



# ICBD Waste Audit Report

Prepared for Auckland Council

July 2023

## CONTENTS

<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. WASTE AUDIT METHODOLOGY .....</b>	<b>2</b>
2.1. COLLECTION .....	2
2.2. AUDITING.....	2
<b>3. AUDIT RESULTS.....</b>	<b>4</b>
3.1. COMPOSITION OF ICBD KERBSIDE RUBBISH BAGS .....	4
3.2. DIVERSION POTENTIAL OF ICBD KERBSIDE RUBBISH BAGS .....	7
<b>4. COMPARISON WITH PREVIOUS AUDIT .....</b>	<b>8</b>
<b>APPENDIX A – MAP OF ICBD COLLECTION AREA .....</b>	<b>9</b>
<b>APPENDIX B – AUDIT CLASSIFICATIONS .....</b>	<b>10</b>
<b>APPENDIX C – PHOTOS OF SORTED RUBBISH .....</b>	<b>12</b>

## DOCUMENT QUALITY CONTROL

Version	Date	Written by	Distributed to
Draft 0.1	17 July 2023	Sunshine Yates	Caroline Rose
Final 1.0	10 August 2023	Sunshine Yates	Caroline Rose

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## 1. INTRODUCTION

Auckland Council (Council) provides a separate kerbside collection service for waste and recycling generated in the Inner City Business District (ICBD) of Auckland. In the ICBD, every rateable property is supplied with 104 orange rubbish bags and 156 clear recycling bags annually. Additional bags can be purchased by ratepayers.

Council provides 13 kerbside collections of official council rubbish bags and recycling bags per week. Two collections occur daily, from 04:30-07:30 hrs and from 17:00-19:30 hrs, except on Sunday, when only the 04:30-07:30 hrs collection occurs.

In October 2022, Council commissioned Sunshine Yates Consulting Limited (SYCL) to undertake an audit of kerbside recycling and cardboard from the ICBD. The results of this audit were provided to Council in November 2022 in a report entitled *ICBD Recycling Audit Report*. In late 2022, Auckland Council requested a proposal to undertake a similar audit of the composition of bagged rubbish collected from the ICBD.

Previously, Waste Not Consulting undertook audits of ICBD rubbish, recycling bags and cardboard from the ICBD in December 2001, March 2002, August 2002, April 2004, July 2010 and March/April and May 2015. The current audits are based on a similar methodology as the previous audits undertaken by Waste Not Consulting, with some differences in the collection methodology, as outlined in the following sections.

This audit includes the kerbside rubbish collected from the ICBD during the morning and evening of the 13 June 2023.

## 2. WASTE AUDIT METHODOLOGY

### 2.1. Collection

In previous years the sample was collected by Waste Not Consulting from a pre-selected area of the ICBD, and this sample was sorted the next day. Collecting materials from the kerbside with a box truck during peak hour traffic is, however, considered to be a high-risk activity. Therefore, for this audit the kerbside rubbish was collected by the council collection contractor, Programmed, and delivered directly to the waste audit site. The bagged kerbside rubbish was collected from the ICBD area shown in the map in Appendix A.

On Tuesday 13 June, Programmed's collection compactor truck containing the bagged kerbside rubbish collected between 04:30 and 07:30 that morning, was met at 8:00 by SYCL at the Tāmaki Zero Waste Hub, 153 Pilkington Road, Glen Innes. The compactor emptied out approximately half of its load onto a tarpaulin on the ground adjacent to the audit area.

At 8:00, on Wednesday 14 June, Programmed's collection compactor truck delivered a second truck load of bagged kerbside rubbish. These bags were collected from the same area between 17:00-19:30 hrs on 13 June.



**Delivery of bagged rubbish from the morning collection**

### 2.2. Auditing

Auditing was undertaken at the Zero Waste Hub over two days (13 and 14 June 2023). The sorting was supervised by a SYCL staff member, and three casual staff were engaged to assist. Auditing took place for seven hours per day. A bin was set up alongside the audit area for the disposal of the rubbish after auditing.



**Audit set up**

The waste was audited in samples of ten bags. Each of the ten bags was weighed, opened, and the contents spread onto a table for sorting.

