Merseyside and Halton Kerbside Waste Composition Analysis

Merseyside Recycling & Waste Authority (MRWA)

Annual Report January 2022

MERSEYSIDE RECYCLING & WASTE AUTHORITY

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Project details and acknowledgements

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Accuracy Statement

All findings in this report relate to figures gained from the sampling exercise of kerbside waste and recycling undertaken by M·E·L Waste Insights. Discussions relating to tonnages, percentage of waste diverted, capture rates and contamination use data from these surveys. Reporting of tonnages and/or percentages of waste recycled or diverted, this is a product from the sample being put into the right container and not to be confused with actual/contractual rates. Results from the standard M·E·L sampling protocol for compositional analysis can be taken as accurate for each primary material category to within error bands of +/-10% at the 95% confidence level (2 standard deviations), assuming a normal statistical distribution for:

Kilograms per household per week by:

- individual Acorn Groups at Merseyside and Halton local authority levels
- Merseyside and Halton area overall

Overall percentage compositional makeup by:

- individual Acorn Groups at Merseyside and Halton local authority levels
- Merseyside and Halton area overall

At the data entry stage, 1 in 10 parts of data that is inputted are checked with the data sheets and if errors are found all the data is then rechecked

Introduction

Background

Merseyside Recycling and Waste Authority (MRWA) is a statutory waste disposal authority[1]that manages the municipal solid waste produced across Merseyside and Halton on behalf of the five Merseyside District Councils (Knowsley, Liverpool, Sefton, St. Helens and Wirral) and via a separate agreement with Halton Council. The Authority therefore serves the waste disposal requirements of more than 1.5 million people that reside in 630,000 properties. MRWA also manages the sorting of the kerbside collected dry recycling from five of the six District Councils, via its two Materials Recovery Facilities.

On behalf of MRWA, a compositional analysis detailing the breakdown of all waste and recycling types (kerbside collected residual waste and kerbside collected dry recycling was commissioned for the Merseyside and Halton Waste Partnership to cover the six associated District council areas. Each of the participating Districts councils also had a compositional assessment of the waste and recycling collected from non-kerbside households using shared or communal bins (flats). The findings from flats are contained in a separate report. By assessing all these waste streams from districts, it will be possible to provide compositional estimates for the household waste and recycling collected throughout Merseyside and Halton as a whole.

MRWA also provides 14 Household Waste Recycling Centres (HWRCs) in Merseyside and two HWRCs in Halton as part its contract with Veolia UK. The local Centres allow for householders to recycle more than 40 different materials. Six of these sites were selected for the compositional analysis of general waste containers.

This report is specifically for the kerbside collected residual waste and kerbside dry recycling generated throughout households within the Merseyside and Halton Waste Partnership area. Findings for the HWRC waste collected throughout the area will be contained in a separate report.

In 2020, MRWA had a combined recycling and composting rate of 37.2%. Ranges across the District councils are 23.6% for Liverpool up to 37.5% for Halton. As well as giving indications as to the levels of kerbside collected residual waste and kerbside dry recycling being generated, this report also provides observations

[1] *Merseyside Recycling and Waste Authority is the public facing name for Merseyside Waste Disposal Authority, which is a statutory Joint Waste Disposal Authority under the Local Government Act 1985*

on the levels of materials that are currently recyclable at the kerbside and those which could potentially be recyclable via future kerbside recycling collections.

This report presents results from the analysis of kerbside collected residual waste and recycling collected from the six District councils surveyed. Each council had four demographic areas sampled which provided the best overall average figures for each. These average figures were then used to provide the best estimates for the kerbside collected residual waste and kerbside dry recycling collected across the Merseyside and Halton Waste Partnership area. The sampling exercise took place across two seasonal periods. Phase one (Spring) took place during May and June 2021 with Phase two (Autumn) done in November and December 2021. Figures in this report combine results from both seasonal phases of fieldwork and therefore represent annual estimates for Merseyside and Halton kerbside collected residual waste and kerbside dry recycling.

Objectives

Specific aims of the work were to:

- Understand the levels of kerbside collected residual being generated by the selected households to form a picture of the waste collected throughout Merseyside and Halton
- Evaluate the amount of specific materials in the kerbside collected residual waste that could potentially be collected separately for recycling at the kerbside
- Assess the amount of separate recycling being generated in terms of kg/hh/wk
- Evaluate the levels and types of contamination present within the kerbside collected dry recycling
- Detect capture rates for individual materials which are collected separately for recycling
- Determine the proportion of kerbside collected residual waste and kerbside dry recycling that was formed from packaging
- Determine the proportion of kerbside collected residual waste and kerbside dry recycling that was formed from potentially re-useable material.
- Comparisons with other previous waste composition studies where suitable data is available.
- Comparisons with national waste composition studies where suitable data is available.

Executive Summary – Compositional Analysis

Key findings – Annual Averages

Kerbside collected residual waste

- 80% of households sampled, presented kerbside collected residual waste for collection.
- In terms of waste generation, households were setting out an average of 6.62kg/hh/wk. this amount allows for the 20% of households who did not present waste.
- Solely considering presented kerbside collected residual waste bins (i.e., if set out was 100%) the amount of waste generated is 8.31kg/hh/wk.
- WRAP has categorised food and drink waste by how avoidable it is:

  Avoidable – food and drink thrown away that was, at some point prior to disposal, edible (e.g., slice of bread, apples, meat).

  Possibly avoidable – food and drink that some people eat, and others do not (e.g., bread crusts), or that can be eaten when a food is prepared in one way but not in another (e.g., potato skins).

  Unavoidable – waste arising from food or drink preparation that is not, and has not been, edible under normal circumstances (e.g., meat bones, eggshells, pineapple skin, tea bags).
- Food waste was seen to be the major component of Merseyside and Halton's kerbside collected residual waste forming 31.6% of the total. Of this food, 73% is deemed to be avoidable with 48% of all discarded food still packaged.
- Paper items made up 7.0% of the Merseyside and Halton's kerbside collected residual waste; 22% of this was of a type that could have been separately recycled at the kerbside. 5% of paper in the residual waste was classified as packaging.
- Card and cardboard items made up 5.0% of the Merseyside and Halton's kerbside collected residual waste; 69% of this was of a type that could have been separately recycled at the kerbside. 79% of card and cardboard in the residual waste was classified as packaging.
- Plastic items made up 11.9% of the Merseyside and Halton's residual waste; 17.5% of this was of a type that could have been separately recycled at the kerbside. 80% of residual plastic waste was classified as packaging.
- Metallic items made up 3.6% of the Merseyside and Halton's residual waste; 41% of this was classified as recyclable packaging. 67% of residual metal waste was classified as packaging.
- Glass items made up 3.6% of the Merseyside and Halton's residual waste; 89% of this was classified as recyclable packaging.
- Include reference to WEEE data as a contaminate
- 2.3% of kerbside collected residual waste was found to be garden vegetation.
- Overall, 12.6% of collected kerbside collected residual waste could have been placed into the kerbside collected dry recycling bins/boxes throughout Merseyside and Halton, the equivalent of 0.83kg/hh/wk.
- Overall, 27.0% of St Helens kerbside collected residual waste could have been placed into food recycling bins, the equivalent of 2.1kg/hh/wk. This is 3.7% of the Merseyside and Halton area's waste.

- An additional 2.3% or 0.15kg/hh/wk of kerbside collected residual waste across Merseyside & Halton was recyclable garden bin waste
- In total 18.7% of kerbside collected residual waste collected could have been separately recycled at the kerbside –1.2kg/hh/wk.
- 20.9% of Merseyside and Halton's kerbside collected residual waste was classified as packaging waste. The equivalent of 1.38kg/hh/wk.
- 50.1% of this packaging waste was of a type suitable for kerbside collected dry recycling; the equivalent of 10.5% of kerbside collected residual waste.
- 4.2% of kerbside collected residual waste was due to single use drinks containers, 52% of which were due to glass bottles.
- 7.0% (0.46kg/hh/wk) of kerbside collected residual waste had some re-use potential. Around 77% of this was due to textiles most of which were clothes and shoes.

Kerbside collected dry recycling

- 69% of Merseyside and Halton's households presented recycling containers for collection.
- In terms of waste generation, Merseyside and Halton's households set out an average of 3.1kg/hh/wk of kerbside collected dry recycling.
- Overall, 27% of kerbside collected dry recycling waste collected from all properties was classified as contamination – 0.83kg/hh/wk.
- 22% of contamination was due to non-recyclable plastics with 23% being non-recyclable paper & card and 21% food and drink waste.
- Around 78% of recyclable paper and 76% of recyclable card was correctly captured across Merseyside and Halton's households.
- 65% of recyclable plastics were recycled.
- 61% of recyclable metals were recycled
- 79% of glass bottles and jars were recycled
- Overall, 74.6% of all materials compatible with Merseyside and Halton's kerbside collected dry recycling bins/boxes were correctly recycled.
- From the kerbside collected dry recycling, 69% or 2.1kg/hh/wk was classified as packaging.
- 86% of this packaging was compatible with kerbside recycling.
- 31% of kerbside collected dry recycling was due to single use drinks containers, 71% of which were due to glass bottles.
- 3.2% (0.10kg/hh/wk) of kerbside collected dry recycling had some re-use potential. Around 50% of this was due to textiles and clothing.

Kerbside collected food recycling

- The analysis shows that an average of 27% of St. Helens households presented food bins for collection.

- In terms of food waste collection, households were setting out an average of 0.9kg/hh/wk of food for recycling.
- 58% of recycled food was avoidable.
- Overall, 2.5% of food recycling waste collected from all St. Helens properties was classified as contamination with an additional 4.3% being packaged food.
- 61% of unavoidable and 23% of avoidable food was correctly recycled.
- 30% of all food waste generated throughout St. Helens was recycled.

Kerbside collected garden recycling

- The analysis shows that an average of 19% of households presented garden bins for collection.
- In terms of waste generation, surveyed households were setting out an average of 1.7kg/hh/wk of garden recycling.
- Overall, 38% of recycling waste collected from all properties was classified as contamination, 67% of which was soil and turf with 18% food and 14% plastics.
- 87% of all garden waste was correctly recycled with the remainder largely disposed of in kerbside collected residual waste.

Recycling rates

- An average of 11.5kg/hh/wk of kerbside waste was generated by sampled households.
- 20.1% of kerbside waste is diverted by kerbside collected dry recycling.
- 0.9% of kerbside waste is diverted by St. Helens kerbside collected food recycling
- 9.0% of kerbside waste is diverted by garden bins.
- This is a total diversion of 30.0%.
- Were all recyclable items correctly disposed of in the correct kerbside bins, then a maximum diversion of 39.5% would be achievable.

Total kerbside packaging materials

- When combining all Merseyside and Halton's kerbside collected residual waste and recycling, a total of 3.5kg/hh/k or 31% was classified as packaging materials (both recyclable and non-recyclable).
- Of all the packaging being disposed of, 69% was suitable for kerbside collected dry recycling.
- Consequently, 21.3% of all Merseyside and Halton's kerbside waste or 2.45kg/hh/wk is due to recyclable packaging.
- Of all the recyclable packaging disposed of, 72% was correctly put in kerbside collected dry recycling bins.

Sampling

For each of the six surveyed Districts councils, four demographic samples (Acorn Types) were selected for the analysis of kerbside collected waste and kerbside collected dry recycling. Table 1 shows the relative proportion of each demographic for its respective council.

Table 1 – Acorn profile for Merseyside and Halton District council authorities

ACORN CATEGORY WEIGHTING		HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL
ACORN 1	AFFLUENT ACHIEVERS	16.5%	9.0%	12.0%	32.7%	16.0%	30.4%
ACORN 3	COMFORTABLE COMMUNITIES	23.2%	28.3%	14.7%	27.6%	29.1%	24.3%
ACORN 4	FINANCIALLY STRETCHED	29.2%	26.7%	28.7%	19.1%	29.1%	21.1%
ACORN 5	URBAN ADVERSITY	31.1%	36.0%	44.5%	20.5%	25.8%	24.2%
TOTAL		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Each sample was formed from the waste presented by around fifty selected households. Therefore, each council area had around 200 households surveyed during each of the two seasonal surveys. Averages for each council were calculated by weighting the figures for each sample against the councils Acorn profile. Waste generation is recorded in kilograms per household per week (kg/hh/wk). This is the average amount of weekly material generated per household from each sample of 50 households; not just those that are participating. Across the six councils (24 individual samples x 50 households x 2 phases = 2,400 households) generated a total of 22,261kg of kerbside collected residual waste, 12,316kg of kerbside collected dry recycling and 6,274kg of garden recycling were surveyed. Additionally, 569kg of food was collected from St. Helens.

To gain the best overall figures for Merseyside and Halton, the average figures from each council were weighted relative to their annual tonnage contributions for each waste stream as shown in Table 2.

Table 2 – Annual tonnage data 2020/21

DISTRICT	RESIDUAL (t)	MIXED RECYCLING (t)	GARDEN RECYCLING (t)
Halton MBC	28,786t	12,199t	4,389t*
Knowsley MBC	40,681t	15,310t	7,164t
Liverpool CC	129,368t	38,148t	19,669t
Sefton MBC	70,371t	28,332t	21,862t
St Helens MBC	47,850t	16,237t**	6,024t
Wirral MBC	81,323t	31,590t	12,754t
TOTAL	398,379t	141,816t	71,862t

Table 3 – Annual tonnage data (% contribution)

DISTRICT	RESIDUAL (%)	MIXED RECYCLING (%)	GARDEN RECYCLING (%)
Halton BC	7.2%	8.6%	6.1%*
Knowsley BC	10.2%	10.8%	10.0%
Liverpool CC	32.5%	26.9%	27.4%
Sefton B C	17.7%	20.0%	30.4%
St Helens B C	12.0%	11.4%**	8.4%
Wirral B C	20.4%	22.3%	17.7%
TOTAL	100.0%	100.0%	100.0%

* *Halton is the only authority to deliver green waste to MRWA*

** *Only 1,491t of the 16,237t of kerbside collected dry recycling is delivered to MRWA*

For kerbside collected residual waste, Merseyside and Halton residents generally have wheelie bins collected fortnightly. Some households that cannot accommodate bins may use bags and may also have weekly collections.

Merseyside and Halton residents also have kerbside collected dry recycling; again, this is generally using wheelie bins that are collected on a fortnightly basis. St. Helens residents have a weekly collection of kerbside collected dry recycling and use a mixture of boxes and bags.

Most households with gardens have access to collections of garden waste. For Liverpool, Halton, St. Helens, and Wirral this is a fortnightly collection with a three weekly cycle operating throughout Sefton and Knowsley.

St. Helens residents additionally have food waste collections which take place on a weekly basis.

The range of materials suitable for kerbside collected dry recycling across Merseyside and Halton are shown below. There are slight differences in the materials that can be recycled within each District council -

Paper = Newspapers, Magazines, Junk mail, leaflets & flyers, Envelopes, Directories.

Card & Cardboard = Cardboard boxes, Corrugated cardboard, Cardboard egg boxes, Cardboard sleeves, Cardboard tubes, Plain greetings cards.

Plastic bottles = Cleaner and detergent bottles, Trigger sprays, Toiletries and other bathroom bottles, Drinks bottles, Skin care product bottles, Ready=to=use plant food and pesticide bottles

Plastic pots and trays = Pots, Tubs, Trays/punnets, Chocolate and biscuit tubs and trays*

Metals = Drinks cans, Food tins, Metal lids and tops, Biscuit/chocolate tins, Aerosol cans*, Aluminium foil*, Foil trays*, Aluminium tubes*.

Glass bottles and jars = Bottles, Jars, Other glass bottles (for example = perfume, aftershave, face/body cream).

Textiles = Clean fabrics, clothing, accessories & shoes*

Food waste = all scrap food and food by=products*

Garden waste = all vegetation including pet bedding**

** St. Helens only.*

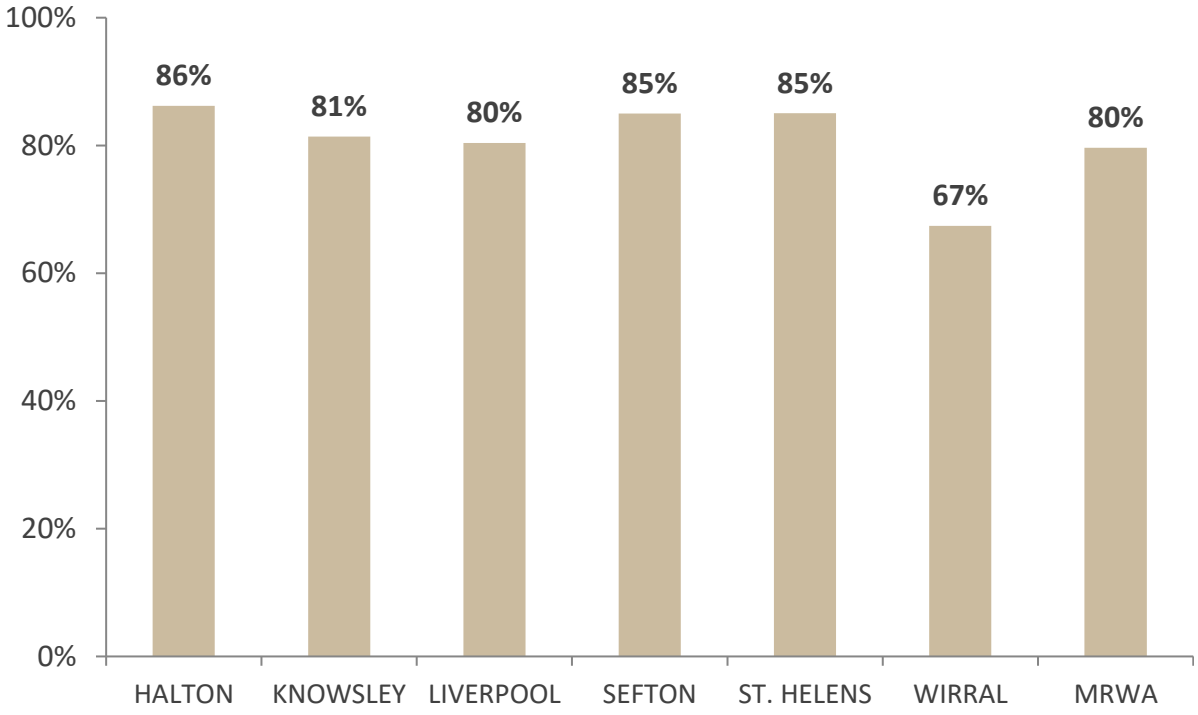
***Pet bedding Knowsley only*

Results – Kerbside Collected Residual Waste

Set out rates

Set out rates refer to the proportion of surveyed kerbside households actively placing out their waste at the time of collection. Results suggested (figure 1) that an annual average of 80% of households across Merseyside and Halton are setting out these bins for collection. Observed ranges were between 67% for Wirral and 86% for Halton.

Figure 1 – Set out rates for residual bins

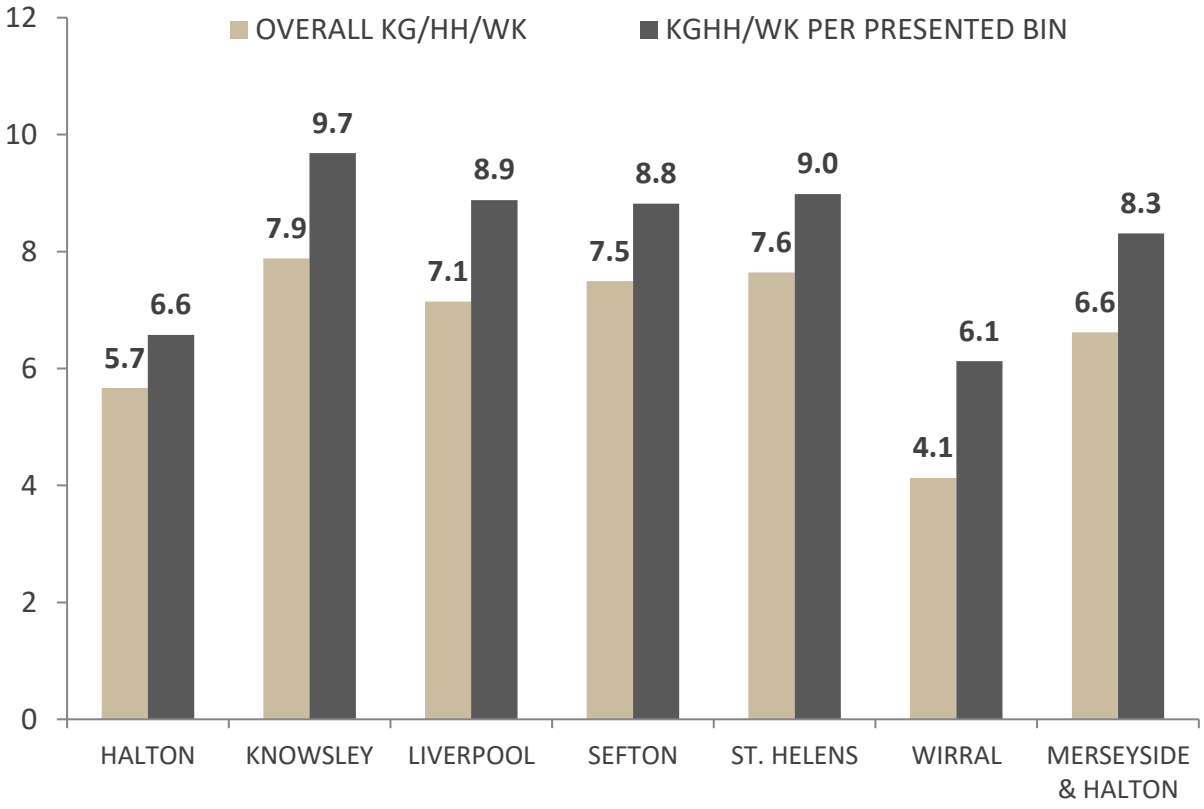


Residual waste generation

From observed results (figure 2), the annual weekly level of kerbside collected residual waste ranged between 4.1kg/hh/wk in Wirral, to 7.9kg/hh/wk in Knowsley. On average, 6.6kg/hh/wk of residual waste is being disposed of by the Merseyside & Halton households sampled. This represents a total annual average figure of 345kg/hh/yr. This figure accounts for the average set out of 80% thus including households that did not put out waste at the time of collection. This represents normal behaviour as you would not expect all households to present waste at every opportunity. Solely considering presented bins, the average

generated is 8.3kg/hh/wk or 434kg/hh/yr. This higher figure estimates the waste level that would be present if every household presented waste for every collection (i.e., 100% set out).

Figure 2 – Residual waste levels (kg/hh/wk)



Compositional analysis of residual waste

This section looks at the average amount and composition of the kerbside collected residual waste presented by the selected Merseyside and Halton households. Hand sorting of the kerbside collected residual waste gave concentration by weight figures for the main categories of waste as well as the more detailed sub-categories. Looking at the concentration percentages gives an indication as to the proportions of each waste category. This can be translated into a figure relating to the average waste generation expected for each waste category; this is given in kilograms per household per week (kg/hh/wk). Detailed residual composition tables can be found in a separate Excel document. Figure 3 breaks down the main waste types present within the kerbside collected residual waste. All kerbside collected residual waste will contain a proportion that is classified as potentially recyclable. That is to say that it should have been placed into one of the kerbside collected dry recycling containers provided.

Table 4: Average residual waste composition (%)

WASTE MATERIAL (%)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PAPER	7.59%	9.54%	6.73%	4.82%	7.43%	8.08%	7.01%
CARD & CARDBOARD	5.13%	5.98%	4.63%	4.99%	4.73%	5.16%	4.98%
PLASTIC FILM	5.67%	6.93%	5.40%	4.49%	6.12%	4.38%	5.39%
DENSE PLASTICS	6.62%	7.24%	6.45%	6.34%	7.47%	5.35%	6.54%
TEXTILES	5.50%	6.02%	5.47%	4.07%	6.33%	5.42%	5.37%
MISCELLANEOUS COMBUSTIBLES	11.23%	14.63%	23.16%	20.55%	15.86%	13.27%	18.59%
FURNITURE	0.00%	0.01%	0.00%	0.25%	0.00%	0.00%	0.05%
NON-COMBUSTIBLE INERTS	2.23%	1.45%	4.52%	5.33%	4.51%	3.96%	4.10%
GLASS	3.62%	4.49%	3.06%	3.62%	4.20%	3.70%	3.62%
FERROUS METALS	2.00%	2.08%	2.03%	1.98%	1.42%	2.12%	1.95%
NON-FERROUS METALS	1.87%	1.87%	1.74%	1.71%	1.48%	1.51%	1.69%
ORGANIC CATERING	43.90%	37.98%	29.82%	32.59%	28.07%	41.36%	33.46%
ORGANIC NON-CATERING	3.51%	0.91%	5.49%	7.63%	9.42%	4.69%	5.68%
HHW	0.47%	0.04%	0.08%	0.30%	1.47%	0.32%	0.37%
COVID-19 WASTE	0.28%	0.14%	0.12%	0.16%	0.12%	0.15%	0.14%
WEEE	0.27%	0.43%	0.79%	0.83%	0.34%	0.17%	0.58%
FINES	0.12%	0.25%	0.51%	0.33%	1.02%	0.36%	0.47%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table 5: Average residual waste generation (kg/hh/wk)

WASTE MATERIAL (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PAPER	0.43	0.75	0.48	0.36	0.57	0.33	0.46
CARD & CARDBOARD	0.29	0.47	0.33	0.37	0.36	0.21	0.33
PLASTIC FILM	0.32	0.55	0.39	0.34	0.47	0.18	0.36
DENSE PLASTICS	0.38	0.57	0.46	0.48	0.57	0.22	0.43
TEXTILES	0.31	0.47	0.39	0.31	0.48	0.22	0.36
MISCELLANEOUS COMBUSTIBLES	0.64	1.15	1.65	1.54	1.21	0.55	1.23
FURNITURE	0.00	0.00	0.00	0.02	0.00	0.00	0.00
NON-COMBUSTIBLE INERTS	0.13	0.11	0.32	0.40	0.34	0.16	0.27
GLASS	0.21	0.35	0.22	0.27	0.32	0.15	0.24
FERROUS METALS	0.11	0.16	0.14	0.15	0.11	0.09	0.13
NON-FERROUS METALS	0.11	0.15	0.12	0.13	0.11	0.06	0.11
ORGANIC CATERING	2.49	2.99	2.13	2.44	2.15	1.71	2.21
ORGANIC NON-CATERING	0.20	0.07	0.39	0.57	0.72	0.19	0.38
HHW	0.03	0.00	0.01	0.02	0.11	0.01	0.02
COVID-19 WASTE	0.02	0.01	0.01	0.01	0.01	0.01	0.01
WEEE	0.02	0.03	0.06	0.06	0.03	0.01	0.04
FINES	0.01	0.02	0.04	0.02	0.08	0.01	0.03
TOTAL	5.66	7.88	7.14	7.49	7.64	4.13	6.62

**Miscellaneous items deemed combustible. Includes nappies & sanitary, wood, carpet and other general bric-a-brac etc.*

***Mixed materials deemed non-combustible. Includes rubble, DIY cement, ceramics, cat litter etc.*

Figure 3: Average residual waste composition (%)

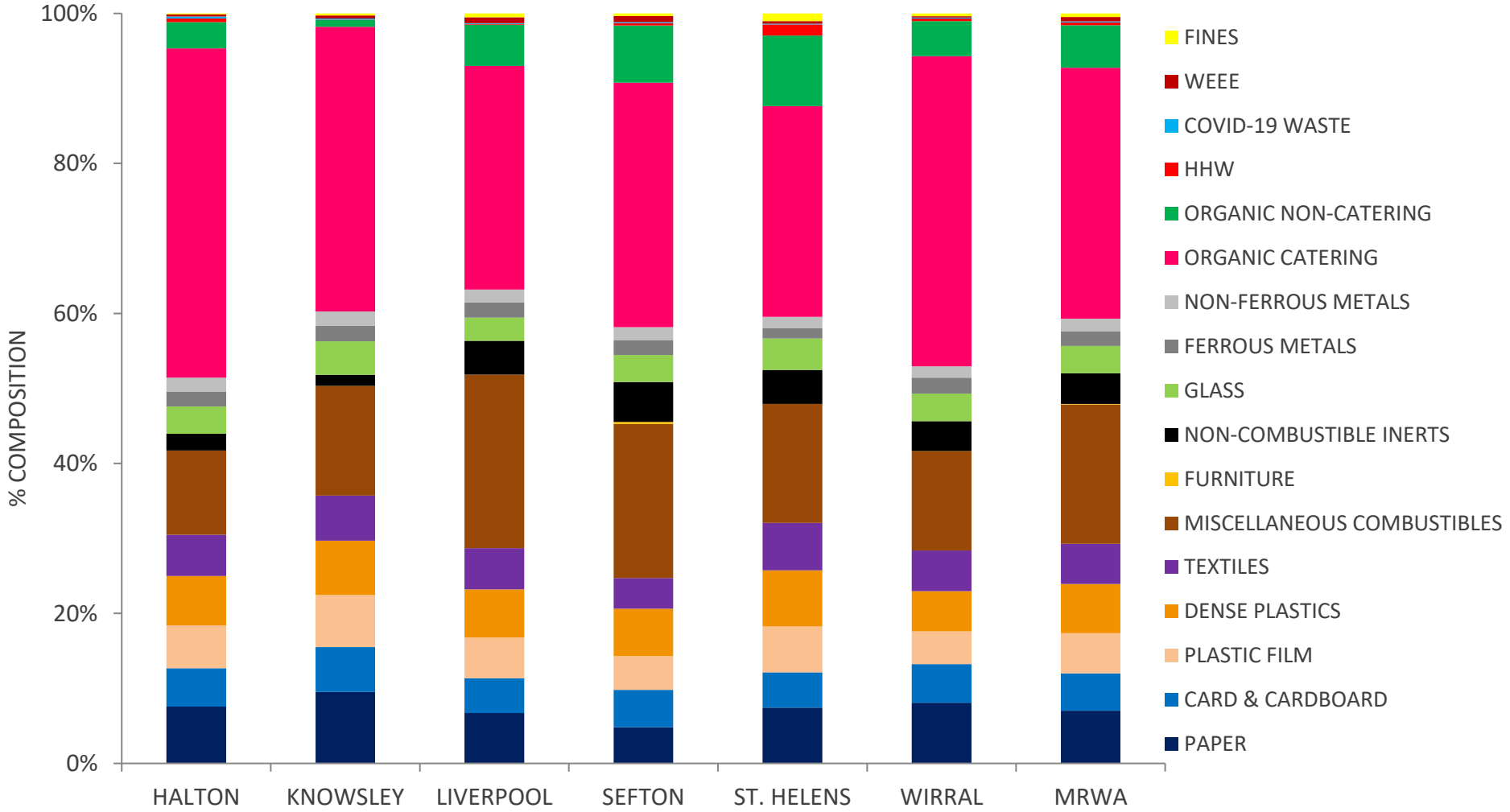
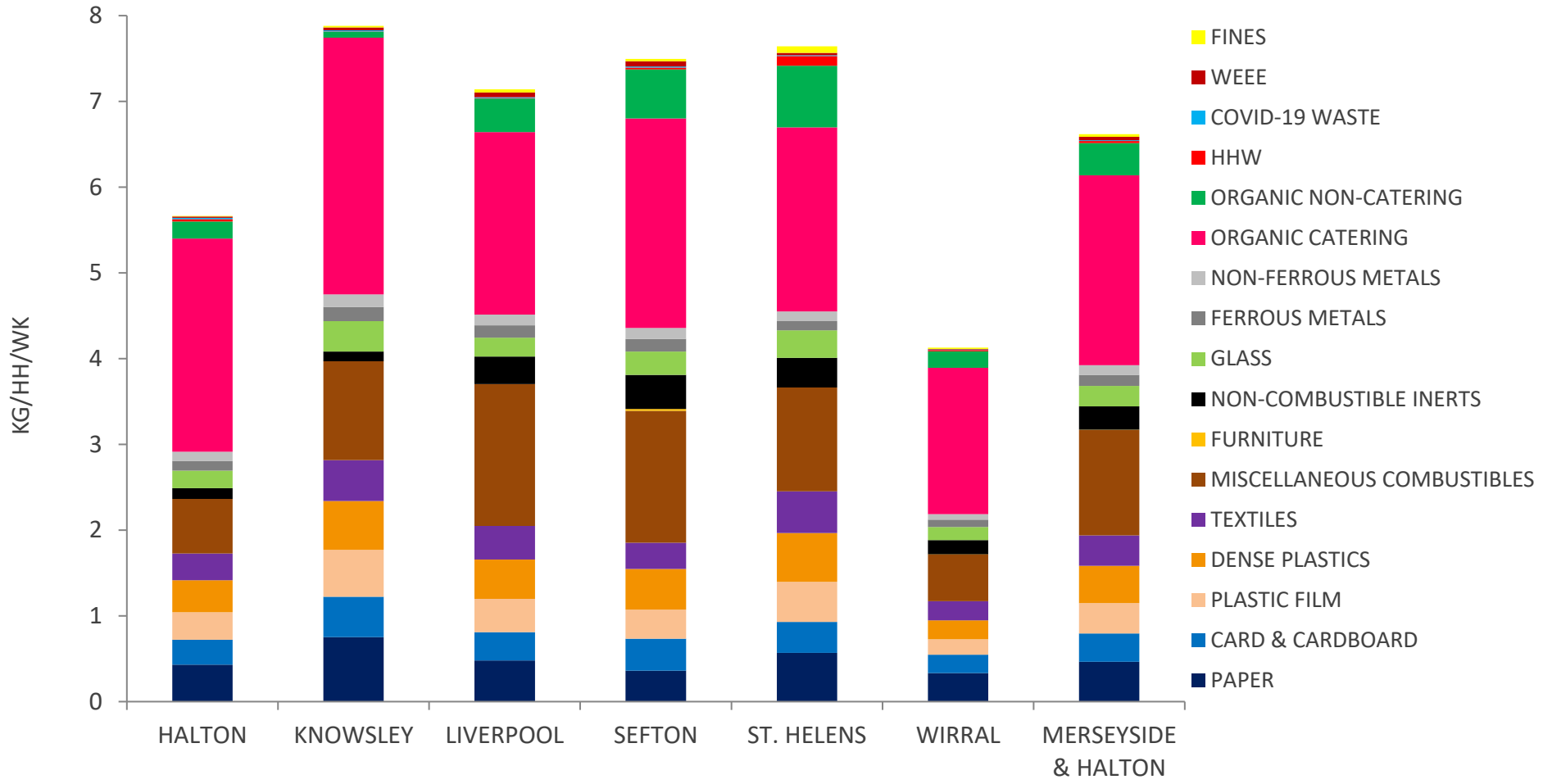


Figure 4: Average residual waste generation (kg/hh/wk)



Organic Waste

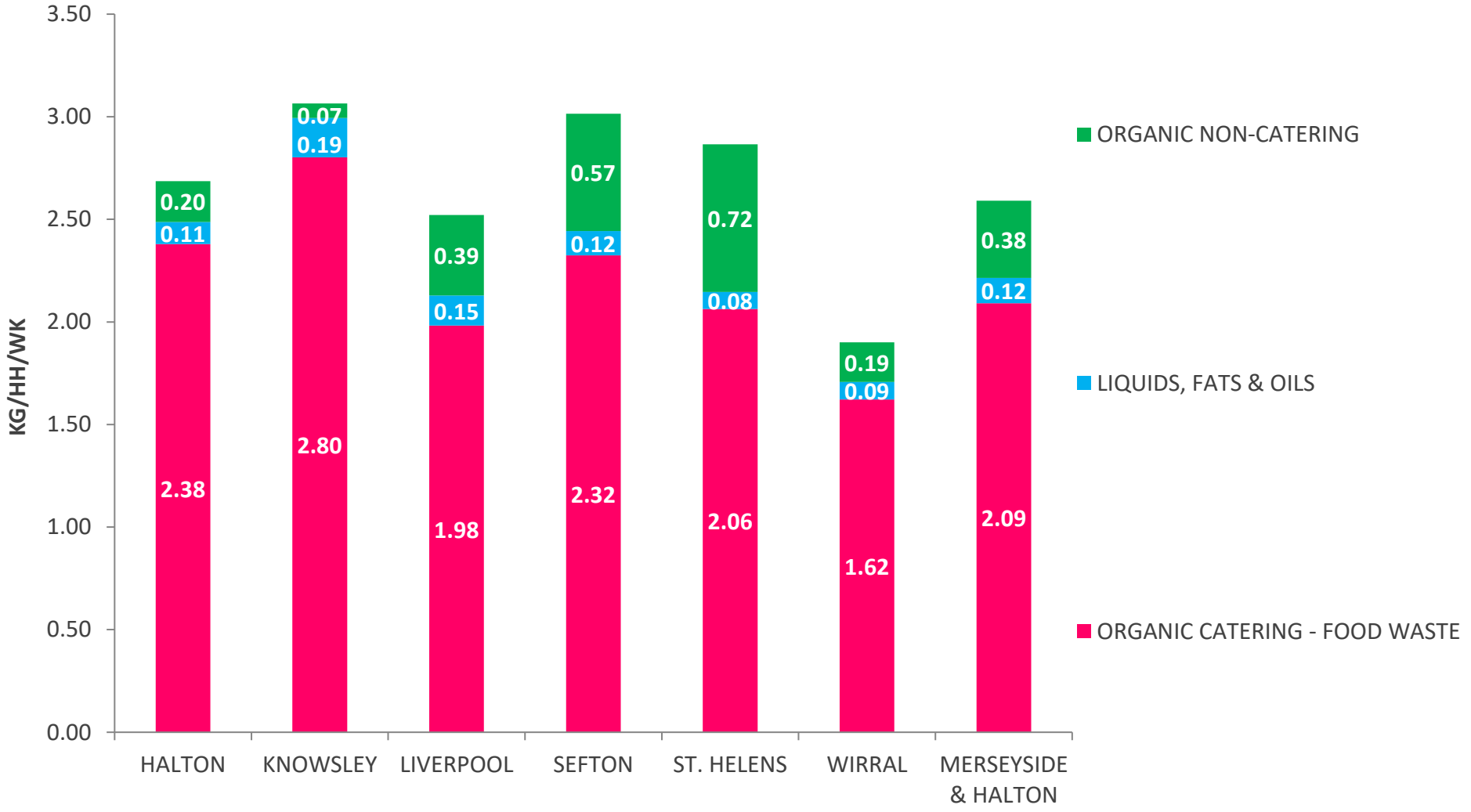
Organic waste (which includes food waste and non-catering organics such as garden waste and pet bedding) formed the greatest weight concentration of the primary waste categories for all Districts. Ranges seen were 35.3% from Liverpool to 47.4% for Halton households. Averaged for Merseyside and Halton, around 39.1% of all kerbside collected residual waste (2.59kg/hh/wk) is classified as organic.

Food waste alone accounted for between 27.0% (St. Helens) and 47.4% (Halton) of kerbside collected residual waste. On average, 31.6% of all kerbside collected residual waste (2.09kg/hh/wk) is classified as food waste. Currently, only St. Helens residents can recycle food waste at the kerbside. Knowsley residents placed the most food into their residual bins at 2.80kg/hh/wk. This compares with 1.62kg/hh/wk for Wirral.

Table 6: Level of organics within the kerbside collected residual waste (kg/hh/wk)

RESIDUAL ORGANICS (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
FOOD WASTE	2.38	2.80	1.98	2.32	2.06	1.62	2.09
LIQUIDS, FATS & OILS	0.11	0.19	0.15	0.12	0.08	0.09	0.12
ORGANIC NON-CATERING	0.20	0.07	0.39	0.57	0.72	0.19	0.38
KG/HH/WK ORGANICS	2.69	3.07	2.52	3.01	2.87	1.90	2.59
% ORGANICS	47.4%	38.9%	35.3%	40.2%	37.5%	46.0%	39.1%
% FOOD WASTE	42.0%	35.6%	27.8%	31.0%	27.0%	39.3%	31.6%

Figure 5: Level of organics within the residual waste (kg/hh/wk)



Further food waste separation identified whether the food was avoidable (uneaten, unused, or spoilt) or unavoidable (inedible by products such as shells, stones, skin etc). Finally, all avoidable food waste was assessed to determine whether it was disposed of packaged or loose.

