Halton Kerbside

Waste Composition Analysis

Merseyside Recycling & Waste Authority (MRWA) with Halton Borough Council

Annual Report 2021

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Project details and acknowledgements

Title	Halton Kerbside Waste Composition Analysis
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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 residue in 630,000 properties. MRWA also manages the sorting of the co-mingled recycling collected at kerbside by 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 dry mixed recycling) was commissioned for the Merseyside and Halton Waste Partnership area 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). By assessing all these waste streams from districts, it will be possible to provide compositional estimates for the waste 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 waste and recycling generated throughout households within the Halton Borough Council area. Four demographic areas were sampled, with the sampling exercise taking place during spring and autumn 2021. In 2020/21, Halton had a combined recycling and composting rate of 39.3%. As well as giving indications as to the levels of waste and recycling being generated, this report also provides observations on the levels of materials that are

[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*

currently recyclable at the kerbside and those which could potentially be recyclable via future schemes.

Executive Summary - Compositional Analysis

Kerbside residual waste

- 86% of households sampled presented residual waste for collection, generating 5.7kg/hh/wk.
- 42% of residual bin waste was due to food. This equates to 2.4kg/hh/wk.
- 60% of discarded food in residual bins was avoidable with 42.5% of all food thrown away in its packaging.
- 14% of all residual waste (0.8kg/hh/wk) could have been recycled at the kerbside using mixed recycling or garden waste bins.

Kerbside mixed recycling waste

- 81% of households sampled presented mixed recycling for collection, generating 4.3kg/hh/wk.
- 31% of mixed recycling was due to contamination waste not compatible with the collection. This equates to 1.3kg/hh/wk.
- 28% of the contamination was due to non-recyclable plastics with 23% being non-recyclable paper & card.

Kerbside garden waste

- 13% of households sampled presented garden recycling for collection, generating 0.8kg/hh/wk.
- 11% of garden recycling was due to soil and turf as opposed to vegetation.

Total kerbside waste

- 10.8kg/hh/wk of total kerbside waste was generated across Halton.
- Of all the materials residents were disposing of, 82% was placed into the correct container (i.e., rubbish in the residual bin and recyclables in the mixed or garden waste bins).
- 13% of all waste collected at the kerbside is due to contamination in recycling bins (1.4kg/hh/wk).
- 8% of all waste collected at the kerbside is due to recyclable material in residual bins (0.7kg/hh/wk).
- 88% of all garden waste disposed of is correctly captured in garden recycling bins.
- 86% of all glass bottles and jars disposed of are correctly captured in mixed recycling bins.
- 80% of all recyclable card and cardboard disposed of is correctly captured in mixed recycling bins.
- 84% of all recyclable paper disposed of is correctly captured in mixed recycling bins.
- 77% of all plastic bottles disposed of are correctly captured in mixed recycling bins.

- 62% of all tins and cans disposed of are correctly captured in mixed recycling bins.
- Currently 34% of kerbside waste is diverted via the recycling collections. With all materials correctly disposed of the rate would increase to 42%
- An estimated 36% of all kerbside waste (3.8kg/hh/wk) is due to packaging materials.

Sampling

Across Halton, four demographic samples (Acorn Types) were selected for the analysis of kerbside collected residual waste and dry mixed recycling. Table 1 shows the relative proportion of each demographic.

Table 1 - Acorn profile for Halton

ACORN CATEGORY WEIGHTING		HALTON
ACORN 1	AFFLUENT ACHIEVERS	16.5%
ACORN 3	COMFORTABLE COMMUNITIES	23.2%
ACORN 4	FINANCIALLY STRETCHED	29.2%
ACORN 5	URBAN ADVERSITY	31.1%
TOTAL		100.0%

Each sample was formed from the waste presented by around fifty selected households. Sampling took place both during the spring and autumn with the same households surveyed on each occasion. Halton averages were calculated by weighting the figures (averaged from the two surveys) for each sample against the Acorn profile. Waste generation is then 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.

For residual waste, Halton residents generally have wheelie bins collected fortnightly. Some households that cannot accommodate bins may use bags and may also have weekly collections. Halton residents also have dry mixed recycling collections; again, this is generally using wheelie bins that are collected on a fortnightly basis. Most households with gardens have access to collections of garden waste. In Halton, this is a paid subscription based service. The range of materials collected separately for recycling across Halton are shown below.