As the bagged rubbish was collected in a compactor truck, some of the material was no longer contained in a bag once it had been compacted, transported to the audit site and emptied onto the ground by the audit area. Therefore, loose materials were collected from the pile in quantities similar to an average bag weight and weighed in as bags of rubbish.



**Pile of rubbish bags**

When all ten bags had been weighed in and sorted into the categories outlined in Appendix B, the individual categories were weighed out, the data recorded, and the process repeated until all bags had been sorted.

## 3. AUDIT RESULTS

The following sections provide the results of the audit of rubbish collected by council’s contractor from the ICBD on Tuesday 13 June 2023. The composition of the materials collected in the morning and those collected in the evening are presented separately and combined.

### 3.1. Composition of ICBD kerbside rubbish bags

The audit of the morning collection of ICBD rubbish included 609 kg of material. The evening collection included 287 kg of material.

Unfortunately, the evening collection included a smaller sample than ideal. The evening collection was undertaken in a different rubbish truck and had undergone a lower level of compaction than the previous truck load. When the second load was emptied from the truck it was wrongly estimated to be of similar weight as the previous load.

While ICBD kerbside rubbish is to be set out in orange Council rubbish bags, some black bags are also set out. While these are not official rubbish bags, and could be left uncollected, Council had requested that their contractor collect these bags too, to avoid leaving them on the kerbside. Ten per cent of the bags in the audit were black bags.

The average weight of the orange bags in the morning collection was 4.14 kg and in the evening collection it was 4.25 kg.

Table 3.1 provides the primary composition of the kerbside rubbish. The average bag weights from the morning collection and the evening collection are used as the mean weights per bag presented in the table. The average composition is the average of the morning and evening collections.

**Table 3.1 - Primary composition of ICBD rubbish bags, by weight, June 2023**

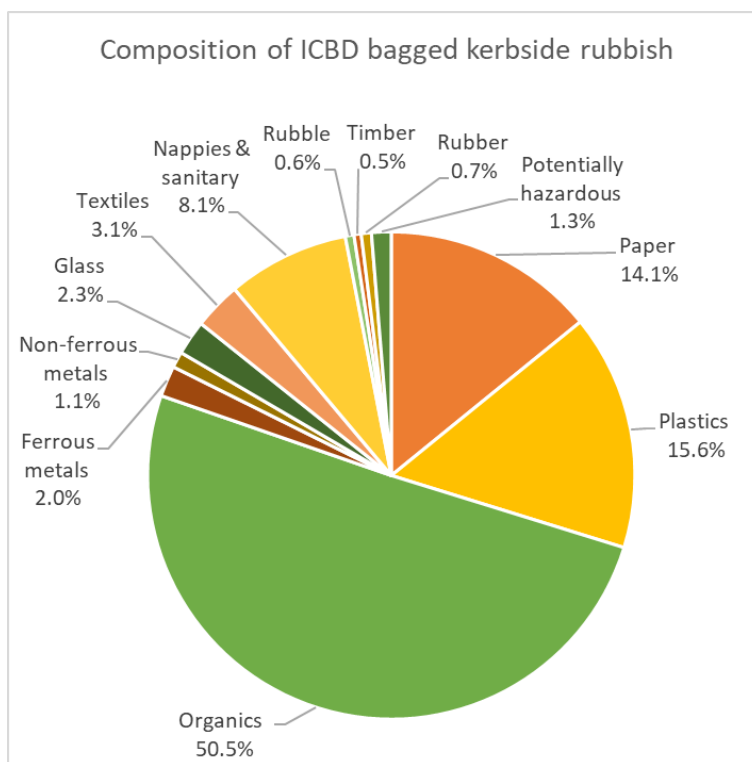
Primary categories	Morning collection		Evening collection		Average	
	% of total	Mean wt. per bag	% of total	Mean wt. per bag	% of total	Mean wt. per bag
<b>Paper</b>	16.7%	0.69 kg	11.7%	0.50 kg	14.1%	0.59 kg
<b>Plastics</b>	16.2%	0.67 kg	15.1%	0.64 kg	15.6%	0.66 kg
<b>Organics</b>	49.3%	2.04 kg	51.8%	2.20 kg	50.5%	2.12 kg
<b>Ferrous metals</b>	0.7%	0.03 kg	3.4%	0.14 kg	2.0%	0.09 kg
<b>Non-ferrous metals</b>	0.7%	0.03 kg	1.4%	0.06 kg	1.1%	0.04 kg
<b>Glass</b>	1.8%	0.07 kg	2.8%	0.12 kg	2.3%	0.10 kg
<b>Textiles</b>	1.5%	0.06 kg	4.8%	0.20 kg	3.1%	0.13 kg
<b>Nappies and sanitary</b>	10.6%	0.44 kg	5.7%	0.24 kg	8.1%	0.34 kg
<b>Rubble</b>	0.5%	0.02 kg	0.6%	0.03 kg	0.6%	0.02 kg
<b>Timber</b>	0.5%	0.02 kg	0.5%	0.02 kg	0.5%	0.02 kg
<b>Rubber</b>	0.4%	0.02 kg	0.9%	0.04 kg	0.7%	0.03 kg
<b>Pot. hazardous</b>	1.1%	0.05 kg	1.5%	0.06 kg	1.3%	0.05 kg
<b>Total</b>	<b>100.0%</b>	<b>4.14 kg</b>	<b>100.0%</b>	<b>4.25 kg</b>	<b>100.0%</b>	<b>4.19 kg</b>