Table 7: Breakdown of residual food waste

RESIDUAL FOOD WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
UNAVOIDABLE FOOD	0.46	0.47	0.34	0.35	0.14	0.32	0.33
POTENTIALLY AVOIDABLE FOOD	0.49	0.54	0.14	0.17	0.22	0.15	0.23
AVOIDABLE FOOD - LOOSE	0.42	0.69	0.49	0.79	0.32	0.48	0.54
AVOIDABLE FOOD - PACKAGED	1.01	1.10	1.01	1.01	1.38	0.67	0.99
% OF FOOD AVOIDABLE	60.0%	63.8%	75.7%	77.7%	82.5%	71.1%	73.2%
% OF AVOIDABLE FOOD PACKAGED	70.8%	61.3%	67.1%	56.1%	81.3%	58.4%	64.9%
% OF ALL FOOD PACKAGED	42.5%	39.1%	50.8%	43.6%	67.1%	41.5%	47.6%

Of the 2.09g/hh/wk of residual food waste present across Merseyside and Halton, 73.2% was deemed to be avoidable; this equates to 1.53kg/hh/wk. In the Halton sample, 60% of all discarded food was avoidable rising to over 82% for St. Helens. Sefton households placed 1.81kg/hh/wk of avoidable food waste in their kerbside collected kerbside collected residual waste.

Around 65% of all the avoidable food waste is due to packaged food which is therefore responsible for 47.6% of all the food in the residual bins. Packaged food therefore accounts for 0.99kg/hh/wk of average bin contents. Less than 40% of Knowsley residual food waste was packaged compared with over 67% of that from St. Helens. Only residents from St. Helens can recycle food waste. These households disposed of below average levels of food in the residual waste but had the highest proportion that was packaged. This suggests residents are not efficient at removing packaging from unwanted food so that it can be recycled.

Residents throughout Merseyside and Halton can also use a free/chargeable service to recycle garden waste at the kerbside. Alternatively, residents can purchase home composting units at a discounted price or simply build a compost heap. The average amount of garden waste was 4.8% or 0.32kg/hh/wk. Around 48% of this garden waste was due to vegetation with the remainder being soil. Around 6.9% of kerbside collected residual waste from St. Helens was garden waste compared with <1% for Knowsley.

Paper

Averaged annually, Knowsley residents had the highest concentrations of this type of waste (9.5%), also disposing of the most at 0.75kg/hh/wk. In comparison 4.8% of kerbside collected residual waste from Sefton and 0.33kg/hh/wk from Wirral was due to paper-based materials. Across Merseyside and Halton households it was seen that around 7.0% or 0.46kg/hh/wk of kerbside collected residual waste consisted of discarded paper.

A proportion of this paper is suitable for kerbside collected dry recycling. Merseyside and Halton residents can use their kerbside dry recycling containers for collecting paper such as newspapers, junk mail, envelopes, and directories. It was found that between 15.2% (Knowsley) and 37.1% (Sefton) of paper could have been placed into kerbside collected dry recycling containers as opposed to the residual bins.

When accounting for all the various types of paper within the Merseyside and Halton kerbside collected residual waste , it is seen that 22.4% of paper in the residual waste was recyclable which accounted for 1.6% of all the kerbside collected residual waste or 0.10kg/hh/wk.

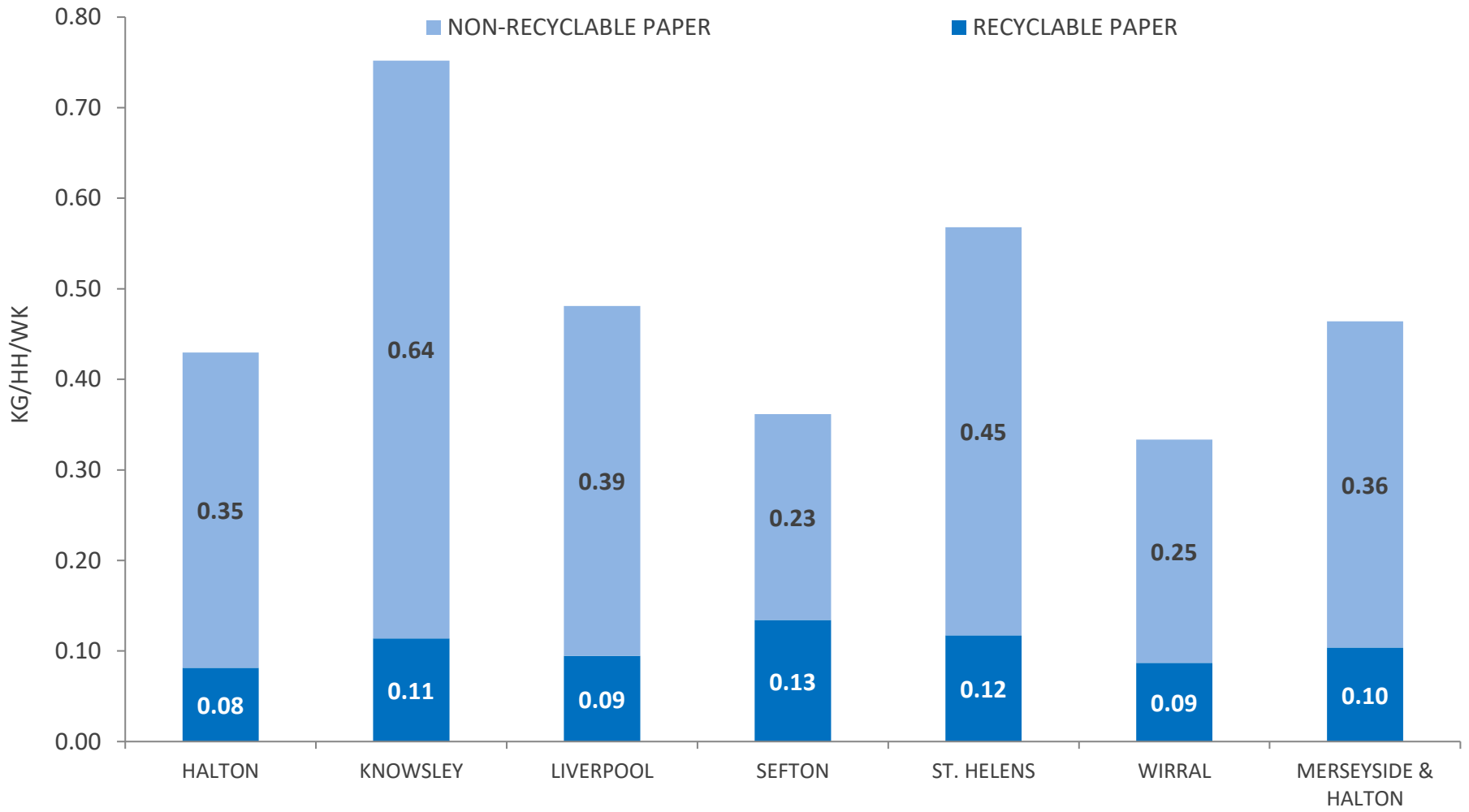
Table 8 and Figure 6 show the amounts of the different forms of paper waste for each council and averaged for the Merseyside and Halton.

Table 8: Level of paper within the residual waste (kg/hh/wk)

PAPER IN THE RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	0.08	0.11	0.09	0.13	0.12	0.09	0.10
NON-RECYCLABLE PAPER	0.35	0.64	0.39	0.23	0.45	0.25	0.36
KG/HH/WK TOTAL PAPER	0.43	0.75	0.48	0.36	0.57	0.33	0.46
% OF PAPER RECYCLABLE	18.9%	15.2%	19.7%	37.1%	20.6%	26.0%	22.4%
% OF PAPER DEEMED PACKAGING	6.1%	4.5%	3.0%	6.2%	5.3%	10.4%	5.3%

There is an interest in the overall packaging content of the Merseyside and Halton's kerbside collected residual waste. This is discussed in more detail in subsequent sections (p.39 Packaging content of the kerbside collected residual waste). Of the paper in the kerbside collected residual waste, just 5.3% was classified as packaging which equates to just 0.4% of the total. Commonly this will be due to items such as grocery bags, sugar and flour bags, envelopes etc. Across the councils the proportion of paper due to packaging ranged between 3.0% (Liverpool) and 10.4% (Wirral).

Figure 6: Level of paper within the residual waste (kg/hh/wk)



Card & Cardboard

Averaged annually, Knowsley residents had the highest concentrations of this type of waste (6.0%), disposing of 0.47kg/hh/wk. In comparison, 0.21kg/hh/wk of kerbside collected residual waste from Wirral was due to card and cardboard based materials. Across the Merseyside and Halton households it was seen that around 5.0% or 0.33kg/hh/wk of kerbside collected residual waste consisted of discarded card and cardboard.

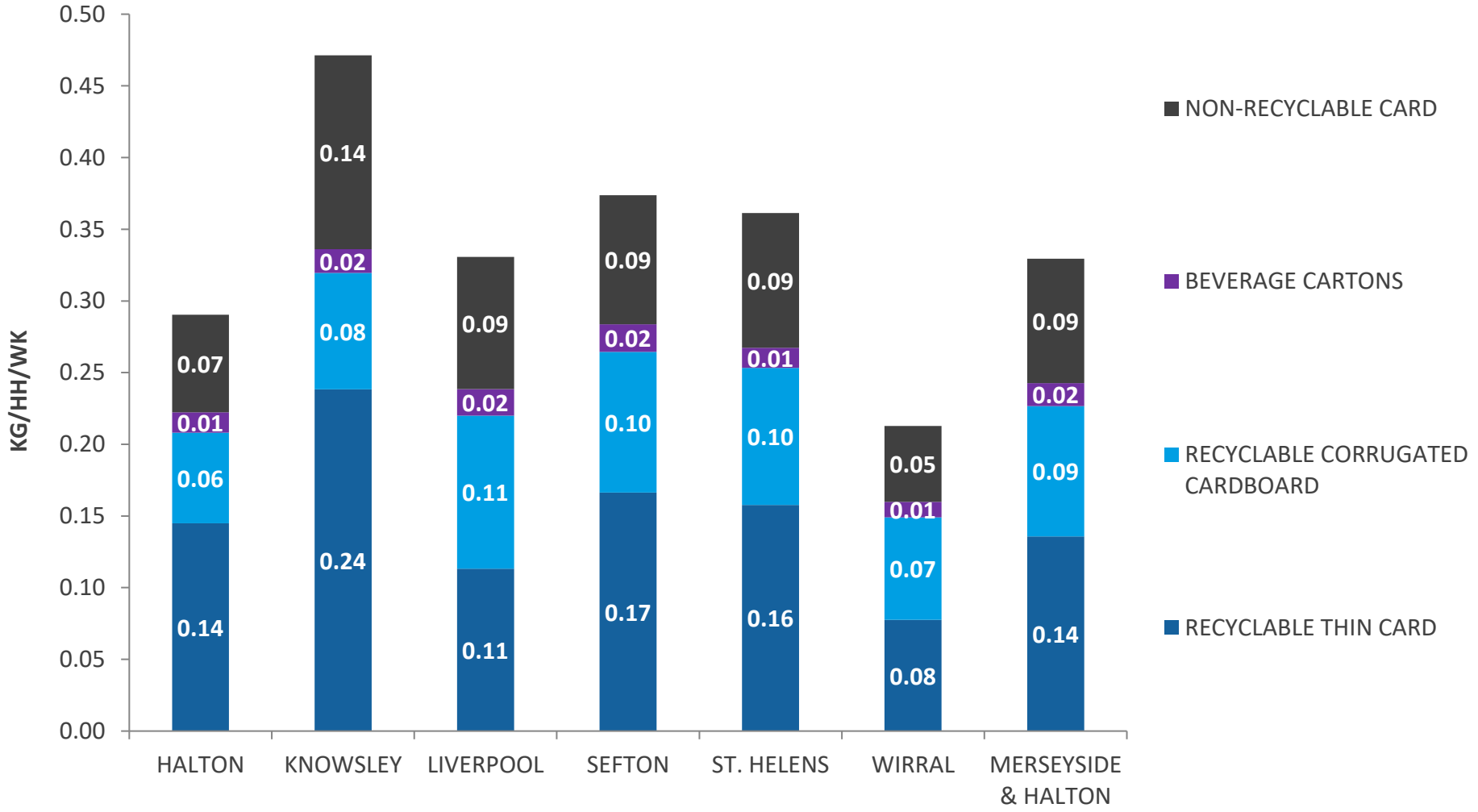
A proportion of this card & cardboard is suitable for kerbside collected dry recycling. It was found that between 66.5% (Liverpool) and 71.6% (Halton) of card and cardboard could have been recycled rather than disposed of in residual bins. Across Merseyside and Halton households, 68.8% of card and cardboard in the residual waste was compatible with kerbside collected dry recycling which accounted for 3.4% of all the kerbside collected residual waste or 0.23kg/hh/wk. When combining paper and card together it is estimated that 42% of that present in Merseyside and Halton residual bins could have been placed into the kerbside collected dry recycling. This amounts to 5.0% of all the kerbside collected residual waste being collected – a total of 0.33kg/hh/wk.

Table 9: Level of card and cardboard within the residual waste (kg/hh/wk)

CARD & CARDBOARD IN THE RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE THIN CARD	0.14	0.24	0.11	0.17	0.16	0.08	0.14
RECYCLABLE CORRUGATED CARDBOARD	0.06	0.08	0.11	0.10	0.10	0.07	0.09
BEVERAGE CARTONS	0.01	0.02	0.02	0.02	0.01	0.01	0.02
NON-RECYCLABLE CARD	0.07	0.14	0.09	0.09	0.09	0.05	0.09
KG/HH/WK TOTAL CARD	0.29	0.47	0.33	0.37	0.36	0.21	0.33
KG/HH/WK RECYCLABLE CARD	0.21	0.32	0.22	0.26	0.25	0.15	0.23
% CARD KERBSIDE RECYCLABLE	71.6%	67.8%	66.5%	70.8%	70.1%	70.0%	68.8%
% OF CARD DEEMED PACKAGING	78.3%	70.2%	82.8%	80.5%	80.9%	78.5%	79.4%

Of the card in the kerbside collected residual waste, 79.4% was classified as packaging which equates to 4.0% of the total. Commonly this will be due to food packaging card and thicker corrugated box packaging. Across the samples the proportion of card due to packaging ranged between 70% (Knowsley) and 83% Liverpool.

Figure 7: Level of card and cardboard within the residual waste (kg/hh/wk)



Plastics

The annual average concentration of plastics in the kerbside collected residual waste ranged between 9.7% from Wirral households to 14.2% in the waste from Knowsley households. Merseyside and Halton residents currently recycle plastic bottles as part of their kerbside collected dry recycling service. St. Helens households can additionally recycle plastic food containers. Across the councils, 11.9% of kerbside collected residual waste was classified as plastic which equates to 0.79kg/hh/wk. On the whole plastic material, although not heavy in itself, can produce large volumes of waste.

Figure 8 clearly shows the levels of recyclable plastics within the kerbside collected residual waste. On average, around 17.5% of the plastic waste present in the kerbside collected residual waste was recyclable, equating to 0.14kg/hh/wk. Around 12.3% of the plastic in Knowsley kerbside collected residual waste was recyclable compared with 37.8% of that in St. Helens bins who placed 0.39kg/hh/wk of recyclable plastics in their residual bins.

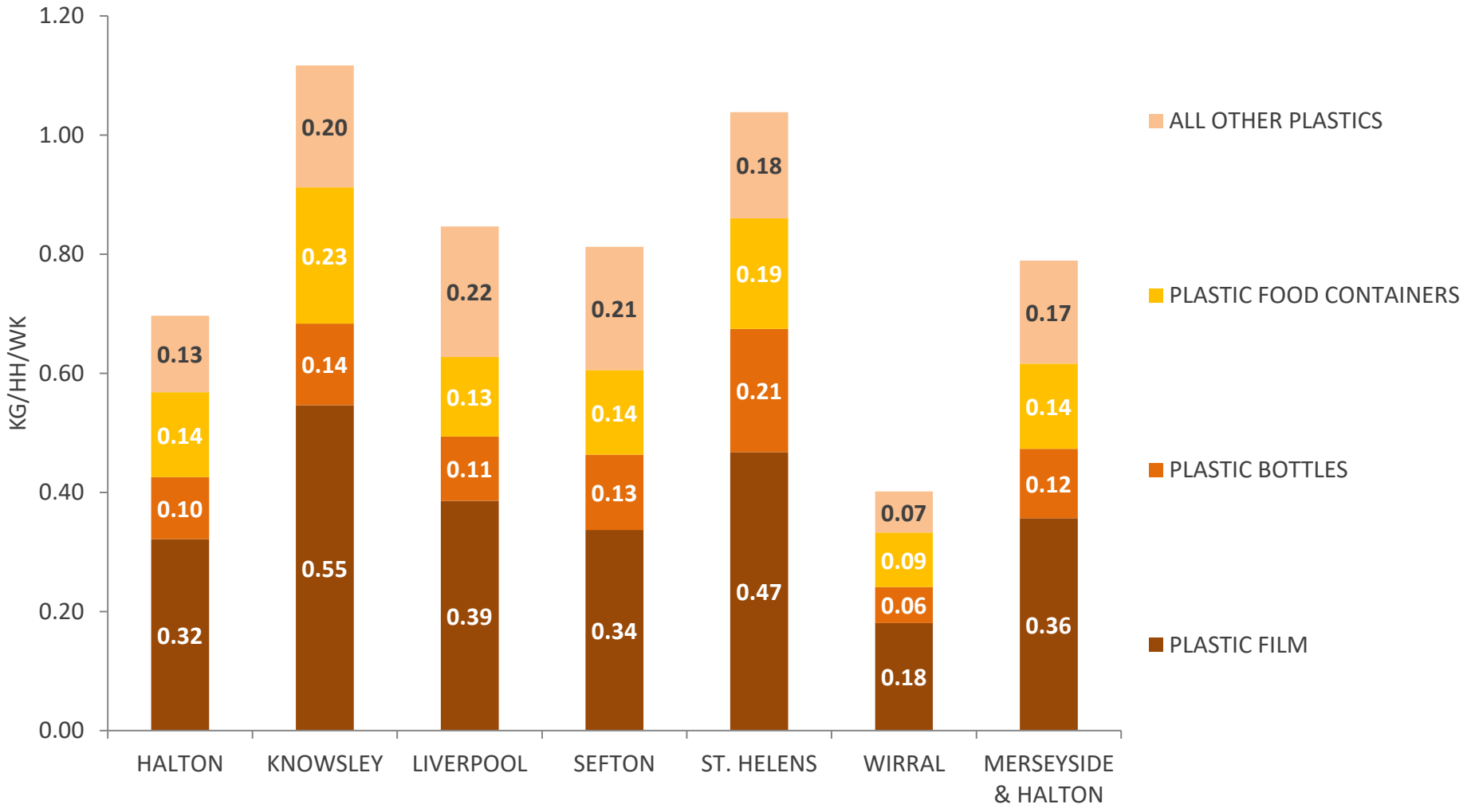
Table 10: Levels of plastics within residual waste (kg/hh/wk)

RESIDUAL PLASTICS	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PLASTIC FILM	0.32	0.55	0.39	0.34	0.47	0.18	0.36
PLASTIC BOTTLES	0.10	0.14	0.11	0.13	0.21	0.06	0.12
PLASTIC FOOD CONTAINERS	0.14	0.23	0.13	0.14	0.19	0.09	0.14
ALL OTHER PLASTICS	0.13	0.20	0.22	0.21	0.18	0.07	0.17
KG/HH/WK TOTAL PLASTIC	0.70	1.12	0.85	0.81	1.04	0.40	0.79
KG/HH/WK RECYCLABLE PLASTIC	0.10	0.14	0.11	0.13	0.39	0.06	0.14
% PLASTIC RECYCLABLE	15.0%	12.3%	12.8%	15.6%	37.8%	15.0%	17.5%
% OF PLASTIC DEEMED PACKAGING	79.4%	80.8%	75.3%	78.5%	87.6%	84.0%	79.8%

Of the plastics in the kerbside collected residual waste, 80% were classified as packaging which equates to 9.5% of total waste. Around 57% of the plastic packaging was due to bags and film with 18% plastic bottles and 23% food and other packaging containers. Across the samples the proportion of plastic due to packaging ranged between 75% (Liverpool) and 88% (St. Helens).

Of all the plastic bottles present in the kerbside collected residual waste around 78% were of as type potentially suitable for deposit return schemes. That is to say they were from consumable liquids and of <3litres in capacity.

Figure 8: Level of plastic within the residual waste (kg/hh/wk)



Metals

Annual average concentrations of metals in the kerbside residual waste ranged between 2.9% total metal by weight from St. Helens households to 4.0% in the waste from Knowsley households, averaging 3.6% or 0.24kg/hh/wk overall. Merseyside and Halton resident's kerbside collected dry recycling accepts food and drink cans with St. Helens additionally able to recycle aerosols and clean foil via their kerbside collected dry recycling.

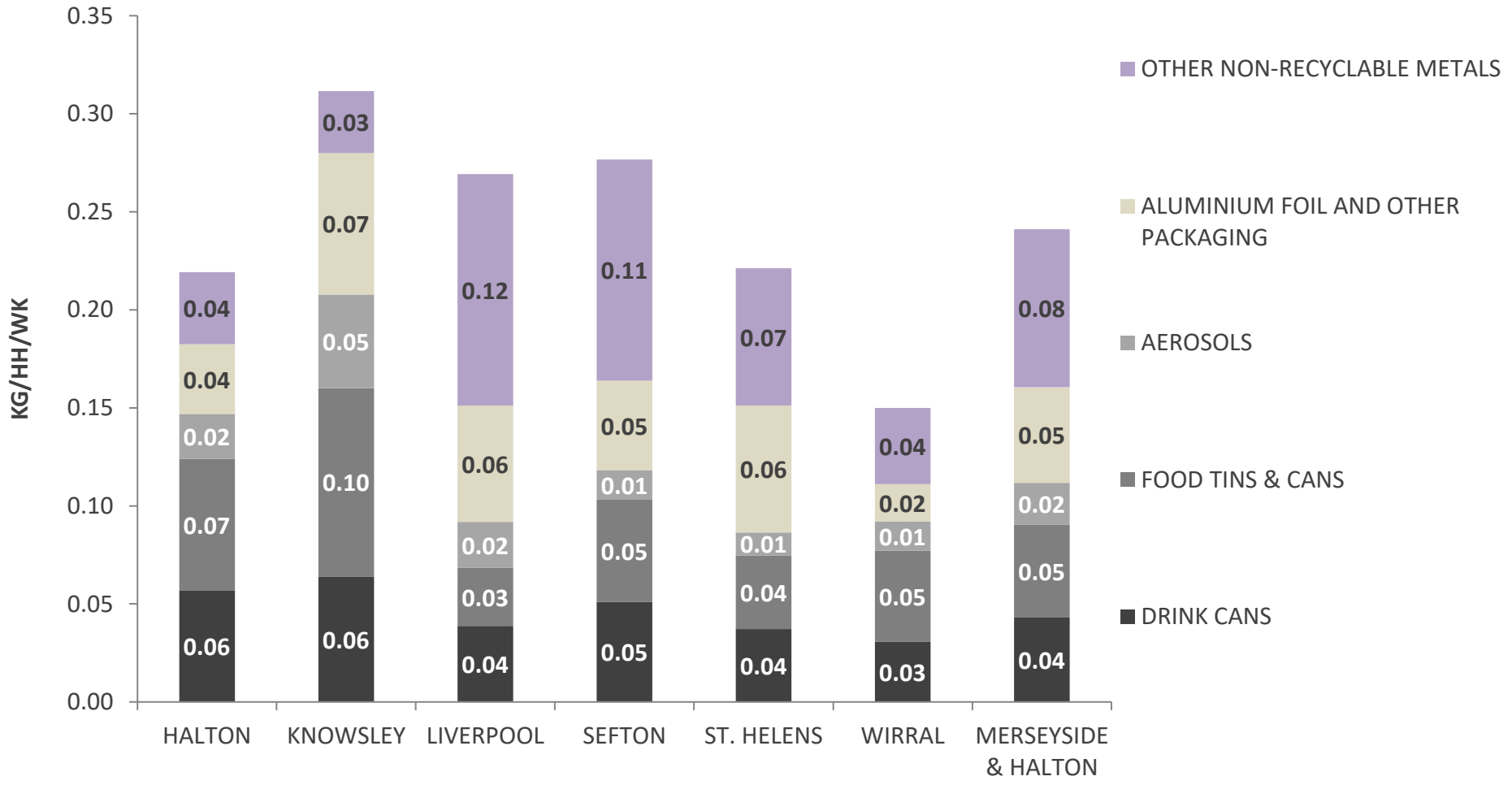
A proportion of this metal waste is suitable for kerbside collected dry recycling. It was found that 25.4% of Liverpool metals were recyclable rising to 68.3% for the metals in St. Helens kerbside collected residual waste. Across Merseyside and Halton, an average of 41.3% or 0.10kg/hh/wk of residual metal is classified as recyclable, this equates to 1.5% of all kerbside collected residual waste.

54% of all metals in the residual waste were ferrous. Around 67% of all metals were deemed to be packaging. Around 30% of the packaging metals were food tins with 30% foil & other packaging, 27% drink cans and 13% aerosols.

Table 11: Level of metals within residual waste (kg/hh/wk)

METALS IN THE RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
DRINK CANS	0.06	0.06	0.04	0.05	0.04	0.03	0.04
FOOD TINS & CANS	0.07	0.10	0.03	0.05	0.04	0.05	0.05
AEROSOLS	0.02	0.05	0.02	0.01	0.01	0.01	0.02
FOIL AND OTHER PACKAGING	0.04	0.07	0.06	0.05	0.06	0.02	0.05
OTHER NON-RECYCLABLE METALS	0.04	0.03	0.12	0.11	0.07	0.04	0.08
RECYCLABLE METALS	0.12	0.16	0.07	0.10	0.15	0.08	0.10
TOTAL METALS	0.22	0.31	0.27	0.28	0.22	0.15	0.24
% FERROUS	51.7%	52.6%	53.8%	53.6%	49.0%	58.4%	53.5%
% OF METALS RECYCLABLE	56.6%	51.4%	25.4%	37.4%	68.3%	51.4%	41.3%
% OF METAL DEEMED PACKAGING	83.2%	89.9%	56.1%	59.2%	68.3%	74.0%	66.6%

Figure 9: Level of metals within residual waste (kg/hh/wk)



Glass

Averaged across the two seasons of sampling, the average annual concentration of glass in the residual waste was seen to be 3.1% total glass by weight from Liverpool households, rising to 4.5% in the waste from Knowsley kerbside collected residual waste. Merseyside and Halton residents can recycle glass bottles and jars via their kerbside collected dry recycling. The weight of glass in the kerbside collected residual waste from Wirral was just 0.15kg/hh/wk rising to 0.35kg/hh/wk for Knowsley. This represented a Merseyside and Halton average of 3.6% or 0.24kg/hh/wk.

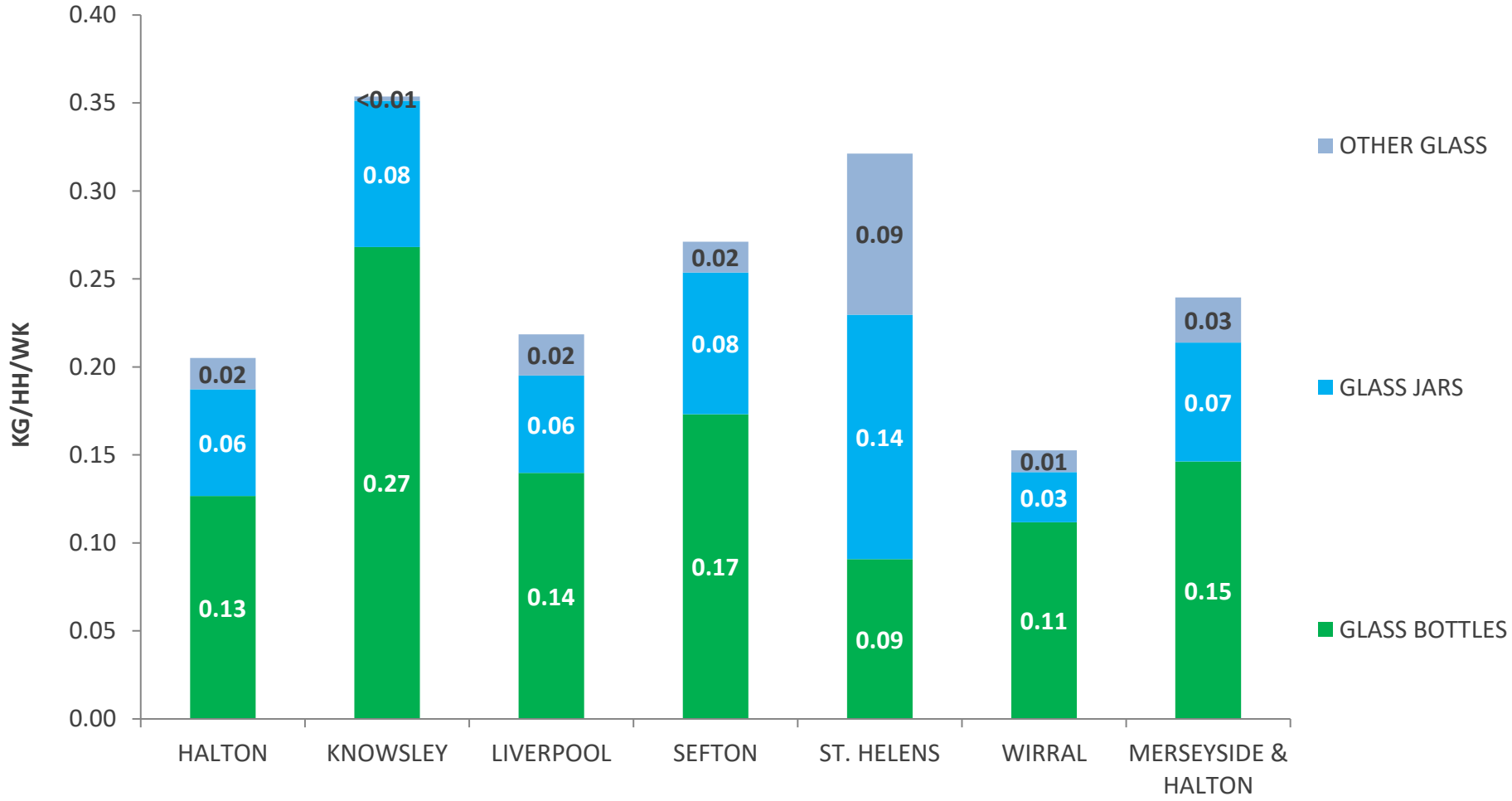
A proportion of this glass consists of bottles and jars which could have been recycled rather than placed into residual bins. It was found that across Merseyside and Halton an average of 89.3% or 0.21kg/hh/wk of glass in the residual waste is classified as recyclable, this equates to 3.2% of all kerbside collected residual waste.

Overall, 68% of recyclable glass was due to bottles as opposed to jars. Jars often need more cleaning than bottles and are generally less effectively recycled.

Table 12: Level of glass within the residual waste (kg/hh/wk)

GLASS IN THE RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
GLAS BOTTLES	0.13	0.27	0.14	0.17	0.09	0.11	0.15
GLASS JARS	0.06	0.08	0.06	0.08	0.14	0.03	0.07
OTHER GLASS	0.02	0.00	0.02	0.02	0.09	0.01	0.03
KG/HH/WK TOTAL GLASS	0.21	0.35	0.22	0.27	0.32	0.15	0.24
KG/HH/WK RECYCLABLE GLASS	0.19	0.35	0.20	0.25	0.23	0.14	0.21
% RECYCLABLE	91.3%	99.3%	89.3%	93.6%	71.5%	91.9%	89.3%

Figure 10: Level of glass within residual waste (kg/hh/wk)



Other notable materials within the residual waste

Textiles – Averaged annually, around 4.1% of the kerbside collected residual waste from Sefton and 0.22kg/hh/wk of residual waste from Wirral was seen to consist of textiles. This compares with levels of 6.3% (0.48kg/hh/wk) for St. Helens. Only St. Helens residents can recycle textiles at the kerbside, yet they have by far the most of this material in their kerbside collected residual waste.

Overall, an average of 5.4% or 0.36kg/hh/wk of kerbside collected residual waste across all households consisted of textile waste. Of the textiles present, around 82% were potentially recyclable (via either kerbside collections or by diverting to HWRCs, local bring banks or donation to charities or community groups) and these accounted for 4.4% of the kerbside collected residual waste – 0.29kg/hh/wk.

Disposable Nappies & AHP (Absorbent Hygiene Products) -Disposable nappy levels within the residual bins of households with babies can be extremely high. These households will be more prevalent in demographic samples typical for young families. This form of waste also encompasses adult incontinence products which will be more typically prevalent in demographic samples with a higher density of senior residents. Averaged annually, the concentrations of disposable nappies and AHP averaged 9.8% or 0.65kg/hh/wk. In Halton samples the average was 4.9% with Wirral generating 0.26kg/hh/wk. In comparison, 14.2% of the kerbside collected residual waste from Sefton (1.06kg/hh/wk) was due to these items.

Inert rubble – This type of waste is generally one of the densest materials placed into residual bins. Although more suited for disposal at HWRC's small amounts of rubble based waste are common in kerbside bins. Often it is seen that a small number of individual houses may place increased levels of construction / clearance type waste into their bins. On average 4.1% or 0.27kg/hh/wk of Merseyside and Halton kerbside collected residual waste consisted of mixed non-combustible waste. Over 5.3% of the residual waste collected from Sefton consisted of this waste

Hazardous waste and WEEE – On average just under 0.4% or 0.02kg/hh/wk of Merseyside and Halton kerbside collected residual waste consisted of hazardous waste with 0.6% or 0.04kg/hh/wk being WEEE . Levels of WEEE were highest at 0.8% for the Liverpool and Sefton samples. Additionally, 0.1% of kerbside collected residual waste was related to Covid-19 materials.

Potential recyclability of the residual waste

The overall recyclability of the kerbside collected residual waste relates to all items present that could have been placed into the kerbside collected dry recycling containers available to all Merseyside and Halton households. Results averaged annually showed that the overall recyclability of the kerbside collected residual waste was highest in St. Helens households at over 49%. This is mainly due to the fact that this is the only authority able to recycle food at the kerbside. For the other councils ranges were 11.3% for Liverpool up to 16.3% for Wirral. Across Merseyside and Halton, it is expected that 18.7% of kerbside collected residual waste is compatible with kerbside recycling collections. Overall, around 12.6% of kerbside collected residual waste was compatible with kerbside collected dry recycling, 3.7% via the food collections in St. Helens and 2.3% via garden waste collections (this includes biodegradable pet bedding where accepted).

Table 13: Proportion of residual waste compatible with kerbside recycling collections (%)

% RECYCLABLES IN RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
KERBSIDE DRY RECYCLABLES	12.4%	13.7%	9.6%	11.8%	20.6%	12.4%	12.6%
RECYCLABLE FOOD	0.0%	0.0%	0.0%	0.0%	27.0%	0.0%	3.7%
GARDEN RECYCLABLE	1.8%	0.9%	1.7%	4.0%	1.6%	3.8%	2.3%
TOTAL RECYCLABLE	14.2%	14.6%	11.3%	15.8%	49.2%	16.3%	18.7%

In terms of the amount of recyclables disposed of it is seen that St. Helens householders put 3.76kg/hh/wk of materials in residual bins that could be placed into their kerbside collected dry recycling. This compares with 0.67kg/hh/wk for Wirral. Across all Merseyside and Halton households around 1.24kg/hh/wk of recyclable material is being disposed of in the kerbside collected residual waste.