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

Metals = Drinks cans, Food tins, Metal lids and tops, Biscuit/chocolate tins

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

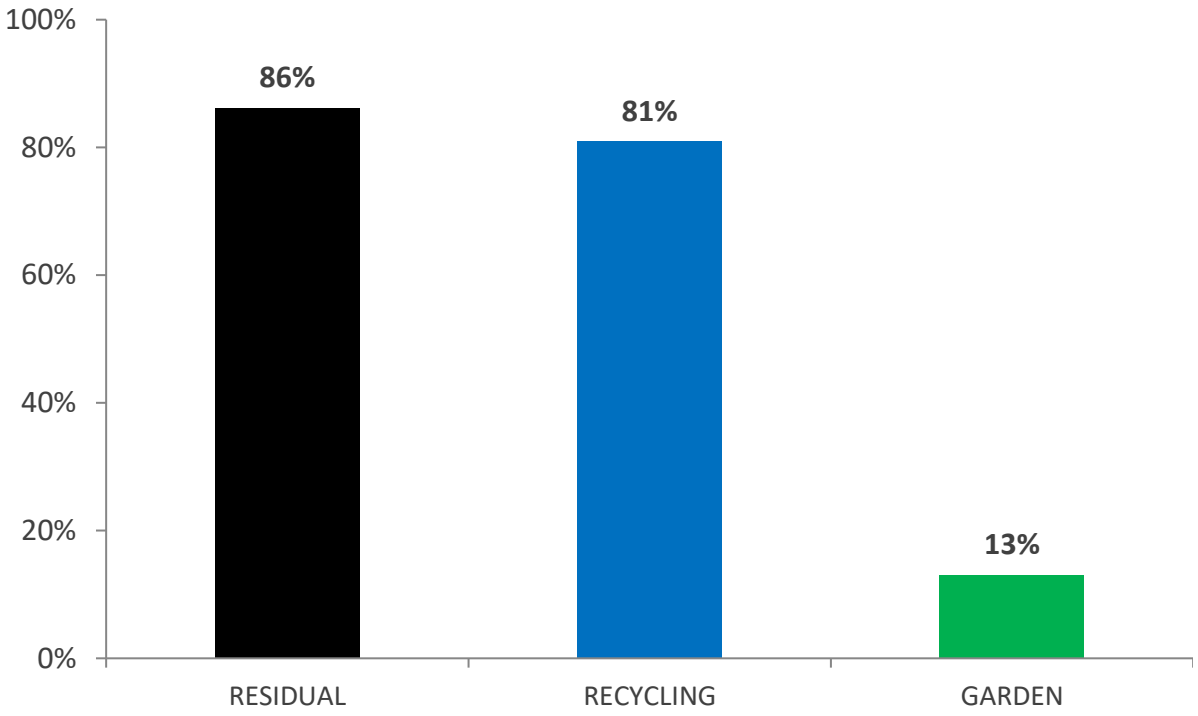
Garden waste = all vegetation

Results

Set out rates

Set out rates refer to the proportion of surveyed kerbside households actively placing out their residual waste and recycling (dry mixed and garden) at the time of collection. Results suggested (figure 1) that an average of 86% of households across Halton are setting out residual bins with 81% presenting dry mixed recycling and 13% garden recycling bins.

Figure 1 - Set out rates

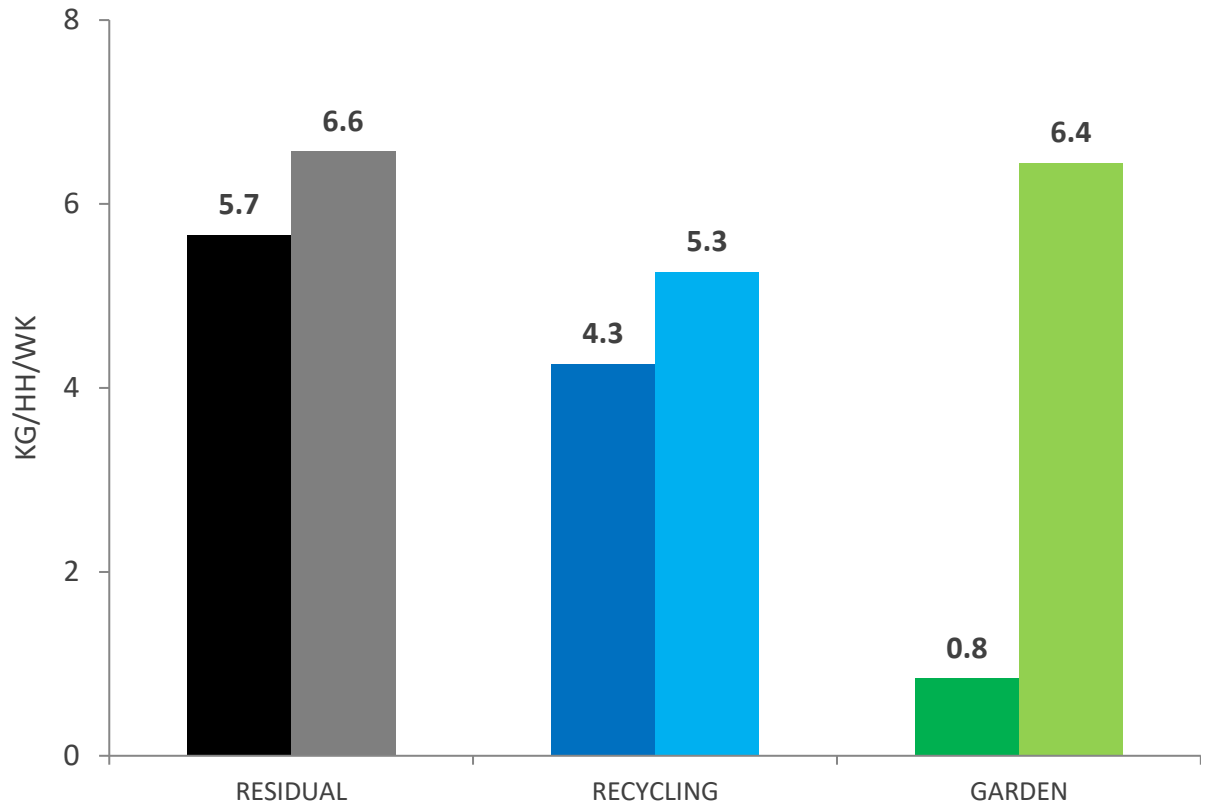


Waste generation

From observed results (figure 2), the average annual level of residual waste being disposed of at the kerbside across Halton was 5.7kg/hh/wk. This figure accounts for the average set out of 86% 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 6.6kg/hh/wk. This higher figure estimates the waste level that would be present if every household presented waste for every collection (i.e., 100% set out).

In comparison 4.3kg/hh/wk of dry mixed recycling was generated (5.3kg/hh/wk presented bins) along with 0.8kg/hh/wk garden recycling (6.4kg/hh/wk presented bins). Therefore around 10.8kg/hh/wk of total kerbside waste is generated across Halton

