Appendix 1
Zero Waste Scotland
Composition Analysis
Islay/Oban and Lorn

Argyll & Bute Council: Waste Compositional Analysis

Islay (2023), Oban & Lorn (2024)

Prepared by: Zero Waste Scotland

John Arthur

Date: March 2024

ZERO WASTE SCOTLAND

Contents

Acknowledgements

Zero Waste Scotland would like to express sincere gratitude to Argyll and Bute Council who were worked with closely throughout the project. Liaison with Alan Millar (Waste Performance Manager) ensured the project was enabled with the cooperation and assistance of the Oban waste operations team. Renewi provided access to an undercover materials processing space at the Moleigh recycling centre. Anastasios Markopoulos provided generous advice and waste composition project experience, advising on field work and data analysis. Other Zero Waste Scotland colleagues provided valuable insight and support.

1 Executive Summary

The objective of this study was to provide estimates for the composition of household waste collected at the kerbside in parts of Argyll and Bute. The data obtained will provide detailed information on the materials the public are disposing of via their household kerbside bins and show if these materials are being placed in the correct bins. Households were sampled to represent wider council areas and the information can be combined with council waste tonnages to inform future waste services strategy and improvements.

The estimates presented in this report have been derived using data collected from two waste composition analysis (WCA) studies carried out in October/ November 2023 (Islay) and February/ March 2024 (Oban & Lorn). The two studies were carried by the same company. This report presents analysis of the contents of the household residual waste bin, which is the bin that should be used to dispose of waste that cannot be recycled, including data on recyclable material that was incorrectly disposed of in the residual waste bin. The report also presents analysis of the contents of the household recycling bin including data on materials that were incorrectly deposited in that bin. The report excludes household waste collected at non-kerbside locations, such as recycling points and household waste recycling centres (HWRCs). It is worth noting that significant quantities of household waste material, particularly recyclable items, are also collected via non-kerbside routes such as public recycling points and HWRCs, so overall household recycling performance should not be inferred on the kerbside analysis presented in the report alone. Most figures are to one decimal place but in some cases, values have been rounded to the nearest whole number for simplicity while reporting.

Findings presented in this report are based on analysis that was designed to support answering several questions, including:

1. How much waste is collected at the kerbside?
2. What is thrown away in the residual waste bin?
3. What materials are placed in the kerbside recycling bin?
4. How many items that could be recycled at the kerbside bin are actually recycled?
5. How common is it for the wrong items to end up in recycling collections?

1.1 How much is collected at the kerbside?

A recent national programme of waste composition analysis involving 15 local authorities carried out between 2021-2023[1] provided an update to the national estimates of household kerbside waste from 2013-15. Argyll and Bute were not included. At the national level, Scottish households put 1.8 million tonnes of material into kerbside collections (residual and recycling combined) per annum by material category. Food waste, paper and cardboard, garden waste, and glass waste made up approximately 66% of the total. Food waste made up the largest single waste type at approximately 24% of the total. These two local studies provide a bespoke and representative data set to augment the general findings from the national study on which to model future waste and recycling services. For Islay, Oban and Lorn areas the kerbside collection service consists of a 3-weekly collection of non-recyclable waste in a green bin and a fortnightly collection of mixed recycling in a blue bin.

[1] Composition of Household Waste at the Kerbside in 2021-23 (2023) (https://www.zerowastescotland.org.uk/resources/household-waste-composition-analysis)

The recycling collection is for:

- Paper, card and cardboard
- Metal tins, cans, aerosols and foil
- Plastic bottles, pots, tubs and trays (no need to check the recycling labels)
- Cartons – food and drink

The Islay study showed an average weight of residual waste per household collection of 27.2 kg per three weekly collection. This equates to 9.1kg/hh/wk (kilograms per household per week) or 471kg per year.

The Oban and Lorn study showed an average weight of residual waste per household collection of 23.8 kg per three weekly collection. This equates to 7.9 kg/hh/wk or 411 kg per year. More details are provided in section 2.1. The average recycling weight per household was 6.9 kg from the two weeky cycle which equals 3.5 kg/hh/wk or 182 kg per year.

More detailed information is provided in sections 4 and 5.

1.2 What is thrown away in the residual waste bin?

There are a range of kerbside recycling services in use across Scotland's local authorities and as such the results of a WCA from a single local authority must be framed in relation to the waste and recycling system being offered to householders in that location. For the majority of Argyll and Bute, the absence of kerbside collections of glass and food and garden waste must be recognised as an influential factor in the composition of the materials collected at the kerbside.

1.2.1 Islay residual waste

Analysis of the residual waste bins sampled on Islay showed that 37% (see Figure 1) of the material in the residual waste bin was non-recyclable, or very difficult to recycle in the context of the wider Scottish local authority recycling landscape. The remaining 62% of the material found in the residual waste bin could be termed recyclable (i.e. being recycled from kerbside collection by certain local authority areas). This 62% consisted of non-target recyclable materials (52%) or target recycling material that should have been placed in the recycling bin (10%). 1% of the material has been allocated to a separate category for '*Metal (excluding food & drinks packaging & WEEE) and wood*''. These are not typically collected at the kerbside in Scotland but usually can be deposited at HWRCs. Food waste is the largest component at 22% of the residual waste bin material. Garden waste is second largest at 15%. More detailed information on the contents of the residual waste bin is provided in section 4.

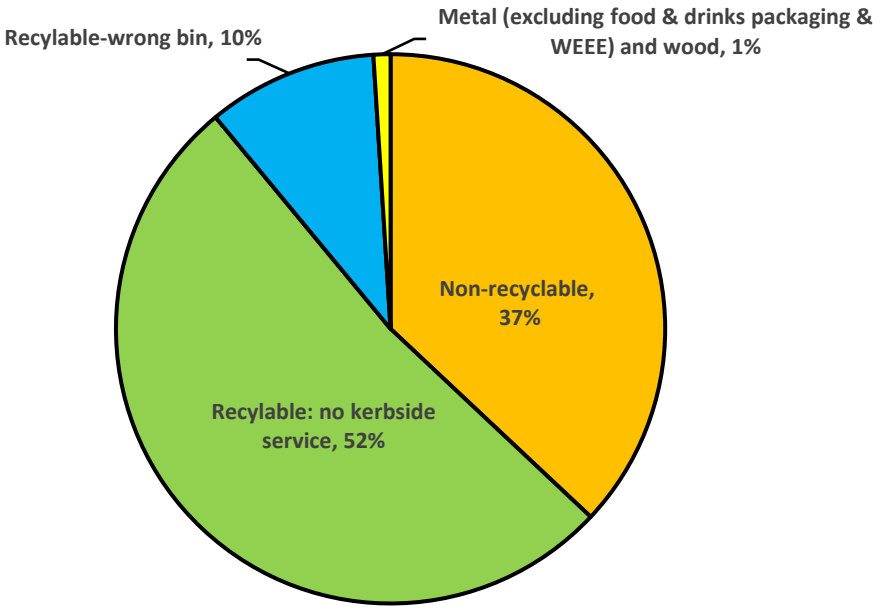


Figure 1: The recyclability of material in ISLAY residual waste bins.

1.2.2 Oban and Lorn residual waste

Analysis of the residual waste bins sampled for Oban and Lorn showed that 28% (see Figure 2) of the material in the non-recycling bin can be termed non-recyclable, or very difficult to recycle in the context of the wider Scottish local authority recycling landscape. 70% of the material can be termed recyclable (are being recycled in some parts of the country) and either no kerbside collection is provided for these materials (58%) or the material should have been placed in the recycling bin (12%). 2% of the material has been allocated to a separate category for '*Metal (excluding food & drinks packaging & WEEE) and wood*'. These are not typically collected at the kerbside in Scotland but usually can be deposited at HWRCs. As with Islay, food waste is the largest component at 20% of the material. Glass is second largest at 9% of the residual bin contents with garden waste third at 8%. More detailed information on the contents of the residual waste bin is provided in section 4.

