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Merseyside and Halton Household Waste Recycling Centre (HWRC) General Waste 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

In the compositional analysis data tables, we have presented figures for the average percentage of waste that falls into each of the compositional categories, for all HWRCs surveyed. To get an indication of the reliability of these figures (given that they are based on analysing just a sample of all the waste that arrives at each HWRC) we use a standard statistical technique to generate a 'confidence interval,' which is a way of representing the possible range of error resulting from using a sample rather than analysing it all.

To do this we have applied validated error tests, which have been standardized for the sampling and analysis technique we use at M·E·L waste insights, based on controlled testing of both sampling error (caused by taking a sample of the waste and not all of it), and also what is termed instrument (observational) error, which reflects the accuracy of the hand sorting technique used by our analysts. These can be combined statistically to produce an estimate of the accuracy of compositional statistics for this phase.

Based on this standard method, the percentages quoted from the standard M·E·L sampling protocol for compositional analysis can be taken as accurate for each material category to within error bands of +/-10% at the 95% confidence level (note that these accuracies are based on assuming a 'normal statistical distribution' in the way waste arrives from people bringing the materials to the HWRCs). This means that, for any of the main compositional category headings, we are 95% confident that the figure we quote based on analysing the sample, is within +/- 10% of the true figure you would get if you analysed all the waste that arrives during a typical week. The confidence intervals are quoted as average levels of accuracy for each HWRC; these may vary to an extent from HWRC to HWRC depending on whether more, or less waste than average is analysed.

Introduction

Background

Merseyside Recycling and Waste Authority (MRWA) is a statutory waste disposal authority¹ 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 comingled recycling collected at kerbside by five of the six District Councils, via its two Materials Recovery Facilities.

MRWA provides 14 Household Waste Recycling Centres (HWRCs) in Merseyside and two HWRCs in Halton as part its contract with Veolia UK. The centres allow for householders to recycle more than 40 different materials. Members of the public brought 140,463 tonnes of household waste to Merseyside and Halton's HWRCs in 2020/21, which had a recycling performance of 70%².

The performance of the HWRCs makes a strong contribution towards the City Region's overall recycling rate, which (including waste collected at the kerbside) is 35.1% for the year 2020/21. This is down from the previous year's 37.2%. Despite this reduction in the recycling rate, the amount of household waste collected in the region has increased at both HWRCs and from the kerbside from 742,355 tonnes in 2019/20 to 784,534 tonnes in 2020/21. District Councils delivered 398,379 tonnes of nonrecyclable waste directly to the Authority through their kerbside residual waste collection services.

On behalf of MRWA a compositional assessment of the general waste collected at six specified HWRCs was commissioned. In addition, a compositional analysis detailing the breakdown of all kerbside collected waste and recycling was performed for the Merseyside and Halton Waste Partnership. This covered the six associated District council areas. Each of the participating Districts councils also had a compositional assessment of the residual waste and recycling collected from non-kerbside households using shared or communal bins (flats).

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

² <https://www.merseysidewda.gov.uk/wpcontent/uploads/2021/11/MRWAANNUALREPORT2021.pdf>

This report is for six HWRCs that were selected for the compositional analysis of general waste containers. Findings for kerbside and flats waste and recycling generated throughout households within the Merseyside and Halton Waste Partnership area will be contained in separate reports.

The sampling exercise took place across two seasonal periods. Phase one (Spring) took place during May and June 2021 with Phase two (Autumn) carried out in November and December 2021. Figures in this report combine results from both seasonal phases of fieldwork and therefore represent annual estimates for the selected HWRCs.

Objectives

Separate consideration will be given to material contained within bags (and thus deemed to be general domestic waste); loose unbagged waste and finally both loose and bagged waste combined. Specific objectives are to

- Understand the general composition of general waste (loose, bagged and combined) being disposed of at the six selected HWRCs throughout Merseyside and Halton.
- Evaluate the proportion of specific materials collected in the general waste containers (loose, bagged and combined) that could potentially be collected separately for recycling either at the kerbside or via alternative onsite containers. These are containers that accept materials for diversion other than those that are compatible with kerbside recycling collections e.g., wood, scrap metal, rubble etc.
- The proportion of general waste deemed to consist of regular household bagged waste.
- Evaluate the total recyclable content of the general waste (loose, bagged and combined).
- Determine the proportion of HWRC general waste that was formed from packaging (loose, bagged and combined).
- Determine the proportion HWRC general waste that was formed from potentially reusable material (loose, bagged and combined).

Executive Summary

Key findings – Average all HWRCs

Composition

- Of the delivered HWRC general waste it was seen that 37% was deemed to be bagged household waste with 63% being loose materials.
- Main waste components within the bagged household waste were food & drink waste (27%), paper & card (16%) and waste plastics (15%).
- Main waste components within the loose household waste were miscellaneous combustibles (24%), inert rubble (15%) and textiles (13%).
- Where all loose and bagged material is combined it is seen that 20% of general HWRC household waste is formed of miscellaneous combustibles with 13% textiles, 11% plastics, 11% furniture and 11% inert rubble.

Recyclability

- Where bagged household waste is considered nonrecyclable waste the overall recyclability of waste as delivered is deemed to be 39.9%.
- The loose items being disposed of in the general HWRC waste had an overall recyclability of 63.4%. Of the recyclables present, 87% were compatible with alternative onsite collection points with 13% suitable for kerbside collected DMR (dry mixed recyclables) and organic recycling.
- Furniture formed around 28% of the recyclable material in the loose waste with rubble making up 23.5% and textiles 16%.
- The bagged household waste had an overall recyclability of 39.3%. Of the recyclables present, 46% were compatible with alternative onsite collection points with 54% suitable for kerbside DMR (dry mixed recyclables) and organic recycling.
- Paper and card formed around 23% of the recyclables in the bagged household waste with rubble and textiles each making up 15%.
- When combining all bagged household waste and loose material, the HWRC general waste had an overall recyclability of 56.3%. Of the recyclables present, 75% were compatible with alternative onsite collection points with 25% suitable for kerbside DMR and organic recycling.
- Furniture formed around 20% of the overall recyclables with rubble contributing 20% and textiles 17%.

Packaging and reuse

- Around 14.4% of all materials in the HWRC general waste were due to packaging. Of the packaging being disposed of, 53% was plastic with 30% paper and card.
- 50.4% of the packaging was deemed to be recyclable. This accounted for 7.3% of total waste.
- 2.5% of HWRC waste was due to single use drinks containers. 43% of these were plastic with 39% glass and 18% metal.

- 32.5% of HWRC general waste had some reuse potential. Three quarters of this was due to textiles and furniture.

Recyclability

- Around 73% of the recyclable material disposed of in the HWRC general waste was within the loose material with 27% contained within bagged household waste.
- It is estimated from tonnage data that 16,817 t.p.a of loose recyclable materials are placed into the general HWRC containers with 6,129 t.p.a. contained within bagged household waste .
- Around 63% of the recyclable materials within the HWRC general waste are due to rubble, furniture, textiles, paper & card and garden waste that are disposed of loose. Diverting these materials would remove a potential 14,335 t.p.a. from the general waste containers.
- Around 14% of the recyclable materials within the HWRC general waste are due to paper & card, textiles and rubble that are disposed of within bagged household waste. Diverting these materials would remove a potential 3,260 t.p.a. from the general waste containers.
- WEEE products and materials have the potential to be recycled and or reused – no data offered here

Comparisons with national data

- The main material in the HWRC general waste that is most noticeably above national averages is rubble based waste. This waste is present at 4.2% for 2017 national data and 15.9% for this survey.
- Other materials that appear slightly above national estimates are cardboard, food, and plastic film.
- The main material in the HWRC general waste that is most noticeably below national averages is textile based waste. This waste is present at 24.6% for 2017 national data and 14.69% for this survey.
- Other materials that appear slightly below national estimates are dense plastics, garden waste and paper.

Sampling

A total of 16 HWRCs are operational across Merseyside & Halton. Of these a total of six were selected for the compositional assessment of their general waste. Those selected were

Huyton Household Waste Recycling Centre

Old Swan Household Waste Recycling Centre

South Sefton Household Waste Recycling Centre

Ravenhead Household Waste Recycling Centre

Bidston Household Waste Recycling Centre

Picow Farm Household Waste Recycling Centre

This study looks at the composition of general waste materials disposed of at these HWRCs. Each HWRC was surveyed during May 2021 and November 2021. The objective was to obtain a bulk sample of general waste from each HWRC for compositional analysis. The general waste was delivered directly to the sorting site for assessment. Of the two samples taken for each HWRC, one was selected from weekday collected general waste and the other from weekend collected general waste. The two samples were then combined to provide average figures for each HWRC and overall.

Analysis

General waste from each of the six HWRCs was transported to the sorting site for analysis. Ideally general waste containers on any particular HWRC will be used for the disposal of materials that are:

- Not suitable or practical for disposal via kerbside residual waste collections
- Are not compatible with kerbside recycling or bring bank collections
- Cannot be placed into alternative collection / recycling points within the HWRC and
- Have no reuse potential.

The following materials are generally considered to be collected at the HWRCs located throughout Merseyside & Halton.

Asbestos	Mattresses	Wood (untreated timber)
Batteries (car)	Mobile phones	Wood (chipboard, composite, MDF)
Batteries (household)	Oil (engine)	Large plastics
Books, CDs & DVDs	Oil (cooking)	Printer cartridges
Reusable bicycles	Oil (filters)	Nonrecyclable household waste
Bric-a-brac	Paint	
Cans	Paper	
Cardboard	Plasterboard (gypsum)	
Carpets and underlay	Rubble	
Coffee cups	Scrap metal	
Electrical items	Shoes	
Fridges & freezers	Soil	
Fluorescent tubes	Televisions	
Light bulbs	Tetrapak cartons	
Garden/Green	Textiles	
Glass (bottles & jars)	Tyres	
Plastic bottles	White Goods	

Loose materials were separated from the delivered HWRC general waste and compositionally assessed. For each HWRC, the level of each material can be expressed in terms of % concentration by weight. Initially the composition of the HWRC general waste will contain a proportion which is deemed to be regular bagged household waste. This type of waste is more suited to disposal in via kerbside residual waste collections but is often taken to HWRCs for disposal along with other items. Once the loose materials are sorted, the contents of the household waste bags are sorted separately for comparison. Finally, the compositions of the loose general waste and bagged household waste are combined to give a breakdown of all the materials that are being disposed of in the general waste container at the HWRC.

Waste materials are expressed in 'Primary Categories' such as paper and card, glass and textiles and then subdivided into more detailed materials such as nappies, wallpaper, shoes or polystyrene. The sort categories are shown in the appendix section with all results submitted in a separate Excel document. This report shows some key findings in relation to the primary categories of waste for each HWRC and overall.

Statistical Accuracy

In the compositional analysis data tables, we have presented figures for the average percentage of HWRC general waste that falls into each of the compositional categories, for all six HWRCs in the survey. To get an indication of the reliability of these figures (given that they are based on analysing just a sample of all the waste that arrives at the HWRC) we use a standard statistical technique to generate a 'confidence interval,' which is a way of representing the possible range of error resulting from using a sample rather than analysing it all.

To do this we have applied validated error tests, which have been standardized for the sampling and analysis technique we use at M·E·L waste insights, based on controlled testing of both sampling error (caused by taking a sample of the waste and not all of it), and also what is termed instrument (observational) error, which reflects the accuracy of the hand sorting technique used by our analysts. These can be combined statistically to produce an estimate of the accuracy of compositional statistics for this phase. Based on this standard method, the percentages quoted from the standard M·E·L sampling protocol for compositional analysis can be taken as accurate for each material category to within error bands of +/-10% at the 95% confidence level (note that these accuracies are based on assuming a 'normal statistical distribution' in the way waste arrives from people bringing the materials to the HWRCs). This means that, for any of the main compositional category headings, we are 95% confident that the figure we quote based on analysing the sample, is within +/- 10% of the true figure you would get if you analysed all the waste that arrives during a typical week. The confidence intervals are quoted as average levels of accuracy for each HWRC; these may vary to an extent from site to site depending on whether more, or less waste than average is analysed.

Compositional of delivered HWRC waste

Waste Composition % by weight

Table 1 and Figure 1 show the percentage composition of materials delivered from the general waste containers at the six selected HWRCs. Figures for each HWRC represent an average of weekend and weekday delivered material and include waste from both the spring and autumn surveys. This will give the best estimates for overall waste composition. Figures show primary categories for the collected waste from each HWRC and averaged overall. Bagged waste that was deemed to be for the disposal of general household waste were removed from the overall pile. This waste is of a type that residents should be placing in their kerbside bins rather than transporting to the HWRC for general disposal. The total amount of this bagged household waste was weighed, and the contents sorted separately (see page 17).

Finally, all the waste was combined to show the overall composition of waste being disposed of. This is the composition of all waste sorted so includes the contents of the bagged household waste mixed with the materials that have been disposed of loose. Differences in the composition of waste at each HWRC and averaged could therefore be shown.

Much of the material placed into the HWRC general waste containers will be of a type that could have been more effectively recycled at the kerbside or placed into alternative collection points within the HWRC itself. General waste containers are best placed where visitors have to travel past alternative collection containers where they can dispose of specifically separated materials such as textiles, electricals, wood, metal etc. Hopefully by this point they will be left only with general waste material that could not have been collected elsewhere.

Results from the survey showed that, on average, bagged household waste was the major constituent of delivered HWRC general waste for four of the six HWRCs surveyed. Overall bagged household waste made up 37.0% towards the total amount of HWRC collected. This level ranged between 7.2% for the Picow Farm HWRC and 68.0% for Ravenhead HWRC.

