed. An amount of 14.46kg was recorded against 'Dust/dirt/rock/inert' material type. This amounted to 5.29% of the sample for that day. In addition an amount of 14.53kg was recorded against the three food categories, 'Food/kitchen – Avoidable', 'Food/kitchen – Unavoidable' and 'Food/kitchen – containerised'. This amounted to 5.32% of the Garden Waste stream. Each of these anomalies can also be considered to be the result of an unusual event -likely from one household. The exclusion of these anomalies from the result decreases the Contamination Rate in the Garden Waste Stream from 3.12% to 1.74%. This difference (1.38 percentage points) should be noted when considering the remainder of this report.

(d) Sampling with a demographics-based random sampling method provides a limited assessment of statistical variation, thus limiting the level of statistical manipulation of the data. However, when looking at the number of samples within this assessment and the statistical analysis required for this report, this limitation does not impact on the overall quality or accuracy of the outcomes.

(e) Mass based analysis – mass was used as the data measurement for this audit. This type of data collection could cause some materials to be presented with a greater overall proportion than others based on material densities.

4.5. Confidence Intervals

The key results included in this report (see Executive Summary and Table Four), include 90% confidence intervals for each of the results. Confidence intervals are used to provide a range around a measurement to express/ convey how precise that measurement is.

For example, the measure of Recyclable Materials in the Garbage stream is reported as being 8.00% +/-0.8% at a 90% confidence interval, means that there is a 90% chance that the key result reported lies between 7.20% and 8.80%. Conversely, there is a 10% chance that the key result lies outside of those upper and lower results respectively.

The confidence intervals are calculated by measuring the variation of each of the sample results or the 'standard error' of the measurements. The standard error calculation shows how well the result for each sample can be used to approximate the reported key result. Generally, the larger the number of measurements (samples) the smaller the standard error and so the narrower the resulting confidence intervals will be. This is evident in considering the omission of a sample due to the asbestos on 20th April, which has impacted the confidence intervals reported against the recycling stream.

5.0. Summary of Results

Over the course of this audit 3,728.05kg of waste was hand segregated from the three waste streams; 1,226.11kg from the Garbage Stream, 1,080.47kg from the Recycling Stream and 1,421.47kg from the Garden Waste Stream. The compositions of each of the waste streams are provided in sections 6.1 Garbage Stream Composition, 7.1 Recycling Stream Composition and 8.1 Garden Waste Composition. This results section details analysis of the results in aggregate, Appendix One details the composition by day for each stream.

A summary of the key results can be found in Tables Three and Four on the following pages. Table Three highlights the composition of the three waste streams by material type, by percentage mass. Table Four summarises the key results with respect to estimated Generation Rates, Contamination Rates and Resource Loss Rates.

Table Three. Waste Stream composition by material type (by % mass)

Code	Material Type	Material Detail	Garbage	Recycling	Garden
A01	Paper	Newspaper	0.84%	2.58%	0.00%
A02		Magazine	0.10%	1.58%	
A03		Misc. packaging	0.63%	0.15%	0.00%
A04		Corrugated cardboard	0.23%	10.55%	0.02%
A05		Package board	1.42%	7.82%	0.02%
A06		CDS liquid paper containers	0.12%	0.08%	0.00%
A06		Liquid paper containers	0.21%	0.92%	0.00%
		Disposable coffee cups	0.10%	0.27%	0.00%
A07		Disposable paper product	4.51%	0.21%	0.02%
A08		Printing & writing paper (incl. books)	0.81%	2.56%	
A09		Composite, mostly paper	0.32%	1.40%	
A10		Nappies - infant	10.12%	0.04%	
		Nappies - Adult	0.53%	0.00%	
		Nappies - Sanitary items	0.70%		
B01	Organic Compostable	Food / Kitchen - Avoidable	8.09%	0.18%	0.39%
		Food / Kitchen - Unavoidable	17.61%	0.07%	0.39%
		Food / Kitchen- containerised	13.21%	1.12%	0.34%
		Food / Kitchen - containerised Liquids	0.26%	0.85%	
		Garden Waste	1.18%	0.09%	94.58%
		Garden - Oversized			2.29%
		Other putrescible	9.52%	0.09%	0.02%
C011	Other Organic	Wood - furniture	0.15%	0.58%	0.18%
C012		Wood - packaging, off cuts	0.25%	0.08%	0.56%
		Clothing textiles	1.31%	0.45%	
		Non-clothing textiles	1.73%	0.41%	0.00%
		Footwear	0.54%	0.21%	
C03		Leather	0.01%		
C041		Rubber	0.25%	0.27%	
C042	Rubber - tyres, tubes		0.02%		
C051	Oils - engine lubricating				
C052	Oils - cooking oil				
D011	Glass	CDS packaging glass / containers	0.69%	11.75%	
D011		Packaging glass / containers	0.43%	17.85%	
D011 A		Glass fines	0.03%	4.36%	
D021		Misc / other glass - plate glass			
D022		Other glass	0.36%	0.62%	
E011	Plastic	CDS 1 PET - package	0.15%	1.85%	0.00%
E011		1 PET - package	0.76%	1.99%	0.00%
E021		CDS 2 HDPE - package	0.00%	0.09%	
E021		2 HDPE - package	0.22%	3.25%	
E031		3 PVC - package	0.01%	0.04%	
E041		4 LDPE - package	0.01%	0.08%	
E051		5 Polypropylene - package	0.90%	1.60%	0.01%
E061		6 Polystyrene - rigid	0.04%	0.07%	0.00%
E061A		6 Polystyrene - expanded	0.15%	0.02%	0.00%
E071		Other plastic - foam	0.08%	0.04%	
E073		Other plastic - film (carry bags, sacks & liners)	2.64%	0.24%	0.01%
		Other plastic - packaging film (food packaging, lolly wrappers)	3.49%	0.78%	0.02%

Code	Material Type	Material Detail	Garbage	Recycling	Garden
		Other plastic - non packaging film (e.g. dust sheet for painters)	0.13%	0.20%	
E074		Other plastic	1.13%	1.35%	0.02%
E08		Composite, mostly plastic	1.40%	0.97%	0.00%
F011	Ferrous	CDS steel packaging - cans		0.00%	
F011		Steel packaging - cans	0.38%	1.81%	
F012		Other - aerosols, paint cans	0.06%	0.23%	
		Pots and pans			
F022		Other appliances			
		E-waste	1.20%	0.26%	
F023		Other - ferrous	0.14%	1.18%	
F031		Composite, mostly ferrous	0.29%	0.93%	
F032		Other - specify			
G011	Non-Ferrous	CDS aluminium - cans	0.16%	1.95%	
G011		Aluminium - cans	0.05%	0.03%	
		Aluminium - aerosols	0.05%	0.10%	
G012		Other packaging - foil	0.33%	0.08%	0.00%
G013		Composite, mostly non-ferrous			
G021		Other - copper			
G022		Other - non ferrous		0.18%	
G03		Composite, non aluminium			
H01	Household Hazardous	Paint	0.03%		
H02		Fluorescent globes	0.04%	0.01%	
H03		Dry cell batteries	0.12%		
H04		Car batteries			
H051		H'hold chemicals - pharmaceuticals	0.59%	0.07%	
H052		H'hold chemicals - other	1.40%	0.06%	
I042		Other special pathogenic, infectious	0.04%		
I01	Others	Ceramics	1.78%	2.33%	
I02		Dust / dirt / rock / inert/ concrete inert	2.42%	0.05%	1.02%
I03		Ash			
I041		Special - other inert building materials		0.67%	
		Other fine material <25mm	3.55%	2.03%	
		Bagged recycling		2.64%	
		Bagged garbage		5.61%	0.08%
		Bagged garden			0.00%
		Total Sample	100.00%	100.00%	100.00%

* note that entries which read 0.00% indicate that material was observed, but the percentage was <0.01%, this applies to all tables and graphs in this report.

Table Four. Summary of Key Findings

	Garbage		Recycling		Garden	
	Mass	90% CI	Mass	90% CI	Mass	90% CI
Landfill Materials	90.82%	+/- 2.5%	26.68%	+/- 11.2%	3.06%	+/- 5.4%
Recyclable Materials	8.00%	+/- 0.8%	73.23%	+/- 11.3%	0.06%	+/- 0.1%
Garden Materials	1.18%	+/- 2.1%	0.09%	+/- 0.2%	96.88%	+/- 5.5%
Generation Rate	9.81 kg/bin/wk		5.40 kg/bin/wk		13.16 kg/bin/wk	
Resource loss/Contamination Rate	9.18%		26.77%		3.12%	

*Note that both the recycling and garden organics are collected on a fortnightly frequency and so the estimated weekly Generation Rates are calculated accordingly

In respect to weekly generation rates, the above calculations are an estimate only, as they are only representative of a single collection cycle. The quantity of material collected annually and sent to landfill, material recovery facilities and organics recovery

facilities and the number of annual collections, could be used to calculate a more accurate estimation of weekly household generation rates across the municipality.

6.0. Kerbside Domestic Garbage Stream

During the audit period five Garbage Stream samples were collected from 125 households and hand segregated by EnviroCom staff. The sample weighed 1,226.11kg, of which 8.00% by mass were recyclable materials and a further 1.18% by mass were garden waste materials. This amounted to an estimated Generation Rate of 9.81kg/bin/wk.