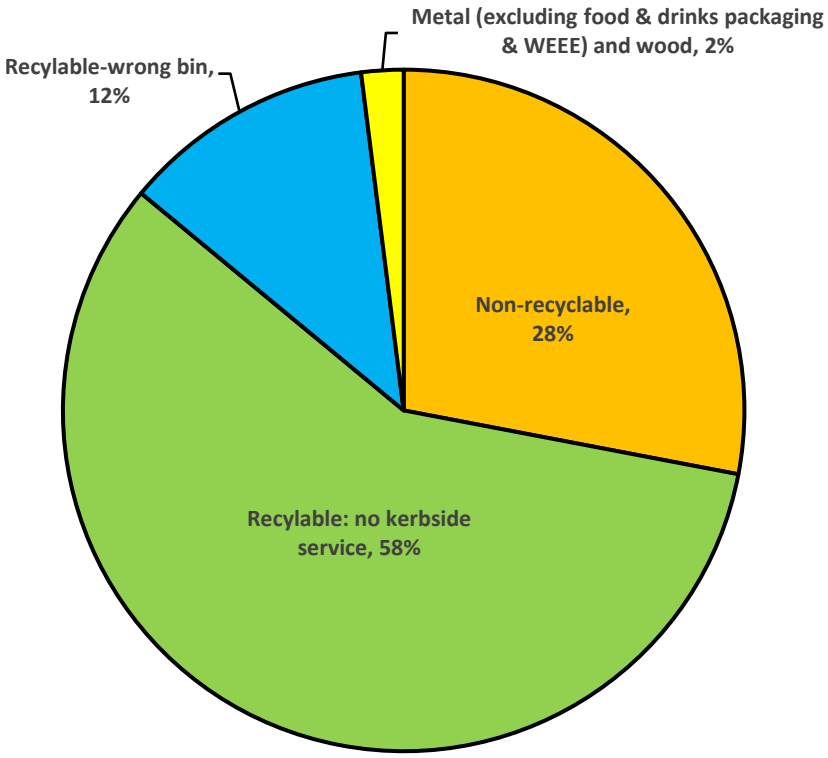


Figure 2: The recyclability of material in OBAN and LORN residual waste bins.

1.3 What is placed in the recycling bin?

Contamination of recycling services occurs when incorrect items (either non-recyclable items or recyclable items placed in the incorrect recycling container, if more than one recycling container is available) end up in the recycling collection. For the Islay, Oban and Lorn areas sampled, a single mixed recycling container was available. Analysis of contamination of recycling services in this report included non-recyclable items and items that may be recyclable, and when the material is not a target kerbside service material in the Islay and Oban and Lorn areas. On Islay this was measured at 20% and Oban and Lorn as 21%. These are a close match to the national study where 20% of the overall material in the dry mixed recycling bin should not have been placed there.

1.3.1 Islay kerbside recycling: Correct and incorrect items

Due to operational issues during field sampling, collection of recyclable waste from the same households sampled for residual waste the previous week could not be achieved. As such the recycling bin data is not as rich as was planned and cannot be related to a group of households where residual bins were also collected as per the original sampling methodology (Section 2). Despite this limitation, analysis of the 356kg of recycling bin material did provide some valuable insights. It was found that 80.0% of the material from the sampled recycling bins was in the correct bin. A subcategory was created for 'Metal (excluding food & drinks packaging & WEEE) and wood'' (3.2%). Such materials are not included in kerbside recycling systems but can be taken to HWRCs. The remaining 16.7 % of materials found in the recycling bins was separated into two categories:

a) 9.5% of the material collected was non-recyclable in the context of the wider Scottish local authority recycling landscape.

b) 7.2% could typically be recycled but are non-target materials under the existing kerbside service.

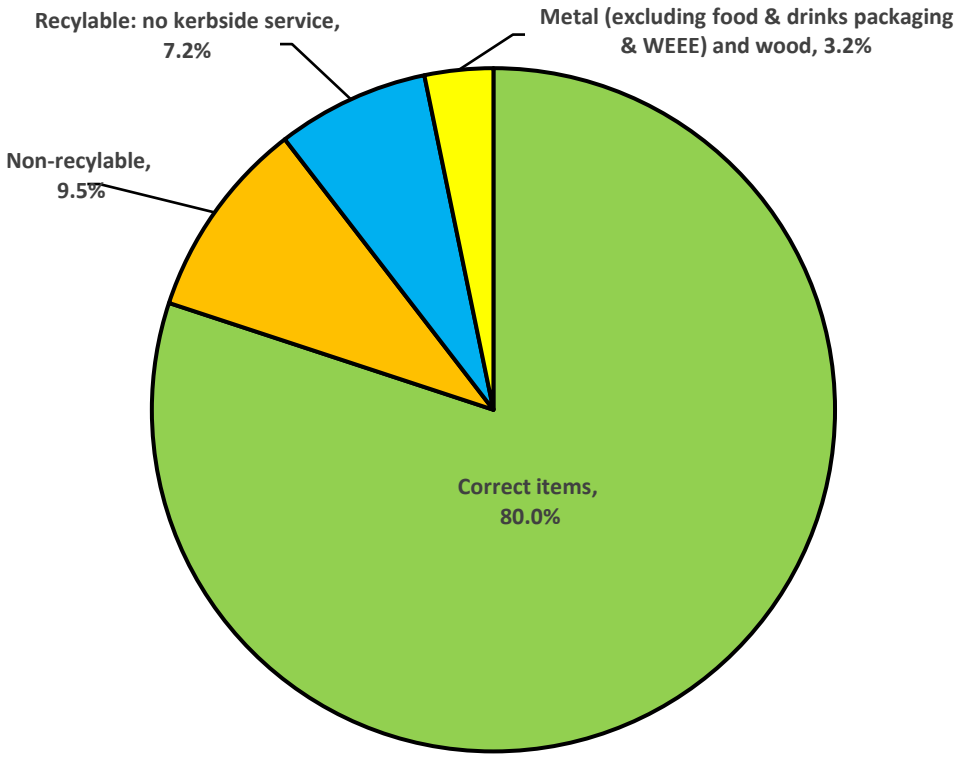


Figure 3: The recyclability of material in ISLAY recycling bins.

The most commonly occurring non-target materials in the recycling bin are heavily contaminated card and non-recyclable paper. More details of the recycling bin contents are provided in Section 5.

1.3.2 Oban & Lorn kerbside recycling: Correct and incorrect items

During field sampling only households that had been sampled for residual waste (171 on week1) were visited. Due to operational issues including vehicle breakdowns, the recycling bins of 82 households were sampled providing a total of 564 kg of material. 78.6% of the material from the sampled recycling bins was in the correct bin. 0.6% was '*Metal (excluding food & drinks packaging & WEEE)*. The remaining 20.8 % of materials can be termed non-recyclable and fall into 2 categories:

a) 5.1% was non-recyclable in the context of the wider Scottish local authority recycling landscape.

b) 15.7% could be recycled but are non-target materials under the existing kerbside service.

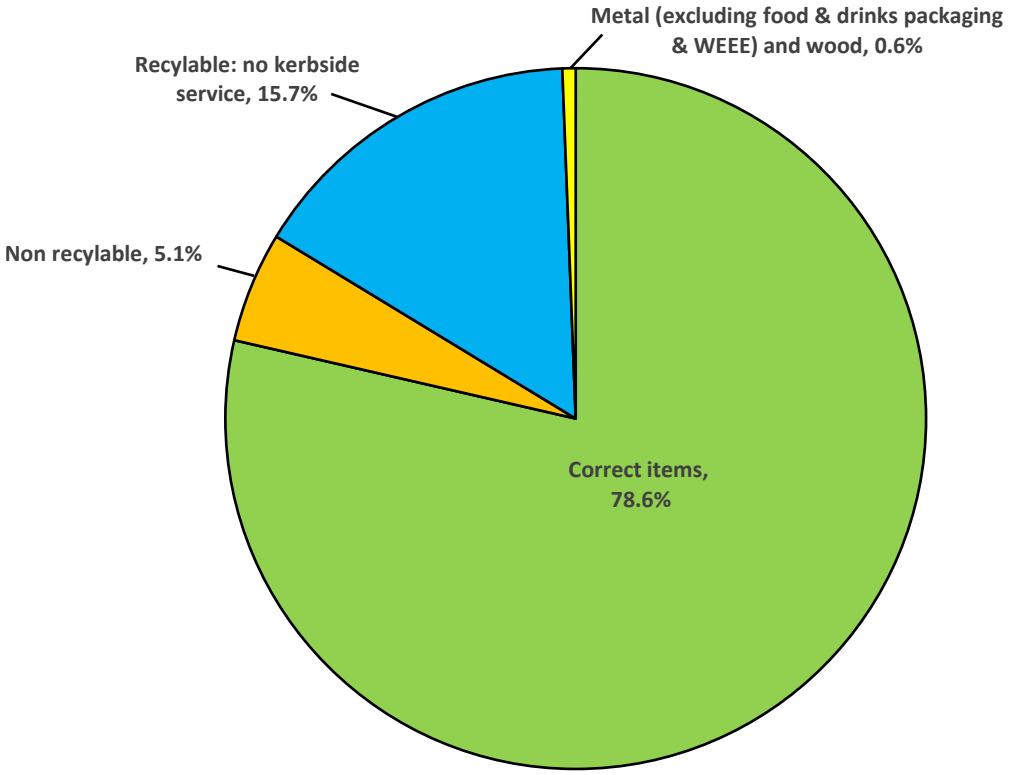


Figure 4: The recyclability of material in OBAN AND LORN recycling bins.

The most commonly occurring non-target materials in the recycling bin were non-recyclable paper and non-recyclable plastic packaging. More details of the recycling bin contents are provided in Section 5.