Table 1 Average composition of HWRC general waste as delivered % by weight

PRIMARY WASTE CATEGORIES %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
BAGGED HOUSEHOLD WASTE	57.85%	27.44%	7.23%	9.44%	52.19%	67.95%	37.02%
PAPER	0.00%	5.74%	0.53%	2.51%	0.00%	0.00%	1.46%
CARD & CARDBOARD	0.00%	6.61%	1.04%	4.25%	3.56%	5.91%	3.56%
PLASTIC FILM	0.39%	2.10%	1.91%	2.23%	0.00%	0.00%	1.11%
DENSE PLASTICS	1.34%	5.60%	6.30%	10.38%	4.17%	1.21%	4.83%
TEXTILES	5.66%	5.65%	10.65%	14.82%	7.55%	5.83%	8.36%
FURNITURE	5.53%	12.70%	31.44%	10.36%	6.02%	0.00%	11.01%
MISCELLANEOUS COMBUSTIBLES	15.31%	7.49%	28.03%	17.76%	13.49%	9.21%	15.21%
NONCOMBUSTIBLE INERTS	7.23%	3.26%	9.26%	20.51%	8.38%	7.65%	9.38%
GLASS	0.00%	1.05%	0.11%	0.00%	0.00%	2.24%	0.57%
FERROUS METALS	0.36%	0.71%	0.62%	0.48%	1.71%	0.00%	0.65%
NONFERROUS METALS	0.48%	2.52%	0.04%	0.00%	0.00%	0.00%	0.51%
ORGANIC NONCATERING	5.42%	12.14%	1.94%	3.44%	2.28%	0.00%	4.20%
ORGANIC CATERING	0.00%	5.62%	0.09%	3.31%	0.00%	0.00%	1.50%
HHW*	0.00%	0.18%	0.37%	0.00%	0.22%	0.00%	0.13%
WEEE*	0.44%	0.96%	0.41%	0.52%	0.43%	0.00%	0.46%
COVID WASTE	0.00%	0.23%	0.00%	0.00%	0.00%	0.00%	0.04%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

*HHW – Hazardous household waste; WEEE waste electrical and electronic equipment

Figure 1 Average composition of HWRC general waste as delivered % by weight

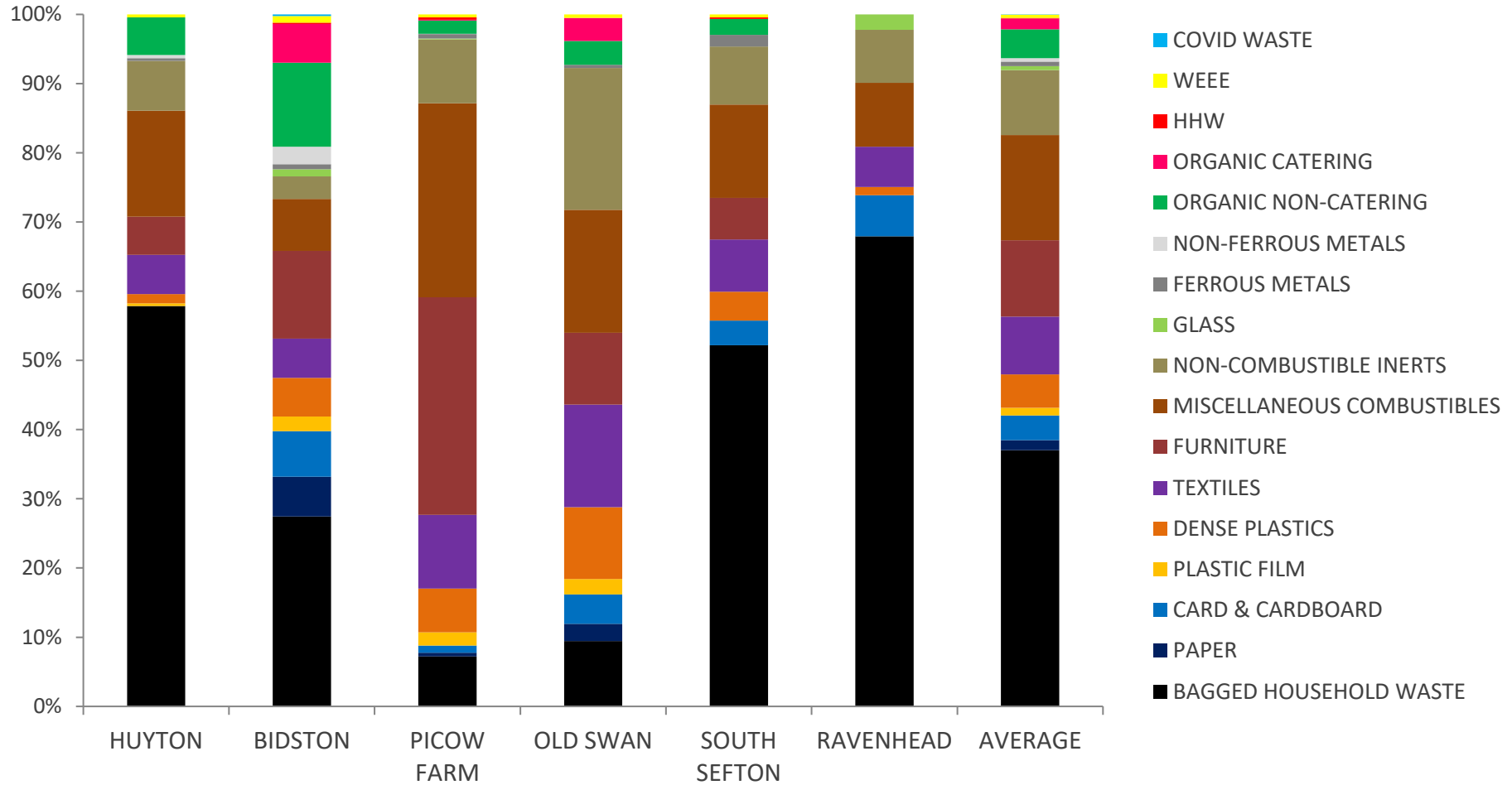


Table 2 Average composition of HWRC general waste as delivered % by weight

PRIMARY WASTE CATEGORIES %	% OF ALL WASTE	% OF LOOSE WASTE
BAGGED HOUSEHOLD WASTE	37.02%	
PAPER	1.46%	2.33%
CARD & CARDBOARD	3.56%	5.65%
PLASTIC FILM	1.11%	1.76%
DENSE PLASTICS	4.83%	7.67%
TEXTILES	8.36%	13.28%
FURNITURE	11.01%	17.48%
MISCELLANEOUS COMBUSTIBLES	15.21%	24.16%
NONCOMBUSTIBLE INERTS	9.38%	14.89%
GLASS	0.57%	0.90%
FERROUS METALS	0.65%	1.03%
NONFERROUS METALS	0.51%	0.80%
ORGANIC NONCATERING	4.20%	6.67%
ORGANIC CATERING	1.50%	2.39%
HHW	0.13%	0.20%
WEEE	0.46%	0.73%
COVID WASTE	0.04%	0.06%
TOTAL	62.98%	100.00%

General miscellaneous combustibles formed the bulk (24.2%) of the loose waste equating to 15.2% of the total. Much of this was due to bulky items such as mattresses (5.4% of waste), carpet and other flooring (2.9% of waste) and wood (2.1% of waste). A more detailed breakdown of the miscellaneous combustible materials can be seen in Table (4).

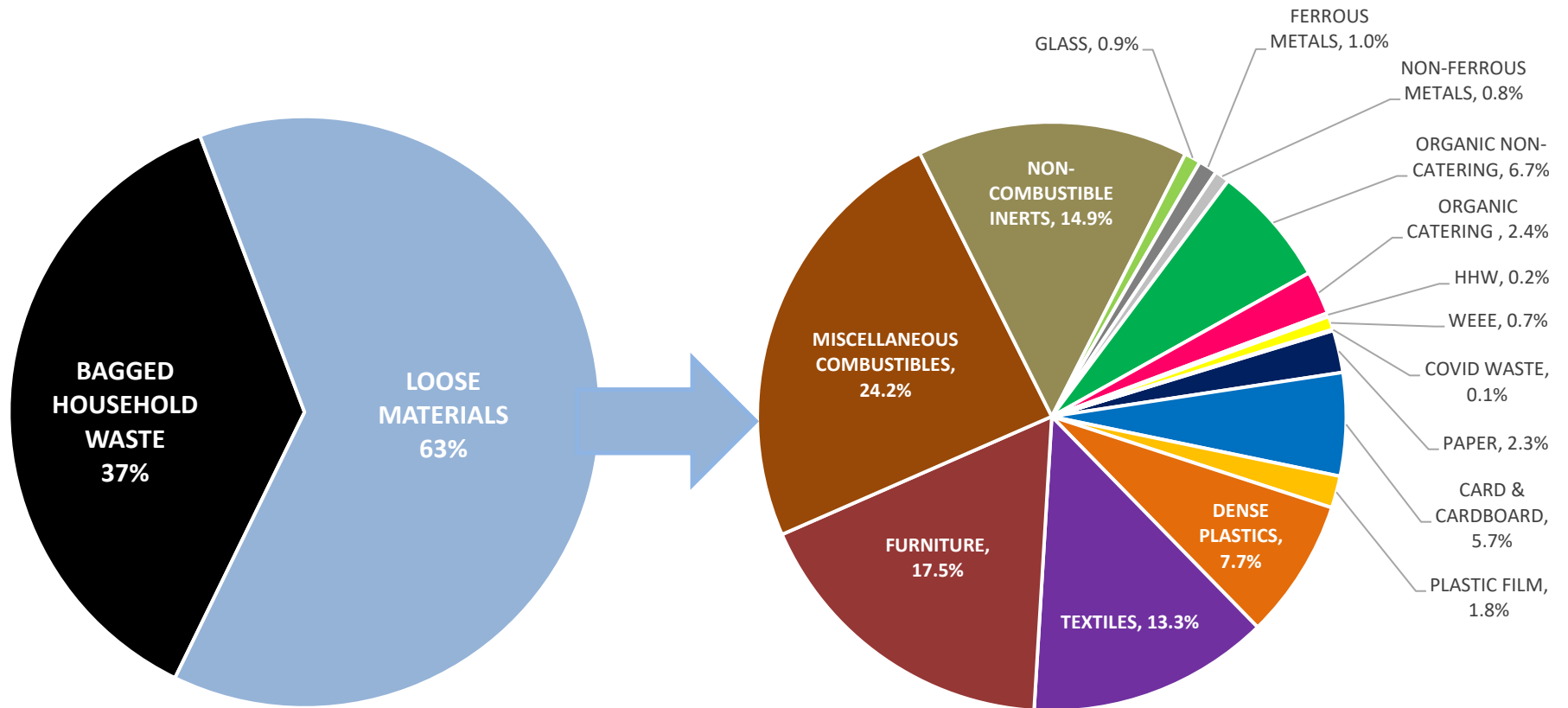
Furniture contributed around 11.0% towards the total amount of HWRC general waste delivered from all HWRCs; this forming 17.5% of the loose waste. 60% of furniture was wood based with 36% upholstered.

Inert material made up 9.4% of the delivered waste or 14.9% of the loose items. Over 80% of this waste was due to rubble and plasterboard.

Textiles made up 8.4% of the delivered waste or 13.3% of the loose items. Around 69% of this waste was due to clothing and shoes.

WEEE made up just 0.5% of the delivered waste or 0.7% of the loose items.

Figure 2 – Loose general waste



Compositional of bagged household waste

Waste Composition % by weight

Compositionally bagged household waste is seen to be very different to that of the rest of the general waste. Obviously only objects of a certain size can be disposed of in these bags. Bagged household waste made up 37.0% of the total amount of HWRC collected. Levels ranged between 7.2% for the Picow Farm HWRC and 68.0% for Ravenhead HWRC.

Table 3 Average composition of HWRC bagged household waste as delivered % by weight

PRIMARY WASTE CATEGORIES %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
PAPER	3.19%	30.88%	10.33%	1.78%	5.10%	7.40%	9.78%
CARD & CARDBOARD	10.53%	5.68%	6.08%	5.65%	8.57%	2.52%	6.50%
PLASTIC FILM	7.47%	11.47%	6.08%	7.51%	3.25%	11.65%	7.91%
DENSE PLASTICS	6.01%	7.58%	4.92%	9.36%	9.17%	6.95%	7.33%
TEXTILES	21.45%	4.12%	1.43%	4.46%	6.88%	11.47%	8.30%
FURNITURE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MISCELLANEOUS COMBUSTIBLES	7.01%	10.02%	17.90%	8.83%	13.92%	16.05%	12.29%
NONCOMBUSTIBLE INERTS	5.46%	3.56%	22.09%	0.00%	2.55%	1.72%	5.90%
GLASS	12.15%	1.99%	8.90%	1.91%	2.32%	4.36%	5.27%
FERROUS METALS	2.63%	0.98%	1.25%	0.02%	1.35%	1.03%	1.21%
NONFERROUS METALS	1.66%	0.75%	0.70%	2.19%	0.74%	1.51%	1.26%
ORGANIC NONCATERING	4.24%	4.07%	0.79%	0.87%	14.86%	12.68%	6.25%
ORGANIC CATERING	17.04%	17.58%	19.54%	57.15%	29.56%	21.36%	27.04%
HHW	0.58%	0.12%	0.00%	0.00%	1.23%	0.60%	0.42%
WEEE	0.41%	0.36%	0.00%	0.27%	0.44%	0.35%	0.31%
COVID WASTE	0.18%	0.84%	0.00%	0.00%	0.05%	0.35%	0.24%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Figure 3 Average composition of bagged household waste % by weight