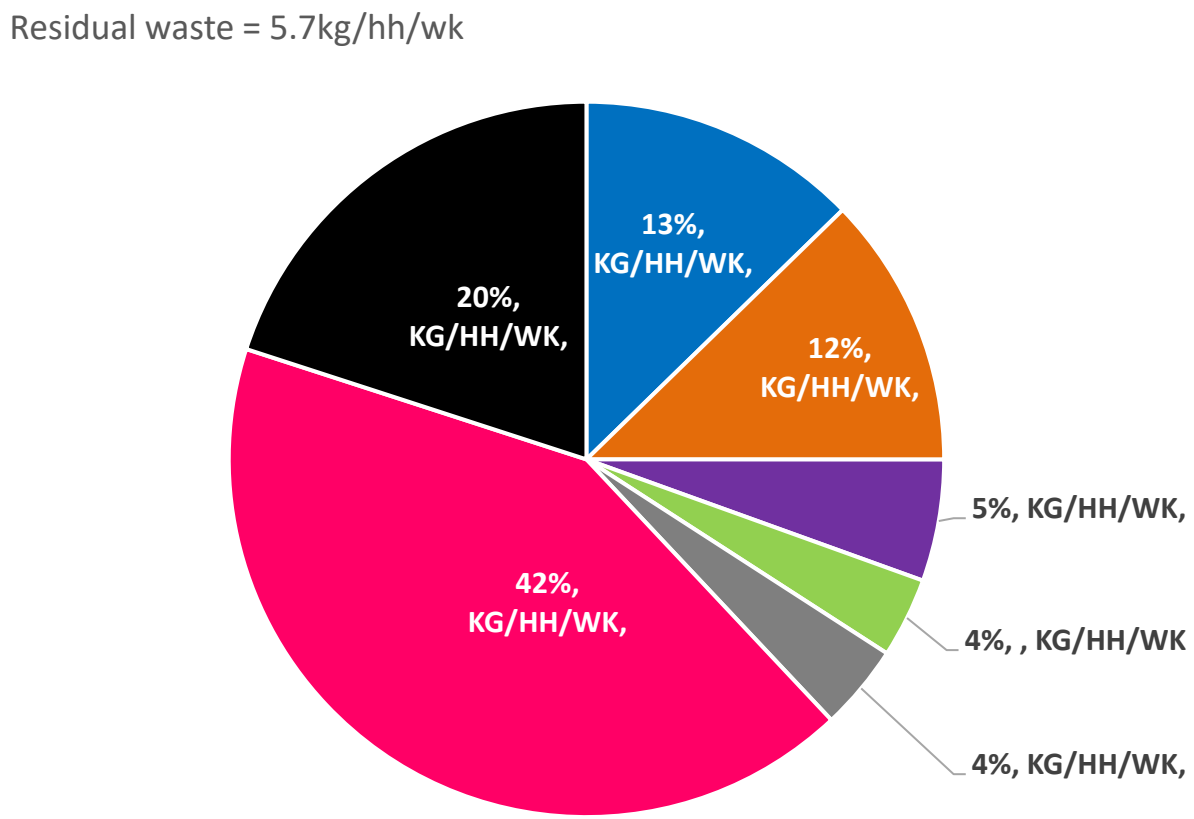
Figure 2 - Kerbside waste levels (kg/hh/wk)



Composition of residual waste

This section looks at the average amount and composition of the kerbside residual waste presented by the selected Halton households. Hand sorting of the 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 - Residual Waste Composition



FOOD WASTE

Of the residual waste surveyed, 42% was due to food waste. This is the equivalent of 2.4kg/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).

Of all the food waste being disposed of, 60% or 1.4kg/hh/wk is deemed to be avoidable. Of all the avoidable food waste placed into residual bins, 71% is packaged. Therefore, it can be said that 42.5% of all the food waste disposed of is still packaged.

PAPER & CARD

Of the kerbside residual waste surveyed, 12.7% was due to paper and card. This is the equivalent of 0.72kg/hh/wk. Of all the paper and card waste being disposed of, 40% or 0.29kg/hh/wk is deemed to be of a type suitable for recycling at the kerbside.

PLASTICS

Around 12.3% of all the waste in kerbside residual bins is due to plastics. These items account for 0.70kg/hh/wk of the kerbside residual waste. Of the plastics disposed of, 15% or 0.10kg/hh/wk are due to plastic bottles that could be recycled at the kerbside.

TEXTILES

Around 5.5% of all the waste in kerbside residual bins is due to textiles. These items account for 0.31kg/hh/wk of the total. Although not collected directly from the kerbside, of the textiles disposed of, 60% or 0.19kg/hh/wk are due to clothing and shoes which could be better placed in bring banks.

GLASS

Around 3.5% of all the waste in kerbside residual bins is due to glass. These items account for 0.18kg/hh/wk of the residual waste. Of the glass disposed of, 93% or 0.17kg/hh/wk are due to bottles and jars that could be recycled at the kerbside.

METALS

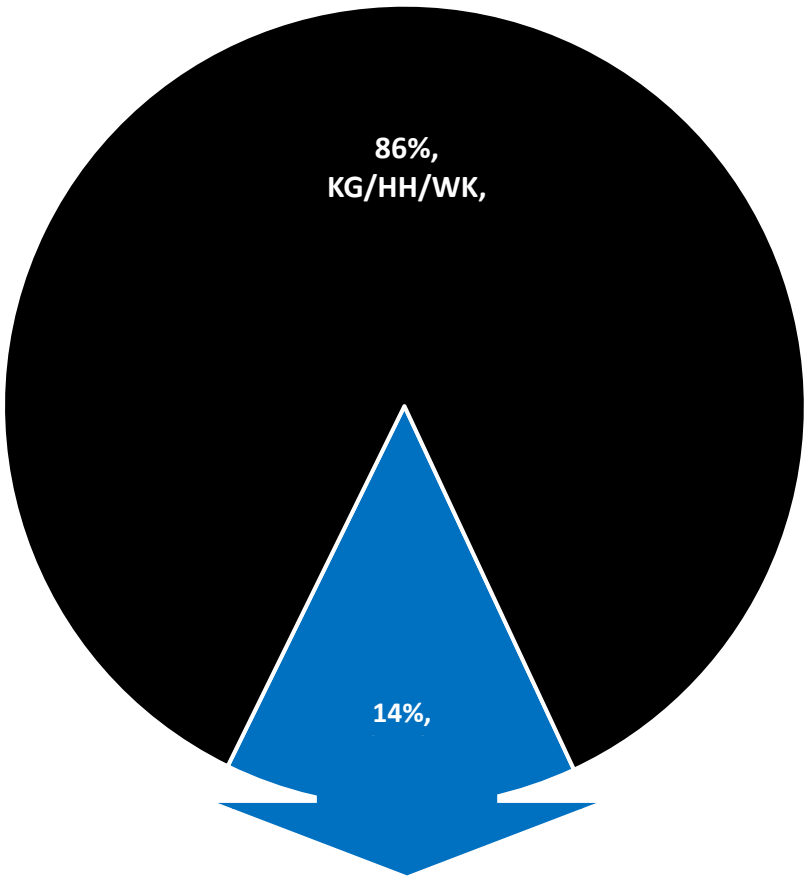
Around 3.9% of all the waste in kerbside residual bins is due to metals. These items account for 0.22kg/hh/wk of the residual waste. Of the metal disposed of, 57% or 0.12kg/hh/wk are due to tins and cans that could be recycled at the kerbside.