Table 14: Kg/hh/wk of residual waste compatible with kerbside recycling collections

KG/HH/WK RECYCLABLES IN RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
KERBSIDE DRY RECYCLABLES	0.70	1.08	0.69	0.88	1.57	0.51	0.83
RECYCLABLE FOOD	0.00	0.00	0.00	0.00	2.06	0.00	0.25
GARDEN RECYCLABLE	0.10	0.07	0.12	0.30	0.12	0.16	0.15
TOTAL RECYCLABLE	0.80	1.15	0.81	1.18	3.76	0.67	1.24

Table 15: Amount of residual waste recyclable (Kg/hh/wk)

KG/HH/WK RECYCLABLE MATERIALS WITHIN RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	0.08	0.11	0.09	0.13	0.12	0.09	0.10
RECYCLABLE CARD & CARDBOARD	0.21	0.32	0.22	0.26	0.25	0.15	0.23
RECYCLABLE PLASTICS	0.10	0.14	0.11	0.13	0.39	0.06	0.14
RECYCLABLE TEXTILES	0.00	0.00	0.00	0.00	0.43	0.00	0.05
RECYCLABLE GLASS	0.19	0.35	0.20	0.25	0.23	0.14	0.21
RECYCLABLE METALS	0.12	0.16	0.07	0.10	0.15	0.08	0.10
TOTAL DRY RECYCLABLES	0.70	1.08	0.69	0.88	1.57	0.51	0.83
RECYCLABLE FOOD WASTE	0.00	0.00	0.00	0.00	2.06	0.00	0.25
RECYCLABLE GARDEN WASTE	0.10	0.07	0.12	0.30	0.12	0.16	0.15
RECYCLABLE PET BEDDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL ORGANIC RECYCLABLES	0.10	0.07	0.12	0.30	2.18	0.16	0.40
TOTAL RECYCLABLE CONTENT	0.80	1.15	0.81	1.18	3.76	0.67	1.24

Table 16: Proportion of residual waste recyclable (%)

% RECYCLABLE MATERIALS WITHIN RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON	MERSEYSIDE & HALTON SPLIT*
RECYCLABLE PAPER	1.4%	1.4%	1.3%	1.8%	1.5%	2.1%	1.6%	8.4%
RECYCLABLE CARD & CARDBOARD	3.7%	4.1%	3.1%	3.5%	3.3%	3.6%	3.4%	18.3%
RECYCLABLE PLASTICS	1.8%	1.7%	1.5%	1.7%	5.1%	1.5%	2.1%	11.2%
RECYCLABLE TEXTILES	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	0.8%	4.2%
RECYCLABLE GLASS	3.3%	4.5%	2.7%	3.4%	3.0%	3.4%	3.2%	17.3%
RECYCLABLE METALS	2.2%	2.0%	1.0%	1.4%	2.0%	1.9%	1.5%	8.1%
TOTAL DRY RECYCLABLES	12.4%	13.7%	9.6%	11.8%	20.6%	12.4%	12.6%	67.5%
RECYCLABLE FOOD WASTE	0.0%	0.0%	0.0%	0.0%	27.0%	0.0%	3.7%	20.0%
RECYCLABLE GARDEN WASTE	1.8%	0.9%	1.7%	4.0%	1.6%	3.8%	2.3%	12.5%
RECYCLABLE PET BEDDING	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL ORGANIC RECYCLABLES	1.8%	0.9%	1.7%	4.0%	28.6%	3.8%	6.1%	32.5%
TOTAL RECYCLABLE CONTENT	14.2%	14.6%	11.3%	15.8%	49.2%	16.3%	18.7%	100.0%

**Split is the proportional breakdown of the recyclable content. E.g., Recyclable paper forms 1.6% of the residual waste equating to 8.4% of the recyclable content*

Figure 11: Amount of residual waste recyclable (Kg/hh/wk)

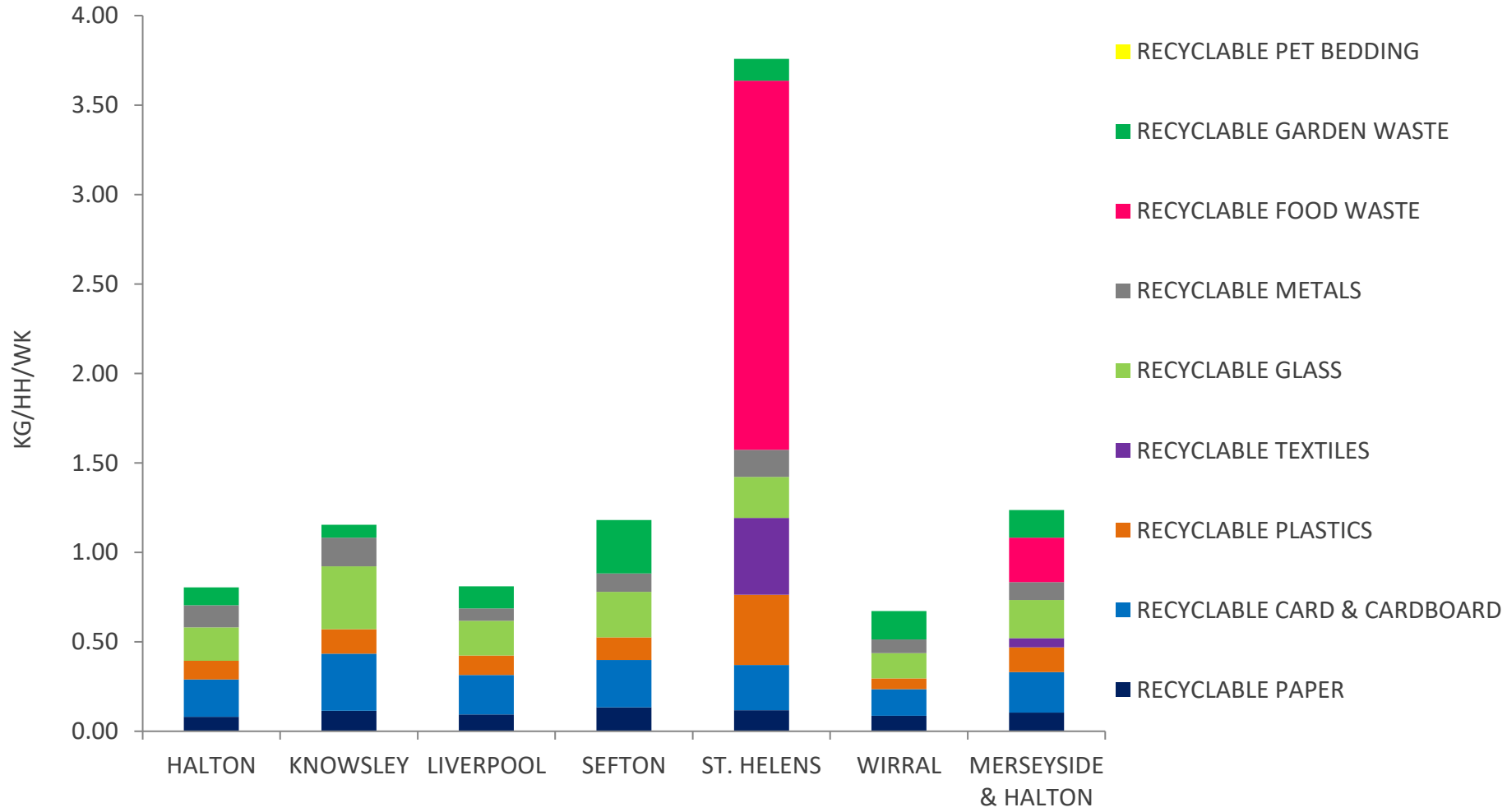


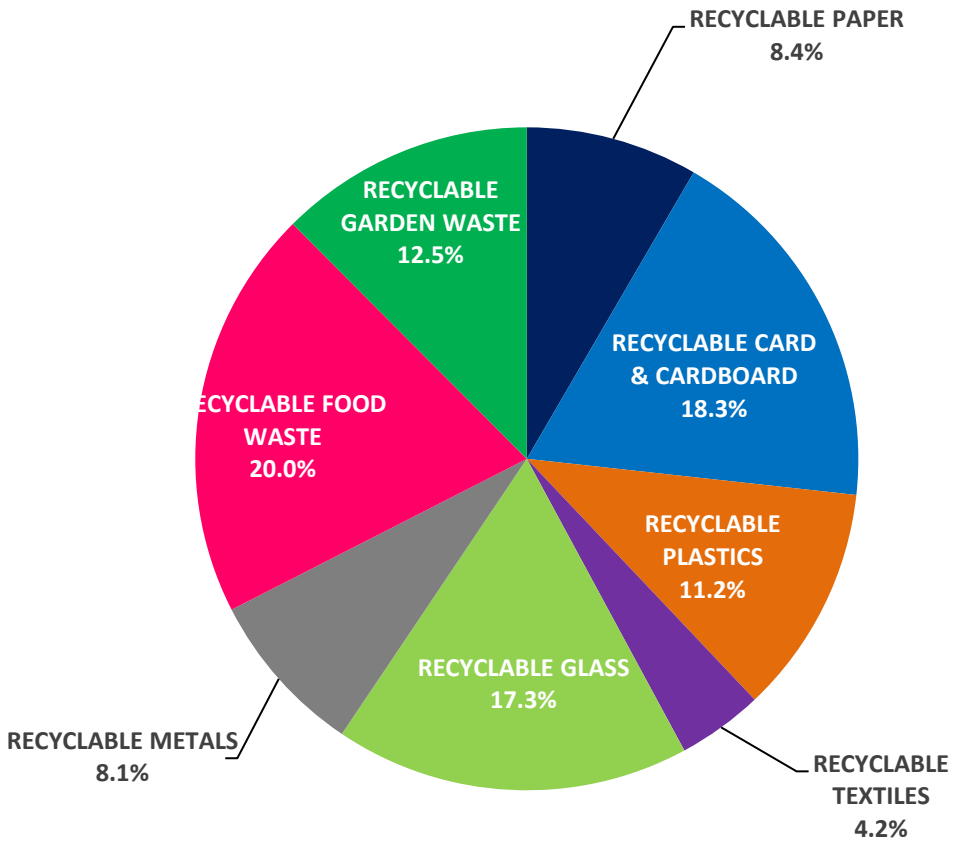
Figure 11 clearly shows the levels of kerbside collected residual waste currently compatible with the kerbside collected dry recycling throughout Merseyside and Halton households. Each individual council was seen to be disposing of differing levels of recyclable materials, both in terms of volume and composition (Tables 15 & 16). On average, 18.1% or 1.10kg/hh/wk of kerbside collected residual waste is classified as recyclable. Figure 12 gives a breakdown of the recyclables present in all of Merseyside and Halton kerbside collected residual waste.

Figures show that recyclable paper and card made up 26.7% of the recyclable content forming 5.0% of the kerbside collected residual waste or 0.33kg/hh/wk.

Despite only being recyclable in St. Helens, food formed 20.0% of the recyclable element of kerbside collected residual waste for the Merseyside and Halton area . Overall, it contributed 0.25kg/hh/wk or 3.7% to the total.

Recyclable glass was responsible for 17.3% of the recyclable material present in Merseyside and Halton kerbside collected residual waste where it formed 3.2% or 0.21kg/hh/wk of the total waste.

Figure 12: Breakdown recyclables within Merseyside and Halton residual waste



Packaging content of the residual waste

Merseyside Recycling and Waste Authority has an interest in the levels of packaging material in its various waste streams. A large proportion of the recyclable material in the kerbside collected residual waste consists of packaging items. On average, 1.38kg/hh/wk of Merseyside and Halton kerbside collected residual waste consists of packaging items. Wirral placed 0.83kg/hh/wk of packaging items in their kerbside collected residual bins. This compares with 2.01kg/hh/wk for Knowsley.

Table 17: Amount of packaging material in the residual waste (kg/hh/wk)

PACKAGING CONTENT (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PAPER PACKAGING	0.03	0.03	0.01	0.02	0.03	0.03	0.02
CARD PACKAGING	0.23	0.33	0.27	0.30	0.29	0.17	0.26
PLASTIC FILM PACKAGING	0.28	0.48	0.37	0.32	0.45	0.17	0.34
DENSE PLASTIC PACKAGING	0.28	0.42	0.26	0.32	0.46	0.17	0.29
METAL PACKAGING	0.18	0.28	0.15	0.16	0.15	0.11	0.16
GLASS PACKAGING	0.19	0.35	0.20	0.25	0.23	0.14	0.21
OTHER PACKAGING	0.01	0.05	0.06	0.02	0.06	0.01	0.04
FOOD ASSOCIATED PACKAGING*	0.06	0.06	0.06	0.06	0.07	0.04	0.06
TOTAL PACKAGING	1.25	2.01	1.39	1.45	1.74	0.83	1.38

** Estimated for food waste disposed of in original packaging (5% of discarded weight)*

Table 18: Amount of packaging material in the residual waste (%)

PACKAGING CONTENT (%)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON	MERSEYSIDE & HALTON SPLIT*
PAPER PACKAGING	0.46%	0.43%	0.20%	0.30%	0.40%	0.84%	0.37%	1.78%
CARD PACKAGING	4.02%	4.20%	3.84%	4.02%	3.83%	4.05%	3.95%	18.91%
PLASTIC FILM PACKAGING	4.90%	6.15%	5.24%	4.26%	5.85%	4.02%	5.06%	24.23%
DENSE PLASTIC PACKAGING	4.87%	5.30%	3.69%	4.24%	6.05%	4.15%	4.45%	21.31%
METAL PACKAGING	3.22%	3.55%	2.09%	2.16%	1.97%	2.64%	2.41%	11.52%
GLASS PACKAGING	3.31%	4.46%	2.73%	3.39%	3.00%	3.40%	3.23%	15.46%
OTHER PACKAGING	0.25%	0.61%	0.90%	0.24%	0.74%	0.13%	0.57%	2.74%
FOOD ASSOCIATED PACKAGING*	0.99%	0.82%	0.81%	0.76%	0.96%	0.92%	0.84%	4.04%
TOTAL PACKAGING	22.01%	25.52%	19.49%	19.36%	22.80%	20.15%	20.90%	100.00%

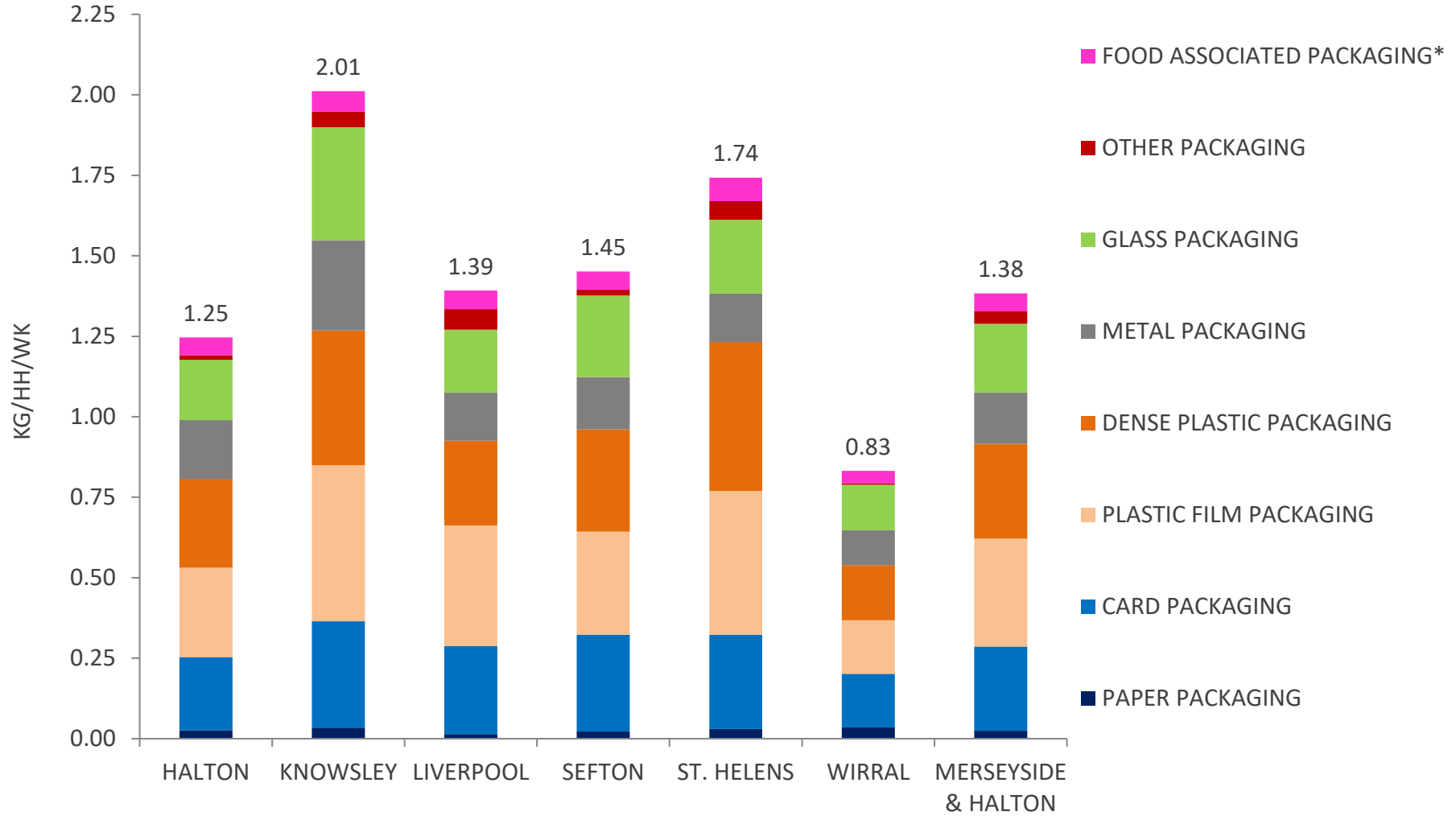
**Split is the proportional breakdown of the packaging content. E.g., Card packing forms 4.0% of the residual waste equating to 18.9% of the packaging content*

*** Estimated for food waste disposed of in original packaging (5% of discarded weight)*

Just over a fifth of all Merseyside and Halton's kerbside collected residual waste was due to packaging. This ranged between 19.4% for Sefton and 25.5% for Knowsley. Almost 46% of all packaging was plastic accounting for 9.5% or 0.63kg/hh/wk of total waste.

An average of 20.7% of packaging was formed from paper and card with 15.5% glass packaging, 11.5% metal packaging, 2.7% other packaging and 4.0% food associated packaging.

Figure 13: Amount of packaging material in the residual waste (kg/hh/wk)



Packaging recyclability

Of the packaging material present in the Merseyside and Halton kerbside collected residual waste, an average of 50.1% or 0.69kg/hh/wk was of a type that could have been recycled at the kerbside. Therefore, an estimated 10.5% of kerbside collected residual waste is due to recyclable packaging items.

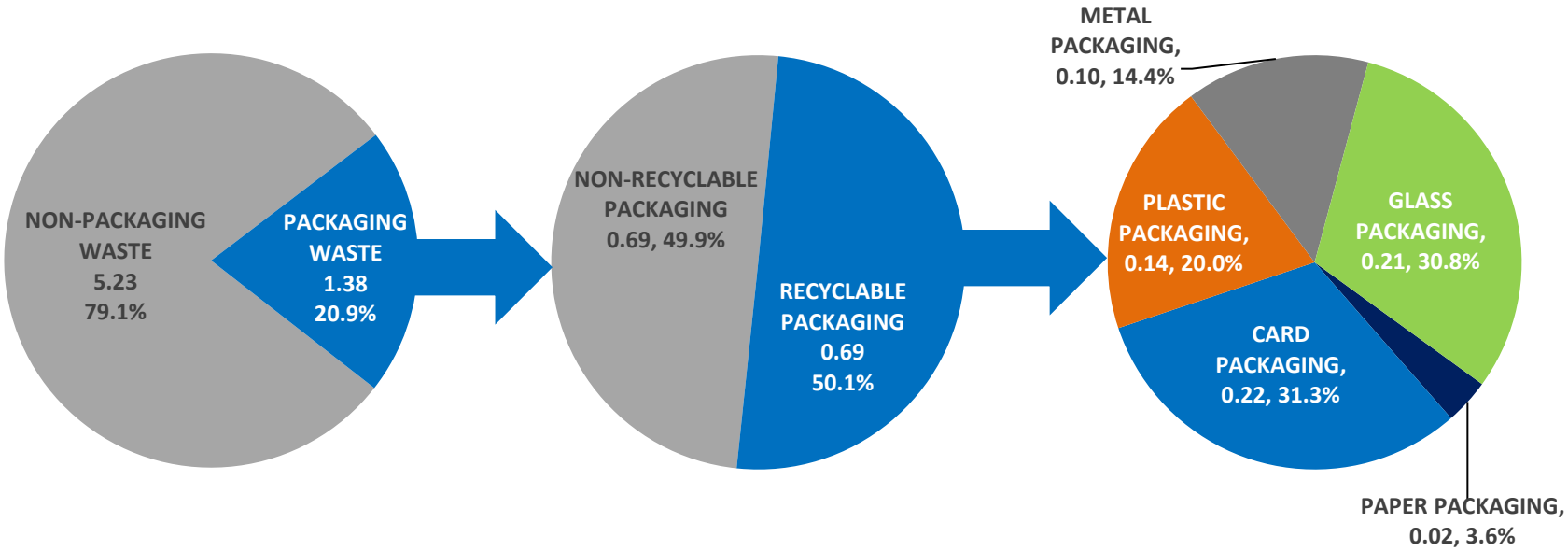
Just 8.4% of Liverpool kerbside collected residual waste was due to recyclable packaging compared with 13.7% of that from St. Helens. In St. Helens, 60% of the packaging in kerbside collected residual waste bins was deemed recyclable.

Knowsley kerbside collected residual waste contained 0.97kg/hh/wk of recyclable packaging compared with 0.45kg/hh/wk for Wirral.

Table 19: Recyclable content of packaging in residual bins

PACKAGING CONTENT (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
TOTAL PACKAGING	1.25	2.01	1.39	1.45	1.74	0.83	1.38
RECYCLABLE PACKAGING	0.65	0.97	0.60	0.77	1.05	0.45	0.69
% OF PACKAGING RECYCLABLE	51.9%	48.4%	42.8%	52.7%	60.0%	54.4%	50.1%
% OF WASTE DUE TO RECYCLABLE PACKAGING	11.4%	12.4%	8.4%	10.2%	13.7%	11.0%	10.5%

Figure 14: Proportion of Merseyside & Halton residual waste due to packaging and recyclable content (%)



Drinks containers within the residual waste

A proportion of the packaging material within the kerbside collected residual waste will be due to single use drinks containers. These are defined as either plastic bottles, metal drinks cans and glass bottles.

Results indicated that the levels of single use drinks containers ranged between 3.8% for Liverpool and 0.19kg/hh/wk for Wirral up to 5.5% (0.44kg/hh/wk) for Knowsley. This represented an average for Merseyside & Halton of 4.2% or 0.28kg/hh/wk. Smaller amounts of liquids cartons (0.2%) were present. The majority of these are either for non-drink waste (sauces, custard etc) or for drinks not consumed on a single use basis (larger cartons of milk, fruit juice etc). Less than 0.1% of waste was due to single use coffee cups with film pouches present at trace levels as part of the plastic film that was disposed of.

In most cases, the majority of all drink's containers were seen to be glass. These were responsible for between 31% of St. Helens and 62% of Knowsley drink containers. On average, 2.2% or 0.15kg/hh/wk of Merseyside & Halton kerbside collected residual waste was due to glass drinks bottles – 52% of the drink containers present.

Between 24% of Knowsley and 57% of St. Helens drink containers were due to plastic bottles. On average, 1.4% or 0.09kg/hh/wk of Merseyside & Halton kerbside collected residual waste was due to plastic drinks bottles – 33% of the drink containers present. Of the plastic drink bottles present, 98% were under 3 litres in capacity. Of all plastic bottles under 3 litres, 76% were PET (polyethylene terephthalate) with 24% HDPE (high-density polyethylene).

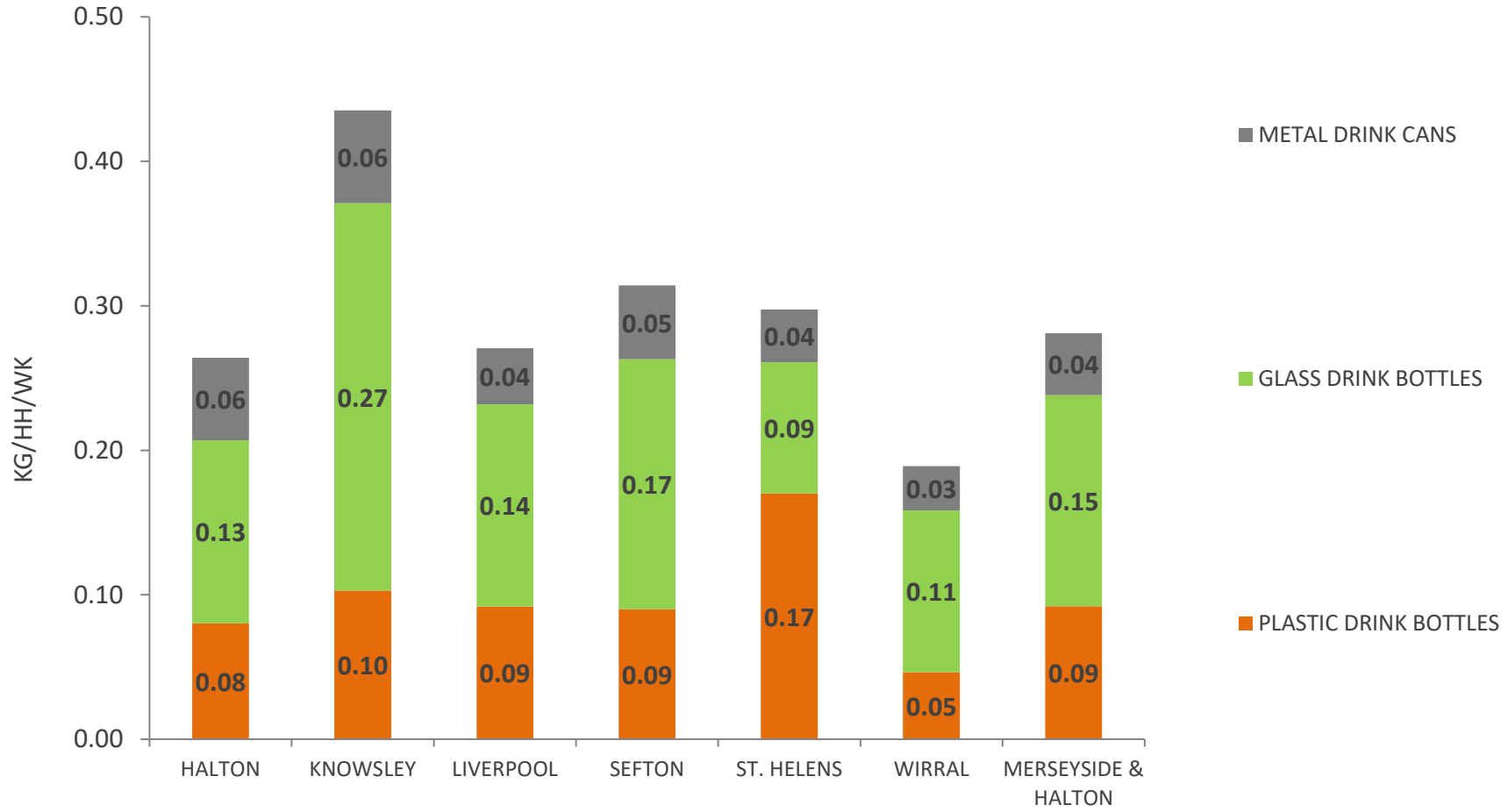
Between 12% of St. Helens and 22% of Halton drink containers were due to metal cans. On average, 0.6% or 0.04kg/hh/wk of Merseyside & Halton kerbside collected residual waste was due to metal drink cans – 15% of the drink containers present.

Table 20: Drink containers in the residual waste

SINGLE USE DRINK CONTAINERS -%	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PLASTIC DRINK BOTTLES	1.4%	1.3%	1.3%	1.2%	2.2%	1.1%	1.4%
GLASS DRINK BOTTLES	2.2%	3.4%	2.0%	2.3%	1.2%	2.7%	2.2%
METAL DRINK CANS	1.0%	0.8%	0.5%	0.7%	0.5%	0.7%	0.6%
TOTAL	4.6%	5.5%	3.8%	4.2%	3.8%	4.6%	4.2%

SINGLE USE DRINK CONTAINERS - KG/HH/WK	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PLASTIC DRINK BOTTLES	0.08	0.10	0.09	0.09	0.17	0.05	0.09
GLASS DRINK BOTTLES	0.13	0.27	0.14	0.17	0.09	0.11	0.15
METAL DRINK CANS	0.06	0.06	0.04	0.05	0.04	0.03	0.04
TOTAL	0.26	0.43	0.27	0.31	0.29	0.19	0.28

Figure 15: Drink containers in the residual waste (kg/hh/wk)



Potentially reusable items

In the same way that certain materials were categorised as packaging items, others were selected as having possible re-use potential. It is a fairly judgemental process to label a waste item as having re-use potential. Many people will have absolutely no interest in any item that has been placed into a rubbish container. Others will judge an item on its merits. For this survey items such as books, clothes, fabrics, carpet, rugs, paint and electrical goods[2] were deemed to have some potential for re-use.

Table 21: Recyclable content of packaging in residual bins

POTENTIAL RE-USE ITEMS	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
KG/HH/WK	0.38	0.51	0.48	0.51	0.62	0.30	0.46
%	6.8%	6.5%	6.7%	6.8%	8.1%	7.2%	7.0%

On average around 0.46kg/hh/wk or 7.0% of the kerbside collected residual waste across Merseyside & Halton had some re-use potential. This amount peaked in the St. Helens waste at 8.1% or 0.74kg/hh/wk. Over half of this (54%) was due to clothing and shoes in the kerbside collected residual waste with 23% other textiles and 8% electrical goods.

[2] No electrical testing was undertaken therefore it should be considered that a good proportion of electrical items will be non-functional and irreparable.

Kerbside collected dry recycling

Set out rates and waste generation

Figure 16 highlights the set-out rates for kerbside collected dry recycling containers observed averaged for the two surveys. Overall, 69.4% of Merseyside and Halton households set out kerbside collected dry recycling. This ranged between 57.5% for St. Helens up to 81.0% for Halton.

Figure 16: Average Set Out for kerbside collected dry recycling (%)

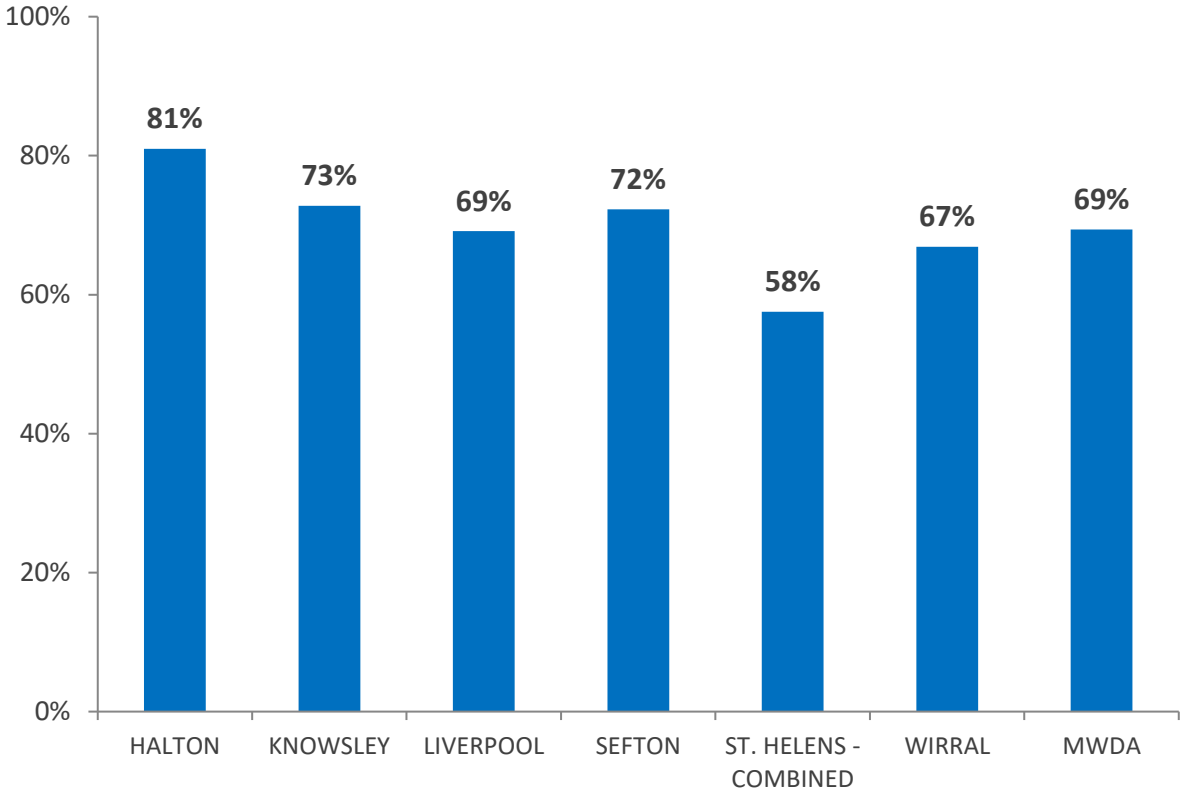
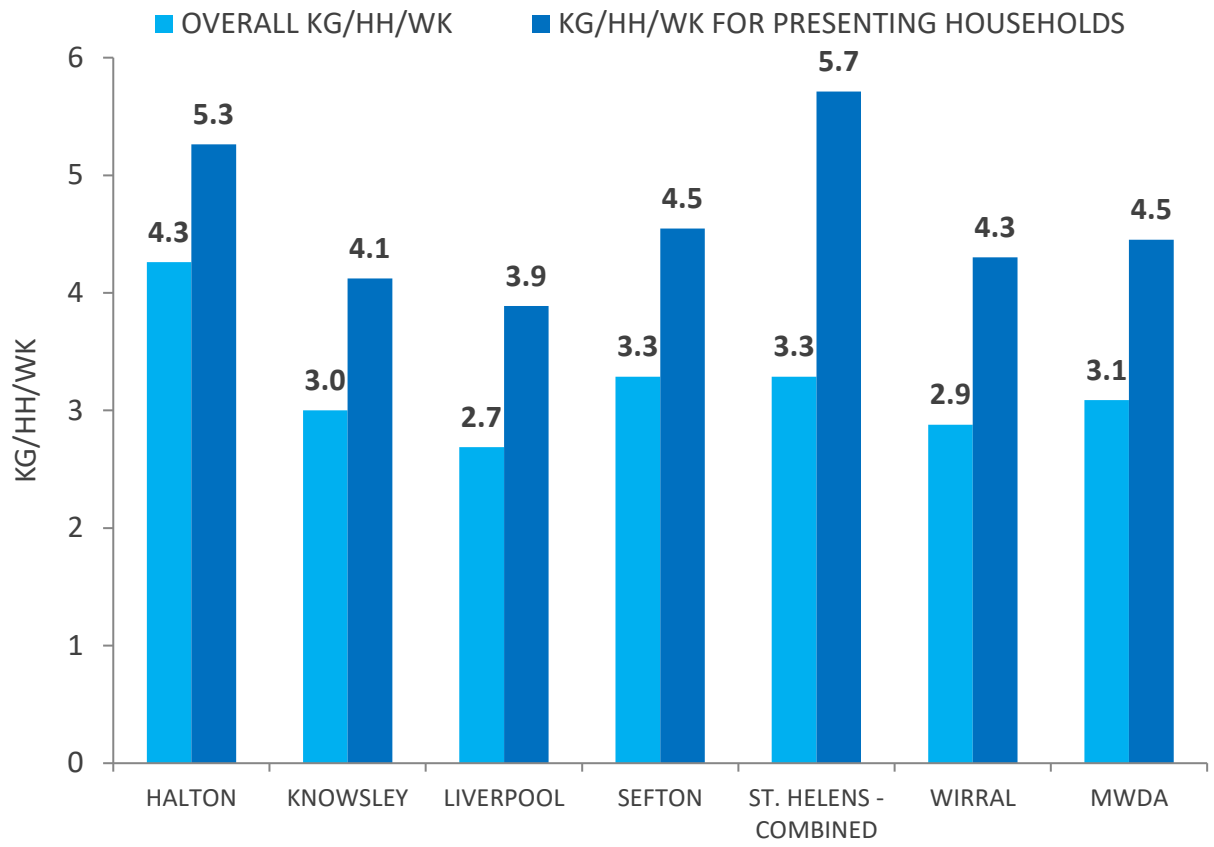


Figure 17 shows the average annual amount of Merseyside and Halton kerbside collected dry recycling in kg/hh/wk. The same houses were sampled as those included in the residual waste survey. As for the residual waste analysis, the overall amount of waste in kilograms per household per week is derived from the number of households who could set out waste and not just those that are participating. A Merseyside and Halton average of 3.09kg/hh/wk of kerbside collected dry recycling is being generated, this ranged between 2.69kg/hh/wk for Liverpool and 4.26kg/hh/wk for Halton. Solely considering presenting households the average level generated is 4.45kg/hh/wk.

Figure 17: Average kerbside collected dry recycling generation rates (kg/hh/wk)



Composition of kerbside collected dry recycling

This section looks at average annual amounts and composition of the kerbside collected dry recycling presented by the District councils sampled. Hand sorting of the kerbside collected dry recycling gave concentration by weight figures for the fifteen main categories of waste as well as the more detailed sub-categories. Results can again be expressed in terms of percentage concentration and kg/hh/wk for each authority and Merseyside and Halton as a whole. Table 22 and Figure 18 show kerbside collected dry recycling data in terms of percentage composition with Table 23 and Figure 18 showing generation rates for major materials in kg/hh/wk across all of Merseyside and Halton households.

As kerbside collected residual waste will contain a proportion that is classified as recyclable; then kerbside collected dry recycling waste will contain a fraction that is deemed to be contamination. That is to say that it is not compatible with the materials currently acceptable in the kerbside collected dry recycling.

Table 22: Composition of kerbside collected dry recycling (% concentration)

KERBSIDE DRY RECYCLING (%)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS*	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	9.8%	11.9%	12.3%	11.5%	10.8%	13.1%	11.1%
RECYCLABLE CARD & CARDBOARD	19.1%	18.8%	21.2%	25.2%	33.4%	24.3%	23.4%
RECYCLABLE PLASTICS	8.0%	7.3%	8.0%	8.4%	11.9%	8.0%	8.2%
RECYCLABLE GLASS	27.1%	25.6%	25.6%	20.5%	29.9%	27.9%	25.4%
RECYCLABLE METALS	4.8%	5.6%	4.5%	5.0%	6.0%	5.5%	5.0%
TOTAL DRY RECYCLABLES	68.7%	69.1%	71.6%	70.6%	92.0%	78.7%	73.1%
TOTAL CONTAMINATION	31.3%	30.9%	28.4%	29.4%	8.1%	21.3%	26.9%

**Composition of all separate containers combined*

Figure 18: Composition of kerbside collected dry recycling (%)

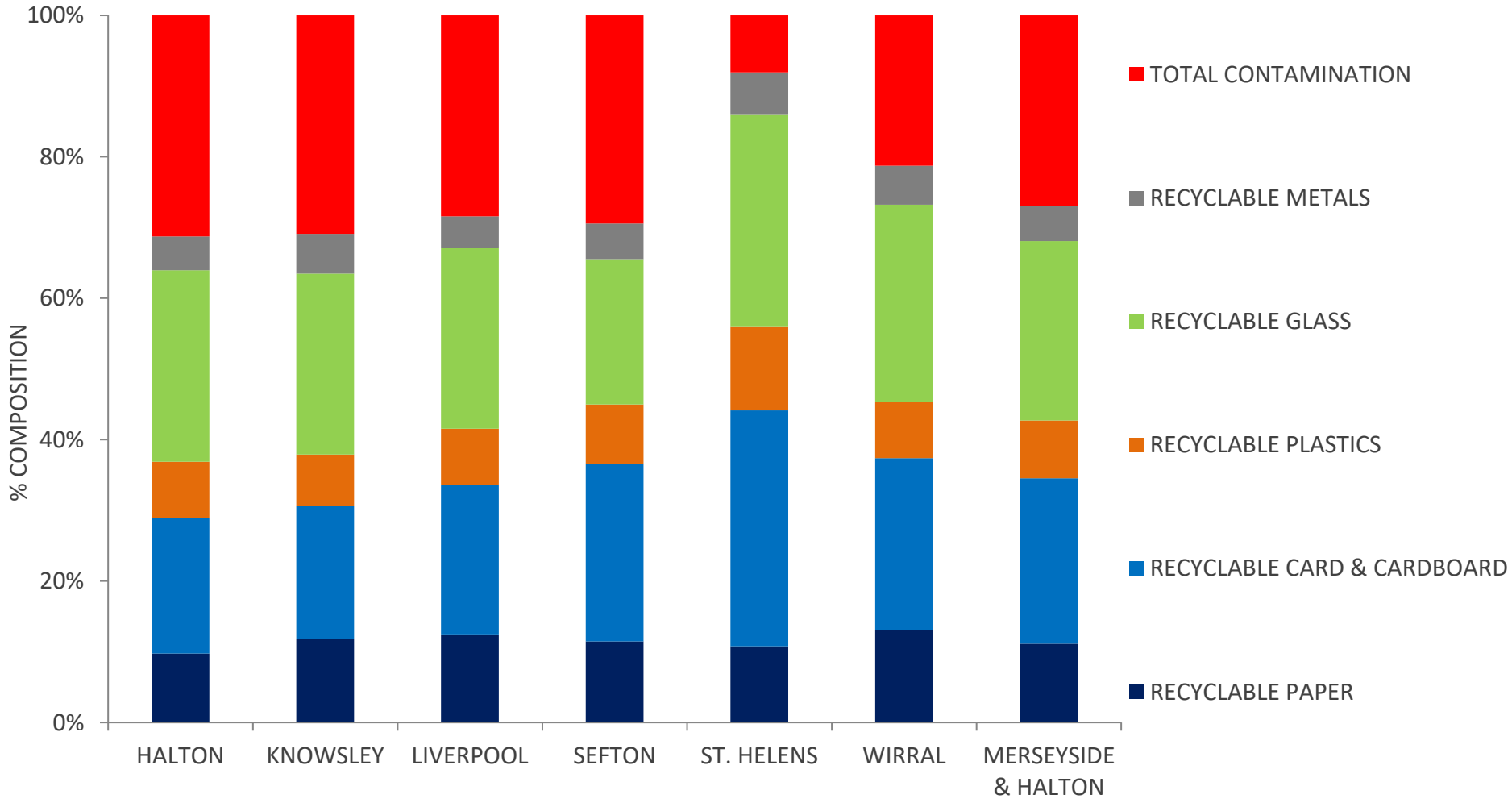
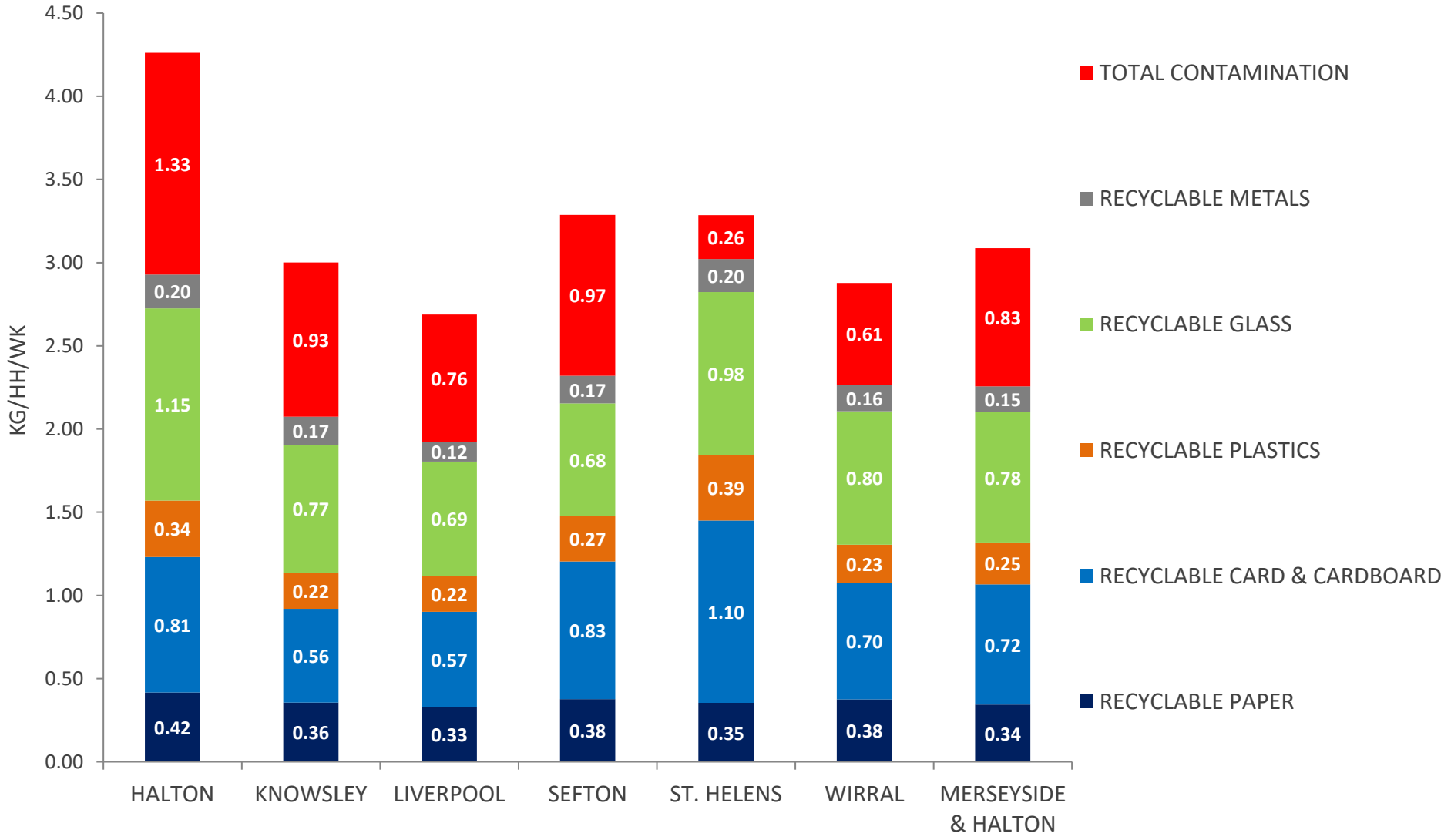


Table 23: Composition of kerbside dry collected recycling (kg/hh/wk)

KERBSIDE DRY RECYCLING (%)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	0.42	0.36	0.33	0.38	0.35	0.38	0.34
RECYCLABLE CARD & CARDBOARD	0.81	0.56	0.57	0.83	1.10	0.70	0.72
RECYCLABLE PLASTICS	0.34	0.22	0.22	0.27	0.39	0.23	0.25
RECYCLABLE GLASS	1.15	0.77	0.69	0.68	0.98	0.80	0.78
RECYCLABLE METALS	0.20	0.17	0.12	0.17	0.20	0.16	0.15
TOTAL DRY RECYCLABLES	2.93	2.07	1.92	2.32	3.02	2.27	2.26
TOTAL CONTAMINATION	1.33	0.93	0.76	0.97	0.26	0.61	0.83

Figure 19: Level of kerbside collected dry recycling (kg/hh/wk)



This section looks in more detail at the individual materials in the kerbside collected dry recycling and highlights the effectiveness with which these collections are capturing target recyclables. Table 24 summarises the capture rates seen for the range of materials collected in kerbside collected dry recycling containers. These figures are calculated by determining the distribution of recyclables across kerbside collected residual waste and kerbside collected dry recycling waste streams for all Merseyside and Halton households surveyed.