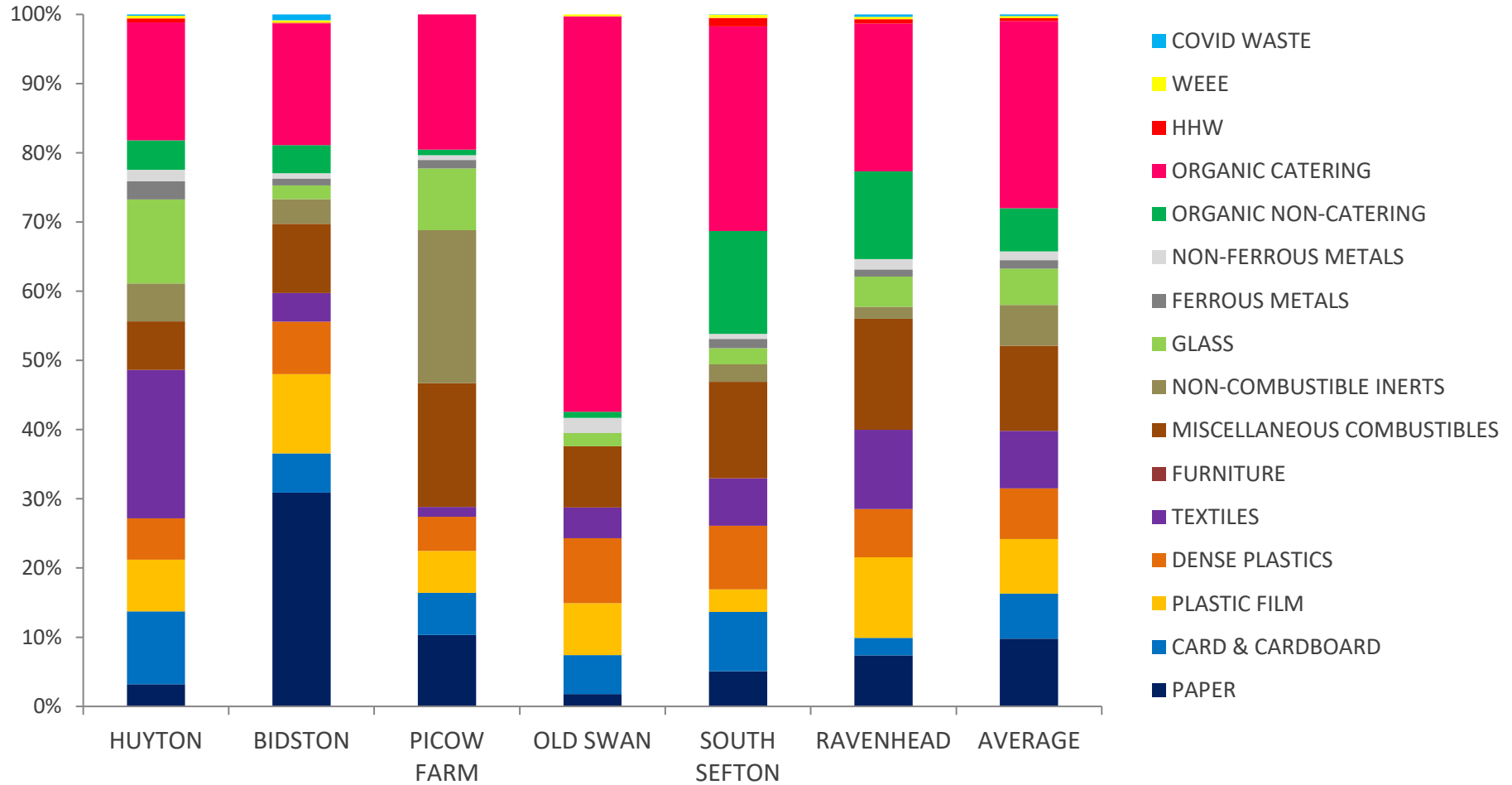


Table 4 Average composition of bagged household waste % by weight

PRIMARY WASTE CATEGORIES %	% OF ALL WASTE	% OF BAGGED HOUSEHOLD WASTE
PAPER	3.62%	9.78%
CARD & CARDBOARD	2.41%	6.50%
PLASTIC FILM	2.93%	7.91%
DENSE PLASTICS	2.71%	7.33%
TEXTILES	3.07%	8.30%
FURNITURE	0.00%	0.00%
MISCELLANEOUS COMBUSTIBLES	4.55%	12.29%
NONCOMBUSTIBLE INERTS	2.18%	5.90%
GLASS	1.95%	5.27%
FERROUS METALS	0.45%	1.21%
NONFERROUS METALS	0.47%	1.26%
ORGANIC NONCATERING	2.31%	6.25%
ORGANIC CATERING	10.01%	27.04%
HHW	0.16%	0.42%
WEEE	0.11%	0.31%
COVID WASTE	0.09%	0.24%
TOTAL	37.02%	100.00%

Food waste was the main constituent of the bagged household waste forming 27% of the contents. Therefore, it can be said that around 10% of all HWRC general waste is due to food and drink waste within bagged household waste. At the Old Swan HWRC, 57% of the bagged household waste contents was due to food and drink. At the South Sefton HWRC over 15% of all general waste was due to food and drink waste within bagged household waste.

Paper and card formed 16.3% of bag contents. Therefore, it can be said that around 6.0% of all waste in the general containers is due to paper and card within bagged household waste. At the Bidston HWRC, 37% of bagged household waste contents was due to paper and card where 10% of all HWRC general waste was due to paper and card within bagged household waste.

Plastics formed 15.2% of bagged household waste. Therefore, it can be said that around 5.6% of all waste in the HWRC general containers is due to plastics within bagged household waste. At the Bidston HWRC,

19% of bagged household waste contents was due to plastics. At Ravenhead, 12.6% of all general waste was due to plastics within the bagged household waste.

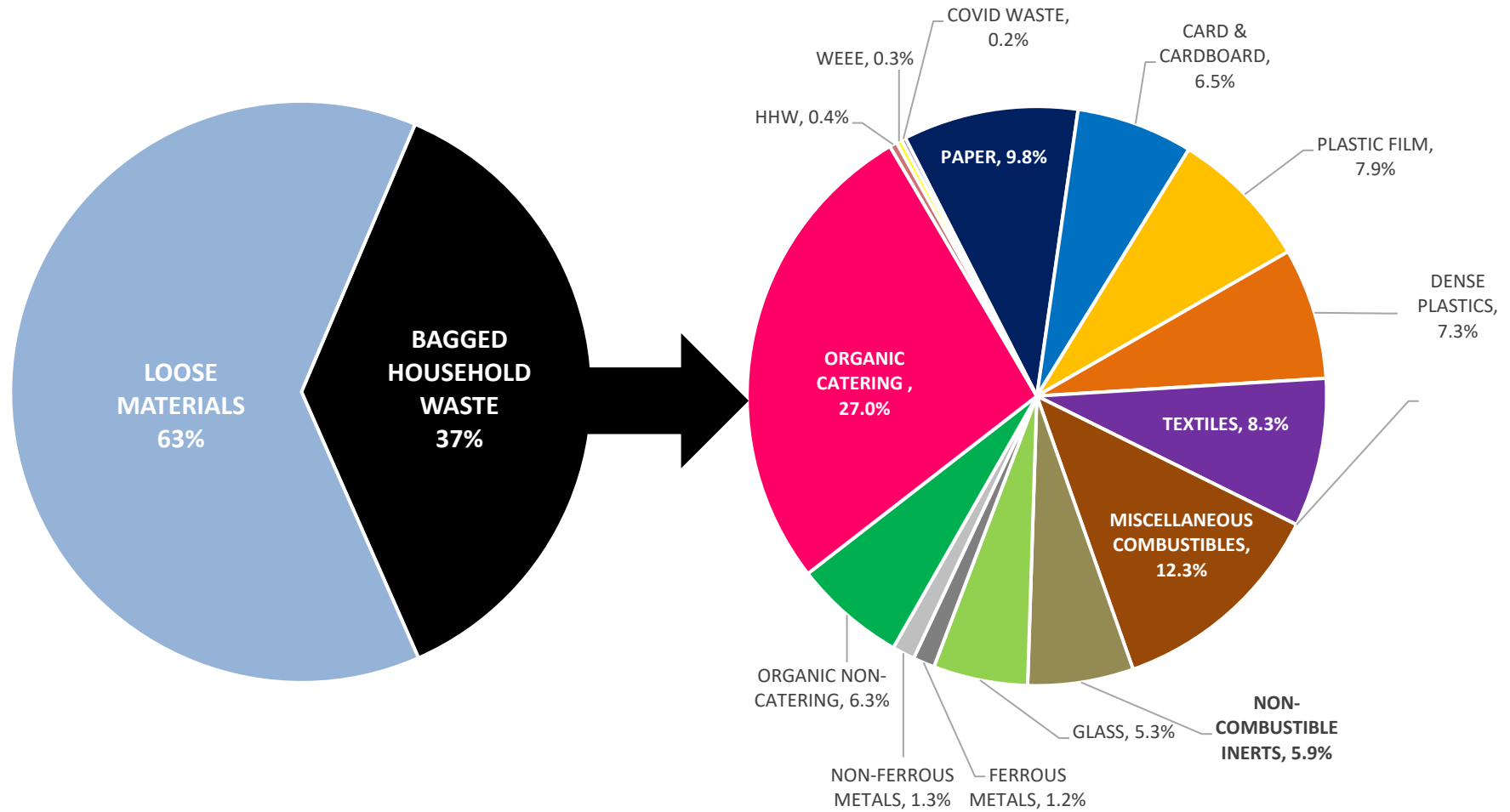
Miscellaneous combustibles formed 12.3% of bagged household waste contents. Around 58% of miscellaneous combustible waste was due to nappies and other sanitary waste. Therefore, it can be said that around 2.6% of all waste in the general containers is due to nappies and AHP (absorbent hygiene products) waste within the bagged household waste. At the Picow Farm HWRC, 17% of household waste bag contents was due to nappies and AHP waste. At the Ravenhead HWRC 6.5% of all general waste was due to nappies and AHP waste within the bagged household waste.

Waste textiles formed 8.3% of bag contents. Around 54% of textile waste was due to clothing and shoes. Therefore, it can be said that around 1.7% of all waste in the general containers is due to clothing and shoes waste within the bagged household waste. At the Huyton HWRC, 21.5% of household waste bag contents was due to textiles and shoes where 8% of all general waste was due to textiles within the bagged household waste.

Non-catering organics formed 6.3% of bag contents. This was essentially garden waste with smaller amounts of pet bedding. At the South Sefton HWRC, almost 15% of household waste bag contents was due to garden waste (both vegetation and soil/turf). Therefore, at this HWRC 7.8% of all general waste was due to garden waste within the bagged household waste.

Concentrations of WEEE present within household waste bags was <0.45% for all HWRCs averaging just 0.31% overall.

Figure 4 – Bagged household waste within general waste containers



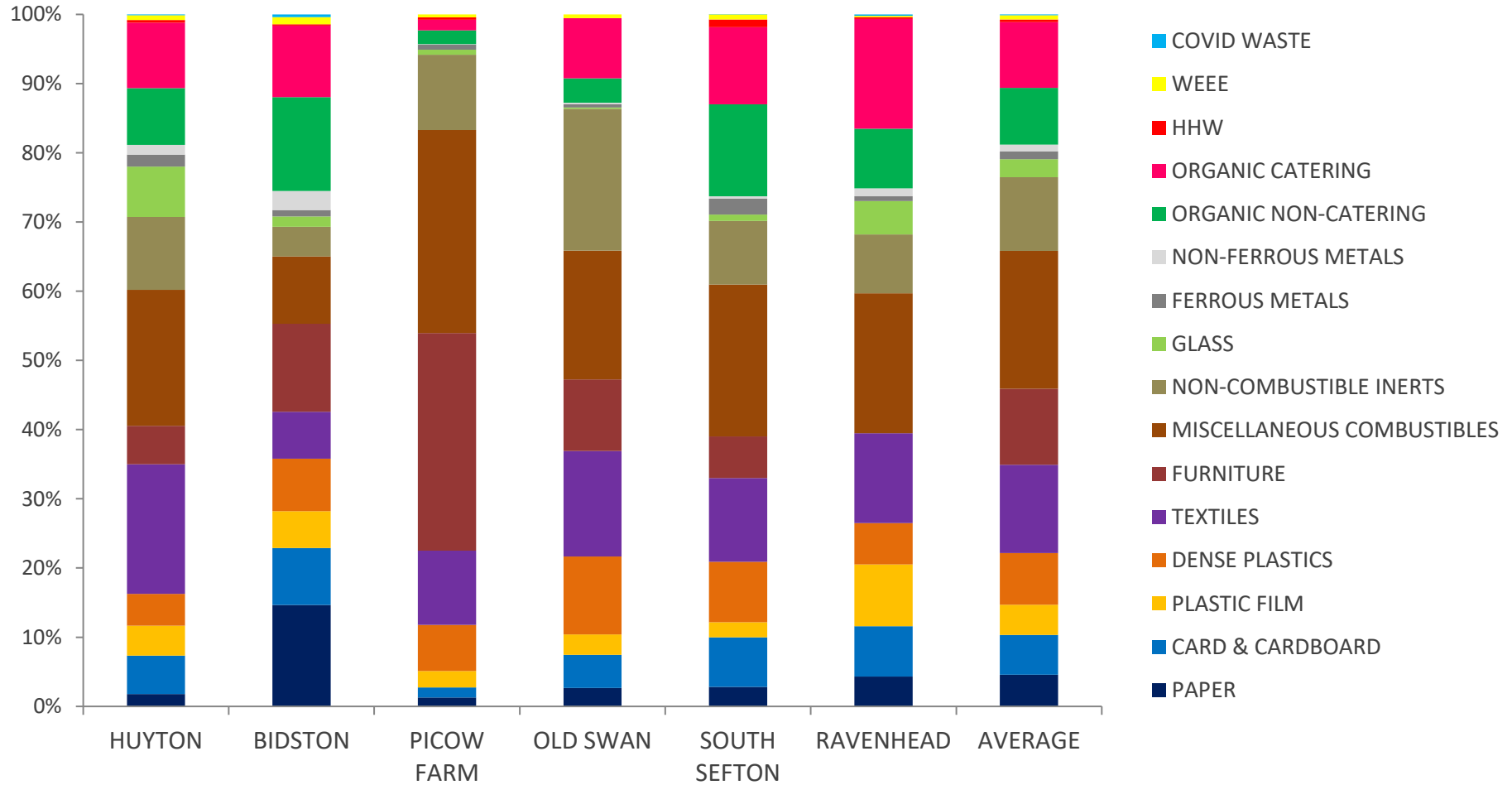
Compositional of combined materials

Bagged household waste made up 37% of the total amount of HWRC general waste with loose items forming the remaining 63%. Combining the contents of the bags with the loose materials gives the best estimates for the overall composition of waste collected in the general collection points across the HWRCs.