2 Introduction

Understanding the flow of materials and resources across households will help to inform and plan the actions necessary to enable the reduction of waste and maximise the potential for closing material loops. The results of the analysis presented in this report contribute to a robust evidence base that can be used to inform the development of future circular economy strategy, policy development, waste management policy and communications, and support technical practitioners working in the fields of resource management and the circular economy across Argyll and Bute.

The analysis includes:

1. The total amount of waste collected at the kerbside
2. The type of waste thrown away in the residual waste container
3. The proportion of the total recyclable material that is correctly recycled at the kerbside
4. The levels of contamination in mixed recycling collections

2.1 SUMMARY OF METHODOLOGY

This project followed the methodology used throughout the National WCA programme managed by Zero Waste Scotland. A total of fifteen Scottish local authority waste composition analysis studies were conducted in 2021-23, which involved the collection and physical sorting of residual waste and recycling presented at the kerbside that met an agreed methodological standard. Details of this standard can be found in an accompanying document produced by Zero Waste Scotland [2]. Individual waste composition analysis studies were designed to be representative of the range of households in each local authority and the sampling for Oban and Lorn was designed to represent the wider Lorn area. The methodology is outlined in Appendix 1.

The Islay study analysed materials from non-recyclable waste bins from 94 households. The sampling of recycling bins unfortunately did not reach the same number of households due to operational and logistical reasons. Nevertheless, the proportions of material types within the smaller sample of recycling bins collected was still obtained. Average recycling rates were not available due to lack of household numbers recorded on recycling.

The Oban & Lorn study sampled residual waste bins from 171 households over 4 days Monday, Tuesday, Wednesday, Friday. On the second week during sampling of the recycling bin, Wednesday returned only16 bins as recycling bins were not presented for some of the flatted properties sampled the previous week. The Friday sampling of recycling bins was not possible due to vehicle breakdown. This resulted in 82 households sampled for recycling compared to 171 on residual sampling week.

The raw data sets from both WCA surveys are provided in Appendix 2.

2 Composition of Household Waste at the Kerbside in 2021-23 (2023)

(https://www.zerowastescotland.org.uk/resources/household-waste-composition-analysis)

2.2 KEY CONSIDERATIONS WHEN READING THIS REPORT

This report is designed to be a summary of the key waste composition analysis findings. The analysis focused on the most commonly occurring waste types, and those highlighting specific areas of interest, for example, estimating representative levels of waste and levels of recycling placed in the correct recycling container at the kerbside. As highlighted above, the focus of this analysis has been on household waste collected at the kerbside, meaning that it excludes household wastes collected via recycling points, HWRCs, and other less common collection routes. As a result, information presented is not a complete analysis of local authority recycling performance.

3 How much residual waste is collected at the kerbside?

This section summarises the overall composition of what was thrown away in the residual waste bin during the studies at Islay and Oban and Lorn.

3.1 ISLAY

The residual (green bins) presented by 50 households per day over 2 days were collected and processed. This resulted in 94 households presenting bins from which the total processed material categories amounted to 2,555.4 kg. This gave an average yield of material of 27.2 kg per household. This represented 3 weeks or 21 days' worth of waste which gives 9.1 kg/hh/wk or 471.3 kg per year per household. This represents almost half a tonne of waste per household over a calendar year. Given the time of year for waste sampling is designed to avoid especially heavy periods for waste generation such as the festive periods or school holidays, the annual household total could be over half a tonne.

3.2 OBAN AND LORN

The residual (green bins) presented over 4 days were sampled, collected, and processed. This resulted in 171 households from which the total processed material categories amounted to 4,066.9 kg. This gave an average yield of material of 23.8 kg per household. This represented 3 weeks or 21 days' worth waste, which gives 7.9 kg/hh/wk or 412.5 kg per year per household. The weight of residual materials collected did vary considerably across the sampling days ranging from 17.4 kg/hh to 30.1 kg/hh. This represents a range from 301kg to 521kg per year from households in the areas sampled.

4 What is thrown away in the residual waste bin?

4.1 ISLAY: The contents of the residual waste bin

The **non-recyclable** materials in the residual waste (green) bin are shown in Table 1.

Material	% of Residual bin weight
Miscellaneous non-combustible	9.5%
Pet excrement, bedding, dead animals and cat litter	6.3%
Sorting residues less than 10mm ('fines')	5.9%
Disposable Nappies	4.6%
Non-recyclable paper	4.4%
Miscellaneous combustible	3.9%
Heavily contaminated card & other composite card	1.0%
Other absorbent hygiene products	0.7%
Non-recyclable plastic packaging	0.4%
Potentially hazardous healthcare wastes	0.1%
Miscellaneous hazardous	0.0%

Table 1: Islay: Non-recyclable materials in residual bins

The largest components by weight of the materials in the residual bin classified as recyclable are shown in Table 2. Those shaded and highlighted in bold are those materials that are suitable for the mixed recycling bin. The other materials are not collected at the kerbside for recycling.

Material	% of Residual bin weight
Food	21.9%
Garden mowing & pruning	15.3%
Soft plastic-films & flexibles	7.7%
Dense plastic-drinks bottles, pots tubs & trays	**4.0%**
Glass (including drinks bottles)	3.2%
Textiles (excluding carpet and underlay)	3.1%
Cardboard (recyclable)	**2.7%**
Metal packaging including drinks cans	**2.2%**
Scrap metal (excluding WEEE)	1.2%
Recyclable paper	**0.8%**
WEEE (waste electrical and electronic equipment)	0.6%

Table 2: Islay: Materials in the residual bin that could potentially be recycled from the kerbside.

The proportions of materials by weight in the Islay residual bin is shown in Figure 5.

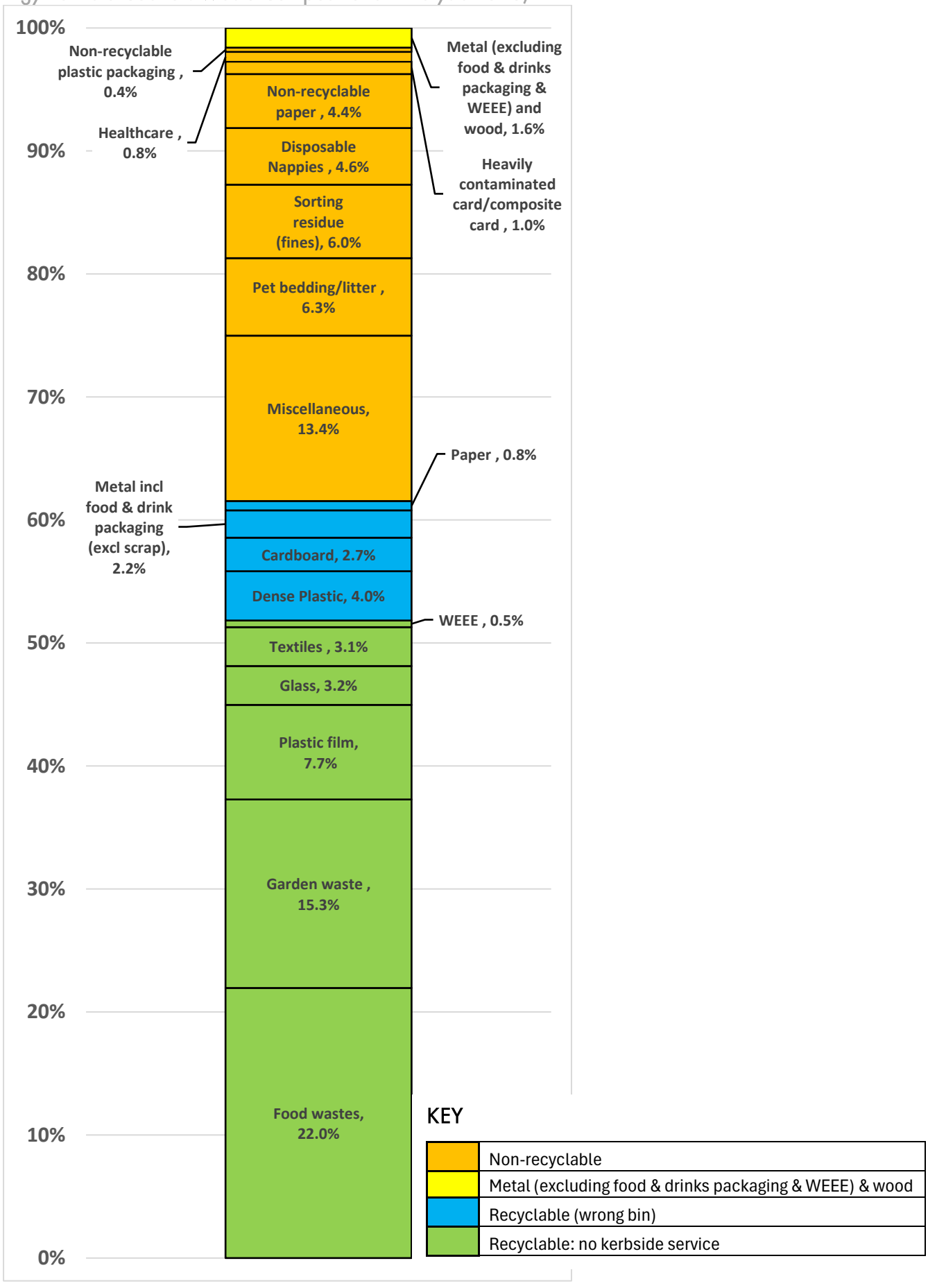


Figure 5: Percentage of materials by weight in the Islay residual bin.