Table 24: Summary table for material capture rates (%) kerbside collected dry recycling

CAPTURE RATES	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	83.6%	75.7%	77.8%	73.7%	74.7%	81.2%	77.7%
RECYCLABLE CARD & CARDBOARD	79.7%	63.8%	72.2%	75.8%	80.5%	82.4%	76.2%
RECYCLABLE PLASTICS	76.5%	61.3%	66.6%	68.5%	49.8%	79.2%	65.3%
RECYCLABLE GLASS	86.0%	68.6%	77.9%	72.7%	81.0%	85.1%	78.8%
RECYCLABLE METALS	62.1%	51.3%	63.6%	61.6%	56.5%	67.3%	61.4%
TOTAL DRY RECYCLABLES	80.6%	65.7%	73.7%	72.4%	72.2%	81.5%	74.6%

It is estimated that Merseyside and Halton households are correctly recycling 77.7% of their recyclable paper and 76.2% of their recyclable card and cardboard. The efficiency of paper recycling ranges between 73.7% for Sefton and 83.6% for Halton. Knowsley recycles the lowest proportion of recyclable card and cardboard at 63.8% compared with 82.4% for Wirral.

Around 65.3% of the available recyclable plastics are captured across Merseyside and Halton as a whole. St. Helens households recycled 49.8% of those available (this is the only authority recycling containers) compared with 79.2% for Wirral.

Glass bottles and jars are the most effectively recycled material with 78.8% placed into Merseyside and Halton kerbside collected dry recycling. Knowsley recycled less than 69% of the glass they disposed of compared with levels of 86.0% for Halton.

Around 61.4% of recyclable metals are captured across Merseyside and Halton households. Whilst Knowsley households captured just 51.3% of the recyclable metals they disposed of, Wirral households captured 67.3%.

Overall, it is estimated that Merseyside and Halton households correctly capture 74.6% of all the recyclable material they dispose of at the kerbside. Capture rates for all recyclable ranged between 65.7% for Knowsley up to 81.5% for Wirral.

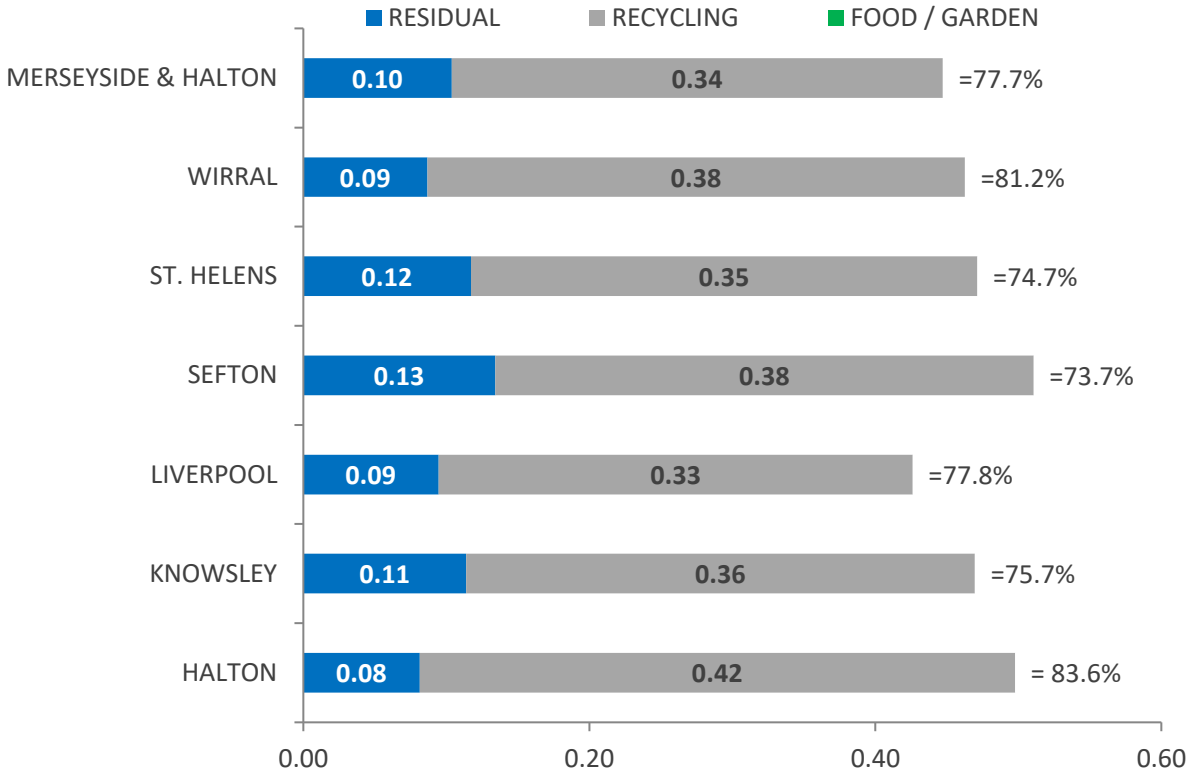
Paper Capture

Halton residents captured the highest proportion of their recyclable paper with 83.6% correctly being recycled. Sefton households generated the most recyclable paper at 0.51kg/hh/wk, however they captured the least at 73.7%. Liverpool disposed of the smallest amount at 0.43kg/hh/wk.

Across Merseyside and Halton, it is estimated that 0.45kg/hh/wk of recyclable paper compatible with kerbside collected dry recycling is generated with around 77.7% being correctly recycled.

There are many different forms of paper and therefore decisions must be made by residents as to whether a particular piece is to go into the kerbside collected dry recycling or residual waste. Across the samples there was a large range in the efficiency of paper separation. Almost a quarter of the recyclable paper disposed of by Merseyside and Halton households is put into residual bins. Consequently, around 0.10kg/hh/wk of potentially recyclable paper is not disposed of in the kerbside collected dry recycling. Figure 20 shows the distribution of recyclable paper throughout the kerbside collected residual waste and recycling waste along with the associated capture rate.

Figure 20: Distribution of recyclable paper within kerbside residual and recycling samples (kg/hh/wk)

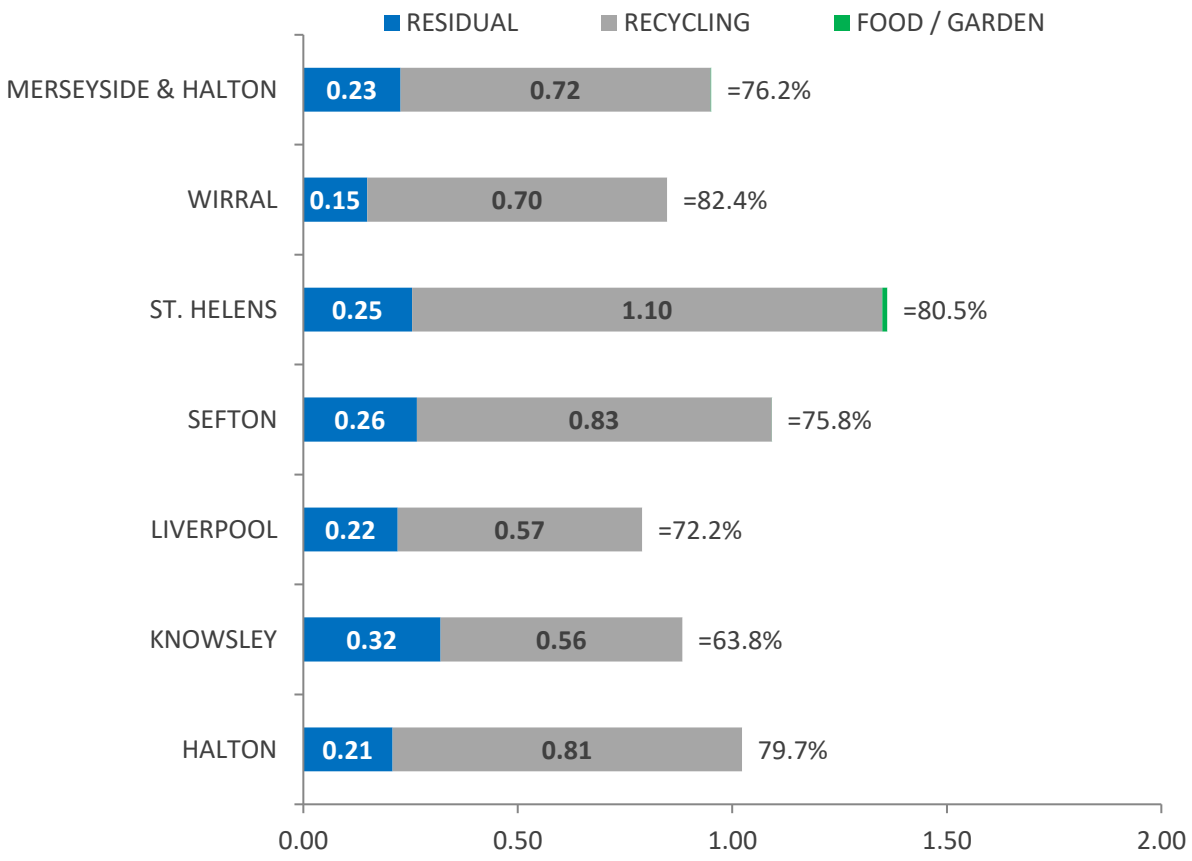


Card & Cardboard Capture

Wirral residents captured the highest proportion of their recyclable card & cardboard with 82.4% correctly being recycled; St. Helens generated the most of this waste at 1.36kg/hh/wk. Residents in Knowsley captured the least at 63.8%, with Liverpool disposing of the least at 0.79kg/hh/wk. Across all Merseyside and Halton households it is estimated that 0.95kg/hh/wk of recyclable card & cardboard is generated with around 76.2% being correctly placed into the kerbside collected dry recycling.

There are many different forms of card & cardboard and therefore decisions must be made by residents as to whether a particular piece is to go into the kerbside collected dry recycling or kerbside collected residual waste. The majority of all recyclable forms of card & cardboard are being correctly diverted by Merseyside and Halton residents surveyed although there is around 0.23kg/hh/wk of potentially recyclable card & cardboard not being recycled. Results from this survey indicated that corrugated cardboard is recycled most efficiently with 82% captured. In comparison 69.5% of thin card is recycled. Figure 21 shows the distribution of recyclable card & cardboard throughout the kerbside collected residual waste and kerbside collected dry recycling along with the associated capture rate.

Figure 21: Distribution of recyclable card within kerbside residual and recycling samples (kg/hh/wk)



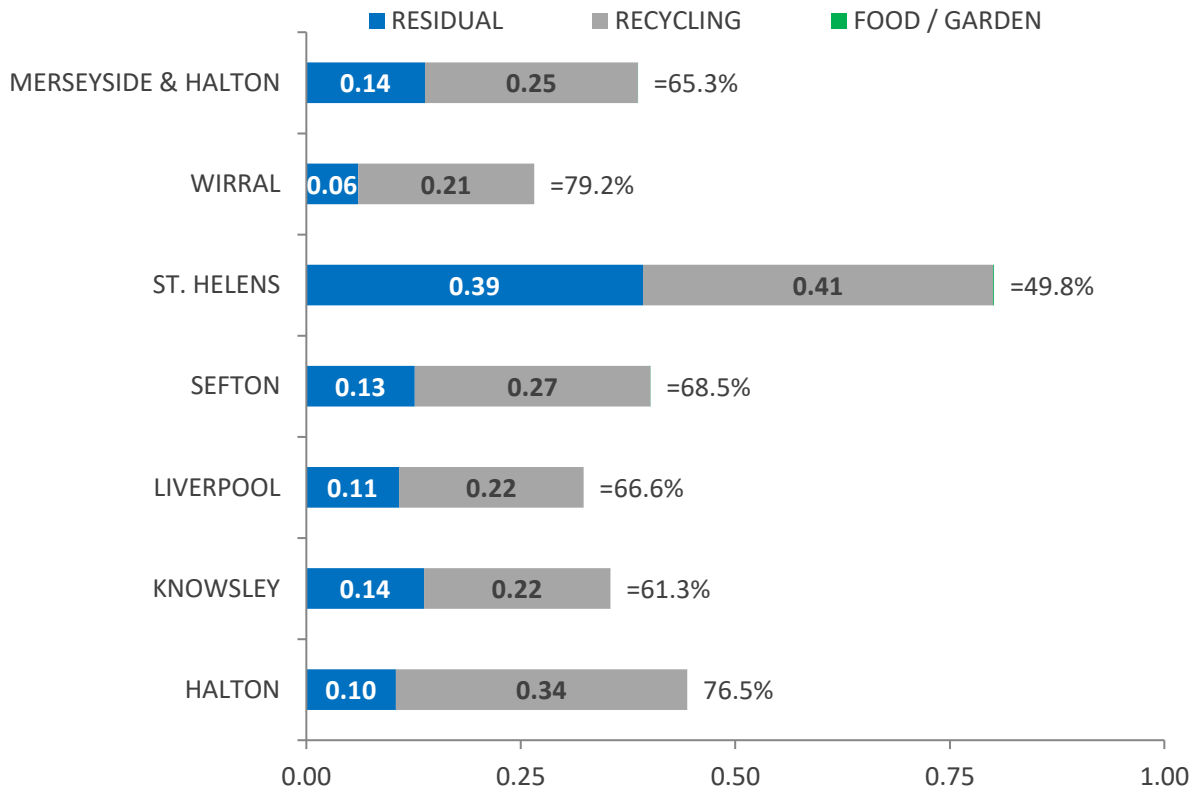
Plastics Capture

Wirral residents captured the highest proportion of their recyclable plastics with 79.2% correctly being recycled. St. Helens households disposed of the greatest amount of recyclable plastic in total at 0.80kg/hh/wk. However, St. Helens captured the lowest proportion at 49.8%. This is to be expected as only St. Helens households can recycle plastic containers, therefore more of their plastic waste is deemed recyclable. Containers are always recycled less effectively than bottles which will impact upon the overall capture rate for all plastics. with Wirral generating the least at 0.27kg/hh/wk. Across Merseyside and Halton it is estimated that 0.39kg/hh/wk of recyclable plastics are generated with around 65.3% being correctly placed into the kerbside collected dry recycling.

There are many different forms of plastic waste and therefore decisions must be made by residents as to whether a particular piece is to go into the kerbside collected dry recycling or kerbside collected residual waste. The majority of all recyclable forms of plastic are being correctly diverted by most of Merseyside and Halton residents surveyed, however, 0.14kg/hh/wk remains unrecycled.

Residents in St. Helens can recycle both plastic food containers and plastic bottles. Whereas 68% of plastic bottles were recycled the rate was just 37% for plastic containers.

Figure 22: Distribution of recyclable plastics within kerbside residual and recycling samples (kg/hh/wk)

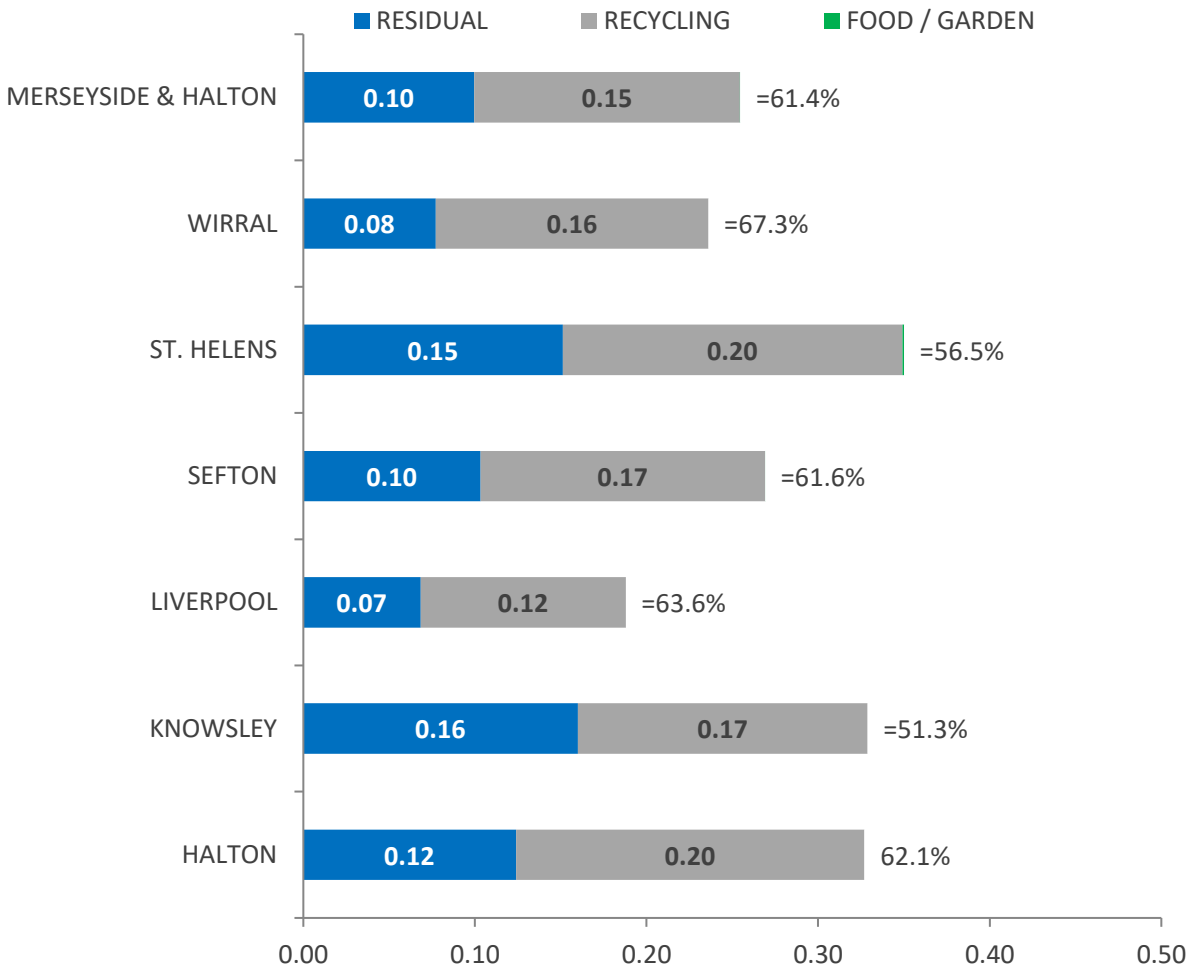


Metals Capture

Wirral residents captured the highest proportion of their recyclable metals with 67.3% correctly being recycled. St. Helens households disposed of the most recyclable metals at 0.35kg/hh/wk. Just 51.3% of recyclable metal was captured by Knowsley households with Liverpool disposing of just 0.19kg/hh/wk. On average, 61.4% of all recyclable metals are being correctly diverted by Merseyside and Halton residents sampled with around 0.25kg/hh/wk being generated.

The majority of all recyclable forms of metal are being correctly diverted by most residents surveyed with 0.10kg/hh/wk in residual bins. Results from this survey indicated that drink cans are recycled most efficiently with 64% correctly captured. In comparison, 63% of food tins are recycled. St. Helens households can also recycle aerosols (56% recycled) and foil (4% recycled). Figure 23 shows the distribution of recyclable metals throughout the kerbside collected residual and kerbside collected dry recycling.

Figure 23: Distribution of recyclable metals within kerbside residual and recycling samples (kg/hh/wk)

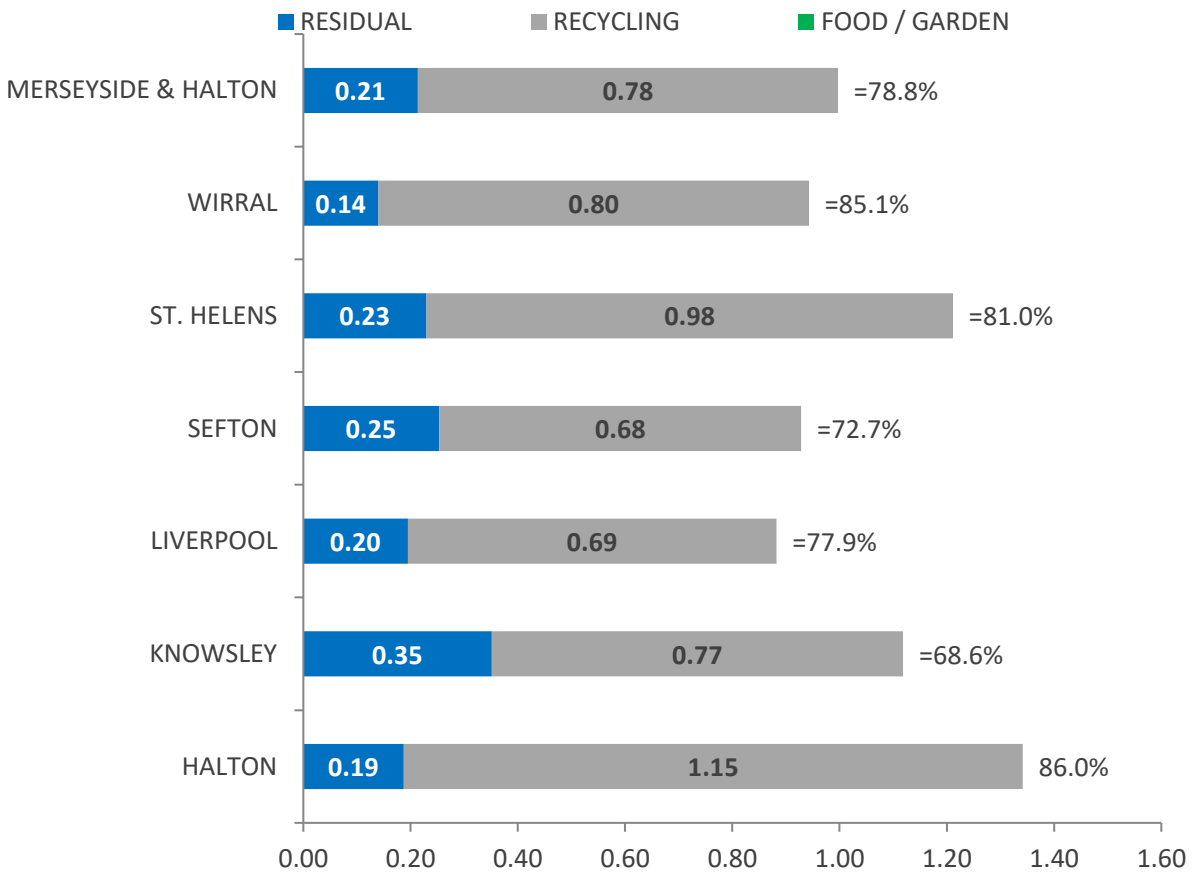


Glass Capture

Halton residents captured 86% of their recyclable glass whilst residents from Knowsley recycled around 68.6%. Halton households produced the most recyclable glass in their combined kerbside waste at 1.34kg/hh/wk compared with 0.88kg/hh/wk from Liverpool. On average, 78.8% of all recyclable glass is being correctly diverted by Merseyside and Halton residents sampled with around 1.0kg/hh/wk being generated.

The majority of all recyclable forms of glass are being correctly diverted by the residents surveyed with 0.21kg/hh/wk of in the kerbside collected residual waste. Results from this survey indicated that glass bottles are recycled most efficiently with 82% correctly captured compared with 63% of glass jars. Whereas bottles (especially coloured) tend mainly to contain liquids that leave the bottle clean once empty; jars often contain sauces and preserves etc. These require cleaning once empty which can impact on the efficiency of recycling. Figure 24 shows the distribution of recyclable glass throughout the kerbside collected residual waste and kerbside collected dry recycling.

Figure 24: Distribution of recyclable glass within residual and kerbside recycling samples (kg/hh/wk)



Kerbside Collected Dry Recycling Contamination

Table 25 shows that on average 0.83kg/hh/wk of the items present in Merseyside and Halton kerbside collected dry recycling are made up of contamination. This equates to around 26.9%. This figure is based solely upon the data obtained during the compositional sampling. Rates set through MAF analysis will differ. This section looks to breakdown the amounts and concentrations of various contaminants being placed into the kerbside collected dry recycling across Merseyside and Halton.

Some forms of contamination may address residents' lack of knowledge in relation to the materials that are accepted into kerbside collected recycling. For example, a householder may believe anything metallic is acceptable with tins and cans. Other contamination will be formed from waste that is totally unrelated to the materials collected (i.e., disposable nappies, wood, or food waste). Table 25 and Figure 25 show the amounts of contamination materials recovered from the kerbside collected dry recycling.

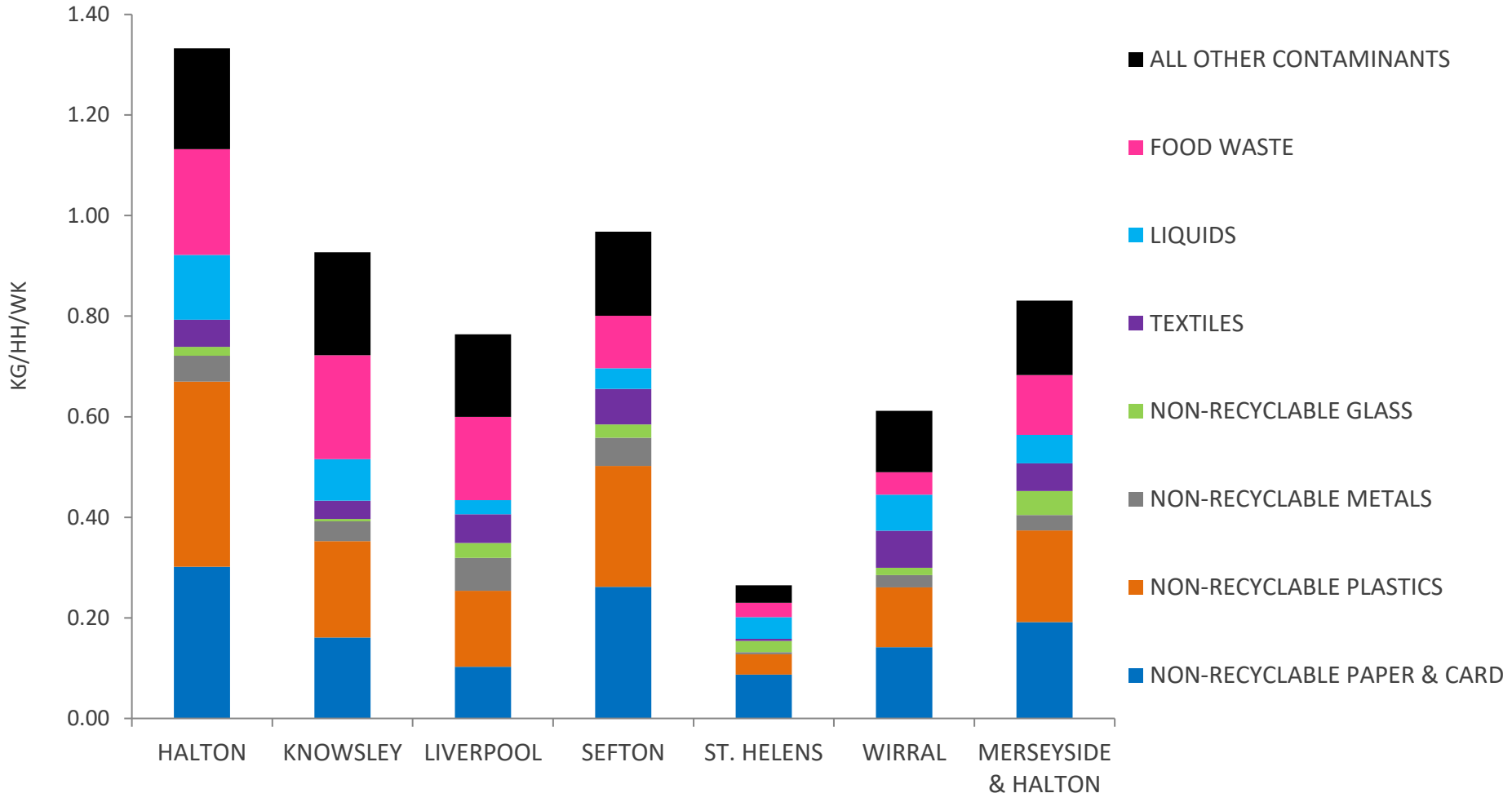
Across the samples, the kerbside collected dry recycling contained between 0.26kg/hh/wk (St. Helens) and 1.33kg/hh/wk (Halton) of contamination.

Table 25: Unacceptable materials within in the kerbside collected dry recycling (kg/hh/wk)

CONTAMINATION (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
NON-RECYCLABLE PAPER & CARD	0.30	0.16	0.10	0.26	0.09	0.14	0.19
NON-RECYCLABLE PLASTICS	0.37	0.19	0.15	0.24	0.04	0.12	0.18
NON-RECYCLABLE METALS	0.05	0.04	0.07	0.06	0.00	0.02	0.03
NON-RECYCLABLE GLASS	0.02	0.00	0.03	0.03	0.02	0.01	0.05
TEXTILES	0.05	0.04	0.06	0.07	0.00	0.07	0.06
LIQUIDS	0.13	0.08	0.03	0.04	0.04	0.07	0.06
FOOD WASTE	0.21	0.21	0.17	0.10	0.03	0.04	0.12
ALL OTHER CONTAMINANTS*	0.20	0.20	0.16	0.17	0.03	0.12	0.15
TOTAL CONTAMINATION	1.33	0.93	0.76	0.97	0.26	0.61	0.83

**0.02 contribution from WEEE*

Figure 25: Breakdown of contamination materials present within kerbside collected dry recycling (kg/hh/wk).



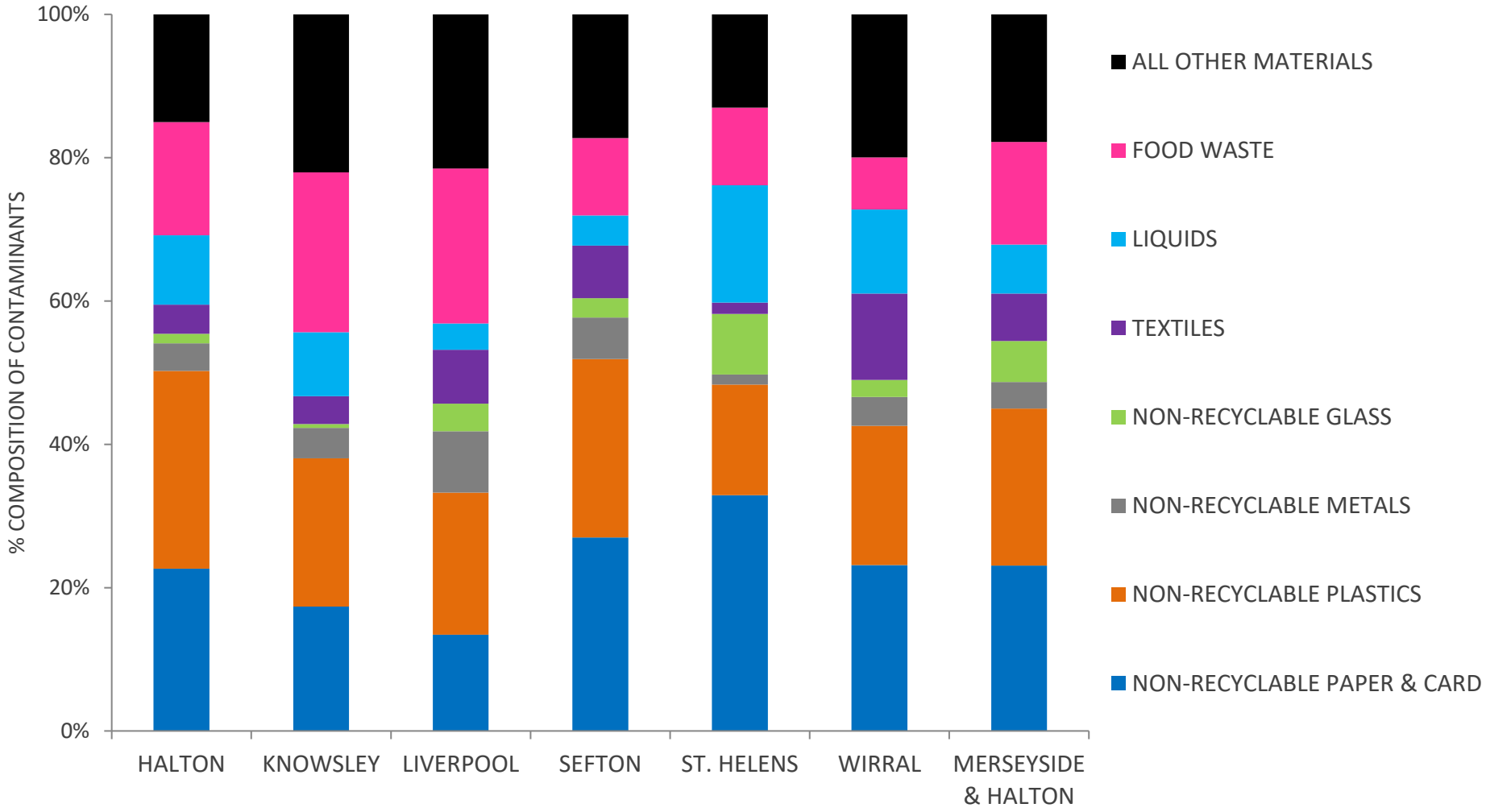
On average 25.9% of the material collected in the kerbside collected dry recycling was deemed to be contamination. The kerbside collected dry recycling collected from St. Helens households was just 6% contamination. In contrast the kerbside collected dry recycling from Sefton households was 33.2% contamination.

Table 26: Breakdown of kerbside collected dry recycling bin contaminants (% of contamination)

CONTAMINATION (%)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
NON-RECYCLABLE PAPER & CARD	7.1%	5.4%	3.8%	8.0%	2.6%	4.9%	6.2%
NON-RECYCLABLE PLASTICS	8.6%	6.4%	5.6%	7.3%	1.2%	4.1%	5.9%
NON-RECYCLABLE METALS	1.2%	1.3%	2.4%	1.7%	0.1%	0.9%	1.0%
NON-RECYCLABLE GLASS	0.4%	0.2%	1.1%	0.8%	0.7%	0.5%	1.5%
TEXTILES	1.3%	1.2%	2.1%	2.2%	0.1%	2.6%	1.8%
LIQUIDS	3.0%	2.7%	1.0%	1.2%	1.3%	2.5%	1.8%
FOOD WASTE	4.9%	6.9%	6.1%	3.2%	0.9%	1.5%	3.9%
ALL OTHER MATERIALS*	4.7%	6.8%	6.1%	5.1%	1.0%	4.2%	4.8%
TOTAL CONTAMINATION	31.3%	30.9%	28.4%	29.4%	8.1%	21.3%	26.9%

**0.53% contribution from WEEE*

Figure 26: Breakdown of contaminants present within kerbside collected dry recycling (% of contamination).



- Overall, it was seen that the most prevalent single contaminant in the kerbside collected dry recycling was non-recyclable paper and card which formed 23.1% of the total contamination ; accounting for 6.2% of kerbside collected dry recycling. Around 13% of the contamination in Liverpool kerbside collected dry recycling dry recycling was due to non-recyclable paper and card with this proportion being 32.9% for St. Helens.
- Non-recyclable plastics formed 5.9% of kerbside collected dry recycling or 21.9% of the total contamination in Merseyside and Halton kerbside collected dry recycling. Around 29% of this was due to plastic film. Around 15.4% of the contamination in St. Helens kerbside collected dry recycling was due to non-recyclable plastics with this proportion being almost 27.6% for Halton.
- General residual waste formed 17.8% of the contamination; accounting for 4.8% of Merseyside and Halton kerbside collected dry recycling. This included items such as rubble (1%), nappies (0.5%), WEEE (0.5%) etc.
- Food waste formed 3.9% of kerbside collected dry recycling or 14.3% of Merseyside and Halton kerbside collected dry recycling contamination. Just 7% of the contamination in Wirral kerbside collected dry recycling was due to food. However, food waste was responsible for around 22% of all kerbside collected dry recycling contamination in Knowsley. Contained liquids (mainly drinks inside plastic bottles) contributed an additional 6.8% of contamination or 1.8% of Merseyside and Halton kerbside collected dry recycling.
- Textiles made up 1.7% of Merseyside and Halton kerbside collected dry recycling or 6.8% of the contamination that was present. Textiles were responsible for almost 10% of the contamination present within Sefton & Wirral kerbside collected dry recycling.
- Non-recyclable metals made up 1.8% of Merseyside and Halton kerbside collected dry recycling or 6.6% of the contamination that was present. Non-recyclable metal was responsible for 3.7% of the contamination present within the Liverpool kerbside collected dry recycling.
- Unacceptable glass made up 1.5% of Merseyside and Halton kerbside collected dry recycling or 5.7% of the contamination that was present. This type of glass was responsible for 8.4% of the contamination present within the St. Helens kerbside collected dry recycling.

Packaging within kerbside dry mixed recycling

Merseyside Recycling and Waste Authority has an interest in the levels of packaging material in its various waste streams. A large proportion of the materials that are available for kerbside collected dry recycling consist of packaging items.

Table 27: Amount of packaging material in the kerbside collected dry recycling (kg/hh/wk)

PACKAGING CONTENT (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PAPER PACKAGING	0.00	0.01	0.04	0.04	0.02	0.07	0.04
CARD PACKAGING	0.83	0.58	0.55	0.84	1.10	0.72	0.74
PLASTIC FILM PACKAGING	0.11	0.07	0.04	0.07	0.01	0.03	0.05
DENSE PLASTIC PACKAGING	0.46	0.29	0.29	0.37	0.40	0.30	0.33
METAL PACKAGING	0.22	0.18	0.15	0.18	0.20	0.18	0.18
GLASS PACKAGING	1.15	0.77	0.69	0.68	0.98	0.80	0.79
OTHER PACKAGING	0.00	0.01	0.00	0.00	0.01	0.00	0.00
FOOD ASSOCIATED PACKAGING*	0.01	0.01	0.01	0.01	0.00	0.01	0.01
TOTAL PACKAGING	2.80	1.92	1.75	2.20	2.73	2.10	2.14

** Estimated for food waste disposed of in original packaging (5% of discarded weight)*

On average, 2.14kg/hh/wk of Merseyside and Halton kerbside collected dry recycling consists of packaging. Liverpool households placed 1.75kg/hh/wk of packaging items in their recycling containers. This compares with 2.80kg/hh/wk for Halton.