Table 5 Average composition of all general waste as delivered % by weight

PRIMARY WASTE CATEGORIES %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
PAPER	1.78%	14.65%	1.28%	2.68%	2.81%	4.33%	4.59%
CARD & CARDBOARD	5.54%	8.23%	1.48%	4.78%	7.19%	7.28%	5.75%
PLASTIC FILM	4.34%	5.34%	2.35%	2.94%	2.17%	8.91%	4.34%
DENSE PLASTICS	4.59%	7.59%	6.66%	11.27%	8.75%	5.98%	7.47%
TEXTILES	18.75%	6.78%	10.76%	15.25%	12.07%	12.97%	12.76%
FURNITURE	5.53%	12.70%	31.44%	10.36%	6.02%	0.00%	11.01%
MISCELLANEOUS COMBUSTIBLES	19.67%	9.73%	29.33%	18.59%	21.95%	20.23%	19.92%
NONCOMBUSTIBLE INERTS	10.51%	4.29%	10.86%	20.51%	9.20%	8.51%	10.65%
GLASS	7.26%	1.51%	0.76%	0.18%	0.93%	4.83%	2.58%
FERROUS METALS	1.74%	0.91%	0.71%	0.48%	2.29%	0.68%	1.14%
NONFERROUS METALS	1.42%	2.75%	0.09%	0.21%	0.35%	1.15%	1.00%
ORGANIC NONCATERING	8.19%	13.56%	1.99%	3.53%	13.26%	8.63%	8.19%
ORGANIC CATERING	9.46%	10.34%	1.51%	8.70%	11.16%	15.83%	9.50%
HHW	0.38%	0.20%	0.37%	0.00%	1.10%	0.30%	0.39%
WEEE	0.70%	1.03%	0.41%	0.54%	0.72%	0.18%	0.60%
COVID WASTE	0.11%	0.40%	0.00%	0.00%	0.01%	0.19%	0.12%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Figure 5 Average composition of all HWRC general waste % by weight



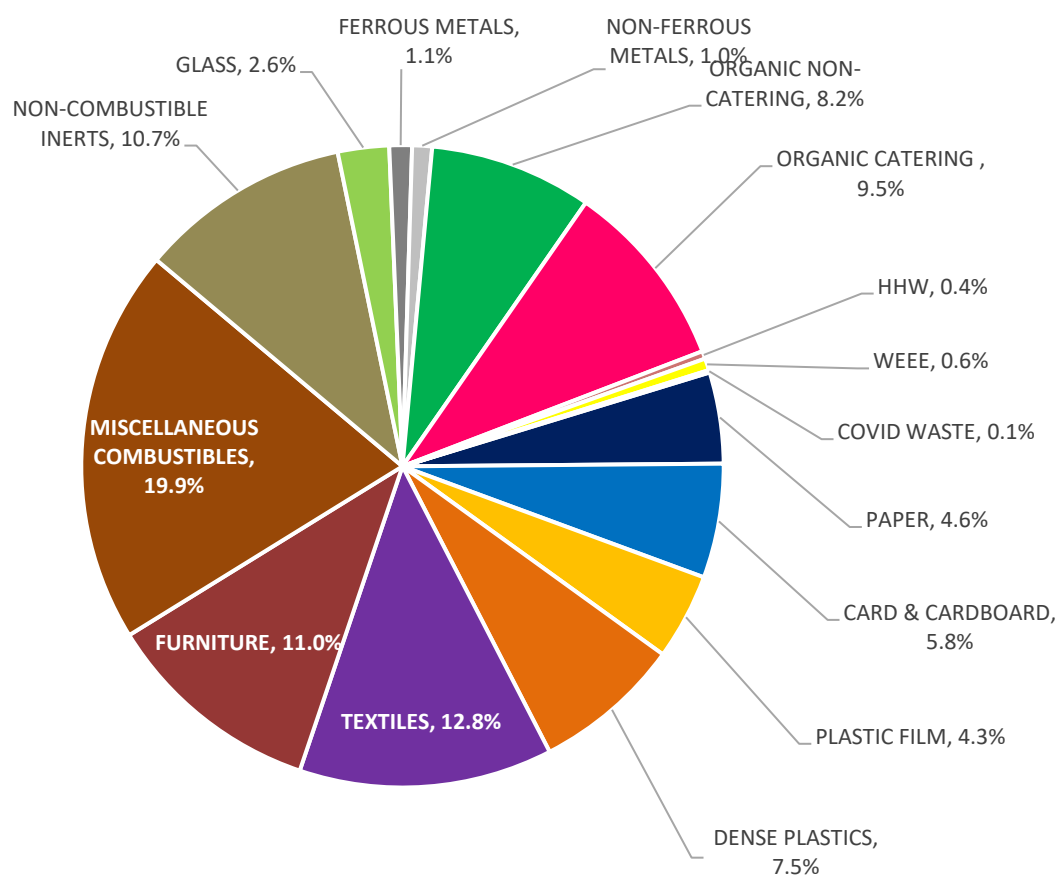
Where the contents of the bagged household waste are combined with the loose materials it is seen that an average of 19.9% of all the materials in the HWRC general waste containers are due to miscellaneous combustibles. Around 27% of the miscellaneous combustibles (5.4% of all waste) was due to mattresses. Obviously, all of these are deemed loose waste. Around a 26% of the miscellaneous combustible content (5.2% of total waste) was formed from mixed bric-a-brac. This appeared at similar concentrations for both loose waste and bagged household waste. Over 20% of miscellaneous combustibles (4.1% of total waste) was due to nappies and AHP waste which were more highly concentrated in bags. Just over 3% of all waste was carpet and other flooring with 2% being wood waste.

Table 6 Average breakdown of miscellaneous combustibles

MISCELLANEOUS COMBUSTIBLES	% OF LOOSE WASTE	% OF BAGGED HOUSEHOLD WASTE	% OF ALL WASTE COMBINED
NAPPIES & AHP WASTE	2.26%	7.07%	4.06%
ALL WOOD WASTE	3.28%	0.13%	2.08%
CARPET	2.41%	0.48%	1.81%
OTHER FLOORING	2.19%	0.00%	1.38%
MATTRESSES	8.50%	0.00%	5.35%
ALL OTHER	5.53%	4.61%	5.24%
TOTAL	24.16%	12.29%	19.92%

- Just under 13% of all the waste in general containers consisted of textiles. Levels ranged between 6.8% for Bidston up to 18.8% for Huyton HWRC.
- Just under 12% of all the waste in general containers consisted of plastics. Levels ranged between 8.9% for Huyton HWRC up to 14.9% for Ravenhead HWRC.
- 11.0% of all waste in general containers was deemed to be furniture. This form of waste was absent from the Ravenhead HWRC sample but formed 31.4% of that from Picow Farm HWRC.
- 10.7% of all waste in general waste containers was deemed to be miscellaneous combustibles (essentially rubble & plasterboard). This form of waste made up just 4.3% of the Bidston HWRC sample but formed 20.5% of that from Old Swan HWRC.
- Around 10.3% of all waste was formed of paper and card. Levels ranged between 2.8% for Picow Farm up to 22.9% for Bidston.
- 9.5% of total waste was due to food and drink waste with a further 8.2% being non-catering (mainly garden) organics. As much as 15.8% of Ravenhead HWRC waste was due to food and drink waste. At South Sefton, 11.2% of all general HWRC waste was due to garden waste.

Figure 6 – All waste present in HWRC general waste containers.



Potential recyclability of HWRC general waste

Ideally general waste containers on any particular HWRC will be used for the disposal of materials that are:

- Not suitable or practical for disposal via residual bin kerbside collections
- Are not compatible with kerbside recycling or bring bank collections
- Cannot be placed into alternative collection / recycling points within the HWRC
- Have no reuse potential.

By knowing what is being collected for kerbside recycling and what items are collectable at individual HWRCs it is possible to predict how much general waste could have been disposed of elsewhere. Tables 7 to 10 show the average recyclability of the contents of the waste as delivered, the separated household waste bags, loose materials as well as that of all waste combined.

Table 7 Potential recyclability of waste as delivered

RECYCLABLE CONTENT %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
KERBSIDE DMR	0.40%	8.39%	1.37%	5.63%	2.96%	9.87%	4.77%
KERBSIDE ORGANIC RECYCLABLE	0.57%	1.76%	0.00%	0.79%	0.22%	0.00%	0.56%
ONSITE COLLECTABLE*	24.46%	35.58%	58.30%	47.41%	34.09%	7.65%	34.58%
TOTAL RECYCLABLE	25.44%	45.72%	59.67%	53.83%	37.28%	17.53%	39.91%

Table 8 Potential recyclability of loose materials

RECYCLABLE CONTENT %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
KERBSIDE DMR	0.96%	11.57%	1.47%	6.22%	6.19%	30.81%	7.57%
KERBSIDE ORGANIC RECYCLABLE	1.35%	2.42%	0.00%	0.87%	0.47%	0.00%	0.88%
ONSITE COLLECTABLE*	58.04%	49.03%	62.85%	52.35%	71.32%	23.88%	54.91%
TOTAL RECYCLABLE	60.35%	63.02%	64.32%	59.44%	77.97%	54.69%	63.37%

Table 9 Potential recyclability of waste in bags

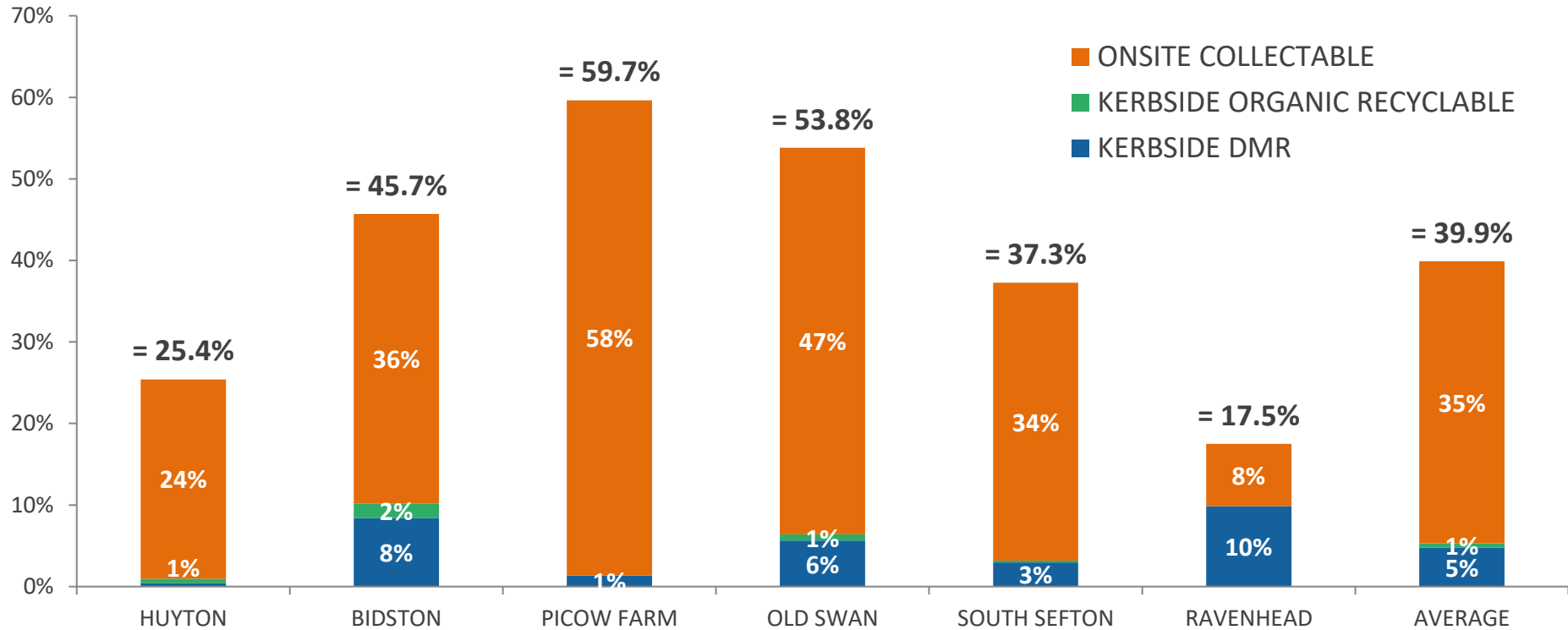
RECYCLABLE CONTENT %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
KERBSIDE DMR	10.49%	20.04%	25.25%	8.95%	14.11%	15.70%	15.76%
KERBSIDE ORGANIC RECYCLABLE	4.24%	2.06%	0.79%	0.36%	2.28%	22.84%	5.43%
ONSITE COLLECTABLE*	32.81%	11.39%	25.25%	1.73%	26.01%	11.42%	18.10%
TOTAL RECYCLABLE	47.54%	33.49%	51.29%	11.04%	42.40%	49.97%	39.29%