6.1. Composition of Garbage Stream

The composition of materials presented to the Garbage Stream during the audit period are provided in Table Six and Figure One below.

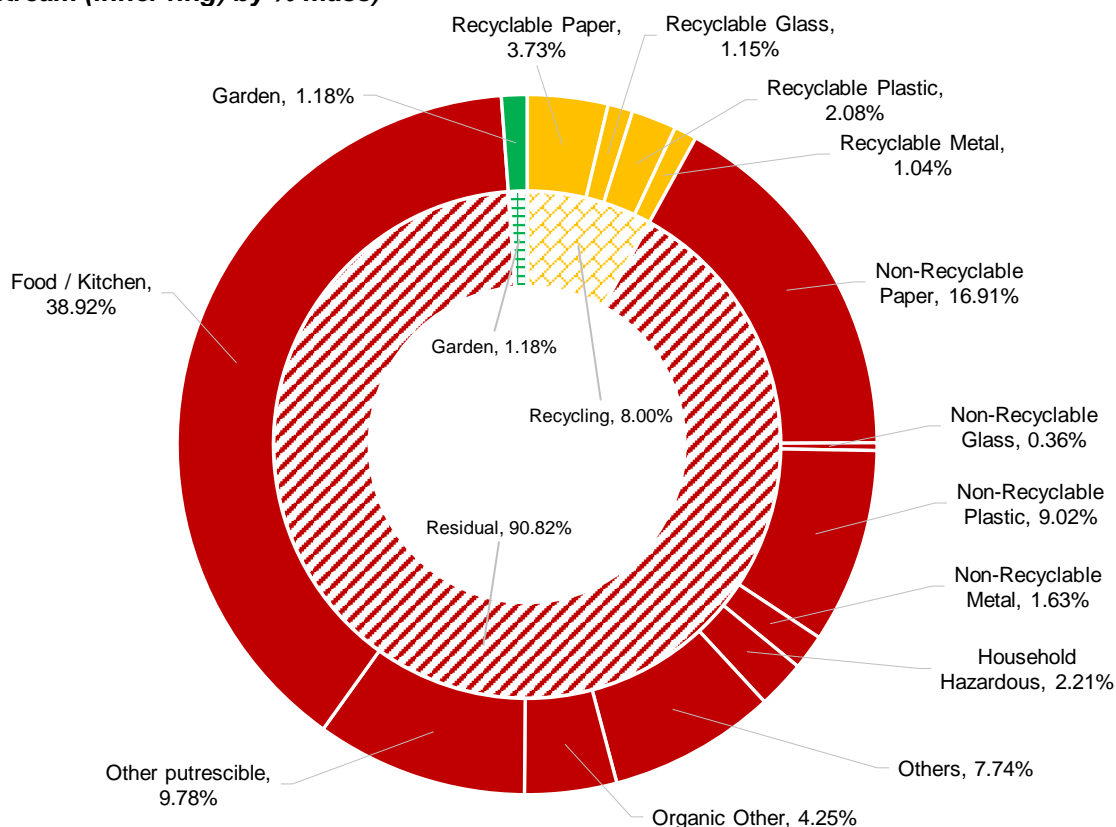
Table Six. Garbage Stream composition (by % mass)

Code	Material Type	Material Detail	Garbage
A01	Paper	Newspaper	0.84%
A02		Magazine	0.10%
A03		Misc. packaging	0.63%
A04		Corrugated cardboard	0.23%
A05		Package board	1.42%
A06		CDS liquid paper containers	0.12%
A06		Liquid paper containers	0.21%
		Disposable coffee cups	0.10%
A07		Disposable paper product	4.51%
A08		Printing & writing paper (incl. books)	0.81%
A09		Composite, mostly paper	0.32%
A10		Nappies - infant	10.12%
		Nappies - Adult	0.53%
		Nappies - Sanitary items	0.70%
B01	Organic Compostable	Food / Kitchen - Avoidable	8.09%
		Food / Kitchen - Unavoidable	17.61%
		Food / Kitchen - containerised	13.21%
		Food / Kitchen - containerised Liquids	0.26%
		Garden Waste	1.18%
		Garden - Oversized	
		Other putrescible	9.52%
C011	Other Organic	Wood - furniture	0.15%
C012		Wood - packaging, off cuts	0.25%
		Clothing textiles	1.31%
		Non-clothing textiles	1.73%
		Footwear	0.54%
C03		Leather	0.01%
C041		Rubber	0.25%
C042		Rubber - tyres, tubes	
C051		Oils - engine lubricating	
C052		Oils - cooking oil	
D011	Glass	CDS packaging glass / containers	0.69%
D011		Packaging glass / containers	0.43%
D011A		Glass fines	0.03%
D021		Misc / other glass - plate glass	
D022		Other glass	0.36%
E011	Plastic	CDS 1 PET - package	0.15%
E011		1 PET - package	0.76%
E021		CDS 2 HDPE - package	0.00%
E021		2 HDPE - package	0.22%
E031		3 PVC - package	0.01%
E041		4 LDPE - package	0.01%
E051		5 Polypropylene - package	0.90%
E061		6 Polystyrene - rigid	0.04%
E061A		6 Polystyrene - expanded	0.15%
E071		Other plastic - foam	0.08%
E073		Other plastic - film (carry bags, sacks & liners)	2.64%
		Other plastic - packaging film (food packaging, lolly wrappers)	3.49%
		Other plastic - non packaging film (e.g. dust sheet for painters)	0.13%
E074		Other plastic	1.13%
E08		Composite, mostly plastic	1.40%

Code	Material Type	Material Detail	Garbage
F011	Ferrous	CDS steel packaging - cans	
F011		Steel packaging - cans	0.38%
F012		Other - aerosols, paint cans	0.06%
		Pots and pans	
F022		Other appliances	
		E-waste	1.20%
F023		Other - ferrous	0.14%
F031		Composite, mostly ferrous	0.29%
F032		Other - specify	
G011	Non-Ferrous	CDS aluminium - cans	0.16%
G011		Aluminium - cans	0.05%
		Aluminium - aerosols	0.05%
G012		Other packaging - foil	0.33%
G013		Composite, mostly non-ferrous	
G021		Other - copper	
G022		Other - non ferrous	
G03		Composite, non aluminium	
H01	Household Hazardous	Paint	0.03%
H02		Fluorescent globes	0.04%
H03		Dry cell batteries	0.12%
H04		Car batteries	
H051		H'hold chemicals - pharmaceuticals	0.59%
H052		H'hold chemicals - other	1.40%
I042		Other special pathogenic, infectious	0.04%
I01	Others	Ceramics	1.78%
I02		Dust / dirt / rock / inert/ concrete inert	2.42%
I03		Ash	
I041		Special - other inert building materials	
		Other fine material <25mm	3.55%
		Bagged recycling	
		Bagged garbage	
		Bagged garden	
		Total Sample	100.00%

The figure below (Figure One) shows the composition of the Garbage Stream by material category.

Figure One. Garbage Stream composition by material category (outer ring) and waste stream (inner ring) by % mass



**note that some Figures will not calculate to 100% due to rounding errors caused by the chart formatting, if 3 or greater decimals are used, the Figure will calculate to 100%, this applies to the other Figures in this report.*

The predominant material category present in the Garbage Stream by mass was 'food/kitchen' (38.92% by mass), followed by 'non recyclable paper' (16.91% by mass).

Segments of the above chart denoted in yellow represent materials of a recoverable nature and are thus 'resource loss' when discarded in the Garbage Stream. Recyclable Paper was the largest portion of material (by category) considered Resource Loss at 3.73% of the sample (by mass). Of this, 'package board' was the most common form of paper-based material representing 1.42% of the sample (by mass).

6.2. Recycling Resource Loss in Garbage Stream

This section quantifies how much recyclable material was lost to the Garbage Stream. Table Six (section 6.1 above) detailed the materials considered to be Resource Loss when observed in the Garbage Stream. Resource Loss refers to the quantity of recyclable or recoverable material incorrectly placed into the garbage bin.

