Merseyside & Halton Waste Partnership

Kerbside Household Waste Composition Analysis

Final Report

October 2010










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Merseyside & Halton Waste Partnership

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Final Report

October 2010

Entec UK Limited

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Executive Summary

Purpose of this Report

This report has been produced for the purpose of presenting the kerbside household waste composition of the Merseyside and Halton Waste Partnership (MHWP).

The Merseyside and Halton Waste Partnership (MHWP) is comprised of the five District Councils on Merseyside (Knowsley, Liverpool, St Helens, Sefton and Wirral), the Merseyside Waste Disposal Authority (MWDA) and Halton. MWDA is a Joint Waste Disposal Authority representing the five Merseyside District Councils and Halton Borough Council is a Unitary Authority. Together the Authorities provide domestic waste collection and disposal services to over 640,000 households. The Partnership requires a household waste composition analysis to identify the main waste materials arising by weight within the Local Authority areas of the Partnership. The results of the analysis will be used as part of ongoing waste growth and composition forecasting, to inform the review of the Merseyside Joint Municipal Waste Management Partnership Strategy 2008 and the aligned Halton Municipal Waste Management Strategy 2008.

The sample design was based on the socio-demographic (ACORN) profile of the households in each of the six Districts of the Partnership, acknowledging and controlling for variations in household waste generation associated with factors such as income and housing types. There are also variations in waste generation associated with the season, so samples were collected in March and June 2010 to account for seasonal differences. In each season waste was collected from 100 targeted households in each District.

Sample areas were identified to represent the main socio-demographic groups of the ACORN profile for each District. During two weeks of sample collection, all of the waste presented by randomly selected households in the identified sample areas was captured for analysis. Samples were delivered to the South Sefton Recycling Park where they were manually sorted into 62 material categories.

Individual sample data were used to model arisings figures (kilograms per household per week, kg/hh/wk) and compositions (weight percent, wt %) at District and the Partnership level. Study average figures were calculated by combining data from both the March and June studies providing composition data while controlling for seasonality as a factor.

This report presents the results from the second household waste sort exercise conducted in March 2010 along with the results of the June 2010 waste sort. District average figures and Partnership average figures are provided for each season as well as study average figures.

This final report presents indicative waste compositional information from the seasonal analyses undertaken in March and June 2010 of kerbside household waste arisings in Merseyside and Halton as well as study average

results for the Districts and Partnership. Data on the biodegradable content of the waste streams, calorific value of the residual waste stream and recycling and organic material content and capture is also provided.

The Headline results from the study are presented below:

Residual Waste

- MHWP residual waste arisings in March 2010 were 11.38 kg/hh/wk;
- MHWP residual waste arisings in June 2010 were 10.51 kg/hh/wk;
- MHWP study average residual waste arisings were 10.95 kg/hh/wk;
- The main material present in the residual waste were: organic catering, 28.4% (3.10 kg/hh/wk); paper, 13.1% (1.43 kg/hh/wk); and miscellaneous combustibles, 10.4% (1.14 kg/hh/wk);
- The Biodegradable Municipal Waste (BMW) content of the Partnership's residual waste was 61.5%;
- The calorific value (CV) of the residual waste at the Partnership level was 8.49 MJ/kg;
- Sefton had the lowest residual waste arisings, 8.09 kg/hh/wk; and
- St Helens had the highest residual waste arisings, 12.95 kg/hh/wk.

Garden Waste

- MHWP garden waste arisings in March 2010 were 1.77 kg/hh/wk;
- MHWP garden waste arisings in June 2010 were 3.41 kg/hh/wk;
- MHWP study average garden waste arisings were 2.59 kg/hh/wk;
- The main material present in the garden waste was organic non-catering, 97.1% (2.52 kg/hh/wk);
- The level of contamination (capture of non-target material) present in MHWP's organic waste (includes garden and food waste) was 3.4%;
- St Helens had the lowest garden waste arisings, 1.18 kg/hh/wk; and
- Sefton had the highest garden waste arisings, 3.85 kg/hh/wk.

Dry Recyclables

- MHWP dry recyclable arisings in March 2010 were 2.29 kg/hh/wk;
- MHWP dry recyclable arisings in June 2010 were 2.49 kg/hh/wk;

- MHWP study average dry recyclable arisings were 2.39 kg/hh/wk;
- The main materials present in the dry recyclables were paper, 43.8% (1.05 kg/hh/wk); and, glass, 28.4% (0.68 kg/hh/wk);
- The level of contamination (capture of non-target material) present in MHWP's dry recyclables was 8.3%;
- Liverpool had the lowest dry recyclable arisings, 1.25 kg/hh/wk; and
- Wirral had the highest dry recyclable arisings, 3.67 kg/hh/wk.

Food Waste

- MHWP food waste arisings in March 2010 were 0.10 kg/hh/wk;
- MHWP food waste arisings in June 2010 were 0.14 kg/hh/wk;
- MHWP study average food waste arisings were 0.12 kg/hh/wk; and
- The main material present in the food waste was organic catering, 99.3% (0.12 kg/hh/wk).

Combined Kerbside Waste Streams

- MHWP modelled combined kerbside waste arisings in March 2010 were 15.54 kg/hh/wk;
- MHWP modelled combined kerbside waste arisings in June 2010 were 16.55 kg/hh/wk;
- MHWP study average modelled combined kerbside waste arisings were 16.04 kg/hh/wk;
- The main material present in the modelled combined kerbside waste were: organic catering, 20.3% (3.25 kg/hh/wk); organic non-catering, 19.2% (3.11 kg/hh/wk); and paper, 15.5% (2.49 kg/hh/wk);
- The Biodegradable Municipal Waste (BMW) content of the Partnership's modelled combined kerbside waste was 67.1%;
- Sefton had the lowest modelled combined kerbside waste arisings, 15.49 kg/hh/wk; and
- Halton had the highest modelled combined kerbside waste arisings, 18.11 kg/hh/wk.

This report also estimates MHWP's overall household waste composition by integrating WDF tonnage data for the individual household waste streams (kerbside waste, HWRC waste, bring banks, litter bins, street sweepings, bulky waste, gully waste, fly tipped waste and other household collected wastes) with supporting compositional data. The dominant categories in the overall household waste stream include organic non-catering, organic catering, paper and miscellaneous combustibles at 17.4%, 14.8%, 12.5% and 11.3% respectively.

Contents

1. Introduction

1.1 Background

The Merseyside and Halton Waste Partnership (MHWP) is comprised of the five District Councils on Merseyside (Knowsley, Liverpool, St Helens, Sefton and Wirral), the Merseyside Waste Disposal Authority (MWDA) and Halton. In November 2009 MWDA, in partnership with Halton Borough Council, commissioned Entec UK Ltd to undertake a two season waste composition analysis.

MWDA is a Joint Waste Disposal Authority representing the five Merseyside District Councils and Halton Borough Council is a Unitary Authority. Together the Authorities provide domestic waste collection and disposal services to over 640,000 households, so understanding the disposal habits of these households is essential to the management of waste services in the future. One element of this is an understanding of the composition of the waste collected.

The Partnership requires a household waste composition analysis to identify the main waste materials arising by weight within the Local Authority areas of the Partnership. The results of the analysis will be used as part of ongoing waste growth and composition forecasting, to inform the review of the Merseyside Joint Municipal Waste Management Partnership Strategy 2008 and the aligned Halton Municipal Waste Management Strategy 2008.

The principal aim of the study is to provide a comprehensive two season waste composition analysis of household kerbside residual, recyclable, garden and food waste produced in Merseyside and Halton.

This final report has been produced for the purpose of presenting indicative waste compositional information from the seasonal analyses undertaken in March and June 2010 of household kerbside residual, recyclable, garden and food waste arisings in Merseyside and Halton.

Using the methodology described in Section 2, Entec devised a representative sampling strategy for the household kerbside waste using household collection information obtained from the Districts and the socio-demographic (ACORN) profile of the six Districts. During the three week waste composition exercise kerbside waste was collected by Entec from the selected sample areas. This material was then manually sorted into the material categories agreed by Entec and MWDA.

The seasonal and study average results plus the analysis of results are presented in this final report. It should be noted that the results from the waste composition survey presented in this report were produced from a limited number of waste samples and the data should be regarded as a snapshot. Therefore care should be applied to the use of this information in drawing conclusions regarding the overall waste composition of the household kerbside waste streams in Merseyside and Halton.

1.2 Aims and Objectives

The aim of the project was to provide up to date waste composition information for waste produced in Merseyside and Halton. The Partnership required the waste composition analysis over two seasons to understand any observable socio-economic and seasonal variations in order to predict general household waste composition. The study provides the following for the Partnership:

- A comprehensive two season waste composition analysis of household kerbside residual, recyclable garden and food waste;
- A statistically representative sample of the socio-economic profile of MHWP which is accurate within the accepted tolerances of industry best practice;
- An understanding of the residual, recyclable, garden and food waste set out by households within the areas sampled during the project;
- Establish the level of contamination in dry recyclables stream;
- Establish the gross calorific value of the residual waste stream;
- Establish the biodegradable content of the waste streams;
- Establish the dry recyclables and organic material content and capture; and
- A comparison of District and Partnership results.

The analysis of this household waste will contribute to the following outcomes:

- Provision of essential baseline data to assist in Merseyside's procurement programme for new, long term waste management contracts and the review of the joint municipal waste management strategy (JMWMS);
- Support Merseyside waste managers in improving and increasing existing recycling and composting services and options for future waste stream recycling;
- Support Merseyside waste managers in developing waste reduction, reuse and recycling strategies and action plans, which move waste management up the waste hierarchy; and
- Establish any links between household waste generation, season and the socio-economic characteristics of Merseyside local communities.

1.3 Report Structure

This report presents the seasonal and study average results from the kerbside household waste composition analyses conducted in 2010. The sampling and analysis methodologies adopted are detailed in Section 2. Summary results for the individual Districts and the Partnership are presented in Sections 3 to 10. Section 11

compares the individual District and Partnership results to each other and the England Kerbside Waste Composition 2006/07. Finally, Section 12 presents the conclusions of the analysis.

Summary and study average arisings and assay data for each of the Districts and the Partnership are presented in the Waste Analysis Results Tables document Appendices A to G.

2. Methodology

2.1 General

The project methodology is comprised of the following stages:

- Determination of sample size;
- Sample strategy;
- Sample design;
- Sample collection;
- Waste sorting;
- Material classification;
- Data analysis; and,
- Reporting.

2.2 Introduction

This study looks at kerbside residual, recyclable, garden and food waste collected within the Merseyside and Halton Waste Partnership (MHWP). In order to observe any seasonal variation, waste samples were collected for analysis in two seasons during March and June 2010. The March 2010 analysis represents a period with traditionally low garden waste arisings with several Districts reintroducing garden waste collections just prior to this period after a winter break. In contrast the June 2010 analysis represents a period of historically high garden waste arisings at the peak of the growing season. Waste is collected and analysed in two seasons in order to provide a complete picture of waste arisings and robust waste composition results by capturing any seasonal differences in waste generation and composition.

Table 2.1 summarises the kerbside schemes operated in each District.

Table 2.1 Kerbside Household Waste Collection Schemes in MHWP, Collection Frequency and Receptacle Type

District	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)
Knowsley	Weekly	Fortnightly	Fortnightly	Weekly (opt in)
	Wheeled bin	Wheeled bin	Wheeled bin	Caddy
Liverpool	Weekly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Wheeled bin or box	n/a
Sefton	Fortnightly	Fortnightly	Weekly	Weekly (opt in)
	Wheeled bin	Wheeled bin	Box and sacks	Caddy
St Helens	Weekly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Box and sacks	n/a
Wirral	Fortnightly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Wheeled bin	n/a
Halton	Weekly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Wheeled bin	n/a

A sampling matrix was designed to provide a rational, representative and repeatable basis for the collection of household kerbside waste samples. The sample matrix was developed following the procedure detailed below.

2.3 Determination of Sample Size

The sample size is required to be large enough to provide a robust representation of household residual waste whilst being small enough to be sorted within the resources designated for the study. Consequently, Entec sampled waste (residual, recyclable and organic) from 100 households in each District – a total sample of 600 households for the Partnership (see Table 2.2).

Table 2.2 Authorities. Households and Sample Size

Authority	Households*	Partnership Household Profile	Sample Size
Knowsley	62,175	7.7%	100
Liverpool	197,995	30.9%	100
Sefton	119,154	21.4%	100
St Helens	75,461	11.8%	100
Wirral	137,219	18.6%	100
MWDA	**592,004**	**-**	**500**
Halton	49,497	9.7%	100
MHWP	**641,483**	**100.0%**	**600**

Note (*): ACORN 2009 database

For populations over 50,000 a sample size of 100 will provide a result precision (Confidence Interval) of ±10% at a confidence level of 95%. Therefore a sample of 100 households will provide robust waste composition data for each District. A sample size a 600 provides a result precision (Confidence Interval) of ±5% at a confidence level of 95% and, therefore, robust waste composition data for the Partnership.

2.4 Sample Strategy

Several factors are recognised as having an influence on the amount and type of waste generated by households. Factors include: the age, income and size of individual households. For planning and predictive modelling it is important to use waste composition and arisings information that reflects the waste produced by the inhabitants of Merseyside and Halton. This implies that average waste composition and arisings data are required to be determined from samples of waste which are collected from a representative selection of households within the MHWP area.

Entec's approach to designing a robust sample of households to represent each of the participating Districts is based on stratified sampling. The socio-demographic tool 'A Classification of Residential Neighbourhoods (ACORN)' was used to profile the six Districts within the Partnership. ACORN is a recognised socio-demographic tool used in the majority of household waste composition survey projects. ACORN is based on Census data and classifies UK households according to a range of sociological, demographic, and economic indicators (e.g. age, sex, number of residents, income brackets, employment type, household amenities, property type and property location). ACORN classification codes are assigned to postcode areas. The database is widely used across disciplines and is owned and managed by CACI Ltd.

There are five primary ACORN categories, the strategy is to collect waste from the four prominent categories in each District, i.e., the categories of households that are the most common, and which will generate the majority of waste arising in each District. This recognises that there are likely to be differences in the waste generation habits between the different socio-demographic categories of household. These individual categories are sampled, rather than the whole population, thus reducing the overall burden of sampling. Table 2.2 below provides ACORN profiles for each District and MHWP. With samples collected from the shaded Category/District combinations shown in Table 2.3, samples representative of more that 90% of the households within each District will be provided for analysis.

Table 2.3 ACORN Category Profiles for the 6 Districts and MHWP

Category	Knowsley	Liverpool	Sefton	St Helens	Wirral	Halton	MHWP
1	8.5	7.6	21.1	15.2	20.8	17.6	14.7
2	0.4	11.6	4.0	0.6	4.0	0.8	5.3
3	30.6	17.6	43.8	33.4	37.5	25.4	30.5
4	9.7	20.0	9.4	19.3	16.6	18.9	16.1
5	50.8	41.6	21.7	31.5	21.1	37.2	32.9
U	0.0	1.6	0.1	0.0	0.0	0.0	0.5
	100	100	100	100	100	100	100
Representation	99.6	90.8	95.9	99.4	96.0	99.2	

2.5 Sample Design

Entec identified specific areas and roads from which collections could be made. Sample areas were chosen according to three primary considerations:

1. ACORN category;
2. Number of households; and
3. Collection day(s) and time(s).

Sample areas had to comprise of approximately 50 households of the same ACORN Category, as identified by postcode, improving the chances of collecting the required number of samples. Specific households were not targeted as there were no assurances that a particular household would put material out on the collection day. Once sample areas meeting the first two criterions were determined for each ACORN category a comparison of the collection day(s) and time(s) for each waste stream was undertaken to identify areas where kerbside collection of waste materials complemented each other allowing for sample collection to be carried out efficiently and with

minimum disruption to normal collection services. The areas selected by Entec were then sense checked by the Districts to confirm information on household numbers and collection day(s) and time(s) was correct and ensure that any local issues or factors (such as high incidence of unoccupied properties or access problems) were taken into account.

2.6 Sample Collection

The collection of waste samples was conducted by Entec sampling teams. Each sampling team comprised of a driver, loader and Entec Consultant. A 7.5 tonne box lorry with tail lift was used for the majority of sample collections, however, on occasions, due to issues such as vehicle breakdown, a long wheel base commercial van was also used. In order to collect the full compliment of waste streams collected at the kerbside, waste samples were collected over two weeks to reflect the fortnightly services carried out by some of the Districts. Samples were collected on the same day as routine collections to ensure that householders noticed no change in the service and their waste disposal/recycling habits were not affected. The teams endeavoured to arrive at the sample areas prior to normal collection crews in order to minimise disruption to normal collection services. However, on some occasions, for a number of operational and logistical reasons, it was necessary to liaise directly with the Districts to postpone some collection services to ensure the required samples could be collected.

Samples were collected from 25 households in each of the four pre-selected sample areas per District to provide the required sample of 100 households for each District and 600 households for the Partnership. The Entec Consultant recorded the set out rate by noting whether waste is presented for collection at all of the households in the sample area. All of the residual, recyclable, garden and food waste presented for collection by the 25 sample households was placed into bulk carrying sacks. The sacks were then labelled to give discrete samples for each waste stream that can be associated with the relevant sample area. Material from individual properties was not be marked or linked to specific households. Collected material was then be loaded onto the vehicle and transported to the sorting facility at South Sefton Recycling Park in Bootle.

Where residents approached the sampling team during the waste sample collection exercise the Entec Consultant was responsible for any interface with the public during the sampling exercise. Entec were provided with a pre-prepared letter for issue to curious householders, with details of the study and contact details for MWDA's project co-ordinator. Householders were not informed prior to the study, as this could alter the disposal habits of the residents, and affect the composition of the waste sampled.

2.7 Waste Sorting

An Entec representative supervised a dedicated waste sorting team to conduct a waste composition survey of each household kerbside waste sample delivered to South Sefton Recycling Park in Bootle.

Each sample was placed on a waste sorting table (a rectangular wire mesh screen with 10 mm holes surrounded by a metal frame) and materials larger than 10 mm were sorted by hand into separate bins according to the category of

waste. Waste materials less than 10 mm in size passed through the holes and were collected, weighed and recorded under the material classification category 'fines'. No further classification of the 'fines' fraction was undertaken.

2.8 Material Classification

The waste categories used for the waste composition survey were based upon the standard waste classification system which groups waste materials into primary categories and secondary categories (see Table 2.4 below).

MHWP were particularly interested in certain materials within the household kerbside waste streams including plastic bottles, Waste Electronic and Electrical Equipment (WEEE) and organic catering (food) waste. Therefore additional subcategories for these materials were included during the manual waste sort. Plastic bottles were sorted by polymer type and, in the case of PET and HDPE polymers, colour type (see Figure 2.1). WEEE was sorted into ten categories based upon the UK WEEE Regulations product categories. Organic catering (food) waste was sorted into four categories. Food waste was categorised by whether it was home compostable or non-home compostable. Within these categories the food waste was further categorized as scrap and/or used food waste and packaged and/or wholly unused food waste (see Figure 2.2).

Figure 2.1 Plastic Bottle Subcategories

Note: Clockwise from top left: PET natural; PET coloured; HDPE natural; HDPE coloured; and, other bottles.

Figure 2.2 Organic Catering Subcategories

Note: Clockwise from top left: home compostable kitchen waste; unused/avoidable home compostable kitchen waste; non-home compostable kitchen waste; and, unused/avoidable non-home compostable kitchen waste.

Table 2.4 Household Kerbside Waste Classification

Primary Category	Secondary Category	Examples
Paper	Newspapers	Local & National Newspapers (Broadsheets & Tabloids), non-glossy stapled magazines
	Magazines	Glossy magazines & glossy paper (gummed & stapled spines)
	Other Recyclable	Printer paper, books
	Paper Packaging	Paper bags and wrappings
	Other Non-Recyclable	Tissue paper, shredded paper
Card	Liquid cartons	Tetra packs, orange juice cartons etc.
	Board packaging	Corrugated card: boxes etc.
	Card packaging	Flat card: cereal card containers etc.
	Other	Greetings cards, photographs, train tickets, beer mats
Dense Plastic	Plastic Bottles – PET Natural	Soft drink bottles, other bottles
	Plastic Bottles – PET Coloured	Soft drink bottles, other bottles
	Plastic Bottles – HDPE Natural	Milk bottles, other bottles
	Plastic Bottles – HDPE Coloured	Milk bottles, other bottles
	Plastic Bottles – Other	PVC, PP, LDPE or other bottles
	Other Packaging	Expanded polystyrene packaging, food trays, pizza bases, yoghurt pots, etc.
	Other Dense Plastic	Video tapes, CD cases, CD's , toys, disposable razors, all non-packaging dense plastic
Plastic Film	Packaging Film	Crisp packets, sweet wrappers, bread bags, potato bags, food wrapping film, gift wrap
	Other Film	Refuse sacks, carrier bags, document wallets etc.
Textiles	Textiles	Clothing, rags, sheets, curtains, towels, fabric off cuts, balls of wool, wash cloths
	Shoes	All footwear
Miscellaneous Combustibles	Treated Wood	Any painted or treated wood
	Untreated Wood	Untreated (recyclable) wood, DIY off cuts, boxes, fencing, shelves
	Furniture	Complete (reusable) items of furniture made of plastic, wood, fabric & foam
	Disposable Nappies / Sanitary	Disposable nappies
	Other	Fluff, vacuum bags, sponges, soap, fake leather clothes, hand-bags, foam, tyres
	Carpet and Underlay	Carpet, rugs, carpet samples, bath mats, underlay
Glass	Glass Bottles	All glass bottles
	Glass Jars	All glass jars
	Other Glass	All other glass – windows glass, filament light bulbs, decorative ornaments
Misc. Non-Combustibles	Construction and Demolition	Floor tiles, plasterboard, plaster, rubble, sawdust, gravel, sand, cement
	Other	Stones, crockery, porcelain ornaments, flower pots, cinder, cat litter
Ferrous Metal	Food Cans	Attracted to magnets
	Beverage Cans	Attracted to magnets
	Aerosols	Attracted to magnets
	Other	Coat hangers, nails, cutlery, door furniture, car parts, metal aerosols attracted to magnets
Non-Ferrous Metal	Food Cans	NOT attracted to magnets
	Beverage Cans	NOT attracted to magnets
	Aerosols	NOT attracted to magnets
	Other	Non-magnetic aerosols, Aluminium foil, copper pipe, decorative furnishings, jewellery
WEEE	Fridges, Freezers	
	Large Household Appliances	Hoovers, microwaves, etc.
	Small Household Appliances	Toasters, kettles, etc.
	IT & Telecoms Equipment	Telephones, laptops, printers, faxes, etc.
	Consumer Equipment	Televisions, DVD players, CD/MP3 players, games consoles, radios etc.
	Electrical & Electronic Tools	Drills, electrical saws, sewing machines etc.
	Toys, Leisure & Sports Equip	Electronic toys, video games, sports equipment with electric or electronic components
	Lighting	Light fixtures and lamps
	Monitoring & Control Instruments	Smoke detectors, thermostats, weighing or measuring appliances, etc.
	Other WEEE	
Potentially Hazardous	Household Batteries	Non-lead acid batteries
	Car Batteries	Lead-acid batteries
	Identifiable Clinical Waste	Drugs, tablets & packaging, dressings, syringes, medical items, blood soiled waste
	Engine Oil	Engine Oil
	Other Potentially Hazardous	White spirit, thinners, paint, insecticides, bleach, chemicals, asbestos
Organic Catering	Home Compostable Kitchen Waste	Fruit & vegetable peelings, tea bags, liquids
	Unused Home Compostable Kitchen Waste	Packaged and/or whole fruit & vegetables, unused teabags and liquids
	Non-Home Compostable Kitchen Waste	Meat, processed food, bread, egg shells, chocolate, biscuits, cheese
	Unused Non-Home Compostable Kitchen Waste	Packaged and/or unused meat, processed food, bread, egg shells, chocolate, biscuits, cheese
Organic Non-Catering	Garden Waste	Twigs, leaves, grass cuttings, hedges trimmings, cut flowers
	Soil	Soil, soil laden plant roots
	Other Organic	Dead animals, excrement, organic animal bedding, bone
Fines	Fines	Fine material less than 10 mm

2.9 Quality Control Measures

Entec provided the waste sorting team with an induction session, which included a presentation and a practical workshop particularly focussed on health and safety and material classification. Entec representatives worked with the sorting teams and maintained close supervision, providing guidance throughout the waste composition survey.

Each sample was stored and sorted separately. Once the waste had been sorted, the Entec supervisors visually checked the material within each bin before weighing using calibrated scales. The sort site and sort tables were also swept and cleaned to minimise the potential for cross contamination of samples.

2.10 Data Analysis

All of the waste sort data was entered into Excel spreadsheets according to district, ACORN and material type. Data from the sample collection sheets (for example, number of households sampled, and the number presenting different material streams) was similarly recorded. This data was then used to calculate the arisings of the different waste streams at District and Partnership level. Not all households will present dry recyclables or garden waste on the day of sample collection. To account for this a set-out rate was calculated for these materials. Residual waste on the other hand was assumed to have a 100% set-out and does not include set-out in its calculation.

Set Out

The set-out for the different material streams was calculated as follows:

$$\frac{100}{\text{(Total number of households in sample area)}} \times \text{(Number of households presenting material stream type)} = \text{Set-Out (\%)}$$

Arisings

Arisings (kg / hh / wk) of dry recyclables and garden waste were calculated as follows:

$$\frac{\text{(Total weight of material reporting to material category, kg)}}{\text{(Number of households sampled)} \times \text{(Number of weeks in normal collection period)}} \times \text{(Set-Out \%)} = \text{Material Arisings (kg/hh/wk)}$$

Arisings (kg / hh / wk) of residual waste were calculated as follows:

$$\frac{\text{(Total weight of material reporting to material category, kg)}}{\text{(Number of households sampled)} \times \text{(Number of weeks in normal collection period)}} = \text{Residual Waste Arisings (kg/hh/wk)}$$

Waste arisings were modelled using the sample data obtained for each District. This was done by combining arisings data for the sample areas in each District in proportion to the District's sample profile.

Modelled District arisings were calculated as follows:

(ACORN 1 kg/hh/wk x ACORN 1 Profile) + (ACORN 2 kg/hh/wk x ACORN 2 Profile) + (ACORN 3 kg/hh/wk x ACORN 3 Profile) + (ACORN 4 kg/hh/wk x ACORN 4 Profile) + (ACORN 5 kg/hh/wk x ACORN 5 Profile) = District kg/hh/wk

Modelled Partnership arisings were calculated as follows:

For all districts $\sum$ (district kg/hh/wk) x (Partnership Household Profile) = Partnership kg/hh/wk

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses:

$$\frac{\text{(Arisings reporting to material category March 2010, kg/hh/wk)} + \text{(Arisings reporting to material category June 2010, kg/hh/wk)}}{\text{(Total arisings March 2010, kg/hh/wk) + (Total arisings June 2010, kg/hh/wk)}} = \text{Study Average Material Arisings (kg/hh/wk)}$$

Confidence Interval

The confidence interval is a measure of accuracy or robustness. There are three factors that determine the size of the confidence interval for a given confidence level:

- Sample size;
- Results; and
- Population.

As sample size increases the greater the probability that the results from the sample truly reflect the population. Therefore, for a given confidence level, the larger the sample size, the smaller the confidence interval. However the relationship is not linear (i.e. doubling the sample size does not halve the confidence interval).

The accuracy of a survey or study is also dependent upon the results of the survey or study. For example if 99% of a sample is comprised of one material (e.g. garden waste) the chances of error are remote regardless of sample size.

Conversely, if a sample is comprised of three prominent materials at 33% each the chances of error are much greater.

The size of the population the sample represents also has a bearing upon the confidence interval. Population size is generally only a factor when examining a relatively small population. For larger populations (>20,000), the mathematics of probability proves the size of the population is irrelevant (provided the sample is representative). This means a sample size of 100 is equally useful for all “large” populations regardless of whether they are 50 thousand or 50 million in size.

Stratified sampling can reduce sampling error if the variable of interest (i.e. waste) varies across strata in the same way it varies within the population. However, although ACORN (the tool used in this study to identify strata in the sample population) is based on a number factors considered to be relevant to waste generation, such as income, consumption habits and housing type (which in turn can be linked to waste collection methods), others may be totally irrelevant. The stratification benefits of ACORN have not been quantified however Entec further control against unintended bias with consideration of the ACORN profile at the group and type level to improve the strata identification process.

Entec have used the sample size (number of households) and worse case percentage (i.e. the one closest to 50%) to determine an indicative confidence interval for a given sample. A standard normal distribution for the material categories was assumed to apply. For residual waste and dry recyclables stream indicative confidence intervals were determined using the “worst case” primary category only. However for garden and food waste indicative confidence intervals were determined by using the “worst case” secondary category due to the limited number of materials present in these streams. Confidence Intervals are included to provide an indication of the robustness for each set of results however they will only hold for the most prominent material categories (primary level for residual waste and dry recyclables, secondary level for garden and food waste).

2.11 Biodegradable Municipal Waste (BMW)

Biodegradable waste is defined as "waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and cardboard" in the EC Landfill Directive (99/31/EC). Biodegradability content factors assigned by Defra for different waste fractions are presented in Table 2.5. The biodegradable municipal waste (BMW) content of the MHWP and District waste streams was calculated by multiplying the individual waste components in each waste stream by its biodegradability factor.

Table 2.5 Kerbside Waste Biodegradable Content Factors

Primary Material Category	Biodegradability Factor
Paper	100%
Card	100%
Dense Plastic	0%
Plastic Film	0%
Textiles	50%
Misc. Combustibles	50%
Glass	0%
Miscellaneous Non-Combustibles	0%
Ferrous Metal	0%
Non-Ferrous Metal	0%
WEEE	0%
Potentially Hazardous	0%
Organic Non-Catering	100%
Organic Catering	100%
Fines	50%

2.12 Calorific Value Assessment

The calorific value (CV) of the residual waste stream has been determined for each of the Districts and MHWP. Entec calculate residual waste CVs based on the study average waste composition and using reference values for the CV of individual waste materials.

2.13 Dry Recyclables Content and Capture

Further analysis of the District and MHWP waste arisings data was undertaken to calculate the capture of potentially recyclable material. The capture of target materials is calculated by determining the total amount of targeted dry recyclable materials collected for recycling and dividing by the total amount of targeted dry recyclable material present in the combined kerbside waste streams. In addition the capture of non-target material is calculated by determining the total amount of non-target material (contamination) present in the dry recyclables stream and dividing by the total amount of material collected in the dry recyclables stream.

2.14 Organic Material Content and Capture

Further analysis of the District and MHWP waste arisings data was undertaken to calculate the capture of potentially compostable organic material. The analysis includes both organic catering (food) and/or non-organic catering (garden) waste dependent upon the waste collection services offered by the Districts. The capture of targeted materials is calculated by determining the total amount of targeted organic materials collected for composting and dividing by the total amount of targeted organic material present in the combined kerbside waste streams. In addition the capture of non-target material (contamination) is calculated by determining the total amount of non-target material present in the organics stream and dividing by the total amount of material collected in the organics stream.

2.15 Data Substitutions

During the March 2010 Entec were unable to collect a number of samples due to issues such as vehicle breakdowns or because the regular collection crew had already collected the waste material prior to the arrival of the Entec sample team.

In March 2010 Entec were unable to collect the Liverpool ACORN 2 residual waste sample and Sefton ACORN 4 residual waste sample. In order to provide a complete waste composition profile this stream was modelled using proxy data from the other MHWP Districts and data held by Entec. Equally Entec were unable to collect St Helens ACORN 3 and 4 red bag (plastic bottles) dry recyclables. These streams were also modelled using data from the collected St Helens ACORN 1 and 5 red bag dry recyclables samples. Entec have re-examined and, where necessary, amended these modelled results in light of the June 2010 results.

In June 2010 Entec were unable to collect the St Helens ACORN 1 garden waste sample from the selected sample area. However Entec were able to collect this garden waste sample from an alternative ACORN 1 sample street during the following week. Please note that although St Helens ACORN 1 garden waste was collected from households of the same ACORN category and type different sample areas were used for the March and June 2010 exercises.

2.16 Project Limitations

The data from this exercise, as with any waste composition study, represent a snap shot of the waste arisings. Furthermore, since ‘normal’ compositions for any given area vary, any individual result however precise is part of a ‘normal’ range of results. Hence all results should be regarded as snap shots.

Factors affecting the potential reliability of the data include the following:

- Waste composition varies on a seasonal and daily basis. Special occasions (e.g. residents’ birthdays, parties etc.) and unexpected events (e.g. severe weather) may alter the regular waste disposal patterns

of households. If these occasions/events occurred during the waste composition survey the results could become skewed;

- Set-out rates were used in dry recyclables and garden waste arisings calculations. Set-out provides a fairly arbitrary measurement of public involvement in recycling schemes which necessarily influences the reliability of dry recyclables and garden waste arising results. However, although less confidence can be placed on results for arisings of dry recyclables and garden waste due to use of an imperfect measure of participation, composition results are based on the actual material present within the samples and considered robust to the indicative confidence levels stated for each set of results;

- Factors such as weather on the collection day and overnight storage can have an effect on the results. For example, rainwater can increase the weight of wastepaper if left exposed and similarly, any moisture loss from samples stored overnight can reduce the sample weight; and

- Finally, please note that all weights and composition figures may be subject to rounding errors of 1 kg, in the case of weight data, or 0.1%, for composition data.

3. Kerbside Household Waste Composition

3.1 Introduction

The following chapters present the results by District of the kerbside household waste composition exercises undertaken during March and June 2010. This section presents summaries of the sample profiles and set out by District.

3.2 District Sample Profiles

Table 3.1 presents the sample profiles for each District.