Table 10 Potential recyclability of all materials combined

RECYCLABLE CONTENT %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
KERBSIDE DMR	6.04%	13.57%	3.19%	6.47%	9.47%	19.34%	9.68%
KERBSIDE ORGANIC RECYCLABLE	3.35%	2.45%	0.06%	0.82%	1.85%	16.57%	4.18%
ONSITE COLLECTABLE*	43.89%	38.90%	60.13%	47.57%	50.04%	13.93%	42.41%
TOTAL RECYCLABLE	53.28%	54.92%	63.38%	54.87%	61.36%	49.84%	56.27%

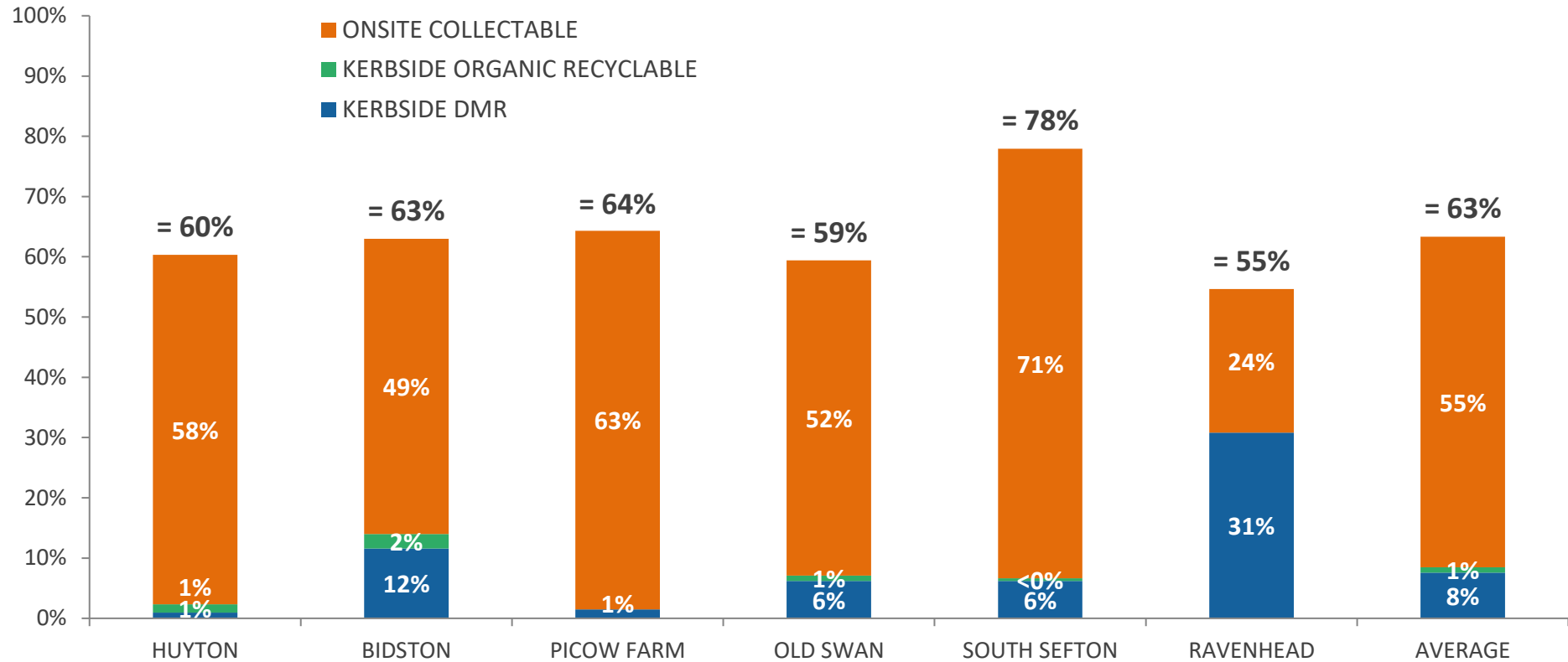
*These are containers that accept materials for diversion other than those that are compatible with kerbside recycling collections e.g., wood, scrap metal, rubble etc.

Figure 7 Potential recyclability of waste as delivered



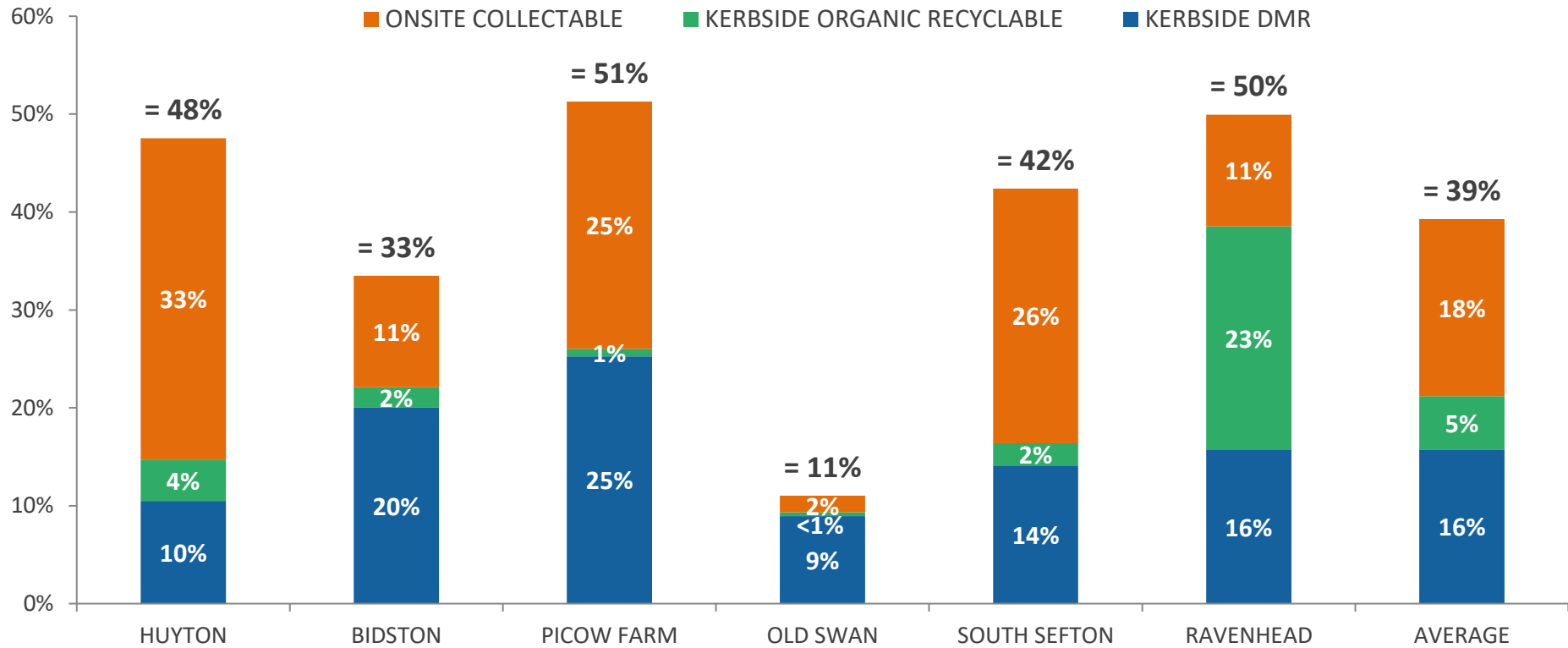
Classifying bagged household waste as nonrecyclable it can be seen that, on average, 39.9% of materials in the general waste could have been recycled at the kerbside or collected more effectively elsewhere on the HWRC. Levels varied ranging between 17.5% (Ravenhead) up to 59.7% for Picow Farm. Generally, the majority of the recyclable items within the general waste were of a type that could have been placed into alternative collection points within the HWRC (34.6%). On average 5.3% of the delivered waste was of a type that could have been directly recycled at the kerbside in the form of DMR and garden vegetation.

Figure 8 Potential recyclability of loose materials



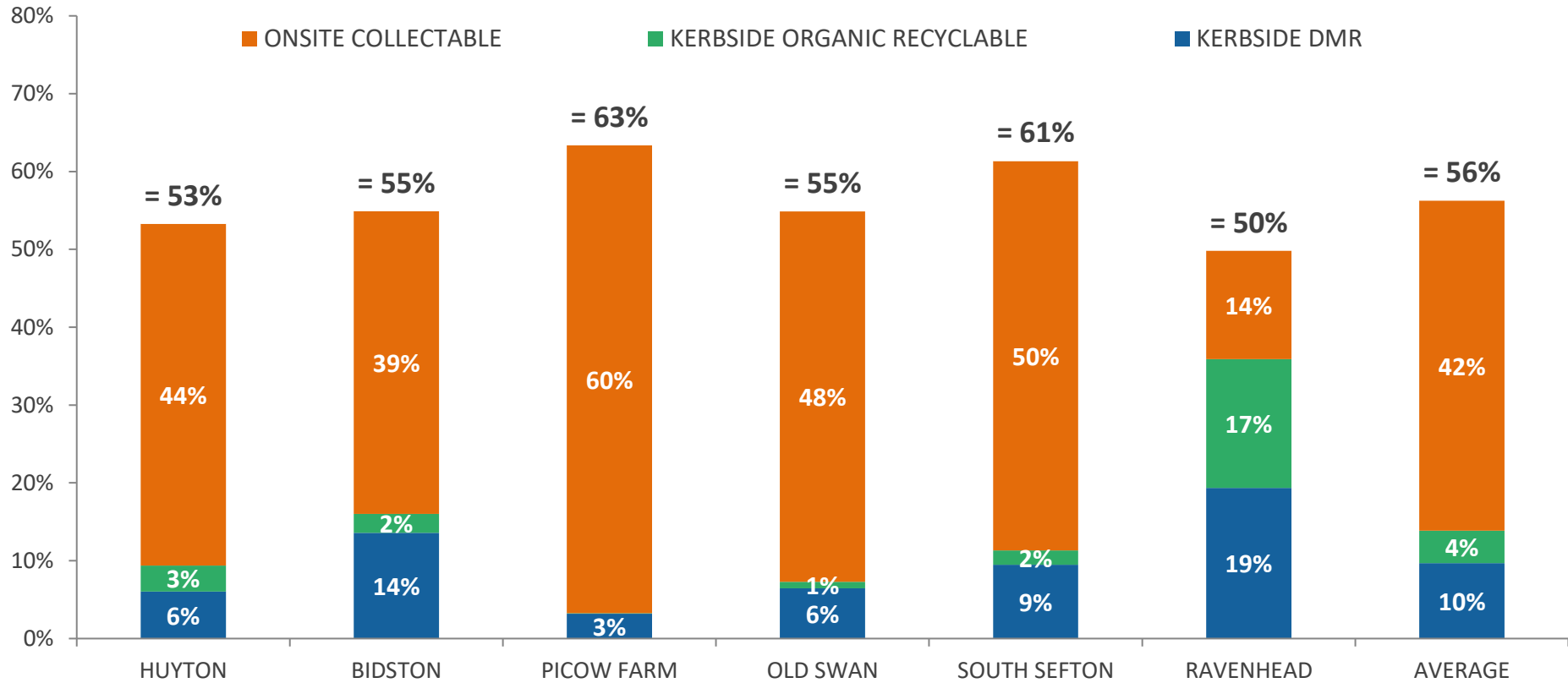
Of the loose general waste an average of 63.4% was deemed to be alternatively divertible. At all HWRCs the majority of loose, general waste placed into general waste containers was deemed recyclable. Ranges were 54.7% for Ravenhead up to 78.0% for South Sefton. On average, 54.9% of loose waste was compatible with onsite collections with 8.5% kerbside recyclable.

Figure 9 Potential recyclability of waste in bags



Bagged household waste formed an average of 37% of the waste collected. The average recyclable content of these bags was seen to be 39.3%, ranging between 11.0% for those in the Old Swan HWRC waste to 51.3% for those recovered from the Picow Farm general waste. For the contents of the bagged household waste, it was seen that the majority of the recyclable items (21.2%) were of a type that could have been directly recycled at the kerbside. Additionally, 18.1% of the bagged household waste was of a type that could have been placed into alternative collection points within the HWRC.

Figure 10 Potential recyclability of all materials combined



Considering all of the material (including the contents of household bags) 56.3% of the general waste is of a recyclable type. Up to 9.7% is compatible with DMR with 4.2% kerbside recyclable garden waste and 42.4% onsite divertible. Ravenhead was the only HWRC where less than half of material in the HWRC general waste was recyclable at a fraction under 50%. Across the remaining HWRCs the average recyclability ranged between 53.3% (Huyton) and 63.4% Picow Farm.