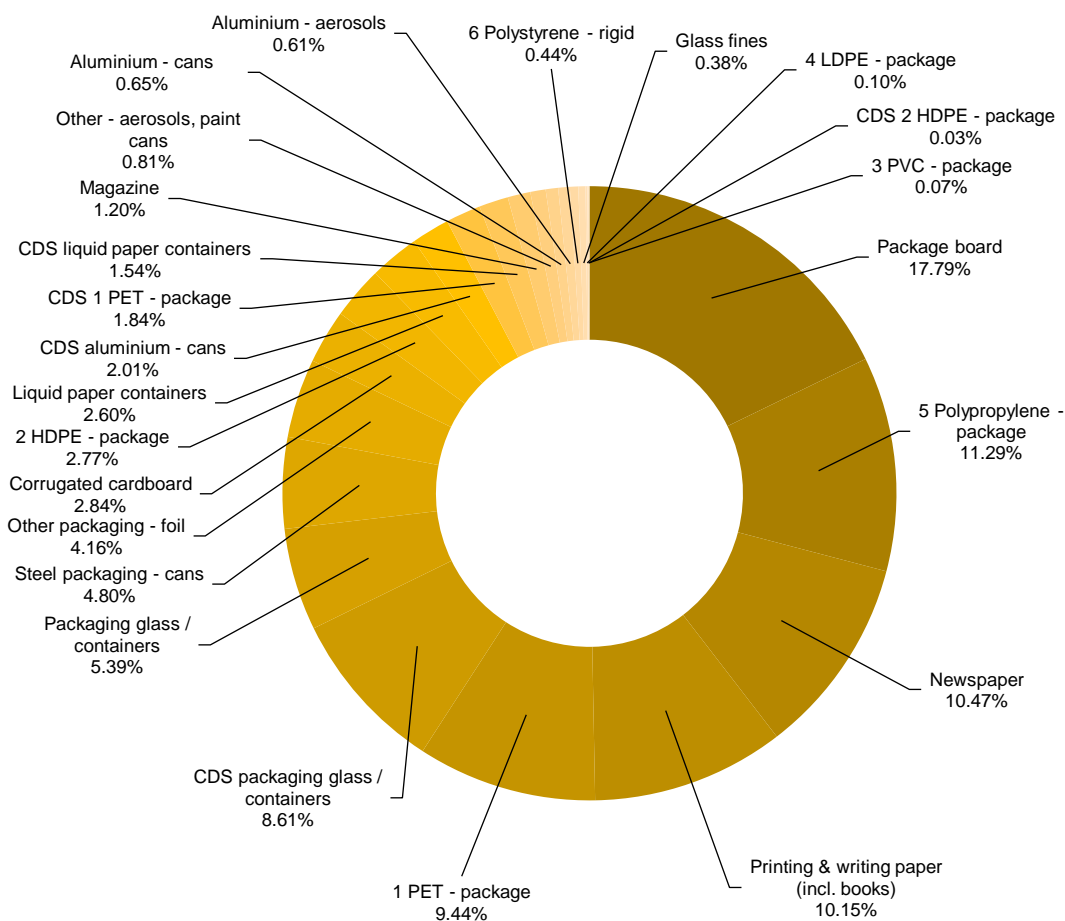
Overall, 8.00% of material in the Garbage Stream by mass, could have been recycled via the Recycling Stream. A further 1.18% (by mass) of the Garbage Stream could have been recovered through the Garden Waste Stream.

As a percentage of all resource losses, the top three material resource losses, by percentage mass, were:

- Package board (17.79%)
- #5 Polypropylene - packaging (11.29%)
- Newspaper (10.47%)

Figure Two on the following page shows the Resource Loss in more detail.

Figure Two. Resource Loss in the Garbage Stream composition by material detail by % mass of all Resource Loss



6.3. Food and Garden Resource Loss in Garbage Stream

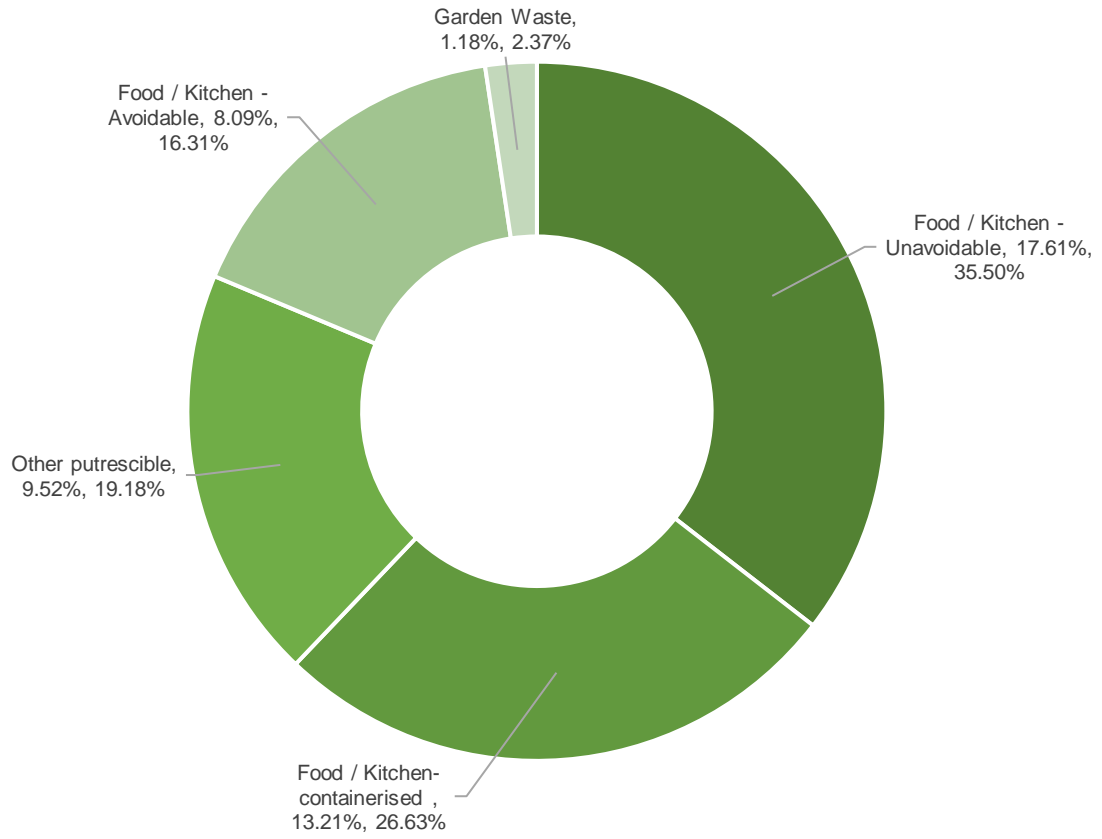
This section quantifies how much food and garden material was placed in the Garbage Stream.

It should be noted that it is not known whether the garbage bins included in the audit were selected from households with an optional Garden Waste bin; technically only where households have opted into the Garden Waste service can garden waste be considered to be a true Resource Loss.

Figure Three below also identifies the potentially recoverable materials when the food and garden waste service is introduced. Food/kitchen – Unavoidable is the largest proportion representing 17.61% of the stream and 35.50% of the potentially recoverable materials. Items in the unavoidable category include food items that are generally not consumed such as vegetable peels, bones, egg shells, etc.

Food/kitchen material category was the largest proportion of the Garbage Stream representing 38.92% of the stream. As shown below in Figure Three this also includes containerised food/kitchen items. This is when food is disposed of with the original packaging, the most common food type in this category is bread.

Figure Three. Food and Garden materials in Garbage Stream (% stream, % food and garden materials)



7.0. Kerbside Domestic Recycling Stream

During the audit period four Recycling Stream samples were collected from 100 households and hand segregated by EnviroCom staff. The sample weighed 1,080.47kg, of which 73.23% (by mass) was found to be recyclable materials. This amounted to an estimated Generation Rate of 5.40kg/bin/wk.

7.1. Composition of the Recycling Stream

The composition of materials presented to the Recycling Stream during the audit period are provided in Table Seven and Figure Four below.

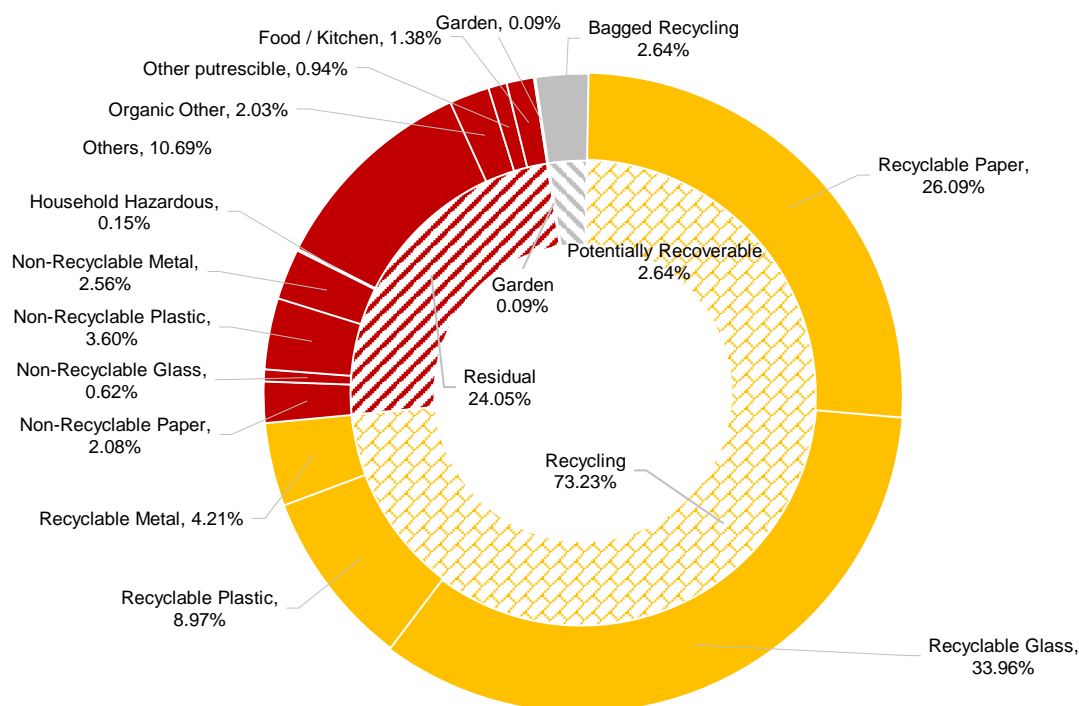
Table Seven. Recycling Stream Composition (by % mass)