4.2 OBAN AND LORN: The contents of the residual waste bin

The **non-recyclable** materials in the residual waste (green) bin are shown in Table 4.

Material	% of Residual bin weight
Pet excrement, bedding, dead animals and cat litter	7.8%
Non-recyclable paper	5.8%
Miscellaneous combustible	5.5%
Disposable Nappies	3.8%
Sorting residues less than 10mm ('fines')	2.9%
Miscellaneous non-combustible	0.9%
Non-recylable plastic packaging	0.6%
Other absorbent hygiene products	0.5%
Heavily contaminated card & other composite card	0.4%
Potentially hazardous healthcare wastes	0.1%
Carpet and underlay	0.03%

Table 4: Oban and Lorn: Non-recyclable materials in residual bins

The largest components by weight of the materials in the residual bin classified as recyclable are shown in Table 5. Those shaded and highlighted in bold are those materials that are suitable for the mixed recycling bin. The other materials are not collected at the kerbside for recycling.

Material	% of Residual bin weight
Food	28.7%
Garden mowing & pruning	7.9%
Glass (including drinks bottles)	8.5%
Soft plastic-films & flexibles	7.4%
Dense plastic-bottles, pots, tubs and trays	**5.9%**
Textiles (excluding carpet & underlay)	4.0%
Cardboard (recyclable)	**2.4%**
Metal packaging including drinks cans	**2.3%**
Scrap metal (excluding WEEE)	1.2%
Recyclable paper	**1.2%**
WEEE (waste electrical and electronic equipment)	1.2%

Table 5: Oban and Lorn: Materials in the residual bin that could potentially be recycled from the kerbside.

Figure 6 shows the composition profile of materials found in the Oban and Lorn residual bin.

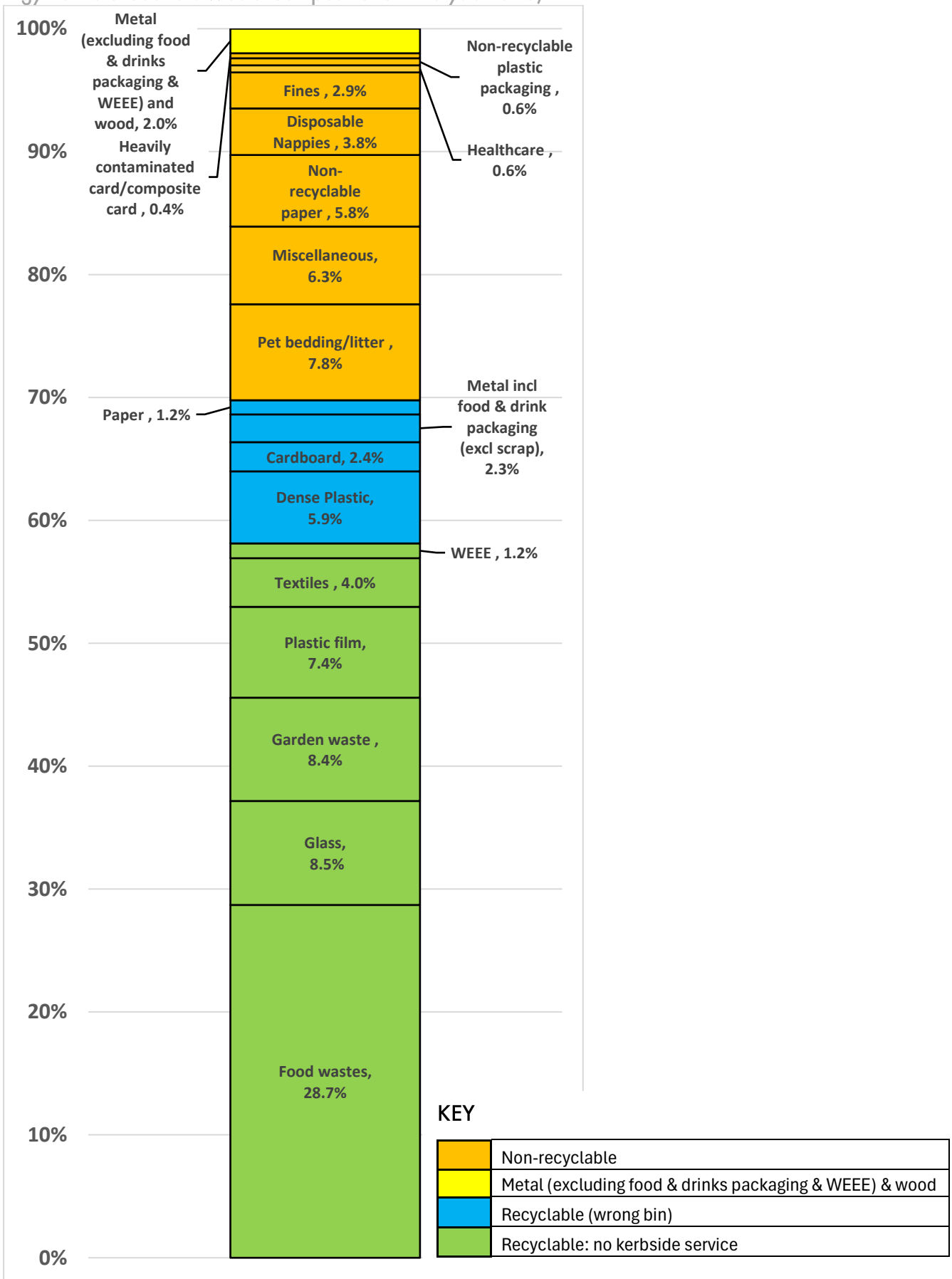


Figure 6: Percentage of materials by weight in the Oban and Lorn residual bin.

5 What is placed in the recycling bin?

5.1 Islay recycling bin

As mentioned previously (section 2.1), the exact number of recycling bins sampled on Islay could not be verified and the matching of residual and recycling bins to the same households could not be achieved. Despite this, analysis of the contents of the dry mixed recycling (blue) bins did provide valuable data on the materials being placed in the kerbside recycling bin. 80% of the materials in the recycling bin are in the correct container. Figure 7 shows a breakdown of the composition of materials found in the recycling bin, and a further disaggregation into the specific categories of materials that should not have been in the recycling bin.