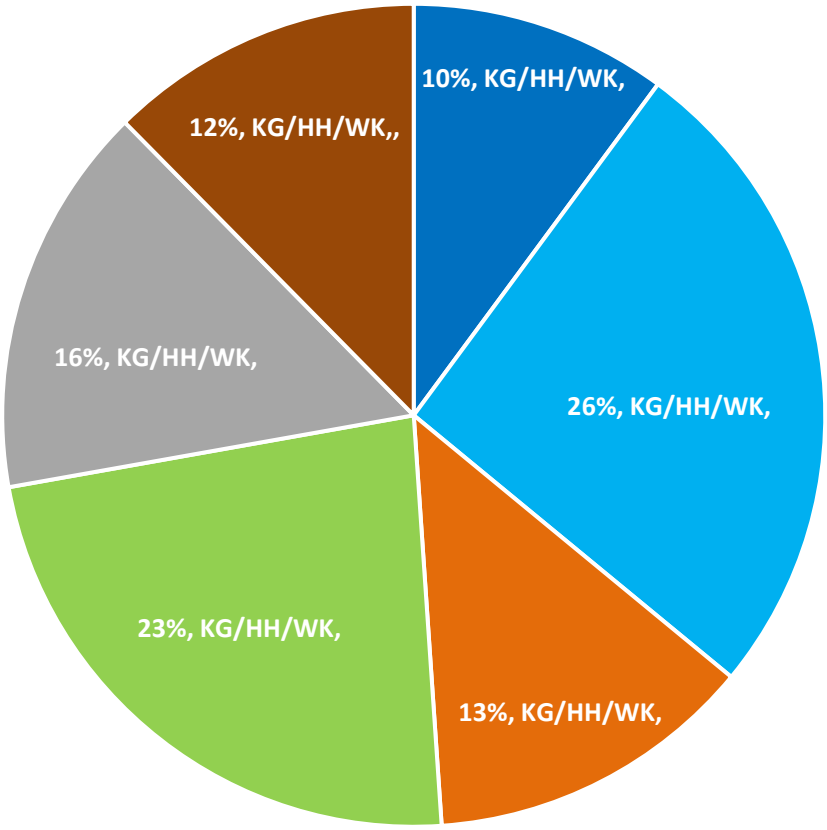
GARDEN VEGETATION

Just 2.3% of all the waste in kerbside residual bins is due to garden waste. This material accounts for 0.13kg/hh/wk of total. Of the garden waste disposed of, 76% or 0.10kg/hh/wk is due to vegetation that could have been recycled at the kerbside or home composted, the remainder is soil and turf.

Figure 4 shows that around 14% or 0.80kg/hh/wk of all residual waste consisted of materials that could have been better disposed of using the kerbside dry mixed recycling bins that are available. Of the recyclable content of the residual waste, 36% is due to recyclable paper and card with 23% glass bottles and jars, 15% tins & cans , 13% plastic bottles and 12%. garden vegetation

Figure 4 - Recyclable content of the residual waste




10%, KG/HH/WK,
26%, KG/HH/WK,
13%, KG/HH/WK,
23%, KG/HH/WK,
16%, KG/HH/WK,
12%, KG/HH/WK,,

Compositional of dry mixed recycling

This section looks at the average amount and composition of the dry mixed recycling presented by the selected Halton households.

Just under 29% of collected dry mixed recycling consisted of recyclable paper and card (1.23kg/hh/wk). Glass bottles and jars made up 27% or 1.15kg/hh/wk of recycling with plastic bottles forming 8% (0.34kg/hh/wk) and tins & cans contributing 5% (0.20kg/hh/wk).

It is clear from figure 5 that a large proportion (31%) of the collected dry mixed recycling is formed from items that are unacceptable to the scheme. In total just over 1.3kg/hh/wk of non-recyclable contamination is placed into the dry mixed recycling bins presented across Halton. Figure 6 shows the make up of contaminants that are present within the collected recycling.