Table 3.1 District Sample Profiles

Category	Knowsley	Liverpool	Sefton	St Helens	Wirral	Halton
1	8.6		22.1	15.3	21.8	17.8
2		13.9				
3	30.7	19.9	44.8	33.6	38.5	25.7
4	9.8	22.3	10.4	19.5	17.6	19.1
5	50.9	43.9	22.7	31.6	22.1	37.4
	100	100	100	100	100	100

3.3 Set Out

Table 3.2 presents the Set Out rates for each District.

Table 3.2 Set Out Rates

District	ACORN	Garden Waste		Dry Recyclables		Food Waste	
		March	June	March	June	March	June
Knowsley	1	21.4%	22.6%	77.4%	90.3%	9.4%*	11.0%*
	3	20.0%	54.0%	72.0%	62.0%	9.4%*	11.0%*
	4	25.8%	29.2%	74.2%	72.9%	9.4%*	11.0%*
	5	26.8%	24.2%	45.1%	30.3%	9.4%*	11.0%*
Liverpool	2	92.6%	43.6%	38.9%	72.7%	-	-
	3	45.0%	34.9%	63.2%	69.8%	-	-
	4	26.7%	56.0%	51.1%	64.0%	-	-
	5	n/a	n/a	10.0%	32.0%	-	-
Sefton	1	18.8%	81.3%	28.1%	89.1%	6.3%	18.8%
	3	27.6%	89.7%	82.8%	82.8%	22.4%	44.8%
	4	n/a	n/a	38.7%	10.7%	5.3%	1.3%
	5	19.0%	62.1%	37.9%	48.3%	13.8%	6.9%
St Helens	1	23.1%	52.5%	30.0%	49.2%	-	-
	3	58.8%	31.4%	56.9%	82.4%	-	-
	4	n/a	n/a	14.6%	11.5%	-	-
	5	20.0%	16.4%	34.5%	25.5%	-	-
Wirral	1	20.0%	49.1%	90.6%	92.5%	-	-
	3	29.0%	88.6%	67.1%	87.3%	-	-
	4	13.5%	25.0%	46.2%	34.6%	-	-
	5	3.3%	23.3%	50.0%	90.0%	-	-
Halton	1	30.8%	54.2%	92.3%	85.4%	-	-
	3	33.3%	67.7%	85.7%	66.7%	-	-
	4	18.8%	16.5%	59.6%	55.3%	-	-
	5	17.0%	40.9%	26.1%	26.1%	-	-

Note: 100% set out assumed for residual waste

Note (*): Participation rates for food waste provided by Knowsley Council (see Section 4.3)

4. Knowsley Kerbside Household Waste Composition Results

4.1 Introduction

This chapter looks at kerbside residual, recyclable, garden and food waste collected within the District of Knowsley. Table 4.1 summarises the kerbside schemes operated in Knowsley.

Table 4.1 Kerbside Household Waste Collection Schemes in Knowsley, Collection Frequency and Receptacle Type

District	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)
Knowsley	Weekly	Fortnightly	Fortnightly	Weekly (opt in)
	Wheeled bin	Wheeled bin	Wheeled bin	Caddy

4.2 Knowsley Sample Profile

Entec's sample design is based upon stratified sampling of the prominent ACORN categories in each District. District waste arisings are modelled using the sample data obtained for each strata and combining it in proportion to the District's sample profile (Table 4.2).

Table 4.2 Knowsley Sample Profile

District	ACORN Category	Households in ACORN Category (%)	Sample Profile
Knowsley	1	8.5	8.6
	3	30.6	30.7
	4	9.7	9.8
	5	50.8	50.9
	Total	99.6	100.0

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

4.3 Set Out

Table 4.3 presents the set out rates for March and June 2010 of kerbside collected services in Knowsley. Due to the opt-in nature of the food waste service and relatively low level of participation in this new service it was difficult to record set out rates therefore the actual participation rates for this waste stream have been used (as provided by Knowsley Council).

Table 4.3 Knowsley Set Out Rates

ACORN	Garden Waste		Dry Recyclables		Food Waste	
	March	June	March	June	March	June
1	21.4%	22.6%	77.4%	90.3%	9.4%	11.0%
3	20.0%	54.0%	72.0%	62.0%	9.4%	11.0%
4	25.8%	29.2%	74.2%	72.9%	9.4%	11.0%
5	26.8%	24.2%	45.1%	30.3%	9.4%	11.0%

Note: 100% set out assumed for residual waste

4.4 Residual Waste

4.4.1 Summary Results

During the March 2010 analysis a total of 1,021 kg of residual waste was collected and analysed from 93 sample households within the District of Knowsley.

In June 2010 923 kg of residual waste was collected and analysed from 95 sample households within the District of Knowsley.

Figure 4.1 and Table 4.4 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

4.4.2 Study Average Results

A total of 1,944 kg of residual waste was collected and analysed from 188 sample households within the District of Knowsley during the March 2010 and June 2010 waste composition exercises.

Figure 4.2 and Table 4.5 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

Figure 4.1 Knowsley Kerbside Residual Waste Arisings (kg/hh/wk), March & June 2010

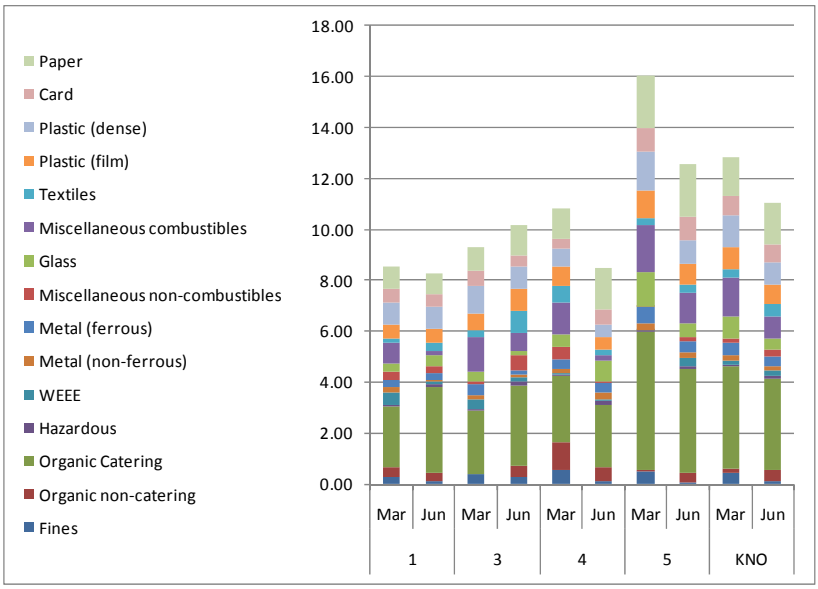

Table 4.4 Knowsley Kerbside Residual Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Knowsley	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	10.4%	10.2%	10.0%	11.5%	11.1%	19.1%	12.8%	16.5%	11.9%	14.9%
Card	6.0%	5.7%	6.7%	4.5%	3.5%	6.9%	5.9%	7.2%	5.9%	6.4%
Plastic (dense)	10.1%	10.9%	11.6%	8.6%	6.6%	6.1%	9.4%	7.1%	9.7%	7.7%
Plastic (film)	6.4%	6.3%	7.0%	8.2%	7.2%	5.3%	6.9%	6.7%	6.9%	7.0%
Textiles	2.1%	4.2%	3.0%	9.0%	5.9%	3.0%	1.6%	2.7%	2.3%	4.6%
Misc. Combustibles	9.9%	1.9%	14.3%	6.5%	11.7%	2.4%	11.6%	9.5%	12.1%	7.6%
Glass	3.8%	5.2%	4.2%	1.7%	4.1%	9.9%	8.4%	4.0%	6.9%	3.9%
Misc. Non-combustibles	3.3%	2.9%	1.3%	6.1%	4.8%	0.5%	0.1%	1.4%	1.0%	2.7%
Metal (ferrous)	3.6%	3.4%	4.7%	1.6%	3.6%	4.5%	3.8%	3.7%	4.0%	3.1%
Metal (non-ferrous)	2.4%	0.8%	1.7%	1.2%	1.1%	3.1%	1.7%	1.4%	1.7%	1.4%
WEEE	5.5%	1.0%	3.8%	1.6%	0.8%	0.6%	0.3%	2.7%	1.4%	2.1%
Hazardous	0.9%	1.9%	0.6%	1.3%	0.5%	1.6%	0.3%	0.9%	0.4%	1.1%
Organic Catering	28.1%	40.7%	27.0%	31.5%	24.1%	29.1%	33.9%	32.6%	31.2%	32.6%
Organic Non-catering	4.6%	3.8%	0.0%	4.2%	10.1%	6.5%	0.2%	3.0%	1.3%	3.6%
Fines	2.9%	1.2%	4.1%	2.6%	4.8%	1.3%	3.1%	0.4%	3.5%	1.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 4.2 Knowsley Kerbside Residual Waste Arisings (kg/hh/wk), Study Average

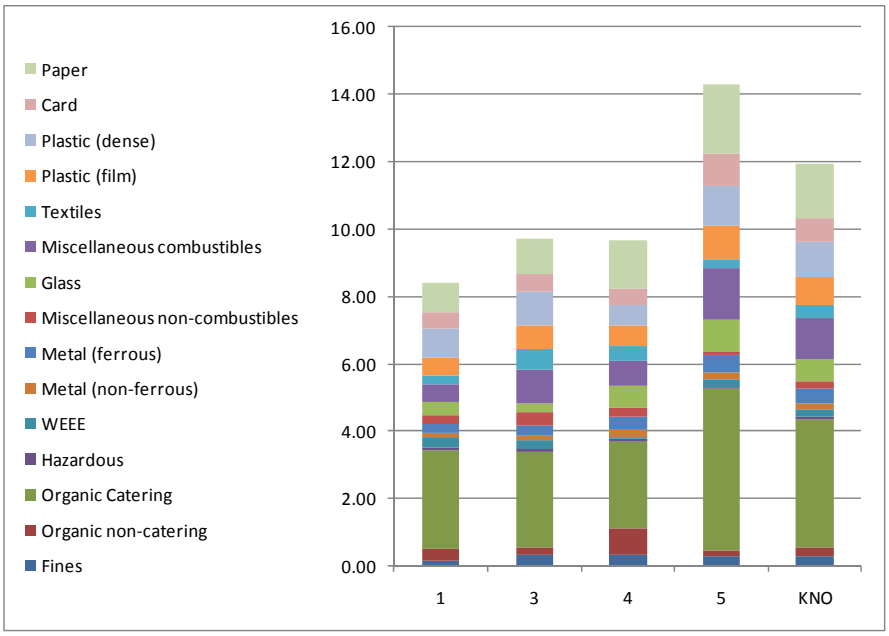

Table 4.5 Knowsley Kerbside Residual Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Knowsley
Paper	10.3%	10.8%	14.6%	14.4%	13.3%
Card	5.9%	5.6%	5.0%	6.5%	6.1%
Plastic (dense)	10.5%	10.0%	6.4%	8.4%	8.8%
Plastic (film)	6.3%	7.6%	6.4%	6.8%	7.0%
Textiles	3.1%	6.1%	4.6%	2.1%	3.3%
Miscellaneous Combustibles	6.0%	10.2%	7.6%	10.7%	10.0%
Glass	4.5%	2.9%	6.7%	6.5%	5.5%
Miscellaneous Non-combustibles	3.1%	3.8%	3.0%	0.7%	1.8%
Metal (ferrous)	3.5%	3.1%	4.0%	3.8%	3.6%
Metal (non-ferrous)	1.6%	1.4%	2.0%	1.6%	1.6%
WEEE	3.3%	2.6%	0.7%	1.3%	1.7%
Hazardous	1.4%	1.0%	1.0%	0.5%	0.7%
Organic Catering	34.3%	29.4%	26.3%	33.3%	31.8%
Organic Non-catering	4.2%	2.2%	8.5%	1.5%	2.4%
Fines	2.1%	3.3%	3.3%	1.9%	2.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 421 kg of residual waste was collected from 50 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 8.41 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 34.3%, dense plastic at 10.5%, paper at 10.3% and plastic film at 6.3%.

ACORN 3 Study Average

A total of 458 kg of residual waste was collected from 47 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±13% at a confidence level of 95%.

The average residual waste arising per household was 9.72 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper, miscellaneous combustibles and dense plastic at 29.4%, 10.8%, 10.2% and 10.0% respectively.

ACORN 4 Study Average

A total of 493 kg of residual waste was collected from 51 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±13% at a confidence level of 95%.

The average residual waste arising per household was 9.65 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 26.3%, paper at 14.6% and organic non-catering at 8.5%.

ACORN 5 Study Average

A total of 572 kg of residual waste was collected from 40 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average residual waste arising per household was 14.28 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and miscellaneous combustibles at 33.3%, 14.4% and 10.7% respectively.

Knowsley Study Average

A total of 1,944 kg of residual waste was collected from 188 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±7% at a confidence level of 95%.

The average residual waste arising per household was 11.92 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 31.8%, paper at 13.3%, miscellaneous combustibles at 10.0% and dense plastic at 8.8%.

4.5 Garden Waste

4.5.1 Summary Results

During the March 2010 analysis a total of 367 kg of garden waste was collected and analysed from 41 sample households within the District of Knowsley.

In June 2010 768 kg of garden waste was collected and analysed from 67 sample households within the District of Knowsley.

Figure 4.3 and Table 4.6 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

4.5.2 Study Average Results

A total of 1,135 kg of garden waste was collected and analysed from 108 sample households within the District of Knowsley during the March 2010 and June 2010 waste composition exercises.

Figure 4.4 and Table 4.7 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

Figure 4.3 Knowsley Kerbside Garden Waste Arisings (kg/hh/wk), March & June 2010

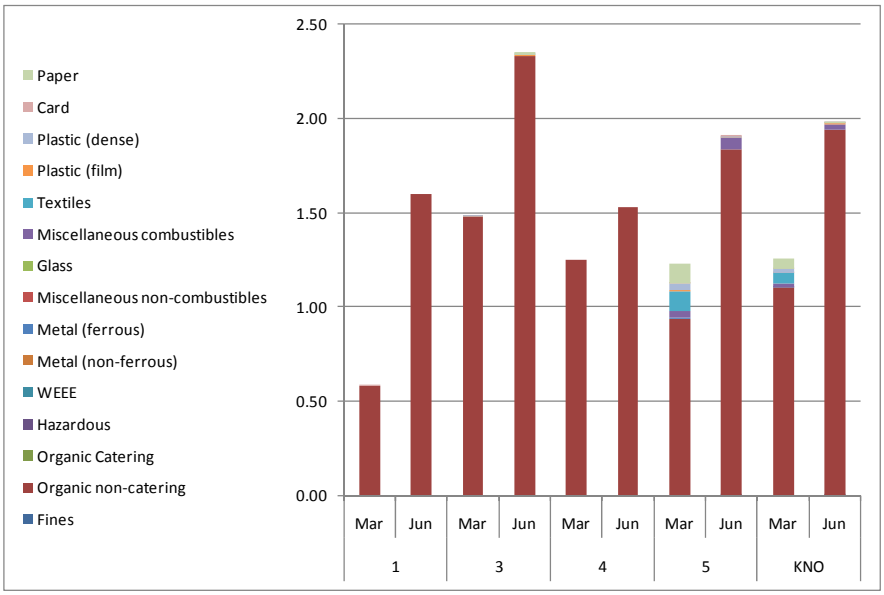

Table 4.6 Knowsley Kerbside Garden Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Knowsley	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	8.7%	0.0%	4.3%	0.2%
Card	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
Plastic (dense)	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	2.9%	0.2%	1.5%	0.1%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.3%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.2%	0.0%	4.1%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	3.3%	1.6%	1.6%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	99.7%	100.0%	99.8%	99.3%	100.0%	100.0%	76.3%	96.3%	88.1%	97.9%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 4.4 Knowsley Kerbside Garden Waste Arisings (kg/hh/wk), Study Average

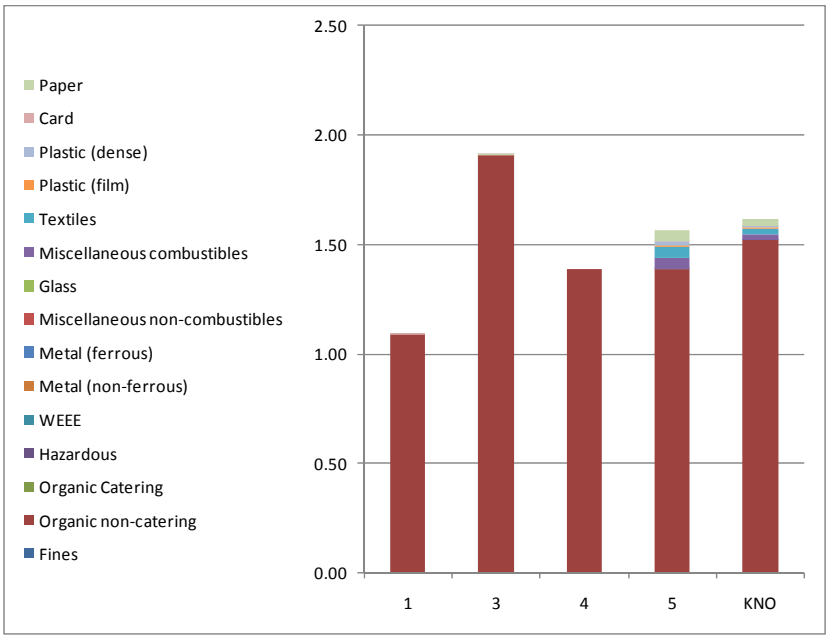

Table 4.7 Knowsley Kerbside Garden Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Knowsley
Paper	0.0%	0.4%	0.0%	3.4%	1.8%
Card	0.1%	0.0%	0.0%	0.1%	0.0%
Plastic (dense)	0.0%	0.1%	0.0%	1.2%	0.6%
Plastic (film)	0.0%	0.0%	0.0%	0.2%	0.1%
Textiles	0.0%	0.0%	0.0%	3.2%	1.6%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	3.3%	1.6%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.1%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	99.9%	99.5%	100.0%	88.4%	94.1%
Fines	0.0%	0.0%	0.0%	0.1%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 164 kg of garden waste was collected from 19 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±18% at a confidence level of 95%.

The average garden waste arising per household was 1.09 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.9%. A small amount of card was present equating to 0.1% of the total sample weight.

ACORN 3 Study Average

A total of 292 kg of garden waste was collected from 30 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±6% at a confidence level of 95%.

The average garden waste arising per household was 1.92 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.5%. A small amount of paper and dense plastic contaminants were present equating to 0.4% and 0.1% respectively of the total sample weight.

ACORN 4 Study Average

A total of 354 kg of garden waste was collected from 35 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average garden waste arising per household was 1.39 kg/hh/wk. The dominant primary waste category was organic non-catering at 100.0%.

ACORN 5 Study Average

A total of 325 kg of garden waste was collected from 24 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±19% at a confidence level of 95%.

The average garden waste arising per household was 1.57 kg/hh/wk. The dominant primary waste category was organic non-catering at 88.4%. A significant amount of contaminants were present equating to 11.6% of the total sample weight. Paper, miscellaneous combustibles and textiles were the dominant primary waste categories within the contaminants comprising 3.4%, 3.3% and 3.2% respectively of the total sample weight.

Knowsley Study Average

A total of 1,135 kg of garden waste was collected from 108 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average garden waste arising per household was 1.62 kg/hh/wk. The dominant primary waste category was organic non-catering at 94.1%. Contaminants equating to 5.9% of the garden waste analysed was present within the

sample. Paper, textiles and miscellaneous combustibles were the dominant primary waste categories within the contaminants comprising 1.8%, 1.6% and 1.6% respectively of the total sample weight.

4.6 Dry Recyclables

4.6.1 Summary Results

During the March 2010 analysis a total of 855 kg of dry recyclables was collected and analysed from 84 sample households within the District of Knowsley.

In June 2010 766 kg of dry recyclables was collected and analysed from 91 sample households within the District of Knowsley.

Figure 4.5 and Table 4.8 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

4.6.2 Study Average Results

A total of 1,621 kg of dry recyclables was collected and analysed from 176 sample households within the District of Knowsley during the March 2010 and June 2010 waste composition exercises.

Figures 4.6 and Tables 4.9 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

Figure 4.5 Knowsley Kerbside Dry Recyclables Arisings (kg/hh/wk), March & June 2010

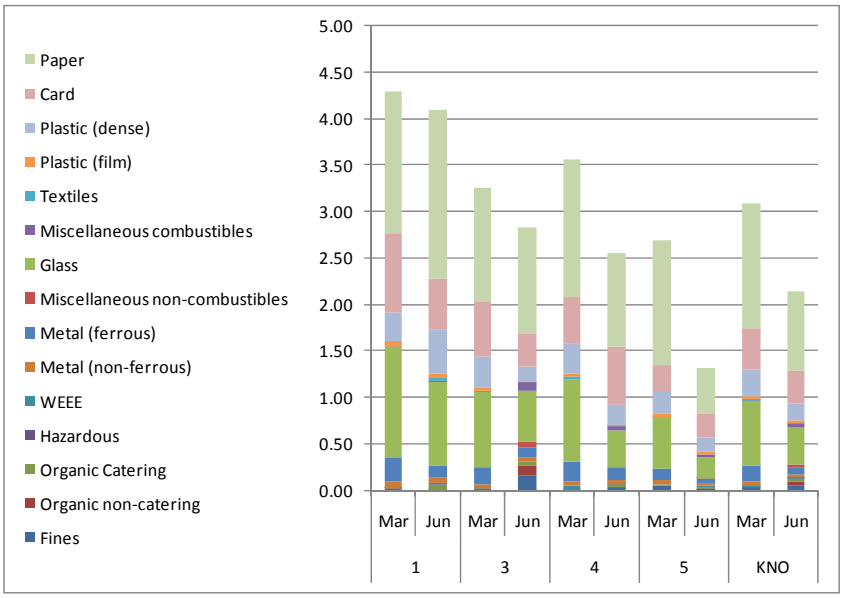

Table 4.8 Knowsley Kerbside Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Knowsley	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	35.5%	44.1%	37.6%	40.3%	41.8%	39.6%	50.1%	36.9%	43.3%	39.8%
Card	20.0%	13.8%	18.3%	12.7%	14.2%	24.8%	10.5%	20.3%	14.6%	16.7%
Plastic (dense)	7.4%	11.5%	10.4%	5.9%	8.9%	8.4%	8.8%	11.0%	9.2%	8.7%
Plastic (film)	1.3%	1.2%	0.7%	0.2%	0.8%	0.3%	1.5%	2.2%	1.2%	1.0%
Textiles	0.1%	0.6%	0.7%	0.0%	1.0%	0.1%	0.0%	0.0%	0.4%	0.1%
Misc. Combustibles	0.0%	0.6%	0.0%	3.1%	0.0%	1.7%	0.2%	2.8%	0.1%	2.4%
Glass	27.7%	21.8%	24.6%	19.2%	24.8%	15.7%	20.1%	17.5%	23.0%	18.7%
Misc. Non-combustibles	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%	0.2%	0.0%	1.1%
Metal (ferrous)	6.0%	3.1%	5.8%	3.3%	5.8%	5.3%	5.0%	3.6%	5.5%	3.6%
Metal (non-ferrous)	1.8%	1.5%	1.5%	1.9%	1.4%	1.9%	1.6%	1.6%	1.6%	1.7%
WEEE	0.0%	0.1%	0.2%	0.0%	1.2%	0.1%	0.0%	1.4%	0.2%	0.5%
Hazardous	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Organic Catering	0.0%	1.0%	0.0%	1.8%	0.0%	1.0%	0.4%	1.8%	0.2%	1.6%
Organic Non-catering	0.0%	0.0%	0.0%	3.4%	0.0%	0.0%	0.0%	0.5%	0.0%	1.5%
Fines	0.2%	0.1%	0.3%	5.7%	0.1%	1.1%	1.8%	0.2%	0.9%	2.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 4.6 Knowsley Kerbside Dry Recyclables Arisings (kg/hh/wk), Study Average

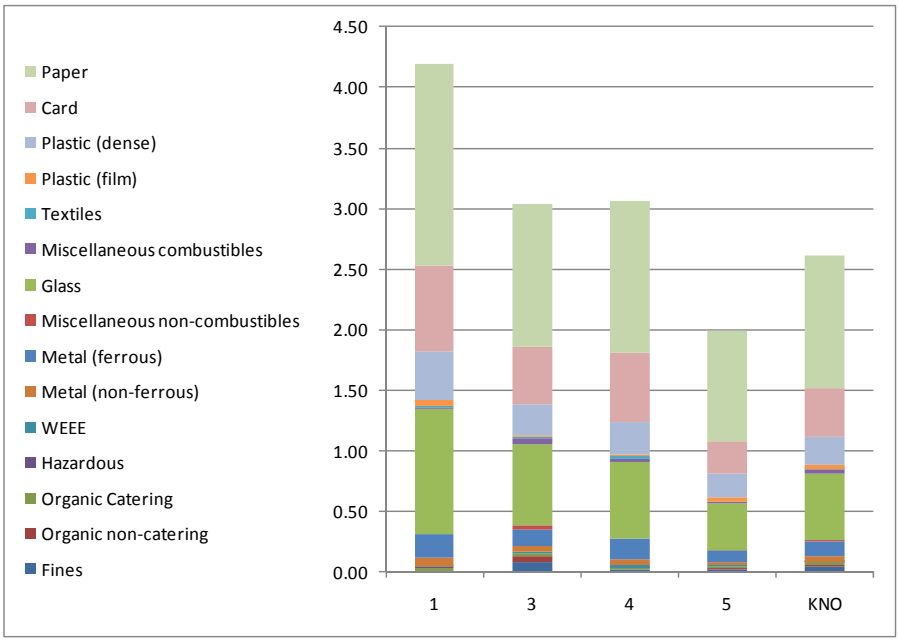

Table 4.9 Knowsley Kerbside Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Knowsley
Paper	39.7%	38.8%	40.9%	45.8%	41.9%
Card	16.9%	15.7%	18.6%	13.7%	15.4%
Plastic (dense)	9.4%	8.3%	8.7%	9.5%	9.0%
Plastic (film)	1.2%	0.5%	0.6%	1.7%	1.1%
Textiles	0.4%	0.4%	0.6%	0.0%	0.3%
Miscellaneous Combustibles	0.3%	1.5%	0.7%	1.0%	1.0%
Glass	24.8%	22.1%	21.0%	19.2%	21.2%
Miscellaneous Non-combustibles	0.0%	1.2%	0.0%	0.1%	0.5%
Metal (ferrous)	4.6%	4.6%	5.6%	4.6%	4.7%
Metal (non-ferrous)	1.7%	1.7%	1.6%	1.6%	1.6%
WEEE	0.1%	0.1%	0.7%	0.4%	0.3%
Hazardous	0.3%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.5%	0.8%	0.4%	0.9%	0.8%
Organic Non-catering	0.0%	1.6%	0.0%	0.2%	0.6%
Fines	0.2%	2.8%	0.5%	1.3%	1.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 503 kg of dry recyclables was collected from 50 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 4.19 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 39.7%, glass at 24.8% and card at 16.9%.

ACORN 3 Study Average

A total of 417 kg of dry recyclables was collected from 46 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average dry recyclables arising per household was 3.04 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and card at 38.8%, 22.1% and 15.7% respectively.

ACORN 4 Study Average

A total of 396 kg of dry recyclables was collected from 48 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 3.06 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 40.9%, glass at 21.0% and card at 18.6%.

ACORN 5 Study Average

A total of 304 kg of dry recyclables was collected from 31 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±30% at a confidence level of 95%.

The average dry recyclables arising per household was 2.00 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and card at 45.8%, 19.2% and 13.7% respectively.

Knowsley Study Average

A total of 1,621 kg of dry recyclables was collected from 175 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average dry recyclables arising per household was 2.61 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 41.9%, glass at 21.2% and card at 15.4%.

4.7 Food Waste

4.7.1 Summary Results

During the March 2010 analysis a total of 203 kg of food waste was collected and analysed from 66 sample households within the District of Knowsley.

In June 2010 138 kg of food waste was collected and analysed from 66 sample households within the District of Knowsley.

Figure 4.7 and Table 4.10 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

4.7.2 Study Average Results

A total of 341 kg of food waste was collected and analysed from 132 sample households within the District of Knowsley during the March 2010 and June 2010 waste composition exercises.

Figures 4.8 and Tables 4.11 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

Figure 4.7 Knowsley Kerbside Food Waste Arisings (kg/hh/wk), March & June 2010

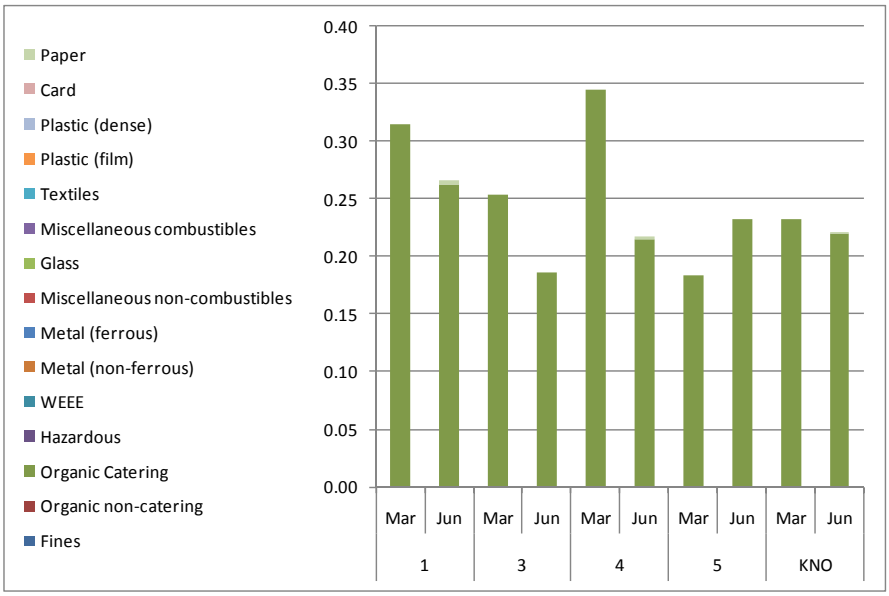

Table 4.10 Knowsley Kerbside Food Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Knowsley	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	1.6%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.3%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	100.0%	98.4%	100.0%	100.0%	100.0%	98.6%	100.0%	100.0%	100.0%	99.7%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 4.8 Knowsley Kerbside Food Waste Arisings (kg/hh/wk), Study Average

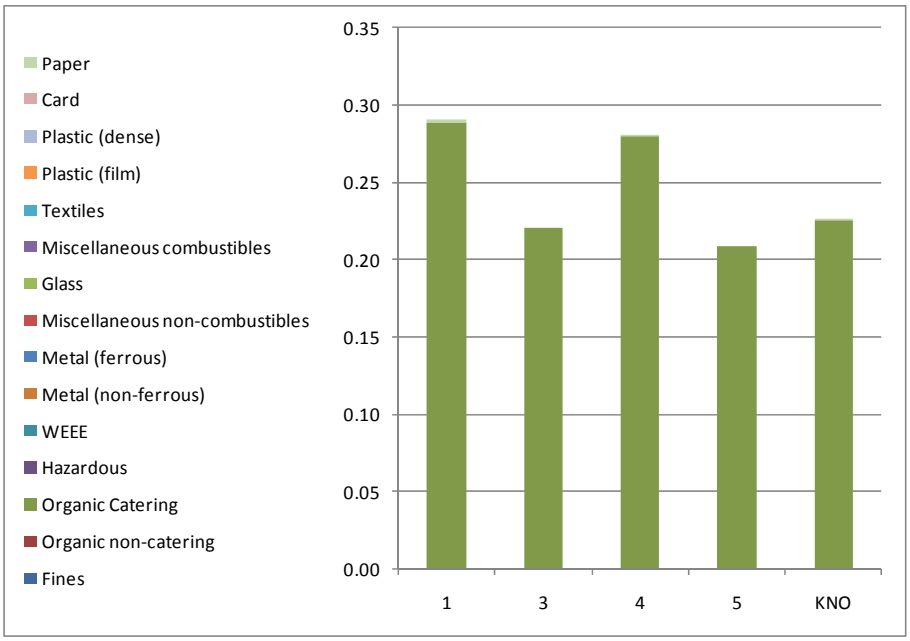

Table 4.11 Knowsley Kerbside Food Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Knowsley
Paper	0.7%	0.0%	0.5%	0.0%	0.1%
Card	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	99.3%	100.0%	99.5%	100.0%	99.9%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 117 kg of food waste was collected from 40 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average food waste arising per household was 0.29 kg/hh/wk. The dominant primary waste category was organic catering at 99.3%. A small amount of paper was present equating to 0.7% of the total sample weight.

ACORN 3 Study Average

A total of 56 kg of food waste was collected from 26 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±20% at a confidence level of 95%.

The average food waste arising per household was 0.22 kg/hh/wk. The dominant primary waste category was organic catering at 100.0%.

ACORN 4 Study Average

A total of 114 kg of food waste was collected from 40 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average food waste arising per household was 0.28 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.5%. A small amount of paper was present equating to 0.5% of the total sample weight.

ACORN 5 Study Average

A total of 54 kg of food waste was collected from 26 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±20% at a confidence level of 95%.

The average food waste arising per household was 0.21 kg/hh/wk. The dominant primary waste category was organic non-catering at 100.0%.

Knowsley Study Average

A total of 341 kg of food waste was collected from 132 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±9% at a confidence level of 95%.

The average food waste arising per household was 0.23 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.9%. A small amount of paper was present equating to 0.1% of the total sample weight.

4.8 Combined Kerbside Waste Streams

4.8.1 Summary Results

During the March 2010 analysis a total of 284 samples containing 2,446 kg of kerbside waste were collected and analysed from within the District of Knowsley.

In June 2010 319 samples containing 2,594 kg of kerbside waste were collected and analysed from within the District of Knowsley.

Figure 4.9 and Table 4.12 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

4.8.2 Study Average Results

A total of 603 waste samples containing 5,041 kg of kerbside waste were collected and analysed from within the District of Knowsley during the March 2010 and June 2010 waste composition exercises.