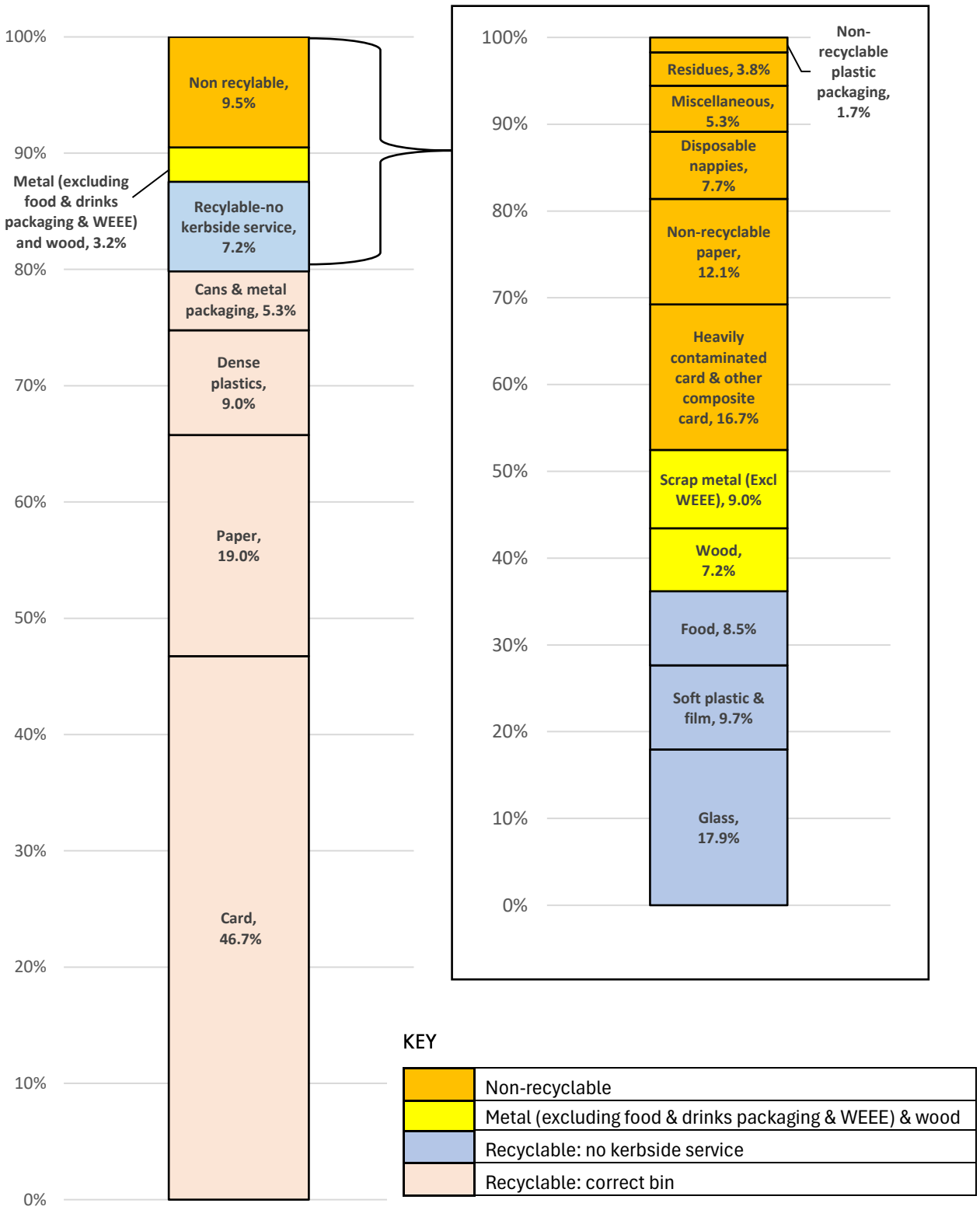


Figure 7: Proportions of materials by weight in the Islay recycling bins with breakdown of non-target and non-recyclable materials (20.0%).

5.2. Oban and Lorn recycling bin

As mentioned previously (Section 2.1), the exact number of households sampled involving residual bins could not be matched with recycling bins due to a vehicle breakdown on the final sampling day. Despite this the contents of the dry mixed recycling (blue) bins did provide valuable data on the materials being placed in the kerbside recycling bin. As mentioned in Section 1.3.2, 78.6% of the materials in the recycling bin are in the correct container. Figure 8 shows a breakdown of the composition of materials found in the recycling bin, and a further disaggregation into the specific categories of materials that should not have been in the recycling bin.

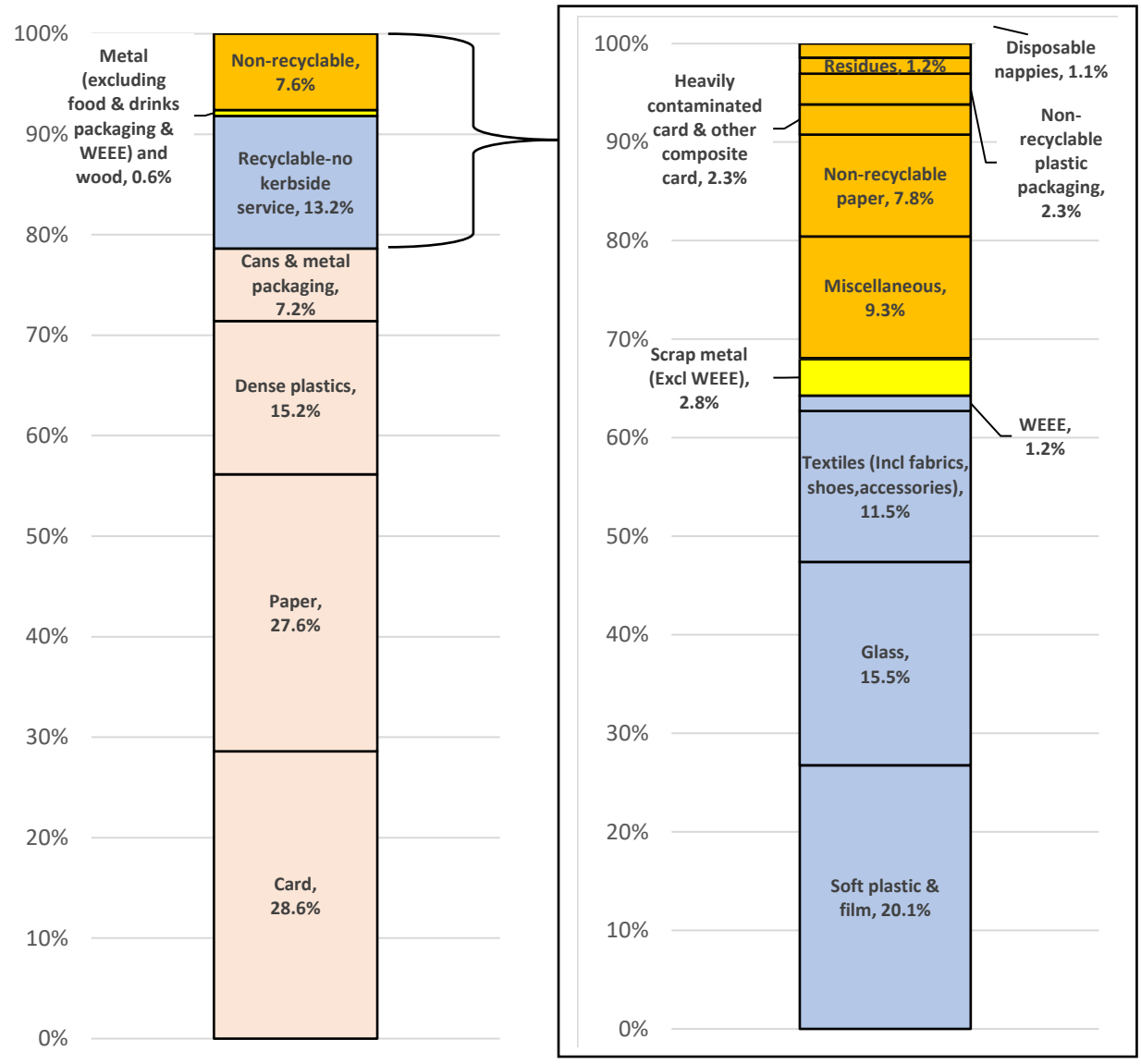


Figure 8: Proportions of materials by weight in the Oban and Lorn recycling bins with breakdown of non-target and non-recyclable materials (21.4%) in the recycling bin.

KEY

	Non-recyclable
	Metal (excluding food & drinks packaging & WEEE) & wood
	Recyclable: no kerbside service
	Recyclable: correct bin

6 Conclusions

6.1 Residual bin

In summary, the takeaway information from the two studies is that a high proportion of the material in the two study areas can potentially be removed from the residual waste bin if either already suitable for the recycling bin or if new recycling target materials were introduced for kerbside collection. 62% of the Islay residual bin and 70% of the Oban and Lorn residual bin fall into this category. The main materials found in the residual waste bin that are recyclable are organic materials in the form of food and garden related waste, as shown in Table 7. These and the other dry/inorganic materials are recyclable through solutions already used in many other local authorities in Scotland.

Material	Islay (%)	Oban & Lorn (%)
Food wastes	22	28.7
Garden wastes	15.3	7.9
Plastic film	7.7	7.4
Glass	3.2	8.5
Dense plastic-bottles, pots, tubs and trays	4	4.5
Textiles	3.1	4
Metal including food & drinks packaging	2.2	2.3

Table 7: Non-target recyclable materials in the residual waste bin.

The amount of organic waste in the residual waste can either be reduced via provision of kerbside services or encouragement of householders to compost materials where estimates show an average home composting bin diverting 150kg from disposal each year.[3] Kerbside services are common across Scotland for food and garden wastes. The data from this study along with the national results provide the figures to quantify the amounts of these organic resources that have the potential to be collected from the kerbside in areas deemed cost effective and where the environmental benefits will be largest. The two studies presented in this report show similarities in material levels with some divergence in levels of garden waste. This could be influenced by having had the Islay study conducted at the end of October 2023 when the weather had remained mild to extend the growing season. Conversely, the Oban sampling took place in late February prior to the spring growth and several of the Oban streets sampled did not have large areas of garden space. The proportion of food waste levels in the residual waste bin were 28.7% in Oban and Lorn compared to 22.0% on Islay. Plastic film levels are similar from both study areas and considering that percentages of materials are calculated by weight, these relatively light materials must be present in large quantities to register such weights. Soft plastic and films are one of the areas currently being considered and trialled with kerbside collections with some local authorities due to their high carbon and other resource impacts. Glass shows a relatively high level (8.5%), particularly in the Oban and Lorn area with over twice the value on Islay (3.2%). Further local investigation into the differences in glass would be recommended. Dense plastics including bottles and pots, tubs and trays are also relatively light in weight so their ranking of 5th in Table 7 (above) is notable. These materials are accepted for disposal in the recycling bin which would indicate potential for household recycling communications to explain and promote best recycling practices.