The morning collection is collected between 04:30 and 07:30 and is likely to include materials generated during evening trade in the ICBD, while the evening collection is collected between 17:00-19:30 and is likely to include materials generated during day time ICBD trade.

The largest proportion of materials in both the morning and evening collections were Organic materials (49.3% in the morning and 51.8% in the evening). The second largest component, in both collections, was Plastics (16.2% in the morning and 15.1% in the evening).

While there are small differences between the composition of the morning and evening rubbish, it is not possible to say whether these differences reflect actual trends in daytime and evening waste generation in the ICBD.

Photos of rubbish sorted into the different audit categories are presented in Appendix C. The composition of the average bag of ICBD rubbish is presented in Figure 3.1, below.



**Figure 3.1 – Composition of average bag of ICBD kerbside rubbish**

The secondary composition of the bagged ICBD rubbish is presented in Table 3.2 on the following page.

**Table 3.2 – Secondary composition of ICBD rubbish bags, by weight, June 2023**

ICBD rubbish bags - June 2023		Morning collection		Evening collection		Average	
		% of total	Mean wt. per bag	% of total	Mean wt. per bag	% of total	Mean wt. per bag
Paper	Recyclable paper	11.9%	0.49 kg	7.4%	0.31 kg	9.6%	0.40 kg
	Non-recyclable paper	4.8%	0.20 kg	4.3%	0.18 kg	4.5%	0.19 kg
	<b>Subtotal</b>	<b>16.7%</b>	<b>0.69 kg</b>	<b>11.7%</b>	<b>0.50 kg</b>	<b>14.1%</b>	<b>0.59 kg</b>
Plastics	#1, 2 & 5 containers	3.5%	0.14 kg	3.3%	0.14 kg	3.4%	0.14 kg
	#3, 4, 6, 7 containers	0.3%	0.01 kg	0.2%	0.01 kg	0.2%	0.01 kg
	Plastic bags and film	10.7%	0.44 kg	8.7%	0.37 kg	9.7%	0.41 kg
	Non-recyclable plastic	1.7%	0.07 kg	3.0%	0.13 kg	2.4%	0.10 kg
	<b>Subtotal</b>	<b>16.2%</b>	<b>0.67 kg</b>	<b>15.1%</b>	<b>0.64 kg</b>	<b>15.6%</b>	<b>0.66 kg</b>
Organics	Kitchen waste	49.0%	2.03 kg	50.9%	2.16 kg	50.0%	2.09 kg
	Green waste	0.0%	0.00 kg	0.0%	0.00 kg	0.0%	0.00 kg
	Organic other	0.2%	0.01 kg	0.9%	0.04 kg	0.6%	0.02 kg
	<b>Subtotal</b>	<b>49.3%</b>	<b>2.04 kg</b>	<b>51.8%</b>	<b>2.20 kg</b>	<b>50.5%</b>	<b>2.12 kg</b>
Ferrous metals	Steel cans	0.6%	0.03 kg	1.1%	0.05 kg	0.9%	0.04 kg
	Multimaterial/other	0.1%	0.00 kg	2.2%	0.09 kg	1.2%	0.05 kg
	<b>Subtotal</b>	<b>0.7%</b>	<b>0.03 kg</b>	<b>3.4%</b>	<b>0.14 kg</b>	<b>2.0%</b>	<b>0.09 kg</b>
Non-ferrous metals	Aluminium cans	0.5%	0.02 kg	0.3%	0.01 kg	0.4%	0.02 kg