Figure 5 - Composition of dry mixed recycling

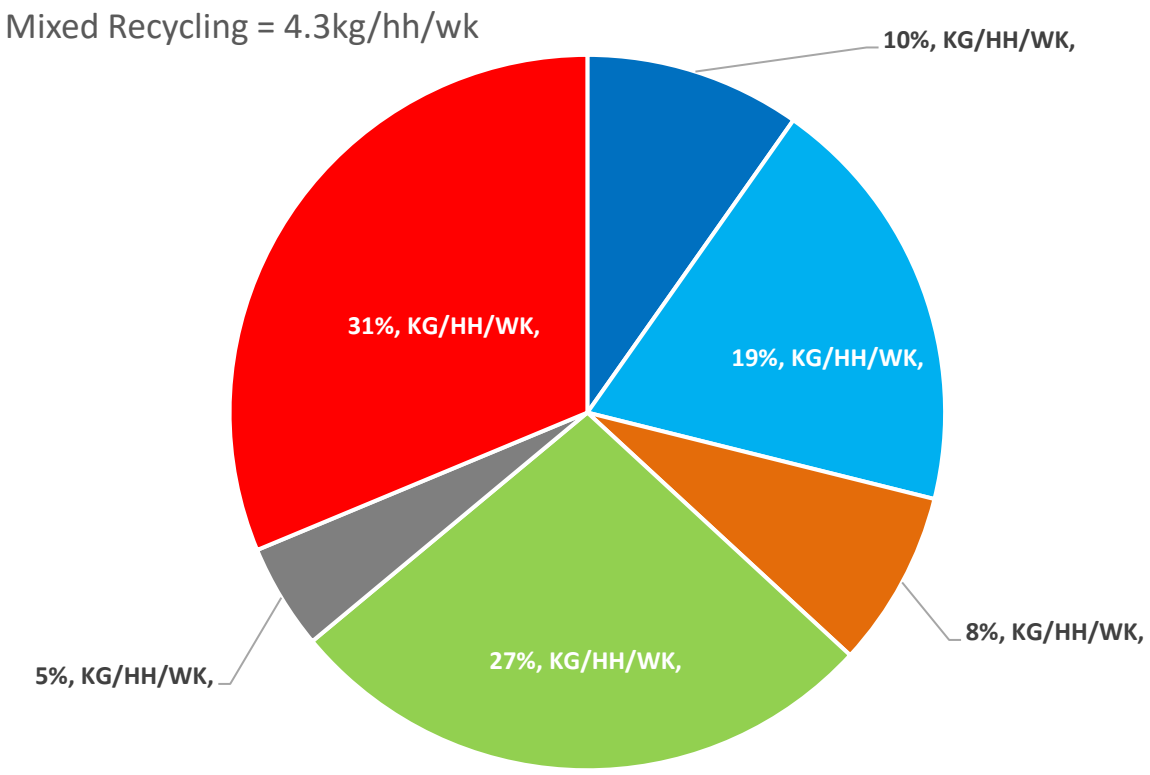
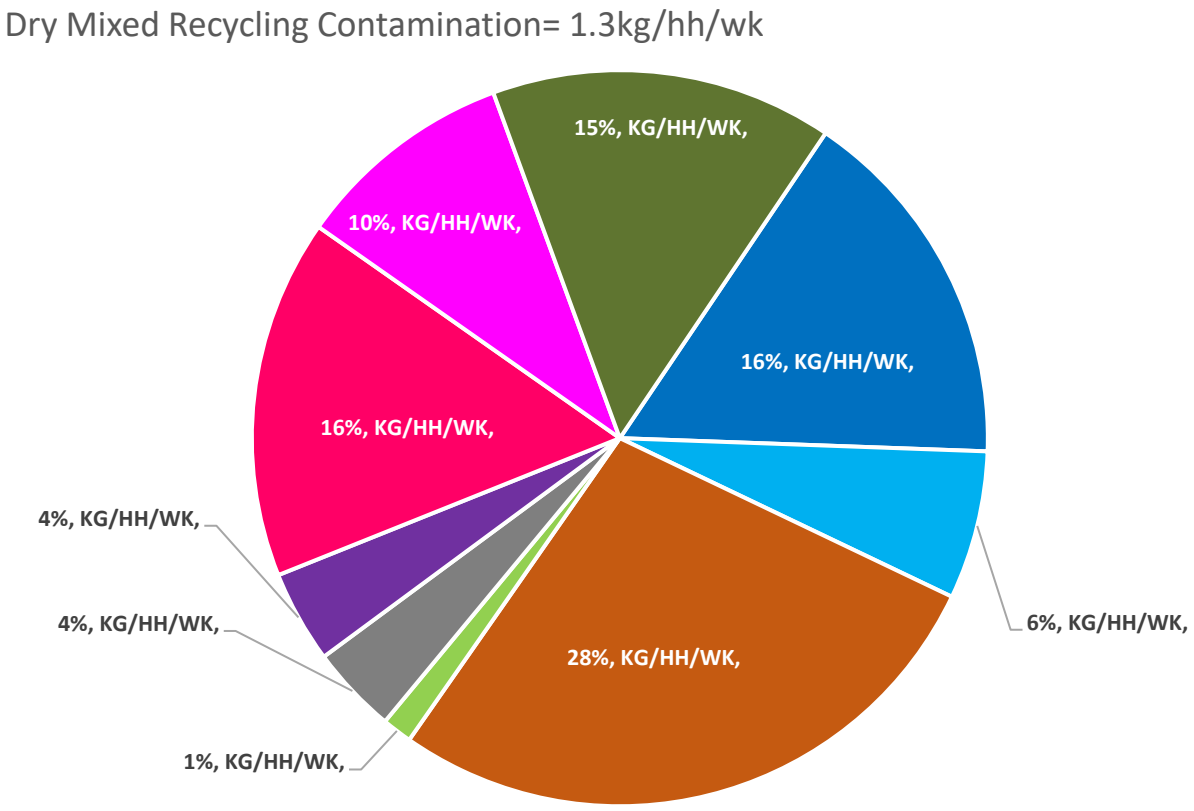