[3] Garden Waste: Home composting costs and impacts, WRAP (2015)

(https://wrap.org.uk/resources/guide/waste-prevention-activities/garden-waste/home-composting)

6.2 Recycling bin

Findings from both studies showed that the level of target material appearing in the recycling bin (Islay-80%, Oban and Lorn-79%) closely reflects the nationally estimated value of 80%. The amount of non-recyclable materials in the recycle bin is similar for both Islay (9.5%) and Oban and Lorn (7.6%). The amounts of potentially recyclable materials differ with 8.7% on Islay and 13.2% in Oban and Lorn. Tables 8 and 9 below show the type of materials found in the recycling bins that should not have been deposited there. The percentage is relative to the contents of the average household recycling bin with the material types listed in descending order.

Material	Wrong materials in recycling bin-Islay (% by weight)
Glass	3.6
Contaminated card	3.3
Non-recyclable paper	2.4
Soft plastic & film	1.9
Scrap metal	1.8
Food	1.7
Disposable nappies	1.5
Wood	1.4

Table 8: Items that should not have been placed in the Islay recycling bin.

Material	Wrong materials in recycling bin-Oban and Lorn (% by weight)
Food	5.3
Soft plastic & film	4.3
Glass	3.3
Textiles	2.5
Miscellaneous	2
Non-recyclable paper	1.7
Scrap metal (excl WEEE)	0.6
Contaminated card	0.5

Table 9: Items that should not have been placed in the Oban and Lorn recycling bin.

As with other areas there will be scope for communications campaigns to inform householders about the correct materials suitable for the kerbside recycling bin. Some materials such as glass, textiles, soft plastics, and scrap metal may be a result of 'wish-cycling'[3] where an item is placed in the recycling bin in the hope that it will be recycled. The analysis has also shown that other non-target and non-recyclable materials (e.g. food and heavily contaminated card) appearing in the kerbside recycling bin could also be addressed through further interventions.

[4] WRAP Press release (October 2022) (https://wrap.org.uk/media-centre/press-releases/84-uk-households-are-unintentionally-contaminating-their-recycling-bins)

Appendix 1: Waste sampling methodology

To be representative of the wider council area the properties chosen should mirror as closely as possible the proportions of the same property types across the wider Argyll and Bute area. The Office for National Statistics (ONS) use socio-economic and demographic data from each census, to identify areas of the country with similar characteristics. These Output Area Classification (OAC) categories are assigned using a variety of socio-economic indicators. In most ZWS supported WCA studies, 50 households are sampled per day. One of the main reasons for this number is that it provides an amount of waste that can be collected and processed by the field team in the same day. For a typical 5-day week sampling design, 50 households are selected from the 5 most prevalent OAC super groups with an OAC supergroup each day. With Oban & Lorn some of the OAC supergroup households did not amount to 50 so the relative proportions were targeted across the total design of 200 HH over each week. The Oban & Lorn service provides most households with a 3-weekly collection of a green 240Litre bin for non-recyclable waste and a fortnightly collection of a blue 240Litre bin for mixed dry recycling. No kerbside glass collection is provided at the kerbside for households and no food and garden waste service is provided. The sampling work starts with non-recyclable waste bins collected in the first week of the study followed by recycling (blue) bins from the same households where green bins were sampled the previous week. If no residual waste bin was presented that household was excluded from the study and a reserve household used. If no recycling bin was presented in the second week no other bins from other households were collected. This ensured the data set represented 50 households only across both material streams whether recycling was presented or not as some households may not participate in recycling. The combination of 3 weekly (green) and 2 weekly (blue) schedules and the many calendar scenarios in use resulted in many of the households being unsuitable to provide week 1 (green) collection followed by the same day collection on week 2 (blue). Areas with a one-way drive time from the depot and processing site of greater than 30 minutes were excluded to allow time in the day for materials processing and recording. Building types were considered and as far as practical matched to the wider Argyll and Bute proportions of building types. This data was obtained from the Office for National Statistics (ONS). A final influence on sampling related to the avoidance of communal bins. This was relevant for flats using shared communal bins such as 600 litre or 1100 litre bins which were excluded from the study. This was advised in the wider methodology to minimise the potential for contamination as these bins are more likely to experience use by non-residents.

In summary the selection of each day's addresses chosen were using the following criteria:

- Suitable schedule and calendars to allow residual then recycling sampling on the same day of field week 1 then field week 2.
- Driving distance within 30 minutes from depot and processing site.
- Proportion of OAC categories to match as closely as practical the wider council OAC proportions.
- Match as closely as practical building types with wider council area proportions.
- Avoid larger communal bins as used for some flatted properties.

Once these criteria were met 50 target households were listed along with 25 reserve addresses in case any of the initial 50 did not present residual bins or were not accessible in week 1.

Appendix 2: Waste sampling data

Appendix 2A: Islay residual and recycling bins-Percentages of waste types

Waste Composition Analysis Input Sheet					
3	Waste Stream sampled		**Residual**		**Recycling**
4	Container type		**240L bin**		**240L bin**
5	Dwelling type		**Own Door**		**Own Door**
6	Days represented in sample		**21**		**14**
7	Date of sampling		30_31/10/2023		06_07/11/2023
8	Number of households sampled		94		
9	Total weight sampled (Kg)		2584.75		358.15
		Sample area			
	Waste type level 1	**Waste type Level 2**	**%**		**%**
1	Glass waste	Drinks bottles	1.52		1.62
2	Glass waste	Other glass packaging	1.40		1.28
3	Glass waste	Non-packaging glass	0.23		0.68
4	Paper	Newspaper, magazines and directories	0.43		16.88
5	Paper	Other recyclable paper	0.17		1.00
6	Paper	Recyclable paper packaging	0.16		1.11
7	Paper	Non-recyclable paper	4.38		2.42
8	Cardboard	Thin (Grey) Card Packaging	2.14		11.54
9	Cardboard	Thick (Brown) corrugated cardboard packaging	0.34		33.97
10	Cardboard	Cartons and other card/plastic laminate packaging	0.12		0.63
11	Cardboard	Other card	0.12		0.58
12	Cardboard	Heavily contaminated card & other composite card	1.01		3.35
13	Metal	Steel drink cans	0.00		0.00
14	Metal	Other ferrous packaging	0.83		2.91
15	Metal	Aluminium drink cans	0.59		1.99
16	Metal	Aluminium packaging	0.64		0.09
17	Metal	Aerosols	0.16		0.32
18	Metal	Scrap metal (exc WEEE)	1.16		1.82
19	Dense plastic	HDPE drink bottles	0.09		1.44
20	Dense plastic	PET drink bottles	0.62		2.41
21	Dense plastic	Other non-drinks plastic bottles	0.65		1.86
22	Dense plastic	Pots, tubs and trays	2.59		3.16
23	Dense plastic	Non-recyclable plastic packaging	0.35		0.35
24	Dense plastic	Other dense plastic (Non-packaging)	0.44		0.16
25	Plastic films and flexibles	Plastic/foil laminate pouches	0.82		0.14

26	Plastic films and flexibles	Plastic film packaging	3.27		1.07
27	Plastic films and flexibles	Bin Bags	1.66		0.03
28	Plastic films and flexibles	Carrier bags	1.53		0.38
29	Plastic films and flexibles	Non-packaging plastic film	0.39		0.32
30	Garden waste	Mowing, cutting and pruning garden waste	15.27		0.00
31	Garden waste	Soil	0.00		0.00
32	Food wastes	Food (avoidable) - in packaging	7.58		1.59
33	Food wastes	Drinks (avoidable) - in packaging	0.58		0.00
34	Food wastes	Food and drink (avoidable) - loose	5.33		0.12
35	Food wastes	Inedible parts of food	8.27		0.00
36	Food wastes	Cooking oil	0.13		0.00
37	Wood	Wooden packaging	0.00		0.00
38	Wood	Non-packaging wood	0.36		1.44
39	Electrical and electronic items	Small domestic appliances and cables	0.43		0.00
40	Electrical and electronic items	Batteries	0.06		0.00
41	Electrical and electronic items	Light bulbs and tubes	0.01		0.00
42	Electrical and electronic items	Other WEEE and associated consumables	0.04		0.00
43	Textiles	Clothing	1.40		0.00
44	Textiles	Shoes, bags, belts and other textile accessories	0.64		0.00
45	Textiles	Non-clothing fabric and textiles	1.09		0.00
46	Textiles	Carpet & underlay	0.00		0.00
47	Absorbent hygiene products	Disposable Nappies	4.59		1.54
48	Absorbent hygiene products	Other absorbent hygiene products	0.65		0.00
49	Other	Potentially hazardous healthcare wastes	0.13		0.00
50	Other	Pet excrement, bedding, dead animals and cat litter	6.29		0.00
51	Other	Miscellaneous combustible	3.92		1.05
52	Other	Miscellaneous non-combustible	9.48		0.00
53	Other	Miscellaneous hazardous	0.00		0.00
54	Unclassified	Sorting residues less than 10mm ('fines')	5.94		0.76
		Total %)	100.00		100.00