	Multimaterial/other	0.2%	0.01 kg	1.0%	0.04 kg	0.6%	0.03 kg
	<b>Subtotal</b>	<b>0.7%</b>	<b>0.03 kg</b>	<b>1.4%</b>	<b>0.06 kg</b>	<b>1.1%</b>	<b>0.04 kg</b>
Glass	Bottles/jars	1.7%	0.07 kg	2.6%	0.11 kg	2.1%	0.09 kg
	Multimaterial/other	0.1%	0.01 kg	0.2%	0.01 kg	0.2%	0.01 kg
	<b>Subtotal</b>	<b>1.8%</b>	<b>0.07 kg</b>	<b>2.8%</b>	<b>0.12 kg</b>	<b>2.3%</b>	<b>0.10 kg</b>
Textiles	Clothing/textiles	0.6%	0.03 kg	2.9%	0.12 kg	1.8%	0.07 kg
	Multimaterial/other	0.9%	0.04 kg	1.9%	0.08 kg	1.4%	0.06 kg
	<b>Subtotal</b>	<b>1.5%</b>	<b>0.06 kg</b>	<b>4.8%</b>	<b>0.20 kg</b>	<b>3.1%</b>	<b>0.13 kg</b>
<b>Nappies and sanitary</b>		<b>10.6%</b>	<b>0.44 kg</b>	<b>5.7%</b>	<b>0.24 kg</b>	<b>8.1%</b>	<b>0.34 kg</b>
<b>Rubble</b>		<b>0.5%</b>	<b>0.02 kg</b>	<b>0.6%</b>	<b>0.03 kg</b>	<b>0.6%</b>	<b>0.02 kg</b>
<b>Timber</b>		<b>0.5%</b>	<b>0.02 kg</b>	<b>0.5%</b>	<b>0.02 kg</b>	<b>0.5%</b>	<b>0.02 kg</b>
<b>Rubber</b>		<b>0.4%</b>	<b>0.02 kg</b>	<b>0.9%</b>	<b>0.04 kg</b>	<b>0.7%</b>	<b>0.03 kg</b>
Potentially hazardous	Household	1.0%	0.04 kg	1.5%	0.06 kg	1.2%	0.05 kg
	Other	0.1%	0.01 kg	0.0%	0.00 kg	0.1%	0.00 kg
	<b>Subtotal</b>	<b>1.1%</b>	<b>0.05 kg</b>	<b>1.5%</b>	<b>0.06 kg</b>	<b>1.3%</b>	<b>0.05 kg</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>4.14 kg</b>	<b>100.0%</b>	<b>4.25 kg</b>	<b>100.0%</b>	<b>4.19 kg</b>



### 3.2. Diversion potential of ICBD kerbside rubbish bags

Rateable properties in the ICBD have access to a kerbside collection of recyclable materials twice daily (except for Sunday when only one collection is undertaken).

This collection is undertaken in clear plastic bags, and accepts recyclable paper, recyclable plastic containers #1-7, aluminium and steel cans, and glass bottles and jars. Flattened cardboard is collected at the same time, stacked adjacent to the recycling bags.

Table 3.3 shows the quantity of ICBD rubbish, per orange bag, that could be diverted using the recycling collection. 'Plastics 3, 4, 6 and 7' have not been included as they are currently not able to be recycled.

A large portion of the materials classified as recyclable during the audit were contaminated with food waste and would not be considered recyclable in that state. Rinsing or washing of recyclable containers would be required before they would be accepted in the kerbside recycling collection.

Also included in Table 3.3 is the quantity of food waste that could be diverted to a food scraps collection.