Figure 6 - Composition of contaminants within the mixed recycling



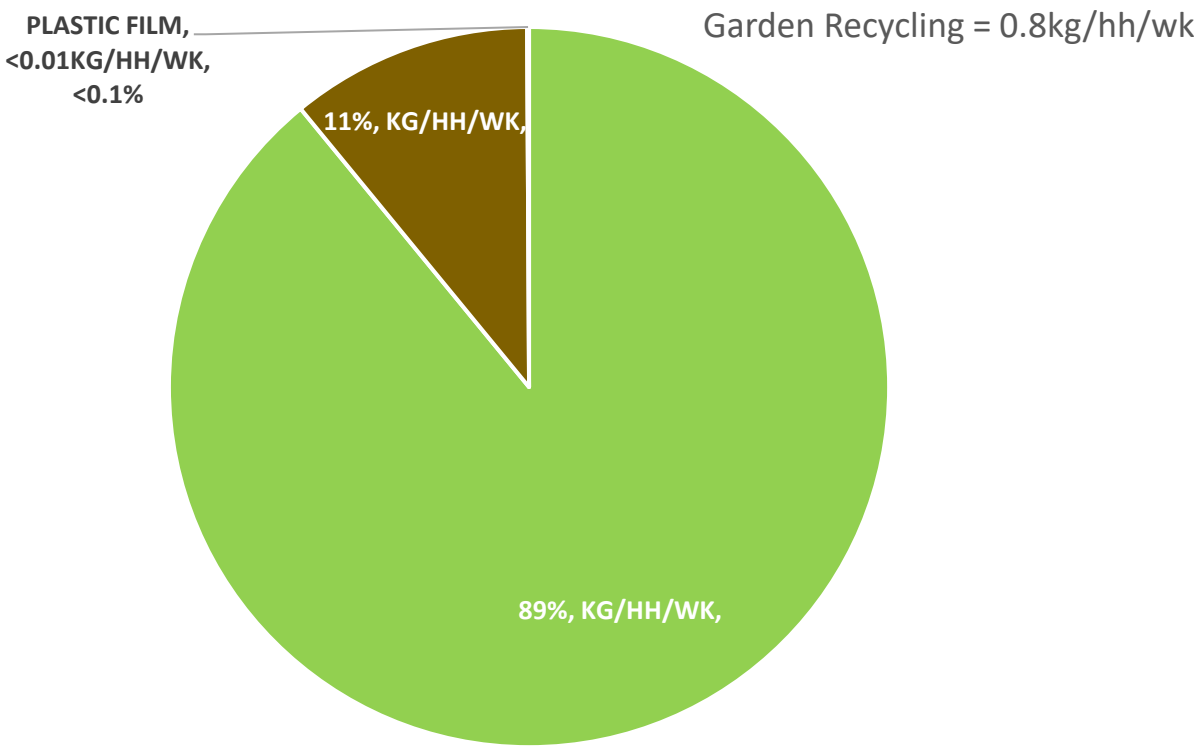
- Over a quarter of the contamination in the dry mixed recycling was due to non-recyclable plastics. These accounted for around 8.6% of all the dry mixed recycling collected equating to 0.37kg/hh/wk. Of the non-recyclable plastics that were present, 34% was due to plastic film with 27% coming from plastic tubs, pots and trays.
- Around 23% of the contamination was due to non-recyclable paper (such as tissue, kitchen roll, shredded) and non-recyclable card (such as cartons and laminated card). These contaminants accounted for 7.1% of the collected recycling or 0.30kg/hh/wk.
- Food waste formed 16% of contamination with contained liquids (mainly in plastic bottles) contributing a further 10%. Food and liquids therefore accounted for 8.0% of the collected recycling or 0.34kg/hh/wk.
- General residual waste made up 15% of the contamination and included items such as electrical items, ceramics, nappies, carpet scraps and animal waste.
- Around 4% of the contamination within mixed dry recycling bins was due to textiles with 4% non-recyclable metals (such as aerosols and foil) and 1% non-recyclable glass.

Compositional of garden recycling

This section looks at the average amount and composition of the garden recycling presented by the selected Halton households.

Of the 0.84kg/hh/wk of garden waste generated across Halton around 89% was due to acceptable types of garden vegetation. The other main component was seen to be soil and tuft which amounted to 11% or 0.09kg/hh/wk of the total. Although this is garden waste, soil and turf are discouraged from the garden bins due to the potential excessive weights they contribute and also the fact that turf and soil are likely to contain non-biodegradable stones and grit. There was a trace amount of plastic in the form of bags within the collected garden recycling.

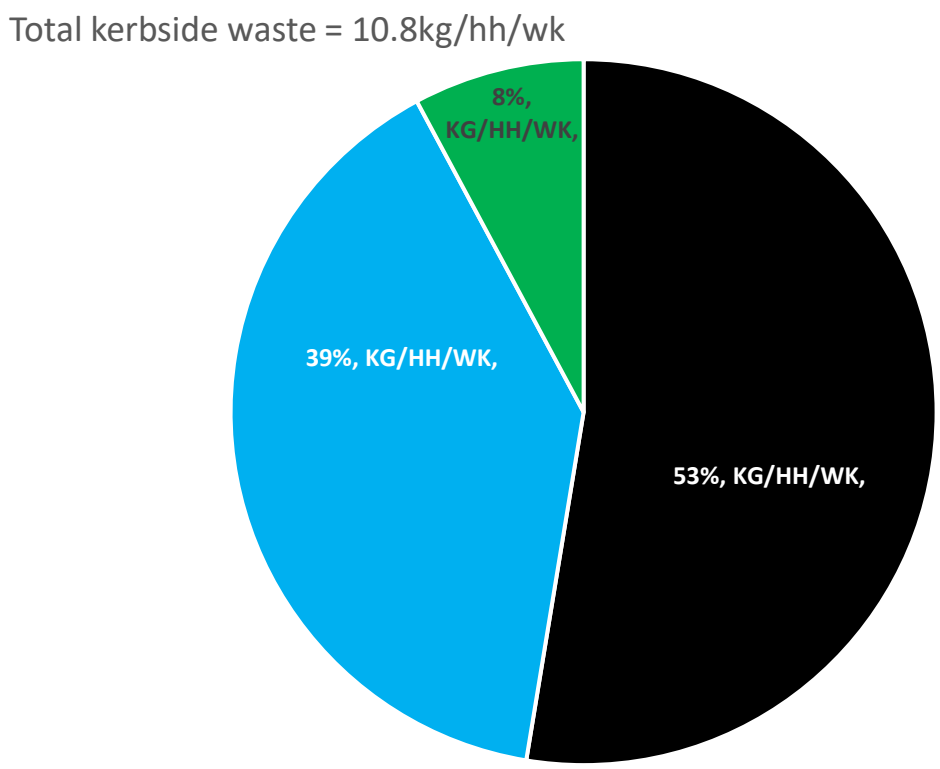
Figure 7 - Composition of garden recycling



Total Kerbside waste & separation

A total of 10.8kg/hh/wk of kerbside residual waste and recycling (dry mixed and garden) is being generated by Halton households. Just over half of this (53%) is contained within residual bins with 39% in mixed recycling bins and 8% in garden waste bins. Ideally all non-recyclable materials will be in the residual bins with all recyclables disposed of separately in the correct bins.

Figure 8 - Distribution of kerbside collected waste - as surveyed



Were all materials to be correctly separated into the desired bin (Figure 9) then there would be an additional 0.62kg/hh/wk of kerbside residual waste collected which would now account for 58% of all kerbside generated waste. The amount of material in the dry mixed recycling would fall by 0.63kg/hh/wk and would now account for 34% of total waste. Levels of garden waste would fall rise slightly by around 0.01kg/hh/wk.

Figure 10 shows that around 79% of all waste materials disposed of throughout Halton are correctly disposed of as either residual items in the kerbside residual bin or recyclables in either the dry mixed or garden recycling bins. Around 13.2% of all waste disposed of at the kerbside is deemed as contamination within the recycling with 7.5% being recyclable items within the residual waste.