Appendix 2B: Oban & Lorn residual and recycling bins-Average percentages of waste types

Waste Composition Analysis Input Sheet-Oban & Lorn			
1	Sample area		
2	Street block		
3	Waste Stream sampled	**Residual**	**Recycling**
4	Container type	**240L**	**240L**
5	Dwelling type		
6	Days represented in sample	**21**	**14**
7	Date of sampling	26 Feb-01Mar 24	04-06Mar 24
8	Number of households sampled	171	82
9	Total weight sampled (kg)	4148	566

		Sample area		
	Waste type level 1	**Waste type Level 2**	%	%
1	Glass waste	Drinks bottles	6.09	2.42
2	Glass waste	Other glass packaging	2.04	0.74
3	Glass waste	Non-packaging glass	0.32	0.15
4	Paper	Newspaper, magazines and directories	0.60	22.21
5	Paper	Other recyclable paper	0.19	3.64
6	Paper	Recyclable paper packaging	0.36	1.72
7	Paper	Non-recyclable paper	5.81	1.66
8	Cardboard	Thin (Grey) Card Packaging	1.69	13.90
9	Cardboard	Thick (Brown) corrugated cardboard packaging	0.45	13.15
10	Cardboard	Cartons and other card/plastic laminate packaging	0.22	1.28
11	Cardboard	Other card	0.03	0.26
12	Cardboard	Heavily contaminated card & other composite card	0.40	0.49
13	Metal	Steel drink cans	0.00	0.00
14	Metal	Other ferrous packaging	0.75	2.64
15	Metal	Aluminium drink cans	0.53	3.83
16	Metal	Aluminium packaging	0.73	0.29
17	Metal	Aerosols	0.23	0.48
18	Metal	Scrap metal (exc WEEE)	1.21	0.59
19	Dense plastic	HDPE drink bottles	0.31	2.11
20	Dense plastic	PET drink bottles	0.90	4.33
21	Dense plastic	Other non-drinks plastic bottles	0.67	2.52
22	Dense plastic	Pots, tubs and trays	2.66	5.49
23	Dense plastic	Non-recyclable plastic packaging	0.58	0.78
24	Dense plastic	Other dense plastic (Non-packaging)	1.32	0.50
25	Plastic films and flexibles	Plastic/foil laminate pouches	0.66	0.55
26	Plastic films and flexibles	Plastic film packaging	3.67	2.31
27	Plastic films and flexibles	Bin Bags	1.49	0.59

28	Plastic films and flexibles	Carrier bags	1.35	0.77
29	Plastic films and flexibles	Non-packaging plastic film	0.21	0.07
30	Garden waste	Mowing, cutting and pruning garden waste	7.86	0.00
31	Garden waste	Soil	0.54	0.00
32	Food wastes	Food (avoidable) - in packaging	12.63	2.82
33	Food wastes	Drinks (avoidable) - in packaging	0.90	1.13
34	Food wastes	Food and drink (avoidable) - loose	6.04	0.81
35	Food wastes	Inedible parts of food	9.07	0.57
36	Food wastes	Cooking oil	0.05	0.00
37	Wood	Wooden packaging	0.03	0.02
38	Wood	Non-packaging wood	0.76	0.00
39	Electrical and electronic items	Small domestic appliances and cables	1.01	0.00
40	Electrical and electronic items	Batteries	0.10	0.00
41	Electrical and electronic items	Light bulbs and tubes	0.02	0.02
42	Electrical and electronic items	Other WEEE and associated consumables	0.07	0.22
43	Textiles	Clothing	2.19	1.42
44	Textiles	Shoes, bags, belts and other textile accessories	0.58	0.36
45	Textiles	Non-clothing fabric and textiles	1.19	0.68
46	Textiles	Carpet & underlay	0.03	0.00
47	Absorbent hygiene products	Disposable Nappies	3.79	0.23
48	Absorbent hygiene products	Other absorbent hygiene products	0.47	0.08
49	Other	Potentially hazardous healthcare wastes	0.12	0.04
50	Other	Pet excrement, bedding, dead animals and cat litter	7.81	0.11
51	Other	Miscellaneous combustible	5.46	1.44
52	Other	Miscellaneous non-combustible	0.87	0.14
53	Other	Miscellaneous hazardous	0.00	0.18
54	Unclassified	Sorting residues less than 10mm ('fines')	2.92	0.26
		Total sorted (%, unadjusted)	100	100

Appendix 2C: Oban & Lorn residual and recycling bins-Percentages per sample days

	Waste Composition Analysis Input Sheet Oban & Lorn								
1	Sample area		1	2	3	4	1	2	3
2	Street block								
3	Waste Stream sampled		Residual	Residual	Residual	Residual	Recycling	Recycling	Recycling
4	Container type		240L	240L	240L	240L	240L	240L	240L
5	Dwelling type								
6	Days represented in sample		14	14	14	14	14	14	14
7	Date of sampling-2024		26th Feb	27th Feb	28th Feb	1st Mar	4th Mar	5th Mar	6th Mar
8	Number of households sampled		21	50	50	50	18	48	16
9	Total weight sampled (Kg)		447.8	1544	887.6	1268	106.1	345.3	115
		Sample area	**1**	**2**	**3**	**4**	**1**	**2**	**3**
	Waste type level 1	**Waste type Level 2**	**wt%**	**wt%**	**wt%**	**wt%**	**wt%**	**wt%**	**wt%**
1	Glass waste	Drinks bottles	3.35	7.49	9.55	3.96	0.00	1.77	5.48
2	Glass waste	Other glass packaging	2.04	1.76	1.96	2.41	0.57	1.05	0.61
3	Glass waste	Non-packaging glass	0.20	0.47	0.49	0.12	0.28	0.17	0.00
4	Paper	Newspaper, magazines and directories	0.47	0.80	0.55	0.59	25.91	6.46	34.25
5	Paper	Other recyclable paper	0.09	0.24	0.33	0.12	5.14	1.35	4.43
6	Paper	Recyclable paper packaging	0.21	0.19	0.71	0.31	2.03	1.87	1.27
7	Paper	Non-recyclable paper	8.85	4.92	5.13	4.34	0.76	2.15	2.06
8	Cardboard	Thin (Grey) Card Packaging	0.84	1.67	2.52	1.72	14.25	14.61	12.85
9	Cardboard	Thick (Brown) corrugated cardboard packaging	0.24	0.31	0.55	0.73	19.49	12.28	7.68
10	Cardboard	Cartons and other card/plastic laminate packaging	0.24	0.18	0.18	0.28	1.51	1.22	1.10
11	Cardboard	Other card	0.07	0.02	0.02	0.00	0.61	0.13	0.04
12	Cardboard	Heavily contaminated card & other composite card	0.16	0.32	0.91	0.22	0.14	0.46	0.88
13	Metal	Steel drink cans	0.00	0.00	0.00	0.00	0.00	0.00	0.00

14	Metal	Other ferrous packaging	0.54	0.83	1.06	0.58	2.93	2.85	2.15
15	Metal	Aluminium drink cans	0.19	0.62	0.88	0.43	2.69	5.07	3.73
16	Metal	Aluminium packaging	0.58	1.23	0.66	0.47	0.47	0.30	0.09
17	Metal	Aerosols	0.33	0.12	0.29	0.18	0.38	0.45	0.61
18	Metal	Scrap metal (exc WEEE)	2.07	1.77	0.33	0.68	0.24	1.50	0.04
19	Dense plastic	HDPE drink bottles	0.01	0.30	0.71	0.20	2.22	1.97	2.15
20	Dense plastic	PET drink bottles	0.10	2.10	0.88	0.53	3.45	5.74	3.82
21	Dense plastic	Other non-drinks plastic bottles	0.73	0.65	0.75	0.55	3.26	2.50	1.80
22	Dense plastic	Pots, tubs and trays	1.83	3.56	3.12	2.13	6.32	5.37	4.78
23	Dense plastic	Non-recyclable plastic packaging	1.29	0.42	0.30	0.31	1.23	0.76	0.35
24	Dense plastic	Other dense plastic (Non-packaging)	3.99	0.36	0.37	0.54	0.57	0.89	0.04
25	Plastic films and flexibles	Plastic/foil laminate pouches	0.64	0.75	0.70	0.56	0.61	0.78	0.26
26	Plastic films and flexibles	Plastic film packaging	4.48	2.99	3.00	4.22	2.36	3.12	1.45
27	"	Bin Bags	1.40	1.79	1.46	1.32	0.05	1.03	0.70
28	"	Carrier bags	1.24	1.82	1.30	1.05	0.71	0.76	0.83
29	Plastic films and flexibles	Non-packaging plastic film	0.27	0.13	0.22	0.24	0.05	0.07	0.09
30	Garden waste	Mowing, cutting and pruning garden waste	1.00	3.11	6.94	20.38	0.00	0.00	0.00
31	Garden waste	Soil	1.48	0.44	0.00	0.24	0.00	0.00	0.00
32	Food wastes	Food (avoidable) - in packaging	7.24	16.71	15.77	10.80	0.00	6.87	1.58
33	Food wastes	Drinks (avoidable) - in packaging	0.07	1.52	1.42	0.61	0.00	1.84	1.54
34	Food wastes	Food and drink (avoidable) - loose	6.41	8.04	5.44	4.25	0.00	1.23	1.18
35	Food wastes	Inedible parts of food	10.76	10.22	8.04	7.27	0.05	1.26	0.39