**Table 3.3 - Diversion potential of ICBD kerbside rubbish bags, by weight**

Materials in ICBD kerbside rubbish bags	Morning collection	Evening collection	Average bag
<b>Recyclable materials</b>			
Recyclable paper	0.49 kg	0.31 kg	0.40 kg
Recyclable plastics - #1, 2 and 5	0.14 kg	0.14 kg	0.14 kg
Steel cans	0.03 kg	0.05 kg	0.04 kg
Aluminium cans	0.02 kg	0.01 kg	0.02 kg
Glass bottles and jars	0.07 kg	0.11 kg	0.09 kg
<b>Subtotal</b>	<b>0.75 kg</b>	<b>0.62 kg</b>	<b>0.69 kg</b>
<b>Recyclable materials as % of total</b>	<b>18.2%</b>	<b>14.7%</b>	<b>16.4%</b>
<b>Compostable materials</b>			
Food waste	2.03 kg	2.16 kg	2.09 kg
<b>Compostable materials as % of total</b>	<b>49.0%</b>	<b>50.9%</b>	<b>50.0%</b>
<b>Total divertible</b>			
<b>Weight of divertible materials per ICBD kerbside rubbish bag</b>	<b>2.78 kg</b>	<b>2.78 kg</b>	<b>2.78 kg</b>
<b>Divertible materials as % of total</b>	<b>67.2%</b>	<b>65.6%</b>	<b>66.4%</b>

Almost two thirds (66.4%) of materials in an average ICBD kerbside rubbish bag could be diverted to recycling and composting. The largest opportunity to divert waste from landfill is through the diversion of food waste, which comprises 2.09 kg (or 50.0%) of the weight of the average bag of rubbish.

## 4. COMPARISON WITH PREVIOUS AUDIT

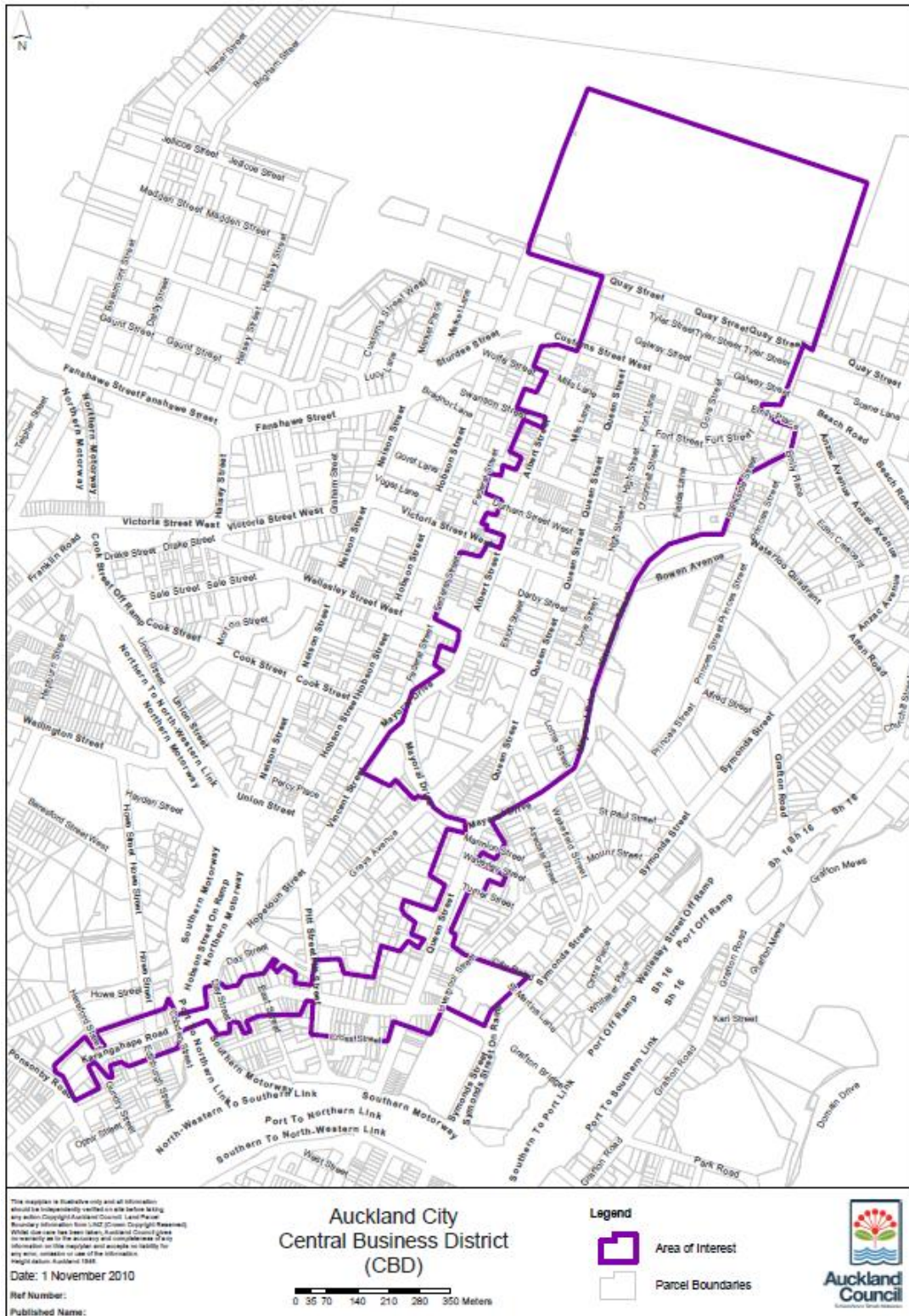
Table 4.1 provides a comparison of the results of this audit with the results of an audit of ICBD bagged kerbside rubbish undertaken by Waste Not Consulting in March/April 2015.