Code	Material Type	Material Detail	Recycling
A01	Paper	Newspaper	2.58%
A02		Magazine	1.58%
A03		Misc. packaging	0.15%
A04		Corrugated cardboard	10.55%
A05		Package board	7.82%
A06		CDS liquid paper containers	0.08%
A06		Liquid paper containers	0.92%
		Disposable coffee cups	0.27%
A07		Disposable paper product	0.21%
A08		Printing & writing paper (incl. books)	2.56%
A09	Composite, mostly paper	1.40%	
A10	Nappies - infant	0.04%	
	Nappies - Adult	0.00%	
	Nappies - Sanitary items		
B01	Organic Compostable	Food / Kitchen - Avoidable	0.18%
		Food / Kitchen - Unavoidable	0.07%
		Food / Kitchen - containerised	1.12%
		Food / Kitchen - containerised Liquids	0.85%
		Garden Waste	0.09%
		Garden - Oversized	
	Other putrescible	0.09%	
C011	Other Organic	Wood - furniture	0.58%
C012		Wood - packaging, off cuts	0.08%
		Clothing textiles	0.45%
		Non-clothing textiles	0.41%
		Footwear	0.21%
C03		Leather	
C041		Rubber	0.27%
C042		Rubber - tyres, tubes	0.02%
C051		Oils - engine lubricating	
C052		Oils - cooking oil	
D011	Glass	CDS packaging glass / containers	11.75%
D011		Packaging glass / containers	17.85%
D011A		Glass fines	4.36%
D021		Misc / other glass - plate glass	
D022		Other glass	0.62%
E011	Plastic	CDS 1 PET - package	1.85%
E011		1 PET - package	1.99%
E021		CDS 2 HDPE - package	0.09%
E021		2 HDPE - package	3.25%
E031		3 PVC - package	0.04%
E041		4 LDPE - package	0.08%
E051		5 Polypropylene - package	1.60%
E061		6 Polystyrene - rigid	0.07%
E061A		6 Polystyrene - expanded	0.02%
E071		Other plastic - foam	0.04%
E073		Other plastic - film (carry bags, sacks & liners)	0.24%
		Other plastic - packaging film (food packaging, lolly wrappers)	0.78%
		Other plastic - non packaging film (e.g. dust sheet for painters)	0.20%
E074		Other plastic	1.35%
E08	Composite, mostly plastic	0.97%	
F011	Ferrous	CDS steel packaging - cans	0.00%
F011		Steel packaging - cans	1.81%
F012		Other - aerosols, paint cans	0.23%

Code	Material Type	Material Detail	Recycling
F022		Other appliances	
		E-waste	0.26%
F023		Other - ferrous	1.18%
F031		Composite, mostly ferrous	0.93%
F032		Other - specify	
G011	Non-Ferrous	CDS aluminium - cans	1.95%
G011		Aluminium - cans	0.03%
		Aluminium - aerosols	0.10%
G012		Other packaging - foil	0.08%
G013		Composite, mostly non-ferrous	
G021		Other - copper	
G022		Other - non ferrous	0.18%
G03		Composite, non aluminium	
H01	Household Hazardous	Paint	
H02		Fluorescent globes	0.01%
H03		Dry cell batteries	
H04		Car batteries	
H051		H'hold chemicals - pharmaceuticals	0.07%
H052		H'hold chemicals - other	0.06%
I042		Other special pathogenic, infectious	
I01	Others	Ceramics	2.33%
I02		Dust / dirt / rock / inert/ concrete inert	0.05%
I03		Ash	
I041		Special - other inert building materials	0.67%
		Other fine material <25mm	2.03%
		Bagged recycling	2.64%
		Bagged garbage	5.61%
		Bagged garden	
		Total Sample	100.00%

The figure below (Figure Three) shows the composition of the Recycling Stream by material category.

Figure Three. Recycling Stream composition by material category (outer ring) and waste stream (inner ring) by % mass



In total, 73.23% of materials presented were recyclable. Recyclable Glass represented the largest portion of materials (by material category), representing 33.96% of the entire sample by weight, followed by Recyclable Paper (26.09% by mass) and

Recyclable Plastic (8.97% by mass). Recyclable Metal represented the smallest proportion of recyclable materials at 4.21% by mass.

The predominant material by type present in the Recycling Stream was 'packaging glass/containers' (17.85% by mass), followed by 'CDS packaging glass/containers' (11.75% by mass) and 'corrugated cardboard' (10.55% by mass).

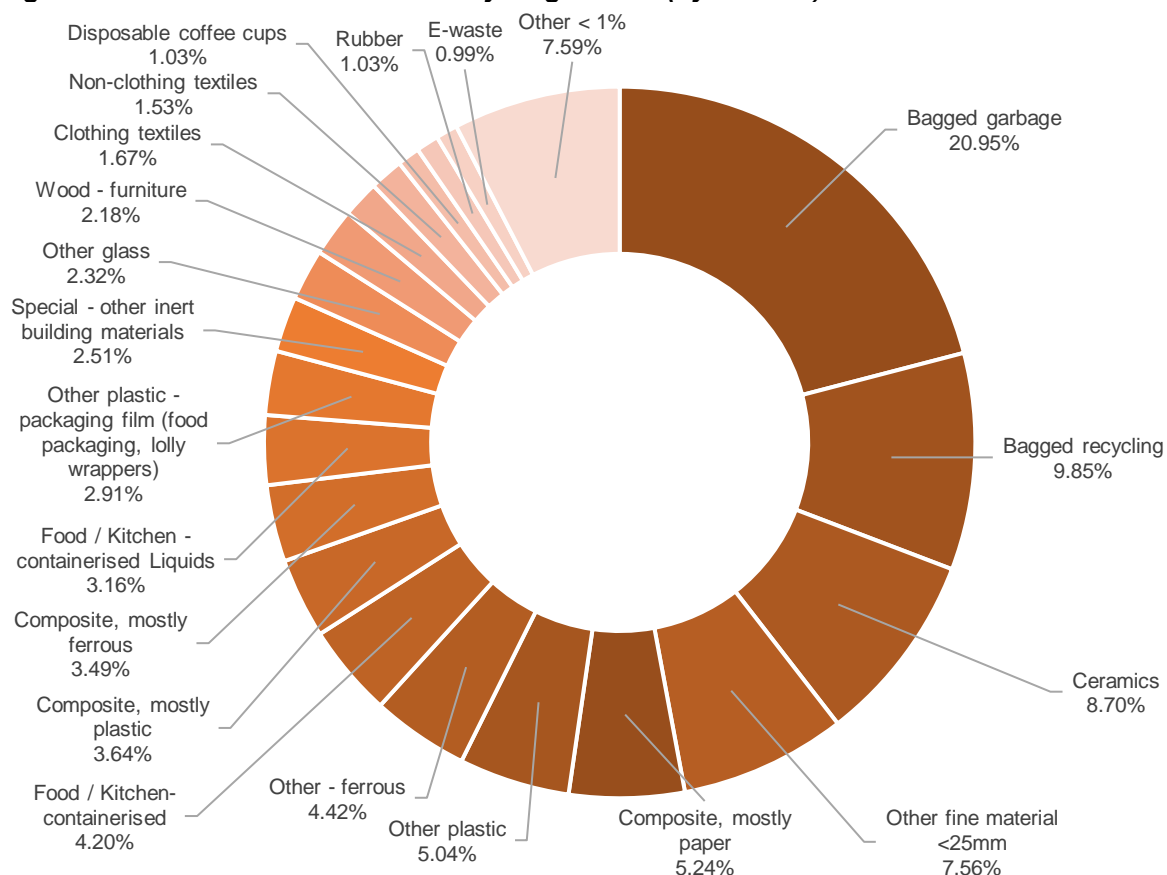
Segments of the above chart denoted in red represent materials of a non-recoverable nature and are thus 'contamination' when placed in the Recycling Stream. The grey segments represent 'presentation losses' – i.e. the material which was in all likelihood correctly presented to the Recycling Stream however, may present problems at the MRF with respect to the material being recovered (bagged or otherwise encased). In this respect it is appropriate to consider these materials as being in the 'correct bin'.

7.2. Contamination in Recycling Stream

This section details the proportion of the garbage and garden waste material observed in the Recycling Stream. The contamination rate for the Recycling Stream was observed as 26.77%, the materials making up the contamination can be seen in Figure Four.

'Bagged garbage' was the most common material type incorrectly disposed of in the Recycling Stream, contributing 5.61% of all the presented materials, by mass and 20.95% of all contamination, followed by 'Bagged recycling' (2.64% by mass and 9.85% of contamination – shown as potentially recoverable in Figure Three above).

Figure Four. Contamination in the Recycling Stream (by % mass)



8.0. Kerbside Domestic Garden Waste Stream

During the audit period, five Garden Waste Stream samples were collected from 54 households and hand segregated by EnviroCom staff. The sample weighed 1,421.47kg, of which 3.12% (by mass) was found to be contamination. This amounts to an estimated Generation Rate of 13.16/bin/wk.