Figures 4.10 and Tables 4.13 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

Figure 4.9 Knowsley Combined Kerbside Waste Arisings (kg/hh/wk), March & June 2010

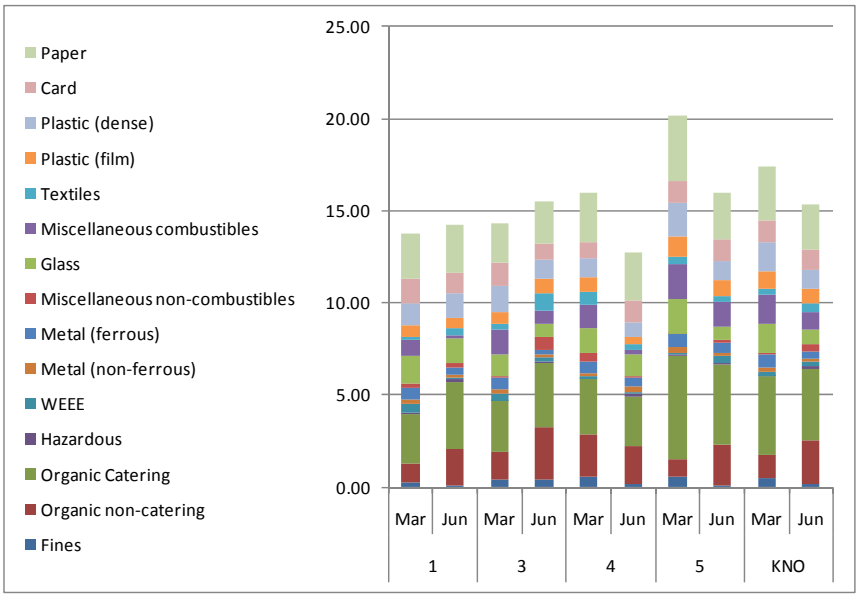

Table 4.12 Knowsley Combined Kerbside Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Knowsley	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	17.6%	18.6%	15.0%	15.0%	16.9%	20.6%	17.4%	16.0%	16.8%	16.2%
Card	10.0%	7.3%	8.5%	5.3%	5.6%	9.5%	6.1%	7.3%	6.9%	6.9%
Plastic (dense)	8.6%	9.6%	9.9%	6.7%	6.4%	5.7%	8.9%	6.5%	8.9%	6.7%
Plastic (film)	4.4%	4.0%	4.7%	5.4%	5.1%	3.6%	5.7%	5.5%	5.3%	5.2%
Textiles	1.3%	2.6%	2.1%	5.9%	4.2%	2.0%	1.7%	2.1%	2.0%	3.3%
Misc. Combustibles	6.2%	1.3%	9.3%	4.8%	7.9%	1.9%	9.4%	8.1%	9.0%	6.0%
Glass	11.0%	9.3%	8.3%	4.6%	8.3%	9.7%	9.4%	4.6%	9.1%	5.4%
Misc. Non-combustibles	2.1%	1.7%	0.8%	4.4%	3.3%	0.4%	0.1%	1.1%	0.7%	2.1%
Metal (ferrous)	4.1%	2.9%	4.4%	1.7%	3.7%	4.0%	3.7%	3.2%	3.9%	2.8%
Metal (non-ferrous)	2.0%	0.9%	1.5%	1.1%	1.0%	2.4%	1.6%	1.3%	1.5%	1.3%
WEEE	3.5%	0.6%	2.5%	1.0%	0.8%	0.4%	0.2%	2.2%	1.1%	1.6%
Hazardous	0.6%	1.3%	0.4%	0.8%	0.3%	1.1%	0.2%	0.7%	0.3%	0.8%
Organic Catering	19.8%	25.8%	19.4%	22.1%	18.4%	21.2%	27.9%	27.2%	24.4%	25.0%
Organic Non-catering	7.1%	13.5%	10.4%	18.4%	14.7%	16.3%	4.9%	13.9%	7.3%	15.4%
Fines	1.9%	0.8%	2.8%	2.7%	3.3%	1.1%	2.7%	0.4%	2.7%	1.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 4.10 Knowsley Combined Kerbside Waste Arisings (kg/hh/wk), Study Average

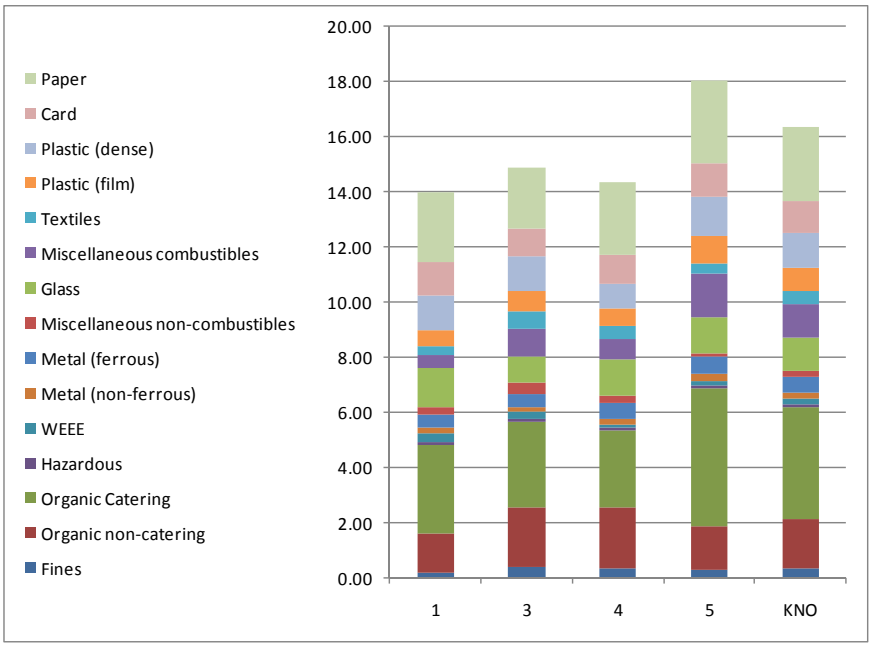

Table 4.13 Knowsley Combined Kerbside Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Knowsley
Paper	18.1%	15.0%	18.5%	16.8%	16.5%
Card	8.6%	6.8%	7.3%	6.7%	6.9%
Plastic (dense)	9.1%	8.3%	6.1%	7.8%	7.9%
Plastic (film)	4.2%	5.1%	4.4%	5.6%	5.3%
Textiles	2.0%	4.1%	3.2%	1.9%	2.6%
Miscellaneous Combustibles	3.7%	7.0%	5.3%	8.8%	7.6%
Glass	10.1%	6.4%	8.9%	7.3%	7.4%
Miscellaneous Non-combustibles	1.9%	2.7%	2.0%	0.6%	1.4%
Metal (ferrous)	3.5%	3.0%	3.9%	3.5%	3.4%
Metal (non-ferrous)	1.5%	1.3%	1.7%	1.4%	1.4%
WEEE	2.0%	1.7%	0.6%	1.1%	1.3%
Hazardous	0.9%	0.6%	0.7%	0.4%	0.5%
Organic Catering	22.8%	20.8%	19.7%	27.6%	24.7%
Organic Non-catering	10.3%	14.5%	15.4%	8.8%	11.1%
Fines	1.3%	2.8%	2.3%	1.7%	2.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 159 samples containing 1,204 kg of kerbside waste were collected from ACORN 1 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±7% at a confidence level of 95%.

The average kerbside waste arising per household was 13.98 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 22.8%, paper at 18.1%, organic non-catering at 10.3% and glass at 10.1%.

ACORN 3 Study Average

A total of 149 samples containing 1,225 kg of kerbside waste were collected from ACORN 2 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±7% at a confidence level of 95%.

The average kerbside waste arising per household was 14.90 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and organic non-catering at 20.8%, 15.0% and 14.5% respectively.

ACORN 4 Study Average

A total of 174 samples containing 1,358 kg of kerbside waste were collected from ACORN 4 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±9% at a confidence level of 95%.

The average kerbside waste arising per household was 14.38 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 19.7%, paper at 18.5% and organic non-catering at 15.4%.

ACORN 5 Study Average

A total of 121 samples containing 1,253 kg of kerbside waste were collected from ACORN 5 sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±11% at a confidence level of 95%.

The average kerbside waste arising per household was 18.05 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper, miscellaneous combustibles and organic non-catering at 27.6%, 16.8%, 8.8% and 8.8% respectively.

Knowsley Study Average

A total of 603 samples containing 5,041 kg of kerbside waste were collected from sample households within the District of Knowsley providing a result precision (Confidence Interval) of ±6% at a confidence level of 95%.

The average kerbside waste arising per household was 16.37 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 24.7%, paper at 16.5% and organic non-catering at 11.1%.

4.9 Biodegradable Municipal Waste (BMW) Content in Knowsley's Kerbside Waste Streams

The BMW content was calculated using the study average results for the Knowsley waste streams. Please refer to Section 2.9 for an explanation of how BMW is calculated. The results are presented in Figure 4.11 and Table 4.14.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix A.

Figure 4.11 Arisings (kg/hh/wk) of BMW in Knowsley's Kerbside Waste Streams

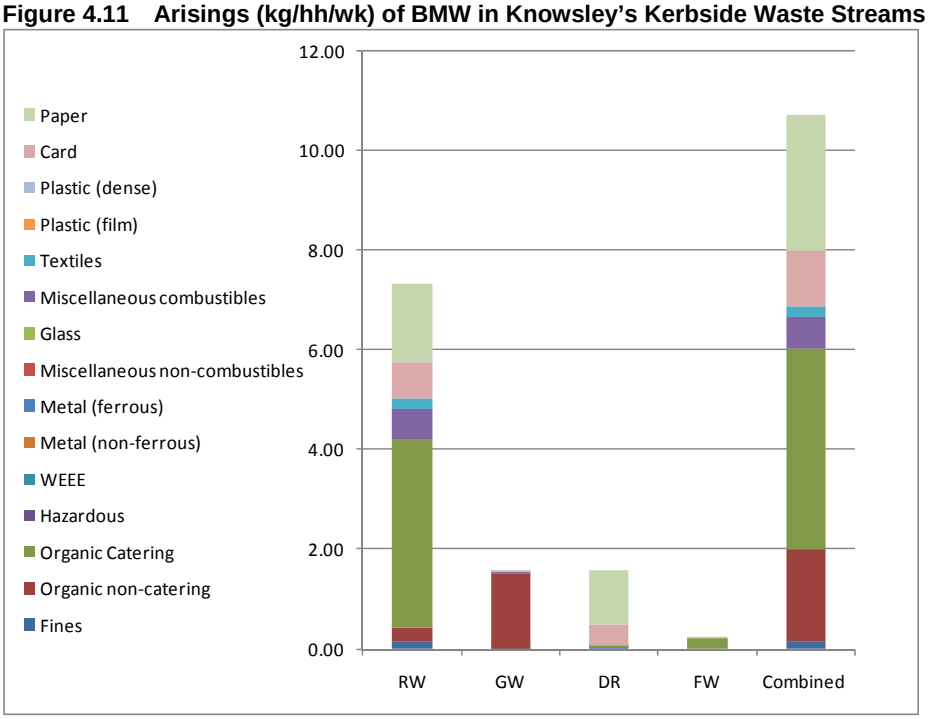

Table 4.14 Proportion (% wt.) of BMW in Knowsley's Kerbside Waste Streams

Primary Category	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)	Combined
Paper	13.3%	1.8%	41.9%	0.1%	16.5%
Card	6.1%	0.0%	15.4%	0.0%	6.9%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	1.7%	0.8%	0.1%	0.0%	1.3%
Miscellaneous Combustibles	5.0%	0.8%	0.5%	0.0%	3.8%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	31.8%	0.0%	0.8%	99.9%	24.7%
Organic Non-catering	2.4%	94.1%	0.6%	0.0%	11.1%
Fines	1.2%	0.0%	0.8%	0.0%	1.0%
Total	61.5%	97.6%	60.2%	100.0%	65.4%

4.10 Calorific Value

Entec calculated residual waste CVs based on the study average residual waste composition for Knowsley using reference values for the CV of individual waste materials. A summary of the CV estimated by Entec is presented in Table 4.15 below.

Table 4.15 Knowsley Residual Waste Calorific Value

Analyte		Values
Hydrogen	% wt.	3.39
Carbon	% wt.	23.39
Nitrogen	% wt.	0.67
Oxygen	% wt.	14.60
Sulphur	% wt.	0.11
Chlorine	% wt.	0.82
Ash	% wt.	19.80
Moisture	% wt.	37.23
Net CV	MJ/kg	8.63

4.11 Knowsley Dry Recyclables Content and Capture

The dry recyclables content and capture was calculated using the study average results for the Knowsley waste streams. The results for capture of dry recyclables are shown in Table 4.16 below. Please refer to Appendix A for an explanation of the table layout and content.

Table 4.16 Kerbside Dry Recyclables Content and Capture, Knowsley Waste Streams

1	2	3	4	4a	5	6	7	8	9	10	11	12
Knowsley												
Material sub-category	Arisings (kg/hh/wk)					Assay	Targetable DR		Captured Target DR		Captured Non-Target	
	RW	GW	DR	FW	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% of DR
Newspapers	0.55	0.02	0.58	0.00	1.15	7.0%	1.15	7.0%	0.58	50.2%	-	-
Magazines	0.25	0.00	0.27	0.00	0.52	3.2%	0.52	3.2%	0.27	52.5%	-	-
Other recyclable paper	0.26	0.01	0.13	0.00	0.40	2.4%	0.40	2.4%	0.13	31.8%	-	-
Paper packaging	0.01	0.00	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	4.8%	-	-
Non-recyclable paper	0.51	0.00	0.12	0.00	0.63	3.8%	-	-	-	-	0.12	4.4%
Subtotal Paper	**1.58**	**0.03**	**1.09**	**0.00**	**2.71**	**16.5%**	**2.08**	**12.7%**	**0.98**	**36.1%**	**0.12**	**4.4%**
Liquid cartons	0.02	0.00	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.2%
Board packaging	0.22	0.00	0.18	0.00	0.40	2.4%	0.40	2.4%	0.18	44.8%	-	-
Card packaging	0.46	0.00	0.21	0.00	0.67	4.1%	0.67	4.1%	0.21	31.4%	-	-
Other card	0.03	0.00	0.01	0.00	0.04	0.2%	0.04	0.2%	0.01	25.6%	-	-
Subtotal Card	**0.73**	**0.00**	**0.40**	**0.00**	**1.13**	**6.9%**	**1.11**	**6.8%**	**0.40**	**35.3%**	**0.00**	**0.2%**
Plastic Bottles: PET	0.14	0.00	0.07	0.00	0.21	1.3%	0.21	1.3%	0.07	32.0%	-	-
PET Coloured	0.06	0.00	0.03	0.00	0.09	0.5%	0.09	0.5%	0.03	31.0%	-	-
HDPE	0.10	0.00	0.04	0.00	0.14	0.9%	0.14	0.9%	0.04	31.1%	-	-
HDPE Coloured	0.04	0.00	0.02	0.00	0.06	0.4%	0.06	0.4%	0.02	31.0%	-	-
Other	0.02	0.00	0.01	0.00	0.02	0.1%	0.02	0.1%	0.01	23.5%	-	-
Other packaging	0.36	0.00	0.04	0.00	0.40	2.4%	-	-	-	-	0.04	1.4%
Other dense plastic	0.33	0.01	0.04	0.00	0.37	2.3%	-	-	-	-	0.04	1.3%
Subtotal Dense Plastic	**1.05**	**0.01**	**0.23**	**0.00**	**1.29**	**7.9%**	**0.52**	**3.2%**	**0.16**	**12.5%**	**0.07**	**2.8%**
Packaging film	0.43	0.00	0.02	0.00	0.44	2.7%	-	-	-	-	0.02	0.6%
Other plastic film	0.40	0.00	0.01	0.00	0.41	2.5%	-	-	-	-	0.01	0.4%
Subtotal Plastic Film	**0.83**	**0.00**	**0.03**	**0.00**	**0.86**	**5.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.03**	**1.1%**
Textiles	0.33	0.03	0.01	0.00	0.36	2.2%	-	-	-	-	0.01	0.2%
Shoes	0.07	0.00	0.00	0.00	0.07	0.4%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.40**	**0.03**	**0.01**	**0.00**	**0.43**	**2.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Treated wood	0.10	0.01	0.01	0.00	0.12	0.8%	-	-	-	-	0.01	0.4%
Untreated wood	0.01	0.02	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	0.96	0.00	0.01	0.00	0.98	6.0%	-	-	-	-	0.01	0.4%
Other misc. comb.	0.06	0.00	0.01	0.00	0.07	0.4%	-	-	-	-	0.01	0.2%
Carpet and underlay	0.05	0.00	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.20**	**0.03**	**0.03**	**0.00**	**1.25**	**7.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.03**	**1.0%**
Glass bottles	0.43	0.00	0.44	0.00	0.87	5.3%	0.87	5.3%	0.44	51.0%	-	-
Glass jars	0.20	0.00	0.11	0.00	0.31	1.9%	0.31	1.9%	0.11	34.3%	-	-
Other glass	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.1%
Subtotal Glass	**0.65**	**0.00**	**0.55**	**0.00**	**1.21**	**7.4%**	**1.18**	**7.2%**	**0.55**	**45.5%**	**0.00**	**0.1%**
Construction and demolition	0.05	0.00	0.01	0.00	0.06	0.4%	-	-	-	-	0.01	0.4%
Other misc.non.comb	0.16	0.00	0.00	0.00	0.16	1.0%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.21**	**0.00**	**0.01**	**0.00**	**0.22**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.5%**
Ferrous food cans	0.24	0.00	0.10	0.00	0.34	2.1%	0.34	2.1%	0.10	28.3%	-	-
Ferrous beverage cans	0.06	0.00	0.02	0.00	0.08	0.5%	0.08	0.5%	0.02	23.6%	-	-
Ferrous aerosols	0.02	0.00	0.00	0.00	0.03	0.2%	0.03	0.2%	0.00	16.2%	-	-
Other ferrous metal	0.10	0.00	0.00	0.00	0.10	0.6%	-	-	-	-	0.00	0.1%
Subtotal Ferrous Metals	**0.43**	**0.00**	**0.12**	**0.00**	**0.55**	**3.4%**	**0.45**	**2.8%**	**0.12**	**22.0%**	**0.00**	**0.1%**
Non-ferrous food cans	0.01	0.00	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	13.0%	-	-
Non-ferrous beverage cans	0.07	0.00	0.04	0.00	0.11	0.7%	0.11	0.7%	0.04	32.7%	-	-
Non-ferrous aerosols	0.02	0.00	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	14.2%	-	-
Other non-ferrous metal	0.09	0.00	0.00	0.00	0.09	0.6%	-	-	-	-	0.00	0.1%
Subtotal Non-Ferr Metals	**0.19**	**0.00**	**0.04**	**0.00**	**0.23**	**1.4%**	**0.14**	**0.8%**	**0.04**	**17.2%**	**0.00**	**0.1%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.13	0.00	0.00	0.00	0.13	0.8%	-	-	-	-	0.00	0.2%
Elec. & Electonic Tools	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Lighting	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.1%
Subtotal WEEE	**0.21**	**0.00**	**0.01**	**0.00**	**0.21**	**1.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Household batteries	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.06	0.00	0.00	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.09**	**0.00**	**0.00**	**0.00**	**0.09**	**0.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.48	0.00	0.01	0.11	1.59	9.7%	-	-	-	-	0.01	0.3%
Unused home compostable food	0.42	0.00	0.00	0.03	0.45	2.8%	-	-	-	-	0.00	0.0%
Non-home compostable food	1.25	0.00	0.01	0.08	1.34	8.2%	-	-	-	-	0.01	0.4%
Unused non-home compostable food	0.64	0.00	0.00	0.01	0.65	4.0%	-	-	-	-	0.00	0.1%
Subtotal Org.Catering	**3.80**	**0.00**	**0.02**	**0.23**	**4.04**	**24.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.8%**
Garden	0.16	1.32	0.01	0.00	1.49	9.1%	-	-	-	-	0.01	0.6%
Soil	0.01	0.20	0.00	0.00	0.21	1.3%	-	-	-	-	0.00	0.0%
Other organic	0.11	0.00	0.00	0.00	0.12	0.7%	-	-	-	-	0.00	0.1%
Subtotal Org.Non Catering	**0.28**	**1.52**	**0.02**	**0.00**	**1.82**	**11.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.6%**
Material less than 10mm	0.29	0.00	0.04	0.00	0.33	2.0%	-	-	-	-	0.04	1.6%
Subtotal Fines	**0.29**	**0.00**	**0.04**	**0.00**	**0.33**	**2.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.04**	**1.6%**
Totals	**11.92**	**1.62**	**2.61**	**0.23**	**16.37**	**100.0%**	**5.48**	**33.4%**	**2.25**	**41.1%**	**0.36**	**13.8%**

4.12 Knowsley Organic Material Content and Capture

The organic material content and capture was calculated using the study average results for the Knowsley waste streams. The results for capture of organic material (garden and kitchen waste) are shown in Table 4.17 below. Please refer to Appendix B for an explanation of the table layout and content.

Table 4.17 Kerbside Organic Material Content and Capture, Knowsley Waste Streams

1	2	3	4	4a	5	6	7	8	9	10	11	12
Knowsley												
Material sub-category	kg/hh/wk					Assay	Targetable Bio Waste		Captured Target Bio Waste		Non-Target Materials in Bio Waste	
	RW	GW	DR	FW	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	GW kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% Bio Waste
Newspapers	0.55	0.02	0.58	0.00	1.15	7.0%	-	-	-	-	0.02	1.0%
Magazines	0.25	0.00	0.27	0.00	0.52	3.2%	-	-	-	-	0.00	0.0%
Other recyclable paper	0.26	0.01	0.13	0.00	0.40	2.4%	-	-	-	-	0.01	0.5%
Paper packaging	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Non-recyclable paper	0.51	0.00	0.12	0.00	0.63	3.8%	-	-	-	-	0.00	0.2%
Subtotal Paper	**1.58**	**0.03**	**1.09**	**0.00**	**2.71**	**16.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.03**	**1.6%**
Liquid cartons	0.02	0.00	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
Board packaging	0.22	0.00	0.18	0.00	0.40	2.4%	-	-	-	-	0.00	0.0%
Card packaging	0.46	0.00	0.21	0.00	0.67	4.1%	-	-	-	-	0.00	0.0%
Other card	0.03	0.00	0.01	0.00	0.04	0.2%	-	-	-	-	0.00	0.0%
Subtotal Card	**0.73**	**0.00**	**0.40**	**0.00**	**1.13**	**6.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Plastic Bottles: PET	0.14	0.00	0.07	0.00	0.21	1.3%	-	-	-	-	0.00	0.0%
PET Coloured	0.06	0.00	0.03	0.00	0.09	0.5%	-	-	-	-	0.00	0.0%
HDPE	0.10	0.00	0.04	0.00	0.14	0.9%	-	-	-	-	0.00	0.0%
HDPE Coloured	0.04	0.00	0.02	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Other	0.02	0.00	0.01	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other packaging	0.36	0.00	0.04	0.00	0.40	2.4%	-	-	-	-	0.00	0.1%
Other dense plastic	0.33	0.01	0.04	0.00	0.37	2.3%	-	-	-	-	0.01	0.5%
Subtotal Dense Plastic	**1.05**	**0.01**	**0.23**	**0.00**	**1.29**	**7.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.5%**
Packaging film	0.43	0.00	0.02	0.00	0.44	2.7%	-	-	-	-	0.00	0.1%
Other plastic film	0.40	0.00	0.01	0.00	0.41	2.5%	-	-	-	-	0.00	0.0%
Subtotal Plastic Film	**0.83**	**0.00**	**0.03**	**0.00**	**0.86**	**5.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Textiles	0.33	0.03	0.01	0.00	0.36	2.2%	-	-	-	-	0.03	1.4%
Shoes	0.07	0.00	0.00	0.00	0.07	0.4%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.40**	**0.03**	**0.01**	**0.00**	**0.43**	**2.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.03**	**1.4%**
Treated wood	0.10	0.01	0.01	0.00	0.12	0.8%	-	-	-	-	0.01	0.5%
Untreated wood	0.01	0.02	0.00	0.00	0.03	0.2%	-	-	-	-	0.02	0.9%
Furniture	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	0.96	0.00	0.01	0.00	0.98	6.0%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.06	0.00	0.01	0.00	0.07	0.4%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.05	0.00	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.20**	**0.03**	**0.03**	**0.00**	**1.25**	**7.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.03**	**1.4%**
Glass bottles	0.43	0.00	0.44	0.00	0.87	5.3%	-	-	-	-	0.00	0.0%
Glass jars	0.20	0.00	0.11	0.00	0.31	1.9%	-	-	-	-	0.00	0.0%
Other glass	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.65**	**0.00**	**0.55**	**0.00**	**1.21**	**7.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Construction and demolition	0.05	0.00	0.01	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.16	0.00	0.00	0.00	0.16	1.0%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.21**	**0.00**	**0.01**	**0.00**	**0.22**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.24	0.00	0.10	0.00	0.34	2.1%	-	-	-	-	0.00	0.0%
Ferrous beverage cans	0.06	0.00	0.02	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
Ferrous aerosols	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Other ferrous metal	0.10	0.00	0.00	0.00	0.10	0.6%	-	-	-	-	0.00	0.0%
Subtotal Ferrous Metals	**0.43**	**0.00**	**0.12**	**0.00**	**0.55**	**3.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Non-ferrous food cans	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Non-ferrous beverage cans	0.07	0.00	0.04	0.00	0.11	0.7%	-	-	-	-	0.00	0.0%
Non-ferrous aerosols	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other non-ferrous metal	0.09	0.00	0.00	0.00	0.09	0.6%	-	-	-	-	0.00	0.0%
Subtotal Non-Ferr Metals	**0.19**	**0.00**	**0.04**	**0.00**	**0.23**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.13	0.00	0.00	0.00	0.13	0.8%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Lighting	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.21**	**0.00**	**0.01**	**0.00**	**0.21**	**1.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.06	0.00	0.00	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.09**	**0.00**	**0.00**	**0.00**	**0.09**	**0.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.48	0.00	0.01	0.11	1.59	9.7%	1.59	9.7%	0.11	6.8%	-	-
Unused home compostable food	0.42	0.00	0.00	0.03	0.45	2.8%	0.45	2.8%	0.03	6.4%	-	-
Non-home compostable food	1.25	0.00	0.01	0.08	1.34	8.2%	1.34	8.2%	0.08	5.9%	-	-
Unused non-home compostable food	0.64	0.00	0.00	0.01	0.65	4.0%	0.65	4.0%	0.01	1.4%	-	-
Subtotal Org.Catering	**3.80**	**0.00**	**0.02**	**0.23**	**4.04**	**24.7%**	**4.04**	**24.7%**	**0.23**	**5.6%**	**0.00**	**0.0%**
Garden	0.16	1.32	0.01	0.00	1.49	9.1%	1.49	9.1%	1.32	88.2%	-	-
Soil	0.01	0.20	0.00	0.00	0.21	1.3%	0.21	1.3%	0.20	96.9%	-	-
Other organic	0.11	0.00	0.00	0.00	0.12	0.7%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.28**	**1.52**	**0.02**	**0.00**	**1.82**	**11.1%**	**1.70**	**10.4%**	**1.52**	**83.6%**	**0.00**	**0.0%**
Material less than 10mm	0.29	0.00	0.04	0.00	0.33	2.0%	-	-	-	-	0.00	0.0%
Subtotal Fines	**0.29**	**0.00**	**0.04**	**0.00**	**0.33**	**2.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Totals	**11.92**	**1.62**	**2.61**	**0.23**	**16.37**	**100.0%**	**5.75**	**35.1%**	**1.75**	**30.4%**	**0.10**	**5.2%**

4.13 Conclusion

Figure 4.12 and Table 4.18 present the final modelled waste composition arisings and assay data for the District of Knowsley.

Knowsley's average residual waste arisings were 11.92 kg/hh/wk. Overall there were higher arisings of residual waste during March 2010 (12.81 kg/hh/wk) in comparison with the June 2010 study (11.03 kg/hh/wk). The most prominent materials were organic catering waste at 31.8% (3.80 kg/hh/wk) and paper at 13.3% (1.58 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the residual waste stream was determined to be 61.5%. The calorific value of the residual waste was calculated to be 8.63 MJ/kg.

Average arisings of garden waste in Knowsley were 1.62 kg/hh/wk. Overall there was higher arisings of garden waste during the June 2010 study (1.98 kg/hh/wk) in comparison to March 2010 (1.25 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. The most prominent material was organic non-catering at 94.1%. The composition of the waste stream varied between the seasons with significantly less non-target material in the garden waste stream during the June 2010 exercise. The kerbside organic material capture was 30.4% of targeted material (garden and food waste). Non-target materials constituted 5.2% of the organic stream. The biodegradable municipal waste (BMW) content of the garden waste stream was calculated to be 97.6%.

Knowsley's average dry recyclables arisings were 2.61 kg/hh/wk. Overall there were higher arisings of dry recyclables during March 2010 (3.08 kg/hh/wk) in comparison with the June 2010 study (2.13 kg/hh/wk). The most prominent materials were paper at 41.9% (1.09 kg/hh/wk), glass at 21.2% (0.55 kg/hh/wk) and card at 15.4% (0.40 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The kerbside dry recyclables material capture was 41.1% of targeted material. Non-target materials constituted 13.8% of the dry recyclables stream. The biodegradable municipal waste (BMW) content of the dry recyclables stream was calculated to be 60.2%.

Average arisings of food waste in Knowsley were 0.23 kg/hh/wk. The level of food waste arisings was similar in both the March 2010 and June 2010 analyses. The most prominent material was organic catering at 99.9 %. The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the food waste stream was calculated to be 100.0%.

The modelled arisings for the combined kerbside waste streams were 16.37 kg/hh/wk. Overall there were higher arisings of kerbside waste during March 2010 (17.38 kg/hh/wk) in comparison with the June 2010 study (15.37 kg/hh/wk). The most prominent materials were organic catering waste at 24.7% (4.04 kg/hh/wk) and paper at 16.5% (2.71 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season however, as expected, a greater proportion of the waste was constituted of organic non-catering material during the June 2010 exercise. The biodegradable municipal waste (BMW) content of the combined kerbside waste stream was calculated to be 65.4%.

Figure 4.12 Knowsley Waste Arisings (kg/hh/wk), Study Average

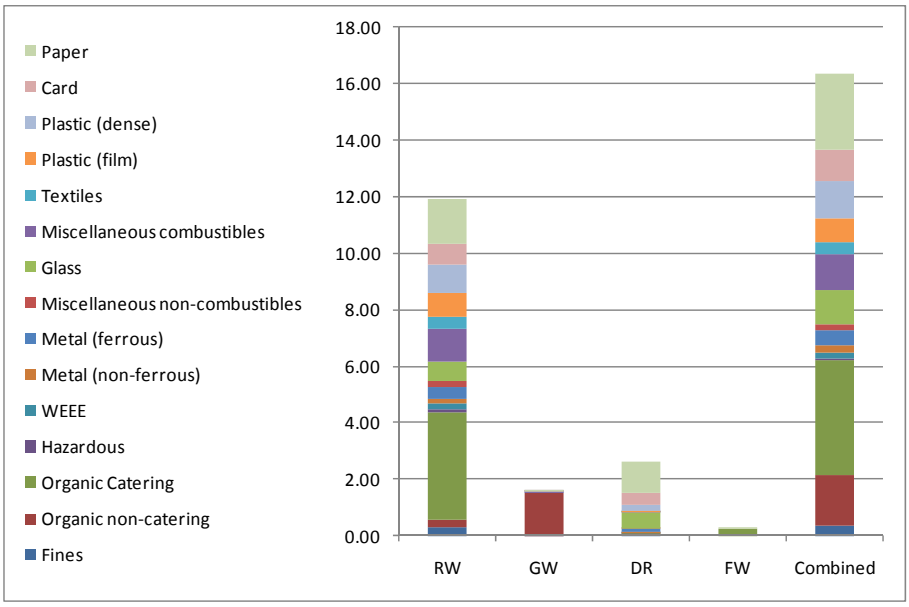

Table 4.18 Knowsley Waste Assay (% wt.), Study Average

Primary Category	Residual Waste	Garden Waste	Dry Recyclables	Food Waste	Combined
Paper	13.1%	0.2%	43.7%	0.6%	15.5%
Card	5.8%	0.9%	10.2%	0.0%	5.6%
Plastic (dense)	8.1%	0.1%	6.5%	0.0%	6.5%
Plastic (film)	6.0%	0.1%	0.7%	0.1%	4.2%
Textiles	4.5%	0.1%	0.6%	0.0%	3.2%
Miscellaneous Combustibles	10.4%	0.6%	0.9%	0.0%	7.3%
Glass	4.9%	0.0%	28.4%	0.0%	7.6%
Miscellaneous Non-combustibles	2.8%	0.0%	0.4%	0.0%	2.0%
Metal (ferrous)	2.9%	0.0%	5.2%	0.0%	2.8%
Metal (non-ferrous)	1.3%	0.0%	1.6%	0.0%	1.2%
WEEE	2.7%	0.0%	0.3%	0.0%	1.9%
Hazardous	0.7%	0.0%	0.0%	0.0%	0.5%
Organic Catering	28.3%	0.5%	0.8%	99.4%	20.3%
Organic Non-catering	5.3%	97.5%	0.1%	0.0%	19.4%
Fines	2.9%	0.0%	0.5%	0.0%	2.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

5. Liverpool Kerbside Household Waste Composition Results

5.1 Introduction

This chapter looks at kerbside residual, recyclable and garden waste collected within the District of Liverpool. Table 5.1 summarises the kerbside schemes operated in Liverpool.