Table 28: Levels of packaging material in the kerbside collected dry recycling (%)

PACKAGING CONTENT (%)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PAPER PACKAGING	0.1%	0.3%	1.4%	1.3%	0.6%	2.5%	1.3%
CARD PACKAGING	19.6%	19.3%	20.4%	25.6%	33.5%	25.0%	23.8%
PLASTIC FILM PACKAGING	2.6%	2.2%	1.3%	2.1%	0.4%	0.9%	1.5%
DENSE PLASTIC PACKAGING	10.7%	9.6%	10.6%	11.4%	12.2%	10.3%	10.8%
METAL PACKAGING	5.2%	6.1%	5.5%	5.6%	6.0%	6.1%	5.8%
GLASS PACKAGING	27.1%	25.6%	25.6%	20.5%	29.9%	27.9%	25.7%
OTHER PACKAGING	0.0%	0.2%	0.1%	0.1%	0.3%	0.0%	0.1%
FOOD ASSOCIATED PACKAGING*	0.3%	0.4%	0.2%	0.2%	0.1%	0.2%	0.2%
TOTAL PACKAGING	65.6%	63.8%	65.2%	66.8%	83.0%	72.9%	69.2%

** Estimated for food waste disposed of in original packaging (5% of discarded weight)*

Around 69% of all Merseyside and Halton kerbside collected dry recycling was due to packaging. This ranged between 63.8% for Knowsley up to 83.0% for St. Helens. Around 37% of all packaging was glass accounting for 25.7% or 0.79kg/hh/wk of total recycling. An average of 34% of packaging was formed from card and cardboard with 17.9% plastics, 8% metal packaging and 2% paper packaging.

Figure 27: Amount of packaging material in the kerbside collected dry recycling (kg/hh/wk)

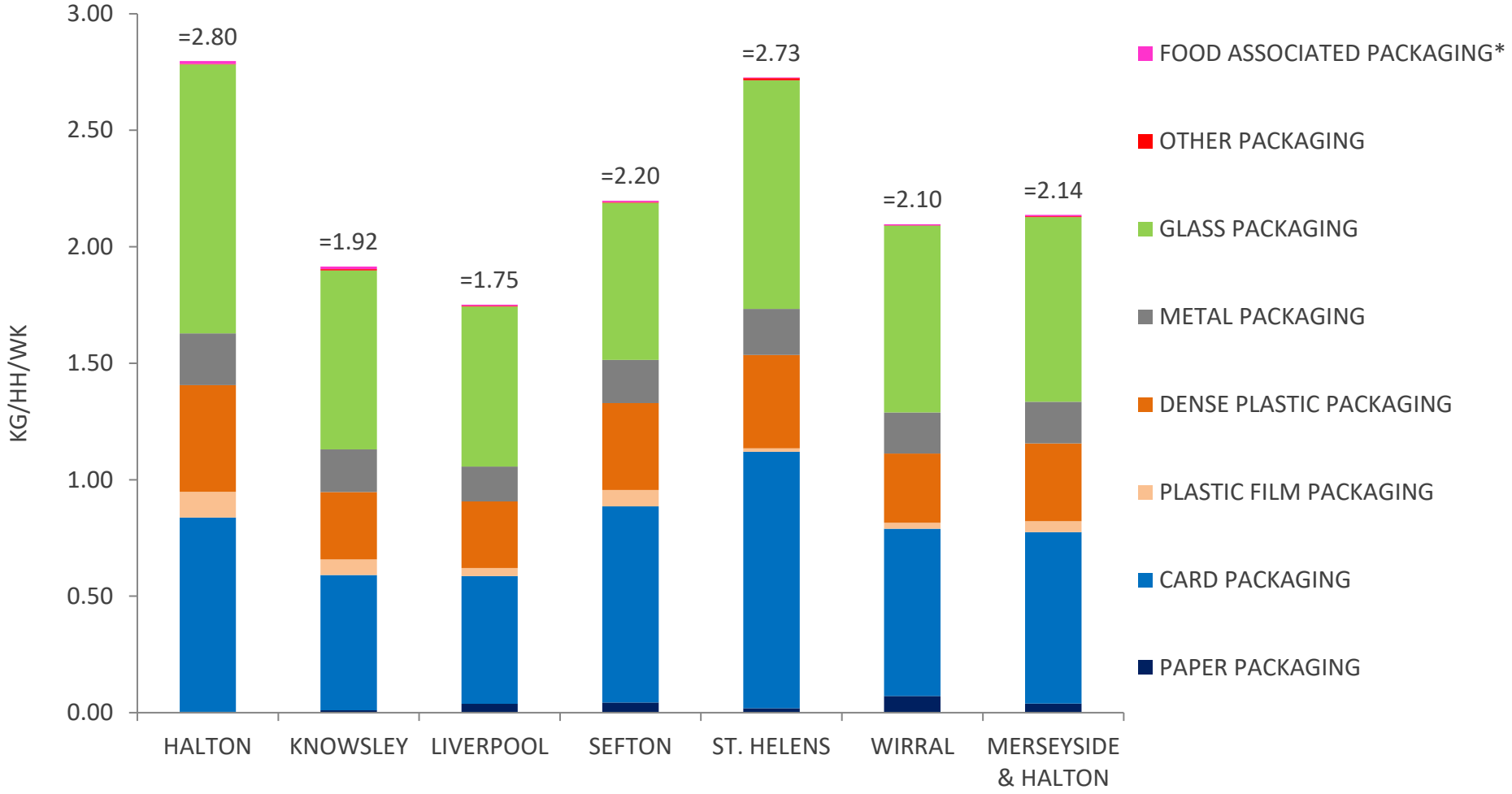
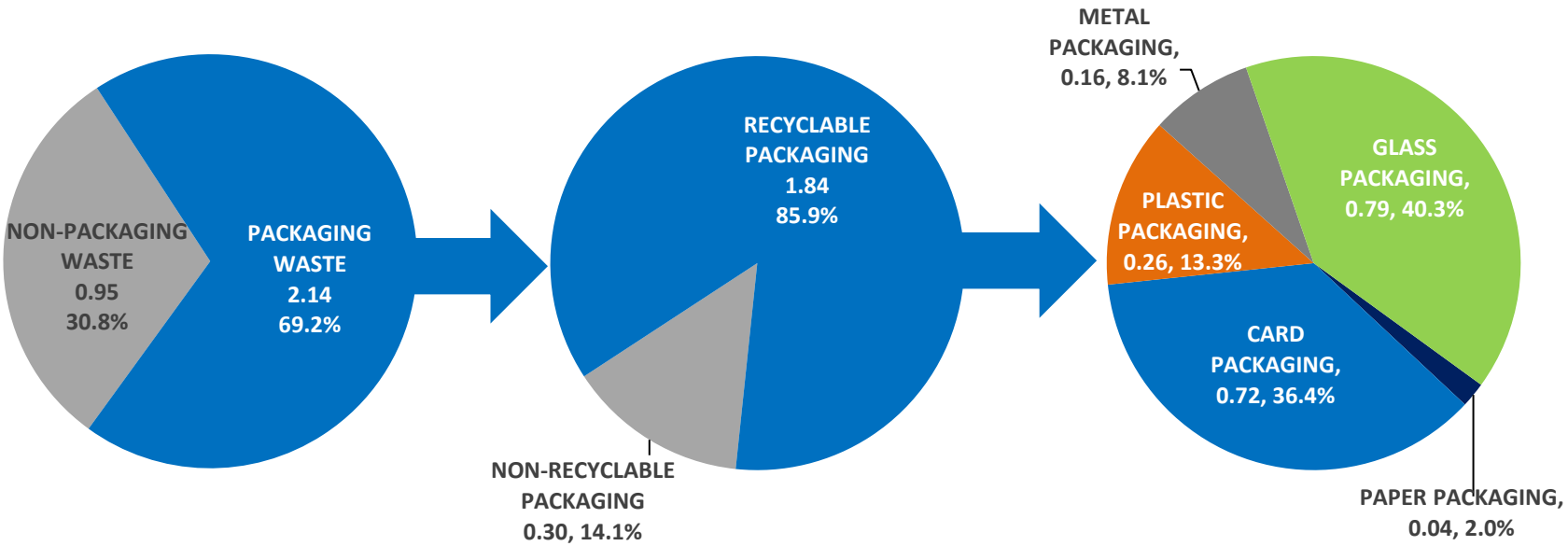


Figure 28: Proportion of Merseyside & Halton kerbside collected dry recycling due to packaging and recyclable content (%)



Total Packaging & Capture

The total annual amount of kerbside collected residual waste, dry and organic recycling generated across all Merseyside and Halton households averaged 11.5.kg/hh/wk. Wirral households generated the least at 7.7kg/hh/wk compared with 13.8kg/hh/wk for Sefton.

Table 29: Total kerbside collected waste (kg/hh/wk)

TOTAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RESIDUAL	5.66	7.88	7.14	7.49	7.64	4.13	6.62
DRY RECYCLING	4.26	3.00	2.69	3.29	3.29	2.88	3.09
GARDEN RECYCLING	0.84	0.98	1.42	3.01	1.14	0.70	1.67
FOOD RECYCLING	N/A	N/A	N/A	N/A	0.92	N/A	0.11
TOTAL	10.77	11.86	11.25	13.79	12.99	7.71	11.49

When combining kerbside collected residual and kerbside collected dry recycling streams, it is estimated that 3.54kg/hh/wk of packaging is disposed of. This represents 31% of total kerbside collected residual waste and kerbside collected dry recycling. The proportion of all kerbside waste and recycling being disposed of that was due to packaging ranged between 26% for Sefton up to 38% for Wirral.

Of this packaging it is seen that 69.2% is of a type that is compatible with kerbside collected dry recycling.

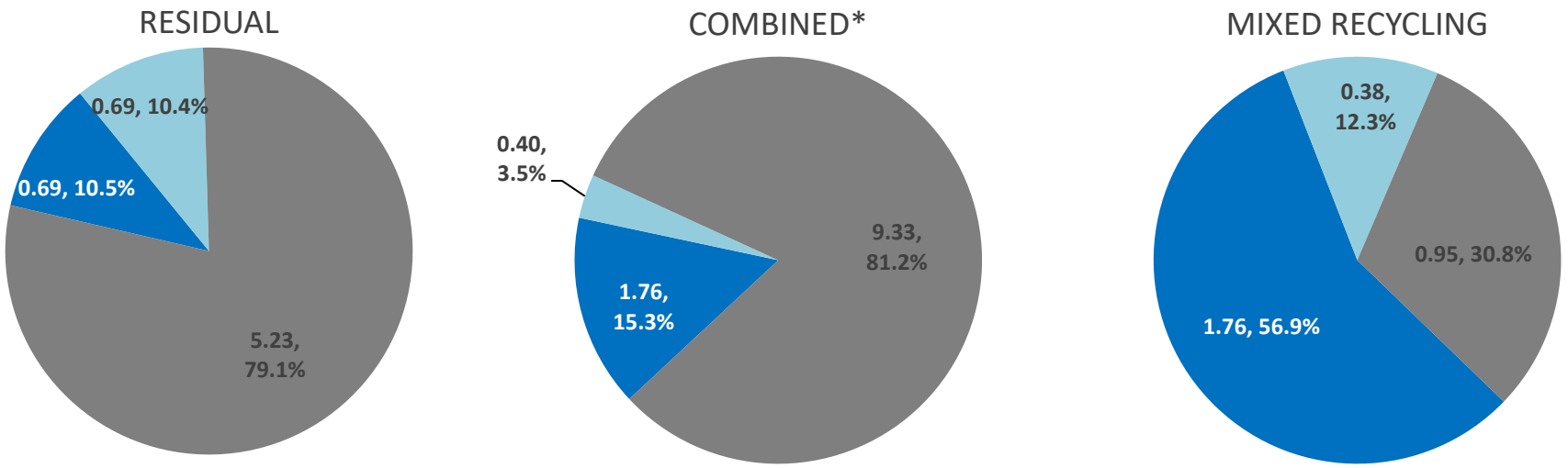
Therefore 2.45kg/hh/wk or 21.3% of total Merseyside and Halton kerbside collected waste and dry recycling consists of recyclable packaging. This proportion ranged between 19.5% for Liverpool up to 31.3% for Wirral.

Of all the recyclable packaging disposed of, 71.6% is correctly recycled at the kerbside by all Merseyside and Halton households. The efficiency of recycling ranged between 63.9% for Knowsley households and 81% for Wirral households

Table 30: Total kerbside packaging waste (kg/hh/wk)

PACKAGING CONTENT (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
TOTAL PACKAGING RESIDUAL	1.25	2.01	1.39	1.45	1.74	0.83	1.38
RECYCLABLE PACKAGING RESIDUAL	0.65	0.97	0.60	0.77	1.05	0.45	0.69
TOTAL PACKAGING RECYCLING	2.80	1.92	1.82	2.20	2.75	2.10	2.16
RECYCLABLE PACKAGING RECYCLING	2.51	1.73	1.60	1.98	2.67	1.96	1.76
TOTAL COMBINED PACKAGING	4.04	3.93	3.22	3.65	4.49	2.93	3.54
TOTAL COMBINED RECYCLABLE PACKAGING	3.16	2.70	2.19	2.75	3.71	2.41	2.45
% OF ALL PACKAGING RECYCLABLE	78.1%	68.8%	68.1%	75.3%	82.7%	82.4%	69.2%
% CAPTURE OF RECYCLABLE PACKAGING	79.5%	63.9%	72.8%	72.1%	71.4%	81.2%	71.6%

Figure 29: Merseyside & Halton Packaging and non-packaging waste (kg/hh/wk and % by weight)



*combined figures include the small contributions from food and garden recycling

RECYCLABLE PACKAGING	NON-RECYCLABLE PACKAGING	NON-PACKAGING WASTE

Drinks containers within the kerbside collected dry recycling

Results indicated that the levels of single use drinks containers in the kerbside collected dry recycling ranged between 26.2% for Sefton up to 33.9% for St. Helens. This represented an average for Merseyside & Halton of 30.9% or 0.95kg/hh/wk.

For all authorities, the majority of drink's containers were seen to be glass. These were responsible for 66% of Sefton and 73% of Wirral and St. Helens drink containers. On average, 22% or 0.68kg/hh/wk of Merseyside & Halton kerbside collected dry recycling was due to glass drinks bottles – 71% of the drink containers present.

Between 19% (Knowsley & Wirral) and 25% (Sefton) of drink containers were due to plastic bottles. On average, 6.5% or 0.20kg/hh/wk of Merseyside & Halton kerbside collected dry recycling was due to plastic drinks bottles – 21% of the drink containers present. Of the plastic drink bottles present, 98.6% were under 3 litres in capacity. Of all plastic bottles under 3 litres, 67% were PET with 33% HDPE.

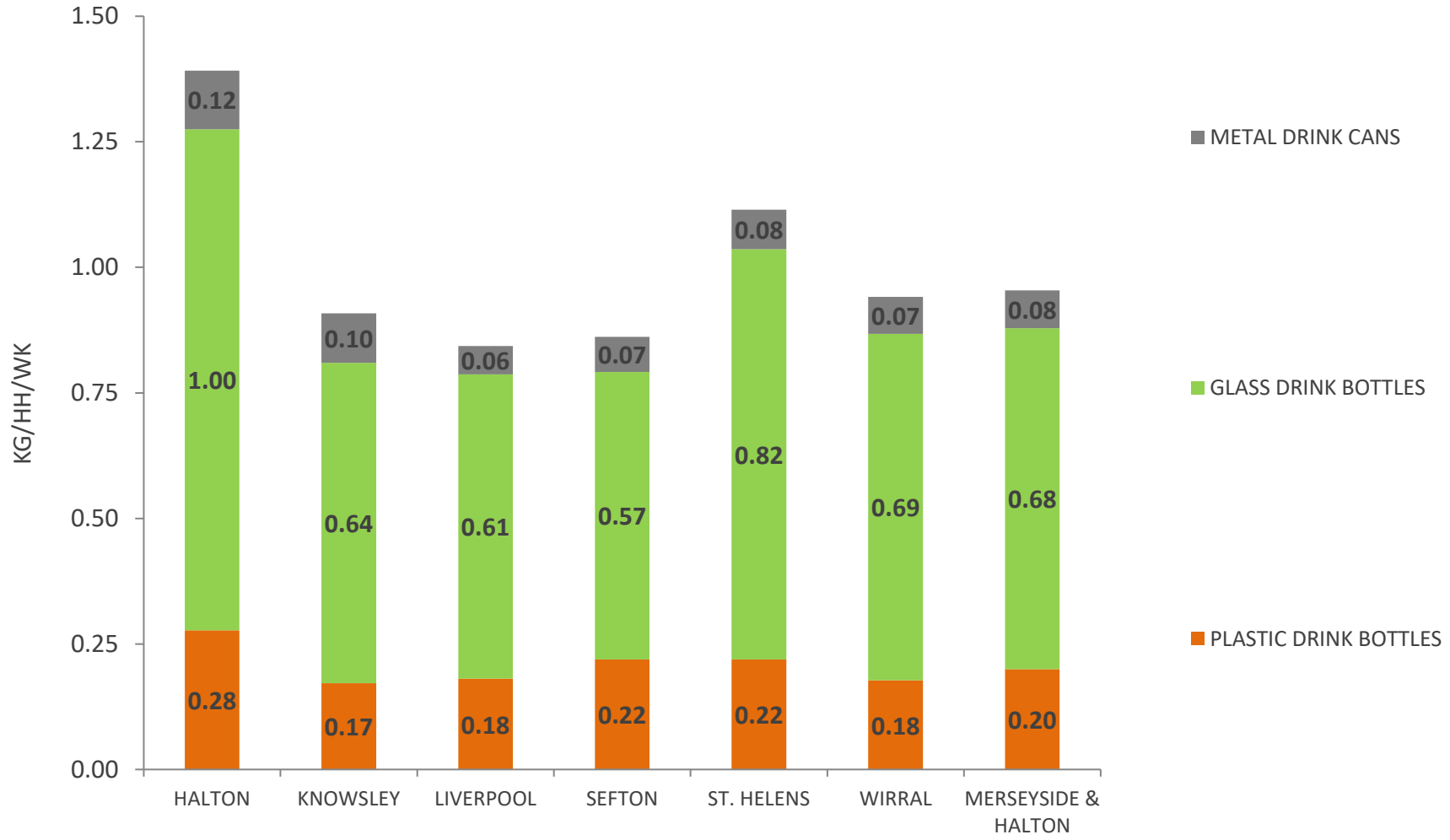
Between 7% (Liverpool & St. Helens) and 11% of Knowsley drink containers were due to metal cans. On average, 2.4% or 0.08kg/hh/wk of Merseyside & Halton kerbside collected dry recycling was due to metal drink cans – 8% of the drink containers present.

Table 31: Drink containers in the kerbside collected dry recycling

SINGLE USE DRINK CONTAINERS -%	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PLASTIC DRINK BOTTLES	6.5%	5.7%	6.7%	6.7%	6.7%	6.2%	6.5%
GLASS DRINK BOTTLES	23.4%	21.3%	22.5%	17.4%	24.9%	24.0%	22.0%
METAL DRINK CANS	2.7%	3.3%	2.1%	2.1%	2.4%	2.5%	2.4%
TOTAL	32.7%	30.3%	31.4%	26.2%	33.9%	32.7%	30.9%

SINGLE USE DRINK CONTAINERS -KG/HH/WK	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PLASTIC DRINK BOTTLES	0.28	0.17	0.18	0.22	0.22	0.18	0.20
GLASS DRINK BOTTLES	1.00	0.64	0.61	0.57	0.82	0.69	0.68
METAL DRINK CANS	0.12	0.10	0.06	0.07	0.08	0.07	0.08
TOTAL	1.39	0.91	0.84	0.86	1.11	0.94	0.95

Figure 30: Drink containers in the kerbside collected dry recycling (kg/hh/wk)



Potentially reusable items

The kerbside collected dry recycling had less than half the level of reuse potential when compared with the kerbside collected residual waste. On average around 0.10kg/hh/wk or 3.2% of the kerbside collected dry recycling across Merseyside & Halton had some re-use potential. This amount peaked in the Wirral waste at 4.3% or 0.12kg/hh/wk. Over a third of the reusable material (38%) was due to clothes and shoes with 18% being other fabrics and 16% carpet and other flooring. Around 8% was due to electrical goods with 17% books.

Table 32: Recyclable content of packaging in kerbside collected dry recycling

POTENTIAL RE-USE ITEMS	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
KG/HH/WK	0.11	0.08	0.11	0.11	0.01	0.12	0.10
%	2.5%	2.7%	4.0%	3.4%	0.4%	4.3%	3.2%

Food recycling waste

Set out rates and waste generation

Food recycling was collected from St. Helens, being the only District councils to collect this material separately. The same houses were sampled as those included in the residual and recycling survey. The overall amount of waste in kilograms per household per week is derived from the number of households who could set out waste and not just those that are participating. These aggregated figures for the recycling waste are shown in tables and figures with additional information relating to individual household samples given where relevant.

Averaged over the spring and autumn surveys, 27.4% of households presented food recycling. On average around 0.92kg/hh/wk of food recycling was generated at the kerbside. Solely considering presented bins the average amount put out was 3.36kg/hh/wk. Allowing for the fact that no other authorities collect food recycling this represents an average of 0.11kg/hh/wk for all Merseyside and Halton households.

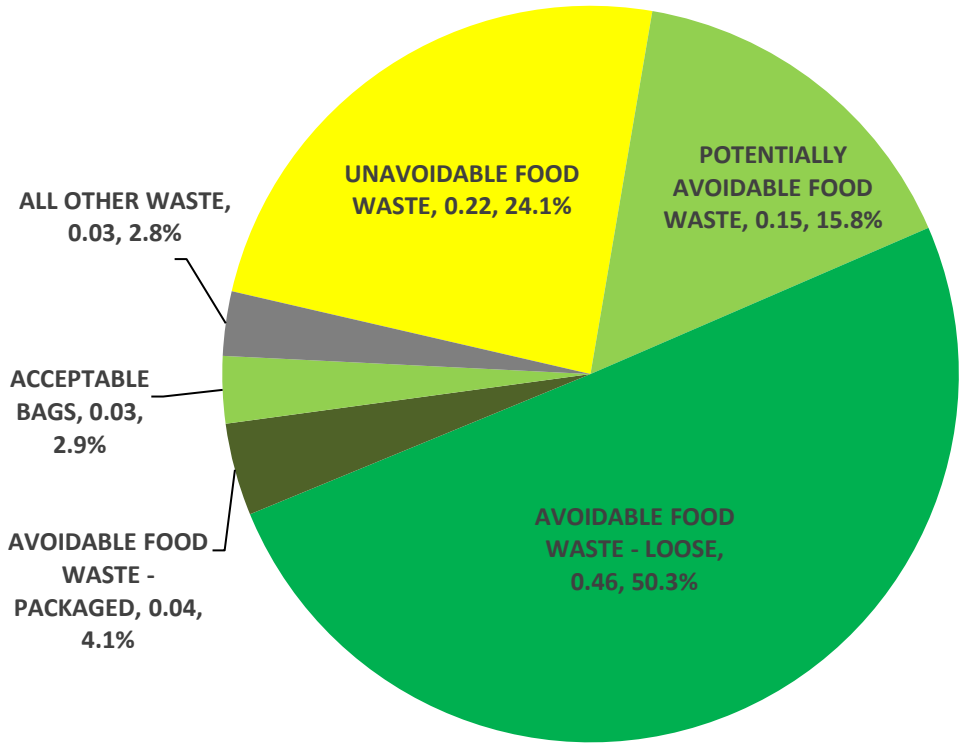
Compositional analysis of food recycling

This section looks at average amounts and composition of the food recycling waste presented by households sampled throughout St. Helens. Hand sorting of the recycling waste gives concentration by weight figures for the main categories of waste as well as the more detailed sub-categories. Results can again be expressed in terms of percentage concentration and kg/hh/wk. As kerbside collected residual waste will contain a proportion that is classified as potentially recyclable; then food recycling waste will contain a faction that is deemed to be contamination. That is to say that it is not compatible with the materials currently acceptable to the recycling containers it is placed into.

Table 33: St. Helens Food Recycling

FOOD RECYCLING (%)	KG/HH/WK	%
UNAVOIDABLE FOOD WASTE	0.22	24.08%
POTENTIALLY AVOIDABLE FOOD WASTE	0.15	15.81%
AVOIDABLE FOOD WASTE – LOOSE	0.46	50.28%
AVOIDABLE FOOD WASTE – PACKAGED	0.04	4.06%
ACCEPTABLE BAGS	0.03	2.94%
ALL OTHER WASTE	0.03	2.82%
TOTAL	0.92	100.00%
% OF FOOD AVOIDABLE	57.67%	
% OF ALL FOOD PACKAGED	4.31%	

Figure 31: Composition of food recycling (kg/hh/wk, %)



Materials placed in food recycling bins

This chapter looks in more detail at the individual materials placed out for food recycling collections in St. Helens and highlights the effectiveness with food is being recycled. Looking at the relationship between the kerbside collected residual waste and recycling waste streams presented will additionally give indications as to the overall diversion being achieved in the St. Helens samples.

Table 34 summarises the capture rates seen for the food collected at the kerbside. These figures are calculated by determining the distribution of recyclables across all waste streams for all the households selected for survey within each sample.

Table 34: Summary table for capture rates (%) for food recycling

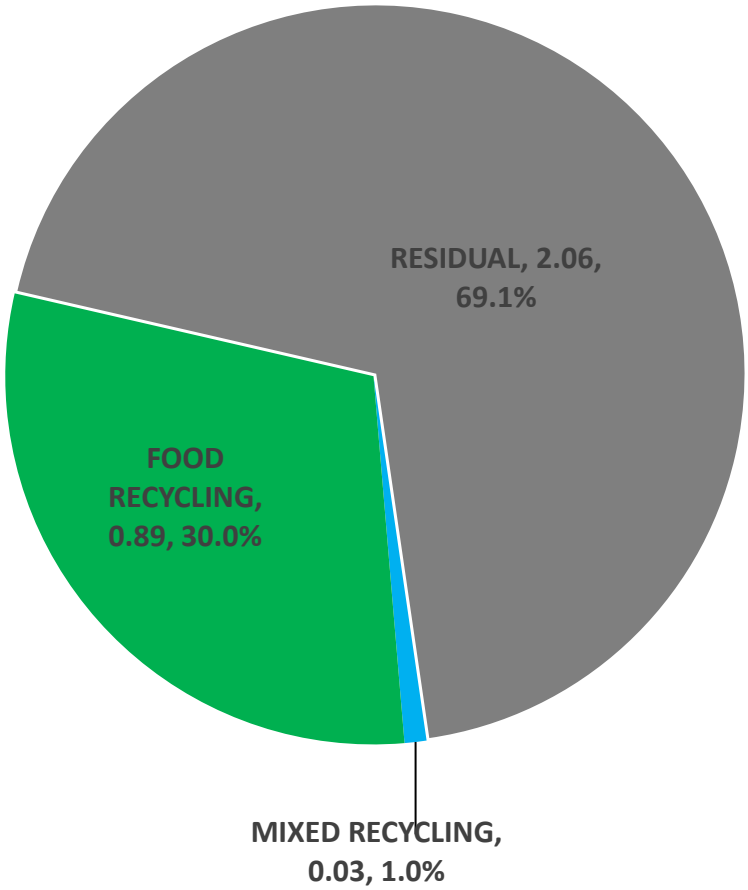
FOOD CAPTURE RATES (%)	
UNAVOIDABLE FOOD WASTE	61.3%
AVOIDABLE FOOD WASTE	22.5%
ALL FOOD WASTE	29.9%

Across St. Helens it is estimated that around 2.99kg/hh/wk of food waste compatible with recycling collections is generated (inc liners) with around 29.9% being correctly recycled. Capture rates for unavoidable food waste was seen to be higher (61.3%) than those seen for non-home compostable foods (22.5%).

In total, 0.89kg/hh/wk of food waste is being recycled with 2.10kg/hh/wk still unrecycled. Most of this is in the kerbside collected residual waste. Around 56% of recycled food is avoidable and just 3% is recycled packaged.

Levels of contamination were low with just 2.5% (0.02kg/hh/wk) made of unacceptable non-food items. Around 1.0% of food recycling was paper and card with 1.0% animal waste. Trace levels of plastics, nappies and other packaging items were present.

Figure 32: Distribution of recyclable food within the kerbside waste (kg/hh/wk & %)



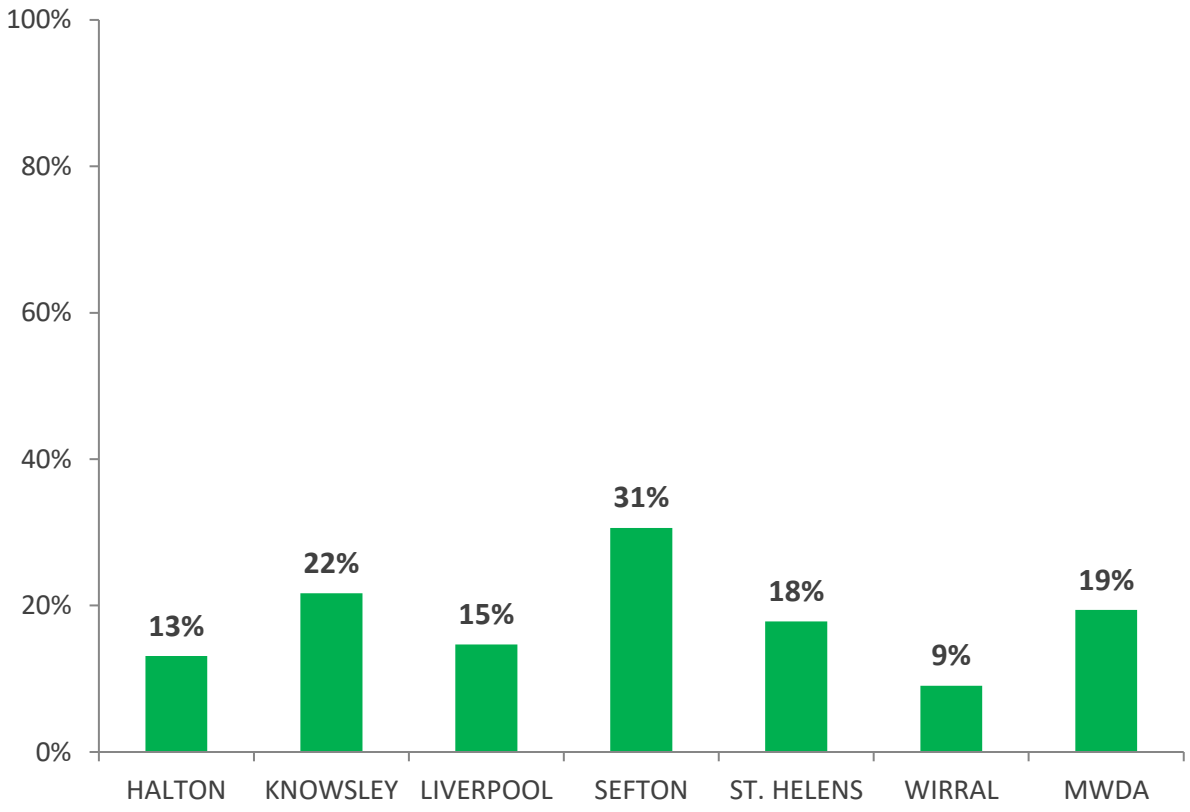
Garden recycling waste

Set out rates and waste generation

Figure 33 highlights the set-out rates for kerbside garden recycling observed at the time waste was collected for compositional analysis. Figure 34 shows the amount of this recycling waste generated in kg/hh/wk. The same houses were sampled as those included in the residual and recycling survey. The overall amount of waste in kilograms per household per week is derived from the number of households who could set out waste and not just those that are participating. These aggregated figures for the recycling waste are shown in tables and figures with additional information relating to individual household samples given where relevant.

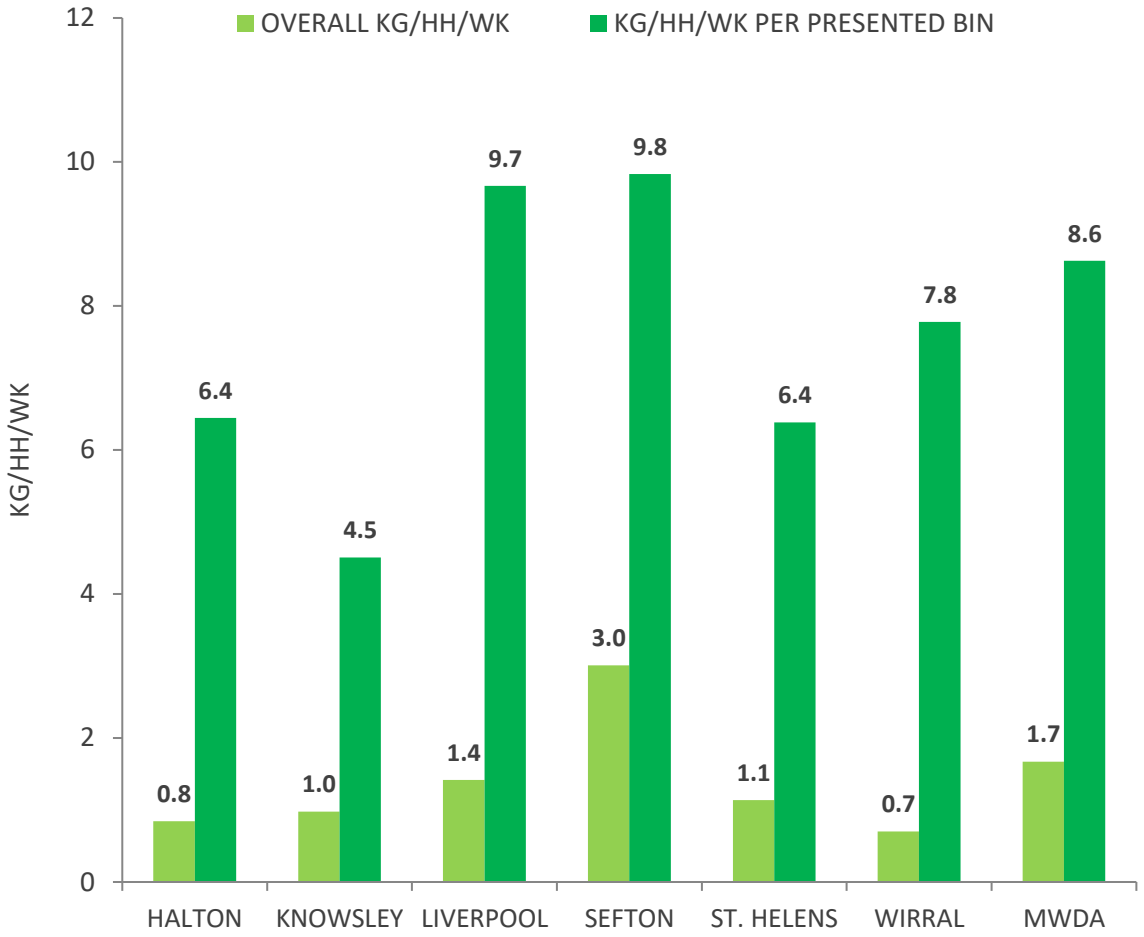
On average, 19% of households presented garden recycling ranging between 9% for Wirral up to 31% for Sefton.

Figure 33: Average set out for garden recycling waste (%)



On average around 1.7kg/hh/wk of garden waste was generated at the kerbside. Levels ranged between 0.7kg/hh/wk for Wirral up to 3.0kg/hh/wk for Sefton. Solely considering presented bins the average amount put out was 8.6kg/hh/wk.

Figure 32: Average Garden recycling waste generation rates (kg/hh/wk)



Compositional analysis of garden recycling

Overall, 62.0% of bin contents were due garden vegetation. Levels ranged between 45.4% for Liverpool and 91.9% for St. Helens. Soil and turf are discouraged from garden waste bins and formed an average of 25.5% of the total collected, ranges were 3.7% for St. Helens up to 33.9% for Wirral.

Of the remaining waste around 7% was due to food waste (this was largely due to the Sefton samples where almost 13% of garden recycling collected was food waste). Almost all the food was classed as potentially avoidable and therefore mostly fruit and vegetable peelings. Most of the remaining material was plastic totalling 5.2%. (this was largely due to the Liverpool samples where over 22% of garden recycling collected was non-packaging dense plastic). Trace levels of paper, card, rubble, and pet bedding were present.

Overall Waste Generation & Diversion

Total waste generation levels & diversion

Capture rates determine how much of a material that should be recycled is being recycled. Diversion rates show the percentage of total generated waste produced from an area that is being 'Diverted' via the available kerbside recycling stream(s). Table 32 and Figure 34 show the average annual waste generation (residual, mixed recycling, and food / garden recycling) for each of the samples and overall. Table 32 and Figure 35 show the overall proportion of material that is being correctly diverted. Wirral produced the lowest levels of total waste at 7.7kg/hh/wk with the households from Sefton generating around 13.8kg/hh/wk. Across Merseyside and Halton, it is estimated that the weekly output of kerbside waste is 11.5kg/hh/wk.