8.1. Composition of the Garden Waste Stream

Table Eight below details the composition of materials presented to the Garden Waste Stream during the audit period.

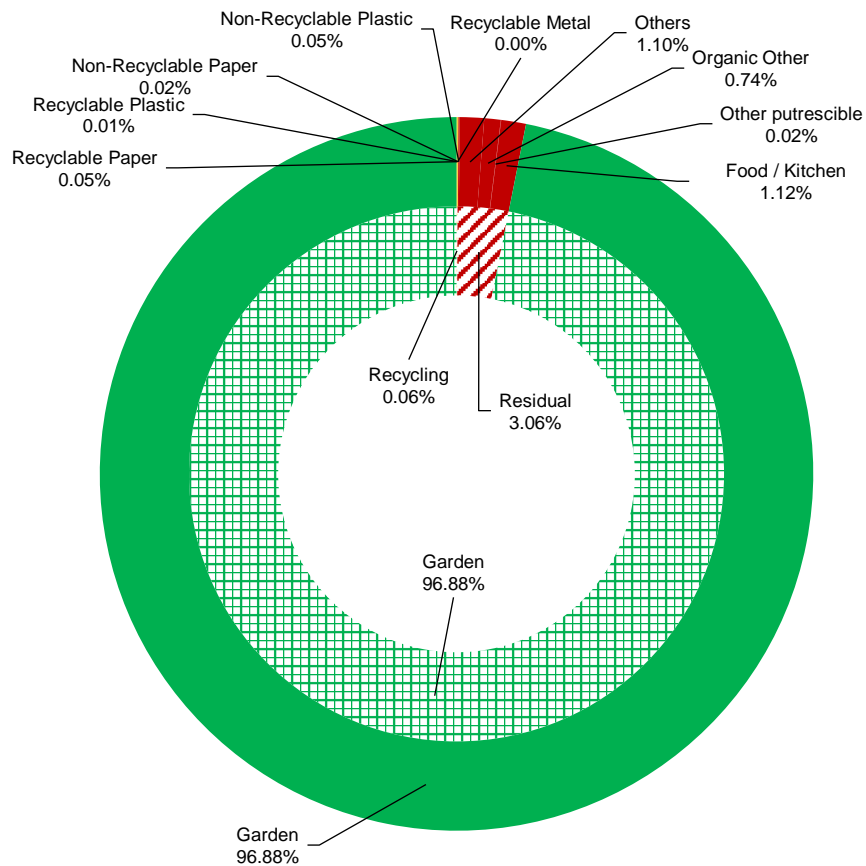
Table Eight. Garden Waste Stream composition (by %mass)

Code	Material Type	Material Detail	Garden
A01	Paper	Newspaper	0.00%
A02		Magazine	
A03		Misc. packaging	0.00%
A04		Corrugated cardboard	0.02%
A05		Package board	0.02%
A06		CDS liquid paper containers	0.00%
A06		Liquid paper containers	0.00%
		Disposable coffee cups	0.00%
A07		Disposable paper product	0.02%
A08		Printing & writing paper (incl. books)	
A09		Composite, mostly paper	
A10		Nappies - infant	
		Nappies - Adult	
		Nappies - Adult	
B01	Organic Compostable	Food / Kitchen - Avoidable	0.39%
		Food / Kitchen - Unavoidable	0.39%
		Food / Kitchen- containerised	0.34%
		Food / Kitchen - containerised Liquids	
		Garden Waste	94.58%
		Garden - Oversized	2.29%
		Other putrescible	0.02%
C011	Other Organic	Wood - furniture	0.18%
C012		Wood - packaging, off cuts	0.56%
		Clothing textiles	
		Non-clothing textiles	0.00%
		Footwear	
C03		Leather	
C041		Rubber	
C042		Rubber - tyres, tubes	
C051		Oils - engine lubricating	
C052		Oils - cooking oil	
D011	Glass	CDS packaging glass / containers	
D011		Packaging glass / containers	
D011A		Glass fines	
D021		Misc / other glass - plate glass	
D022		Other glass	
E011	Plastic	CDS 1 PET - package	0.00%
E011		1 PET - package	0.00%
E021		CDS 2 HDPE - package	
E021		2 HDPE - package	
E031		3 PVC - package	
E041		4 LDPE - package	
E051		5 Polypropylene - package	0.01%
E061		6 Polystyrene - rigid	0.00%
E061A		6 Polystyrene - expanded	0.00%
E071		Other plastic - foam	
E073		Other plastic - film (carry bags, sacks & liners)	0.01%
		Other plastic - packaging film (food packaging, lolly wrappers)	0.02%
		Other plastic - non packaging film (e.g. dust sheet for painters)	
E074		Other plastic	0.02%
E08		Composite, mostly plastic	0.00%
F011	Ferrous	CDS steel packaging - cans	
F011		Steel packaging - cans	
F012		Other - aerosols, paint cans	
F022		Other appliances	
		E-waste	
F023		Other - ferrous	

Code	Material Type	Material Detail	Garden
F031		Composite, mostly ferrous	
F032		Other - specify	
G011	Non-Ferrous	CDS aluminium - cans	
G011		Aluminium - cans	
G011		Aluminium - aerosols	
G012		Other packaging - foil	0.00%
G013		Composite, mostly non-ferrous	
G021		Other - copper	
G022		Other - non ferrous	
G03		Composite, non aluminium	
H01	Household Hazardous	Paint	
H02		Fluorescent globes	
H03		Dry cell batteries	
H04		Car batteries	
H051		H'hold chemicals - pharmaceuticals	
H052		H'hold chemicals - other	
I042		Other special pathogenic, infectious	
I01	Others	Ceramics	
I02		Dust / dirt / rock / inert/ concrete inert	1.02%
I03		Ash	
I041		Special - other inert building materials	
		Other fine material <25mm	
		Bagged recycling	
		Bagged garbage	0.08%
		Bagged garden	
		Total Sample	100.00%

The figure below (Figure Five) shows the composition of the Garden Waste Stream by material category.

Figure Five. Garden Stream composition by material category (outer ring) and waste stream (inner ring) by % mass



The predominant material type present in the Garden Waste Stream was found to be 'acceptable garden material', representing 96.88% of the entire Garden Waste sample by mass.

Segments of the above chart denoted in red and yellow represent materials of a non-recoverable nature and are thus 'contamination' when placed into the Garden Waste Stream.

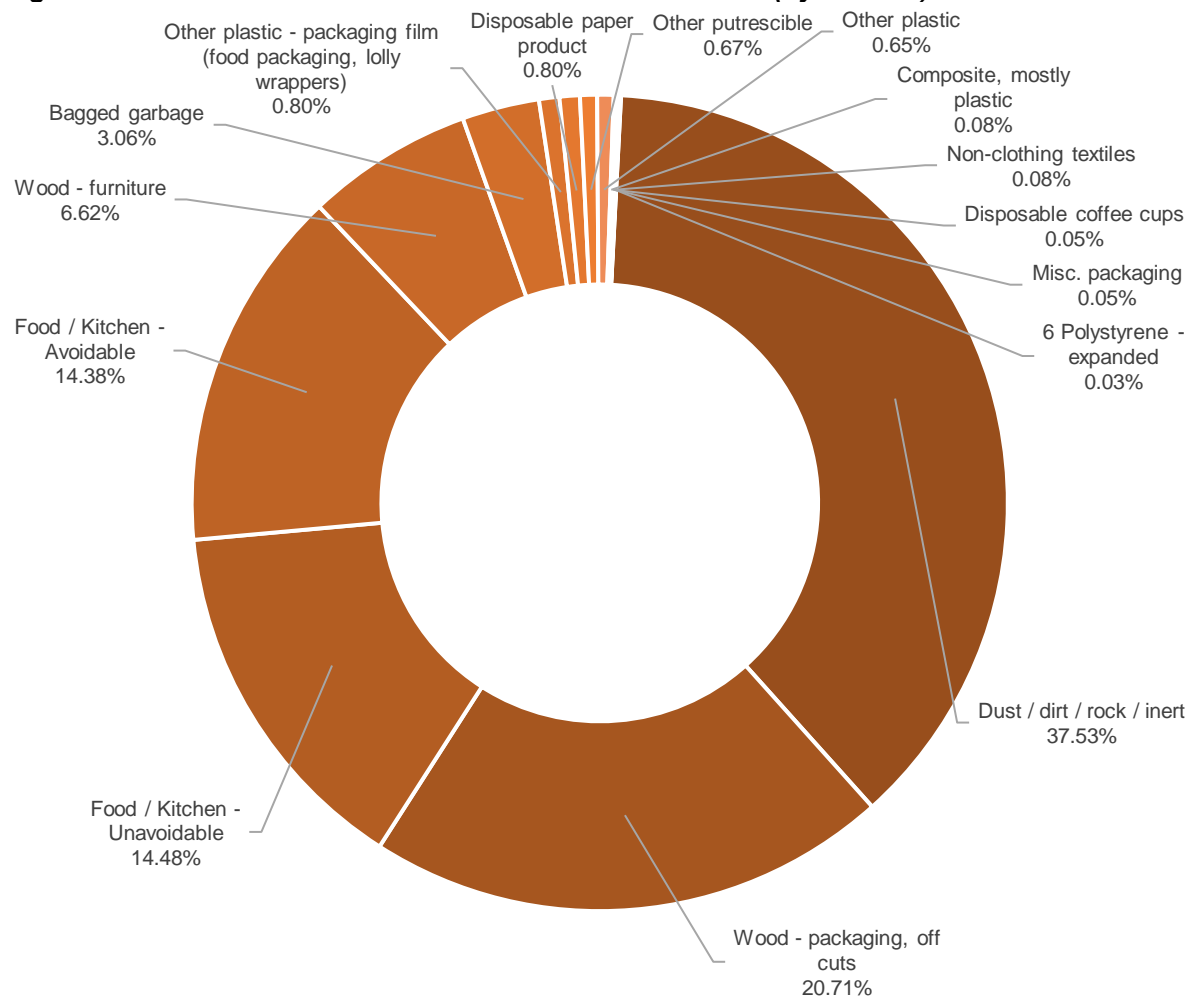
The 'Dust/dirt/rock/inert' material was the largest proportion of materials (by category) considered to be contamination, representing 1.02% of the entire sample, by mass. (although, note the anomaly discussed above in Section 4.4)