Table 5.1 Kerbside Household Waste Collection Schemes in Liverpool, Collection Frequency and Receptacle Type

District	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)
Liverpool	Weekly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Wheeled bin or box	n/a

5.2 Liverpool Sample Profile

Entec's sample design is based upon stratified sampling of the prominent ACORN categories in each District. District waste arisings are modelled using the sample data obtained for each strata and combining it in proportion to the District's sample profile (Table 5.2).

Table 5.2 Liverpool Sample Profile

District	ACORN Category	Households in ACORN Category (%)	Sample Profile
Liverpool	2	11.6	13.9
	3	17.6	19.9
	4	20.0	22.3
	5	41.6	43.9
	Total	90.8	100.0

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

5.3 Set Out

Table 5.3 presents the set out rates for March and June 2010 of kerbside collected services in Liverpool.

Table 5.3 Liverpool Set Out Rates

ACORN	Garden Waste		Dry Recyclables	
	March	June	March	June
2	92.6%	43.6%	38.9%	72.7%
3	45.0%	34.9%	63.2%	69.8%
4	26.7%	56.0%	51.1%	64.0%
5	n/a	n/a	10.0%	32.0%

Note: 100% set out assumed for residual waste

5.4 Residual Waste

5.4.1 Summary Results

During the March 2010 analysis a total of 1,087 kg of residual waste was collected and analysed from 85 sample households within the District of Liverpool.

In June 2010 1,101 kg of residual waste was collected and analysed from 91 sample households within the District of Liverpool.

Figure 5.1 and Table 5.4 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

5.4.2 Study Average Results

A total of 2,188 kg of residual waste was collected from 176 sample households within the District of Liverpool during the March 2010 and June 2010 waste composition exercises.

Figure 5.2 and Table 5.5 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

Figure 5.1 Liverpool Kerbside Residual Waste Arisings (kg/hh/wk), March & June 2010

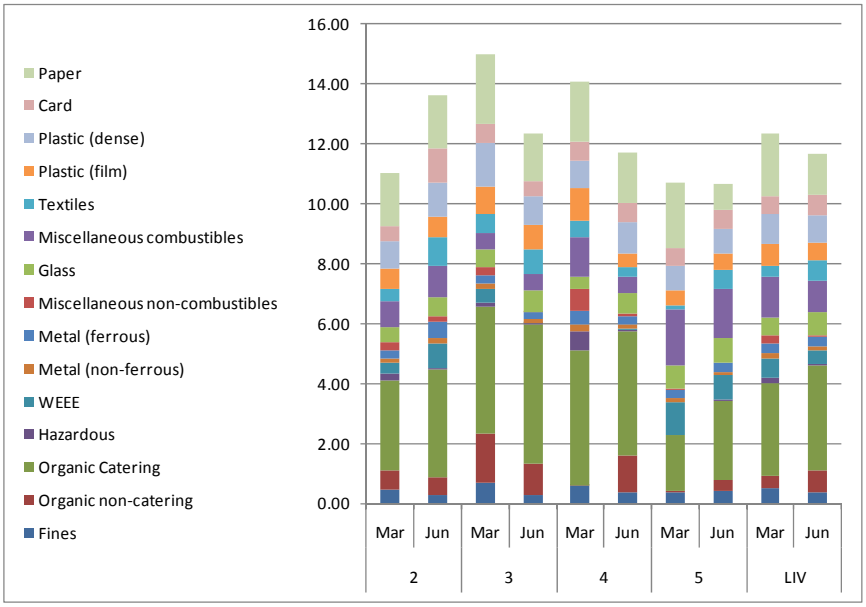

Table 5.4 Liverpool Kerbside Residual Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Liverpool	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	16.0%	12.9%	15.7%	12.9%	14.0%	14.5%	20.1%	8.3%	17.0%	11.4%
Card	4.5%	8.5%	4.0%	4.1%	4.6%	5.6%	5.6%	5.9%	4.8%	5.9%
Plastic (dense)	8.5%	8.4%	9.9%	7.7%	6.6%	8.7%	7.8%	7.6%	8.1%	8.0%
Plastic (film)	6.2%	5.0%	5.9%	6.5%	7.6%	4.0%	4.7%	4.9%	5.9%	5.1%
Textiles	3.6%	6.9%	4.1%	6.6%	4.1%	2.9%	1.1%	6.3%	2.9%	5.7%
Misc. Combustibles	8.0%	7.6%	3.6%	4.4%	9.5%	4.5%	17.5%	15.1%	10.9%	9.3%
Glass	4.4%	4.7%	4.2%	5.8%	2.8%	5.9%	7.5%	8.0%	5.1%	6.5%
Misc. Non-combustibles	2.6%	1.5%	1.8%	0.3%	5.3%	0.8%	0.2%	0.0%	2.2%	0.5%
Metal (ferrous)	2.4%	3.9%	1.7%	1.5%	3.2%	2.3%	2.8%	2.7%	2.6%	2.6%
Metal (non-ferrous)	1.4%	1.3%	1.4%	1.1%	1.5%	1.2%	1.2%	1.0%	1.4%	1.1%
WEEE	3.4%	6.2%	2.9%	0.3%	0.0%	0.5%	10.2%	7.6%	5.0%	4.2%
Hazardous	1.8%	0.4%	0.8%	0.2%	4.7%	0.1%	0.0%	0.4%	1.6%	0.3%
Organic Catering	27.4%	26.4%	28.3%	37.7%	31.9%	35.4%	17.6%	24.8%	25.0%	30.1%
Organic Non-catering	5.6%	4.3%	10.9%	8.3%	0.2%	10.6%	0.1%	3.4%	3.4%	6.2%
Fines	4.3%	2.1%	4.7%	2.3%	4.1%	3.1%	3.5%	4.0%	4.0%	3.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 5.2 Liverpool Kerbside Residual Waste Arisings (kg/hh/wk), Study Average

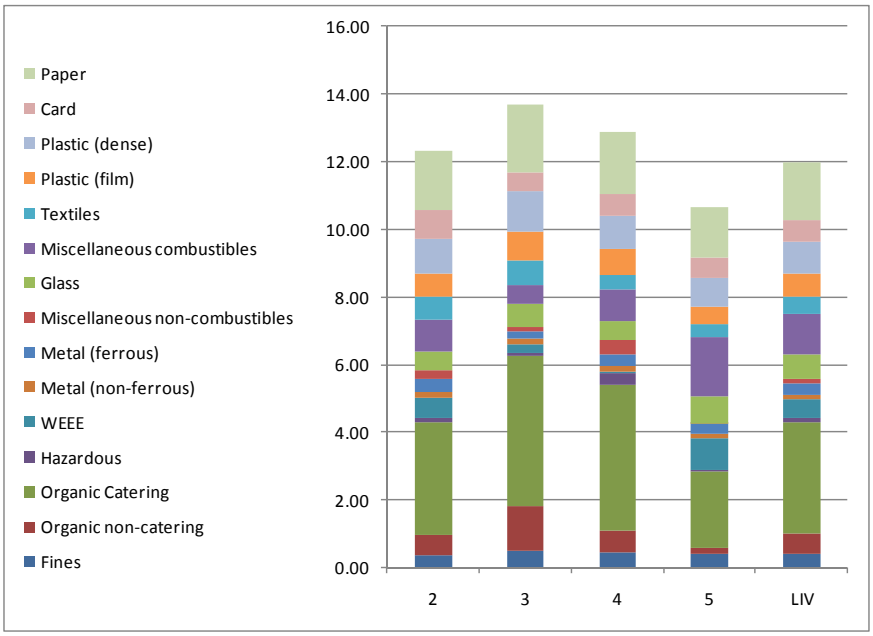

Table 5.5 Liverpool Kerbside Residual Waste Assay (% wt.), Study Average

Primary Category	ACORN 2	ACORN 3	ACORN 4	ACORN 5	Liverpool
Paper	14.3%	14.4%	14.2%	14.2%	14.3%
Card	6.7%	4.1%	5.0%	5.7%	5.3%
Plastic (dense)	8.5%	8.9%	7.6%	7.7%	8.1%
Plastic (film)	5.5%	6.2%	5.9%	4.8%	5.5%
Textiles	5.4%	5.3%	3.5%	3.7%	4.3%
Miscellaneous Combustibles	7.8%	4.0%	7.2%	16.3%	10.1%
Glass	4.6%	4.9%	4.2%	7.7%	5.8%
Miscellaneous Non-combustibles	2.0%	1.1%	3.2%	0.1%	1.4%
Metal (ferrous)	3.2%	1.6%	2.8%	2.8%	2.6%
Metal (non-ferrous)	1.3%	1.3%	1.4%	1.1%	1.2%
WEEE	4.9%	1.8%	0.2%	8.9%	4.6%
Hazardous	1.1%	0.5%	2.6%	0.2%	1.0%
Organic Catering	26.8%	32.5%	33.5%	21.2%	27.5%
Organic Non-catering	4.9%	9.8%	4.9%	1.7%	4.8%
Fines	3.1%	3.6%	3.7%	3.8%	3.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 2 Study Average

A total of 517 kg of residual waste was collected from 42 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 12.31 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 26.8%, paper at 14.3% and dense plastic at 8.5%.

ACORN 3 Study Average

A total of 657 kg of residual waste was collected from 50 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 13.67 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and organic non-catering at 32.5%, 14.4% and 9.8% respectively.

ACORN 4 Study Average

A total of 560 kg of residual waste was collected from 40 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average residual waste arising per household was 12.89 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 33.5%, paper at 14.2% and dense plastic at 7.6%.

ACORN 5 Study Average

A total of 454 kg of residual waste was collected from 40 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±13% at a confidence level of 95%.

The average residual waste arising per household is 10.67 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, miscellaneous combustibles and paper at 21.2%, 16.3% and 14.2% respectively.

Liverpool Study Average

A total of 2,188 kg of residual waste was collected from 176 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average residual waste arising per household was 11.99 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 27.5%, paper at 14.3% and miscellaneous combustibles at 10.1%.

5.5 Garden Waste

5.5.1 Summary Results

During the March 2010 analysis a total of 1,102 kg of garden waste was collected and analysed from 61 sample households within the District of Liverpool.

In June 2010 2,358 kg of garden waste was collected and analysed from 64 sample households within the District of Liverpool.

Figure 5.3 and Table 5.6 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

5.5.2 Study Average Results

A total of 3,460 kg of garden waste was collected from 125 sample households within the District of Liverpool during the March 2010 and June 2010 waste composition exercises.

Figure 5.4 and Table 5.7 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

Figure 5.3 Liverpool Kerbside Garden Waste Arisings (kg/hh/wk), March & June 2010

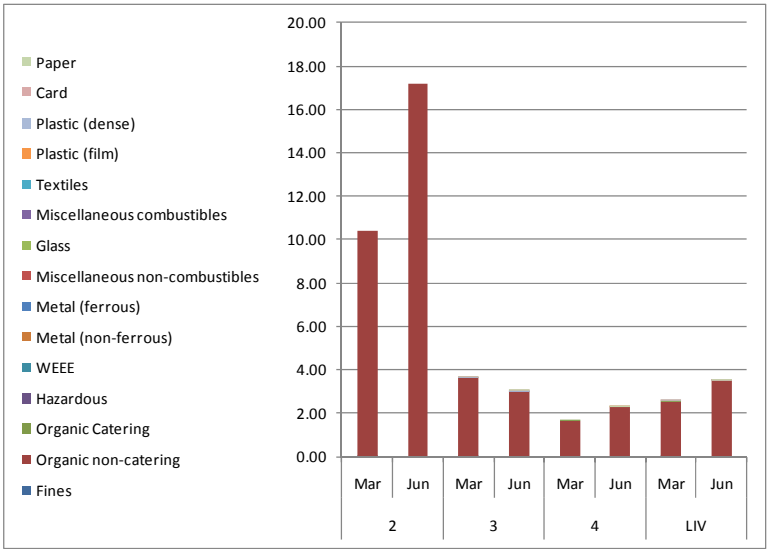

Table 5.6 Liverpool Kerbside Garden Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		Liverpool	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.1%
Card	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%	0.0%	0.2%
Plastic (dense)	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.1%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.6%	0.1%	1.4%	1.2%	0.4%	0.2%
Organic Non-catering	99.8%	100.0%	98.8%	98.3%	98.6%	98.4%	99.3%	99.5%
Fines	0.2%	0.0%	0.6%	0.0%	0.0%	0.0%	0.3%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 5.4 Liverpool Kerbside Garden Waste Arisings (kg/hh/wk), Study Average

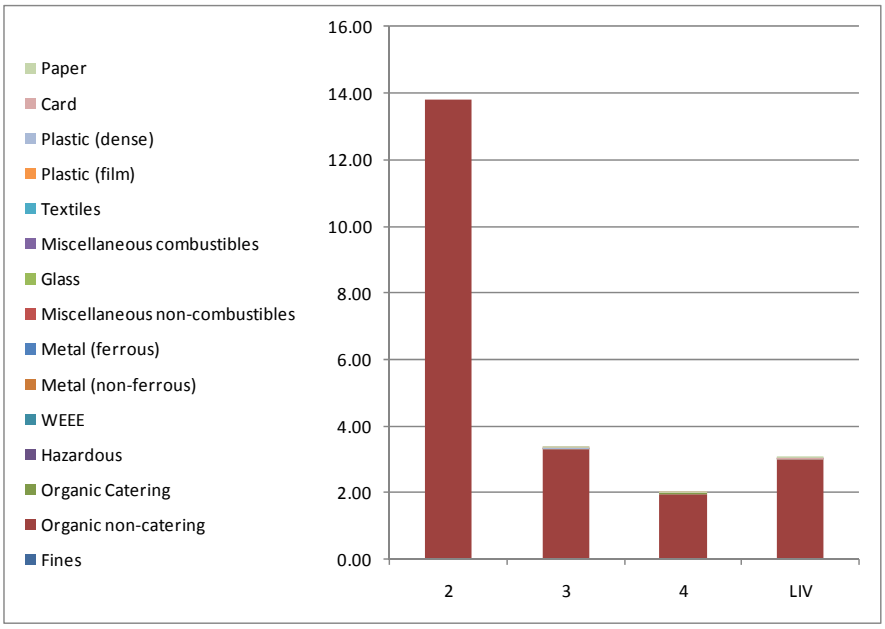

Table 5.7 Liverpool Kerbside Garden Waste Assay (% wt.), Study Average

Primary Category	ACORN 2	ACORN 3	ACORN 4	Liverpool
Paper	0.0%	0.2%	0.0%	0.0%
Card	0.0%	0.3%	0.2%	0.1%
Plastic (dense)	0.0%	0.1%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.2%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.4%	1.3%	0.3%
Organic Non-catering	99.9%	98.5%	98.5%	99.4%
Fines	0.1%	0.3%	0.0%	0.1%
Total	100.0%	100.0%	100.0%	100.0%

ACORN 2 Study Average

A total of 2,454 kg of garden waste was collected from 49 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average garden waste arising per household was 13.80 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.9%.

ACORN 3 Study Average

A total of 652 kg of garden waste was collected from 39 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±12% at a confidence level of 95%.

The average garden waste arising per household was 3.35 kg/hh/wk. The dominant primary waste category was organic non-catering at 98.5%. Contaminants equating to 1.5% of the garden waste analysed was present within the sample. Organic catering and card were the dominant primary waste categories within the contaminants comprising 0.4% and 0.3% respectively of the total sample weight.

ACORN 4 Study Average

A total of 355 kg of garden waste was collected from 37 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average garden waste arising per household was 1.98 kg/hh/wk. The dominant primary waste category was organic non-catering at 98.5%. A small amount of organic catering and card material was present equating to 1.3% and 0.2% respectively of the total sample weight.

Liverpool Study Average

A total of 3,460 kg of garden waste was collected from 125 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±6% at a confidence level of 95%.

The average garden waste arising per household was 3.03 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.4%. A small amount of contaminants were present equating to 0.6% of the total sample weight.

5.6 Dry Recyclables

5.6.1 Summary Results

During the March 2010 analysis a total of 772 kg of dry recyclables was collected and analysed from 84 sample households within the District of Liverpool.

In June 2010 555 kg of dry recyclables was collected and analysed from 91 sample households within the District of Liverpool.

Figure 5.5 and Table 5.8 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

5.6.2 Study Average Results

A total of 1,327 kg of dry recyclables was collected from 175 sample households within the District of Liverpool during the March 2010 and June 2010 waste composition exercises.

Figure 5.6 and Table 5.9 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

Figure 5.5 Liverpool Kerbside Dry Recyclables Arisings (kg/hh/wk), March & June 2010

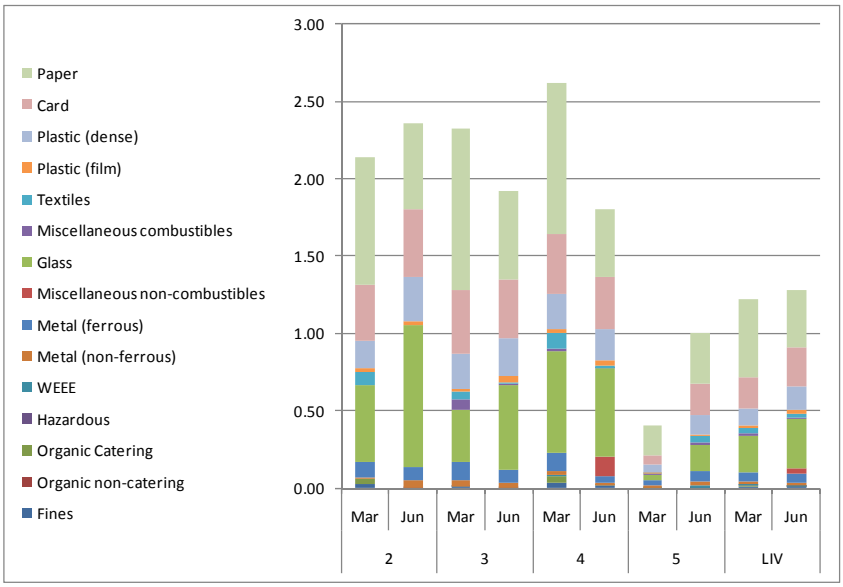

Table 5.8 Liverpool Kerbside Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Liverpool	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	38.4%	23.6%	44.8%	29.5%	37.2%	24.2%	48.9%	32.7%	41.8%	29.1%
Card	17.3%	18.6%	18.0%	20.0%	14.8%	19.1%	14.4%	19.8%	16.0%	19.6%
Plastic (dense)	8.0%	12.3%	9.6%	12.7%	8.7%	11.0%	11.8%	12.6%	9.5%	12.1%
Plastic (film)	1.2%	0.8%	0.8%	2.1%	1.0%	2.1%	0.9%	0.8%	0.9%	1.6%
Textiles	3.9%	0.0%	2.1%	0.3%	3.7%	0.8%	0.8%	4.2%	2.7%	2.0%
Misc. Combustibles	0.0%	0.0%	2.9%	0.5%	0.7%	0.2%	1.5%	2.1%	1.6%	1.0%
Glass	23.3%	38.8%	14.7%	28.6%	25.1%	31.7%	9.6%	16.7%	18.9%	24.9%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	0.0%	0.0%	0.0%	2.1%
Metal (ferrous)	4.7%	3.9%	5.1%	4.4%	4.5%	2.4%	8.0%	6.7%	5.2%	4.6%
Metal (non-ferrous)	0.7%	1.9%	1.6%	1.7%	0.9%	0.8%	3.3%	2.6%	1.5%	1.8%
WEEE	0.0%	0.0%	0.2%	0.0%	0.5%	0.0%	0.0%	1.3%	0.3%	0.5%
Hazardous	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	1.3%	0.0%	0.0%	0.0%	1.6%	0.3%	0.7%	0.2%	0.9%	0.2%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Fines	1.3%	0.0%	0.3%	0.2%	1.2%	0.8%	0.0%	0.1%	0.7%	0.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 5.6 Liverpool Kerbside Dry Recyclables Arisings (kg/hh/wk), Study Average

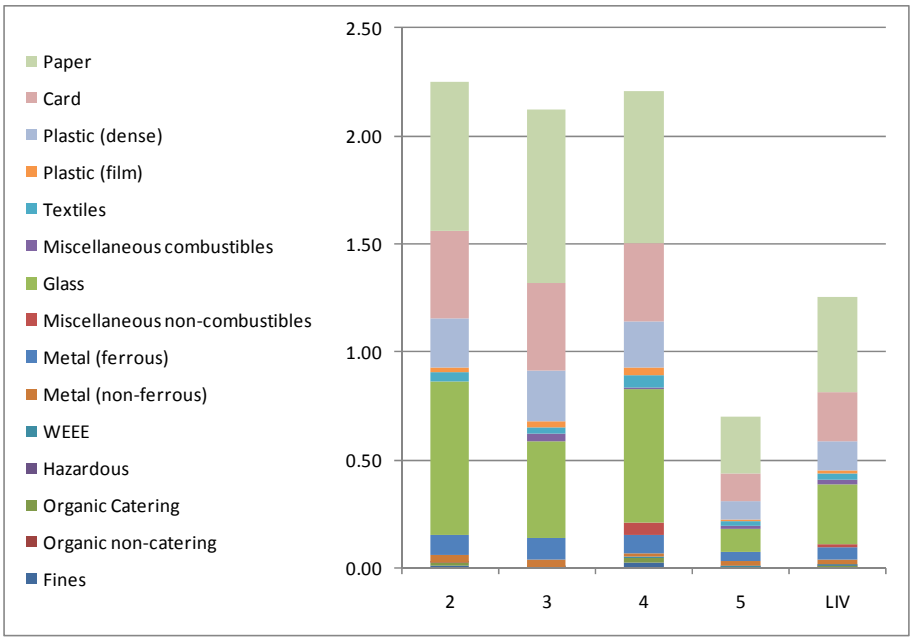

Table 5.9 Liverpool Kerbside Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 2	ACORN 3	ACORN 4	ACORN 5	Liverpool
Paper	30.6%	37.9%	31.9%	37.4%	35.3%
Card	17.9%	18.9%	16.6%	18.3%	17.9%
Plastic (dense)	10.3%	11.0%	9.6%	12.4%	10.8%
Plastic (film)	1.0%	1.4%	1.5%	0.8%	1.3%
Textiles	1.9%	1.3%	2.5%	3.2%	2.3%
Miscellaneous Combustibles	0.0%	1.8%	0.5%	1.9%	1.3%
Glass	31.4%	21.0%	27.8%	14.7%	22.0%
Miscellaneous Non-combustibles	0.0%	0.0%	2.7%	0.0%	1.1%
Metal (ferrous)	4.3%	4.8%	3.6%	7.1%	4.9%
Metal (non-ferrous)	1.3%	1.6%	0.9%	2.8%	1.6%
WEEE	0.0%	0.1%	0.3%	0.9%	0.4%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.6%	0.0%	1.1%	0.3%	0.5%
Organic Non-catering	0.0%	0.0%	0.0%	0.1%	0.0%
Fines	0.6%	0.3%	1.0%	0.1%	0.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 2 Study Average

A total of 393 kg of dry recyclables was collected from 46 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 2.25 kg/hh/wk. The dominant primary waste categories identified within the sample were glass at 31.4%, paper at 30.6% and card at 17.9%.

ACORN 3 Study Average

A total of 322 kg of dry recyclables was collected from 50 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 2.12 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and card at 37.9%, 21.0% and 18.9% respectively.

ACORN 4 Study Average

A total of 377 kg of dry recyclables was collected from 48 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 2.21 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 31.9%, glass at 27.8% and card at 16.6%.

ACORN 5 Study Average

A total of 236 kg of dry recyclables was collected from 31 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±24% at a confidence level of 95%.

The average dry recyclables arising per household was 0.70 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, card and glass at 37.4%, 18.3% and 14.7% respectively.

Liverpool Study Average

A total of 1,327 kg of dry recyclables was collected from 175 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±11% at a confidence level of 95%.

The average dry recyclables arising per household was 1.25 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 35.3%, glass at 22.0% and card at 17.9%.

5.7 Combined Kerbside Waste Streams

5.7.1 Summary Results

During the March 2010 analysis a total of 230 samples containing 2,961 kg of kerbside waste were collected and analysed from within the District of Liverpool.

In June 2010 246 samples containing 4,014 kg of kerbside waste was collected and analysed from within the District of Liverpool.

Figure 5.7 and Table 5.10 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

5.7.2 Study Average Results

A total of 476 waste samples containing 6,975 kg of kerbside waste were collected from within the District of Liverpool during the March 2010 and June 2010 waste composition exercises.

Figure 5.8 and Table 5.11 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

Figure 5.7 Liverpool Combined Kerbside Waste Arisings (kg/hh/wk), March & June 2010

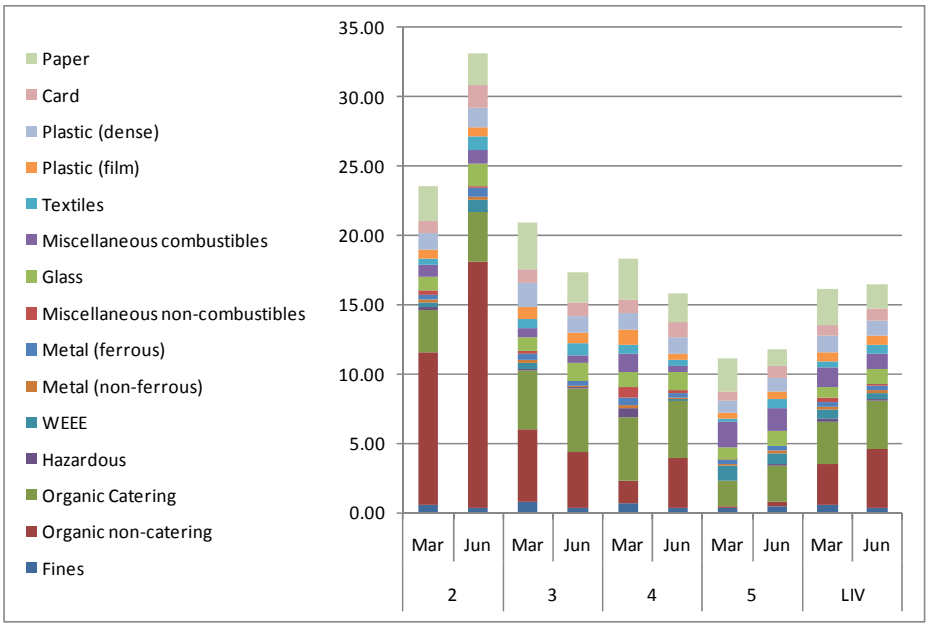

Table 5.10 Liverpool Combined Kerbside Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Liverpool	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	10.9%	7.0%	16.1%	12.6%	16.1%	13.5%	21.1%	10.6%	16.2%	10.4%
Card	3.7%	4.8%	4.9%	5.2%	5.6%	6.4%	5.9%	7.2%	4.9%	5.7%
Plastic (dense)	4.7%	4.3%	8.2%	6.9%	6.3%	7.7%	7.9%	8.1%	6.9%	6.6%
Plastic (film)	3.0%	2.1%	4.3%	4.9%	5.9%	3.2%	4.6%	4.6%	4.6%	3.7%
Textiles	2.0%	2.8%	3.2%	4.8%	3.6%	2.2%	1.1%	6.1%	2.4%	4.2%
Misc. Combustibles	3.7%	3.1%	2.9%	3.3%	7.4%	3.4%	16.9%	13.8%	8.5%	6.7%
Glass	4.1%	4.7%	4.6%	7.3%	5.7%	8.0%	7.5%	8.8%	5.3%	6.6%
Misc. Non-combustibles	1.2%	0.6%	1.3%	0.2%	4.1%	1.3%	0.2%	0.0%	1.7%	0.5%
Metal (ferrous)	1.5%	1.9%	1.8%	1.6%	3.1%	1.9%	3.0%	3.1%	2.4%	2.2%
Metal (non-ferrous)	0.7%	0.7%	1.2%	1.0%	1.3%	1.0%	1.3%	1.2%	1.2%	0.9%
WEEE	1.6%	2.5%	2.1%	0.2%	0.1%	0.4%	9.8%	7.0%	3.9%	3.0%
Hazardous	0.9%	0.2%	0.6%	0.2%	3.6%	0.1%	0.0%	0.3%	1.2%	0.2%
Organic Catering	12.9%	10.8%	20.3%	26.9%	24.8%	26.4%	17.0%	22.4%	19.3%	21.4%
Organic Non-catering	46.8%	53.6%	25.0%	23.2%	9.0%	22.2%	0.1%	3.0%	18.3%	25.6%
Fines	2.2%	0.8%	3.5%	1.7%	3.3%	2.4%	3.4%	3.7%	3.2%	2.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 5.8 Liverpool Combined Kerbside Waste Arisings (kg/hh/wk), Study Average

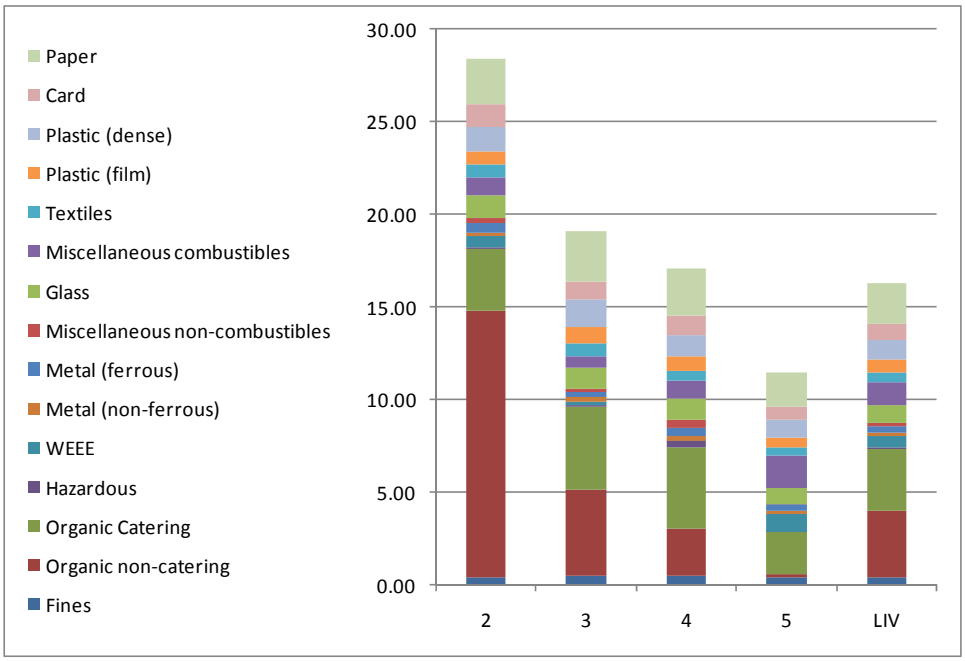

Table 5.11 Liverpool Combined Kerbside Waste Assay (% wt.), Study Average

Primary Category	ACORN 2	ACORN 3	ACORN 4	ACORN 5	Liverpool
Paper	8.6%	14.5%	14.9%	15.7%	13.2%
Card	4.3%	5.0%	6.0%	6.6%	5.3%
Plastic (dense)	4.5%	7.6%	7.0%	8.0%	6.8%
Plastic (film)	2.5%	4.6%	4.7%	4.6%	4.2%
Textiles	2.5%	3.9%	3.0%	3.7%	3.3%
Miscellaneous Combustibles	3.4%	3.1%	5.5%	15.3%	7.6%
Glass	4.5%	5.8%	6.8%	8.2%	6.0%
Miscellaneous Non-combustibles	0.8%	0.8%	2.8%	0.1%	1.1%
Metal (ferrous)	1.7%	1.7%	2.6%	3.0%	2.3%
Metal (non-ferrous)	0.7%	1.1%	1.1%	1.2%	1.0%
WEEE	2.1%	1.3%	0.2%	8.4%	3.4%
Hazardous	0.5%	0.4%	2.0%	0.2%	0.7%
Organic Catering	11.7%	23.3%	25.6%	19.8%	20.4%
Organic Non-catering	50.8%	24.2%	15.1%	1.6%	22.0%
Fines	1.4%	2.7%	2.9%	3.5%	2.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 2 Study Average

A total of 137 samples containing 3,364 kg of kerbside waste were collected from ACORN 1 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±9% at a confidence level of 95%.

The average kerbside waste arising per household was 28.36 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering at 50.8%, organic catering at 11.7% and paper at 8.6%.

ACORN 3 Study Average

A total of 139 samples containing 1,657 kg of kerbside waste were collected from ACORN 2 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 19.14 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering, organic catering and paper at 24.2%, 23.3% and 14.5% respectively.

ACORN 4 Study Average

A total of 129 samples containing 1,292 kg of kerbside waste were collected from ACORN 4 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 17.09 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 25.6%, organic non-catering at 15.1% and paper at 14.9%.

ACORN 5 Study Average

A total of 71 samples containing 662 kg of kerbside waste were collected from ACORN 5 sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average kerbside waste arising per household was 11.45 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and miscellaneous combustibles at 19.8%, 15.7%, and 15.3% respectively.

Liverpool Study Average

A total of 476 samples containing 6,975 kg of kerbside waste were collected from sample households within the District of Liverpool providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average kerbside waste arising per household was 16.27 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering at 22.0%, organic catering at 20.4% and paper at 13.2%.

5.8 Biodegradable Municipal Waste (BMW) Content in Liverpool's Kerbside Waste Streams

The BMW content was calculated using the study average results for the Liverpool's waste streams. Please refer to Section 2.9 for an explanation of how BMW is calculated. The results are presented in Figure 5.9 and Table 5.12.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix B.