Potential recyclability of HWRC general waste

Table 11 Materials potentially divertible from general waste % of waste

RECYCLABLE MATERIALS % OF WASTE	WASTE AS DELIVERED	LOOSE ITEMS	BAGGED HOUSEHOLD WASTE	ALL WASTE COMBINED
RECYCLABLE PAPER	0.6%	0.9%	4.5%	1.8%
RECYCLABLE CARD & CARDBOARD	3.1%	5.0%	4.5%	4.6%
RECYCLABLE PLASTICS	0.3%	0.5%	2.4%	1.2%
RECYCLABLE TEXTILES	6.4%	10.2%	6.0%	9.6%
SCRAP WOOD	2.1%	3.3%	0.1%	2.1%
CARPET	1.5%	2.4%	0.5%	1.8%
FURNITURE	11.0%	17.5%	0.0%	11.0%
RUBBLE & INERTS	9.4%	14.9%	5.9%	10.6%
RECYCLABLE GLASS	0.2%	0.3%	3.5%	1.1%
RECYCLABLE METALS	1.2%	1.8%	2.5%	2.1%
RECYCLABLE HHW	0.1%	0.2%	0.3%	0.3%
RECYCLABLE WEEE	0.5%	0.7%	0.3%	0.6%
TOTAL DMR	36.3%	57.7%	30.5%	46.9%
RECYCLABLE FOOD WASTE	0.0%	0.0%	3.4%	2.6%
RECYCLABLE GARDEN WASTE	3.5%	5.5%	5.4%	6.7%
RECYCLABLE PET BEDDING	0.1%	0.2%	0.0%	0.1%
TOTAL ORGANIC RECYCLABLES	3.6%	5.7%	8.8%	9.4%
TOTAL RECYCLABLE CONTENT	39.9%	63.4%	39.3%	56.3%

Table 11 Materials potentially divertible from general waste % of recyclables

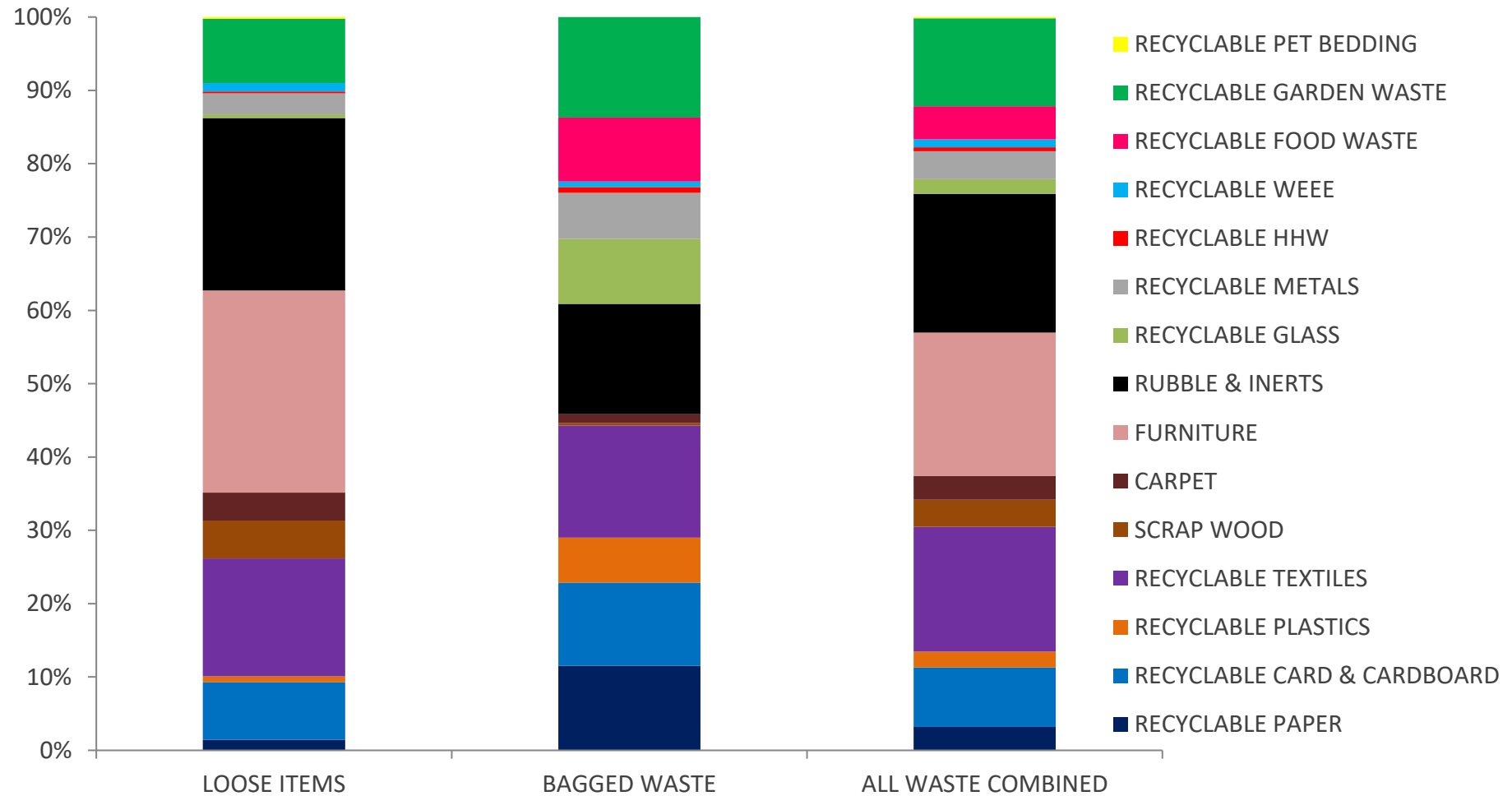
RECYCLABLE MATERIALS % OF RECYCLABLES	WASTE AS DELIVERED	LOOSE ITEMS	BAGGED HOUSEHOLD WASTE	ALL WASTE COMBINED
RECYCLABLE PAPER	1.5%	1.5%	11.5%	3.2%
RECYCLABLE CARD & CARDBOARD	7.9%	7.9%	11.3%	8.1%
RECYCLABLE PLASTICS	0.8%	0.8%	6.1%	2.2%
RECYCLABLE TEXTILES	16.1%	16.1%	15.3%	17.0%
SCRAP WOOD	5.2%	5.2%	0.3%	3.7%
CARPET	3.8%	3.8%	1.2%	3.2%
FURNITURE	27.6%	27.6%	0.0%	19.6%
RUBBLE & INERTS	23.5%	23.5%	15.0%	18.9%
RECYCLABLE GLASS	0.5%	0.5%	8.9%	2.0%
RECYCLABLE METALS	2.9%	2.9%	6.3%	3.8%
RECYCLABLE HHW	0.3%	0.3%	0.8%	0.5%
RECYCLABLE WEEE	1.2%	1.2%	0.8%	1.1%
TOTAL DMR	91.0%	91.0%	77.6%	83.3%
RECYCLABLE FOOD WASTE	0.0%	0.0%	8.7%	4.5%
RECYCLABLE GARDEN WASTE	8.8%	8.8%	13.7%	12.0%
RECYCLABLE PET BEDDING	0.2%	0.2%	0.0%	0.2%
TOTAL ORGANIC RECYCLABLES	9.0%	9.0%	22.4%	16.7%
TOTAL RECYCLABLE CONTENT	100.0%	100.0%	100.0%	100.0%

As previously shown, where bagged household waste is deemed nonrecyclable then 39.9% of waste present in the general waste was divertible. This all comes from the loose materials that forms 63% of general waste, 63.4% of which is potentially recyclable. Of this divertible material, 91% was formed of DMR with 9% organic recyclables. Furniture was the most prevalent component forming 27.6% of the recyclable element with rubble based waste contributing 23.5%. Therefore, these two waste types accounted for 51% of the recyclable content of HWRC general waste. Recyclable textiles accounted for 16.1% of the divertible waste. Solely regarding loose materials in the HWRC general waste, furniture, rubble, and textiles make up 42.6% of all loose waste disposed of.

Around 37% of all HWRC general waste was bagged household waste, 39.3% of which is potentially recyclable. Of this divertible material, 78% was formed of DMR with 22% organic recyclables. Recyclable paper and card were the most prevalent component forming 22.8% of the recyclable element with recyclable textiles contributing 15.3%, rubble 15.0% and garden waste 13.7%. Therefore, these four waste types accounted for 67% of the recyclable content of delivered waste which equates to 26.3% of bag contents.

When combining all bagged household and loose general waste it is suggested that around 56.3% of all HWRC general waste is potentially recyclable. Of this divertible material, 83% was formed of DMR with 17% organic recyclables. Furniture and rubble based waste were the most prevalent components forming 19.6% and 18.9% of the recyclable element respectively. Recyclable textiles contributed 17% of total recyclables with garden waste accounting for 12.0%. These four waste types therefore accounted for 68% of the recyclables present and 38.0% of the total HWRC general waste.

Figure 11 – Breakdown of recyclables in the HWRC general waste.



Packaging content of the HWRC general 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 materials that are available for kerbside recycling consist of packaging items so ideally would not be present in any residual waste streams, kerbside or HWRC general waste. Considering all materials (loose general and bagged household) within the general waste containers around 14.4% was considered to be packaging. Levels ranged between 8.9% for Picow Farm up to 22.7% for Ravenhead.

Table 12: Proportion of all HWRC waste deemed packaging

PACKAGING CONTENT %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
TOTAL LOOSE PACKAGING WASTE	12.0%	20.4%	8.9%	9.4%	11.9%	22.5%	14.2%
PACKAGING ASSOCIATED WITH WASTE FOOD*	0.3%	0.3%	0.0%	0.2%	0.2%	0.2%	0.2%
TOTAL PACKAGING	12.3%	20.8%	8.9%	9.6%	12.1%	22.7%	14.4%

Table 13: Breakdown of packaging materials

PACKAGING CONTENT (%)	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
PAPER PACKAGING	0.0%	0.4%	0.4%	0.1%	0.9%	0.1%	0.3%
CARD PACKAGING	0.6%	6.3%	1.0%	3.9%	5.8%	5.9%	3.9%
PLASTIC FILM PACKAGING	3.7%	4.5%	0.5%	1.0%	1.1%	8.5%	3.2%
DENSE PLASTIC PACKAGING	3.8%	5.9%	5.5%	3.9%	2.3%	5.2%	4.4%
METAL PACKAGING	1.6%	1.9%	0.2%	0.2%	0.5%	1.3%	0.9%
GLASS PACKAGING	2.3%	1.5%	0.8%	0.2%	0.9%	1.3%	1.1%
OTHER PACKAGING	0.1%	0.0%	0.4%	0.0%	0.5%	0.1%	0.2%
FOOD ASSOCIATED PACKAGING*	0.3%	0.3%	0.0%	0.2%	0.2%	0.2%	0.2%
TOTAL PACKAGING	12.3%	20.8%	8.9%	9.6%	12.1%	22.7%	14.4%

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

- Over 53% of packaging was due to plastic items. Therefore, plastic packaging accounted for 7.7% of all HWRC general waste.
- Almost 30% of packaging was paper and card based with these items contributing 4.3% to total HWRC waste.
- 8.5% of packaging was due to glass bottles and jars with 6.5% metal packaging, 1.6% of packaging was associated with food waste and 1.3% other packaging materials.

Packaging recyclability

Of the packaging material present in the HWRC general waste, an average of 50.4% was of a type that could have been recycled at the kerbside. Therefore, an estimated 7.3% of all general waste is due to recyclable packaging items. Just 2.9% of Picow Farm general waste was due to recyclable packaging compared with 11.2% of that from Bidston. At South Sefton, 75% of the packaging in the general waste was deemed recyclable.

Table 14: Recyclable content of packaging in HWRC general waste

PACKAGING CONTENT (%)	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
TOTAL PACKAGING	12.3%	20.8%	8.9%	9.6%	12.1%	22.7%	14.4%
RECYCLABLE PACKAGING	5.5%	11.2%	2.9%	4.6%	9.2%	10.1%	7.3%
% OF PACKAGING RECYCLABLE	44.5%	54.1%	32.7%	48.4%	75.4%	44.5%	50.4%

Drinks containers in the HWRC general waste

A proportion of the packaging material within the general waste will be due to single use drinks containers. These are defined as either plastic bottles, metal drinks cans and glass bottles. These containers may be covered by Govts DRS (deposit return scheme) proposals. Other single use drinks containers such as liquids cartons, disposable coffee cups and pouches formed just 0.1% of all HWRC general waste.

Results indicated that the levels of single use drinks containers ranged between <1% for Picow Farm and Old Swan to over 4% for Bidston and Huyton. This represented an average of 2.5%. Of the drink containers present, 43% were plastic with 39% glass and 18% metal.

Table 15: Drink containers in the HWRC general waste

SINGLE USE DRINK CONTAINERS %	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
PLASTIC DRINK BOTTLES	1.03%	2.32%	0.21%	0.17%	1.18%	1.58%	1.08%
GLASS DRINK BOTTLES	2.28%	1.21%	0.49%	0.18%	0.64%	1.01%	0.97%
METAL DRINK CANS	0.77%	0.50%	0.02%	0.13%	0.30%	0.95%	0.44%
TOTAL	4.08%	4.03%	0.72%	0.48%	2.11%	3.53%	2.49%

Potentially reusable items

In the same way that certain materials were categorised as packaging items, others were selected as having possible reuse potential. It is a fairly judgemental process to label a waste item as having reuse 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 furniture, books, clothes, fabrics, carpet, rugs, paint and electrical goods³ were deemed had having some potential for reuse.

Table 16: Reusable content of HWRC general waste

POTENTIAL REUSE ITEMS	HUYTON	BIDSTON	PICOW FARM	OLD SWAN	SOUTH SEFTON	RAVENHEAD	AVERAGE
	33.8%	22.9%	60.7%	35.3%	28.8%	13.7%	32.5%

On average around 32.5% of the HWRC general waste had some reuse potential. This amount peaked in at 60.7% for Picow Farm and was just 13.7% for Ravenhead. Around 39% of the waste with some reuse potential was due to clothing, shoes and textiles with 34% being furniture, 16% mattresses, 6% carpet and 2% books and 2% electricals.

³ No electrical testing was undertaken therefore it should be considered that a good proportion of electrical items will be non-functional and irreparable.

Key Findings and Performance Indicators

Members of the public brought 140,463 tonnes of household waste to Merseyside and Halton's HWRCs in 2020/21, which had an average recycling performance of 70%. Therefore around 42,139 tonnes of HWRC general waste are estimated. Additionally, District Councils delivered 398,379 tonnes of nonrecyclable kerbside collected residual waste directly to the Authority. A Resource Recovery Contract (RRC) is operated by Merseyside Energy Recovery Ltd and with SUEZ UK provides the Authority with a Rail Transfer Loading Station (RTLS) in Kirkby and an Energy from Waste (EfW) plant at Wilton International on Teeside. The majority of the Authority's kerbside collected residual waste and HWRC general waste is now managed through the RTLS and EfW. Last year saw 451,511 tonnes of waste delivered to the facility⁴.