36	Food wastes	Cooking oil	0.00	0.00	0.21	0.00	0.00	0.00	0.00
37	Wood	Wooden packaging	0.01	0.02	0.02	0.06	0.05	0.01	0.00
38	Wood	Non-packaging wood	1.65	0.36	0.59	0.45	0.00	0.00	0.00
39	Electrical and electronic	Small domestic appliances and cables	1.76	0.36	0.45	1.45	0.00	0.00	0.00
40	Electrical and electronic	Batteries	0.08	0.18	0.10	0.04	0.00	0.01	0.00
41	Electrical and electronic	Light bulbs and tubes	0.02	0.02	0.02	0.02	0.00	0.07	0.00
42	Electrical and electronic	Other WEEE and associated consumables	0.08	0.00	0.16	0.06	0.00	0.67	0.00
43	Textiles	Clothing	1.77	2.99	1.93	2.07	0.61	3.64	0.00
44	Textiles	Shoes, bags, belts and other textile accessories	0.95	0.25	0.43	0.70	0.00	1.07	0.00
45	Textiles	Non-clothing fabric and textiles	0.47	1.03	1.20	2.06	0.00	2.03	0.00
46	Textiles	Carpet & underlay	0.00	0.00	0.12	0.00	0.00	0.00	0.00
47	Absorbent hygiene	Disposable Nappies	1.24	5.73	1.29	6.89	0.00	0.70	0.00
48	Absorbent hygiene products	Other absorbent hygiene products	0.21	0.44	0.55	0.65	0.09	0.13	0.00
49	Other	Potentially hazardous healthcare wastes	0.19	0.03	0.12	0.13	0.09	0.01	0.00
50	Other	Pet excrement, bedding, dead animals and cat litter	12.97	3.43	8.11	6.72	0.00	0.06	0.26
51	Other	Miscellaneous combustible	9.49	3.30	4.93	4.12	0.61	2.53	1.18
52	Other	Miscellaneous non-combustible	1.36	1.33	0.65	0.16	0.00	0.42	0.00
53	Other	Miscellaneous hazardous	0.00	0.00	0.00	0.00	0.00	0.55	0.00
54	Unclassified	Sorting residues less than 10mm ('fines')	4.33	2.70	2.59	2.07	0.28	0.19	0.31
Total sorted (%, unadjusted)			100	100	100	100	100	100	100

References

[1] The composition of household waste at the kerbside in 2021-23 Summary of findings

Anastasios Markopoulos, Zero Waste Scotland, October 2023.

https://www.zerowastescotland.org.uk/resources/household-waste-composition-analysis

[2] The composition of household waste at the kerbside in 2021-23 Methodology Overview

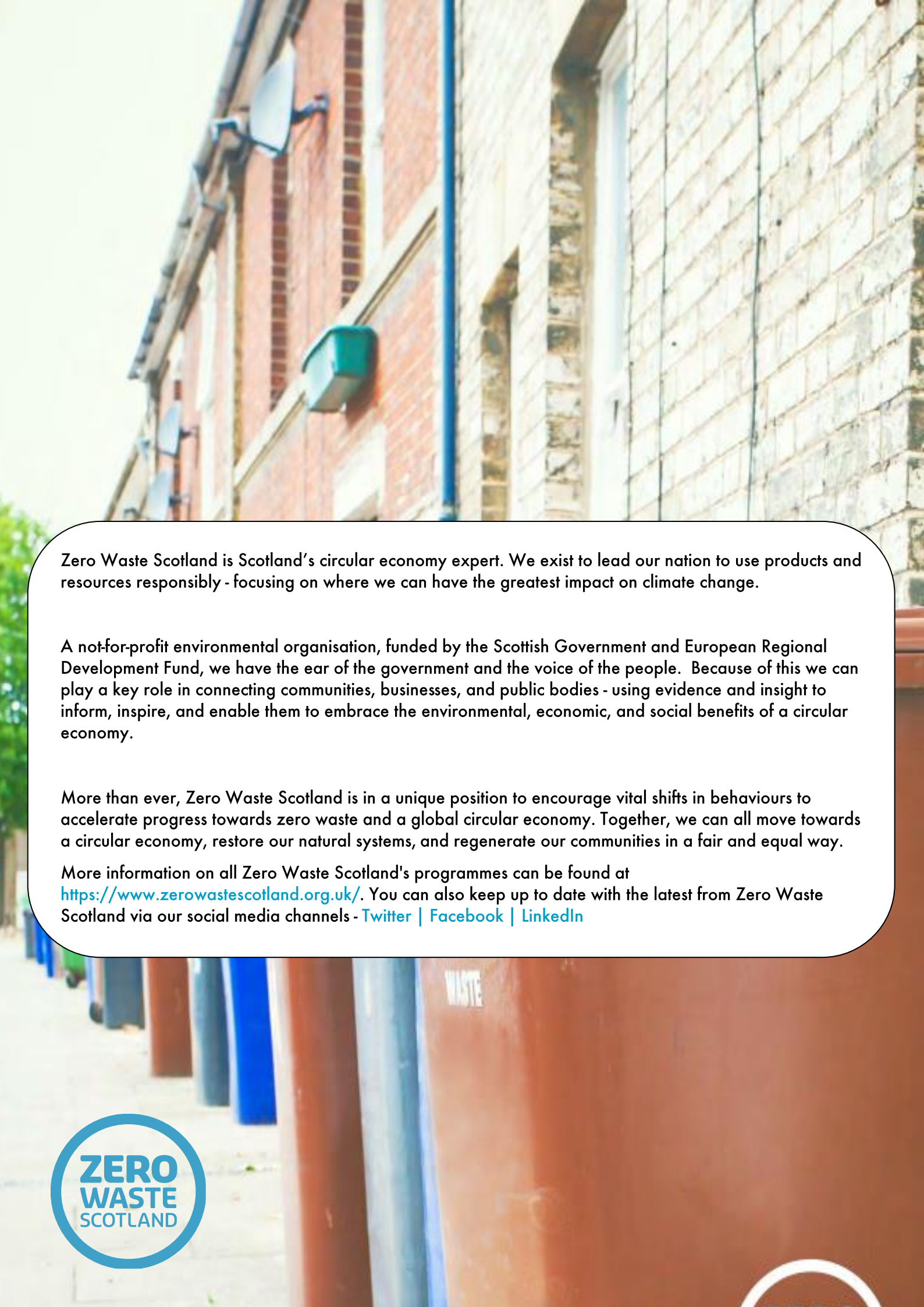
Anastasios Markopoulos, Zero Waste Scotland, October 2023.

https://www.zerowastescotland.org.uk/resources/household-waste-composition-analysis

[3] WRAP Press release (October 2022) (https://wrap.org.uk/media-centre/press-releases/84-uk-households-are-unintentionally-contaminating-their-recycling-bins)

[4] Garden Waste: Home composting costs and impacts, WRAP (2015)

(https://wrap.org.uk/resources/guide/waste-prevention-activities/garden-waste/home-composting)



Zero Waste Scotland is Scotland's circular economy expert. We exist to lead our nation to use products and resources responsibly - focusing on where we can have the greatest impact on climate change.

A not-for-profit environmental organisation, funded by the Scottish Government and European Regional Development Fund, we have the ear of the government and the voice of the people. Because of this we can play a key role in connecting communities, businesses, and public bodies - using evidence and insight to inform, inspire, and enable them to embrace the environmental, economic, and social benefits of a circular economy.

More than ever, Zero Waste Scotland is in a unique position to encourage vital shifts in behaviours to accelerate progress towards zero waste and a global circular economy. Together, we can all move towards a circular economy, restore our natural systems, and regenerate our communities in a fair and equal way.

More information on all Zero Waste Scotland's programmes can be found at https://www.zerowastescotland.org.uk/. You can also keep up to date with the latest from Zero Waste Scotland via our social media channels - Twitter | Facebook | LinkedIn

ZERO WASTE SCOTLAND