Figure 5.9 Arisings (kg/hh/wk) of BMW in Liverpool's Kerbside Waste Streams

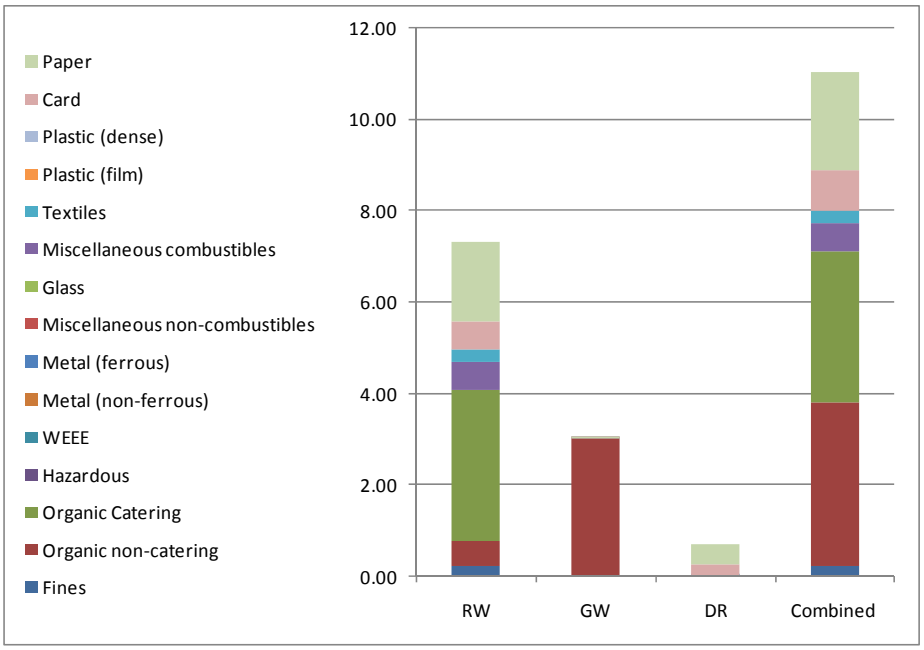

Table 5.12 Proportion (% wt.) of BMW in Liverpool's Kerbside Waste Streams

Primary Category	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Combined
Paper	14.3%	0.0%	35.3%	13.2%
Card	5.3%	0.1%	17.9%	5.3%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%
Textiles	2.1%	0.0%	1.2%	1.7%
Miscellaneous Combustibles	5.1%	0.0%	0.7%	3.8%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	27.5%	0.3%	0.5%	20.4%
Organic Non-catering	4.8%	99.4%	0.0%	22.0%
Fines	1.8%	0.1%	0.3%	1.4%
Total	60.9%	99.9%	55.7%	67.7%

5.9 Calorific Value

Entec calculated residual waste CVs based on the study average residual waste composition for Liverpool using reference values for the CV of individual waste materials. A summary of the CV estimated by Entec is presented in Table 5.13 below.

Table 5.13 Liverpool Residual Waste Calorific Value

Analyte		Values
Hydrogen	% wt.	3.34
Carbon	% wt.	22.92
Nitrogen	% wt.	0.66
Oxygen	% wt.	15.97
Sulphur	% wt.	0.11
Chlorine	% wt.	0.78
Ash	% wt.	19.72
Moisture	% wt.	36.50
Net CV	MJ/kg	8.39

5.10 Liverpool Dry Recyclables Content and Capture

The dry recyclables content and capture was calculated using the study average results for the Liverpool waste streams. The results for capture of dry recyclables are shown in Table 5.14 below. Please refer to Appendix A for an explanation of the table layout and content.

Table 5.14 Kerbside Dry Recyclables Content and Capture, Liverpool Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
Liverpool											
Material sub-category	Arisings (kg/hh/wk)				Assay	Targetable DR		Captured Target DR		Captured Non-Target	
	RW	GW	DR	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	kg/hh/wk	wt.% of Material Fraction	Arisings, kg/hh/wk	wt.% of DR
Newspapers	0.60	0.00	0.20	0.79	4.9%	0.79	4.9%	0.20	24.6%	-	-
Magazines	0.25	0.00	0.09	0.34	2.1%	0.34	2.1%	0.09	25.9%	-	-
Other recyclable paper	0.26	0.00	0.12	0.38	2.3%	0.38	2.3%	0.12	30.7%	-	-
Paper packaging	0.01	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	13.4%	-	-
Non-recyclable paper	0.59	0.00	0.04	0.63	3.9%	-	-	-	-	0.04	3.4%
Subtotal Paper	**1.71**	**0.00**	**0.44**	**2.15**	**13.2%**	**1.52**	**9.4%**	**0.40**	**18.6%**	**0.04**	**3.4%**
Liquid cartons	0.02	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.2%
Board packaging	0.23	0.00	0.10	0.33	2.0%	0.33	2.0%	0.10	31.3%	-	-
Card packaging	0.36	0.00	0.11	0.47	2.9%	0.47	2.9%	0.11	22.6%	-	-
Other card	0.03	0.00	0.01	0.04	0.3%	0.04	0.3%	0.01	29.0%	-	-
Subtotal Card	**0.64**	**0.00**	**0.22**	**0.87**	**5.3%**	**0.84**	**5.2%**	**0.22**	**25.5%**	**0.00**	**0.2%**
Plastic Bottles: PET	0.25	0.00	0.04	0.29	1.8%	0.29	1.8%	0.04	14.8%	-	-
PET Coloured	0.01	0.00	0.01	0.02	0.1%	0.02	0.1%	0.01	37.4%	-	-
HDPE	0.10	0.00	0.03	0.13	0.8%	0.13	0.8%	0.03	21.3%	-	-
HDPE Coloured	0.05	0.00	0.02	0.06	0.4%	0.06	0.4%	0.02	26.2%	-	-
Other	0.02	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	7.7%	-	-
Other packaging	0.33	0.00	0.03	0.36	2.2%	-	-	-	-	0.03	2.0%
Other dense plastic	0.20	0.00	0.01	0.22	1.3%	-	-	-	-	0.01	1.2%
Subtotal Dense Plastic	**0.97**	**0.00**	**0.14**	**1.10**	**6.8%**	**0.53**	**3.2%**	**0.10**	**8.7%**	**0.04**	**3.2%**
Packaging film	0.34	0.00	0.01	0.34	2.1%	-	-	-	-	0.01	0.5%
Other plastic film	0.32	0.00	0.01	0.33	2.0%	-	-	-	-	0.01	0.7%
Subtotal Plastic Film	**0.66**	**0.00**	**0.02**	**0.68**	**4.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**1.3%**
Textiles	0.45	0.00	0.03	0.48	3.0%	-	-	-	-	0.03	2.3%
Shoes	0.06	0.00	0.00	0.06	0.4%	-	-	-	-	0.00	0.1%
Subtotal Textiles	**0.51**	**0.00**	**0.03**	**0.54**	**3.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.03**	**2.3%**
Treated wood	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.2%
Untreated wood	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.3%
Nappies/ Sanitary	1.10	0.00	0.01	1.11	6.8%	-	-	-	-	0.01	0.5%
Other misc. comb.	0.07	0.00	0.00	0.07	0.5%	-	-	-	-	0.00	0.1%
Carpet and underlay	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.2%
Subtotal Misc.Comb	**1.21**	**0.00**	**0.02**	**1.23**	**7.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**1.3%**
Glass bottles	0.55	0.00	0.23	0.78	4.8%	0.78	4.8%	0.23	29.9%	-	-
Glass jars	0.13	0.00	0.04	0.17	1.0%	0.17	1.0%	0.04	23.8%	-	-
Other glass	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.2%
Subtotal Glass	**0.70**	**0.00**	**0.28**	**0.97**	**6.0%**	**0.95**	**5.8%**	**0.27**	**28.1%**	**0.00**	**0.2%**
Construction and demolition	0.11	0.00	0.00	0.11	0.6%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.06	0.00	0.01	0.07	0.4%	-	-	-	-	0.01	1.1%
Subtotal Misc.Non-Comb	**0.16**	**0.00**	**0.01**	**0.18**	**1.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**1.1%**
Ferrous food cans	0.18	0.00	0.05	0.23	1.4%	0.23	1.4%	0.05	21.2%	-	-
Ferrous beverage cans	0.05	0.00	0.01	0.05	0.3%	0.05	0.3%	0.01	13.8%	-	-
Ferrous aerosols	0.03	0.00	0.00	0.03	0.2%	0.03	0.2%	0.00	4.6%	-	-
Other ferrous metal	0.05	0.00	0.00	0.06	0.3%	-	-	-	-	0.00	0.3%
Subtotal Ferrous Metals	**0.31**	**0.00**	**0.06**	**0.37**	**2.3%**	**0.31**	**1.9%**	**0.06**	**15.7%**	**0.00**	**0.3%**
Non-ferrous food cans	0.00	0.00	0.00	0.00	0.0%	0.00	0.0%	0.00	54.1%	-	-
Non-ferrous beverage cans	0.05	0.00	0.02	0.07	0.4%	0.07	0.4%	0.02	24.4%	-	-
Non-ferrous aerosols	0.02	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	3.2%	-	-
Other non-ferrous metal	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.2%
Subtotal Non-Ferr Metals	**0.15**	**0.00**	**0.02**	**0.17**	**1.0%**	**0.09**	**0.6%**	**0.02**	**10.9%**	**0.00**	**0.2%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.38	0.00	0.00	0.38	2.3%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.06	0.00	0.00	0.06	0.4%	-	-	-	-	0.00	0.2%
Lighting	0.05	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.2%
Subtotal WEEE	**0.56**	**0.00**	**0.01**	**0.56**	**3.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.4%**
Household batteries	0.01	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.09	0.00	0.00	0.09	0.5%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.12**	**0.00**	**0.00**	**0.12**	**0.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.16	0.01	0.00	1.17	7.2%	-	-	-	-	0.00	0.3%
Unused home compostable food	0.53	0.00	0.00	0.53	3.3%	-	-	-	-	0.00	0.0%
Non-home compostable food	1.04	0.00	0.00	1.04	6.4%	-	-	-	-	0.00	0.1%
Unused non-home compostable food	0.57	0.00	0.00	0.57	3.5%	-	-	-	-	0.00	0.1%
Subtotal Org.Catering	**3.30**	**0.01**	**0.01**	**3.31**	**20.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.5%**
Garden	0.43	2.88	0.00	3.31	20.3%	-	-	-	-	0.00	0.0%
Soil	0.09	0.12	0.00	0.21	1.3%	-	-	-	-	0.00	0.0%
Other organic	0.06	0.01	0.00	0.07	0.4%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.57**	**3.01**	**0.00**	**3.58**	**22.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Material less than 10mm	0.43	0.00	0.01	0.44	2.7%	-	-	-	-	0.01	0.5%
Subtotal Fines	**0.43**	**0.00**	**0.01**	**0.44**	**2.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.5%**
Totals	**11.99**	**3.03**	**1.25**	**16.27**	**100.0%**	**4.24**	**26.1%**	**1.07**	**25.2%**	**0.19**	**14.9%**

5.11 Liverpool Organic Material Content and Capture

The organic material content and capture was calculated using the study average results for the Liverpool waste streams. The results for capture of organic material (garden and kitchen waste) are shown in Table 5.15 below. Please refer to Appendix B for an explanation of the table layout and content.

Table 5.15 Kerbside Organic Material Content and Capture, Liverpool Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
Liverpool											
Material sub-category	kg/hh/wk				Assay	Targetable Bio Waste		Captured Target Bio Waste		Non-Target Materials in Bio Waste	
	RW	GW	DR	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	GW kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% Bio Waste
Newspapers	0.60	0.00	0.20	0.79	4.9%	-	-	-	-	0.00	0.0%
Magazines	0.25	0.00	0.09	0.34	2.1%	-	-	-	-	0.00	0.0%
Other recyclable paper	0.26	0.00	0.12	0.38	2.3%	-	-	-	-	0.00	0.0%
Paper packaging	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Non-recyclable paper	0.59	0.00	0.04	0.63	3.9%	-	-	-	-	0.00	0.0%
Subtotal Paper	**1.71**	**0.00**	**0.44**	**2.15**	**13.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Liquid cartons	0.02	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Board packaging	0.23	0.00	0.10	0.33	2.0%	-	-	-	-	0.00	0.0%
Card packaging	0.36	0.00	0.11	0.47	2.9%	-	-	-	-	0.00	0.1%
Other card	0.03	0.00	0.01	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Card	**0.64**	**0.00**	**0.22**	**0.87**	**5.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Plastic Bottles: PET	0.25	0.00	0.04	0.29	1.8%	-	-	-	-	0.00	0.0%
PET Coloured	0.01	0.00	0.01	0.02	0.1%	-	-	-	-	0.00	0.0%
HDPE	0.10	0.00	0.03	0.13	0.8%	-	-	-	-	0.00	0.0%
HDPE Coloured	0.05	0.00	0.02	0.06	0.4%	-	-	-	-	0.00	0.0%
Other	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other packaging	0.33	0.00	0.03	0.36	2.2%	-	-	-	-	0.00	0.0%
Other dense plastic	0.20	0.00	0.01	0.22	1.3%	-	-	-	-	0.00	0.0%
Subtotal Dense Plastic	**0.97**	**0.00**	**0.14**	**1.10**	**6.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Packaging film	0.34	0.00	0.01	0.34	2.1%	-	-	-	-	0.00	0.0%
Other plastic film	0.32	0.00	0.01	0.33	2.0%	-	-	-	-	0.00	0.0%
Subtotal Plastic Film	**0.66**	**0.00**	**0.02**	**0.68**	**4.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Textiles	0.45	0.00	0.03	0.48	3.0%	-	-	-	-	0.00	0.0%
Shoes	0.06	0.00	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.51**	**0.00**	**0.03**	**0.54**	**3.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Treated wood	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Untreated wood	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	1.10	0.00	0.01	1.11	6.8%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.07	0.00	0.00	0.07	0.5%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.21**	**0.00**	**0.02**	**1.23**	**7.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Glass bottles	0.55	0.00	0.23	0.78	4.8%	-	-	-	-	0.00	0.0%
Glass jars	0.13	0.00	0.04	0.17	1.0%	-	-	-	-	0.00	0.0%
Other glass	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.70**	**0.00**	**0.28**	**0.97**	**6.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Construction and demolition	0.11	0.00	0.00	0.11	0.6%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.06	0.00	0.01	0.07	0.4%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.16**	**0.00**	**0.01**	**0.18**	**1.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.18	0.00	0.05	0.23	1.4%	-	-	-	-	0.00	0.0%
Ferrous beverage cans	0.05	0.00	0.01	0.05	0.3%	-	-	-	-	0.00	0.0%
Ferrous aerosols	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Other ferrous metal	0.05	0.00	0.00	0.06	0.3%	-	-	-	-	0.00	0.0%
Subtotal Ferrous Metals	**0.31**	**0.00**	**0.06**	**0.37**	**2.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Non-ferrous food cans	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Non-ferrous beverage cans	0.05	0.00	0.02	0.07	0.4%	-	-	-	-	0.00	0.0%
Non-ferrous aerosols	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other non-ferrous metal	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
Subtotal Non-Ferr Metals	**0.15**	**0.00**	**0.02**	**0.17**	**1.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.38	0.00	0.00	0.38	2.3%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.06	0.00	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Lighting	0.05	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.56**	**0.00**	**0.01**	**0.56**	**3.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.09	0.00	0.00	0.09	0.5%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.12**	**0.00**	**0.00**	**0.12**	**0.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.16	0.01	0.00	1.17	7.2%	-	-	-	-	0.01	0.3%
Unused home compostable food	0.53	0.00	0.00	0.53	3.3%	-	-	-	-	0.00	0.0%
Non-home compostable food	1.04	0.00	0.00	1.04	6.4%	-	-	-	-	0.00	0.0%
Unused non-home compostable food	0.57	0.00	0.00	0.57	3.5%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**3.30**	**0.01**	**0.01**	**3.31**	**20.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Garden	0.43	2.88	0.00	3.31	20.3%	3.31	20.3%	2.88	87.1%	-	-
Soil	0.09	0.12	0.00	0.21	1.3%	0.21	1.3%	0.12	56.9%	-	-
Other organic	0.06	0.01	0.00	0.07	0.4%	-	-	-	-	0.01	0.3%
Subtotal Org.Non Catering	**0.57**	**3.01**	**0.00**	**3.58**	**22.0%**	**3.52**	**21.6%**	**3.00**	**83.7%**	**0.01**	**0.3%**
Material less than 10mm	0.43	0.00	0.01	0.44	2.7%	-	-	-	-	0.00	0.1%
Subtotal Fines	**0.43**	**0.00**	**0.01**	**0.44**	**2.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Totals	**11.99**	**3.03**	**1.25**	**16.27**	**100.0%**	**3.52**	**21.6%**	**3.00**	**85.3%**	**0.03**	**0.9%**

5.12 Conclusion

Figure 5.10 and Table 5.16 present the final modelled waste composition arisings and assay data for the District of Liverpool.

Liverpool's average residual waste arisings were 11.99 kg/hh/wk. Overall there were lower arisings of residual waste during June 2010 (11.64 kg/hh/wk) in comparison with the March 2010 study (12.34 kg/hh/wk). The most prominent materials were organic catering waste at 27.5% (3.30 kg/hh/wk) and paper at 14.3% (1.71 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the residual waste stream was determined to be 60.9%. The calorific value of the residual waste was calculated to be 8.39 MJ/kg.

Average arisings of garden waste in Liverpool were 3.03 kg/hh/wk. Overall there was higher arisings of garden waste during the June 2010 study (3.51 kg/hh/wk) in comparison to March 2010 (2.55 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. The most prominent material was organic non-catering at 99.4%. The composition of this waste stream showed a similar pattern in each season. The kerbside organic material capture was 85.3% of targeted material. Non-target materials constituted 0.9% of the organic stream. The biodegradable municipal waste (BMW) content of the garden waste stream was calculated to be 99.9%.

Liverpool's average dry recyclables arisings were 1.25 kg/hh/wk. Overall there were slightly higher arisings of dry recyclables during June 2010 (1.28 kg/hh/wk) in comparison with the March 2010 study (1.22 kg/hh/wk). The most prominent materials were paper at 35.3% (0.44 kg/hh/wk), glass at 22.0% (0.28 kg/hh/wk) and card at 17.9% (0.22 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season however arisings of paper decreased significantly from 41.8% (0.51 kg/hh/wk) in March 2010 to 35.3% (0.37 kg/hh/wk) June 2010 studies. The kerbside dry recyclables material capture was 25.2% of targeted material. Non-target materials constituted 14.9% of the dry recyclables stream. The biodegradable municipal waste (BMW) content of the dry recyclables stream was calculated to be 55.7%.

The modelled arisings for the combined kerbside waste streams were 16.27 kg/hh/wk. Overall there were higher arisings of kerbside waste during June 2010 (16.44 kg/hh/wk) in comparison with the March 2010 study (16.11 kg/hh/wk). The most prominent materials were organic non-catering waste at 22.0% (3.58 kg/hh/wk), organic catering at 20.4% (3.31 kg/hh/wk) and paper at 13.2% (2.15 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the combined kerbside waste stream was calculated to be 67.7%.

Figure 5.10 Liverpool Waste Arisings (kg/hh/wk), Study Average

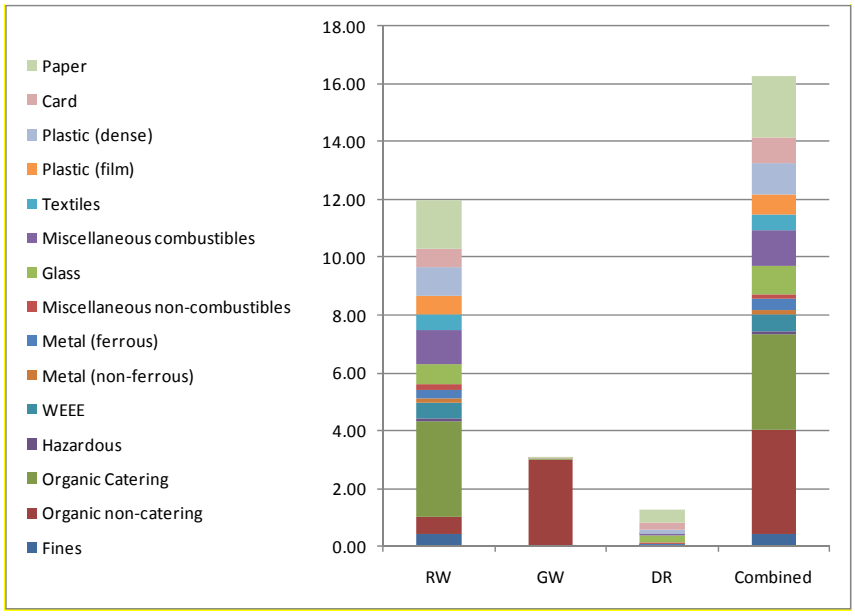

Table 5.16 Liverpool Waste Assay (% wt.), Study Average

Primary Category	Residual Waste	Garden Waste	Dry Recyclables	Combined
Paper	14.3%	0.0%	35.3%	35.3%
Card	5.3%	0.1%	17.9%	17.9%
Plastic (dense)	8.1%	0.0%	10.8%	10.8%
Plastic (film)	5.5%	0.0%	1.3%	1.3%
Textiles	4.3%	0.0%	2.3%	2.3%
Miscellaneous Combustibles	10.1%	0.0%	1.3%	1.3%
Glass	5.8%	0.0%	22.0%	22.0%
Miscellaneous Non-combustibles	1.4%	0.0%	1.1%	1.1%
Metal (ferrous)	2.6%	0.0%	4.9%	4.9%
Metal (non-ferrous)	1.2%	0.0%	1.6%	1.6%
WEEE	4.6%	0.0%	0.4%	0.4%
Hazardous	1.0%	0.0%	0.0%	0.0%
Organic Catering	27.5%	0.3%	0.5%	0.5%
Organic Non-catering	4.8%	99.4%	0.0%	0.0%
Fines	3.6%	0.1%	0.5%	0.5%
Total	100.0%	100.0%	100.0%	100.0%

6. Sefton Kerbside Household Waste Composition Results

6.1 Introduction

This chapter looks at kerbside residual, recyclable, garden and food waste collected within the District of Sefton. Table 6.1 summarises the kerbside schemes operated in Sefton.

Table 6.1 Kerbside Household Waste Collection Schemes in Sefton, Collection Frequency and Receptacle Type

District	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)
Sefton	Fortnightly	Fortnightly	Weekly	Weekly (opt in)
	Wheeled bin	Wheeled bin	Box and sacks	Caddy

6.2 Sefton Sample Profile

Entec's sample design is based upon stratified sampling of the prominent ACORN categories in each District. District waste arisings are modelled using the sample data obtained for each strata and combining it in proportion to the District's sample profile (Table 6.2).

Table 6.2 Sefton Sample Profile

District	ACORN Category	Households in ACORN Category (%)	Sample Profile
Sefton	1	21.1	22.1
	3	43.8	44.8
	4	9.4	10.4
	5	21.7	22.7
	Total	95.9	100.0

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

6.3 Set Out

Table 6.3 presents the set out rates for March and June 2010 of kerbside collected services in Sefton.

Table 6.3 Sefton Set Out Rates

ACORN	Garden Waste		Dry Recyclables		Food Waste	
	March	June	March	June	March	June
1	18.8%	81.3%	28.1%	89.1%	6.3%	18.8%
3	27.6%	89.7%	82.8%	82.8%	22.4%	44.8%
4	n/a	n/a	38.7%	10.7%	5.3%	1.3%
5	19.0%	62.1%	37.9%	48.3%	13.8%	6.9%

Note: 100% set out assumed for residual waste

6.4 Residual Waste

6.4.1 Summary Results

During the March 2010 analysis a total of 1,369 kg of residual waste was collected and analysed from 87 sample households within the District of Sefton.

In June 2010 1,434 kg of residual waste was collected and analysed from 94 sample households within the District of Sefton.

Figure 6.1 and Table 6.4 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

6.4.2 Study Average Results

A total of 2,803 kg of residual waste was collected and analysed from 181 sample households within the District of Sefton during the March 2010 and June 2010 waste composition exercises.

Figure 6.2 and Table 6.5 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

Figure 6.1 Sefton Kerbside Residual Waste Arisings (kg/hh/wk), March & June 2010

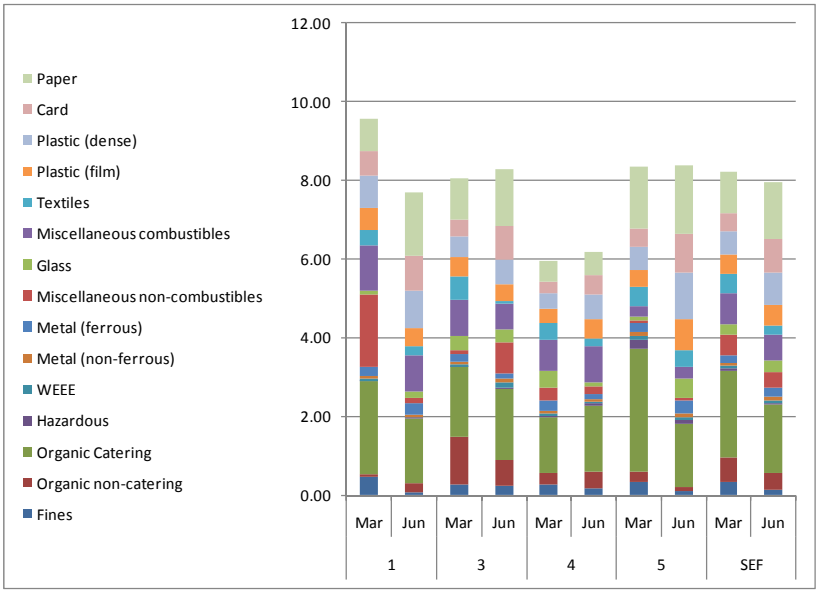

Table 6.4 Sefton Kerbside Residual Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Sefton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	10.9%	7.0%	16.1%	12.6%	16.1%	13.5%	21.1%	10.6%	16.2%	10.4%
Card	3.7%	4.8%	4.9%	5.2%	5.6%	6.4%	5.9%	7.2%	4.9%	5.7%
Plastic (dense)	4.7%	4.3%	8.2%	6.9%	6.3%	7.7%	7.9%	8.1%	6.9%	6.6%
Plastic (film)	3.0%	2.1%	4.3%	4.9%	5.9%	3.2%	4.6%	4.6%	4.6%	3.7%
Textiles	2.0%	2.8%	3.2%	4.8%	3.6%	2.2%	1.1%	6.1%	2.4%	4.2%
Misc. Combustibles	3.7%	3.1%	2.9%	3.3%	7.4%	3.4%	16.9%	13.8%	8.5%	6.7%
Glass	4.1%	4.7%	4.6%	7.3%	5.7%	8.0%	7.5%	8.8%	5.3%	6.6%
Misc. Non-combustibles	1.2%	0.6%	1.3%	0.2%	4.1%	1.3%	0.2%	0.0%	1.7%	0.5%
Metal (ferrous)	1.5%	1.9%	1.8%	1.6%	3.1%	1.9%	3.0%	3.1%	2.4%	2.2%
Metal (non-ferrous)	0.7%	0.7%	1.2%	1.0%	1.3%	1.0%	1.3%	1.2%	1.2%	0.9%
WEEE	1.6%	2.5%	2.1%	0.2%	0.1%	0.4%	9.8%	7.0%	3.9%	3.0%
Hazardous	0.9%	0.2%	0.6%	0.2%	3.6%	0.1%	0.0%	0.3%	1.2%	0.2%
Organic Catering	12.9%	10.8%	20.3%	26.9%	24.8%	26.4%	17.0%	22.4%	19.3%	21.4%
Organic Non-catering	46.8%	53.6%	25.0%	23.2%	9.0%	22.2%	0.1%	3.0%	18.3%	25.6%
Fines	2.2%	0.8%	3.5%	1.7%	3.3%	2.4%	3.4%	3.7%	3.2%	2.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 6.2 Sefton Kerbside Residual Waste Arisings (kg/hh/wk), Study Average

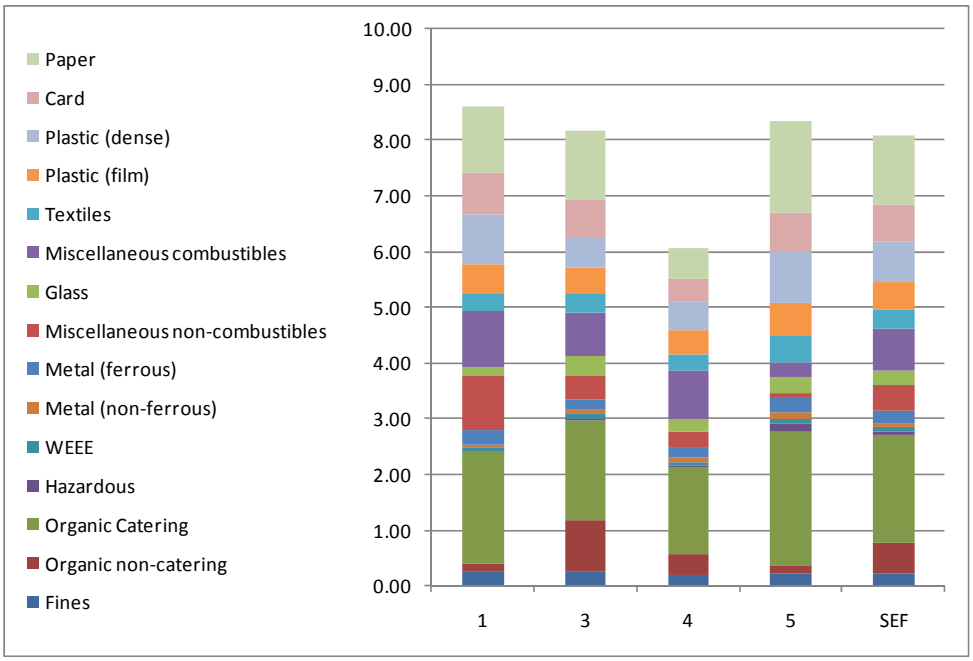

Table 6.5 Sefton Kerbside Residual Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Sefton
Paper	14.0%	15.1%	8.9%	20.0%	15.5%
Card	8.8%	8.1%	6.5%	8.4%	8.2%
Plastic (dense)	10.2%	6.9%	8.8%	10.8%	8.7%
Plastic (film)	6.2%	5.7%	7.0%	7.1%	6.3%
Textiles	3.5%	4.2%	4.9%	5.7%	4.4%
Miscellaneous Combustibles	12.0%	9.5%	14.4%	3.2%	9.0%
Glass	1.6%	4.1%	4.1%	3.5%	3.4%
Miscellaneous Non-combustibles	11.4%	5.5%	4.5%	1.0%	5.8%
Metal (ferrous)	3.0%	2.1%	3.1%	3.2%	2.6%
Metal (non-ferrous)	0.8%	0.9%	1.4%	1.1%	1.0%
WEEE	0.5%	1.0%	0.5%	1.2%	0.9%
Hazardous	0.2%	0.3%	0.6%	1.9%	0.7%
Organic Catering	23.2%	21.9%	25.8%	28.4%	24.1%
Organic Non-catering	1.8%	11.6%	6.0%	2.0%	6.6%
Fines	3.0%	2.9%	3.4%	2.6%	2.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 693 kg of residual waste was collected from 40 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 8.62 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 23.2%, paper at 14.0% and miscellaneous combustibles at 12.0%.

ACORN 3 Study Average

A total of 752 kg of residual waste was collected from 46 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±12% at a confidence level of 95%.

The average residual waste arising per household was 8.16 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and organic non-catering at 21.9%, 15.1% and 11.6% respectively.

ACORN 4 Study Average

A total of 605 kg of residual waste was collected from 50 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±13% at a confidence level of 95%.

The average residual waste arising per household was 6.05 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 25.8%, miscellaneous combustibles at 14.4% and paper at 8.9%.

ACORN 5 Study Average

A total of 752 kg of residual waste was collected from 45 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 8.36 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and dense plastic at 28.4%, 20.0% and 10.8% respectively.

Sefton Study Average

A total of 2,803 kg of residual waste was collected from 181 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average residual waste arising per household was 8.09 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 24.1%, paper at 15.5% and miscellaneous combustibles at 9.0%.

6.5 Garden Waste

6.5.1 Summary Results

During the March 2010 analysis a total of 751 kg of garden waste was collected and analysed from 39 sample households within the District of Sefton.

In June 2010 782 kg of garden waste was collected and analysed from 41 sample households within the District of Sefton.

Figure 6.3 and Table 6.6 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

6.5.2 Study Average Results

A total of 1,533 kg of garden waste was collected and analysed from 80 sample households within the District of Sefton during the March 2010 and June 2010 waste composition exercises.