Figure 9 - Distribution of kerbside collected waste - with correct waste separation

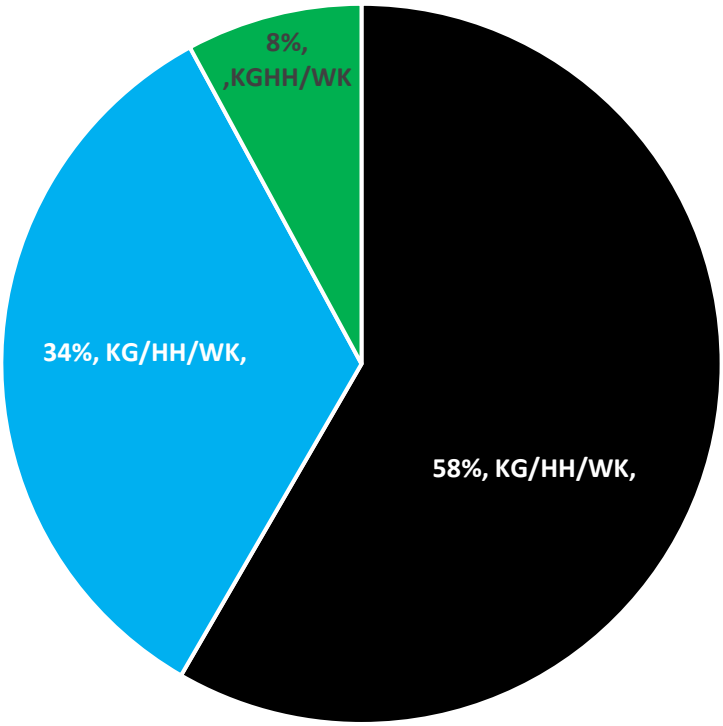
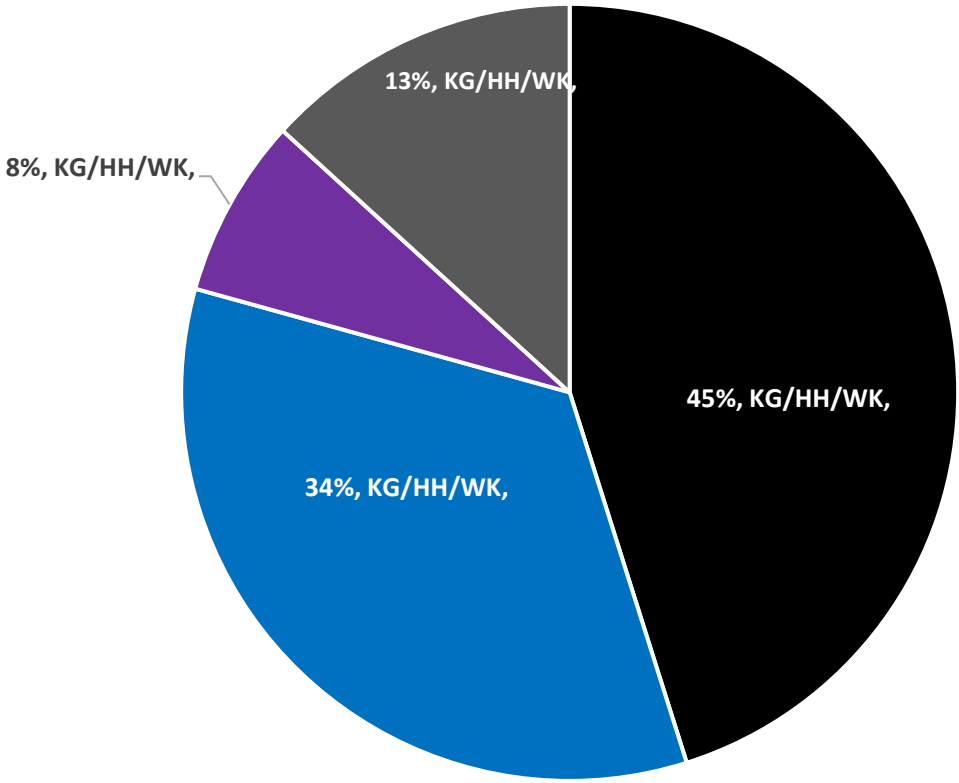