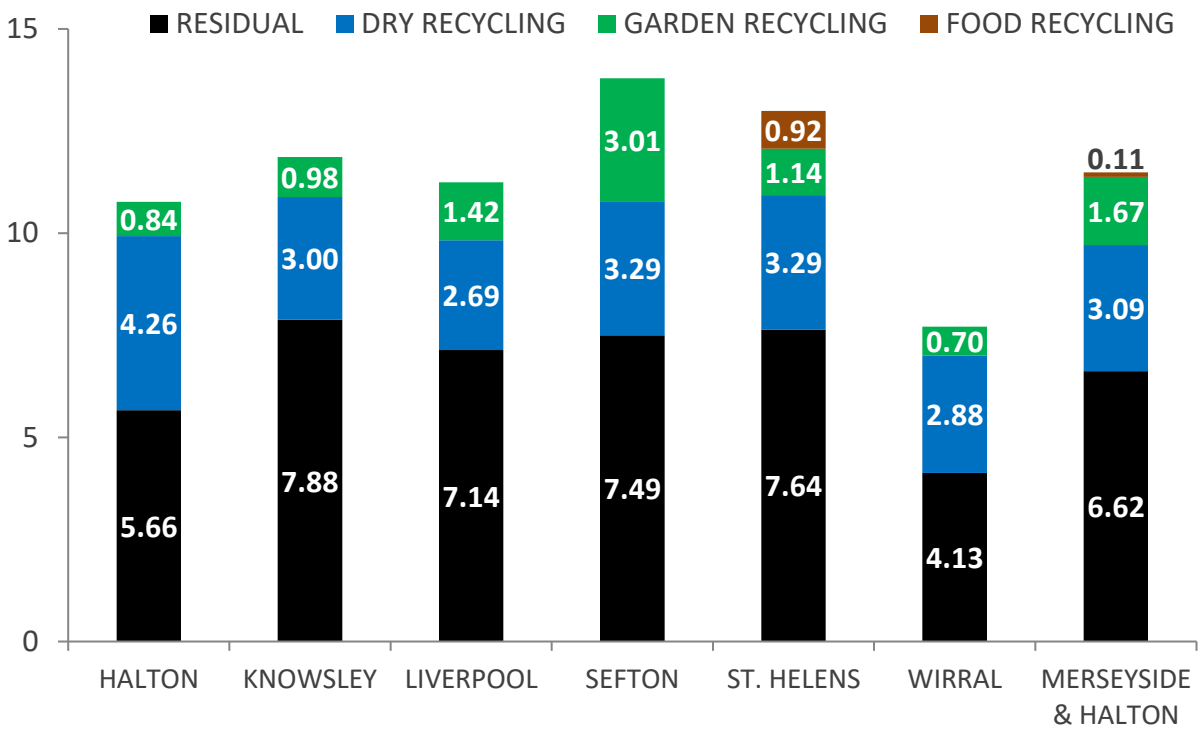
Table 34: Average overall waste generation levels (kg/hh/wk)

TOTAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RESIDUAL	5.66	7.88	7.14	7.49	7.64	4.13	6.62
DRY RECYCLING	4.26	3.00	2.69	3.29	3.29	2.88	3.09
GARDEN RECYCLING	0.84	0.98	1.42	3.01	1.14	0.70	1.67
FOOD RECYCLING	N/A	N/A	N/A	N/A	0.92	N/A	0.11
TOTAL	10.77	11.86	11.25	13.79	12.99	7.71	11.49

Table 35: Overall % diversion

DIVERSION RATES	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
DRY RECYCLING	27.2%	17.5%	17.1%	16.8%	23.3%	29.4%	20.1%
GARDEN RECYCLING	7.0%	7.5%	5.7%	13.3%	10.6%	6.0%	9.0%
FOOD RECYCLING	N/A	N/A	N/A	N/A	7.9%	N/A	0.9%
TOTAL	34.2%	25.0%	22.8%	30.1%	41.8%	35.4%	30.0%

Figure 34: Total waste generation levels (kg/hh/wk)

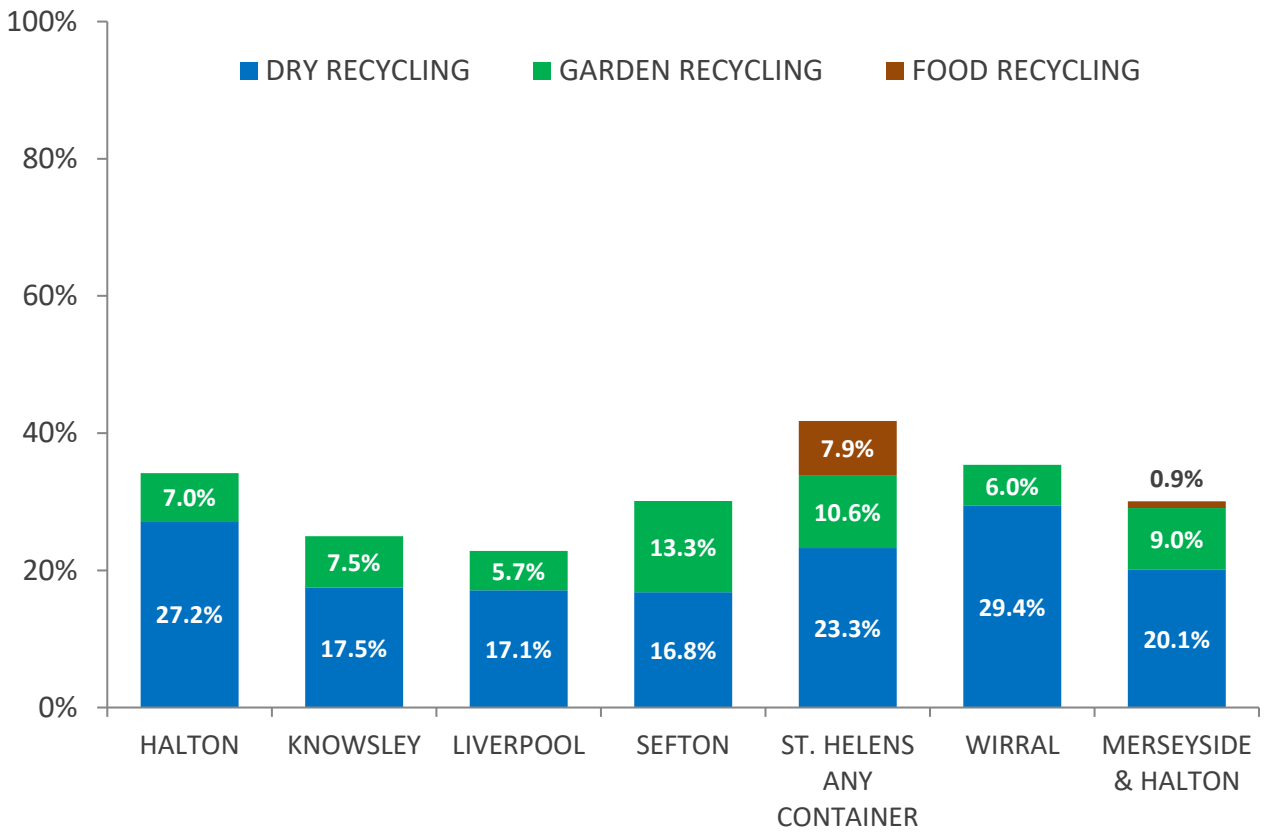


When combining the diversion achieved from all kerbside recycling streams it is estimated that households across Merseyside and Halton are diverting around 30.0% of their kerbside waste. The diversion rate ranged between 22.8% for Liverpool up to 41.8% for St. Helens. This represents around 3.45kg/hh/wk of the 11.5kg/hh/wk being generated.

Around 20.1% is diverted via kerbside collected dry recycling with 9.0% diverted via garden bins and 0.9% via St. Helens food waste collections.

Were all the recyclable materials disposed of in the desired kerbside recycling container the maximum achievable overall diversion for Merseyside and Halton would be 39.5%

Figure 35: Overall % diversion



Key Findings and Performance Indicators

By sampling all of the kerbside waste streams available to all residents throughout Merseyside & Halton it is possible to highlight key areas where improvements in waste reduction, waste separation and recycling quality can be identified.

Waste diversion can be increased by increasing the proportion of recyclable materials that are correctly disposed of in kerbside collected recycling containers, reducing the amount of contamination in kerbside collected recycling containers and decreasing the amount of total waste in residual bins. Figures displayed represent annual averages taken across the two seasonal surveys. The amount of kerbside waste and recycling collected enables estimates to be made for each District council (and therefore each District council and Merseyside & Halton overall) in terms of waste generation levels. This is expressed in kg/hh/wk. Levels of kerbside collected waste and recycling vary over the course of a year relative to both season and other factors such as school holidays. It should also be noted that during 2021 households were under varying levels of Covid-19 restrictions. This increased time spent at home may have affected levels and composition of waste to some extent although any restrictions were consistent across all districts. As a result, it is not advisable to factor up the amount of waste in kg/hh/wk from a single collection to predict annual arisings (either in kg or tonnes per annum).

From figures collated by MRWA, around 65% of all waste material generated across Merseyside and Halton is due to kerbside collected residual waste with 23% being kerbside collected dry recycling, 12% garden waste and less than 1% separately collected food.

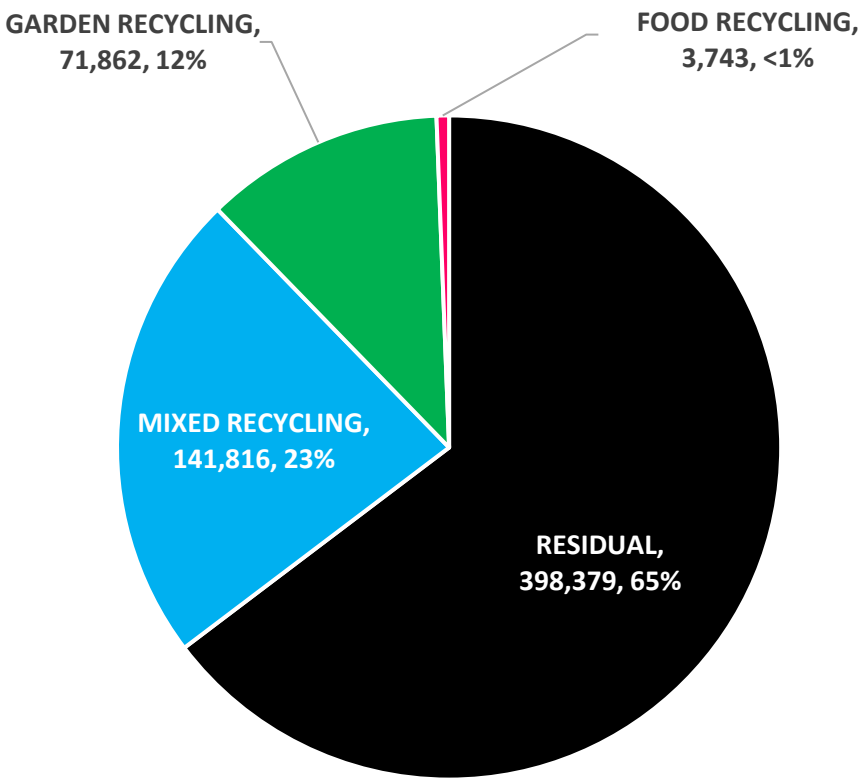
Applying Composition Data to Annual Tonnages

Table 38: Annual tonnages for Merseyside & Halton.

ANNUAL TONNAGES*	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RESIDUAL	28,786	40,681	129,368	70,371	47,850	81,323	398,379
DRY RECYCLING	12,199	15,310	38,148	28,332	16,237	31,590	141,816
GARDEN RECYCLING	4,389	7,164	19,669	21,862	6,024	12,754	71,862
FOOD RECYCLING	N/A	N/A	N/A	N/A	3,743	N/A	3,743
TOTAL WASTE	45,374	63,154	187,186	120,565	73,854	125,667	615,800
% CONTRIBUTION	7.4%	10.3%	30.4%	19.6%	12.0%	20.4%	100.0%

**As supplied by MRWA*

Figure 36: Waste profile for Merseyside & Halton (t.p.a % of total)



Considerations for reducing residual waste

As kerbside collected residual waste forms around two thirds of the total material collected across Merseyside and Halton, and significant increases or decreases in constituent materials are likely to have a noticeable effect on waste performance figures as a whole.

Food Waste

The single biggest component of the kerbside collected residual waste is seen to be food waste. Overall, this makes up an average of 31.6% of all the kerbside collected residual waste collected – an estimated 134,107 tonnes per annum. St. Helens is the only authority where food waste is collectable from the kerbside and consequently its kerbside collected residual waste has the lowest concentration of food at 24.8%. For authorities where food is not recycled than around 36.6% of kerbside collected residual waste is classified as food waste.

Table 39: Food within the residual waste

RESIDUAL WASTE*	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
T.P.A TOTAL	28,786	40,681	129,368	70,371	47,850	81,323	398,379
% FOOD WASTE	42.0%	35.6%	27.8%	31.0%	27.0%	39.3%	31.6%
T.P.A FOOD WASTE	12,090	14,465	35,911	21,821	12,912	31,947	129,146

**T.P.A total provided by MRWA. % food waste estimated from compositional analysis. T.P.A food waste for Merseyside & Halton is a sum of district totals not a function of % food and T.P.A total.*

There will always be a degree of food waste in kerbside collected residual waste. A lot of food waste comes from inedible by-products such as cores, skin, shells, stones, fat and bone etc. The amount of food waste can, however, be reduced in a number of ways.

Reducing avoidable food waste

Annually it is estimated that 73.2% of all the food in the kerbside collected residual waste is classified as avoidable. That is to say it is disposed of packaged or in a prepared but uneaten condition. Overall, therefore an estimated 93,980 t.p.a of kerbside collected residual waste collected across Merseyside and Halton consists of avoidable food waste. Clearly it is unrealistic to aim to fully eliminate avoidable food in

the kerbside collected residual waste. Consequently, it may be worth targeting a certain proportion of this waste food.

For example, reducing the amount of avoidable food waste being disposed of by just 5% would remove 4,699t.p.a of kerbside collected residual waste from the Merseyside and Halton total. Were a reduction of 20% to be achieved then the figure would be 18,796 t.p.a.

Table 40: Avoidable food within the residual waste

RESIDUAL FOOD WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
T.P.A FOOD WASTE	12,090	14,465	35,911	21,821	12,912	31,947	129,146
% AVOIDABLE	60.0%	63.8%	75.7%	77.7%	82.5%	71.1%	73.2%
T.P.A AVOIDABLE FOOD WASTE	7,256	9,229	27,175	16,955	10,649	22,717	93,980

Home composting

Even in the absence of kerbside food recycling collections a certain amount of food waste can be home composted. Items such as fruit and vegetable peelings, fruit skins eggshells, teabags, coffee grinds etc can be readily added to home composters. Whereas most homes will produce these types of food waste not all houses will have home composters. Furthermore, not all households will have a requirement for a home composter due to the type (or lack of) outdoor space that they have.

Introducing food recycling collections

Currently only St. Helens households have access to weekly kerbside collections of food waste. Figures from the waste analysis show that this authority has by far the lowest concentrations of food waste in its kerbside collected residual waste as a whole. If food waste collections were universally available, then obviously a proportion of food in residual bins would be diverted into recycling collections. There may also be an associated effect on general food waste reduction when food waste recycling is introduced.

Just as it is unrealistic to expect a household to eliminate all avoidable food waste from its kerbside collected residual waste, it is unlikely many households will recycle all of their waste food via a newly introduced recycling collection. However, we can use St. Helens as a guide as to the proportion of kerbside collected residual waste that may be due to food were recycling collections to be introduced.

If food recycling collections were universally available, and all authorities now had kerbside collected residual waste where 27.0% was due to food, then the total amount of residual food waste could potentially be 107,502t.p.a. This represents a reduction of around 21,644t.p.a

Table 41: Avoidable food within the residual waste

RESIDUAL FOOD WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
T.P.A TOTAL RESIDUAL	28,786	40,681	129,368	70,371	47,850	81,323	398,379
% FOOD WASTE	42.00%	35.56%	27.76%	31.01%	26.98%	39.28%	31.60%
T.P.A FOOD WASTE	12,090	14,465	35,911	21,821	12,912	31,948	129,146
% FOOD WASTE REPLICATING ST. HELENS	27.0%	27.0%	27.0%	27.0%	27.0%	27.0%	27.0%
T.P.A FOOD WASTE – POTENTIAL TOTAL	7,768	10,978	34,910	18,990	12,912	21,945	107,502
T.P.A FOOD WASTE – POTENTIAL REDUCTION	4,322	3,487	1,001	2,831	0	10,003	21,644

From table 41 it can be seen that of the 21,644t.p.a of food waste that could potentially be removed from the kerbside collected residual waste via the introduction of food recycling, around 46% would come from Wirral. As Wirral had the highest proportion of its kerbside collected residual waste due to food then it follows that any proportional reduction in food waste concentrations will lead to greater tonnage savings.

Finally, it is possible to predict the possible reductions in the amount of food within kerbside collected residual waste if food recycling were universally available (i.e., concentrations fell to the St. Helens level of 27.0%) across all authorities AND there was a notional 20% reduction in residual food waste.

Table 42: Potential residual food waste levels with universal recycling and general reduction

RESIDUAL FOOD WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
T.P.A TOTAL RESIDUAL	28,786	40,681	129,368	70,371	47,850	81,323	398,379
% FOOD WASTE - CURRENT	42.00%	35.56%	27.76%	31.01%	26.98%	39.28%	31.60%
T.P.A FOOD WASTE - CURRENT	12,090	14,465	35,911	21,821	12,912	31,948	129,146
% FOOD WASTE REPLICATING ST. HELENS	27.0%	27.0%	27.0%	27.0%	27.0%	27.0%	27.0%
T.P.A FOOD WASTE WITH RECYCLING	7,768	10,978	34,910	18,990	12,912	21,945	107,502
ADDITIONAL 20% REDUCTION IN AVOIDABLE FOOD	6,214	8,782	27,928	15,192	10,330	17,556	86,002
POTENTIAL T.P.A FOOD WASTE REDUCTION	5,875	5,683	7,983	6,629	2,582	14,392	43,144

Currently it is estimated that 129,146t.p.a of waste collected across Merseyside & Halton is due to food contained within the kerbside collected residual waste. This amount could potentially fall to 107,502t.p.a with the introduction of food recycling to all authorities. If there could be a further additional 20% reduction in the amount of avoidable food waste households are placing in residual bins then residual food levels may fall to around 86,002t.p.a. This would represent an overall reduction of around 43,144t.p.a.

If Merseyside and Halton were looking to roll out food waste collections gradually it is recommended that Wirral is the first to be considered as it is here that the greatest potential reductions appear.

Dry Mixed Recycling (DMR) in residual bins

Kerbside collected residual waste contains items that should have been placed into the kerbside collected dry recycling containers that are available to all Merseyside & Halton residents. . Overall, these materials make up an average of 11.8% of all the kerbside collected residual waste collected – an estimated 47,164 tonnes per annum. All authorities have the ability to recycle paper, card, plastic bottles, glass bottles & jars and food tins and drinks cans at the kerbside. St. Helens residents have a slightly expanded service which includes plastic tubs, pots and trays as well as aerosols and foil, There is also a separate textile collection separate from its DMR.

Table 43: DMR within the residual waste

RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
T.P.A TOTAL	28,786	40,681	129,368	70,371	47,850	81,323	398,379
% DMR RECYCLABLE	12.4%	13.7%	9.6%	11.8%	15.0%*	12.4%	11.8%*
T.P.A DMR	3,582	5,585	12,434	8,284	7,162	10,116	47,164

**Excludes textiles recycled as part of a separate collection only in St. Helens.*

For most authorities the amount of food in the kerbside collected residual waste can only be reduced by less being thrown away. This is because there is no option to divert it into a kerbside recycling collection. With DMR items there is an avenue to reduce the amount in the kerbside collected residual waste by

diverting it into existing collections. This has the benefit of both reducing the amount of residual waste and increasing the amount of recyclable material collected.

Residents generally find certain materials easier to separate for kerbside collected dry recycling than others. Paper & card as well as most drinks cans, glass bottles and plastic bottles are easily identifiable and clean at the point of disposal. Jars and food tins tend to contain food waste that deters residents from cleaning them out for recycling.

Reducing existing DMR content of residual waste

It is estimated that 11.8% or 47,164t.p.a of waste material generated across Merseyside & Halton consists of recyclable paper, card, glass, metal and plastics within the kerbside collected residual waste. Around 29% of the DMR in residual bins was card with 27% glass, 18% plastic, 13% paper and 13% metals.

Table 44: Breakdown of DMR in residual waste

% OF RESIDUAL DMR	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	11.5%	10.5%	13.8%	15.2%	10.2%	16.9%	13.3%
RECYCLABLE CARD & CARDBOARD	29.5%	29.5%	32.1%	30.0%	22.1%	29.0%	29.0%
RECYCLABLE PLASTICS	14.8%	12.7%	15.7%	14.3%	34.3%	11.7%	17.7%
RECYCLABLE GLASS	26.6%	32.5%	28.4%	28.8%	20.1%	27.3%	27.3%
RECYCLABLE METALS	17.6%	14.8%	10.0%	11.7%	13.2%	15.0%	12.7%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Recyclable glass and card account for over 56% of the DMR present in the kerbside collected residual waste across Merseyside & Halton. This equates to an estimated 26,583t.p.a in total that could be diverted into kerbside collected dry recycling. Around 48% of all DMR present in the kerbside collected residual waste comes in waste collected from Liverpool and Wirral.

Table 45: Annual tonnage of available of DMR in residual waste

T.P.A. OF DMR MATERIALS IN RESIDUAL WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	414	588	1,716	1,260	734	1,711	6,422
RECYCLABLE CARD & CARDBOARD	1,057	1,649	3,986	2,484	1,586	2,937	13,698
RECYCLABLE PLASTICS	529	708	1,958	1,188	2,458	1,186	8,028
RECYCLABLE GLASS	952	1,813	3,536	2,383	1,438	2,764	12,885
RECYCLABLE METALS	630	826	1,238	970	947	1,519	6,131
TOTAL	3,582	5,585	12,434	8,284	7,162	10,116	47,164

As for food waste, it is unrealistic to target the removal of all recyclable DMR from the residual waste stream. If just 5% of all DMR present in the kerbside collected residual waste bins was diverted into the kerbside collected dry recycling, then this would equate to a reduction of 2,579t.p.a from the total kerbside collected residual waste collected. Table 46 below shows the reductions that could be achieved if 20% of all DMR materials were diverted into recycling.

With a 20% reduction in DMR from the residual waste, a total of 9,433t.p.a of materials could be removed from the residual waste collected across Merseyside & Halton.

Table 46: Reduction in the amount of residual DMR with 20% recycled

T.P.A. REDUCTION IN DMR WHERE +20% IS RECYCLED	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RECYCLABLE PAPER	83	118	343	252	147	342	1,284
RECYCLABLE CARD & CARDBOARD	211	330	797	497	317	587	2,740
RECYCLABLE PLASTICS	106	142	392	238	492	237	1,606
RECYCLABLE GLASS	190	363	707	477	288	553	2,577
RECYCLABLE METALS	126	165	248	194	189	304	1,226
TOTAL	716	1,117	2,487	1,657	1,432	2,023	9,433

Expanding the range of recyclable materials

When looking at food waste we looked at the amount that could potentially be removed from the kerbside collected residual waste stream if food recycling were to become a standard collection for all authorities. St. Helens residents are able to recycle foil, aerosols and plastic tubs, pots and trays as part of their expanded DMR collections. It is therefore of interest to see the levels of these materials in the kerbside collected residual waste from other authorities.

It is seen that an average of 3.1% of all the kerbside collected residual waste collected across Merseyside and Halton consists of potentially recyclable foil, aerosols, and plastic containers. Only St. Helens residents currently recycle these materials. It is seen that across Merseyside & Halton around 12,425 t.p.a of foil, aerosols and plastic containers are present within the kerbside collected residual waste.

Table 47: Additional DMR materials - % of residual

ADDITIONAL DMR MATERIALS	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PLASTIC TUBS, POTS & TRAYS	2.52%	2.90%	1.87%	1.90%	2.43%	2.22%	2.16%
ALUMINIUM FOIL	0.60%	0.91%	0.61%	0.61%	0.79%	0.46%	0.65%
EMPTY AEROSOLS	0.40%	0.61%	0.33%	0.20%	0.15%	0.36%	0.32%
TOTAL	3.52%	4.42%	2.80%	2.70%	3.37%	3.04%	3.13%

Table 48: Additional DMR materials – t.p.a in residual

ADDITIONAL DMR MATERIALS	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
PLASTIC TUBS, POTS & TRAYS	725	1,180	2,417	1,334	1,162	1,805	8,623
ALUMINIUM FOIL	172	372	786	426	377	374	2,506
EMPTY AEROSOLS	116	246	426	140	73	294	1,296
TOTAL	1,014	1,798	3,628	1,900	1,612	2,473	12,425

Considerations for better waste separation

Combined kerbside waste and recycling

Looking at the total amount of kerbside waste being disposed of via all available waste containers it is possible to gauge where the greatest potential lies for improving waste separation. From table 49 it is seen that across Merseyside & Halton 615,800 t.p.a of total kerbside collected waste and recycling is collected. Using the percentage by weight data from the compositional analysis against the district tonnages provides an insight into the way residents are separating their waste materials.

It is an aspirational target that all non-recyclable material is placed into kerbside collected residual waste with all recyclable material separated out and placed into the appropriate kerbside collected recycling container. This would mean that there would be no recyclable material in kerbside collected residual waste and no contamination in the kerbside collected recycling. All materials would therefore have a 100% capture rate and the maximum possible diversion would be achieved.

Table 49: Separation of kerbside waste t.p.a

T.P.A TOTAL KERBSIDE WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
NON-RECYCLABLES IN RESIDUAL	**24,697**	**34,724**	**114,705**	**59,287**	**24,324**	**68,082**	**325,820**
RECYCLABLES IN RECYCLING	**12,293**	**17,072**	**36,229**	**33,284**	**24,092**	**33,234**	**156,204**
RECYCLABLES IN RESIDUAL	4,089	5,956	14,663	11,084	23,527	13,241	72,559
NON-RECYCLABLES IN RECYCLING	4,294	5,345	21,589	16,810	1,670	11,042	60,749
WRONGLY RECYCLED	1	56	0	100	242	69	468
TOTAL	45,374	63,154	187,186	120,565	73,854	125,667	615,800

Table 50: Separation of total kerbside waste (%)

% SPLIT OF TOTAL KERBSIDE WASTE	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
NON-RECYCLABLES IN RESIDUAL	**54.4%**	**55.0%**	**61.3%**	**49.2%**	**32.9%**	**54.2%**	**52.9%**
RECYCLABLES IN RECYCLING	**27.1%**	**27.0%**	**19.4%**	**27.6%**	**32.6%**	**26.4%**	**25.4%**
RECYCLABLES IN RESIDUAL	9.0%	9.4%	7.8%	9.2%	31.9%	10.5%	11.8%
NON-RECYCLABLES IN RECYCLING	9.5%	8.5%	11.5%	13.9%	2.3%	8.8%	9.9%
WRONGLY RECYCLED	0.0%	0.1%	0.0%	0.1%	0.3%	0.1%	0.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figures indicate that of the 615,800 t.p.a of total kerbside collected waste and recycling materials disposed of, 482,024 t.p.a is correctly separated. This equates to 78.3% of all waste. Just under 12% (72,559 t.p.a) of all the material collected is made up of recyclable material (DMR & organic) present within the kerbside collected residual waste

Around 9.9% (60,750 t.p.a) of the waste collected across Merseyside & Halton is due to contamination within the DMR, garden and food recycling containers.

Finally, a small amount of waste (0.1% or 468 t.p.a) is due to either DMR in food and garden bins or recyclable organics in DMR containers.

In theory all non-recyclable items should be in the kerbside collected residual waste with all recyclable materials correctly separated into the appropriate kerbside recycling container. In the St. Helens waste around 66% of all waste is correctly disposed of. This is to be expected as St. Helens residents have access to food recycling and a wider range of DMR. Therefore, more waste is deemed recyclable and therefore is classified as incorrectly disposed of when in the wrong container. This is especially the case for food in kerbside collected residual waste.

Figure 37 shows the potential distribution of waste collected across Merseyside & Halton if all materials were in the correct containers.

Figure 37: Target split of waste

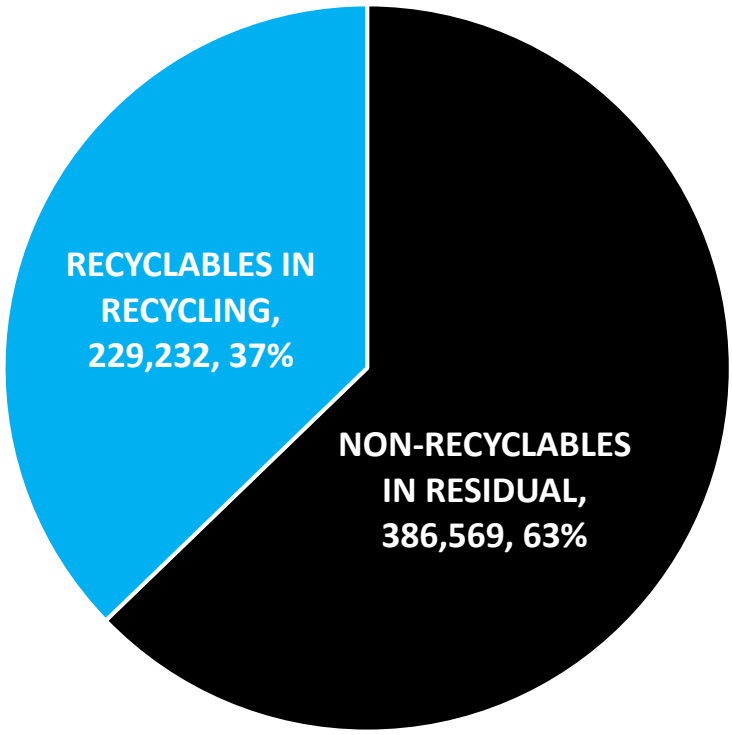
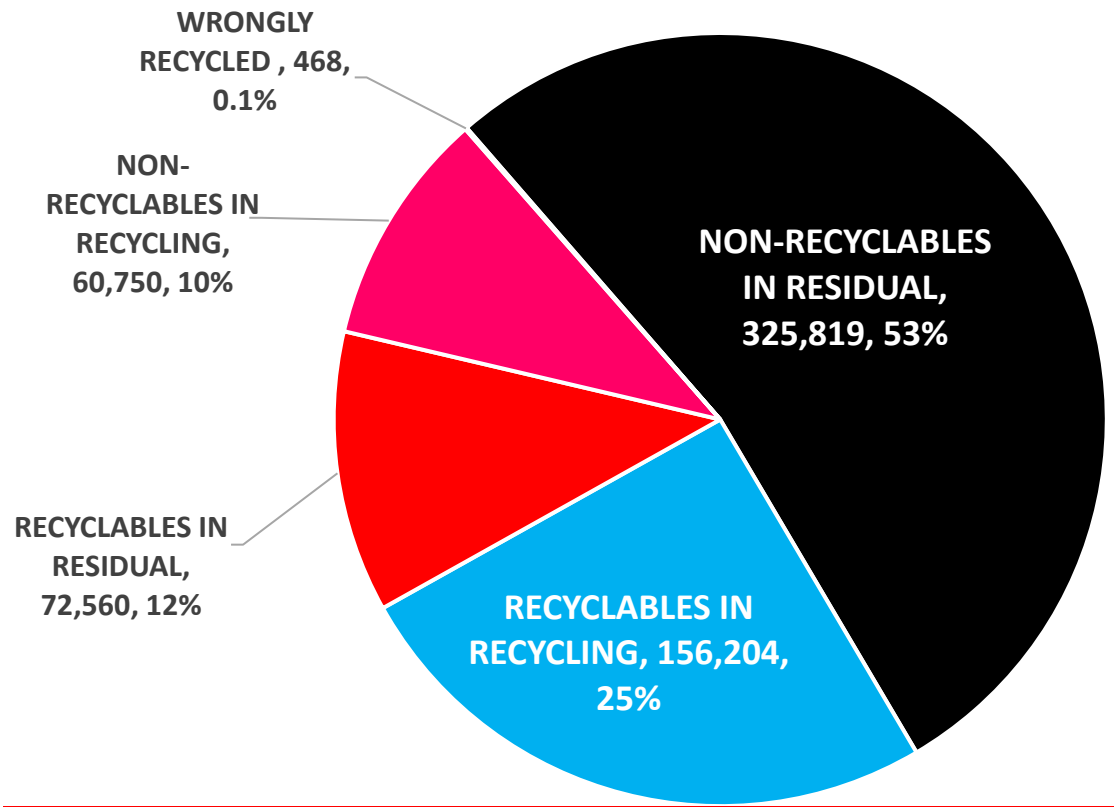


Figure 38 shows the estimated split of waste across Merseyside & Halton based on the composition of waste surveyed and the annual tonnages from districts. Almost a quarter of the waste being disposed of is being placed into the incorrect kerbside container.

Figure 38: Actual split of waste



Reducing kerbside recycling contamination

Around 61,217t.p.a of waste collected across Merseyside & Halton consists of contamination within the kerbside collected recycling. Over 99% of this is residual waste in recycling containers with <1% being DMR in organic recycling, and vice versa. Around 68% of contamination in garden bins is due to soil, turf and other non-catering organics which will generally be tolerable to the mix. There was only a negligible amount of contamination within food recycling. Therefore, the main source of contamination is due to unacceptable materials being placed into the DMR containers.

Contamination within the DMR is responsible for around 5.8% of all the waste collected across Merseyside & Halton (35,749 t.p.a). Around a third of this is predicted to come from the kerbside collected recycling collected from Liverpool and Sefton.

Table 51: Contamination within DMR containers

ADDITIONAL DMR MATERIALS	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
CONTAMINATION IN DMR (% OF TOTAL)	8.41%	7.49%	5.79%	6.92%	1.77%	5.34%	5.81%
TOTAL CONTAMINATION IN DMR (T.P.A.)	3,816	4,730	10,841	8,340	1,307	6,715	35,749

Main DMR contaminants

Currently an estimated 35,749 t.p.a of waste collected across Merseyside & Halton consists of the contamination contained within the kerbside collected dry recycling. It will always be the case that some degree of contamination will be present. Residents need to determine whether something is deemed as acceptable for kerbside recycling or is a residual bin item. Some forms of contamination may be due to a misunderstanding of what is acceptable. For example, a resident may believe anything made of glass or metal is acceptable alongside bottles, jars, tins, and cans. Other forms of contamination will be more deliberate as the items bear no reasonable connection to the materials being recycled. This may include waste such as disposable nappies, wood, food waste or bagged household rubbish.

Table 52: Material contaminants within the DMR (t.p.a)

DMR CONTAMINANTS T.P.A	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
NON-RECYCLABLE PAPER & CARD	864	821	1,456	2,253	430	1,555	7,379
NON-RECYCLABLE PLASTICS	606	650	1,315	1,406	202	1,012	5,378
TEXTILES	155	185	814	610	21	809	2,593
NON-RECYCLABLE GLASS	50	25	418	227	110	160	966
NON-RECYCLABLE METALS	147	201	927	484	19	271	2,049
ORGANIC WASTE	973	1,532	2,745	1,360	356	1,348	8,314
GENERAL RESIDUAL WASTE	1,020	1,315	3,167	2,000	170	1,561	9,069
TOTAL	3,816	4,730	10,841	8,340	1,307	6,715	35,749

From table 52 we can see the contributions of the main contamination materials within the DMR. Non-organic waste, general residual waste and non-recyclable paper & card are the three main components each contributing over between 7,000 and 9,000 t.p.a to the total waste collected across Merseyside & Halton.

Table 53: Material contaminants within the DMR (% of contaminants)

DMR CONTAMINANTS T.P.A	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
NON-RECYCLABLE PAPER & CARD	22.6%	17.3%	13.4%	27.0%	32.9%	23.2%	20.6%
NON-RECYCLABLE PLASTICS	15.9%	13.8%	12.1%	16.9%	15.4%	15.1%	15.0%
TEXTILES	4.1%	3.9%	7.5%	7.3%	1.6%	12.0%	7.3%
NON-RECYCLABLE GLASS	1.3%	0.5%	3.9%	2.7%	8.4%	2.4%	2.7%
NON-RECYCLABLE METALS	3.9%	4.2%	8.6%	5.8%	1.4%	4.0%	5.7%
ORGANIC WASTE	25.5%	32.4%	25.3%	16.3%	27.2%	20.1%	23.3%
GENERAL RESIDUAL WASTE	26.7%	27.8%	29.2%	24.0%	13.0%	23.2%	25.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Reducing contamination in the kerbside collected dry recycling would not necessarily decrease the amount of overall waste being collected across Merseyside & Halton as it would most likely be diverted back into residual bins, whose weights would increase. The benefit would obviously be in increasing the purity of the kerbside collected dry recycling.

Even a 20% reduction in the levels of contamination within the DMR would remove around 7,150 t.p.a of unrecyclable material. Looking at table 53 it is seen that 64% of contamination is due to non-recyclable plastics, organic waste, and non-recyclable paper & card. It may be worth targeting these contaminants via communications to residents clarifying what is and is not acceptable. For example, many people believe TetraPaks to simply be cardboard and therefore collectable. In districts other than St. Helens households are placing tubs, pots, and trays in their kerbside collected dry recycling along with plastic bottles. Discouraging the use of plastic bags to contain recycling is a way of reducing plastic films.

Food should not be in the kerbside collected dry recycling so encouraging residents to clean or empty containers would be of benefit. Additionally, much of the organic content is due to contained liquids. Containers should be emptied before being recycled.

Diverting just 20% of non-recyclable plastics, organic waste and non-recyclable paper & card into residual bins would remove 4,214 t.p.a of contamination from the DMR collected across Merseyside & Halton.

Improving material capture rates

As part of the waste analysis performed it was possible to calculate capture rates for recyclable materials. These rates apply solely to the waste collected from a single analysis and estimate that around 69% of all DMR, 82% of garden waste and 2.6% of food waste (via St. Helens only) was captured.

By applying the compositional data from the waste analysis against the annual tonnage data we can also estimate the mix of all recyclables across all waste streams. This will also show the proportion of each recyclable material in the correct container.

Table 54: Total recyclable materials in Merseyside & Halton waste

RECYCLABLE MATERIAL	T.P.A ALL WASTE	T.P.A RECYCLED	% RECYCLED
RECYCLABLE PAPER	23,264	16,832	72.4%
RECYCLABLE CARD & CARDBOARD	47,291	33,529	70.9%
RECYCLABLE PLASTICS	19,985	11,953	59.8%
RECYCLABLE GLASS	49,348	36,463	73.9%
RECYCLABLE METALS	13,426	7,291	54.3%
TOTAL DRY RECYCLABLES	153,314	106,068	69.2%
RECYCLABLE FOOD WASTE	141,073	3,626	2.6%
RECYCLABLE GARDEN WASTE	56,484	46,511	82.3%

- Based on annual tonnage data, around 23,264 t.p.a of recyclable paper is generated with 16,832 t.p.a collected via DMR collections. This means around 6,432 t.p.a of recyclable paper could potentially be captured. If just 20% of the unrecycled paper was diverted into the DMR collections, then an additional 1,286 t.p.a of material would be captured increasing the rate to around 78%.

- Based on annual tonnage data, around 47,291 t.p.a of recyclable card and cardboard is generated with 33,529 t.p.a collected via DMR collections. This means around 13,763 t.p.a of recyclable card and cardboard could potentially be captured. If just 20% of the unrecycled card and cardboard was diverted into the DMR collections, then an additional 2,753 t.p.a of material would be captured increasing the rate to around 77%.

- Based on annual tonnage data, around 19,985 t.p.a of recyclable plastics are generated with 11,953 t.p.a collected via DMR collections. This means around 8,032 t.p.a of recyclable plastic could potentially

be captured. If just 20% of the unrecycled plastics were diverted into the DMR collections, then an additional 1,606 t.p.a of material would be captured increasing the rate to around 68%.

- Based on annual tonnage data, around 49,348 t.p.a of recyclable glass is generated with 36,463 t.p.a collected via DMR collections. This means around 12,885 t.p.a of recyclable glass could potentially be captured. If just 20% of the unrecycled glass was diverted into the DMR collections, then an additional 2,577 t.p.a of material would be captured increasing the rate to around 79%.

- Based on annual tonnage data, around 13,426 t.p.a of recyclable metal is generated with 7,291 t.p.a collected via DMR collections. This means around 6,135 t.p.a of recyclable metal could potentially be captured. If just 20% of the unrecycled metal was diverted into the DMR collections, then an additional 1,227 t.p.a of material would be captured increasing the rate to around 63%.

Overall, around 47,247 t.p.a of potentially divertible DMR could be correctly recycled. If just 20% of this was diverted away from residual bins into the correct kerbside recycling containers, then around 9,449 t.p.a of material would be recycled.

The majority of garden waste is already being recycled (around 82% of the total disposed of). Around 9,973 t.p.a of vegetation is incorrectly disposed of. Capturing an extra 20% of this vegetation would divert just 1,995 t.p.a away from incorrect waste containers.

Food Recycling

Currently only St. Helens residents have the option to recycle food at the kerbside. Using annual tonnage data, they are generating around 16,679 t.p.a of food waste and recycling around 3,626 t.p.a. This equates to around 21.7% food waste capture for St. Helens and means that just 2.6% of all the food disposed of across Merseyside & Halton is recycled.

Were food waste to be introduced to all authorities and each had the same separation efficiency (21.7%) as St. Helens then an additional 27,038 t.p.a of material would be recycled and removed (mostly) from the residual waste stream.

Table 55: Potential for food capture

CAPTURE RATES	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
TOTAL FOOD	12,693	15,614	38,256	25,493	16,680*	32,436	141,171
RECYCLED AT 21.7%	2,759	3,394	8,315	5,541	3,626	7,050	30,685

**includes liners*

Expanded Kerbside Recycling Collections

New legislation and government policy in development is expected to guide councils in relation to the way they collect kerbside waste and the materials that are available for households to recycle separately.

- The introduction of weekly food recycling (available only in St. Helens).
- Consistent recycling for all households. As well as the materials already recycled across Merseyside and Halton, there would be a need to introduce plastic tubs, pots and trays, foil and aerosols to all authorities other than St. Helens which already recycles them. Additionally, plastic film and flexible packaging, and drink cartons (TetraPaks) would be added. The timescales for adding different materials may vary.
- DRS (deposit return scheme) for drinks containers - potentially PET plastic bottles, drink cans and glass bottles used for consumable liquids and below 3L capacity will become available for deposit return. Therefore, they may be removed from the kerbside waste stream.
- Packaging EPR (Extended Producer Responsibility); producers will become responsible for funding the waste management of packaging material which includes items not covered by DRS.

Tables 56 shows the amount of material that could potentially be diverted from the residual waste into expanded and new schemes. Table 57 shows the same information but accounts for all of the waste presented for collection at the kerbside. The greatest potential for future diversion is clearly food waste. An estimated 141,073t.p.a is disposed of at the kerbside with 129,146t.p.a of this inside residual waste bins. Approximately 80,976t.p.a of kerbside waste (30,886t.p.a from residual waste) is potentially covered by EPR with 56,301t.p.a (15,521t.p.a from residual waste) compatible with DRS.

Around 36,348t.p.a of all kerbside waste is due to plastic films and plastic containers that could become part of standard kerbside recycling collections.