Figure 6.4 and Table 6.7 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

Figure 6.3 Sefton Kerbside Garden Waste Arisings (kg/hh/wk), March & June 2010

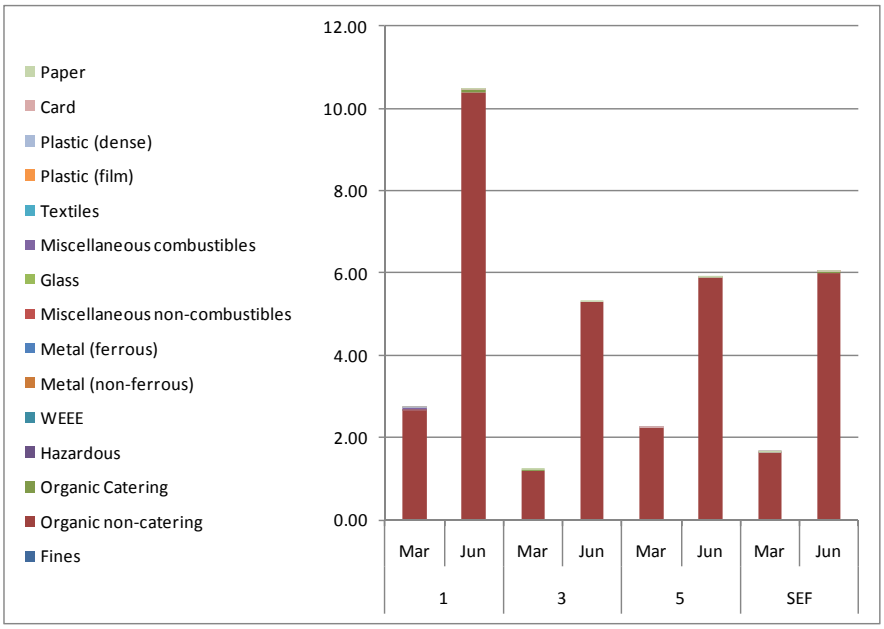

Table 6.6 Sefton Kerbside Garden Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 5		Sefton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.2%	0.6%	0.5%	0.0%	0.1%	0.2%	0.3%
Card	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Plastic (film)	0.2%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
Textiles	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	1.7%	0.0%	0.0%	0.0%	0.1%	0.0%	0.6%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Metal (ferrous)	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.2%	0.4%	1.4%	0.0%	0.0%	0.1%	0.5%	0.2%
Organic Non-catering	96.6%	99.2%	98.0%	99.5%	99.8%	99.8%	98.0%	99.4%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 6.4 Sefton Kerbside Garden Waste Arisings (kg/hh/wk), Study Average

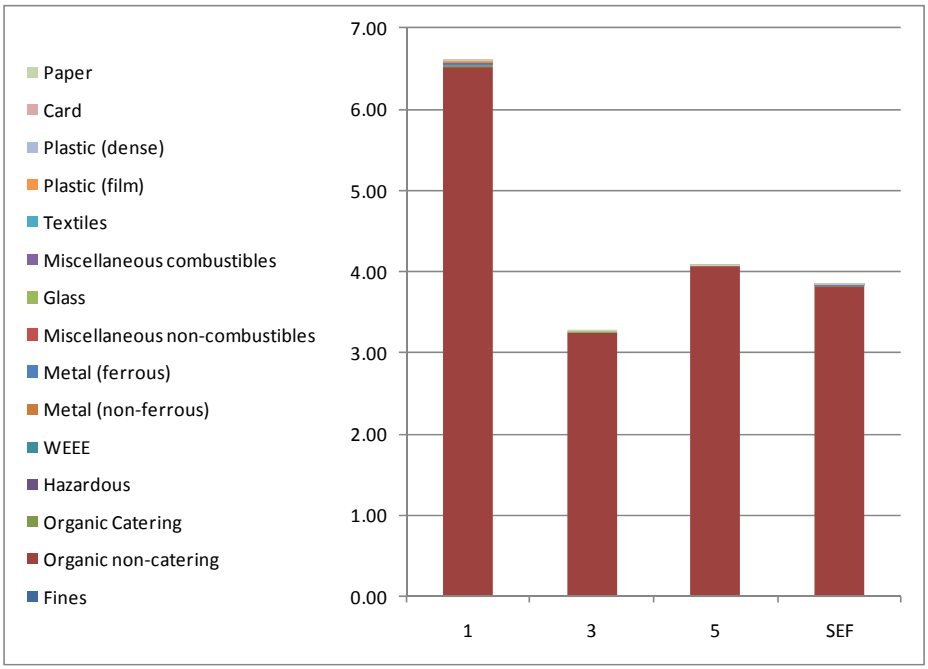

Table 6.7 Sefton Kerbside Garden Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 5	Sefton
Paper	0.1%	0.5%	0.0%	0.3%
Card	0.1%	0.0%	0.0%	0.0%
Plastic (dense)	0.1%	0.0%	0.0%	0.0%
Plastic (film)	0.1%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.3%	0.0%	0.0%	0.1%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.1%	0.0%	0.0%	0.0%
Metal (ferrous)	0.1%	0.0%	0.0%	0.1%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.4%	0.3%	0.1%	0.2%
Organic Non-catering	98.6%	99.2%	99.8%	99.1%
Fines	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 763 kg of garden waste was collected from 28 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average garden waste arising per household was 6.61 kg/hh/wk. The dominant primary waste category was organic non-catering at 98.6%. Other primary categories present in the sample include organic catering at 0.4% and miscellaneous combustibles at 0.3%.

ACORN 3 Study Average

A total of 319 kg of garden waste was collected from 31 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±17% at a confidence level of 95%.

The average garden waste arising per household was 3.27 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.2%. Other primary categories present in the sample include paper at 0.5% and organic catering at 0.3%.

ACORN 5 Study Average

A total of 451 kg of garden waste was collected from 21 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±21% at a confidence level of 95%.

The average garden waste arising per household was 4.08 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.8%. Other primary categories present in the sample include organic catering at 0.1%.

Sefton Study Average

A total of 1,533 kg of garden waste was collected from 80 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average garden waste arising per household was 3.85 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.1%. Other primary categories present in the sample include paper at 0.3% and organic catering at 0.2%.

6.6 Dry Recyclables

Sefton collects dry recyclables in four streams. Paper is collected in a blue bag. Glass, cans, tins and aerosols are collected in a green box. Textiles and aluminium foil are also collected separately in plastic carrier bags.

Entec analysed Sefton's dry recyclables as two streams with textiles and aluminium foil examined in the green box stream due to low presentation of these materials and low arisings.

6.7 Stream 1 (Blue Bag)

6.7.1 Summary Results

During the March 2010 analysis a total of 234 kg of stream 1 (blue bag) dry recyclables was collected and analysed from 89 sample households within the District of Sefton.

In June 2010 246 kg of stream 1 (blue bag) dry recyclables was collected and analysed from 85 sample households within the District of Sefton.

Figure 6.5 and Table 6.8 present the results of the March and June 2010 waste composition analyses.

6.7.2 Study Average Results

A total of 480 kg of stream 1 (blue bag) dry recyclables was collected and analysed from 174 sample households within the District of Sefton during the March 2010 and June 2010 waste composition exercises.

Figure 6.6 and Table 6.9 present the study average results of the waste composition analysis.

Figure 6.5 Sefton Kerbside Stream 1 (Blue Bag) Dry Recyclables Assay (% wt.), March & June 2010

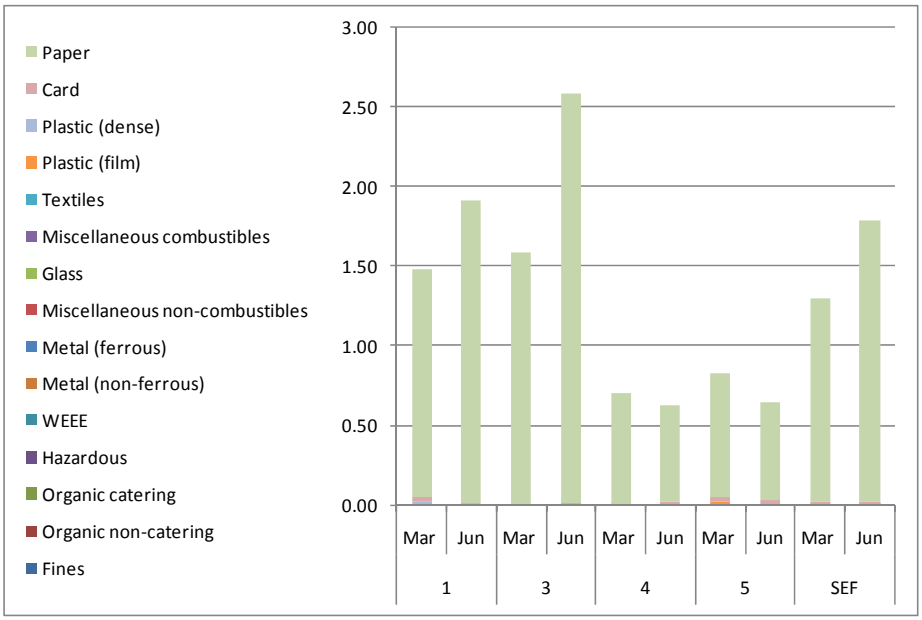

Table 6.8 Sefton Kerbside Stream 1 (Blue Bag) Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Sefton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	96.5%	99.4%	100.0%	99.6%	99.7%	96.8%	94.1%	95.8%	98.2%	99.1%
Card	2.2%	0.6%	0.0%	0.3%	0.0%	2.2%	3.8%	4.2%	1.1%	0.8%
Plastic (dense)	1.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.3%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.1%	0.3%	0.4%	2.1%	0.0%	0.3%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 6.6 Sefton Kerbside Stream 1 (Blue Bag) Dry Recyclables Assay (% wt.), Study Average

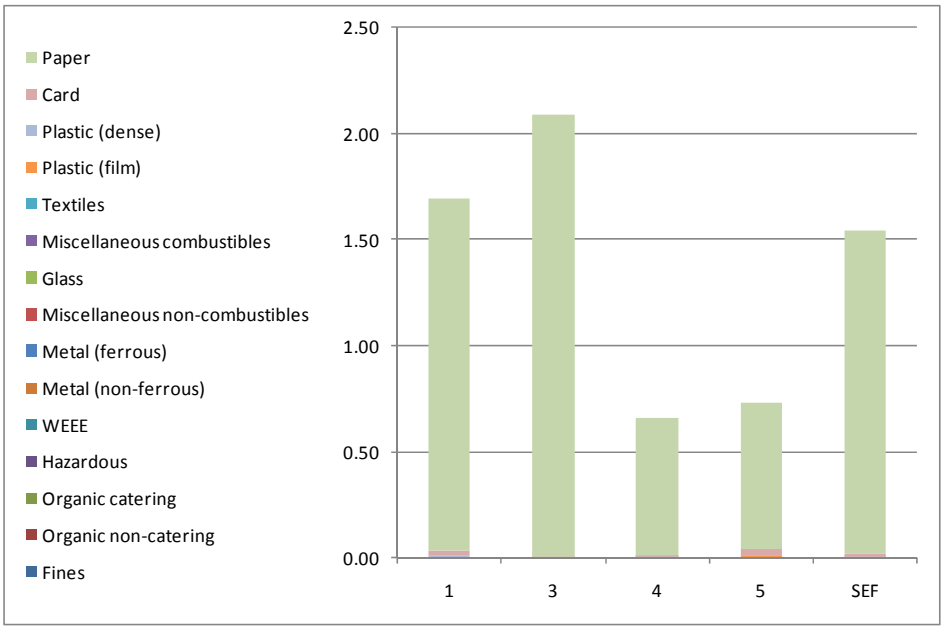

Table 6.9 Sefton Kerbside Stream 1 (Blue Bag) Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Sefton
	% wt.	% wt.	% wt.	% wt.	% wt.
Paper	98.1%	99.7%	98.4%	94.8%	98.8%
Card	1.3%	0.2%	1.1%	4.0%	0.9%
Plastic (dense)	0.6%	0.0%	0.3%	0.0%	0.2%
Plastic (film)	0.0%	0.1%	0.3%	1.2%	0.2%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 149 kg of stream 1 (blue bag) dry recyclables was collected from 43 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 1.70 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 98.1%, card at 1.3% and dense plastic at 0.6%.

ACORN 3 Study Average

A total of 124 kg of stream 1 (blue bag) dry recyclables was collected from 49 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 2.09 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 99.7%, card at 0.2% and plastic film at 0.1%.

ACORN 4 Study Average

A total of 132 kg of stream 1 (blue bag) dry recyclables was collected from 40 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 0.66 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 98.4%, card at 1.1%, plastic film at 0.3% and dense plastic at 0.3%.

ACORN 5 Study Average

A total of 75 kg of stream 1 (blue bag) dry recyclables was collected from 42 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 0.73 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 94.8%, card at 4.0% and plastic film at 1.2%.

Sefton Study Average

A total of 480 kg of stream 1 (blue bag) dry recyclables was collected from 174 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 1.54 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 98.8%, card at 0.9%, dense plastic at 0.2% and plastic film at 0.2%.

6.8 Stream 2 (Green Box)

6.8.1 Summary Results

During the March 2010 analysis a total of 253 kg of stream 2 (green box) dry recyclables was collected and analysed from 89 sample households within the District of Sefton.

In June 2010 224 kg of stream 2 (green box) dry recyclables was collected and analysed from 85 sample households within the District of Sefton.

Figure 6.7 and Table 6.10 present the results of the March and June 2010 waste composition analyses.

6.8.2 Study Average Results

A total of 477 kg of stream 2 (green box) dry recyclables was collected and analysed from 174 sample households within the District of Sefton during the March 2010 and June 2010 waste composition exercises.

Figure 6.8 and Table 6.11 present the study average results of the waste composition analysis.

Figure 6.7 Sefton Kerbside Stream 2 (Green Box) Dry Recyclables Arisings (kg/hh/wk), March & June 2010

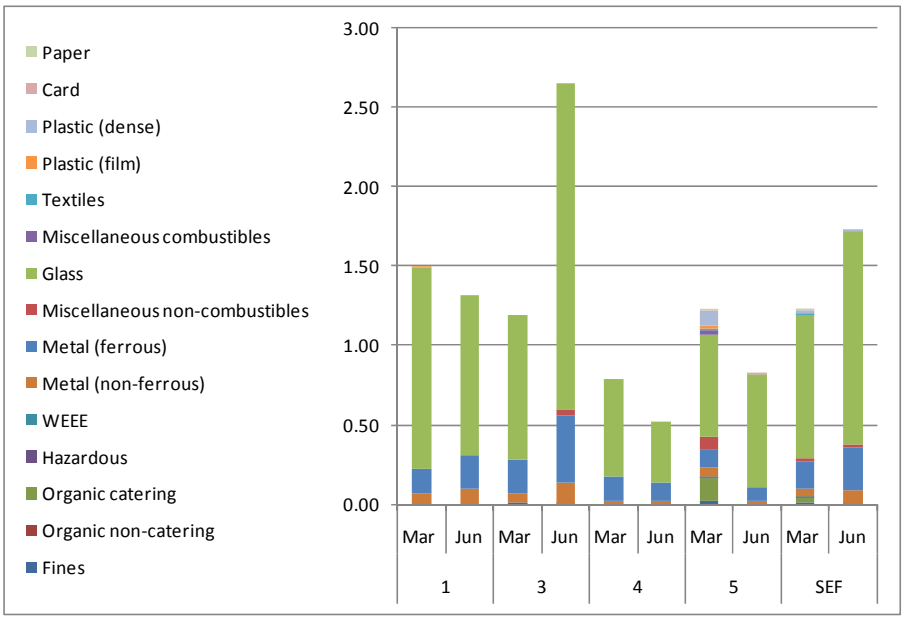

Table 6.10 Sefton Kerbside Stream 2 (Green Box) Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Sefton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.2%	0.0%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.2%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.8%	0.2%	1.5%	0.0%
Plastic (film)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.2%	0.3%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.3%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	0.6%	0.0%
Glass	85.2%	76.5%	76.7%	77.4%	77.7%	74.3%	51.8%	86.1%	73.4%	78.1%
Misc. Non-combustibles	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	6.3%	0.0%	1.4%	1.0%
Metal (ferrous)	9.9%	16.1%	17.9%	16.0%	20.0%	22.2%	9.1%	11.4%	13.9%	15.7%
Metal (non-ferrous)	4.9%	7.4%	4.5%	4.9%	2.3%	2.8%	5.1%	1.6%	4.6%	4.9%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.2%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	11.5%	0.0%	2.6%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.9%	0.1%	0.0%	0.3%	1.6%	0.4%	0.7%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 6.8 Sefton Kerbside Stream 2 (Green Box) Dry Recyclables Arisings (kg/hh/wk), Study Average

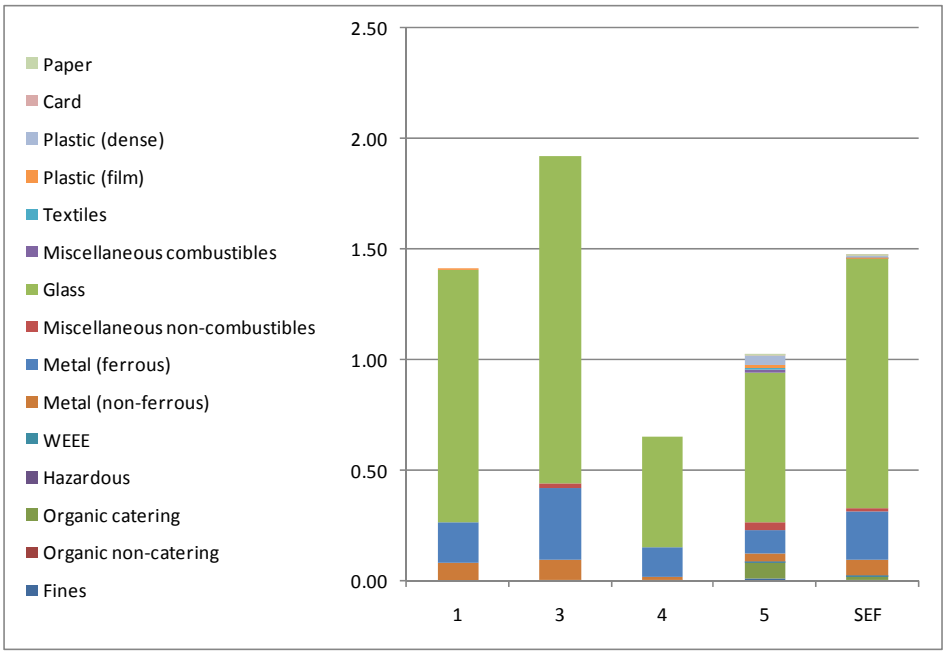

Table 6.11 Sefton Kerbside Stream 2 (Green Box) Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Sefton
Paper	0.0%	0.0%	0.0%	0.7%	0.1%
Card	0.0%	0.0%	0.0%	0.5%	0.1%
Plastic (dense)	0.0%	0.0%	0.0%	4.1%	0.7%
Plastic (film)	0.0%	0.0%	0.0%	0.8%	0.1%
Textiles	0.0%	0.0%	0.0%	0.7%	0.1%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	1.6%	0.3%
Glass	81.1%	77.2%	76.4%	65.6%	76.1%
Miscellaneous Non-combustibles	0.0%	1.0%	0.0%	3.8%	1.2%
Metal (ferrous)	12.8%	16.6%	20.9%	10.0%	15.0%
Metal (non-ferrous)	6.1%	4.8%	2.5%	3.7%	4.8%
WEEE	0.0%	0.0%	0.0%	0.5%	0.1%
Hazardous	0.0%	0.0%	0.0%	0.1%	0.0%
Organic Catering	0.0%	0.0%	0.2%	6.9%	1.1%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.4%	0.1%	1.1%	0.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 132 kg of stream 2 (green box) dry recyclables was collected from 43 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±12% at a confidence level of 95%.

The average stream 2 (green box) dry recyclables arising per household was 1.40 kg/hh/wk. The dominant primary waste categories identified within the sample were glass at 81.1%, ferrous metal at 12.8% and non-ferrous metal at 6.1%.

ACORN 3 Study Average

A total of 115 kg of stream 2 (green box) dry recyclables was collected from 49 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±12% at a confidence level of 95%.

The average stream 2 (green box) dry recyclables arising per household was 1.92 kg/hh/wk. The dominant primary waste categories identified within the sample were glass, ferrous metal and non-ferrous metal at 77.2%, 16.6% and 4.8% respectively of total sample weight.

ACORN 4 Study Average

A total of 124 kg of stream 2 (green box) dry recyclables was collected from 40 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average stream 2 (green box) dry recyclables arising per household was 0.66 kg/hh/wk. The dominant primary waste categories identified within the sample were glass at 76.4%, ferrous metal at 20.9% and non-ferrous metal at 2.5%.

ACORN 5 Study Average

A total of 105 kg of stream 2 (green box) dry recyclables was collected from 42 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average stream 2 (green box) dry recyclables arising per household was 1.03 kg/hh/wk. The dominant primary waste categories identified within the sample were glass, ferrous metal and dense plastic at 65.6%, 10.0% and 4.1% respectively of total sample weight.

Sefton Study Average

A total of 477 kg of stream 2 (green box) dry recyclables was collected from 174 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±7% at a confidence level of 95%.

The average stream 2 (green box) dry recyclables arising per household was 1.47 kg/hh/wk. The dominant primary waste categories identified within the sample were glass at 76.1%, ferrous metal at 15.0% and non-ferrous metal at 4.8%.

6.9 Combined Kerbside Dry Recyclables

6.9.1 Summary Results

During the March 2010 analysis a total of 486 kg of dry recyclables was collected and analysed from 89 sample households within the District of Sefton.

In June 2010 470 kg of dry recyclables was collected and analysed from 85 sample households within the District of Sefton.

Figure 6.9 and Table 6.12 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

6.9.2 Study Average Results

A total of 956 kg of dry recyclables was collected and analysed from 174 sample households within the District of Sefton during the March 2010 and June 2010 waste composition exercises.

Figure 6.10 and Table 6.13 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

Figure 6.9 Sefton Combined Kerbside Dry Recyclables Arisings (kg/hh/wk), March & June 2010

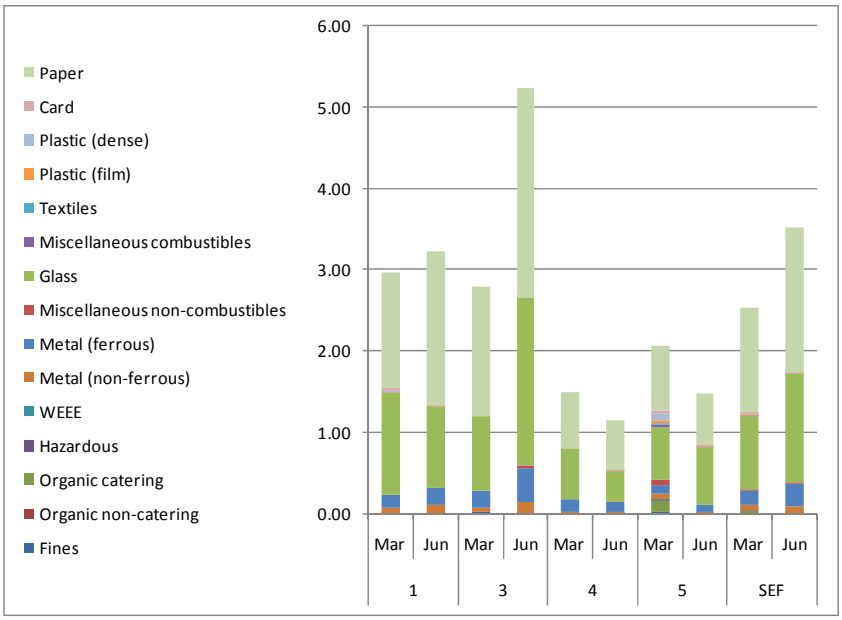

Table 6.12 Sefton Combined Kerbside Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Sefton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	48.1%	58.8%	57.0%	49.2%	46.8%	52.7%	38.3%	42.0%	50.6%	50.6%
Card	1.1%	0.3%	0.0%	0.2%	0.0%	1.2%	2.0%	1.8%	0.7%	0.4%
Plastic (dense)	0.7%	0.0%	0.0%	0.0%	0.0%	0.3%	4.1%	0.1%	0.9%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	1.6%	0.1%	0.3%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.1%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.3%	0.0%
Glass	42.7%	31.3%	33.0%	39.2%	41.2%	33.8%	31.1%	48.4%	35.7%	38.3%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	3.8%	0.0%	0.7%	0.5%
Metal (ferrous)	5.0%	6.6%	7.7%	8.1%	10.6%	10.1%	5.4%	6.4%	6.7%	7.7%
Metal (non-ferrous)	2.4%	3.0%	1.9%	2.5%	1.2%	1.3%	3.0%	0.9%	2.2%	2.4%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.1%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	6.9%	0.0%	1.3%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.4%	0.1%	0.0%	0.1%	1.0%	0.2%	0.4%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 6.10 Sefton Combined Kerbside Dry Recyclables Arisings (kg/hh/wk), Study Average

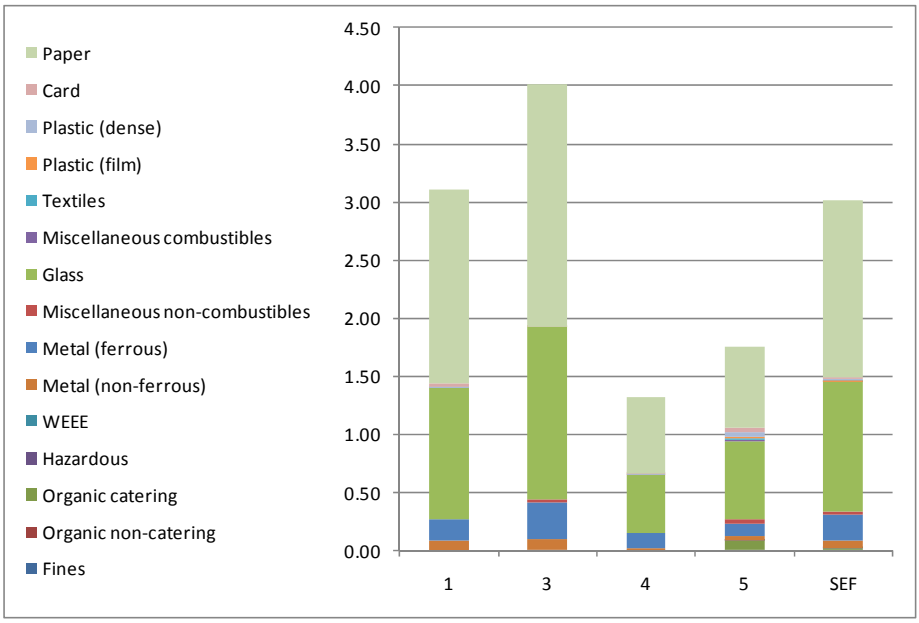

Table 6.13 Sefton Combined Kerbside Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Sefton
	% wt.	% wt.	% wt.	% wt.	% wt.
Paper	53.7%	51.9%	49.4%	39.8%	50.6%
Card	0.7%	0.1%	0.5%	1.9%	0.5%
Plastic (dense)	0.3%	0.0%	0.1%	2.4%	0.4%
Plastic (film)	0.0%	0.0%	0.2%	1.0%	0.2%
Textiles	0.0%	0.0%	0.0%	0.4%	0.1%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.9%	0.1%
Glass	36.7%	37.0%	38.0%	38.3%	37.2%
Miscellaneous Non-combustibles	0.0%	0.5%	0.0%	2.2%	0.6%
Metal (ferrous)	5.8%	8.0%	10.4%	5.8%	7.3%
Metal (non-ferrous)	2.7%	2.3%	1.3%	2.2%	2.3%
WEEE	0.0%	0.0%	0.0%	0.3%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.1%	0.0%
Organic Catering	0.0%	0.0%	0.1%	4.0%	0.5%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.2%	0.1%	0.7%	0.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 281 kg of dry recyclables was collected from 43 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average dry recyclables arising per household was 3.10 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and ferrous metal at 53.7%, 36.7% and 5.8% respectively.

ACORN 3 Study Average

A total of 239 kg of dry recyclables was collected from 49 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 4.01 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 51.9%, glass at 37.0% and ferrous metal at 8.0%.

ACORN 4 Study Average

A total of 256 kg of dry recyclables was collected from 40 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average dry recyclables arising per household was 1.32 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and ferrous metal at 49.4%, 38.0% and 10.4% respectively.

ACORN 5 Study Average

A total of 180 kg of dry recyclables was collected from 42 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average dry recyclables arising per household was 1.76 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and ferrous metal at 39.8%, 38.3% and 5.8% respectively.

Sefton Study Average

A total of 956 kg of dry recyclables was collected from 174 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±11% at a confidence level of 95%.

The average dry recyclables arising per household was 3.02 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 50.6%, glass at 37.2% and ferrous metal at 7.3%.

6.10 Food Waste

6.10.1 Summary Results

During the March 2010 analysis a total of 141 kg of food waste was collected and analysed from 53 sample households within the District of Sefton.

In June 2010 115 kg of food waste was collected and analysed from 53 sample households within the District of Sefton.

Figure 6.11 and Table 6.14 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

6.10.2 Study Average Results

A total of 256 kg of food waste was collected and analysed from 106 sample households within the District of Sefton during the March 2010 and June 2010 waste composition exercises.

Figure 6.12 and Table 6.15 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

Figure 6.11 Sefton Kerbside Food Waste Arisings (kg/hh/wk), March & June 2010

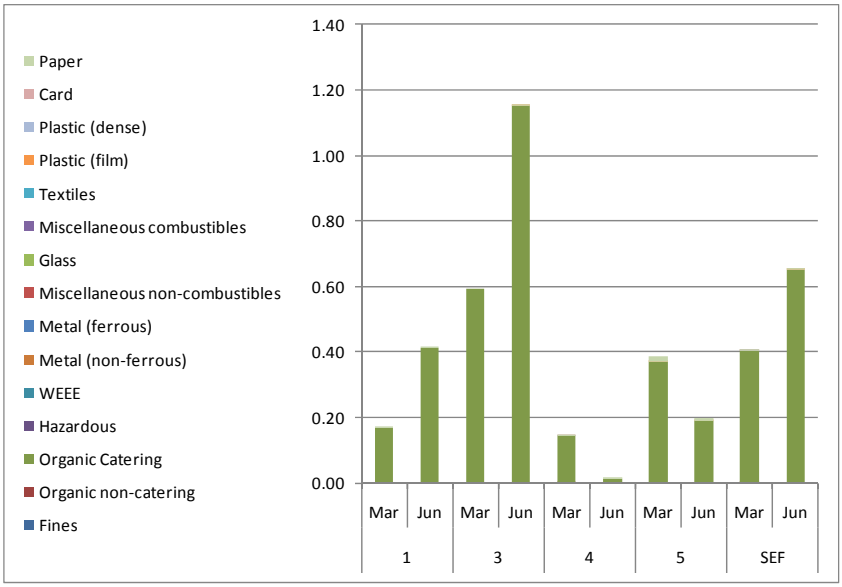

Table 6.14 Sefton Kerbside Food Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Sefton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	1.8%	0.9%	0.0%	0.2%	0.8%	2.5%	3.7%	3.4%	1.0%	0.5%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.7%	0.0%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	98.2%	99.1%	100.0%	99.8%	98.7%	97.5%	96.2%	95.9%	99.0%	99.4%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 6.12 Sefton Kerbside Food Waste Arisings (kg/hh/wk), Study Average

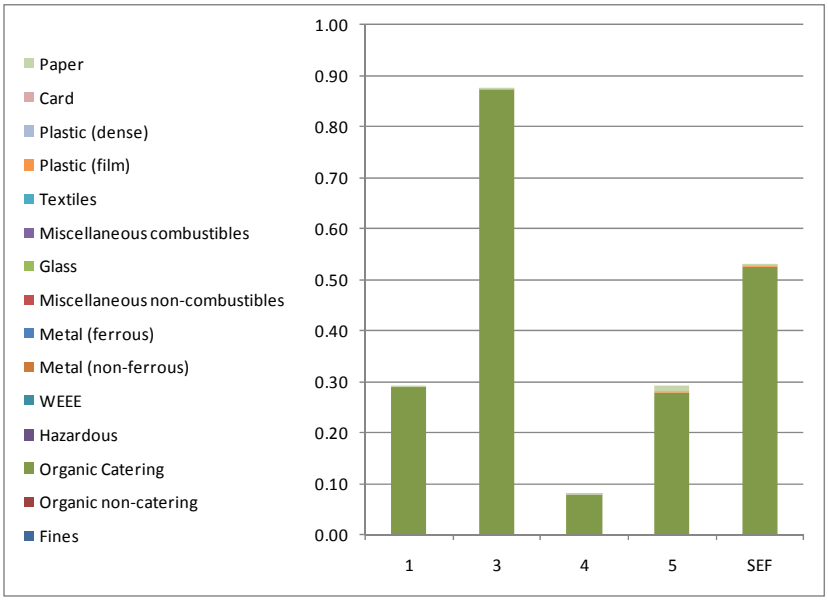

Table 6.15 Sefton Kerbside Food Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Sefton
Paper	1.2%	0.1%	0.9%	3.6%	0.7%
Card	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.0%	0.2%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.1%	0.3%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	98.8%	99.9%	98.6%	96.1%	99.2%
Organic Non-catering	0.0%	0.0%	0.1%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 57 kg of food waste was collected from 24 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±20% at a confidence level of 95%.

The average food waste arising per household was 0.29 kg/hh/wk. The dominant primary waste categories are organic catering at 98.8% and paper at 1.2%.

ACORN 3 Study Average

A total of 117 kg of food waste was collected from 45 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average food waste arising per household was 0.87 kg/hh/wk. The dominant primary waste categories are organic catering at 99.9% and paper at 0.1%.

ACORN 4 Study Average

A total of 45 kg of food waste was collected from 24 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±20% at a confidence level of 95%.

The average food waste arising per household was 0.08 kg/hh/wk. The dominant primary waste categories are organic non-catering 98.6% and paper at 0.9%.

ACORN 5 Study Average

A total of 37 kg of food waste was collected from 13 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±27% at a confidence level of 95%.

The average food waste arising per household was 0.29 kg/hh/wk. The dominant primary waste category was organic non-catering at 96.1%, paper at 3.6% and plastic film at 0.3%.

Sefton Study Average

A total of 256 kg of food waste was collected from 106 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average food waste arising per household was 0.53 kg/hh/wk. The dominant primary waste categories are organic non-catering at 99.2% and paper at 0.7%.

6.11 Combined Kerbside Waste Streams

6.11.1 Summary Results

During the March 2010 analysis a total of 268 samples containing 2,748 kg of kerbside waste were collected and analysed from within the District of Sefton.

In June 2010 273 samples containing 2,801 kg of kerbside waste was collected and analysed from within the District of Sefton.

Figure 6.13 and Table 6.16 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

6.11.2 Study Average Results

A total of 541 waste samples containing 5,549 kg of kerbside waste were collected from within the District of Sefton during the March 2010 and June 2010 waste composition exercises.