Figure 10 - Current separation of kerbside waste



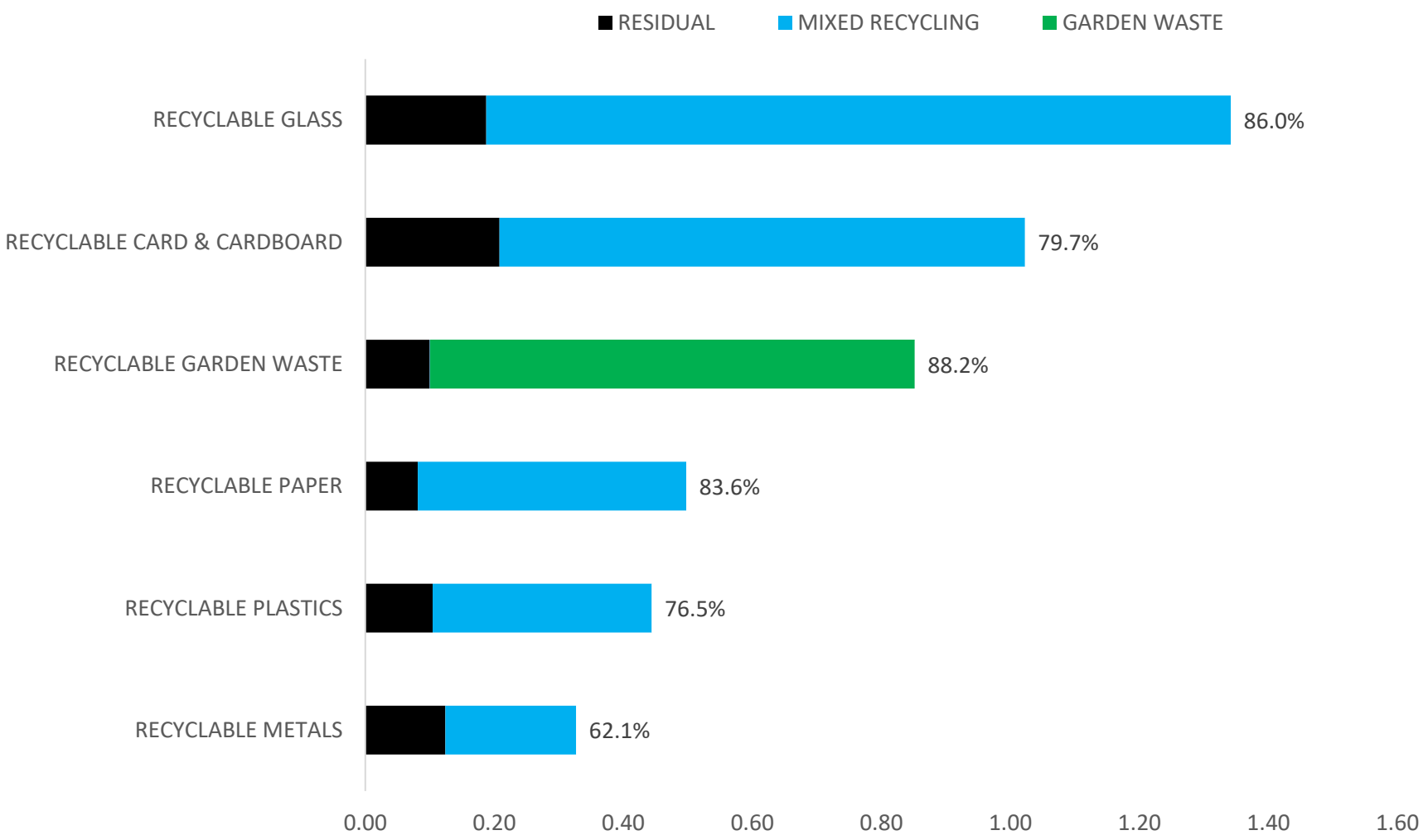
Efficiency of recycling target materials

Looking at the contents of all kerbside waste and recycling presented for kerbside collection it is possible to estimate the proportion of recyclable material correctly being disposed of (captured).

- A total of 0.85kg/hh/wk of garden vegetation is being disposed of at the kerbside, of this 0.75kg/hh/wk or 88% is being correctly disposed of in garden waste bins.
- A total of 1.34kg/hh/wk of glass bottles and jars are disposed of with 86% (1.15kg/hh/wk) correctly being recycled.
- A total of 0.50kg/hh/wk of recyclable paper is disposed of with 84% (0.42kg/hh/wk) correctly being recycled.
- A total of 1.02kg/hh/wk of recyclable card and cardboard is disposed of with 80% (0.81kg/hh/wk) correctly being recycled.
- A total of 0.44kg/hh/wk of plastic bottles are disposed of with 77% (0.34kg/hh/wk) correctly being recycled.
- A total of 0.33kg/hh/wk of recyclable metal is disposed of with 62% (0.20kg/hh/wk) correctly being recycled.
- Overall, 3.63kg/hh/wk of recyclable paper, card, plastic, glass and metal is disposed of with 81% or 2.93kg/hh/wk correctly placed into recycling bins.

Diversion rates are determined by the total amount of material correctly recycled, relative to the total amount of kerbside waste overall. Currently, 0.75kg/hh/wk of garden vegetation is correctly recycled. This represents a diversion rate of 7.0%. In addition, 2.93kg/hh/wk of dry mixed recyclables are correctly recycled. This represents a diversion rate of 27.2%. Therefore, it can be said that from this survey, 34.2% of Halton waste is being diverted. Were all of the recyclable materials correctly disposed of then the potential diversion rate that could be achieved is 41.6%.

Figure 11 - Kg/hh/wk of recyclable materials in total kerbside waste with % capture rates



Efficiency of recycling target materials

From the compositional analysis it is estimated that around 35.6% or 3.8kg/hh/wk of all waste disposed of at the kerbside consists of packaging. Much of the material that is acceptable for current recycling collections is deemed to be packaging in the form of card, tins, cans, jars and bottles.

Potentially PET plastic bottles, drink cans and glass bottles used for consumable liquids and below 3L capacity will also soon become available for deposit return schemes (DRS). Therefore, they may be removed from the kerbside waste stream.

Packaging EPR (extended producer responsibility); producers will also potentially become responsible for packaging material which includes items not covered by DRS.

There is also future potential to expand the current recycling schemes running in Halton. Food waste is not currently collected but is likely to be a future requirement. Materials such as plastic tubs, pots , trays, foils, cartons and aerosols are also widely recycled at the kerbside and may be introduced.

Table 2 shows materials that are potentially divertible from the kerbside waste.

Table 2 - Potential future divertible waste

MATERIALS POTENTIALLY DIVERTIBLE FROM RESIDUAL WASTE VIA EXPANDED / NEW SCHEMES	KG/HH/WK	% OF KERBSIDE WASTE
FOOD	2.59	24.0%
TUBS, POTS, TRAYS	0.24	2.2%
PLASTIC FILMS	0.45	4.1%
FOIL	0.04	0.4%
AEROSOLS	0.04	0.4%
CARTONS	0.03	0.3%
DRS	1.55	14.4%
ADDITIONAL EPR	1.50	14.0%

- Around 24% of kerbside waste (2.59kg/hh/wk) is due to food that could have its own separate collection. This could be diverted away from the residual waste.
- Around 7.6% of kerbside waste (0.80kg/hh/wk) is due to recyclable food containers, plastic film, foil, aerosols and cartons that could form part of an expanded mixed recycling collection . These

materials could be diverted away from the residual waste and would now not be considered recycling contaminants.

- DRS containers form 14.4% or 1.55kg/hh/wk of kerbside waste. These packaging items are already part of the mixed recycling scheme so could potentially be diverted away from both residual and dry mixed recycling collections.
- In addition to DRS items a further 14.0% or 1.50kg/hh/wk of kerbside waste is classed as EPR items.

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	DIY RUBBLE & CERAMICS

INERTS	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