Table 56: Expanded & new schemes – residual waste

MATERIALS POTENTIALLY DIVERTIBLE FROM RESIDUAL WASTE VIA EXPANDED / NEW SCHEMES (T.P.A)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON	
FOOD*	12,090	14,465	35,911	21,821	12,912	31,947	129,146	32.4%
TUBS, POTS, TRAYS*	725	1,180	2,417	1,334	1,162	1,805	8,623	2.2%
PLASTIC FILMS**	1,633	2,820	6,988	3,163	2,927	3,558	21,089	5.3%
FOIL*	172	372	786	426	377	374	2,506	0.6%
AEROSOLS*	116	246	426	140	73	294	1,296	0.3%
CARTONS**	73	86	336	181	88	214	978	0.2%
DRS***	1,272	2,017	4,525	2,666	1,739	3,303	15,521	3.9%
EPR****	2,283	3,649	8,939	5,364	4,214	6,417	30,866	7.7%
TOTAL	18,364	24,834	60,326	35,096	23,493	47,912	210,024	52.7%

* Potentially removed from residual bins and into new kerbside collections (other than St. Helens where collections are already in place)
** Potentially removed from residual bins into expanded DMR collection
*** Potentially removed from residual bins for DRS
**** Potentially funded by EPR. This amount excludes the contribution from DRS packaging which would also be covered.

Table 57: Expanded & new schemes – total kerbside waste

MATERIALS POTENTIALLY DIVERTIBLE / REDISTRIBUTED FROM TOTAL WASTE VIA EXPANDED / NEW SCHEMES (T.P.A)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON	
FOOD*	12,693	15,614	38,256	25,493	16,581	32,436	141,073	22.9%
TUBS, POTS, TRAYS*	1,009	1,480	3,291	1,933	1,699	2,451	11,863	1.9%
PLASTIC FILMS**	1,994	3,168	8,521	3,925	3,017	3,859	24,485	4.0%
FOIL*	185	399	1,066	483	394	404	2,931	0.5%
AEROSOLS*	161	286	563	244	146	371	1,771	0.3%
CARTONS**	131	144	482	303	243	394	1,696	0.3%
DRS***	4,983	6,373	15,657	9,345	6,878	13,064	56,301	9.1%
EPR****	5,830	8,239	20,652	16,090	11,761	18,404	80,976	13.1%
TOTAL	26,985	35,703	88,489	57,816	40,720	71,384	321,096	52.1%

* Potentially removed from existing containers and into new kerbside collections (other than St. Helens where collections are already in place)
** Potentially removed from existing containers into expanded DMR collection
*** Potentially removed from residual and recycling containers for DRS
**** Potentially funded by EPR. This amount excludes the contribution from DRS packaging which would also be covered.

Deposit Return Scheme Packaging (DRS)

Figures from the waste compositional analysis suggest that around 1.14kg/hh/wk of DRS compatible waste is disposed of at the kerbside via residual and recycling collections. DRS items include PET plastic bottles, glass bottles and drink cans. All should be for the containment of consumable drinks and be of under 3 litres in capacity.

Currently it is estimated that across Merseyside and Halton, 65.9% of PET drink bottles, 82.4% of glass drink bottles and 63.6% of metal drink cans are captured – 77.5% of all DRS packaging.

DRS has the capacity to remove all of this drinks packaging from the kerbside waste stream This means both the residual waste and also the kerbside collected dry recycling. This will obviously reduce the amount of recyclable material in the residual waste, but also the amount of material collected in the kerbside dry recycling. This will have a potential impact on the amount of waste being diverted. Table 58 shows the amount of total kerbside collected waste based on the compositional analysis with Table 59 showing the distribution of DRS packaging.

Table 58: Average overall waste generation levels (kg/hh/wk)

TOTAL WASTE (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RESIDUAL	5.66	7.88	7.14	7.49	7.64	4.13	6.62
DRY RECYCLING	4.26	3.00	2.69	3.29	3.29	2.88	3.09
GARDEN RECYCLING	0.84	0.98	1.42	3.01	1.14	0.70	1.67
FOOD RECYCLING	N/A	N/A	N/A	N/A	0.92	N/A	0.11
TOTAL	10.77	11.86	11.25	13.79	12.99	7.71	11.49

Table 59: DRS in kerbside collected waste and recycling (kg/hh/wk)

TOTAL DRS WASTE (KG/HH/WK)	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
RESIDUAL	0.25	0.39	0.25	0.28	0.28	0.17	0.26
DRY RECYCLING	1.30	0.85	0.78	0.77	1.04	0.89	0.89
GARDEN RECYCLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FOOD RECYCLING	N/A	N/A	N/A	N/A	0.00	N/A	0.00
TOTAL	1.55	1.24	1.03	1.06	1.32	1.06	1.14

Currently around 30% of all waste presented at the kerbside by Merseyside and Halton residents is diverted at the kerbside via recycling collections. Were all DRS removed from all waste containers the overall diversion would reduce from 30.0% to an estimated 24.3%. In Sefton the reduction could potentially be 3.6% with a reduction of over 8% possible for Halton and St. Helens.

Table 60: Overall % diversion - current estimates

DIVERSION RATES	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
DRY RECYCLING	27.2%	17.5%	17.1%	16.8%	23.3%	29.4%	20.1%
GARDEN RECYCLING	7.0%	7.5%	5.7%	13.3%	10.6%	6.0%	9.0%
FOOD RECYCLING	N/A	N/A	N/A	N/A	7.9%	N/A	0.9%
TOTAL	34.2%	25.0%	22.8%	30.1%	41.8%	35.4%	30.0%

Table 61: Overall % diversion - with removal of all DRS

DIVERSION RATES	HALTON	KNOWSLEY	LIVERPOOL	SEFTON	ST. HELENS	WIRRAL	MERSEYSIDE & HALTON
DRY RECYCLING	17.7%	11.5%	11.2%	12.1%	17.0%	20.7%	13.2%
GARDEN RECYCLING	8.1%	8.3%	6.3%	14.4%	9.0%	6.9%	10.0%
FOOD RECYCLING	N/A	N/A	N/A	N/A	7.7%	N/A	1.0%
TOTAL	25.8%	19.8%	17.5%	26.5%	33.6%	27.6%	24.3%

Comparisons with previous data

A two phased survey of kerbside waste was undertaken in 2015. It is therefore of interest to compare basic compositional data for all available waste streams with the 2021 average figures. Supplied data for 2015 exists solely in percentage composition by weight figures for primary categories. These were matched as closely as possible with the primary categories used in the 2021 analysis. Full 2015/2021 figures for each waste stream and for each district are displayed in Appendix 2.

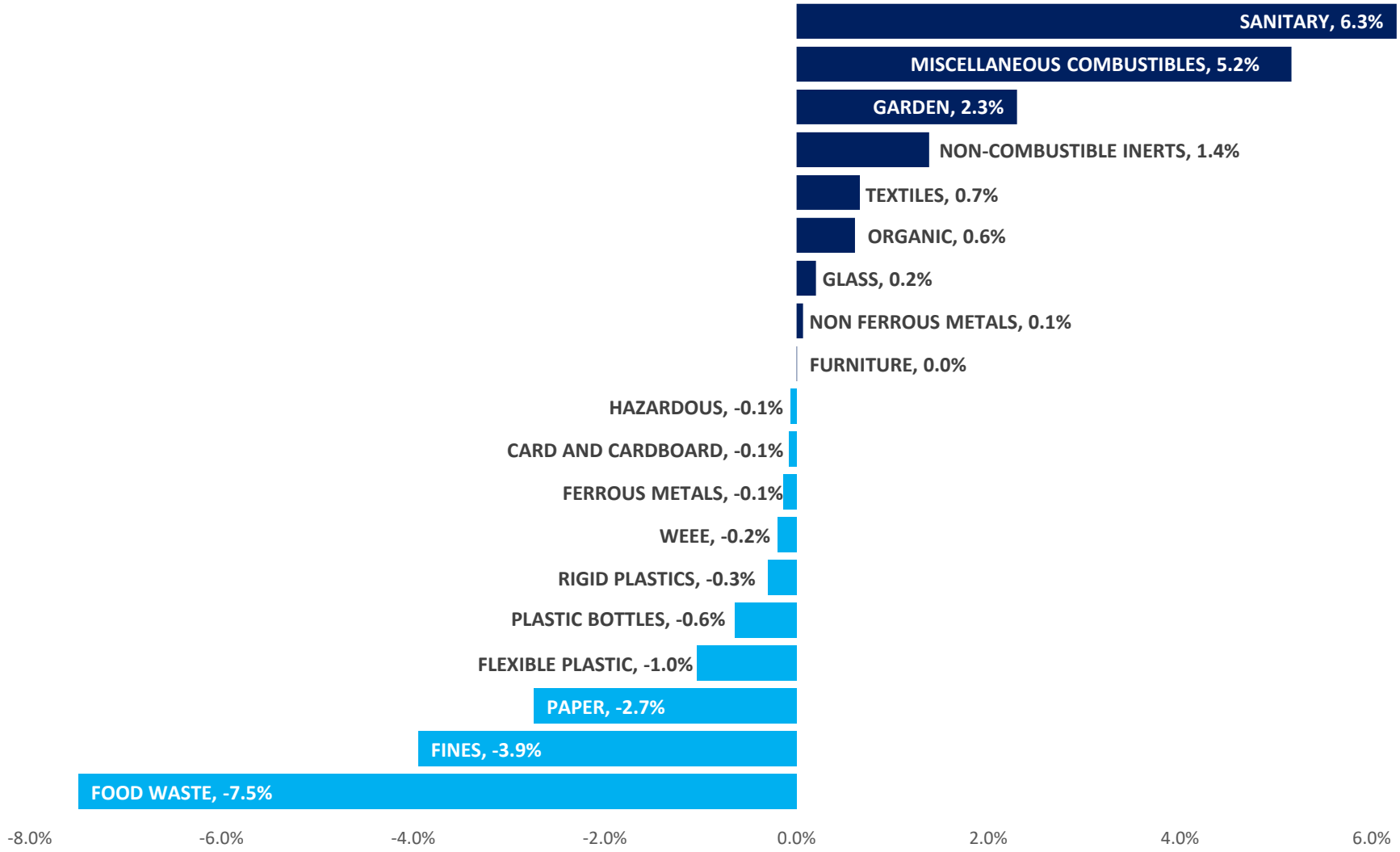
Residual Waste

From table 62 and figure 39 below the average composition of primary materials can be compared for the 2015 and 2021 surveys. Food waste remains the main component of kerbside collected residual waste at 39.1% for 2015 and 31.6% for 2021. Therefore, there has been a drop of 7.5% in concentrations of residual food waste. The greatest reduction of the main waste categories. Levels of paper have fallen by 2.7%. Total plastics have fallen by 2%. Sanitary waste levels have increased by 6.3% although this is an inconsistent waste item highly dependent on levels of disposable nappies in use at the time of survey. Miscellaneous combustibles and non-combustibles have increased by 5.2% and 1.4% respectively with garden waste showing a 2.3% increase and textiles an increase of 0.7%

Table 62: 2015 – 2021 Residual waste composition

PRIMARY CATEGORY	2015	2021	CHANGE +/-
PAPER	9.8%	7.0%	-2.7%
CARD AND CARDBOARD	5.1%	5.0%	-0.1%
FLEXIBLE PLASTIC	6.4%	5.4%	-1.0%
PLASTIC BOTTLES	2.4%	1.8%	-0.6%
RIGID PLASTICS	5.1%	4.8%	-0.3%
TEXTILES	4.7%	5.4%	0.7%
SANITARY	3.5%	9.8%	6.3%
MISCELLANEOUS COMBUSTIBLES	3.6%	8.8%	5.2%
ORGANIC	2.1%	2.7%	0.6%
FURNITURE	0.0%	0.1%	0.0%
NON-COMBUSTIBLE INERTS	2.7%	4.1%	1.4%
GLASS	3.4%	3.6%	0.2%
FERROUS METALS	2.1%	1.9%	-0.1%
NON FERROUS METALS	1.6%	1.7%	0.1%
FOOD WASTE	39.1%	31.6%	-7.5%
GARDEN	2.5%	4.8%	2.3%
HAZARDOUS	0.6%	0.5%	-0.1%
WEEE	0.8%	0.6%	-0.2%
FINES	4.4%	0.5%	-3.9%
TOTAL	100%	100%	100%

Figure 39: % change in concentrations of residual waste categories 2015 – 2021



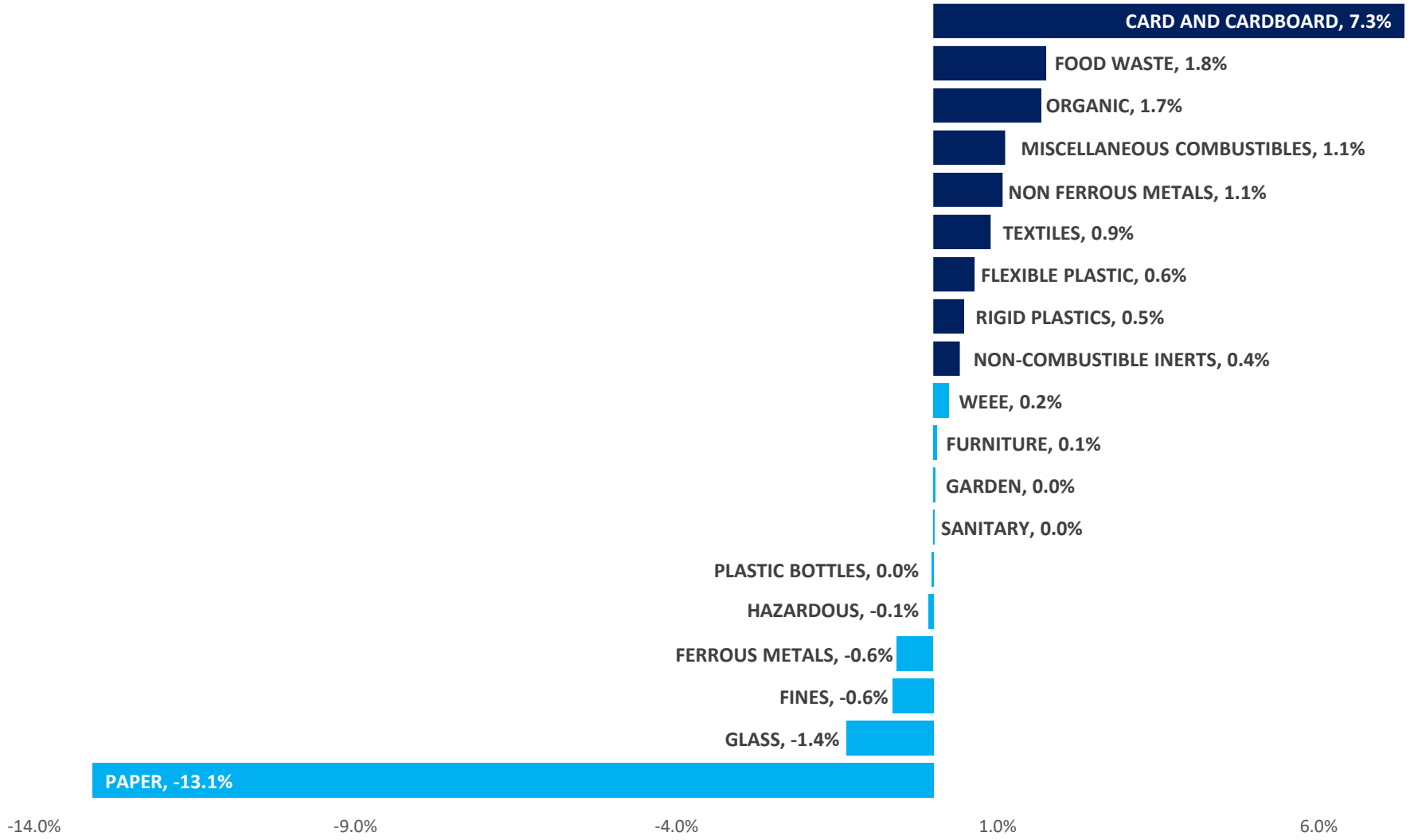
Dry Mixed Recycling (DMR)

From table 63 and figure 40 below the average composition of primary materials can be compared for the 2015 and 2021 surveys. Levels of paper have shown a large reduction when compared to other materials with concentrations falling by 13.1% from 28.1% to 15.0%. This may partly be due to a continuing fall in levels of newspapers and magazines. Levels of paper are also less in kerbside collected residual waste. Conversely there is a 7.3% increase in cardboard concentrations from 18.5% to 25.8%. Increases in the levels of home delivery packaging may be a contributory factor along with card replacing some forms of plastic packaging. Concentrations of non-ferrous metals have shown a small increase as have contaminants such as mixed plastics and textiles. Food and other organics have increased by 3.4%.

Table 63: 2015 – 2021 DMR waste composition

PRIMARY CATEGORY	2015	2021	CHANGE +/-
PAPER	28.1%	15.0%	-13.1%
CARD AND CARDBOARD	18.5%	25.8%	7.3%
FLEXIBLE PLASTIC	1.1%	1.7%	0.6%
PLASTIC BOTTLES	8.1%	8.1%	0.0%
RIGID PLASTICS	3.8%	4.3%	0.5%
TEXTILES	0.9%	1.8%	0.9%
SANITARY	0.5%	0.5%	0.0%
MISCELLANEOUS COMBUSTIBLES	1.1%	2.2%	1.1%
ORGANIC	0.2%	1.9%	1.7%
FURNITURE	0.0%	0.1%	0.1%
NON-COMBUSTIBLE INERTS	0.6%	1.1%	0.4%
GLASS	27.7%	26.4%	-1.4%
FERROUS METALS	4.0%	3.5%	-0.6%
NON FERROUS METALS	2.0%	3.1%	1.1%
FOOD WASTE	2.1%	3.9%	1.8%
GARDEN	0.1%	0.1%	0.0%
HAZARDOUS	0.2%	0.1%	-0.1%
WEEE	0.3%	0.5%	0.2%
FINES	0.7%	0.1%	-0.6%
TOTAL	100%	100%	100%

Figure 40: % change in concentrations of DMR waste categories 2015– 2021



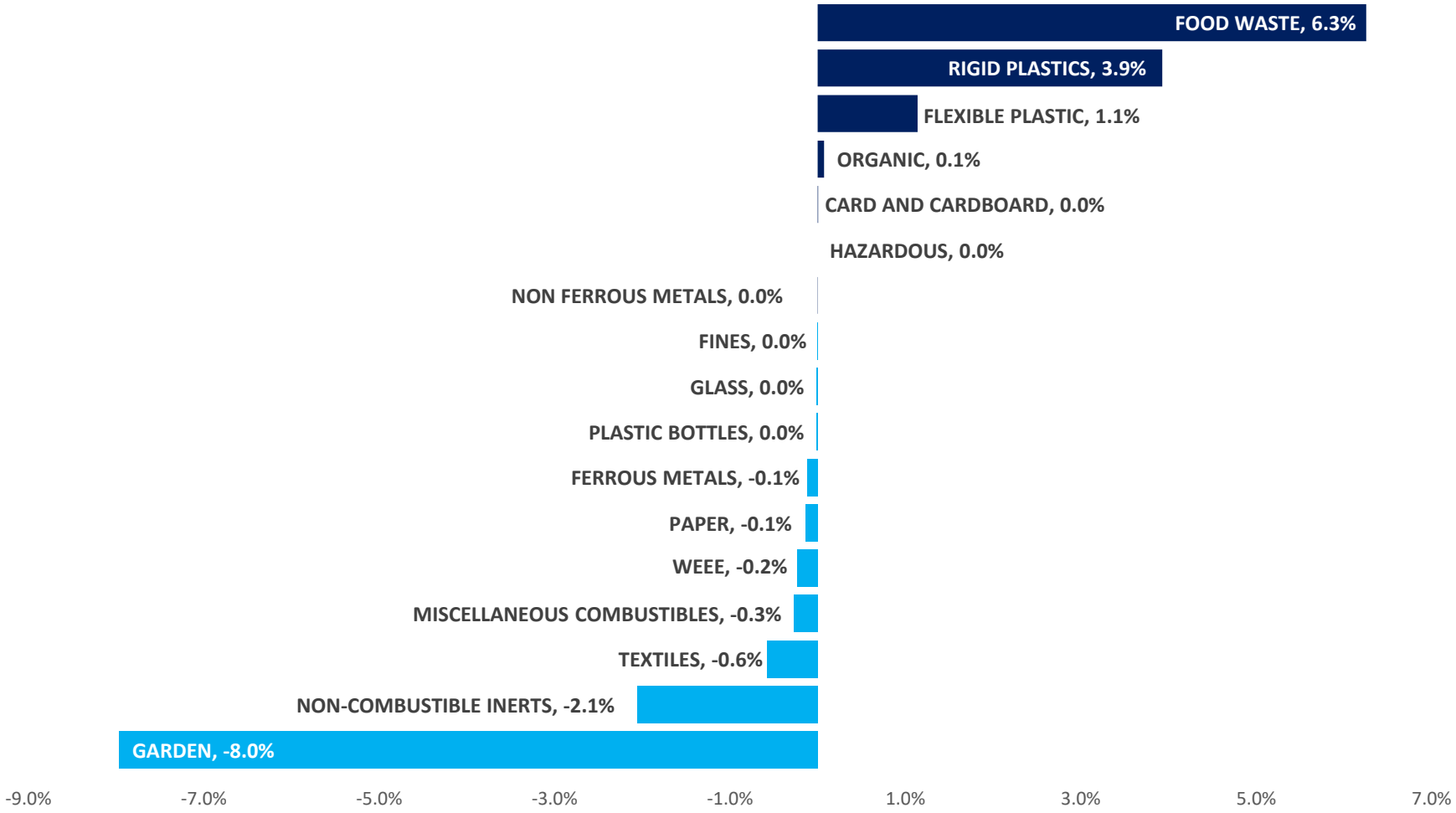
Garden Recycling

From table 64 and figure 41 below the average composition of primary materials can be compared for the 2015 and 2021 surveys. The mix of materials in the garden recycling appears to show a reduction in actual garden-based waste falling by 8.0% from 95.4% to 87.4%. Non-combustible inerts (-2.1%) and textiles (-0.6%) ae the other main materials showing a reduction. Garden bins have a higher food composition, up 6.3% from 0.8% to 7.0%. Also, contamination from mixed plastics is up by 5.1% from 0.1% to 5.2%.

Table 64: 2015 – 2021 Garden waste composition

PRIMARY CATEGORY	2015	2021	CHANGE +/-
PAPER	0.2%	0.1%	-0.1%
CARD AND CARDBOARD	0.1%	0.1%	0.0%
FLEXIBLE PLASTIC	0.1%	1.2%	1.1%
PLASTIC BOTTLES	0.0%	0.0%	0.0%
RIGID PLASTICS	0.1%	4.0%	3.9%
TEXTILES	0.6%	0.0%	-0.6%
MISCELLANEOUS COMBUSTIBLES	0.3%	0.0%	-0.3%
ORGANIC	0.1%	0.2%	0.1%
NON-COMBUSTIBLE INERTS	2.1%	0.0%	-2.1%
GLASS	0.0%	0.0%	0.0%
FERROUS METALS	0.1%	0.0%	-0.1%
NON FERROUS METALS	0.0%	0.0%	0.0%
FOOD WASTE	0.8%	7.0%	6.3%
GARDEN	95.4%	87.4%	-8.0%
HAZARDOUS	0.0%	0.0%	0.0%
WEEE	0.2%	0.0%	-0.2%
FINES	0.0%	0.0%	0.0%
TOTAL	100%	100%	100%

Figure 41: % change in concentrations of garden waste categories 2015–- 2021



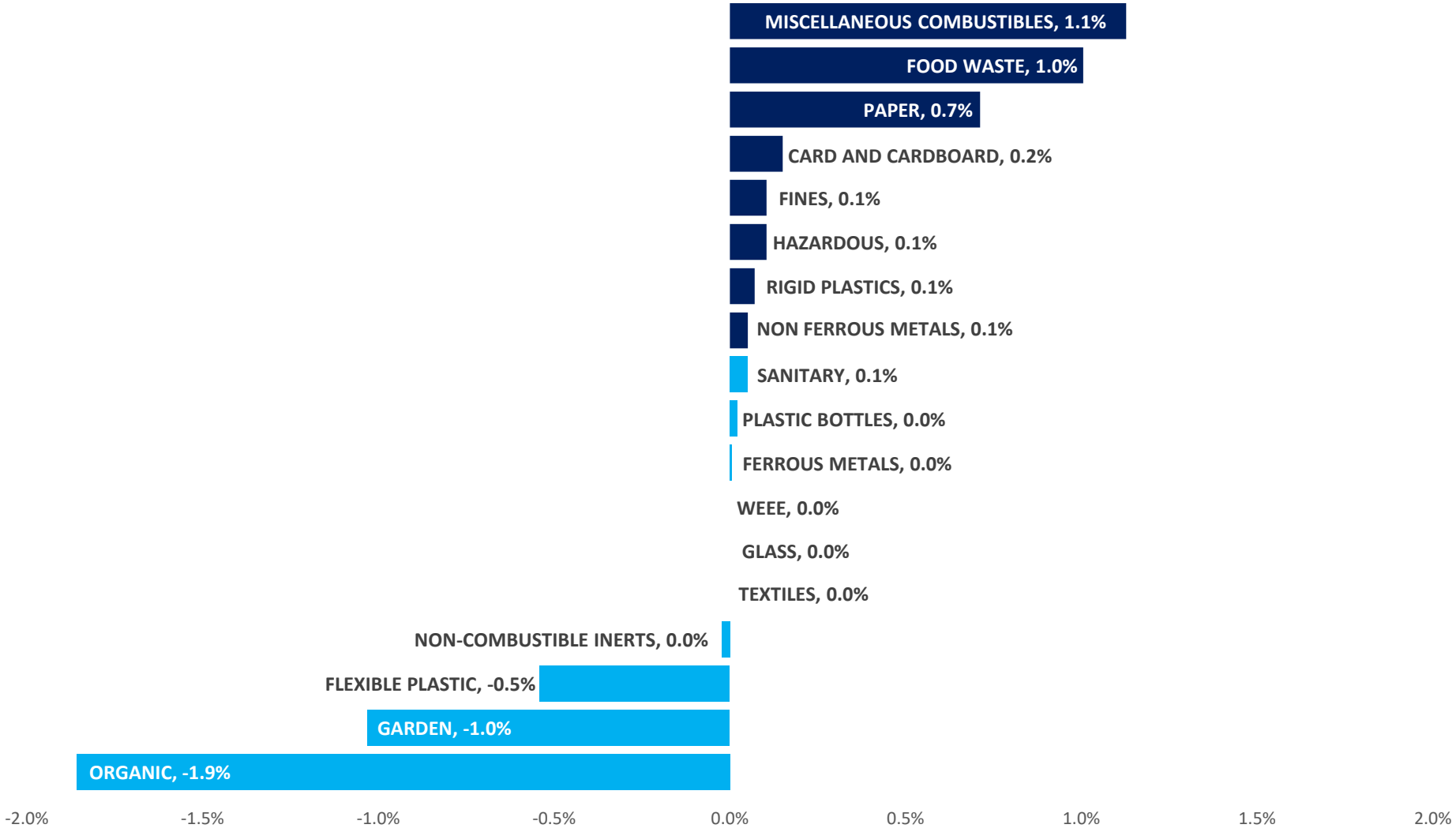
Food Recycling

From table 65 and figure 42 below the average composition of primary materials can be compared for the 2015 and 2021 surveys. The mix of materials in the food recycling appears to show a small increase in target food waste increasing from 96% to 97% of the total. There is a drop odd of 2.9% in the contribution of other organics and garden waste. Miscellaneous combustibles (+1.1%), paper (+0.7%) and cardboard (+0.2%) have increased their contributions to the overall mix.

Table 65: 2015 – 2021 food recycling composition

PRIMARY CATEGORY	2015	2021	CHANGE +/-
PAPER	0.1%	0.8%	0.7%
CARD AND CARDBOARD	0.0%	0.2%	0.2%
FLEXIBLE PLASTIC	1.0%	0.5%	-0.5%
PLASTIC BOTTLES	0.0%	0.0%	0.0%
RIGID PLASTICS	0.0%	0.1%	0.1%
TEXTILES	0.0%	0.0%	0.0%
SANITARY	0.0%	0.1%	0.1%
MISCELLANEOUS COMBUSTIBLES	0.0%	1.1%	1.1%
ORGANIC	1.9%	0.0%	-1.9%
NON-COMBUSTIBLE INERTS	0.0%	0.0%	0.0%
GLASS	0.0%	0.0%	0.0%
FERROUS METALS	0.0%	0.0%	0.0%
NON FERROUS METALS	0.1%	0.1%	0.1%
FOOD WASTE	95.9%	96.9%	1.0%
GARDEN	1.0%	0.0%	-1.0%
HAZARDOUS	0.0%	0.1%	0.1%
WEEE	0.0%	0.0%	0.0%
FINES	0.0%	0.1%	0.1%
TOTAL	100%	100%	100%

Figure 42: % change in concentrations of food waste categories 2015– 2021



Comparisons with national data

Total Kerbside Arisings

Average figures from the spring and autumn surveys performed throughout Merseyside & Halton can be compared with available national data. From the compositional analysis of kerbside waste collected across Merseyside and Halton It is suggested that a total of 11.49kg/hh/wk is generated; 57.6% of which is kerbside collected residual waste. This closely compares with average figures for England where the figure is 55.9%. Tonnage figures from MRWA suggest a slightly higher residual mix at 64.7%.

In 2020, total 'waste from households' increased to 22.6 million tonnes from 2019 when it was 22.1 million tonnes. This is equivalent to 399 kg per person, up from 392 kg per person in 2019, an increase of 1.8 %. At an average household size of 2.4[3] this equates to around 958kg/hh/yr. Scaling up figures from the waste analysis suggests a rate of 599kg/hh/yr with annual tonnage data (based on 688,438 households taken from Acorn profiles) estimating 894kg/hh/yr.

Table 66: Total Kerbside waste

TOTAL HOUSEHOLD WASTE	KG/HH/WK*	TONNAGE DATA**	ENGLAND (MILLION TONNES)***
RESIDUAL	6.62	398,379	12.64
DRY RECYCLING	3.09	141,816	5.90
GARDEN RECYCLING	1.67	71,862	3.59
FOOD RECYCLING	0.11	3,743	0.48
TOTAL	11.49	615,800	22.60
KG/HH/YR	599	894	958

TOTAL WASTE	KG/HH/WK*	TONNAGE DATA**	ENGLAND
RESIDUAL	57.6%	64.7%	55.9%
DRY RECYCLING	26.9%	23.0%	26.1%
GARDEN RECYCLING	14.6%	11.7%	15.9%
FOOD RECYCLING	1.0%	0.6%	2.1%
TOTAL	100.0%	100.0%	100.0%

*Kg/hh/wk figures and % kerbside mix estimated from waste compositional analysis

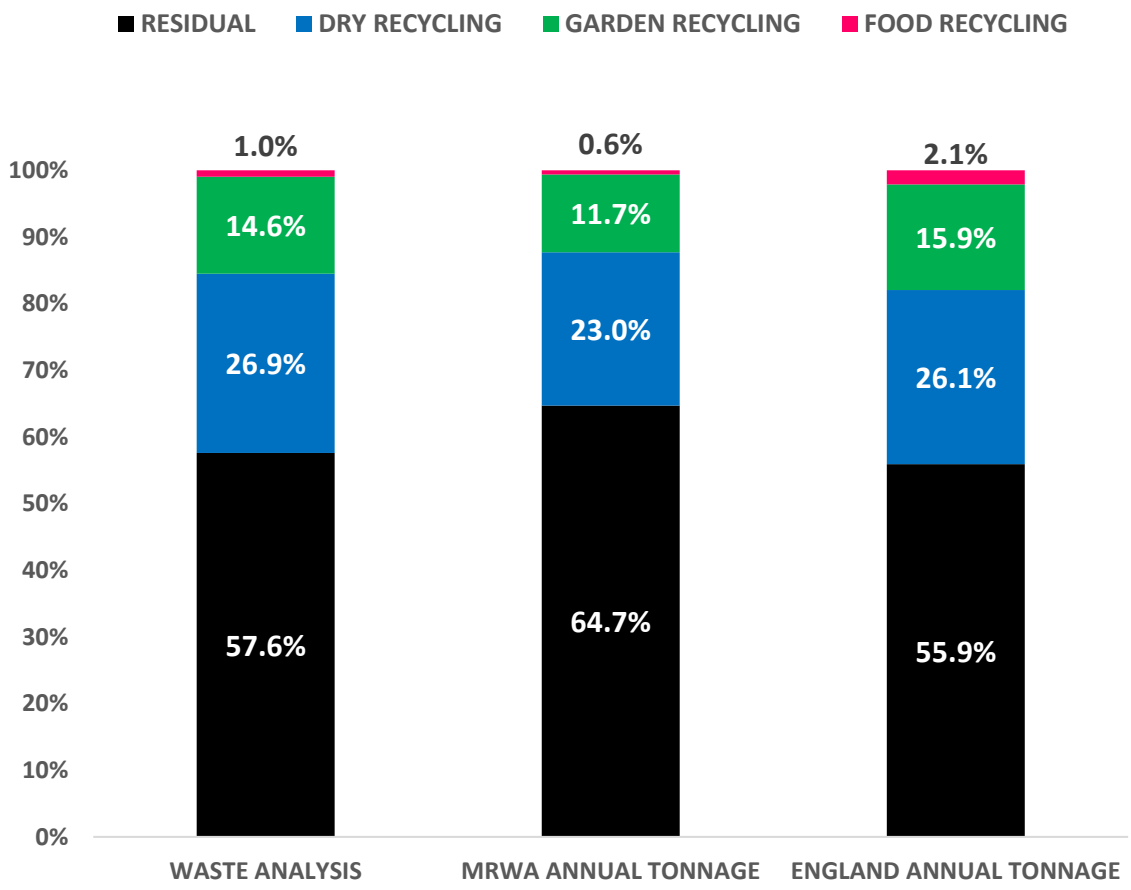
**Annual tonnage data 2021 and % kerbside mix, figures supplied by MRWA

***Annual tonnage (million tonnes) "Defra Statistics on waste managed LA's in England in 2020/21 – with approximated % kerbside mix.

3 https://www.statista.com/statistics/295551/average-household-size-in-the-uk/

Figure 42 shows the estimated mix of kerbside waste based on the three data sources from Table 61.

Figure 42: Estimated mix of kerbside collected waste



Residual waste composition

There is not a great deal of up to date and detailed compositional national data for "kerbside collected" waste. However, figures are available from a 2019 study by WRAP which gathered data from around 199 survey samples from 2017.[4] Due to the different ways in which waste is categorised then comparisons can only be reliably made at Primary Category levels.

Table 67 shows the breakdown of kerbside collected residual waste from the Merseyside & Halton compositional analysis against aggregated 2017 data from WRAP. Figures in terms of percentage composition are fairly similar. Waste groups such as food waste, paper and plastics appear below the national average. Materials such as garden waste, cardboard and metals appear above average.

Table 67: Kerbside residual waste

RESIDUAL ARISINGS	KG/HH/YR	%	KG/HH/YR*	%
	NATIONAL ESTIMATE (2017)		2021 WASTE COMPOSITION	
FOOD WASTE	155.7	34.7%	109.1	31.6%
GARDEN WASTE	14.1	3.1%	16.6	4.8%
OTHER ORGANIC	19.6	4.4%	9.5	2.7%
PAPER	41.7	9.3%	24.2	7.0%
CARD	16.7	3.7%	17.2	5.0%
GLASS	12.5	2.8%	12.5	3.6%
FERROUS METALS	8.2	1.8%	6.7	1.9%
NON-FERROUS METALS	5.1	1.1%	5.9	1.7%
DENSE PLASTIC	30.6	6.8%	22.6	6.5%
PLASTIC FILM	28.8	6.4%	18.6	5.4%
TEXTILES	23.7	5.3%	18.5	5.4%
WEEE	4.5	1.0%	2.0	0.6%
HAZARDOUS	2.2	0.5%	1.8	0.5%
MISC. COMBUSTIBLE	56.2	12.5%	64.2	18.6%
MISC. NON-COMBUSTIBLE	22.3	5.0%	14.1	4.1%
FINES	4.6	1.0%	1.6	0.5%
OTHER WASTES	1.6	0.4%	0.2	0.1%
TOTAL	**448.1**	**100.0%**	**345.3**	**100.0%**

**kg/hh/yr estimated from compositional analysis. Annual tonnage data from MRWA suggests around 579kg/hh/yr for residual waste.*

[4] *WRAP, 2019, Bristol, National Household Waste Composition 2017, by Eunomia Research & Consulting Ltd. Written by: Eunomia Research & Consulting Ltd: Eric Bridgwater, Emma Fletcher, Rosy Scholes, Tanguy Tomes, Jack Hedger*

Figure 43: Estimated residual waste composition 2017 National data

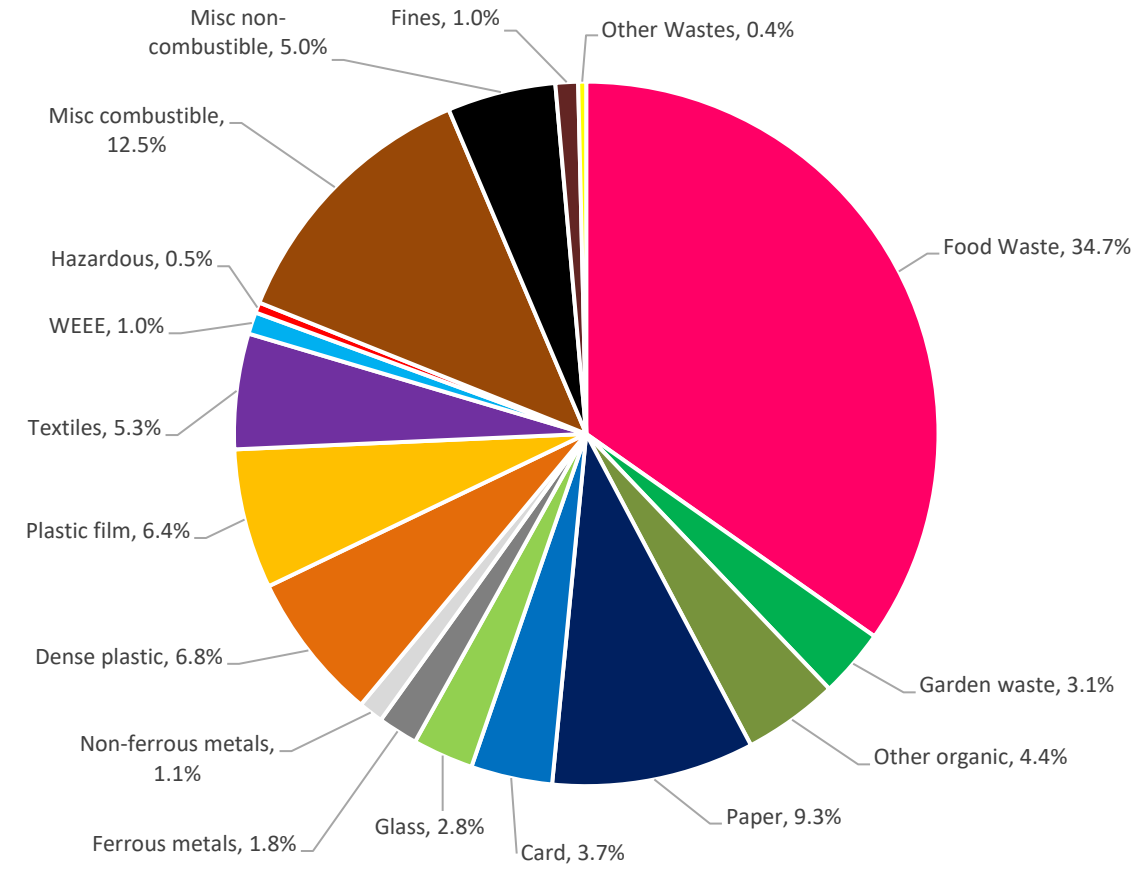
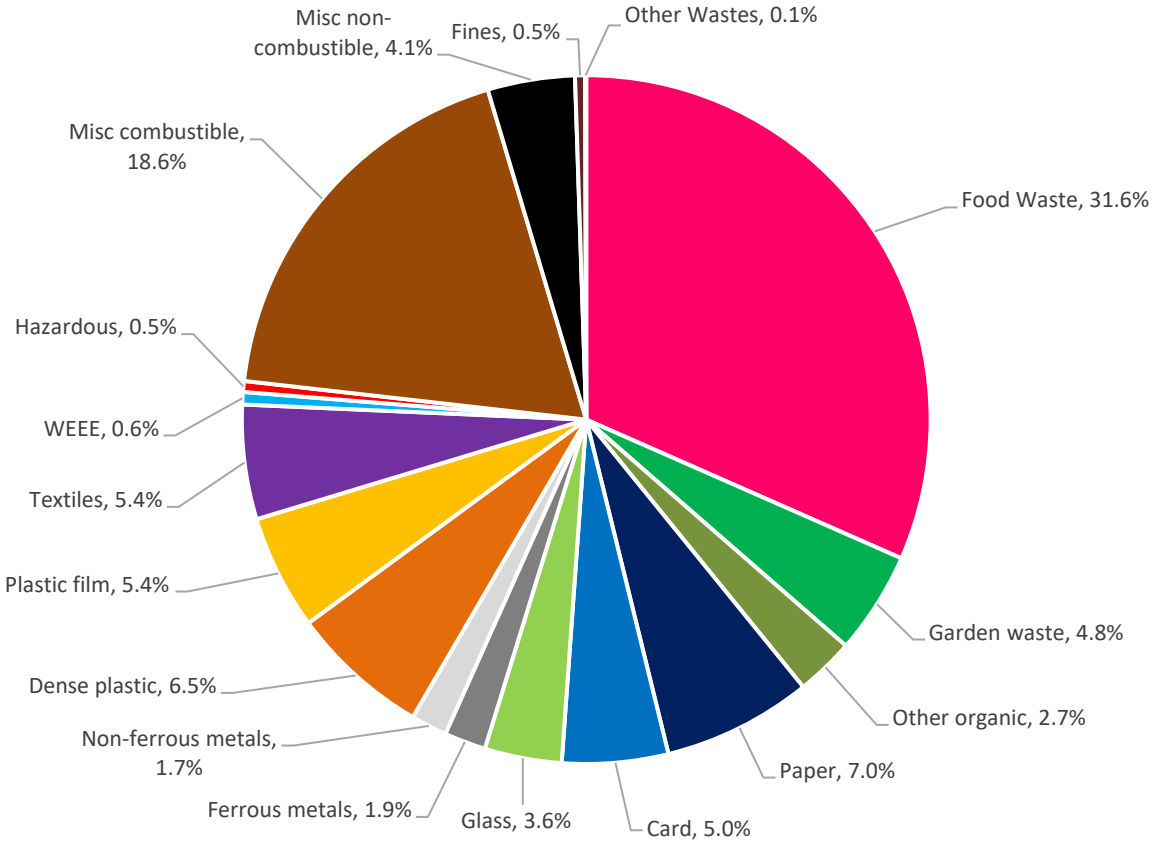


Figure 44: Estimated residual waste composition 2021 Merseyside & Halton analysis



Recycling Rates

Appendix 3 shows a more detailed breakdown of materials present within the kerbside collected residual waste and recycling. Figures from the 2021 compositional analysis have been adjusted to best fit the categories used for the 2017 national figures. Figures shown for recycling represent kerbside collected DMR, garden and food collections combined. From this data we can look at the concentrations of recyclable materials present within the kerbside collected residual waste and recycling waste streams.