Figure 6.14 and Table 6.17 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

Figure 6.13 Sefton Combined Kerbside Waste Arisings (kg/hh/wk), March & June 2010

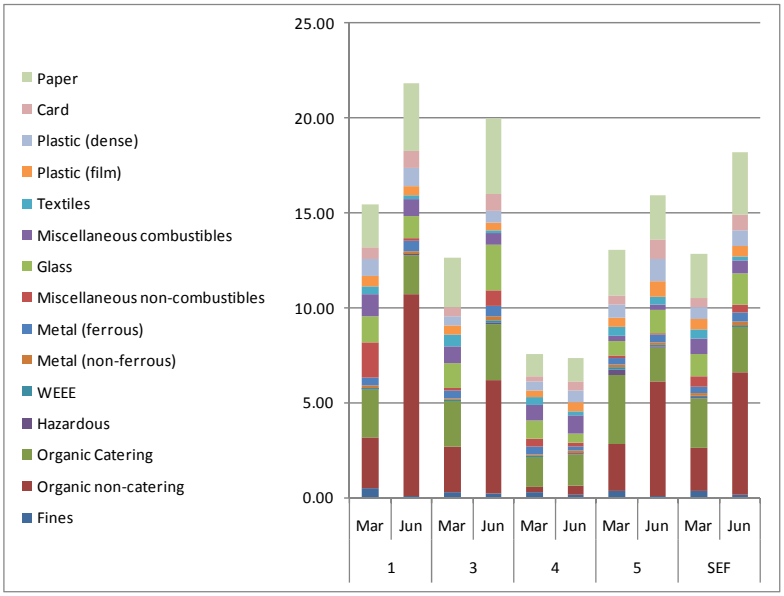

Table 6.16 Sefton Combined Kerbside Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Sefton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	1.8%	0.9%	0.0%	0.2%	0.8%	2.5%	3.7%	3.4%	1.0%	0.5%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.7%	0.0%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	98.2%	99.1%	100.0%	99.8%	98.7%	97.5%	96.2%	95.9%	99.0%	99.4%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 6.14 Sefton Combined Kerbside Waste Arisings (kg/hh/wk), Study Average

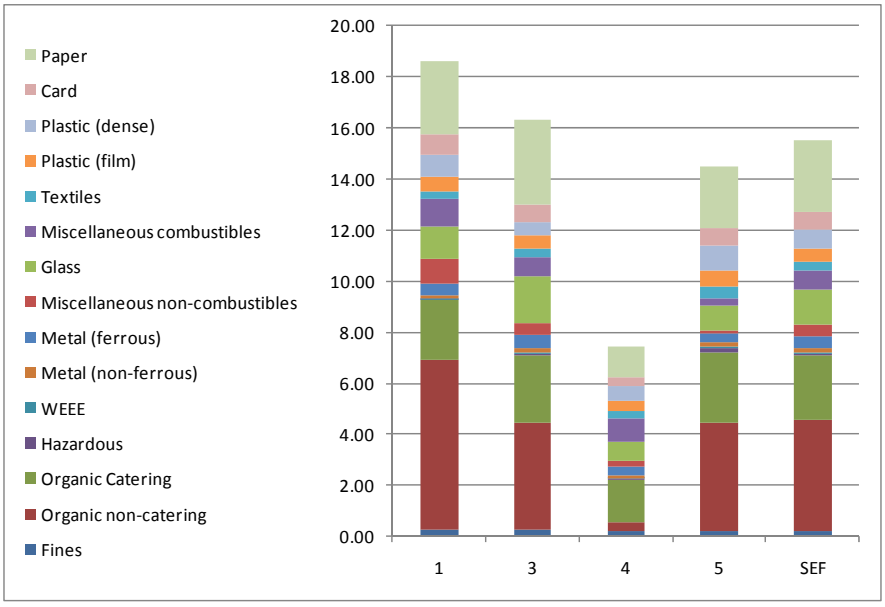

Table 6.17 Sefton Combined Kerbside Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Sefton
Paper	15.5%	20.4%	16.0%	16.5%	18.0%
Card	4.2%	4.1%	5.3%	5.1%	4.4%
Plastic (dense)	4.8%	3.4%	7.2%	6.5%	4.6%
Plastic (film)	2.9%	2.9%	5.7%	4.3%	3.3%
Textiles	1.6%	2.1%	4.0%	3.3%	2.3%
Miscellaneous Combustibles	5.7%	4.8%	11.7%	2.0%	4.8%
Glass	6.8%	11.2%	10.1%	6.6%	9.0%
Miscellaneous Non-combustibles	5.3%	2.9%	3.7%	0.9%	3.1%
Metal (ferrous)	2.4%	3.0%	4.3%	2.6%	2.8%
Metal (non-ferrous)	0.8%	1.0%	1.4%	0.9%	1.0%
WEEE	0.2%	0.5%	0.4%	0.7%	0.5%
Hazardous	0.1%	0.2%	0.5%	1.1%	0.4%
Organic Catering	12.4%	16.4%	22.1%	18.8%	16.1%
Organic Non-catering	35.8%	25.7%	4.9%	29.2%	28.1%
Fines	1.4%	1.5%	2.7%	1.6%	1.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 135 samples containing 1,794 kg of kerbside waste were collected from ACORN 1 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 18.62 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering at 35.8%, paper at 15.5% and organic catering at 12.4%.

ACORN 3 Study Average

A total of 171 samples containing 1,427 kg of kerbside waste were collected from ACORN 3 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±7% at a confidence level of 95%.

The average kerbside waste arising per household was 16.32 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering, paper and organic catering at 25.7%, 20.4% and 16.4% respectively.

ACORN 4 Study Average

A total of 114 samples containing 907 kg of kerbside waste were collected from ACORN 4 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 7.45 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 22.1%, paper at 16.0% and miscellaneous combustibles at 11.7%.

ACORN 5 Study Average

A total of 121 samples containing 1,420 kg of kerbside waste were collected from ACORN 5 sample households within the District of Sefton providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 14.49 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering, organic catering and paper at 29.2%, 18.8% and 16.1% respectively.

Sefton Study Average

A total of 541 samples containing 5,549 kg of kerbside waste were collected from sample households within the District of Sefton providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average kerbside waste arising per household was 15.49 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering at 28.1%, paper at 18.0% and organic catering at 16.1%.

6.12 Biodegradable Municipal Waste (BMW) Content in Sefton's Kerbside Waste Streams

The BMW content was calculated using the study average results for the Sefton waste streams. Please refer to Section 2.9 for an explanation of how BMW is calculated. The results are presented in Figure 6.15 and Table 6.18.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix C.

Figure 6.15 Arisings (kg/hh/wk) of BMW in Sefton's Kerbside Waste Streams

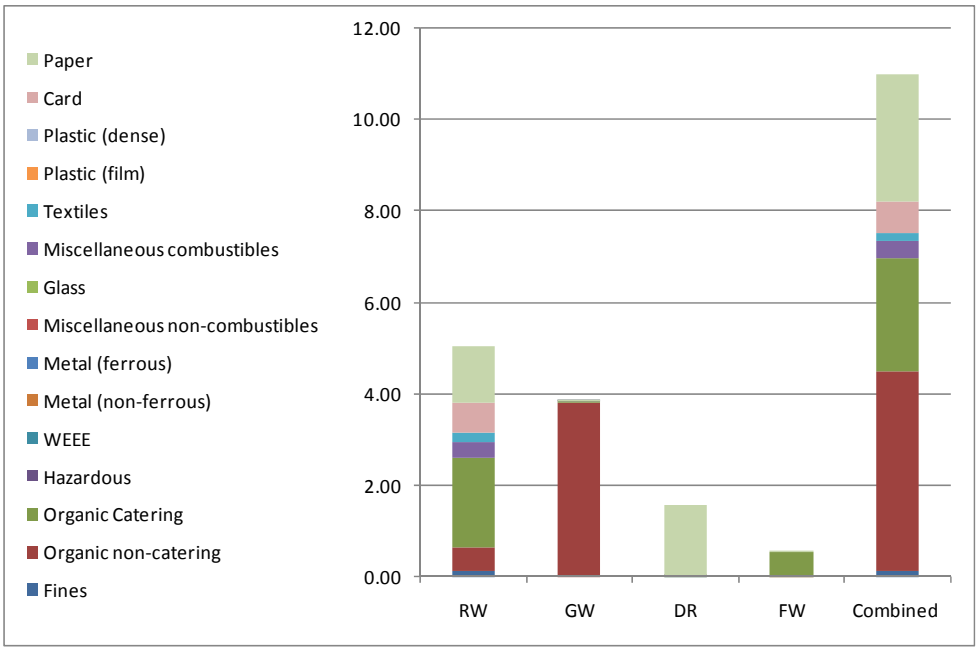

Table 6.18 Proportion (% wt.) of BMW in Sefton's Kerbside Waste Streams

Primary Category	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)	Combined
Paper	15.5%	0.3%	50.6%	0.7%	18.0%
Card	8.2%	0.0%	0.5%	0.0%	4.4%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	2.2%	0.0%	0.0%	0.0%	1.2%
Miscellaneous Combustibles	4.5%	0.1%	0.1%	0.0%	2.4%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	24.1%	0.2%	0.5%	99.2%	16.1%
Organic Non-catering	6.6%	99.1%	0.0%	0.0%	28.1%
Fines	1.4%	0.0%	0.1%	0.0%	0.8%
Total	62.5%	99.8%	51.8%	99.9%	71.0%

6.13 Calorific Value

Entec calculated residual waste CVs based on the study average residual waste composition for Sefton and using reference values for the CV of individual waste materials. A summary of the CV estimated by Entec is presented in Table 6.19 below.

Table 6.19 Sefton Residual Waste Calorific Value

Analyte		Values
Hydrogen	% wt.	3.47
Carbon	% wt.	24.39
Nitrogen	% wt.	0.70
Oxygen	% wt.	15.32
Sulphur	% wt.	0.14
Chlorine	% wt.	0.81
Ash	% wt.	20.43
Moisture	% wt.	34.73
Net CV	MJ/kg	8.97

6.14 Sefton Dry Recyclables Content and Capture

The dry recyclables content and capture was calculated using the study average results for the Sefton waste streams. The results for capture of dry recyclables are shown in Table 6.20 below. Please refer to Appendix A for an explanation of the table layout and content.

Table 6.20 Kerbside Dry Recyclables Content and Capture, Sefton Waste Streams

1	2	3	4	4a	5	6	7	8	9	10	11	12
Sefton												
Material sub-category	Arisings (kg/hh/wk)					Assay	Targetable DR		Captured Target DR		Captured Non-Target	
	RW	GW	DR	FW	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% of DR
Newspapers	0.18	0.01	0.93	0.00	1.12	7.2%	1.12	7.2%	0.93	83.3%	-	-
Magazines	0.16	0.00	0.44	0.00	0.60	3.9%	0.60	3.9%	0.44	74.1%	-	-
Other recyclable paper	0.29	0.00	0.12	0.00	0.41	2.7%	0.41	2.7%	0.12	29.1%	-	-
Paper packaging	0.09	0.00	0.00	0.00	0.10	0.6%	0.10	0.6%	0.00	1.5%	-	-
Non-recyclable paper	0.54	0.00	0.03	0.00	0.57	3.7%	-	-	-	-	0.03	1.0%
Subtotal Paper	**1.25**	**0.01**	**1.53**	**0.00**	**2.80**	**18.0%**	**2.23**	**14.4%**	**1.50**	**53.6%**	**0.03**	**1.0%**
Liquid cartons	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Board packaging	0.21	0.00	0.00	0.00	0.21	1.4%	-	-	-	-	0.00	0.1%
Card packaging	0.40	0.00	0.01	0.00	0.40	2.6%	-	-	-	-	0.01	0.2%
Other card	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.1%
Subtotal Card	**0.66**	**0.00**	**0.02**	**0.00**	**0.68**	**4.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.5%**
Plastic Bottles: PET	0.14	0.00	0.00	0.00	0.14	0.9%	-	-	-	-	0.00	0.1%
PET Coloured	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
HDPE	0.08	0.00	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.1%
HDPE Coloured	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Other	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Other packaging	0.30	0.00	0.00	0.00	0.30	2.0%	-	-	-	-	0.00	0.1%
Other dense plastic	0.12	0.00	0.00	0.00	0.12	0.8%	-	-	-	-	0.00	0.1%
Subtotal Dense Plastic	**0.70**	**0.00**	**0.01**	**0.00**	**0.72**	**4.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.4%**
Packaging film	0.26	0.00	0.00	0.00	0.26	1.7%	-	-	-	-	0.00	0.1%
Other plastic film	0.25	0.00	0.00	0.00	0.25	1.6%	-	-	-	-	0.00	0.1%
Subtotal Plastic Film	**0.51**	**0.00**	**0.00**	**0.00**	**0.51**	**3.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.2%**
Textiles	0.30	0.00	0.00	0.00	0.30	1.9%	0.30	1.9%	0.00	0.5%	-	-
Shoes	0.06	0.00	0.00	0.00	0.06	0.4%	0.06	0.4%	0.00	0.0%	-	-
Subtotal Textiles	**0.36**	**0.00**	**0.00**	**0.00**	**0.36**	**2.3%**	**0.36**	**2.3%**	**0.00**	**0.4%**	**0.00**	**0.0%**
Treated wood	0.05	0.00	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Untreated wood	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	0.45	0.00	0.00	0.00	0.46	3.0%	-	-	-	-	0.00	0.1%
Other misc. comb.	0.19	0.00	0.00	0.00	0.19	1.2%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**0.73**	**0.01**	**0.00**	**0.00**	**0.74**	**4.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Glass bottles	0.16	0.00	0.84	0.00	1.00	6.4%	1.00	6.4%	0.84	83.9%	-	-
Glass jars	0.10	0.00	0.28	0.00	0.38	2.4%	0.38	2.4%	0.28	74.6%	-	-
Other glass	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.1%
Subtotal Glass	**0.27**	**0.00**	**1.12**	**0.00**	**1.39**	**9.0%**	**1.37**	**8.9%**	**1.12**	**80.1%**	**0.00**	**0.1%**
Construction and demolition	0.41	0.00	0.00	0.00	0.41	2.7%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.06	0.00	0.02	0.00	0.07	0.5%	-	-	-	-	0.02	0.6%
Subtotal Misc.Non-Comb	**0.47**	**0.00**	**0.02**	**0.00**	**0.49**	**3.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.6%**
Ferrous food cans	0.09	0.00	0.17	0.00	0.26	1.7%	0.26	1.7%	0.17	65.8%	-	-
Ferrous beverage cans	0.02	0.00	0.02	0.00	0.04	0.3%	0.04	0.3%	0.02	49.3%	-	-
Ferrous aerosols	0.01	0.00	0.01	0.00	0.02	0.1%	0.02	0.1%	0.01	29.5%	-	-
Other ferrous metal	0.09	0.00	0.02	0.00	0.11	0.7%	-	-	-	-	0.02	0.7%
Subtotal Ferrous Metals	**0.21**	**0.00**	**0.22**	**0.00**	**0.44**	**2.8%**	**0.32**	**2.1%**	**0.20**	**45.4%**	**0.02**	**0.7%**
Non-ferrous food cans	0.00	0.00	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	46.3%	-	-
Non-ferrous beverage cans	0.02	0.00	0.06	0.00	0.08	0.5%	0.08	0.5%	0.06	77.4%	-	-
Non-ferrous aerosols	0.01	0.00	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	4.7%	-	-
Other non-ferrous metal	0.05	0.00	0.00	0.00	0.05	0.3%	0.05	0.3%	0.00	7.6%	-	-
Subtotal Non-Ferr Metals	**0.08**	**0.00**	**0.07**	**0.00**	**0.15**	**1.0%**	**0.15**	**1.0%**	**0.07**	**47.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Lighting	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.07**	**0.00**	**0.00**	**0.00**	**0.07**	**0.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.06**	**0.00**	**0.00**	**0.00**	**0.06**	**0.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	0.68	0.01	0.01	0.28	0.97	6.3%	-	-	-	-	0.01	0.2%
Unused home compostable food	0.24	0.00	0.00	0.06	0.30	2.0%	-	-	-	-	0.00	0.0%
Non-home compostable food	0.72	0.00	0.01	0.16	0.89	5.7%	-	-	-	-	0.01	0.3%
Unused non-home compostable food	0.30	0.00	0.00	0.03	0.33	2.2%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**1.95**	**0.01**	**0.02**	**0.53**	**2.50**	**16.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.5%**
Garden	0.12	2.90	0.00	0.00	3.02	19.5%	-	-	-	-	0.00	0.0%
Soil	0.06	0.92	0.00	0.00	0.98	6.3%	-	-	-	-	0.00	0.0%
Other organic	0.35	0.00	0.00	0.00	0.35	2.3%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.53**	**3.82**	**0.00**	**0.00**	**4.35**	**28.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Material less than 10mm	0.23	0.00	0.01	0.00	0.24	1.5%	-	-	-	-	0.01	0.2%
Subtotal Fines	**0.23**	**0.00**	**0.01**	**0.00**	**0.24**	**1.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.2%**
Totals	**8.09**	**3.85**	**3.02**	**0.53**	**15.49**	**100.0%**	**4.43**	**28.6%**	**2.88**	**65.1%**	**0.13**	**4.4%**

6.15 Sefton Organic Material Content and Capture

The organic material content and capture was calculated using the study average results for the Sefton waste streams. The results for capture of organic material (garden and kitchen waste) are shown in Table 6.21 below. Please refer to Appendix B for an explanation of the table layout and content.

Table 6.21 Kerbside Organic Material Content and Capture, Sefton Waste Streams

1	2	3	4	4a	5	6	7	8	9	10	11	12
Sefton												
Material sub-category	kg/hh/wk					Assay	Targetable Bio Waste		Captured Target Bio Waste		Non-Target Materials in Bio Waste	
	RW	GW	DR	FW	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	GW kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% Bio Waste
Newspapers	0.18	0.01	0.93	0.00	1.12	7.2%	-	-	-	-	0.01	0.2%
Magazines	0.16	0.00	0.44	0.00	0.60	3.9%	-	-	-	-	0.00	0.0%
Other recyclable paper	0.29	0.00	0.12	0.00	0.41	2.7%	-	-	-	-	0.00	0.0%
Paper packaging	0.09	0.00	0.00	0.00	0.10	0.6%	-	-	-	-	0.00	0.0%
Non-recyclable paper	0.54	0.00	0.03	0.00	0.57	3.7%	-	-	-	-	0.00	0.1%
Subtotal Paper	**1.25**	**0.01**	**1.53**	**0.00**	**2.80**	**18.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Liquid cartons	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Board packaging	0.21	0.00	0.00	0.00	0.21	1.4%	-	-	-	-	0.00	0.0%
Card packaging	0.40	0.00	0.01	0.00	0.40	2.6%	-	-	-	-	0.00	0.0%
Other card	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Card	**0.66**	**0.00**	**0.02**	**0.00**	**0.68**	**4.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Plastic Bottles: PET	0.14	0.00	0.00	0.00	0.14	0.9%	-	-	-	-	0.00	0.0%
PET Coloured	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
HDPE	0.08	0.00	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
HDPE Coloured	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Other	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Other packaging	0.30	0.00	0.00	0.00	0.30	2.0%	-	-	-	-	0.00	0.0%
Other dense plastic	0.12	0.00	0.00	0.00	0.12	0.8%	-	-	-	-	0.00	0.0%
Subtotal Dense Plastic	**0.70**	**0.00**	**0.01**	**0.00**	**0.72**	**4.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Packaging film	0.26	0.00	0.00	0.00	0.26	1.7%	-	-	-	-	0.00	0.0%
Other plastic film	0.25	0.00	0.00	0.00	0.25	1.6%	-	-	-	-	0.00	0.0%
Subtotal Plastic Film	**0.51**	**0.00**	**0.00**	**0.00**	**0.51**	**3.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Textiles	0.30	0.00	0.00	0.00	0.30	1.9%	-	-	-	-	0.00	0.0%
Shoes	0.06	0.00	0.00	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.36**	**0.00**	**0.00**	**0.00**	**0.36**	**2.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Treated wood	0.05	0.00	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.1%
Untreated wood	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	0.45	0.00	0.00	0.00	0.46	3.0%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.19	0.00	0.00	0.00	0.19	1.2%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**0.73**	**0.01**	**0.00**	**0.00**	**0.74**	**4.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.1%**
Glass bottles	0.16	0.00	0.84	0.00	1.00	6.4%	-	-	-	-	0.00	0.0%
Glass jars	0.10	0.00	0.28	0.00	0.38	2.4%	-	-	-	-	0.00	0.0%
Other glass	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.27**	**0.00**	**1.12**	**0.00**	**1.39**	**9.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Construction and demolition	0.41	0.00	0.00	0.00	0.41	2.7%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.06	0.00	0.02	0.00	0.07	0.5%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.47**	**0.00**	**0.02**	**0.00**	**0.49**	**3.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.09	0.00	0.17	0.00	0.26	1.7%	-	-	-	-	0.00	0.0%
Ferrous beverage cans	0.02	0.00	0.02	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Ferrous aerosols	0.01	0.00	0.01	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other ferrous metal	0.09	0.00	0.02	0.00	0.11	0.7%	-	-	-	-	0.00	0.0%
Subtotal Ferrous Metals	**0.21**	**0.00**	**0.22**	**0.00**	**0.44**	**2.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Non-ferrous food cans	0.00	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Non-ferrous beverage cans	0.02	0.00	0.06	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
Non-ferrous aerosols	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Other non-ferrous metal	0.05	0.00	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Non-Ferr Metals	**0.08**	**0.00**	**0.07**	**0.00**	**0.15**	**1.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Lighting	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.07**	**0.00**	**0.00**	**0.00**	**0.07**	**0.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.06**	**0.00**	**0.00**	**0.00**	**0.06**	**0.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	0.68	0.01	0.01	0.28	0.97	6.3%	0.97	6.3%	0.29	29.3%	-	-
Unused home compostable food	0.24	0.00	0.00	0.06	0.30	2.0%	0.30	2.0%	0.06	21.2%	-	-
Non-home compostable food	0.72	0.00	0.01	0.16	0.89	5.7%	0.89	5.7%	0.16	17.7%	-	-
Unused non-home compostable food	0.30	0.00	0.00	0.03	0.33	2.2%	0.33	2.2%	0.03	8.8%	-	-
Subtotal Org.Catering	**1.95**	**0.01**	**0.02**	**0.53**	**2.50**	**16.1%**	**2.50**	**16.1%**	**0.54**	**21.5%**	**0.00**	**0.0%**
Garden	0.12	2.90	0.00	0.00	3.02	19.5%	3.02	19.5%	2.90	95.9%	-	-
Soil	0.06	0.92	0.00	0.00	0.98	6.3%	0.98	6.3%	0.92	94.1%	-	-
Other organic	0.35	0.00	0.00	0.00	0.35	2.3%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.53**	**3.82**	**0.00**	**0.00**	**4.35**	**28.1%**	**4.00**	**25.8%**	**3.82**	**87.7%**	**0.00**	**0.0%**
Material less than 10mm	0.23	0.00	0.01	0.00	0.24	1.5%	-	-	-	-	0.00	0.0%
Subtotal Fines	**0.23**	**0.00**	**0.01**	**0.00**	**0.24**	**1.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Totals	**8.09**	**3.85**	**3.02**	**0.53**	**15.49**	**100.0%**	**6.50**	**42.0%**	**4.36**	**67.0%**	**0.03**	**0.6%**

6.16 Conclusion

Figure 6.16 and Table 6.22 present the final modelled waste composition arisings and assay data for the District of Sefton.

Sefton's average residual waste arisings were 8.09 kg/hh/wk. Overall there were higher arisings of residual waste during March 2010 (8.22 kg/hh/wk) in comparison with the March 2010 study (7.96 kg/hh/wk). The most prominent materials were organic catering waste at 24.1% (1.95 kg/hh/wk) and paper at 15.5% (1.25 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the residual waste stream was determined to be 62.5%. The calorific value of the residual waste was calculated to be 8.97 MJ/kg.

Average arisings of garden waste in Sefton were 3.85 kg/hh/wk. Overall there was higher arisings of garden waste during the June 2010 study (6.05 kg/hh/wk) in comparison to March 2010 (1.66 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. The most prominent material was organic non-catering at 99.1%. The composition of the waste stream varied between the seasons with significantly less non-target material in the garden waste stream during the June 2010 exercise. The kerbside organic material capture was 67.0% of targeted material (garden and food waste). Non-target materials constituted 0.6% of the organic stream. The biodegradable municipal waste (BMW) content of the garden waste stream was calculated to be 99.8%.

Sefton's average dry recyclables arisings were 3.02 kg/hh/wk. Overall there were higher arisings of dry recyclables during June 2010 (3.51 kg/hh/wk) in comparison with the March 2010 study (2.52 kg/hh/wk). The most prominent materials were paper at 50.6% (1.53 kg/hh/wk) and glass at 37.2% (1.12 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The kerbside dry recyclables material capture was 65.1% of targeted material. Non-target materials constituted 4.4% of the dry recyclables stream. The biodegradable municipal waste (BMW) content of the dry recyclables stream was calculated to be 51.8%.

Average arisings of food waste in Sefton were 0.53 kg/hh/wk. The level of food waste arisings was higher during the June 2010 study (0.66 kg/hh/wk) in comparison to March 2010 (0.41 kg/hh/wk). The most prominent material was organic catering at 99.2 %. The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the food waste stream was calculated to be 99.9%.

The modelled arisings for the combined kerbside waste streams were 15.49 kg/hh/wk. Overall there were significantly higher arisings of kerbside waste during June 2010 (18.17 kg/hh/wk) in comparison with the March 2010 study (12.81 kg/hh/wk) which is mainly due to increased garden waste arisings during June 2010. The most prominent materials were organic non-catering waste at 28.1% (4.35 kg/hh/wk), paper at 18.0% (2.80 kg/hh/wk) and organic catering at 16.1% (2.50 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the combined kerbside waste stream was calculated to be 71.0%.

Figure 6.16 Sefton Waste Arisings (kg/hh/wk), Study Average

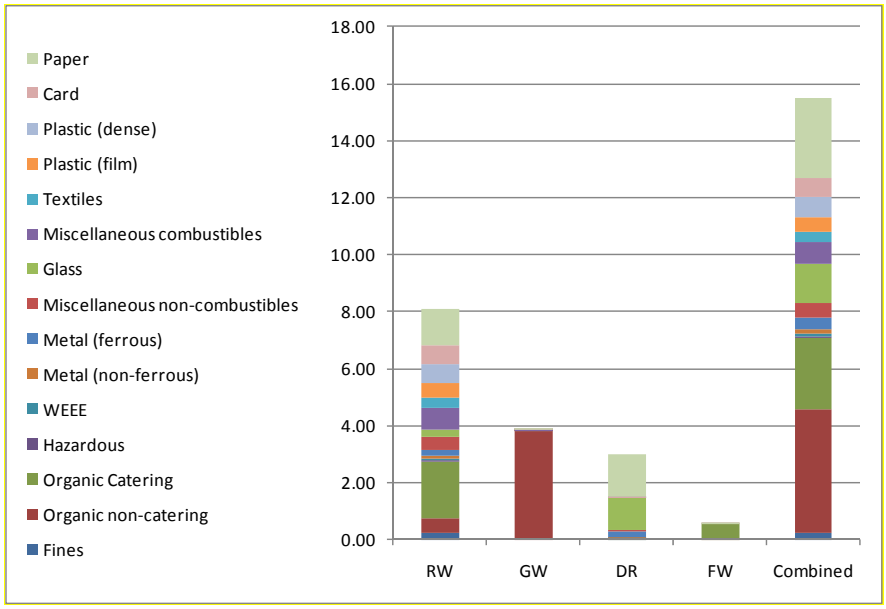

Table 6.22 Sefton Waste Assay (% wt.), Study Average

Primary Category	Residual Waste	Garden Waste	Dry Recyclables	Food Waste	Combined
Paper	15.5%	0.3%	50.6%	0.7%	18.0%
Card	8.2%	0.0%	0.5%	0.0%	4.4%
Plastic (dense)	8.7%	0.0%	0.4%	0.0%	4.6%
Plastic (film)	6.3%	0.0%	0.2%	0.1%	3.3%
Textiles	4.4%	0.0%	0.1%	0.0%	2.3%
Miscellaneous Combustibles	9.0%	0.1%	0.1%	0.0%	4.8%
Glass	3.4%	0.0%	37.2%	0.0%	9.0%
Miscellaneous Non-combustibles	5.8%	0.0%	0.6%	0.0%	3.1%
Metal (ferrous)	2.6%	0.1%	7.3%	0.0%	2.8%
Metal (non-ferrous)	1.0%	0.0%	2.3%	0.0%	1.0%
WEEE	0.9%	0.0%	0.0%	0.0%	0.5%
Hazardous	0.7%	0.0%	0.0%	0.0%	0.4%
Organic Catering	24.1%	0.2%	0.5%	99.2%	16.1%
Organic Non-catering	6.6%	99.1%	0.0%	0.0%	28.1%
Fines	2.9%	0.0%	0.2%	0.0%	1.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

7. St Helens Kerbside Household Waste Composition Results

7.1 Introduction

This chapter looks at kerbside residual, recyclable and organic household waste collected within the District of St Helens. Table 7.1 summarises the kerbside schemes operated in St Helens.

Table 7.1 Kerbside Household Waste Collection Schemes in St Helens, Collection Frequency and Receptacle Type

District	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)
St Helens	Weekly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Box and sacks	n/a

7.2 St Helens Sample Profile

Entec's sample design is based upon stratified sampling of the prominent ACORN categories in each District. District waste arisings are modelled using the sample data obtained for each strata and combining it in proportion to the District's sample profile (Table 7.2).

Table 7.2 St Helens Sample Profile

District	ACORN Category	Households in ACORN Category (%)	Sample Profile
St Helens	1	15.2	15.3
	3	33.4	33.6
	4	19.3	19.4
	5	31.5	31.7
	Total	99.4	100.0

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

7.3 Set Out

Table 7.3 presents the set out rates for March and June 2010 of kerbside collected services in St Helens.

Table 7.3 St Helens Set Out Rates

ACORN	Garden Waste		Dry Recyclables	
	March	June	March	June
1	23.1%	52.5%	30.0%	49.2%
3	58.8%	31.4%	56.9%	82.4%
4	n/a	n/a	14.6%	11.5%
5	20.0%	16.4%	34.5%	25.5%

Note: 100% set out assumed for residual waste

7.4 Residual Waste

7.4.1 Summary Results

During the March 2010 analysis a total of 1,156 kg of residual waste was collected and analysed from 88 sample households within the District of St Helens.

In June 2010 1,232 kg of dry recyclables was collected and analysed from 94 sample households within the District of St Helens.

Figure 7.1 and Table 7.4 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

7.4.2 Study Average Results

A total of 2,388 kg of residual waste was collected and analysed from 182 sample households within the District of St Helens during the March 2010 and June 2010 waste composition exercises.