8.2. Contamination in Garden Waste Stream

This section details the proportion of the garbage and recycling waste material observed in the Garden Waste Stream. The contamination rate for the Garden Waste Stream was observed as 3.12%, the materials making up the contamination can be seen in Figure Six below.

'Dust/dirt/rock/inert' was the most common material type incorrectly disposed of in the Garden Waste Stream, contributing 1.02% of all the presented materials, by mass and 37.53% of all contamination, followed by 'Wood – packaging, off cuts' (0.56% by mass and 20.71% of contamination).

Figure Six. Contamination Rate of the Garden Waste Stream (by % mass)



9.0. Container Deposit Scheme Considerations

Container Deposit Scheme (CDS) eligible materials were also considered in this assessment. Containers anticipated as being eligible for inclusion in the proposed Victorian CDS were selected based on schemes currently operating in other States. In addition, EnviroCom has been conducting detailed CDS assessment, including 'count' audits in Queensland both prior to and since the introduction of the Queensland Container Refund Scheme (CRS). EnviroCom has applied data from these studies (Average Mass of Container) to calculate an estimated container 'count' for Council as depicted in Table Nine below.

CDS eligible materials represented 15.74% of the Recycling stream, which equates to approximately 157.36kg/tonne of the Domestic Kerbside Recycling Stream. It is estimated that there are approximately 2,643 CDS eligible containers present per tonne of the stream.

CDS eligible materials represented 1.12% of the Garbage stream, which equates to approximately 11.23kg/tonne of the Domestic Kerbside Garbage Stream. It is estimated that there are approximately 291 CDS eligible containers present per tonne of the stream.

No CDS steel packaging cans were observed in the garbage stream.

Table Nine. Container Deposit Scheme eligible materials in the recycling and garbage waste streams

Material Type	Proportion of Waste Stream	Mass – kg/tonne of waste	Ave Mass of Container (kg)	Estimated Containers/ tonne of waste
Recycling	Prop			
CDS liquid paper containers	0.08%	0.84kg	13 grams	65
CDS packaging glass / containers	11.75%	117.51kg	210 grams	560
CDS 1 PET - package	1.85%	18.49kg	31 grams	597
CDS 2 HDPE - package	0.09%	0.93kg	36 grams	26
CDS steel packaging - cans	0.00%	0.04kg	40 grams	1
CDS aluminium - cans	1.95%	19.54kg	14 grams	1396
All	15.74%	157.36		2,643
Garbage				
CDS liquid paper containers	0.12%	1.23kg	13 grams	95
CDS packaging glass / containers	0.69%	6.89kg	210 grams	33
CDS 1 PET - package	0.15%	1.48kg	31 grams	48
CDS 2 HDPE - package	0.00%	0.02kg	36 grams	1
CDS steel packaging - cans	0.00%	0.00kg	40 grams	0
CDS aluminium - cans	0.16%	1.61kg	14 grams	115
All	1.12%	11.23		291

10.0. Estimated Resource Recovery Rates

Examining the total kerbside waste stream provides an opportunity to calculate an estimate of the Resource Recovery Rates for the Total Waste Stream. The Resource Recovery Rate (RRR) is an estimate of the total amount of recyclable (or garden waste) materials presented for diversion, as compared to the total amount presented across all waste streams. Table Ten and Figure Seven provides the observed RRR in the snapshot assessment for both Recyclables and Garden Waste.

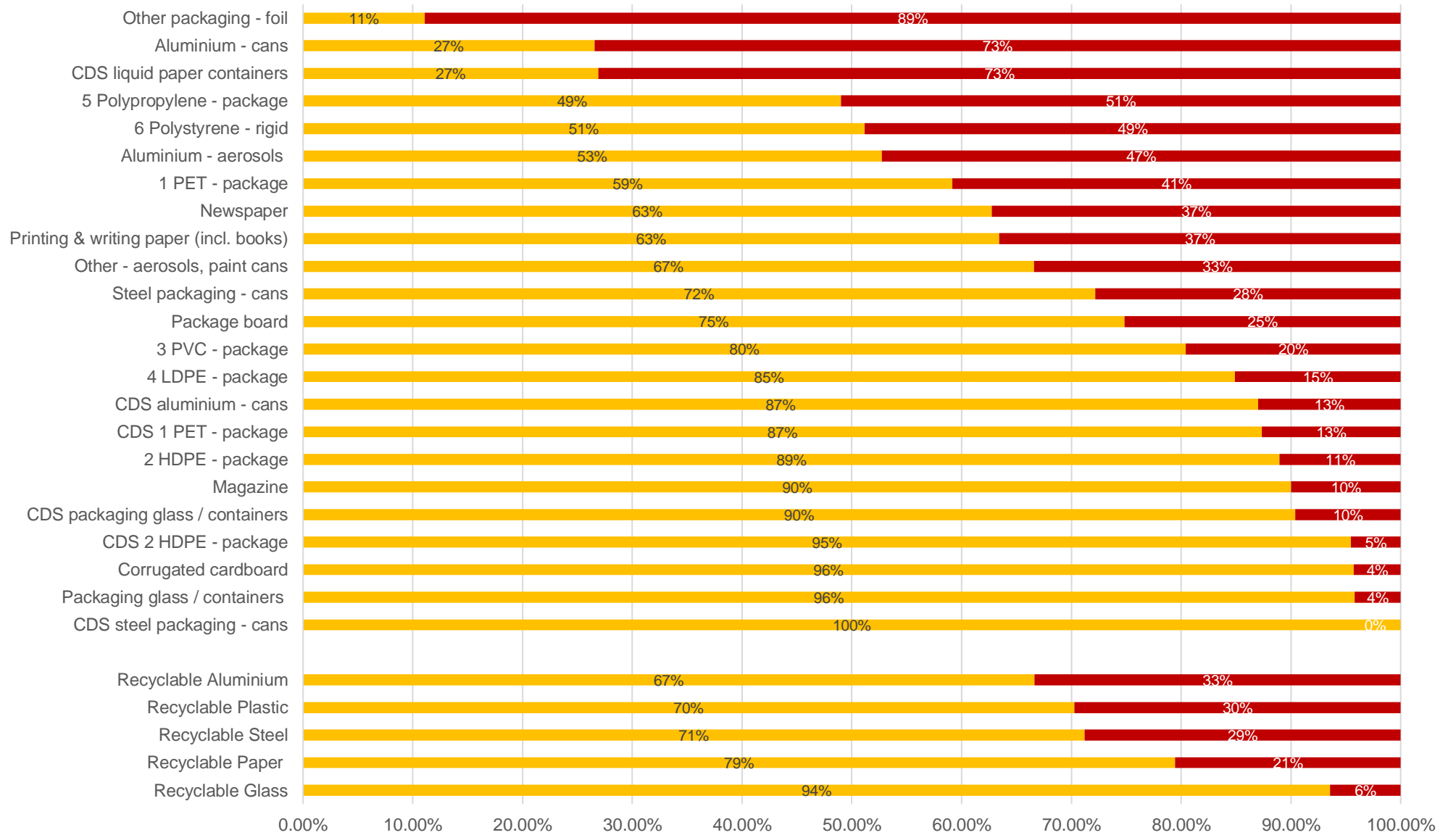
Table Ten. Estimated Resource Recovery Rate of Recyclables and Garden Waste

Resource Recovery Rates		
Overall Resource Recovery Rate (Estimated) - Recycling		83%
Broad Recycling Categories	Recyclable Paper / Cardboard	79%
	Recyclable Glass	94%
	Recyclable Plastic	70%
	Recyclable Steel	71%
	Recyclable Aluminium	67%
Detailed Recyclable Materials	Newspaper	63%
	Magazine	90%
	Corrugated cardboard	96%
	Package board	75%
	CDS liquid paper containers	27%
	Printing & writing paper (incl. books)	63%
	CDS packaging glass / containers	90%
	Packaging glass / containers	96%
	CDS 1 PET - package	87%
	1 PET - package	59%
	CDS 2 HDPE - package	95%
	2 HDPE - package	89%
	3 PVC - package	80%
	4 LDPE - package	85%
	5 Polypropylene - package	49%
	6 Polystyrene - rigid	51%
	CDS steel packaging - cans	100%
	Steel packaging - cans	72%
	Other - aerosols, paint cans	67%
	CDS aluminium - cans	87%
Aluminium - cans	27%	
Aluminium - aerosols	53%	
Other packaging - foil	11%	
Overall Resource Recovery Rate (Estimated) - Garden Waste		99%

Recovery of recyclables in the Total Waste Stream via the Recycling Stream was estimated at 83%. Recyclable Glass was the most successfully recovered category (94%), followed by Recyclable Paper / Cardboard (79%). Of the glass-based materials, 'packaging glass/containers' was the most successfully recycled material at 96% by mass. By category, Recyclable Aluminium had the lowest RRR, estimated at 67%.