HWRC waste diversion can be increased by increasing the proportion of recyclable materials that are correctly disposed of in recycling containers, reducing the amount of contamination in recycling containers and decreasing the amount of total waste in general waste bins. Figures displayed represent annual averages taken across the two seasonal surveys from the six HWRCs combined. Although not all Merseyside and Halton HWRCs were surveyed, it is of use to apply the estimated composition of general waste to available tonnage data.

Table 17: Estimated material tonnages for HWRC general waste

PRIMARY WASTE CATEGORIES %	AVERAGE %	ESTIMATED ANNUAL TONNAGE
PAPER	4.59%	1,933
CARD & CARDBOARD	5.75%	2,423
PLASTIC FILM	4.34%	1,831
DENSE PLASTICS	7.47%	3,149
TEXTILES	12.76%	5,378
FURNITURE	11.01%	4,639
MISCELLANEOUS COMBUSTIBLES	19.92%	8,393
NONCOMBUSTIBLE INERTS	10.65%	4,486
GLASS	2.58%	1,086
FERROUS METALS	1.14%	479
NONFERROUS METALS	1.00%	420
ORGANIC NONCATERING	8.19%	3,453
ORGANIC CATERING	9.50%	4,003
HHW	0.39%	165
WEEE	0.60%	251
COVID WASTE	0.12%	50
TOTAL	100.00%	42,139

⁴ MRWAANNUALREPORT2021

Considerations for reducing general waste

Divertible Material in the HWRC general waste

HWRC general waste contains items that should have been placed into either the kerbside recycling containers that are available to all Merseyside & Halton residents or alternative onsite collection points. . As previously shown (Table 11) 56.3% of HWRC general waste is deemed divertible. Overall, these materials make up an estimated of 23,714 tonnes per annum.

An estimated 4,080 tonnes per annum of general waste is compatible with kerbside DMR collections with 1,763 tonnes per annum potentially recyclable in garden waste bins. The majority of divertible material (17,871 tonnes per annum) should have been placed into alternative onsite collection containers.

Table 18: Divertible material within the HWRC general waste

PRIMARY WASTE CATEGORIES %	AVERAGE %	ESTIMATED ANNUAL TONNAGE
RECYCLABLE PAPER	1.79%	755
RECYCLABLE CARD & CARDBOARD	4.58%	1,929
RECYCLABLE PLASTICS	1.21%	510
RECYCLABLE TEXTILES	9.58%	4,035
SCRAP WOOD	2.08%	877
CARPET	1.81%	762
FURNITURE	11.01%	4,639
RUBBLE & INERTS	10.65%	4,486
RECYCLABLE GLASS	1.14%	479
RECYCLABLE METALS	2.13%	899
RECYCLABLE HHW	0.31%	130
RECYCLABLE WEEE	0.60%	251
TOTAL DMR	46.88%	19,753
RECYCLABLE FOOD WASTE	2.56%	1,078
RECYCLABLE GARDEN WASTE	6.75%	2,843
RECYCLABLE PET BEDDING	0.10%	40
TOTAL ORGANIC RECYCLABLES	9.40%	3,961
TOTAL RECYCLABLE CONTENT	56.27%*	23,714*

**The divertible figures of 56.3% & 23,714 t.p.a are derived by averaging figures from all HWRCs, where tonnage data is applied then summed from loose general and bagged household waste a slightly adjusted figure of 54.5% or 22,946 t.p.a is given.*

Considerations for better waste separation

Looking at the total amount of divertible material being disposed of via HWRC general waste containers it is possible to gauge where the greatest potential lies for improving waste separation. From table 17 it is seen that an estimated 42,139 t.p.a of total HWRC general waste is collected. Of this, 56.3% or 23,714 t.p.a is potentially divertible.

It is an aspirational target that all nonrecyclable material is placed into the general waste container with all recyclable material separated out and placed into the appropriate onsite recycling container. This would mean that there would be no recyclable material in the general waste and no contamination in the diversion containers.

From the compositional survey it was estimated that 37% of HWRC general waste is bagged household waste with 63% loose. This would give annual contribution tonnages of 15,599 t.p.a. and 26,540 t.p.a respectively. Bagged household waste has a far lower recyclable content (39.3%) when compared with that of the loose waste (63.4%). Therefore, of the 23,714 t.p.a of divertible material estimated to be in the general waste, 73.3% or 16,817 t.p.a will come from the loose waste with 6,129 t.p.a. contained within bagged household waste.

Table 19: Separation of HWRC general waste

RECYCLABLE CONTENT %	LOOSE ITEMS	BAGGED HOUSEHOLD WASTE	COMBINED
% OF GENERAL HWRC WASTE	63.0%	37.0%	100.0%
ESTIMATED ANNUAL TONNAGE OF TOTAL WASTE	26,540	15,599	42,139
% DIVERTIBLE	63.4%	39.3%	54.5%*
ESTIMATED ANNUAL TONNAGE OF DIVERTIBLE WASTE	16,817	6,129	22,946*
SPLIT OF TOTAL DIVERTIBLE	73.3%	26.7%	N/A

**The divertible figures of 56.3% & 23,714 t.p.a are derived by averaging figures from all HWRCs, where tonnage data is applied then summed from loose general and bagged household waste a slightly adjusted figure of 54.5% or 22,946 t.p.a is given.*

Figure 12 below highlights that over half of HWRC general waste is divertible with the majority being loose. Therefore, it can be said that approximately 40% of HWRC general waste is formed from loose divertible material. Of the nonrecyclable materials present within the HWRC general waste the material is roughly equally split between that which is bagged household waste and that disposed of loose.

Figure 12: Mix of HWRC general waste (t.p.a. and %)

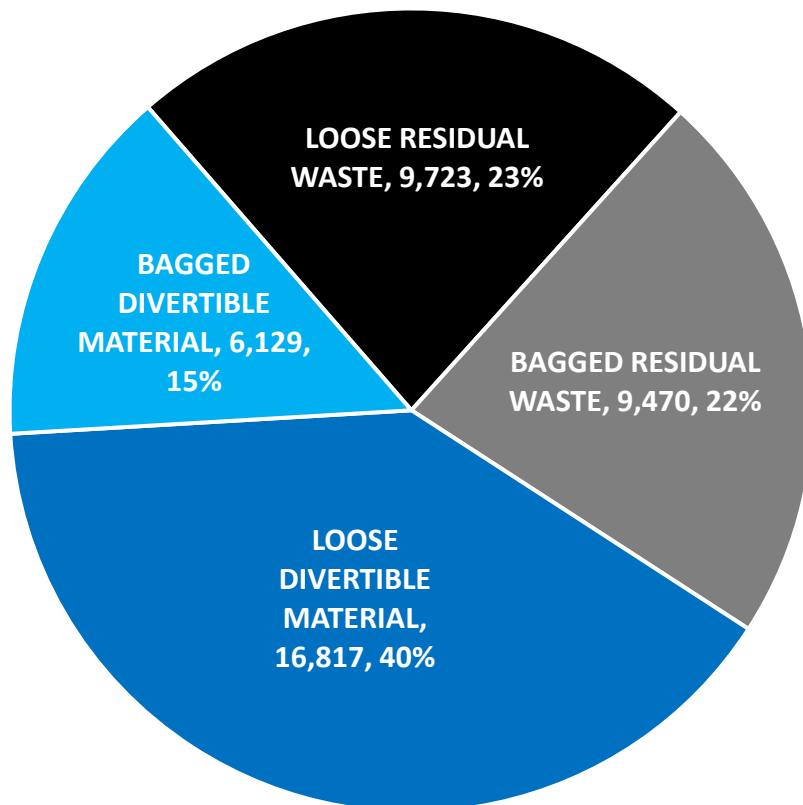


Table 20 shows where the greatest potential for increasing diversion by removing divertible material from the general waste lies. It makes most sense to target divertible material that is a) most accessible and b) most commonly occurring. The table shows divertible materials with those disposed of loose highlighted in blue and those within bags left clear. The top five most commonly divertible materials are all disposed of loose and are furniture (20.2% of the recyclables present), rubble (17.2%), textiles (11.8%), paper & card (6.8%) and garden waste (6.4%). These items alone account for 62.5% of the recyclable material present of around 14,335 t.p.a of material.

It is harder to access bagged household waste, however if bagged paper & card, textiles and rubble could be diverted instead of placed into the general waste a further 14.2% or 3,260 t.p.a of material could be diverted.

Effect of expanding kerbside recycling collections

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

- The introduction of weekly food recycling
- 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 20 shows the amount of material that could potentially be diverted from the HWRC general waste into expanded and new kerbside recycling schemes or other outlets that may become available. The greatest potential for future diversion is food waste. An estimated 3,759 t.p.a is present within the general HWRC waste, around 8.9% of the total.

Approximately 2,354 t.p.a (5.6%) of HWRC general waste is covered by plastic containers, aerosols, foil, cartons and plastic film which could potentially become part of an expanded kerbside DMR collection. In addition to this packaging a further 3,247 t.p.a (7.7%) of HWRC general waste is made up of other packaging which may be diverted by EPR.

Only around 899 t.p.a or 2.1% of HWRC general waste is formed of recyclable DRS packaging. 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.

Table 20: Potential reductions in HWRC general waste due to expanded kerbside collection schemes

MATERIALS POTENTIALLY DIVERTIBLE FROM HWRC GENERAL WASTE DUE TO EXPANDED KERBSIDE RECYCLING (T.P.A)	%	t.p.a
FOOD*	8.92%	3,759
TUBS, POTS, TRAYS**	0.90%	377
PLASTIC FILMS**	4.34%	1,831
FOIL & AEROSOLS**	0.28%	118
CARTONS**	0.07%	28
DRS***	2.13%	899
EPR****	7.70%	3,247
TOTAL	24.34%	10,258

* Potentially divertible into new kerbside recycling collections

** Potentially divertible into expanded DMR collection

*** Potentially divertible for DRS

**** Potentially funded by EPR. This amount excludes the contribution from DRS packaging which would also be covered.

Table 20: Materials to target for diversion away from HWRC general waste

DIVERTIBLE MATERIAL*	T.P.A	% OF RECYCLABLES
FURNITURE	4,639	20.2%
RUBBLE & INERTS	3,953	17.2%
RECYCLABLE TEXTILES	2,704	11.8%
RECYCLABLE PAPER & CARD	1,566	6.8%
RECYCLABLE GARDEN WASTE	1,472	6.4%
RECYCLABLE PAPER & CARD	1,402	6.1%
RECYCLABLE TEXTILES	938	4.1%
RUBBLE & INERTS	920	4.0%
SCRAP WOOD	871	3.8%
RECYCLABLE GARDEN WASTE	841	3.7%
CARPET	638	2.8%
RECYCLABLE GLASS	544	2.4%
RECYCLABLE FOOD WASTE	533	2.3%
RECYCLABLE METALS	485	2.1%
RECYCLABLE METALS	385	1.7%
RECYCLABLE PLASTICS	375	1.6%
RECYCLABLE WEEE	194	0.8%
RECYCLABLE PLASTICS	129	0.6%
RECYCLABLE GLASS	82	0.4%
CARPET	75	0.3%
RECYCLABLE HHW	48	0.2%
RECYCLABLE WEEE	48	0.2%
RECYCLABLE HHW	43	0.2%
RECYCLABLE PET BEDDING	40	0.2%
SCRAP WOOD	20	0.1%
TOTAL	22,946	100.00%

*Materials highlighted in blue are disposed of loose.

Comparisons with national data

Total HWRC general waste arisings

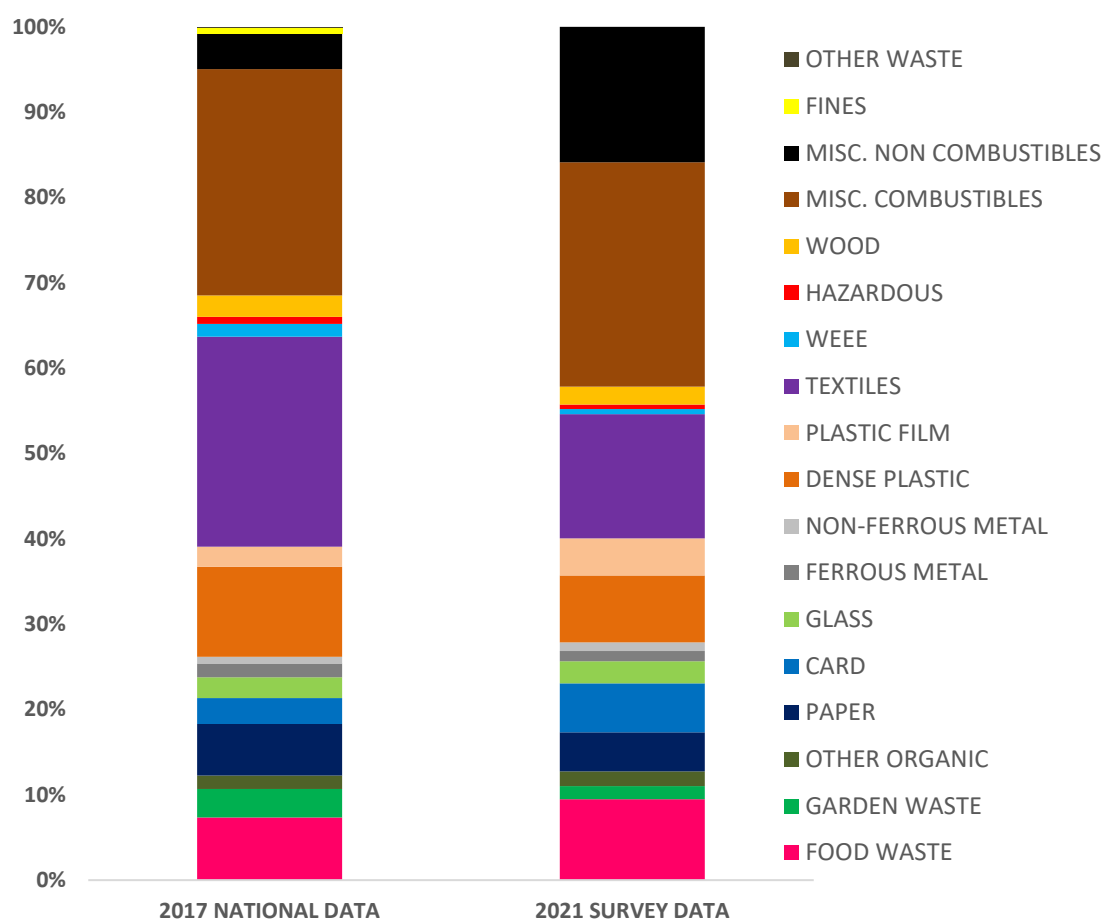
Average figures from the two waste analysis surveys performed across the six HWRCs can be compared with available national data⁵. Primary categories from the 2021 survey have been matched as near as possible to those used in the 2017 figures. Subcategories do not necessarily match exactly between the two surveys.