**Table 4.1 – Comparison of composition of ICBD kerbside rubbish bags – 2023 and 2015**

Comparison of composition of ICBD rubbish bags – 2023 and 2015		2023		2015	
		% of total	Mean wt. per bag	% of total	Mean wt. per bag
Paper	Recyclable paper	9.6%	0.40 kg	16.1%	0.73 kg
	Non-recyclable paper	4.5%	0.19 kg	2.4%	0.11 kg
	<b>Subtotal</b>	<b>14.1%</b>	<b>0.59 kg</b>	<b>18.6%</b>	<b>0.85 kg</b>
Plastics	#1, 2 & 5 containers	3.4%	0.14 kg	2.6%	0.12 kg
	#3, 4, 6, 7 containers	0.2%	0.01 kg	1.4%	0.06 kg
	Plastic bags and film	9.7%	0.41 kg	8.8%	0.40 kg
	Non-recyclable plastic	2.4%	0.10 kg	2.1%	0.09 kg
	<b>Subtotal</b>	<b>15.6%</b>	<b>0.66 kg</b>	<b>14.9%</b>	<b>0.68 kg</b>
Organics	Kitchen waste	50.0%	2.09 kg	49.4%	2.25 kg
	Green waste	0.0%	0.00 kg	0.1%	0.00 kg
	Organic other	0.6%	0.02 kg	0.6%	0.03 kg
	<b>Subtotal</b>	<b>50.5%</b>	<b>2.12 kg</b>	<b>50.1%</b>	<b>2.28 kg</b>
Ferrous metals	Steel cans	0.9%	0.04 kg	0.4%	0.02 kg
	Multimaterial/other	1.2%	0.05 kg	0.9%	0.04 kg
	<b>Subtotal</b>	<b>2.0%</b>	<b>0.09 kg</b>	<b>1.3%</b>	<b>0.06 kg</b>
Non-ferrous metals	Aluminium cans	0.4%	0.02 kg	0.4%	0.02 kg
	Multimaterial/other	0.6%	0.03 kg	0.2%	0.01 kg
	<b>Subtotal</b>	<b>1.1%</b>	<b>0.04 kg</b>	<b>0.6%</b>	<b>0.03 kg</b>
Glass	Bottles/jars	2.1%	0.09 kg	2.3%	0.10 kg
	Multimaterial/other	0.2%	0.01 kg	0.5%	0.02 kg
	<b>Subtotal</b>	<b>2.3%</b>	<b>0.10 kg</b>	<b>2.8%</b>	<b>0.13 kg</b>
Textiles	Clothing/textiles	1.8%	0.07 kg	0.3%	0.01 kg
	Multimaterial/other	1.4%	0.06 kg	0.8%	0.04 kg
	<b>Subtotal</b>	<b>3.1%</b>	<b>0.13 kg</b>	<b>1.2%</b>	<b>0.05 kg</b>
<b>Nappies and sanitary</b>		<b>8.1%</b>	<b>0.34 kg</b>	<b>6.9%</b>	<b>0.32 kg</b>
<b>Rubble</b>		<b>0.6%</b>	<b>0.02 kg</b>	<b>0.5%</b>	<b>0.02 kg</b>
<b>Timber</b>		<b>0.5%</b>	<b>0.02 kg</b>	<b>0.6%</b>	<b>0.03 kg</b>
<b>Rubber</b>		<b>0.7%</b>	<b>0.03 kg</b>	<b>1.4%</b>	<b>0.06 kg</b>
Potentially hazardous	Household	1.2%	0.05 kg	0.2%	0.01 kg
	Other	0.1%	0.00 kg	1.1%	0.05 kg
	<b>Subtotal</b>	<b>1.3%</b>	<b>0.05 kg</b>	<b>1.2%</b>	<b>0.06 kg</b>
<b>TOTAL</b>		<b>100.0%</b>	<b>4.19 kg</b>	<b>100.0%</b>	<b>4.56 kg</b>