An estimated 99% of garden waste materials in the Total Waste Stream were recovered via the Garden Waste Stream.

Figure Seven. Estimated Resource Recovery Rate of Recyclables and the Resource Loss



11.0. Observations and Recommendations

The following observations and recommendations could be used to inform waste education initiatives to provide improved outcomes in future years:

- 'Food / kitchen waste' (combining both 'loose and containerised') was the largest of all sample material types observed in the in the Garbage Stream, at 38.92% (by mass). EnviroCom understands that Council are introducing FOGO (Food Organics Garden Organics) in October 2023 This material represents an excellent opportunity for Council to improve diversion outcomes. The prevalence of food in its original packaging (containerised food – 13.21%), indicates that education around FOGO should include the importance of emptying food containers prior to food disposal, so as to minimise contamination in the FOGO stream and reduce the Resource Loss of recyclable packaging.
- The Contamination Rate of the Recycling Stream was 26.77%. The most common contamination items observed in the Recycling Stream were 'Bagged garbage' and 'Bagged recycling' (5.61% and 2.64%by mass). An educational focus on not utilising the recycling bin as an overflow garbage bin may decrease this behaviour and represents an opportunity for improvement. A focus on not bagging recycling may also assist here, as it is possible that some of the 'Bagged garbage' bags also contained recyclables.
- Recyclable Aluminium had the lowest estimated Resource Recovery Rate (by material category) at 67%. This represents an opportunity to continue to educate residents around the recyclability of aluminium. Aluminium foil was particularly low with a Resource Recovery Rate of only 11%

12.0. Appendices

12.1. Appendix One. Per day Results for each Waste Stream

12.1.1. Garbage Stream

Code	Material Type	Material Detail	Monday	Tuesday	Wednesday	Thursday	Friday
A01	Paper	Newspaper	0.61%	0.56%	0.78%	1.42%	0.51%
A02		Magazine		0.38%	0.11%	0.03%	0.04%
A03		Misc. packaging	0.62%	1.46%	0.42%	0.27%	0.76%
A04		Corrugated cardboard		0.02%	0.13%	0.25%	0.67%
A05		Package board	1.45%	1.91%	1.16%	1.45%	1.28%
A06		CDS liquid paper containers	0.12%	0.03%	0.10%	0.04%	0.33%
A06		Liquid paper containers	0.22%	0.12%	0.39%	0.17%	0.11%
		Disposable coffee cups	0.10%	0.15%	0.02%	0.09%	0.16%
A07		Disposable paper product	4.09%	4.15%	5.63%	3.26%	5.62%
A08		Printing & writing paper (incl. books)	0.27%	0.82%	0.85%	1.29%	0.61%
A09		Composite, mostly paper	0.13%	0.59%	0.28%	0.18%	0.54%
A10		Nappies - infant	5.33%	8.22%	11.56%	13.56%	9.56%
		Nappies - Adult		2.02%	1.05%		
		Nappies - Sanitary items	0.32%	1.56%	0.24%	0.59%	1.05%
B01	Organic Compostable	Food / Kitchen - Avoidable	9.44%	9.07%	10.78%	4.74%	7.69%
		Food / Kitchen - Unavoidable	17.10%	16.24%	19.25%	15.00%	20.86%
		Food / Kitchen- containerised	18.67%	13.65%	8.06%	14.09%	12.56%
		Food / Kitchen - containerised Liquids	0.03%	0.44%	0.29%	0.37%	0.16%
B02		Garden Waste	0.80%	0.10%	0.06%	0.00%	5.21%
		Garden - Oversized					
B03		Other putrescible	16.87%	0.78%	14.17%	9.22%	4.65%
C011	Other Organic	Wood - furniture	0.05%	0.07%	0.12%	0.16%	0.34%
C012		Wood - packaging, off cuts		0.18%	0.94%	0.07%	
		Clothing textiles	0.53%	1.82%	0.50%	1.16%	2.77%
		Non-clothing textiles	1.38%	4.93%	1.10%	0.73%	1.68%
		Footwear	0.13%	0.11%	0.35%	0.98%	0.85%
C03		Leather	0.07%			0.01%	
C041		Rubber	0.55%	0.04%	0.39%	0.13%	0.12%
C042		Rubber - tyres, tubes					
C051		Oils - engine lubricating					
C052		Oils - cooking oil					
D011	Glass	CDS packaging glass / containers	1.31%	0.79%	0.42%	0.26%	0.94%
D011		Packaging glass / containers/ broken	0.78%	0.85%	0.19%	0.31%	0.23%
D011A		Glass fines					0.16%
D021		Misc / other glass - plate glass					
D022		Other glass	0.98%	0.39%	0.27%	0.24%	0.03%
E011	Plastic	CDS 1 PET - package	0.07%	0.10%	0.15%	0.15%	0.24%
E011		1 PET - package	0.89%	0.67%	0.53%	0.80%	0.90%
E021		CDS 2 HDPE - package			0.00%	0.01%	
E021		2 HDPE - package	0.42%	0.44%	0.12%	0.12%	0.14%
E031		3 PVC - package					0.03%
E041		4 LDPE - package		0.06%			
E051		5 Polypropylene - package	1.34%	0.68%	0.80%	0.79%	0.95%
E061		6 Polystyrene - rigid	0.05%	0.03%	0.06%	0.02%	0.02%
E061A		6 Polystyrene - expanded	0.03%	0.04%	0.13%	0.34%	0.08%
E071		Other plastic - foam	0.07%	0.07%		0.20%	0.00%
E073		Other plastic - film (carry bags, sacks & liners)	2.94%	2.47%	2.93%	2.52%	2.33%
		Other plastic - packaging film (food packaging, lolly wrappers)	4.30%	2.96%	3.38%	2.90%	4.10%
		Other plastic - non packaging film (e.g. dust sheet for painters)	0.40%	0.41%			

Code	Material Type	Material Detail	Monday	Tuesday	Wednesday	Thursday	Friday
E074		Other plastic	0.37%	1.38%	1.84%	0.90%	1.14%
E08		Composite, mostly plastic	0.79%	1.66%	1.19%	1.95%	1.26%
F011	Ferrous	CDS steel packaging - cans					
F011		Steel packaging - cans	0.37%	0.12%	0.47%	0.65%	0.15%
F012		Other - aerosols, paint cans	0.06%	0.04%		0.03%	0.21%
		Pots and pans					
F022		Other appliances					
		E-waste	0.07%	0.48%	4.41%	0.40%	0.27%
F023		Other - ferrous	0.06%	0.31%	0.03%	0.27%	0.00%
F031		Composite, mostly ferrous	0.36%	0.08%	0.28%	0.28%	0.43%
F032		Other - specify					
G011	Non-Ferrous	CDS aluminium - cans	0.29%	0.22%	0.05%		0.34%
G011		Aluminium - cans				0.20%	
G011		Aluminium - aerosols	0.04%	0.10%		0.08%	0.02%
G012		Other packaging - foil	0.60%	0.25%	0.30%	0.17%	0.41%
G013		Composites					
G021		Other - copper					
G022		Other - non ferrous					
G03		Composite, non aluminium					
H01	Household Hazardous	Paint				0.05%	0.06%
H02		Fluorescent globes	0.09%		0.12%		
H03		Dry cell batteries	0.09%	0.06%	0.12%	0.22%	0.06%
H04		Car batteries					
H051		H'hold chemicals - pharmaceuticals	1.11%	0.13%	0.00%	0.74%	0.91%
H052		H'hold chemicals - other	0.58%	1.29%	0.32%	3.35%	0.78%
I042		Other special pathogenic, infectious	0.03%		0.14%	0.00%	
I01	Others	Ceramics		0.55%	0.16%	5.51%	1.03%
I02		Dust / dirt / rock / inert/ concrete inert	0.27%	12.52%	0.38%	0.09%	2.13%
I03		Ash					
I041		Special - other inert building materials					
		Other fine material <25mm	2.38%	1.43%	2.46%	7.17%	2.49%
		Total	100.00%	100.00%	100.00%	100.00%	100.00%