Table 21: HWRC general waste composition

WASTE MATERIAL	ARISINGS ENGLAND 2017 T.P.A.	% ENGLAND	% MERSEYSIDE & HALTON
FOOD WASTE	126,370	7.3%	9.5%
GARDEN WASTE	57,310	3.3%	1.5%
OTHER ORGANIC	27,245	1.6%	1.7%
PAPER	103,921	6.0%	4.6%
CARD	52,645	3.1%	5.7%
GLASS	41,530	2.4%	2.6%
FERROUS METAL	28,146	1.6%	1.2%
NONFERROUS METAL	13,460	0.8%	1.0%
DENSE PLASTIC	181,742	10.6%	7.9%
PLASTIC FILM	40,413	2.3%	4.3%
TEXTILES	423,729	24.6%	14.6%
WEEE	25,989	1.5%	0.6%
HAZARDOUS	14,000	0.8%	0.5%
WOOD	43,501	2.5%	2.1%
MISC. COMBUSTIBLES	456,071	26.5%	26.3%
MISC. NON COMBUSTIBLES	72,200	4.2%	15.9%
FINES	11,428	0.7%	0.0%
OTHER WASTE	1,881	0.1%	0.0%
TOTAL	1,721,581	100.0%	100.0%

⁵ NATIONAL COMPOSITIONAL ESTIMATES FOR LOCAL AUTHORITY COLLECTED HOUSEHOLD WASTE AND RECYCLING IN THE UNITED KINGDOM NATIONAL HOUSEHOLD WASTE COMPOSITION 2017

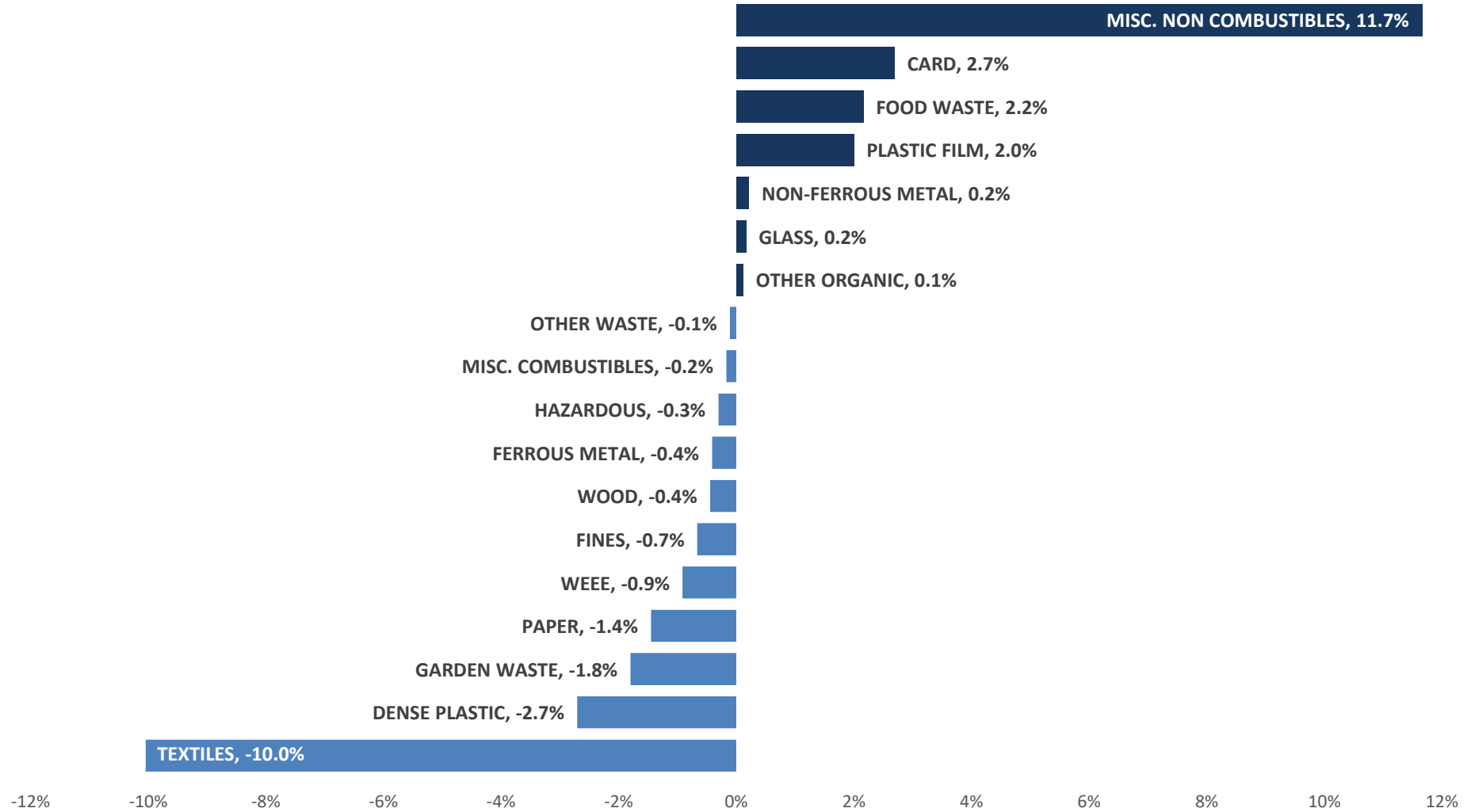
Figure 13: Comparisons with national data



Figures in terms of percentage composition are fairly similar between the 2021 survey data and 2017 national averages. Of the eighteen waste categories compared, only five have a difference of more than two percentage points when compared. Textiles are present at concentrations of 24.6% for the national data but are at comparable levels of 14.6% from the survey data (10%). Dense plastics are present at concentrations of 10.6% for the national data but are at comparable levels of 7.9% from the survey data (2.7%).

In contrast levels of miscellaneous non-combustible (rubble based waste) form around 4.2% of national data but 15.9% of 2021 data (+11.7%). Concentrations of plastic film, food waste and cardboard are also at higher concentrations in the 2021 data showing increases of 2.0%, 2.2% and 2.7% respectively.

Figure 14: % point differences 2021 survey data against 2017 national averages



Recommendations / options for a more frequent waste analysis programme

This section discusses different options for more frequent sampling compared to the current project which is carried out every 5 or 6 years. As described in this report the same 6 HWRC's were included in the sampling for both phases. Each HWRC had their annual sample derived over 2 days, 1 weekday and 1 weekend day over 2 phases (spring and autumn). Overall, there are 16 HWRC's across Merseyside and Halton. By sampling only once per site per year more sites could be included as shown below.

Table 22: Number of HWRC's included over 1 year and 2 years

Site	Biannual (existing sampling)		Av/year	Site	Annual		Av/year
	Phase 1	Phase 2			Year 1	Year 2	
1	✓	✓	✓	1	✓		✓
2	✓	✓	✓	2	✓		✓
3	✓	✓	✓	3	✓		✓
4	✓	✓	✓	4	✓		✓
5	✓	✓	✓	5	✓		✓
6	✓	✓	✓	6	✓		✓
7				7	✓		✓
8				8	✓		✓
9				9		✓	✓
10				10		✓	✓
11				11		✓	✓
12				12		✓	✓
13				13		✓	✓
14				14		✓	✓
15				15		✓	✓
16				16		✓	✓
Total	6	6	12	Total	8	8	16

This example assumes that all 16 HWRC's need to be included. MRWA will need to assess sites on an individual basis for inclusion. Assessment criteria could include the following:

- Centre size
- Location and proximity to other sites
- Number of visitors
- Tonnage per year
- Number of days open per week
- Trade and building waste
- Other parameters to be agreed

Other options are shown in the tables below, including sampling 6 different sites each year over three years or 8 sites per year over 2 or 3 years

Table 23: All HWRC's included over 3 years

Site	Year		
	1	2	3
1	✓		
2	✓		
3	✓		
4	✓		
5	✓		
6	✓		
7		✓	
8		✓	
9		✓	
10		✓	
11		✓	
12			✓
13			✓
14			✓
15			✓
16			✓
Total	6	5	5

Table 24: 9 targeted sites included 2 years

Site	Annual		Av/year
	1	2	
1	✓	✓	✓
2	✓	✓	✓
3	✓	✓	✓
4	✓	✓	✓
5	✓	✓	✓
6	✓	✓	✓
7	✓	✓	✓
8	✓	✓	✓
9			✓
10			✓
11			✓
12			✓
13			✓
14			✓
15			✓
16			✓
Total	8	8	16

Table 25: All sites included over 3 years

Site	Biennial		Year 3
	Year 1	Year 2	
1	✓		
2	✓		
3	✓		
4	✓		
5	✓		
6	✓		
7	✓		
8	✓		
9			✓
10			✓
11			✓
12			✓
13			✓
14			✓
15			✓
16			✓
Total	8	0	8

Appendix 1 – Sort Categories

PAPER	RECYCLABLE PAPER PACKAGING
	RECYCLABLE PAPER NONPACKAGING
	SHREDDED PAPER
	ALL NONRECYCLABLE PAPER
CARD & CARDBOARD	LIQUID CARTONS
	CORRUGATED CARDBOARD
	RECYCLABLE CARD PACKAGING
	RECYCLABLE CARD NONPACKAGING
	COFFEE CUPS
	BOOKS
	HEAVILY FOOD CONTAMINATED FOOD PACKAGING CARD
	NONRECYCLABLE CARD & CARDBOARD
PLASTIC FILM	CARRIER BAGS & PLASTIC BAGS
	ALL OTHER FILM PACKAGING
	REFUSE BAGS
	ALL OTHER FILM NON PACKAGING
DENSE PLASTICS	ALL DRINKS PLASTIC BOTTLES < 3L
	ALL PLASTIC DRINKS BOTTLES >3 LITRES CAPACITY
	ALL NONDRINKS PLASTIC BOTTLES
	ALL PLASTIC TUBS, POTS AND TRAYS
	POLYSTYRENE
	CD'S & DVD'S
	TYRES
	OTHER DENSE PLASTIC PACKAGING
	OTHER DENSE 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
FURNITURE	FURNITURE PLASTIC BASED
	UPHOLSTERED SOFT FURNITURE WITH FIRE SAFETY TAGS
	UPHOLSTERED SOFT FURNITURE NO FIRE SAFETY TAGS
	FURNITURE WOOD BASED
	FURNITURE METAL BASED
MISC COMBUSTIBLES	DISPOSABLE NAPPIES & SANITARY
	PACKAGING WOOD & CORK
	NONPACKAGING UNTREATED WOOD
	TREATED WOOD
	CARPET
	ANIMAL WASTE
	OTHER FLOORING
	MATTRESSES
	OTHER HOUSEHOLD COMBUSTIBLES

MISC NON COMBUSTIBLES	DIY RUBBLE & BRICKS
	PLASTERBOARD
	OTHER DIY NONCOMBUSTIBLE
	OTHER NONCOMBUSTIBLE
GLASS	ALL GLASS DRINKS BOTTLES < 3L
	ALL NON DRINKS BOTTLES AND BOTTLES > 3L
	ALL JARS
	OTHER GLASS
FERROUS METAL	FOOD TINS & CANS
	DRINK CANS < 3L
	ALL NON DRINKS CANS AND DRINK CANS > 3L
	OTHER FERROUS METAL PACKAGING
	DIY FERROUS
	OTHER FERROUS
NON FERROUS METAL	FOOD TINS & CANS
	DRINK CANS < 3L
	ALL NON DRINKS CANS AND DRINK CANS > 3L
	OTHER NONFERROUS / FOIL METAL PACKAGING
	DIY NONFERROUS
	OTHER NONFERROUS
ORGANIC NONCATERING	GARDEN VEGETATION
	SOIL & TURF
	PET BEDDING
ORGANIC CATERING	ALL FOOD WASTE LOOSE
	ALL FOOD WASTE PACKAGED
	CONSUMABLE LIQUIDS
WEEE	WHITE GOODS
	OTHER ELECTRICAL ITEMS
	COMPUTERS
	TELEVISIONS
	OTHER LARGE ELECTRONIC ITEMS
	MOBILE PHONES
	OTHER SMALL ELECTRONIC ITEMS
HHW	FLUORESCENT TUBES
	PRINTER CARTRIDGES
	PAINT CANS
	COOKING OIL
	ENGINE OIL & FILTERS
	LEAD ACID BATTERIES
	OTHER BATTERIES
	CLINICAL WASTE
	PESTICIDES & CHEMICALS
	ASBESTOS
	OTHER POTENTIALLY HAZARDOUS MATERIALS