There are no major differences between the composition of bagged ICBD kerbside rubbish in 2015 and 2023.

# APPENDIX A – MAP OF ICBD COLLECTION AREA



## APPENDIX B – AUDIT CLASSIFICATIONS

Primary categories	Secondary categories	Description
<b>Paper</b>	Paper recyclable	Newspapers, envelopes, magazines, junk mail, egg cartons, pizza boxes, cardboard boxes, liquid paperboard packaging
	Non-recyclable paper	Coffee cups, photographic paper, laminated paper, plastic coated paper and card
<b>Plastic</b>	#1, 2 & 5 containers	Rigid household plastic containers numbered 1, 2 and 5
	#3, 4, 6 & 7 containers	Rigid household plastic containers numbered 3, 4, 6 & 7
	Plastic bags and film	Plastic shopping bags, bread bags, non-rigid plastic packaging and film
	Non-recyclable plastics	All other non-recyclable items made primarily of plastic
<b>Organics</b>	Food waste	All food waste
	Green waste	Green waste (lawn clippings, plants, tree branches etc.)
	Organic other	Includes cat tray litter, hair, vacuum cleaner bags, candles etc
<b>Steel</b>	Steel cans	All steel cans
	Ferrous other	All non-packaging items made primarily of ferrous metal
<b>Nonferrous metal</b>	Aluminium cans	All aluminium cans
	Non-ferrous other	Items such as aluminium frying pans, aluminium foil, pots, electrical wire and aerosols
<b>Glass</b>	Glass bottles/jars	Bottles and jars, with the contents removed
	Glass other	All other items made primarily of glass, includes light bulbs, drinking glasses, and window pane
<b>Textiles</b>	Clothing & rags	All items primarily made of a fabric, such as clothes, curtains, which are suitable for rags
	Textile other	Includes shoes, backpacks, handbags, rugs, face masks
<b>Nappies and sanitary</b>		Includes disposable nappies, paper towels, tissues
<b>Rubble</b>		All concrete, ceramics, fibreglass, rubble, and soil
<b>Timber</b>		All items made primarily of timber

<b>Rubber</b>		All items made primarily of rubber (e.g. kitchen gloves)
<b>Potentially hazardous</b>	Household hazardous	Batteries, containers of medicines and cosmetics, cleaning agents, smoke detectors
	Hazardous other	Potentially hazardous items not associated with domestic activity, such as used oil and garden chemicals.

## APPENDIX C – PHOTOS OF SORTED RUBBISH

The following photos are examples of sorted ICBD kerbside rubbish from the morning collection.



**Example of recyclable paper**



**Example of non-recyclable paper**



**Example of recyclable plastic 1, 2 & 5**



**Example of plastic 3, 4, 6 & 7**



**Example of timber**



**Example of potentially hazardous**

The following photos are examples of sorted ICBD kerbside rubbish from the evening collection.



**Example of recyclable paper**



**Example of non-recyclable paper**



**Example of recyclable plastic 1, 2 & 5**



**Example of Non-recyclable plastics**



**Example of food waste**



**Example of food waste**



**Example of steel cans**



**Example of ferrous metal other**