Table 68: Recyclables in kerbside collected residual waste and recycling combined

WASTE MATERIAL	RESIDUAL		RECYCLING*	
	NATIONAL AVERAGE 2017	2021 COMPOSITION	NATIONAL AVERAGE 2017	2021 COMPOSITION
FOOD WASTE	32.3%	31.6%	8.6%	7.0%
GARDEN WASTE	3.3%	2.3%	36.2%	21.4%
RECYCLABLE PAPER	3.8%	1.6%	18.3%	7.5%
RECYCLABLE CARD	2.8%	3.8%	9.3%	15.1%
RECYCLABLE GLASS	2.7%	3.2%	14.1%	16.3%
PLASTIC BOTTLES	1.4%	1.8%	3.6%	5.1%
TINS & CANS	1.1%	1.4%	3.0%	3.2%

**N.B. this is all recycling streams combined.*

Compared with 2017 national data, the analysis figures suggest lower concentrations of recyclable food waste, garden waste and recyclable paper in the kerbside collected residual waste. Concentrations of recyclable card, glass, plastic bottles, tins and cans are higher.

For the combined kerbside collected recycling, figures also suggest lower concentrations of recyclable food waste, garden waste and recyclable paper in the kerbside collected residual waste. Concentrations of recyclable card, glass, plastic bottles, tins, and cans are also higher.

Table 69 below shows estimated recycling rates for the main materials accepted for kerbside collected recycling. The 2017 percentages represent the proportion in all recycling containers combined so will include small contributions from contaminants. For example, where recyclable plastic bottles are in garden bins or food waste in in recycling bins. The 2021 figures are solely for the correct container.

Other than St. Helens, no food is recycled for other authorities so capture rates overall are well below the national comparison (4.6% as opposed to 15.9%).

Rates for garden waste are very similar being 88.6% nationally and 86.8% for Merseyside & Halton.

Rates for recyclable paper and recyclable glass are practically identical to national rates at around 77% and 79% respectively.

Rates for recyclable card, plastic bottles and tins & cans are slightly above those recorded in the national 2017 survey.

Table 69: Estimated capture

RECYCLABLE ITEMS	PROPORTION IN RECYCLING CONTAINERS	
	NATIONAL AVERAGE 2017*	2021 COMPOSITION**
FOOD WASTE	15.9%	4.6%
GARDEN WASTE	88.6%	86.8%
RECYCLABLE PAPER	77.2%	77.7%
RECYCLABLE CARD	69.9%	76.2%
RECYCLABLE GLASS	78.8%	78.8%
PLASTIC BOTTLES	64.1%	68.2%
TINS & CANS	64.8%	67.3%

**For 2017 figures the % relates to the amount in all recycling containers combined.*

***For 2021 data % is rate captured in the correct recycling container (would be slightly higher when including the amount in other recycling containers)*

The official England 'waste from households' recycling rate for the period of 2020 and 2020/21 was 44.0% in 2020, down 1.5% percentage points from 45.5% per cent in 2019[5]. Amongst the 338 local authorities in England, there is considerable variation in 'household waste' recycling rates, ranging from 18% to 64% in 2020/21.

The 2021 waste compositional analysis suggested an overall recycling rate for Merseyside and Halton of 30.0% ranging between 22.8% for Liverpool up to 41.8% for St. Helens. Waste data derived from WasteDataFlow and Defra's statistical department for the period covering the financial year 2020/21 suggests an overall recycling rate for Merseyside WDA of 34.8% ranging between 23.5% for Liverpool up to 39.3% for Halton[6].

Recommendations / options for a more frequent waste analysis programme

MRWA currently procures a comprehensive waste analysis every 5-6 years. This includes all collection authorities over 2 phases to provide annual estimates. Smaller but more frequent waste analysis projects could be considered which would:

- Provide more annual data points
- Show composition changes annually or biennially
- Show effects of any resident communication campaigns
- Reduce budget requirements for these projects
- Reduce sort site requirement frequency per phase
- Show effects of any collection system changes more rapidly, including:
    - additional material inclusions into diversion streams
    - frequency of collections for kerbside systems
    - types of collection systems (source separated)

There are several options for including more frequent, but less comprehensive composition projects. These are shown below.

5 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1040756/Statistics_on_waste_managed_by_local_authorities_in_England_in_2020_v2rev_accessible.pdf*

6 *https://www.letsrecycle.com/councils/league-tables/2020-21-overall-performance-2/*

Waste steams

Currently kerbside collected residual and recycling streams are included in the project. It may be worth considering including only the residual material collected at the kerbside. Although this option will not include contamination in the dry recycling or capture rates, it will provide important data on the composition of this waste stream, specifically the types and quantities of materials that could have been diverted into existing kerbside systems. The fieldwork will also take around half the time when compared to including recycling/garden streams and the price per phase will also be reduced compared to collecting all material streams. Collecting all waste streams, as per the current programme, or just including the residual only, can both be used in the following options.

Single phase options

The simplest way of including a reduced composition project is to include single phases either annually or biennially for all authorities. Phase 1 will be in either Winter or Spring, with phase 2 being in either Summer or Autumn. Each phase should be 6 months apart for the annual option. This will provide rolling data points which can be combined to provide a set of estimated annual results based on actual tonnages. Please see the table below for examples of this option:

Table 70: Single phase option – annual

Annual						
Year 1				Year 2		
	Phase 1	Phase 2			Phase 1	Phase 2
Halton	✓	x		Halton	x	✓
Knowsley	✓	x		Knowsley	x	✓
Liverpool	✓	x		Liverpool	x	✓
Sefton	✓	x		Sefton	x	✓
St. Helens	✓	x		St. Helens	x	✓
Wirral	✓	x		Wirral	x	✓

Based on table 70, annual estimates will be available after the Summer/Autumn phase of year 2

Table 71: Single phase option – biennial

Biennial						
Year 1				Year 3		
	Phase 1	Phase 2			Phase 1	Phase 2
Halton	✓	x		Halton	x	✓
Knowsley	✓	x		Knowsley	x	✓
Liverpool	✓	x		Liverpool	x	✓
Sefton	✓	x		Sefton	x	✓
St. Helens	✓	x		St. Helens	x	✓
Wirral	✓	x		Wirral	x	✓

Based on table 71, annual estimates will be available after phase 2 of year 3

Alternating authorities

All authorities except for St Helens have the same collection system, including frequency of collection of kerbside waste streams and the material that can be placed in dry recycling and garden bins. They also have the same dominant socio demographic ACORN Categories. Using this information can reduce the amount of times an authority is included in the sampling over a specified period, even though results for each authority can be estimated for each authority. This can be done by using the composition data from a participating authority in a particular phase and projecting it onto a non-participating authority, using the latter's socio demographic profile and tonnage data. Please see the table below for how this could work.

Table 72: Biannual 2-phase option, alternating authorities

	Biannual	
	Phase 1	Phase 2
Halton	✓	x
Knowsley	x	✓
Liverpool	✓	x
Sefton	x	✓
Wirral	✓	x
St Helens	✓	✓

For this option St Helens would need to be included twice due to their different collection system.

Table 73: Annual 2-phase option, alternating authorities

Annual						
Year 1				Year 2		
	Phase 1	Phase 2			Phase 1	Phase 2
Halton	✓	x		Halton	x	x
Knowsley	x	x		Knowsley	x	✓
Liverpool	✓	x		Liverpool	x	x
Sefton	x	x		Sefton	x	✓
Wirral	✓	x		Wirral	x	x
St. Helens	✓	x		St. Helens	x	✓

Appendix 1 – Sort Categories

PAPER	NEWSPAPERS, BROCHURES, CATALOGUES, DIRECTORIES & MAGAZINES
	RECYCLABLE PACKAGING PAPER INC BAGS & ENVELOPES
	RECYCLABLE NON-PACKAGING PAPER, OFFICE PAPER & JUNK MAIL ETC
	SHREDDED PAPER
	NON-RECYCLABLE PAPER
CARD & CARDBOARD	RECYCLABLE CORRUGATED CARDBOARD
	RECYCLABLE THIN PACKAGING CARD
	RECYCLABLE THIN NON-PACKAGING CARD
	BOOKS
	LIQUID CARTONS
	DISPOSABLE COFFEE CUPS
	HEAVILY FOOD CONTAMINATED FOOD PACKAGING CARD
	NON-RECYCLABLE CARD
PLASTIC FILM	CARRIER BAGS & PLASTIC BAGS
	PACKAGING FILM
	ALL OTHER FILM - PACKAGING
	ALL OTHER FILM – NON-PACKAGING
DENSE PLASTICS	CLEAR PET DRINKS BOTTLES < 3L
	COLOURED PET DRINKS BOTTLES < 3L
	NATURAL HDPE DRINKS BOTTLES < 3L
	COLOURED HDPE DRINKS BOTTLES < 3L
	ALL PLASTIC DRINKS BOTTLES >3 LITRES CAPACITY
	ALL NON-DRINKS PLASTIC BOTTLES
	FOOD TUBS, POTS, TRAYS, PUNNETS - NON BLACK
	FOOD TUBS, POTS, TRAYS, PUNNETS - BLACK
	ALL POLYSTYRENE
	ALL OTHER PLASTIC - PACKAGING
	ALL OTHER PLASTIC - NON-PACKAGING
TEXTILES	CLOTHING
	SHOES
	ACCESSORIES - BAGS, BELTS, HATS ETC
	FLAT LINEN & FABRICS (TOWELS, CURTAINS, SHEETS ETC)
	ALL OTHER TEXTILES INC ALL STUFFED TEXTILES
MISCELLANEOUS COMBUSTIBLES	DISPOSABLE NAPPIES
	ALL OTHER SANITARY
	CARPET, UNDERLAY & FLOORING
	ANIMAL WASTE
	ALL OTHER - PACKAGING
	ALL OTHER - NON PACKAGING
FURNITURE	ALL SMALL FURNITURE ITEMS

NON-COMBUSTIBLE INERTS	DIY RUBBLE & CERAMICS
	CEMENT & PLASTERBOARD
	UNCLASSIFIED INC CAT LITTER
GLASS	ALL GLASS DRINKS BOTTLES < 3L
	ALL NON DRINKS BOTTLES AND BOTTLES > 3L
	ALL JARS
	OTHER NON-PACKAGING GLASS
FERROUS METALS	FOOD TINS & CANS
	DRINK CANS < 3L
	ALL NON DRINKS CANS AND DRINK CANS > 3L
	AEROSOLS
	OTHER FERROUS PACKAGING
	OTHER FERROUS
NON-FERROUS METALS	FOOD TINS & CANS
	DRINK CANS < 3L
	ALL NON DRINKS CANS AND DRINK CANS > 3L
	AEROSOLS
	ALUMINIUM FOIL AND FOOD TRAYS
	OTHER NON-FERROUS
ORGANIC CATERING	UNAVOIDABLE FOOD WASTE
	POTENTIALLY AVOIDABLE FOOD WASTE
	AVOIDABLE FOOD WASTE - LOOSE
	AVOIDABLE FOOD WASTE - PACKAGED
	CONSUMABLE LIQUIDS, FATS AND OILS.
ORGANIC NON-CATERING	GARDEN WASTE (VEGETATION)
	SOIL & TURF
	PET BEDDING (HERBIVOROUS)
	ACCEPTABLE CADDY LINERS
	OTHER ORGANIC
HHW	HOUSEHOLD BATTERIES
	PRINTER CARTRIDGES
	LIST ALL (INC PAINT CANS)
COVID-19 WASTE	(MASKS, VISORS, SANITISER BOTTLES, LATEX GLOVES, DISPOSABLE APRONS ETC…)
WEEE	MOBILE PHONES
	LIST ALL OTHER
FINES	<10MM

Appendix 2 – Composition Data 2015 & 2021

RESIDUAL WASTE	DISTRICT	2015	2021	CHANGE
PAPER	WC Halton	8.2%	7.6%	-0.6%
	WC Knowsley	10.1%	9.5%	-0.6%
	WC Liverpool	8.2%	6.7%	-1.4%
	WC Sefton	12.2%	4.8%	-7.4%
	WC St Helens	11.1%	7.4%	-3.7%
	WC Wirral	9.9%	8.1%	-1.8%
	WC MWDA	9.8%	7.0%	-2.7%
CARD AND CARDBOARD	WC Halton	5.6%	5.1%	-0.5%
	WC Knowsley	4.5%	6.0%	1.5%
	WC Liverpool	5.5%	4.6%	-0.8%
	WC Sefton	6.0%	5.0%	-1.0%
	WC St Helens	5.2%	4.7%	-0.4%
	WC Wirral	3.5%	5.2%	1.6%
	WC MWDA	5.1%	5.0%	-0.1%
FLEXIBLE PLASTIC	WC Halton	6.5%	5.7%	-0.8%
	WC Knowsley	7.1%	6.9%	-0.2%
	WC Liverpool	6.4%	5.4%	-1.0%
	WC Sefton	6.5%	4.5%	-2.0%
	WC St Helens	5.7%	6.1%	0.4%
	WC Wirral	6.5%	4.4%	-2.2%
	WC MWDA	6.4%	5.4%	-1.0%
PLASTIC BOTTLES	WC Halton	2.4%	1.8%	-0.5%
	WC Knowsley	2.5%	1.7%	-0.7%
	WC Liverpool	2.3%	1.5%	-0.7%
	WC Sefton	3.2%	1.7%	-1.5%
	WC St Helens	2.0%	2.7%	0.7%
	WC Wirral	2.1%	1.5%	-0.7%
	WC MWDA	2.4%	1.8%	-0.6%
RIGID PLASTICS	WC Halton	5.3%	4.8%	-0.5%
	WC Knowsley	4.9%	5.5%	0.6%
	WC Liverpool	5.3%	4.9%	-0.3%
	WC Sefton	4.8%	4.7%	-0.2%
	WC St Helens	5.7%	4.8%	-1.0%
	WC Wirral	4.6%	3.9%	-0.7%
	WC MWDA	5.1%	4.8%	-0.3%
TEXTILES	WC Halton	5.4%	5.5%	0.1%
	WC Knowsley	4.9%	6.0%	1.1%
	WC Liverpool	3.9%	5.5%	1.5%
	WC Sefton	5.0%	4.1%	-0.9%
	WC St Helens	4.4%	6.3%	1.9%
	WC Wirral	5.5%	5.4%	-0.1%
	WC MWDA	4.7%	5.4%	0.7%
SANITARY	WC Halton	5.9%	4.9%	-1.0%
	WC Knowsley	4.9%	6.3%	1.4%
	WC Liverpool	2.2%	12.0%	9.8%
	WC Sefton	5.2%	14.2%	9.0%
	WC St Helens	4.3%	6.4%	2.0%
	WC Wirral	2.3%	6.3%	4.0%
	WC MWDA	3.5%	9.8%	6.3%
MISCELLANEOUS COMBUSTIBLES	WC Halton	3.7%	6.4%	2.7%
	WC Knowsley	3.6%	8.3%	4.7%
	WC Liverpool	3.3%	11.2%	7.8%
	WC Sefton	3.2%	6.4%	3.1%
	WC St Helens	4.4%	9.5%	5.1%
	WC Wirral	4.0%	6.9%	2.9%
	WC MWDA	3.6%	8.8%	5.2%
ORGANIC	WC Halton	1.8%	3.1%	1.2%
	WC Knowsley	3.1%	2.4%	-0.6%
	WC Liverpool	1.8%	2.3%	0.6%
	WC Sefton	1.6%	3.3%	1.7%
	WC St Helens	4.4%	3.6%	-0.8%
	WC Wirral	1.6%	2.3%	0.6%
	WC MWDA	2.1%	2.7%	0.6%

FURNITURE	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.3%	0.3%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.2%	0.0%	-0.2%
	WC MWDA	0.0%	0.1%	0.0%
NON-COMBUSTIBLE INERTS	WC Halton	0.5%	2.2%	1.8%
	WC Knowsley	1.8%	1.5%	-0.4%
	WC Liverpool	4.0%	4.5%	0.5%
	WC Sefton	1.9%	5.3%	3.4%
	WC St Helens	3.6%	4.5%	0.9%
	WC Wirral	2.1%	4.0%	1.9%
	WC MWDA	2.7%	4.1%	1.4%
GLASS	WC Halton	3.2%	3.6%	0.4%
	WC Knowsley	4.7%	4.5%	-0.2%
	WC Liverpool	3.3%	3.1%	-0.3%
	WC Sefton	3.9%	3.6%	-0.3%
	WC St Helens	2.7%	4.2%	1.5%
	WC Wirral	3.0%	3.7%	0.6%
	WC MWDA	3.4%	3.6%	0.2%
FERROUS METALS	WC Halton	2.4%	2.0%	-0.4%
	WC Knowsley	2.4%	2.1%	-0.4%
	WC Liverpool	1.8%	2.0%	0.3%
	WC Sefton	2.0%	2.0%	0.0%
	WC St Helens	2.9%	1.4%	-1.5%
	WC Wirral	2.0%	2.1%	0.2%
	WC MWDA	2.1%	1.9%	-0.1%
NON FERROUS METALS	WC Halton	1.6%	1.9%	0.2%
	WC Knowsley	1.6%	1.9%	0.3%
	WC Liverpool	1.6%	1.7%	0.1%
	WC Sefton	2.4%	1.7%	-0.7%
	WC St Helens	1.5%	1.5%	0.0%
	WC Wirral	1.1%	1.5%	0.4%
	WC MWDA	1.6%	1.7%	0.1%
FOOD WASTE	WC Halton	38.7%	42.0%	3.3%
	WC Knowsley	37.0%	35.6%	-1.5%
	WC Liverpool	43.4%	27.8%	-15.6%
	WC Sefton	36.9%	31.0%	-5.9%
	WC St Helens	32.7%	27.0%	-5.7%
	WC Wirral	38.7%	39.3%	0.6%
	WC MWDA	39.1%	31.6%	-7.5%
GARDEN	WC Halton	3.2%	2.3%	-0.9%
	WC Knowsley	1.6%	0.9%	-0.7%
	WC Liverpool	1.8%	5.2%	3.4%
	WC Sefton	0.3%	5.9%	5.6%
	WC St Helens	2.5%	6.9%	4.4%
	WC Wirral	5.8%	4.5%	-1.3%
	WC MWDA	2.5%	4.8%	2.3%
HAZARDOUS	WC Halton	0.6%	0.7%	0.2%
	WC Knowsley	0.8%	0.2%	-0.7%
	WC Liverpool	0.4%	0.2%	-0.2%
	WC Sefton	0.5%	0.5%	-0.1%
	WC St Helens	0.3%	1.6%	1.3%
	WC Wirral	1.0%	0.5%	-0.6%
	WC MWDA	0.6%	0.5%	-0.1%
WEEE	WC Halton	1.1%	0.3%	-0.8%
	WC Knowsley	1.3%	0.4%	-0.9%
	WC Liverpool	0.5%	0.8%	0.3%
	WC Sefton	0.8%	0.8%	0.0%
	WC St Helens	1.1%	0.3%	-0.8%
	WC Wirral	0.7%	0.2%	-0.5%
	WC MWDA	0.8%	0.6%	-0.2%
FINES	WC Halton	4.0%	0.1%	-3.9%
	WC Knowsley	3.0%	0.3%	-2.8%
	WC Liverpool	4.5%	0.5%	-4.0%
	WC Sefton	3.5%	0.3%	-3.2%
	WC St Helens	5.4%	1.0%	-4.4%
	WC Wirral	5.3%	0.4%	-4.9%
	WC MWDA	4.4%	0.5%	-3.9%

MIXED RECYCLING	DISTRICT	2015	2021	CHANGE
PAPER	WC Halton	22.8%	14.8%	-8.0%
	WC Knowsley	32.8%	15.2%	-17.5%
	WC Liverpool	23.9%	14.1%	-9.8%
	WC Sefton	23.9%	17.1%	-6.8%
	WC St Helens	28.1%	11.5%	-16.7%
	WC Wirral	35.0%	15.7%	-19.3%
	WC MWDA	28.1%	15.0%	-13.1%
CARD AND CARDBOARD	WC Halton	18.7%	21.2%	2.4%
	WC Knowsley	16.4%	20.8%	4.4%
	WC Liverpool	20.0%	23.3%	3.3%
	WC Sefton	17.0%	27.4%	10.4%
	WC St Helens	18.0%	35.3%	17.3%
	WC Wirral	18.9%	26.6%	7.6%
	WC MWDA	18.5%	25.8%	7.3%
FLEXIBLE PLASTIC	WC Halton	1.5%	2.9%	1.4%
	WC Knowsley	1.0%	2.3%	1.3%
	WC Liverpool	1.2%	1.4%	0.1%
	WC Sefton	1.3%	2.7%	1.4%
	WC St Helens	0.7%	0.4%	-0.3%
	WC Wirral	0.8%	0.9%	0.1%
	WC MWDA	1.1%	1.7%	0.6%
PLASTIC BOTTLES	WC Halton	7.9%	8.0%	0.1%
	WC Knowsley	7.2%	7.2%	0.1%
	WC Liverpool	7.9%	8.0%	0.1%
	WC Sefton	7.4%	8.4%	1.0%
	WC St Helens	11.3%	8.6%	-2.7%
	WC Wirral	7.9%	8.0%	0.0%
	WC MWDA	8.1%	8.1%	0.0%
RIGID PLASTICS	WC Halton	4.7%	5.7%	1.0%
	WC Knowsley	2.6%	4.1%	1.5%
	WC Liverpool	6.9%	4.3%	-2.7%
	WC Sefton	3.4%	4.6%	1.2%
	WC St Helens	1.4%	4.1%	2.7%
	WC Wirral	2.0%	3.2%	1.2%
	WC MWDA	3.8%	4.3%	0.5%
TEXTILES	WC Halton	0.7%	1.3%	0.5%
	WC Knowsley	1.3%	1.2%	-0.1%
	WC Liverpool	2.1%	2.1%	0.1%
	WC Sefton	0.4%	2.2%	1.7%
	WC St Helens	0.3%	0.1%	-0.2%
	WC Wirral	0.2%	2.6%	2.4%
	WC MWDA	0.9%	1.8%	0.9%
SANITARY	WC Halton	0.7%	0.3%	-0.4%
	WC Knowsley	0.2%	1.0%	0.8%
	WC Liverpool	1.1%	0.8%	-0.2%
	WC Sefton	0.5%	0.7%	0.2%
	WC St Helens	0.2%	0.3%	0.1%
	WC Wirral	0.2%	0.1%	-0.1%
	WC MWDA	0.5%	0.5%	0.0%
MISCELLANEOUS COMBUSTIBLES	WC Halton	0.4%	3.0%	2.6%
	WC Knowsley	1.7%	2.9%	1.2%
	WC Liverpool	2.1%	2.7%	0.5%
	WC Sefton	1.0%	2.4%	1.5%
	WC St Helens	0.0%	0.6%	0.6%
	WC Wirral	0.6%	1.7%	1.1%
	WC MWDA	1.1%	2.2%	1.1%
ORGANIC	WC Halton	0.3%	3.0%	2.8%
	WC Knowsley	0.0%	3.0%	3.0%
	WC Liverpool	0.5%	1.0%	0.5%
	WC Sefton	0.1%	1.3%	1.1%
	WC St Helens	0.0%	1.3%	1.3%
	WC Wirral	0.0%	2.5%	2.5%
	WC MWDA	0.2%	1.9%	1.7%

FURNITURE	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.1%	0.7%	0.6%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.0%	0.1%	0.1%
NON-COMBUSTIBLE INERTS	WC Halton	0.3%	0.8%	0.4%
	WC Knowsley	0.5%	1.0%	0.6%
	WC Liverpool	0.6%	1.9%	1.3%
	WC Sefton	1.1%	0.9%	-0.2%
	WC St Helens	0.1%	0.1%	0.1%
	WC Wirral	0.7%	0.9%	0.2%
	WC MWDA	0.6%	1.1%	0.4%
GLASS	WC Halton	30.3%	27.5%	-2.8%
	WC Knowsley	25.9%	25.7%	-0.2%
	WC Liverpool	24.4%	26.7%	2.2%
	WC Sefton	33.6%	21.3%	-12.2%
	WC St Helens	28.6%	30.6%	1.9%
	WC Wirral	26.2%	28.4%	2.2%
	WC MWDA	27.7%	26.4%	-1.4%
FERROUS METALS	WC Halton	4.4%	2.6%	-1.8%
	WC Knowsley	4.8%	3.3%	-1.4%
	WC Liverpool	2.9%	3.7%	0.7%
	WC Sefton	4.5%	4.0%	-0.5%
	WC St Helens	6.5%	3.3%	-3.2%
	WC Wirral	3.4%	3.4%	0.0%
	WC MWDA	4.0%	3.5%	-0.6%
NON FERROUS METALS	WC Halton	2.0%	3.3%	1.3%
	WC Knowsley	1.9%	3.6%	1.7%
	WC Liverpool	1.7%	3.2%	1.5%
	WC Sefton	2.1%	2.8%	0.7%
	WC St Helens	3.6%	2.8%	-0.8%
	WC Wirral	1.6%	3.0%	1.4%
	WC MWDA	2.0%	3.1%	1.1%
FOOD WASTE	WC Halton	3.8%	4.9%	1.1%
	WC Knowsley	2.7%	6.9%	4.2%
	WC Liverpool	2.3%	6.1%	3.8%
	WC Sefton	3.2%	3.2%	0.0%
	WC St Helens	0.3%	0.9%	0.6%
	WC Wirral	0.9%	1.5%	0.6%
	WC MWDA	2.1%	3.9%	1.8%
GARDEN	WC Halton	0.1%	0.0%	-0.1%
	WC Knowsley	0.0%	0.1%	0.0%
	WC Liverpool	0.2%	0.0%	-0.2%
	WC Sefton	0.0%	0.4%	0.3%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.1%	0.2%	0.2%
	WC MWDA	0.1%	0.1%	0.0%
HAZARDOUS	WC Halton	0.2%	0.1%	-0.1%
	WC Knowsley	0.1%	0.2%	0.1%
	WC Liverpool	0.3%	0.0%	-0.3%
	WC Sefton	0.0%	0.2%	0.1%
	WC St Helens	0.4%	0.0%	-0.3%
	WC Wirral	0.1%	0.1%	0.0%
	WC MWDA	0.2%	0.1%	-0.1%
WEEE	WC Halton	0.3%	0.5%	0.2%
	WC Knowsley	0.4%	0.6%	0.1%
	WC Liverpool	0.7%	0.5%	-0.2%
	WC Sefton	0.0%	0.4%	0.4%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.1%	1.0%	0.9%
	WC MWDA	0.3%	0.5%	0.2%
FINES	WC Halton	0.8%	0.0%	-0.8%
	WC Knowsley	0.6%	0.1%	-0.5%
	WC Liverpool	0.9%	0.1%	-0.8%
	WC Sefton	0.3%	0.1%	-0.2%
	WC St Helens	0.3%	0.0%	-0.3%
	WC Wirral	1.1%	0.2%	-0.9%
	WC MWDA	0.7%	0.1%	-0.6%

GARDEN RECYCLING	DISTRICT	2015	2021	CHANGE
PAPER	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	1.3%	0.0%	-1.3%
	WC Liverpool	0.0%	0.2%	0.2%
	WC Sefton	0.2%	0.0%	-0.2%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.2%	0.1%	-0.1%
CARD AND CARDBOARD	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	1.0%	1.0%
	WC Wirral	0.3%	0.0%	-0.3%
	WC MWDA	0.1%	0.1%	0.0%
FLEXIBLE PLASTIC	WC Halton	0.0%	0.1%	0.1%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	5.1%	5.1%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.3%	0.0%	-0.2%
	WC MWDA	0.1%	1.2%	1.1%
PLASTIC BOTTLES	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.0%	0.0%	0.0%
RIGID PLASTICS	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.1%	0.1%
	WC Liverpool	0.1%	17.3%	17.2%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.4%	0.0%	-0.4%
	WC MWDA	0.1%	4.0%	3.9%
TEXTILES	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.1%	0.0%	-0.1%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	3.1%	0.0%	-3.1%
	WC MWDA	0.6%	0.0%	-0.6%
SANITARY	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.0%	0.0%	0.0%
MISCELLANEOUS COMBUSTIBLES	WC Halton	0.2%	0.0%	-0.2%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.9%	0.0%	-0.9%
	WC Sefton	0.1%	0.0%	-0.1%
	WC St Helens	0.1%	0.3%	0.2%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.3%	0.0%	-0.3%
ORGANIC	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	1.0%	3.1%	2.0%
	WC Wirral	0.0%	0.6%	0.6%
	WC MWDA	0.1%	0.2%	0.1%

FURNITURE	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.0%	0.0%	0.0%
NON-COMBUSTIBLE INERTS	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.1%	0.0%	-0.1%
	WC Liverpool	1.0%	0.0%	-1.0%
	WC Sefton	5.3%	0.0%	-5.3%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	2.0%	0.0%	-2.0%
	WC MWDA	2.1%	0.0%	-2.1%
GLASS	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.1%	0.0%	-0.1%
	WC MWDA	0.0%	0.0%	0.0%
FERROUS METALS	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.6%	0.0%	-0.6%
	WC MWDA	0.1%	0.0%	-0.1%
NON FERROUS METALS	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.0%	0.0%	0.0%
FOOD WASTE	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.2%	1.3%	1.1%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	12.7%	12.7%
	WC St Helens	3.6%	0.0%	-3.6%
	WC Wirral	1.3%	0.0%	-1.3%
	WC MWDA	0.8%	7.0%	6.3%
GARDEN	WC Halton	99.8%	99.9%	0.1%
	WC Knowsley	98.2%	98.5%	0.3%
	WC Liverpool	97.9%	77.4%	-20.5%
	WC Sefton	94.3%	87.3%	-7.0%
	WC St Helens	95.2%	95.7%	0.4%
	WC Wirral	90.6%	99.4%	8.8%
	WC MWDA	95.4%	87.4%	-8.0%
HAZARDOUS	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.0%	0.0%	0.0%
WEEE	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	1.3%	0.0%	-1.3%
	WC MWDA	0.2%	0.0%	-0.2%
FINES	WC Halton	0.0%	0.0%	0.0%
	WC Knowsley	0.0%	0.0%	0.0%
	WC Liverpool	0.0%	0.0%	0.0%
	WC Sefton	0.0%	0.0%	0.0%
	WC St Helens	0.0%	0.0%	0.0%
	WC Wirral	0.0%	0.0%	0.0%
	WC MWDA	0.0%	0.0%	0.0%

FOOD RECYCLING	DISTRICT	2015	2021	CHANGE
PAPER	WC Sefton	0.6%		
	WC St Helens	0.1%	0.8%	0.7%
	WC MWDA	0.3%		
CARD AND CARDBOARD	WC Sefton	0.0%		
	WC St Helens	0.0%	0.2%	0.2%
	WC MWDA	0.0%		
FLEXIBLE PLASTIC	WC Sefton	0.2%		
	WC St Helens	1.0%	0.5%	-0.5%
	WC MWDA	0.7%		
PLASTIC BOTTLES	WC Sefton	0.0%		
	WC St Helens	0.0%	0.0%	0.0%
	WC MWDA	0.0%		
RIGID PLASTICS	WC Sefton	0.0%		
	WC St Helens	0.0%	0.1%	0.1%
	WC MWDA	0.0%		
TEXTILES	WC Sefton	0.0%		
	WC St Helens	0.0%	0.0%	0.0%
	WC MWDA	0.0%		
SANITARY	WC Sefton	0.0%		
	WC St Helens	0.0%	0.1%	0.1%
	WC MWDA	0.0%		
MISCELLANEOUS COMBUSTIBLES	WC Sefton	0.0%		
	WC St Helens	0.0%	1.1%	1.1%
	WC MWDA	0.0%		
ORGANIC	WC Sefton	3.6%		
	WC St Helens	1.9%	0.0%	-1.9%
	WC MWDA	2.5%		
NON-COMBUSTIBLE INERTS	WC Sefton	0.0%		
	WC St Helens	0.0%	0.0%	0.0%
	WC MWDA	0.0%		
GLASS	WC Sefton	0.0%		
	WC St Helens	0.0%	0.0%	0.0%
	WC MWDA	0.0%		
FERROUS METALS	WC Sefton	0.0%		
	WC St Helens	0.0%	0.0%	0.0%
	WC MWDA	0.0%		
NON FERROUS METALS	WC Sefton	0.0%		
	WC St Helens	0.1%	0.1%	0.1%
	WC MWDA	0.0%		
FOOD WASTE	WC Sefton	95.5%		
	WC St Helens	95.9%	96.9%	1.0%
	WC MWDA	95.7%		
GARDEN	WC Sefton	0.0%		
	WC St Helens	1.0%	0.0%	-1.0%
	WC MWDA	0.6%		
HAZARDOUS	WC Sefton	0.0%		
	WC St Helens	0.0%	0.1%	0.1%
	WC MWDA	0.0%		
WEEE	WC Sefton	0.0%		
	WC St Helens	0.0%	0.0%	0.0%
	WC MWDA	0.0%		
FINES	WC Sefton	0.0%		
	WC St Helens	0.0%	0.1%	0.1%
	WC MWDA	0.0%		

Appendix 3 – National Comparison Data

MATERIAL CATEGORY	RESIDUAL		RECYCLING	
	NATIONAL AVERAGE 2017	2021 COMPOSITION	NATIONAL AVERAGE 2017	2021 COMPOSITION
AVOIDABLE FOOD WASTE	23.5%	26.6%	3.8%	6.3%
UNAVOIDABLE FOOD WASTE	8.7%	5.0%	4.8%	0.7%
CONSUMABLE LIQUIDS, FATS & OILS	1.2%	1.9%	0.0%	1.2%
GARDEN WASTE	3.3%	2.3%	36.2%	21.4%
PET EXCREMENT AND BEDDING	4.6%	4.1%	0.0%	0.2%
OTHER ORGANIC	0.0%	0.4%	0.0%	0.1%
PACKAGING PAPER	0.3%	0.4%	1.5%	0.8%
NEWS, MAGS, BROCHURES, CATALOGUES & DIRECTORIES	2.4%	0.6%	11.0%	5.5%
OTHER RECYCLABLE PAPER	1.2%	0.6%	5.8%	1.1%
NON-RECYCLABLE PAPER	5.4%	5.4%	0.5%	2.1%
THIN CARD	2.1%	2.1%	6.8%	6.4%
THICK AND CORRUGATED CARD	0.8%	1.7%	2.5%	8.7%
CARTONS (INCLUDING TETRAPAK)	0.3%	0.2%	0.9%	0.3%
OTHER CARD	0.7%	1.0%	2.2%	1.0%
PACKAGING GLASS	2.7%	3.2%	14.1%	16.3%
NON-PACKAGING GLASS	0.4%	0.4%	0.4%	0.4%
FERROUS DRINK CANS	0.1%	0.0%	0.2%	0.0%
FERROUS FOOD CANS	0.7%	0.7%	2.0%	1.6%
FERROUS AEROSOLS	0.1%	0.2%	0.0%	0.1%
OTHER FERROUS PACKAGING	0.1%	0.1%	0.0%	0.0%
OTHER FERROUS NON-PACKAGING	0.9%	1.0%	0.0%	0.4%
NON-FERROUS DRINK CANS	0.3%	0.6%	0.7%	1.5%
NON-FERROUS FOOD CANS	0.1%	0.0%	0.1%	0.1%
NON-FERROUS AEROSOLS	0.1%	0.1%	0.0%	0.1%
ALUMINIUM FOIL	0.6%	0.6%	0.0%	0.2%
OTHER NON-FERROUS	0.1%	0.2%	0.0%	0.1%
PET BOTTLES	0.8%	1.4%	1.8%	3.8%
HDPE BOTTLES	0.5%	0.3%	0.9%	1.3%
OTHER PLASTIC BOTTLES	0.2%	0.0%	0.9%	0.0%
POTS, TUBS & TRAYS	2.4%	2.2%	0.8%	1.5%
OTHER DENSE PLASTIC PACKAGING	0.8%	0.3%	0.3%	0.2%
OTHER DENSE PLASTIC NON-PACKAGING	2.1%	2.1%	0.7%	2.3%
POLYSTYRENE	0.3%	0.3%	0.1%	0.1%
CARRIER BAGS	0.9%	1.9%	0.1%	0.3%
OTHER PACKAGING PLASTIC FILM	3.6%	3.2%	0.1%	1.1%
NON-PACKAGING PLASTIC FILM	2.2%	0.3%	0.1%	0.1%
CLOTHING	2.0%	3.1%	0.2%	0.7%
SHOES, BAGS & BELTS	1.1%	0.9%	0.0%	0.1%
CARPET & UNDERLAY	0.7%	0.9%	0.0%	0.3%
OTHER NON-CLOTHING TEXTILES	1.5%	1.4%	0.0%	0.3%
LARGE WEEE	0.3%	0.0%	0.1%	0.0%
SMALL WEEE	0.7%	0.6%	0.0%	0.3%
HOUSEHOLD BATTERIES	0.1%	0.0%	0.0%	0.0%
PAINTS AND VARNISHES	0.2%	0.0%	0.0%	0.0%
OTHER HOUSEHOLD HAZARDOUS WASTE	0.2%	0.5%	0.0%	0.1%
TREATED WOOD	0.9%	0.0%	0.0%	0.0%
NON-TREATED WOOD	0.4%	0.0%	0.0%	0.0%
AHPS	7.8%	9.2%	0.1%	0.3%
OTHER SANITARY	0.3%	0.6%	0.0%	0.1%
FURNITURE	0.3%	0.1%	0.1%	0.0%
MATTRESSES	0.0%	0.0%	0.0%	0.0%
OTHER MISC. COMBUSTIBLE	2.6%	4.3%	0.0%	1.0%
SOIL	0.8%	2.5%	0.0%	8.7%
RUBBLE	1.5%	2.6%	0.0%	0.6%
PLASTERBOARD	0.2%	0.2%	0.0%	0.0%
OTHER MISC. NON-COMBUSTIBLE	2.4%	1.3%	0.0%	0.0%
FINES	1.2%	0.5%	0.0%	0.1%
OTHER WASTES	0.3%	0.0%	0.1%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%