12.1.2. Recycling Stream

Code	Material Type	Material Detail	Monday	Tuesday	Wednesday	Thursday	Friday
A01	Paper	Newspaper	0.89%	2.04%	4.15%		4.42%
A02		Magazine	1.15%	1.80%	2.28%		1.50%
A03		Misc. packaging	0.22%	0.14%	0.12%		0.07%
A04		Corrugated cardboard	8.17%	10.73%	16.51%		9.65%
A05		Package board	7.31%	8.26%	8.78%		7.49%
A06		CDS liquid paper containers	0.04%	0.09%	0.09%		0.14%
A06		Liquid paper containers	0.70%	1.22%	1.20%		0.76%
		Disposable coffee cups	0.18%	0.56%	0.28%		0.15%
A07		Disposable paper product	0.15%	0.22%	0.37%		0.18%
A08		Printing & writing paper (incl. books)	2.34%	0.79%	7.81%		0.80%
A09		Composite, mostly paper	2.07%	1.37%	0.66%		0.98%
A10		Nappies - infant		0.16%			
		Nappies - Adult					0.01%
		Nappies - Sanitary items					
B01	Organic Compostable	Food / Kitchen - Avoidable	0.03%	0.63%	0.17%		0.00%
		Food / Kitchen - Unavoidable	0.09%	0.07%	0.09%		0.05%
		Food / Kitchen- containerised	0.81%	1.67%	1.62%		0.73%
		Food / Kitchen - containerised Liquids	0.28%	1.39%	1.08%		1.00%
B02		Garden Waste	0.02%	0.35%			0.03%
		Garden - Oversized					
B03		Other putrescible	0.03%	0.28%	0.04%		0.05%
C011	Other Organic	Wood - furniture	0.07%	1.70%	0.47%		0.39%
C012		Wood - packaging, off cuts			0.39%		0.06%
		Clothing textiles	0.05%	1.36%	0.32%		0.29%
		Non-clothing textiles	0.39%	0.30%	0.14%		0.72%
		Footwear	0.10%		0.48%		0.39%
C03		Leather					
C041		Rubber	0.50%	0.15%	0.04%		0.23%
C042		Rubber - tyres, tubes			0.10%		
C051		Oils - engine lubricating					
C052		Oils - cooking oil					
D011	Glass	CDS packaging glass / containers	12.54%	15.25%	16.43%		4.07%
D011		Packaging glass / containers/ broken	25.32%	8.16%	9.94%		21.45%
D011A		Glass fines	8.83%		5.24%		1.20%
D021		Misc / other glass - plate glass					
D022		Other glass	0.48%	0.61%	0.27%		1.09%
E011	Plastic	CDS 1 PET - package	1.47%	3.03%	1.33%		1.69%
E011		1 PET - package	1.70%	2.31%	2.35%		1.85%
E021		CDS 2 HDPE - package	0.05%	0.24%	0.02%		0.08%
E021		2 HDPE - package	2.89%	5.64%	2.31%		2.24%
E031		3 PVC - package	0.02%	0.05%	0.10%		0.03%
E041		4 LDPE - package	0.10%	0.12%	0.12%		
E051		5 Polypropylene - package	1.75%	1.73%	1.49%		1.33%
E061		6 Polystyrene - rigid	0.07%	0.11%	0.07%		0.03%
E061A		6 Polystyrene - expanded	0.00%	0.02%	0.05%		0.03%
E071		Other plastic - foam			0.01%		0.16%
E073		Other plastic - film (carry bags, sacks & liners)	0.06%	0.48%	0.17%		0.34%
		Other plastic - packaging film (food packaging, lolly wrappers)	0.29%	1.56%	0.84%		0.73%
		Other plastic - non packaging film (e.g. dust sheet for painters)					0.81%
E074		Other plastic	1.22%	1.82%	0.37%		1.79%
E08		Composite, mostly plastic	0.91%	2.06%	0.44%		0.44%
F011	Ferrous	CDS steel packaging - cans		0.02%			
F011		Steel packaging - cans	1.56%	2.15%	1.48%		2.09%
F012		Other - aerosols, paint cans	0.10%	0.45%	0.20%		0.25%
		Pots and pans					
F022		Other appliances					

Code	Material Type	Material Detail	Monday	Tuesday	Wednesday	Thursday	Friday
		E-waste	0.01%	0.20%	0.14%		0.79%
F023		Other - ferrous	0.13%	2.33%	0.78%		1.95%
F031		Composite, mostly ferrous	0.01%	2.22%	2.10%		0.28%
F032		Other - specify					
G011	Non-Ferrous	CDS aluminium - cans	1.55%	3.06%	1.57%		1.80%
G011		Aluminium - cans	0.08%	0.01%	0.01%		
G011		Aluminium - aerosols	0.12%	0.14%	0.04%		0.08%
G012		Other packaging - foil	0.04%	0.12%	0.07%		0.08%
G013		Composites					
G021		Other - copper					
G022		Other - non ferrous					0.75%
G03		Composite, non aluminium					
H01	Household Hazardous	Paint					
H02		Fluorescent globes			0.07%		
H03		Dry cell batteries					
H04		Car batteries					
H051		H'hold chemicals - pharmaceuticals		0.23%	0.10%		
H052		H'hold chemicals - other	0.04%		0.20%		0.06%
I042		Other special pathogenic, infectious					
I01	Others	Ceramics	6.26%		0.43%		0.07%
I02		Dust / dirt / rock / inert/ concrete inert	0.11%		0.06%		
I03		Ash					
I041		Special - other inert building materials		1.21%			1.64%
		Other fine material <25mm	0.50%	4.74%	0.93%		2.54%
		Bagged recycling	4.65%	1.16%	1.12%		2.13%
		Bagged garbage	1.56%	3.48%	1.98%		16.04%
		Total	100.00%	100.00%	100.00%	0.00%	100.00%

12.1.3. Garden Waste Stream

Code	Material Type	Material Detail	Monday	Tuesday	Wednesday	Thursday	Friday
A01	Paper	Newspaper			0.02%		
A02		Magazine					
A03		Misc. packaging	0.00%	0.00%			
A04		Corrugated cardboard				0.10%	
A05		Package board					0.10%
A06		CDS liquid paper containers			0.01%	0.00%	
A06		Liquid paper containers			0.01%		
		Disposable coffee cups				0.01%	
A07		Disposable paper product				0.01%	0.11%
A08		Printing & writing paper (incl. books)					
A09		Composite, mostly paper					
A10		Nappies - infant					
		Nappies - Adult					
		Nappies - Sanitary items					
B01	Organic Compostable	Food / Kitchen - Avoidable		0.10%			1.95%
		Food / Kitchen - Unavoidable	0.06%	0.06%		0.03%	1.89%
		Food / Kitchen- containerised				0.24%	1.47%
		Food / Kitchen - containerised Liquids					
B02		Garden Waste	97.72%	99.24%	95.10%	98.36%	82.03%
		Garden - oversized	1.45%		4.80%	0.76%	4.50%
B03		Other putrescible		0.06%		0.01%	0.03%
C011	Other Organic	Wood - furniture	0.76%				
C012		Wood - packaging, off cuts		0.52%			2.54%
		Clothing textiles					
		Non-clothing textiles	0.00%				0.01%
		Footwear					
C03		Leather					
C041		Rubber					
C042		Rubber - tyres, tubes					
C051		Oils - engine lubricating					
C052		Oils - cooking oil					
D011	Glass	CDS packaging glass / containers					
D011		Packaging glass / containers/ broken					
D011A		Glass fines					
D021		Misc / other glass - plate glass					
D022		Other glass					
E011	Plastic	CDS 1 PET - package				0.01%	
E011		1 PET - package			0.00%		
E021		CDS 2 HDPE - package					
E021		2 HDPE - package					
E031		3 PVC - package					
E041		4 LDPE - package					
E051		5 Polypropylene - package	0.00%		0.02%		0.02%
E061		6 Polystyrene - rigid			0.00%		
E061A		6 Polystyrene - expanded				0.00%	
E071		Other plastic - foam					
E073		Other plastic - film (carry bags, sacks & liners)				0.05%	
		Other plastic - packaging film (food packaging, lolly wrappers)	0.00%		0.00%	0.06%	0.03%
		Other plastic - non packaging film (e.g. dust sheet for painters)					
E074		Other plastic	0.00%		0.03%	0.02%	0.03%
E08		Composite, mostly plastic		0.01%			
F011	Ferrous	CDS steel packaging - cans					
F011		Steel packaging - cans					
F012		Other - aerosols, paint cans					
		Pots and pans					
F022		Other appliances					

Code	Material Type	Material Detail	Monday	Tuesday	Wednesday	Thursday	Friday
		E-waste					
F023		Other - ferrous					
F031		Composite, mostly ferrous					
F032		Other - specify					
G011	Non-Ferrous	CDS aluminium - cans					
G011		Aluminium - cans					
G011		Aluminium - aerosols					
G012		Other packaging - foil					0.01%
G013		Composites					
G021		Other - copper					
G022		Other - non ferrous					
G03		Composite, non aluminium					
H01	Household Hazardous	Paint					
H02		Fluorescent globes					
H03		Dry cell batteries					
H04		Car batteries					
H051		H'hold chemicals - pharmaceuticals					
H052		H'hold chemicals - other					
I042		Other special pathogenic, infectious					
I01	Others	Ceramics					
I02		Dust / dirt / rock / inert/ concrete inert					5.29%
I03		Ash					
I041		Special - other inert building materials					
		Other fine material <25mm					
		Bagged recycling					
		Bagged garbage				0.34%	
		Bagged garden					
		Total	100.00%	100.00%	100.00%	100.00%	100.00%

- End of report -