Figure 7.2 and Table 7.5 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

Figure 7.1 St Helens Kerbside Residual Waste Arisings (kg/hh/wk), March & June 2010

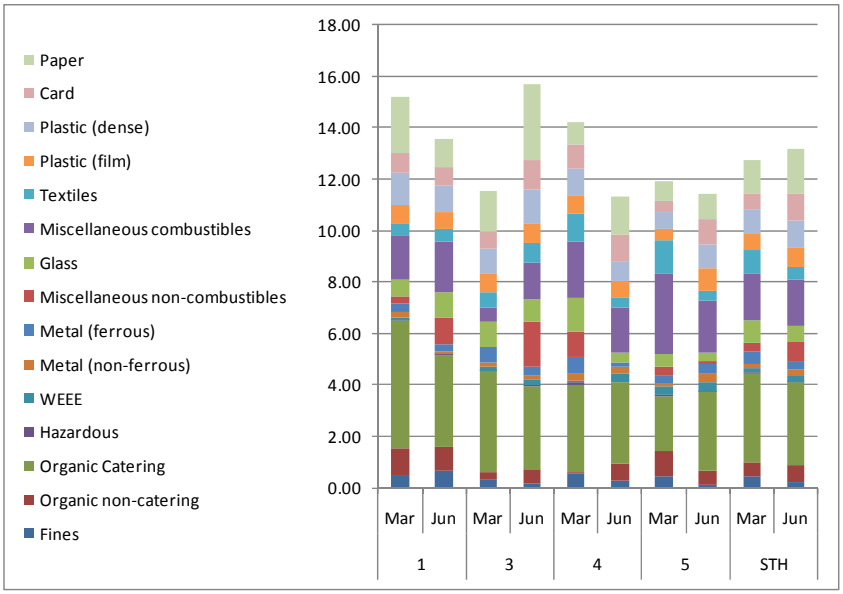

Table 7.4 St Helens Kerbside Residual Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		St Helens	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	14.6%	8.2%	13.7%	18.8%	6.2%	13.0%	6.2%	8.4%	10.0%	13.3%
Card	4.8%	5.3%	5.8%	7.3%	6.2%	9.3%	3.8%	8.6%	5.1%	7.7%
Plastic (dense)	8.3%	7.5%	8.2%	8.3%	7.6%	7.0%	5.3%	8.4%	7.2%	8.0%
Plastic (film)	4.8%	4.7%	6.4%	5.0%	5.1%	5.6%	4.1%	7.4%	5.1%	5.7%
Textiles	3.3%	3.6%	5.2%	4.8%	7.7%	3.4%	10.9%	3.5%	7.1%	4.0%
Misc. Combustibles	11.0%	14.9%	4.5%	9.0%	15.1%	15.3%	26.0%	17.8%	14.3%	13.4%
Glass	4.3%	7.1%	8.8%	5.6%	9.3%	3.4%	4.4%	2.9%	6.8%	4.7%
Misc. Non-combustibles	2.0%	7.7%	0.0%	11.3%	6.9%	0.0%	2.6%	0.6%	2.6%	5.9%
Metal (ferrous)	2.2%	2.0%	5.4%	2.0%	4.8%	1.4%	2.5%	3.6%	3.8%	2.3%
Metal (non-ferrous)	1.4%	0.7%	1.4%	1.0%	1.6%	2.7%	1.2%	2.7%	1.4%	1.7%
WEEE	0.5%	0.2%	1.0%	1.5%	0.5%	2.7%	2.8%	3.6%	1.3%	2.1%
Hazardous	0.2%	0.3%	0.4%	0.1%	0.7%	0.0%	0.2%	0.1%	0.4%	0.1%
Organic Catering	32.5%	26.1%	33.8%	20.8%	24.1%	28.0%	18.0%	26.6%	26.8%	24.4%
Organic Non-catering	6.9%	6.9%	2.7%	3.6%	0.4%	6.0%	8.1%	4.6%	4.6%	4.8%
Fines	3.3%	4.9%	2.8%	0.9%	3.7%	2.2%	3.9%	1.1%	3.4%	1.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.2 St Helens Kerbside Residual Waste Arisings (kg/hh/wk), Study Average

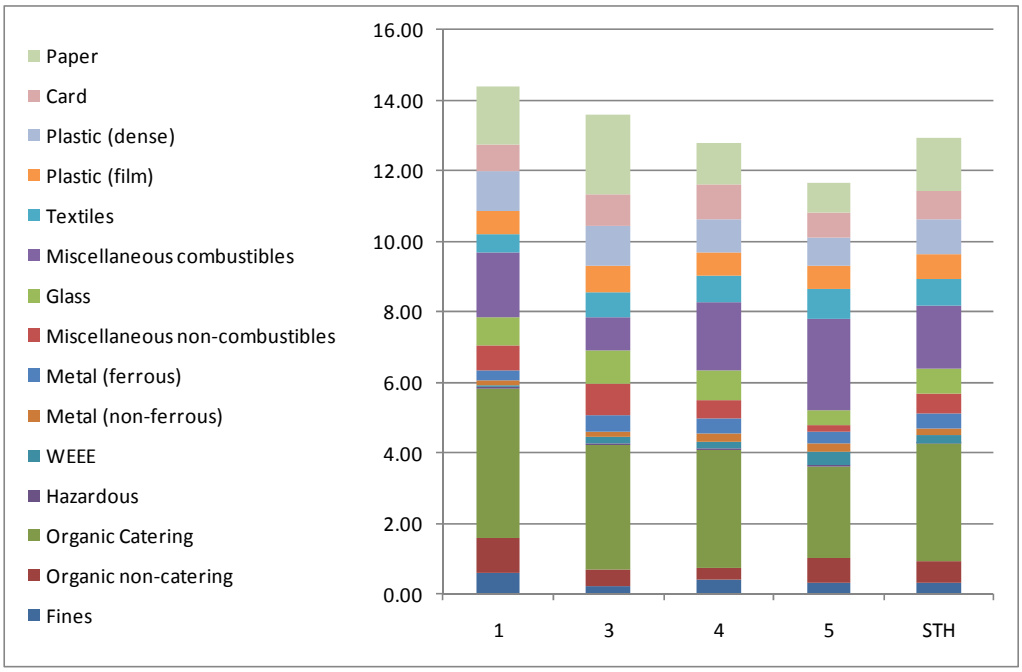

Table 7.5 St Helens Kerbside Residual Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	St Helens
Paper	11.6%	16.6%	9.2%	7.3%	11.7%
Card	5.0%	6.7%	7.6%	6.1%	6.4%
Plastic (dense)	7.9%	8.3%	7.3%	6.8%	7.6%
Plastic (film)	4.7%	5.6%	5.3%	5.7%	5.4%
Textiles	3.5%	5.0%	5.8%	7.3%	5.5%
Miscellaneous Combustibles	12.8%	7.1%	15.2%	22.0%	13.9%
Glass	5.6%	7.0%	6.7%	3.6%	5.7%
Miscellaneous Non-combustibles	4.7%	6.5%	3.8%	1.6%	4.3%
Metal (ferrous)	2.1%	3.4%	3.3%	3.1%	3.1%
Metal (non-ferrous)	1.0%	1.2%	2.1%	2.0%	1.6%
WEEE	0.3%	1.3%	1.4%	3.2%	1.7%
Hazardous	0.2%	0.3%	0.4%	0.2%	0.2%
Organic Catering	29.5%	26.3%	25.9%	22.2%	25.6%
Organic Non-catering	6.9%	3.2%	2.9%	6.4%	4.7%
Fines	4.0%	1.7%	3.0%	2.5%	2.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 644 kg of residual waste was collected from 45 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 14.40 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 29.5%, miscellaneous combustibles at 12.8% and paper at 11.6%.

ACORN 3 Study Average

A total of 634 kg of residual waste was collected from 46 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 13.59 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and dense plastic at 26.3%, 16.6% and 8.3% respectively.

ACORN 4 Study Average

A total of 584 kg of residual waste was collected from 46 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 12.77 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 25.9%, miscellaneous combustibles at 15.2% and paper at 9.2%.

ACORN 5 Study Average

A total of 527 kg of residual waste was collected from 45 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±13% at a confidence level of 95%.

The average residual waste arising per household was 11.67 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, miscellaneous combustibles, paper and textiles at 22.2%, 22.0%, 7.3% and 7.3% respectively.

St Helens Study Average

A total of 2,388 kg of residual waste was collected from 182 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±9% at a confidence level of 95%.

The average residual waste arising per household was 12.95 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 25.6%, miscellaneous combustibles at 13.9% and paper at 11.7%.

7.5 Garden Waste

7.5.1 Summary Results

During the March 2010 analysis a total of 451 kg of garden waste was collected and analysed from 47 sample households within the District of St Helens.

In June 2010 655 kg of dry recyclables was collected and analysed from 37 sample households within the District of St Helens.

Figure 7.3 and Table 7.6 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

7.5.2 Study Average Results

A total of 1,106 kg of garden waste was collected and analysed from 84 sample households within the District of St Helens during the March 2010 and June 2010 waste composition exercises.

Figure 7.4 and Table 7.7 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

Figure 7.3 St Helens Kerbside Garden Waste Arisings (kg/hh/wk), March & June 2010

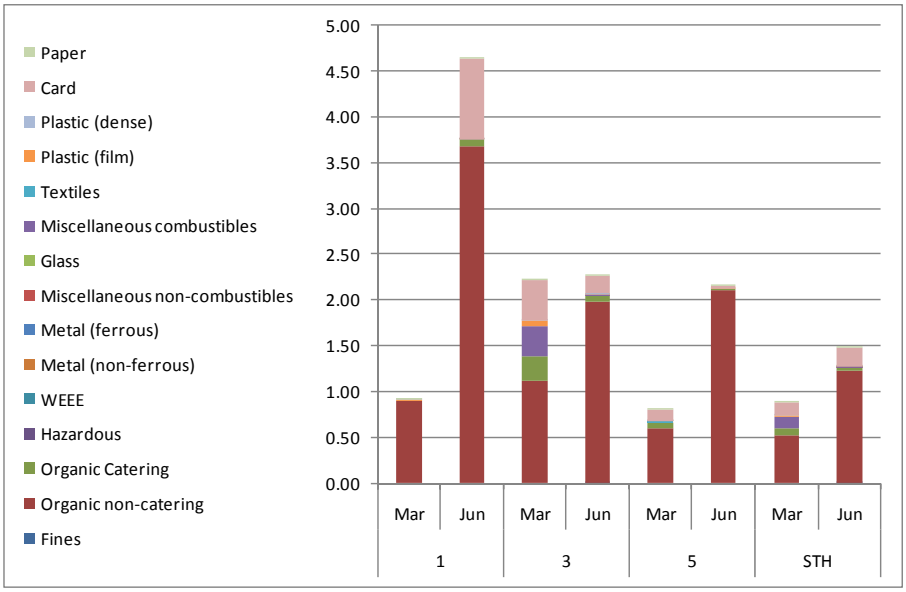

Table 7.6 St Helens Kerbside Garden Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 5		St Helens	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.2%	0.2%	0.9%	0.2%	3.0%	0.0%	0.8%	0.2%
Card	0.0%	18.9%	20.0%	8.8%	14.7%	1.0%	16.9%	13.7%
Plastic (dense)	0.0%	0.0%	0.0%	0.5%	0.2%	0.0%	0.0%	0.3%
Plastic (film)	0.0%	0.1%	2.2%	0.1%	0.1%	0.0%	1.8%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	15.3%	0.4%	0.0%	0.0%	12.9%	0.2%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	1.5%	11.6%	3.0%	8.5%	0.7%	9.8%	2.3%
Organic Non-catering	99.8%	79.2%	50.1%	86.9%	72.1%	98.3%	57.8%	83.2%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.4 St Helens Kerbside Garden Waste Arisings (kg/hh/wk), Study Average

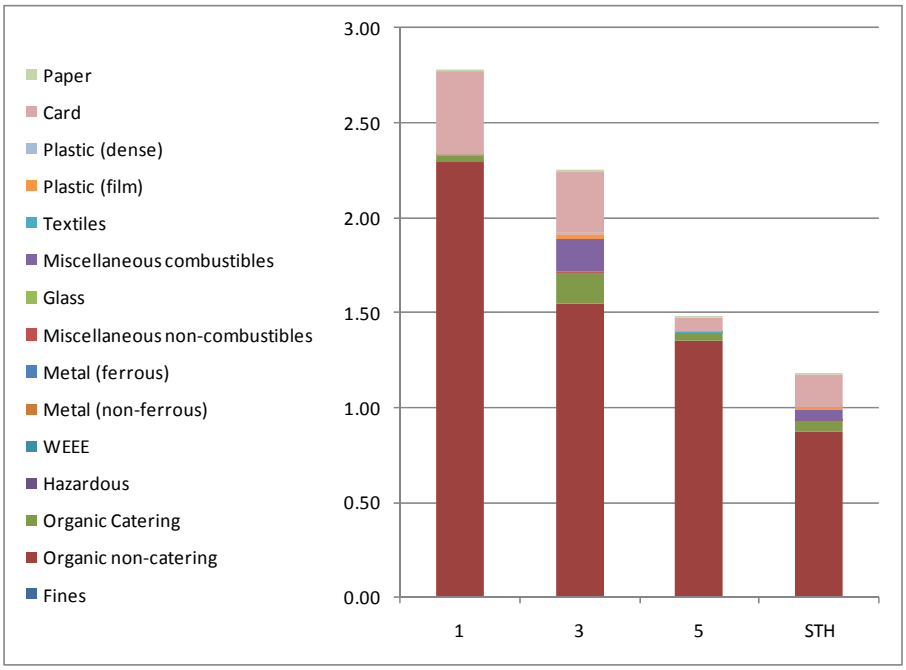

Table 7.7 St Helens Kerbside Garden Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 5	St Helens
Paper	0.2%	0.6%	0.8%	0.4%
Card	15.8%	14.3%	4.8%	14.9%
Plastic (dense)	0.0%	0.3%	0.1%	0.2%
Plastic (film)	0.1%	1.1%	0.0%	0.7%
Textiles	0.0%	0.0%	0.4%	0.0%
Miscellaneous Combustibles	0.0%	7.8%	0.0%	5.0%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	1.3%	7.2%	2.9%	5.1%
Organic Non-catering	82.6%	68.7%	91.0%	73.7%
Fines	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 384 kg of garden waste was collected from 30 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average garden waste arising per household was 2.78 kg/hh/wk. The dominant primary waste category was organic non-catering at 82.6%. Other primary categories present in the sample include card at 15.8% and organic catering at 1.3%.

ACORN 3 Study Average

A total of 474 kg of garden waste was collected from 37 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average garden waste arising per household was 2.26 kg/hh/wk. The dominant primary waste category was organic non-catering at 68.7%. Other primary categories present in the sample include card at 14.3%, miscellaneous combustibles at 7.8% and organic catering at 7.2%.

ACORN 5 Study Average

A total of 248 kg of garden waste was collected from 17 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±19% at a confidence level of 95%.

The average garden waste arising per household was 1.49 kg/hh/wk. The dominant primary waste category was organic non-catering at 91.0%. Other primary categories present in the sample include card at 4.8% and organic catering at 2.9%.

St Helens Study Average

A total of 1,106 kg of garden waste was collected from 84 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average garden waste arising per household was 1.18 kg/hh/wk. The dominant primary waste category was organic non-catering at 73.7%. Other primary categories present in the sample include card at 14.9%, and organic catering at 5.1%.

7.6 Dry Recyclables

St Helens collects recyclables in four streams. Paper is collected in a blue bag. Glass, cans, tins, aluminium foil and aerosols are collected in a black box. Plastic bottles are collected in a red bag. Textiles are also collected in separate plastic carrier bags.

Entec analysed St Helens dry recyclables as three streams with textiles examined in the black box stream due to low presentation of this material and low arisings.

7.7 Stream 1 (Blue Bag)

7.7.1 Summary Results

During the March 2010 analysis a total of 290 kg of stream 1 (blue bag) dry recyclables was collected and analysed from 86 sample households within the District of St Helens.

In June 2010 224 kg of stream 1 (blue bag) dry recyclables was collected and analysed from 71 sample households within the District of St Helens.

Figure 7.5 and Table 7.8 present the results of the March and June 2010 waste composition analyses.

7.7.2 Study Average Results

A total of 514 kg of stream 1 (blue bag) dry recyclables was collected and analysed from 157 sample households within the District of St Helens during the March 2010 and June 2010 waste composition exercises.

Figure 7.6 and Table 7.9 present the study average results of the waste composition analysis.

Figure 7.5 St Helens Kerbside Stream 1 (Blue Bag) Dry Recyclables Arisings (kg/hh/wk), March & June 2010

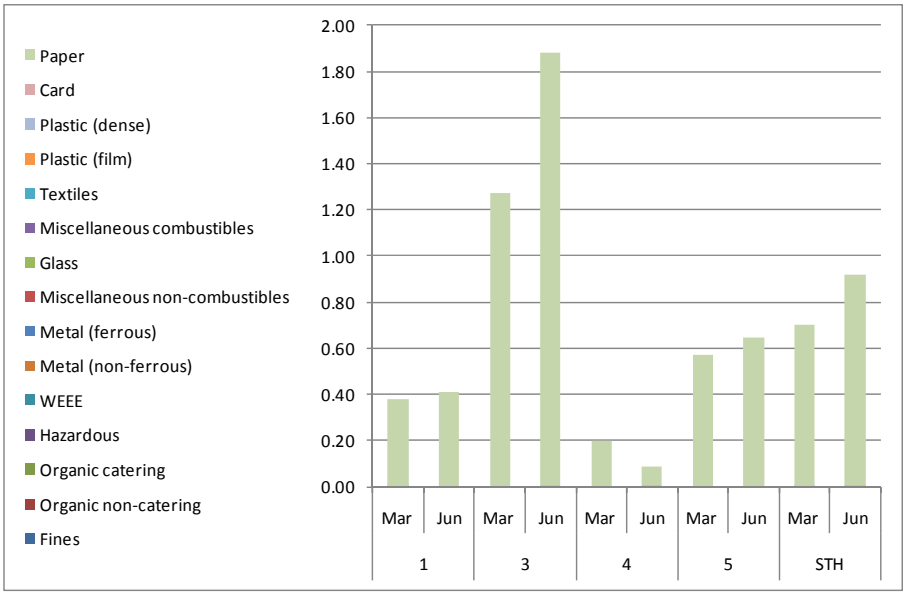

Table 7.8 St Helens Kerbside Stream 1 (Blue Bag) Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		St Helens	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	99.5%	100.0%	100.0%	99.7%	100.0%	89.7%	99.4%	100.0%	99.8%	99.6%
Card	0.5%	0.0%	0.0%	0.3%	0.0%	10.3%	0.6%	0.0%	0.2%	0.4%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.6 St Helens Kerbside Stream 1 (Blue Bag) Dry Recyclables Assay (% wt.), Study Average

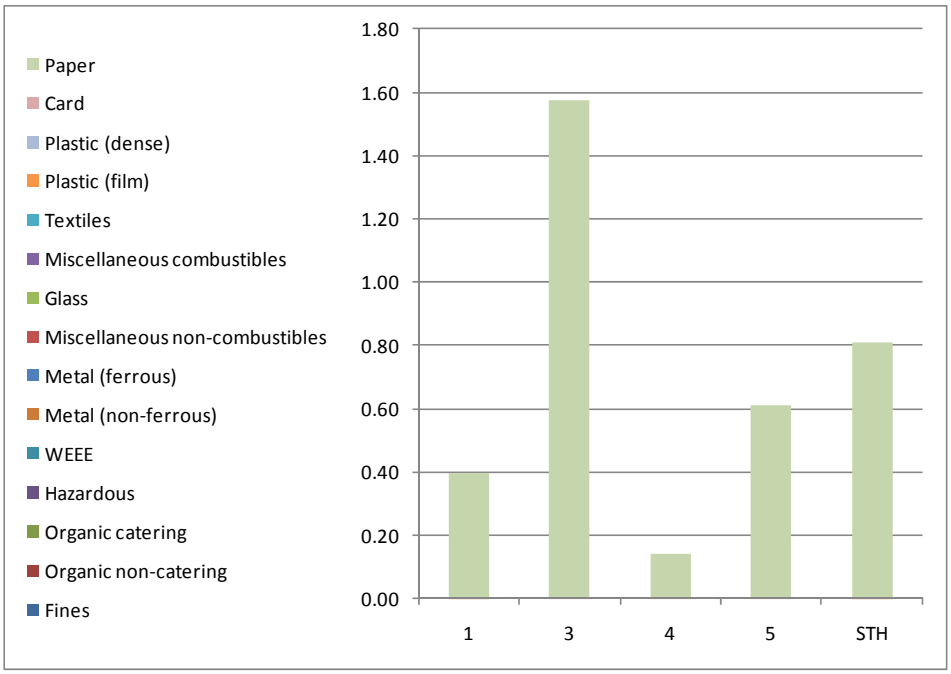

Table 7.9 St Helens Kerbside Stream 1 (Blue Bag) Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	St Helens
Paper	99.7%	99.8%	96.8%	99.7%	99.7%
Card	0.2%	0.2%	3.2%	0.3%	0.3%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 72 kg of stream 1 (blue bag) dry recyclables was collected from 43 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 0.39 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 99.7% and card at 0.2%.

ACORN 3 Study Average

A total of 226 kg of stream 1 (blue bag) dry recyclables was collected from 50 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 1.58 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 99.8% and card at 0.2%.

ACORN 4 Study Average

A total of 82 kg of stream 1 (blue bag) dry recyclables was collected from 35 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 0.14 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 96.8% and card at 3.2%.

ACORN 5 Study Average

A total of 134 kg of stream 1 (blue bag) dry recyclables was collected from 35 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 0.61 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 99.7% and card at 0.3%.

St Helens Study Average

A total of 514 kg of stream 1 (blue bag) dry recyclables was collected from 157 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average stream 1 (blue bag) dry recyclables arising per household was 0.81 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 99.7% and card at 0.3%.

7.8 Stream 2 (Black Box)

7.8.1 Summary Results

During the March 2010 analysis a total of 256 kg of stream 2 (black box) dry recyclables was collected and analysed from 87 sample households within the District of St Helens.

In June 2010 181 kg of stream 2 (black box) dry recyclables was collected and analysed from 71 sample households within the District of St Helens.

Figure 7.7 and Table 7.10 present the results of the March and June 2010 waste composition analyses.

7.8.2 Study Average Results

A total of 437 kg of stream 2 (black box) dry recyclables was collected and analysed from 158 sample households within the District of St Helens during the March 2010 and June 2010 waste composition exercises.

Figure 7.8 and Table 7.11 present the study average results of the waste composition analysis.

Figure 7.7 St Helens Kerbside Stream 2 (Black Box) Dry Recyclables Arisings (kg/hh/wk), March & June 2010

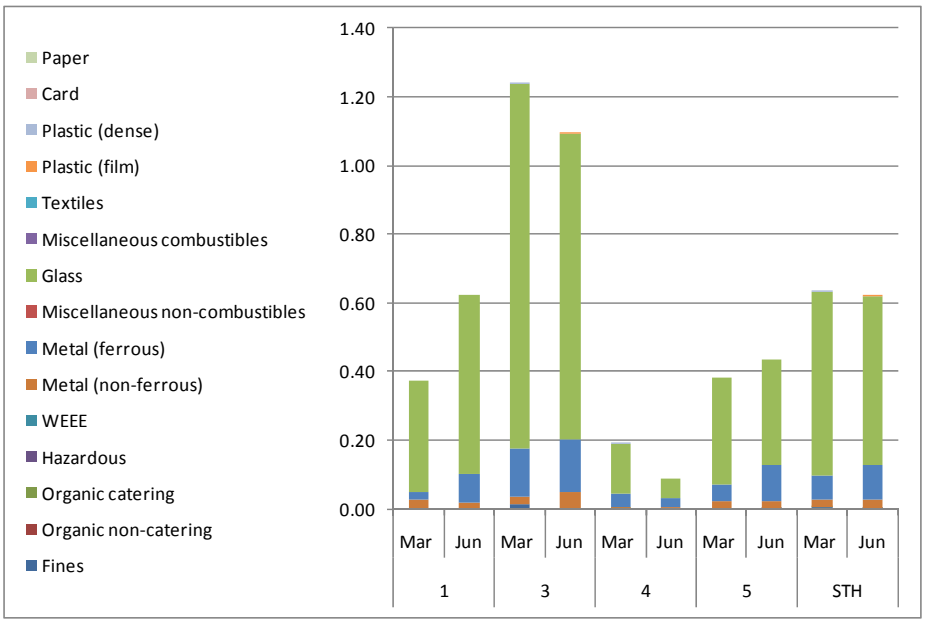

Table 7.10 St Helens Kerbside Stream 2 (Black Box) Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		St Helens	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.0%	0.2%	0.0%	0.6%	0.0%	0.0%	0.0%	0.2%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	87.2%	84.1%	85.5%	81.6%	76.2%	66.9%	82.1%	70.9%	84.5%	79.2%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	5.3%	12.9%	11.4%	13.9%	20.0%	27.9%	12.2%	24.0%	11.5%	16.4%
Metal (non-ferrous)	7.4%	3.0%	1.9%	4.3%	2.6%	5.3%	5.7%	4.9%	3.2%	4.3%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.8 St Helens Kerbside Stream 2 (Black Box) Dry Recyclables Arisings (kg/hh/wk), Study Average

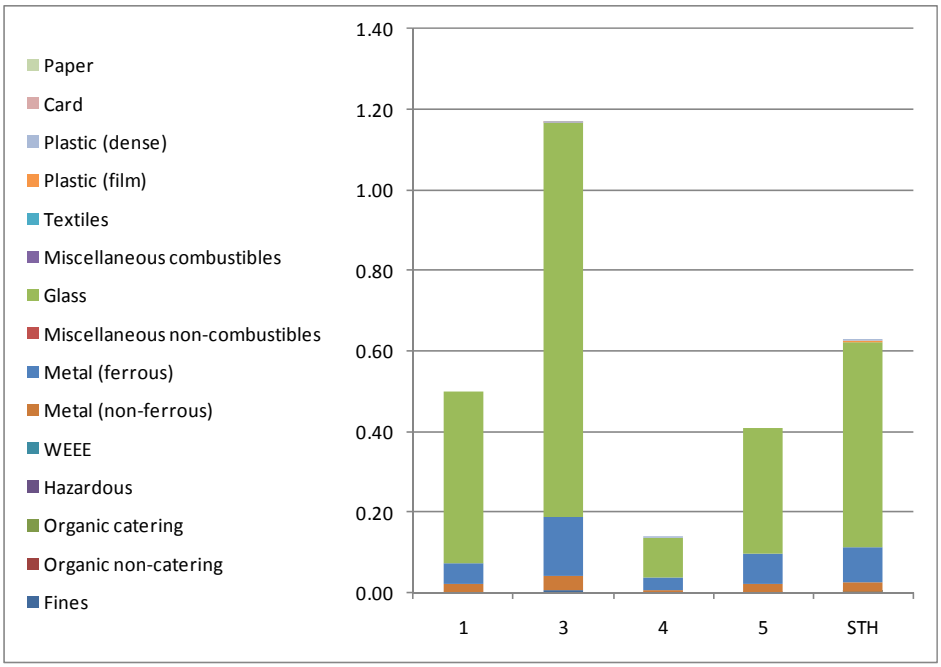

Table 7.11 St Helens Kerbside Stream 2 (Black Box) Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	St Helens
Paper	0.0%	0.0%	0.0%	0.0%	0.0%
Card	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.1%	0.4%	0.0%	0.1%
Plastic (film)	0.0%	0.1%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	85.3%	83.6%	73.2%	76.1%	81.8%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	10.1%	12.6%	22.5%	18.5%	13.9%
Metal (non-ferrous)	4.6%	3.0%	3.5%	5.3%	3.7%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.1%	0.0%
Organic Catering	0.0%	0.0%	0.4%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.6%	0.0%	0.0%	0.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 93 kg of stream 2 (black box) dry recyclables was collected from 39 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±12% at a confidence level of 95%.

The average stream 2 (black box) dry recyclables arising per household was 0.50 kg/hh/wk. The dominant primary waste categories identified within the sample were glass at 85.3%, ferrous metal at 10.1% and non-ferrous metal at 4.6%.

ACORN 3 Study Average

A total of 175 kg of stream 2 (black box) dry recyclables was collected from 49 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average stream 2 (black box) dry recyclables arising per household was 1.17 kg/hh/wk. The dominant primary waste categories identified within the sample were glass, ferrous metal and non-ferrous metal at 83.6%, 12.6% and 3.0% respectively of total sample weight.

ACORN 4 Study Average

A total of 79 kg of stream 2 (black box) dry recyclables was collected from 35 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average stream 2 (black box) dry recyclables arising per household was 0.14 kg/hh/wk. The dominant primary waste categories identified within the sample were glass at 73.2%, ferrous metal at 22.5% and non-ferrous metal at 3.5%.

ACORN 5 Study Average

A total of 89 kg of stream 2 (black box) dry recyclables was collected from 35 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average stream 2 (black box) dry recyclables arising per household was 0.41 kg/hh/wk. The dominant primary waste categories identified within the sample were glass, ferrous metal and non-ferrous metal at 76.1%, 18.5% and 5.3% respectively of total sample weight.

St Helens Study Average

A total of 437 kg of stream 2 (black box) dry recyclables was collected from 158 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±21% at a confidence level of 95%.

The average stream 2 (black box) dry recyclables arising per household was 0.62 kg/hh/wk. The dominant primary waste categories identified within the sample were glass at 81.8%, ferrous metal at 13.9% and non-ferrous metal at 3.7%.

7.9 Stream 3 (Red Bag)

7.9.1 Summary Results

During the March 2010 analysis a total of 26 kg of stream 3 (red bag) dry recyclables was collected and analysed from 86 sample households within the District of St Helens.

In June 2010 28 kg of stream 3 (red bag) dry recyclables was collected and analysed from 71 sample households within the District of St Helens.

Figure 7.9 and Table 7.12 present the results of the March and June 2010 waste composition analyses.

7.9.2 Study Average Results

A total of 54 kg of stream 3 (red bag) dry recyclables was collected and analysed from 157 sample households within the District of St Helens during the March 2010 and June 2010 waste composition exercises.

Figure 7.10 and Table 7.13 present the study average results of the waste composition analysis.

Figure 7.9 St Helens Kerbside Stream 3 (Red Bag) Dry Recyclables Arisings (kg/hh/wk), March & June 2010

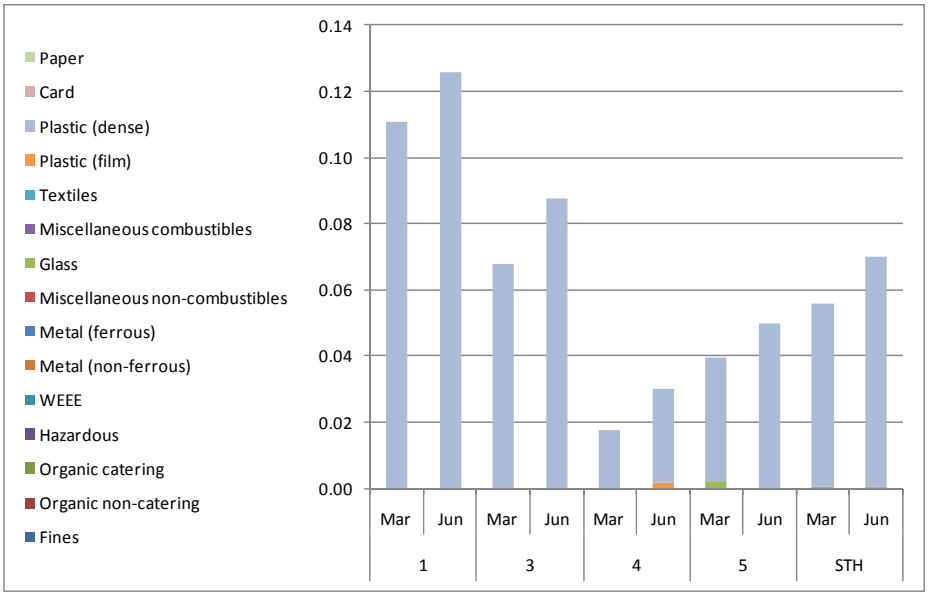

Table 7.12 St Helens Kerbside Stream 3 (Red Bag) Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		St Helens	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	100.0%	100.0%	100.0%	100.0%	100.0%	94.6%	94.8%	100.0%	98.8%	99.6%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%	5.4%	0.0%	0.0%	0.0%	0.4%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%	0.0%	1.2%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.10 St Helens Kerbside Stream 3 (Red Bag) Dry Recyclables Arisings (kg/hh/wk), Study Average

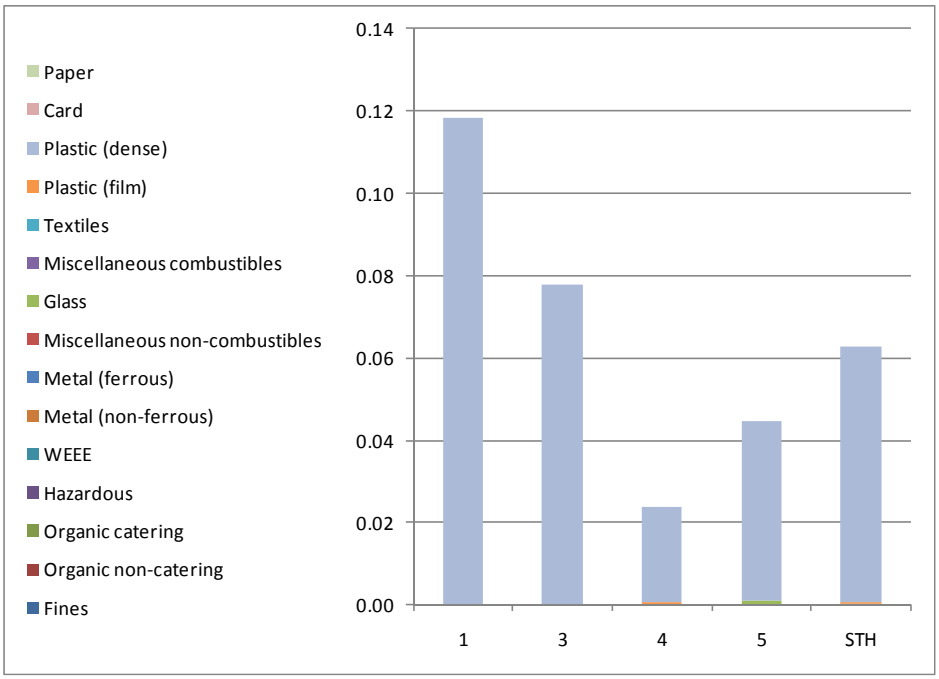

Table 7.13 St Helens Kerbside Stream 3 (Red Bag) Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	St Helens
Paper	0.0%	0.0%	0.0%	0.0%	0.0%
Card	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	100.0%	100.0%	96.6%	97.7%	99.2%
Plastic (film)	0.0%	0.0%	3.4%	0.0%	0.3%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	2.3%	0.5%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 22 kg of stream 3 (red bag) dry recyclables was collected from 37 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 3 (red bag) dry recyclables arising per household was 0.12 kg/hh/wk. The dominant primary waste category was dense plastic at 100.0%.

ACORN 3 Study Average

A total of 11 kg of stream 3 (red bag) dry recyclables was collected from 50 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 3 (red bag) dry recyclables arising per household was 0.08 kg/hh/wk. The dominant primary waste category was dense plastic at 100.0%.

ACORN 4 Study Average

A total of 12 kg of stream 3 (red bag) dry recyclables was collected from 35 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average stream 3 (red bag) dry recyclables arising per household was 0.02 kg/hh/wk. The dominant primary waste categories were dense plastic at 96.6% and plastic film at 3.4%.

ACORN 5 Study Average

A total of 10 kg of stream 3 (red bag) dry recyclables was collected from 35 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average stream 3 (red bag) dry recyclables arising per household was 0.04 kg/hh/wk. The dominant primary waste categories were dense plastic at 97.7% and glass at 2.3%.

St Helens Study Average

A total of 54 kg of stream 3 (red bag) dry recyclables was collected from 157 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±3% at a confidence level of 95%.

The average stream 3 (red bag) dry recyclables arising per household was 0.06 kg/hh/wk. The dominant primary waste categories were dense plastic at 99.2%, glass at 0.5% and plastic film at 0.3%.

7.10 Combined Kerbside Dry Recyclables

7.10.1 Summary Results

During the March 2010 analysis a total of 572 kg of dry recyclables was collected and analysed from sample households within the District of St Helens.

In June 2010 433 kg of dry recyclables was collected and analysed from sample households within the District of St Helens.

Figure 7.11 and Table 7.14 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

7.10.2 Study Average Results

A total of 1,005 kg of dry recyclables was collected and analysed from representative sample households within the District of St Helens during the March 2010 and June 2010 waste composition exercises.

Figure 7.12 and Table 7.15 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

Figure 7.11 St Helens Combined Kerbside Dry Recyclables Arisings (kg/hh/wk), March & June 2010

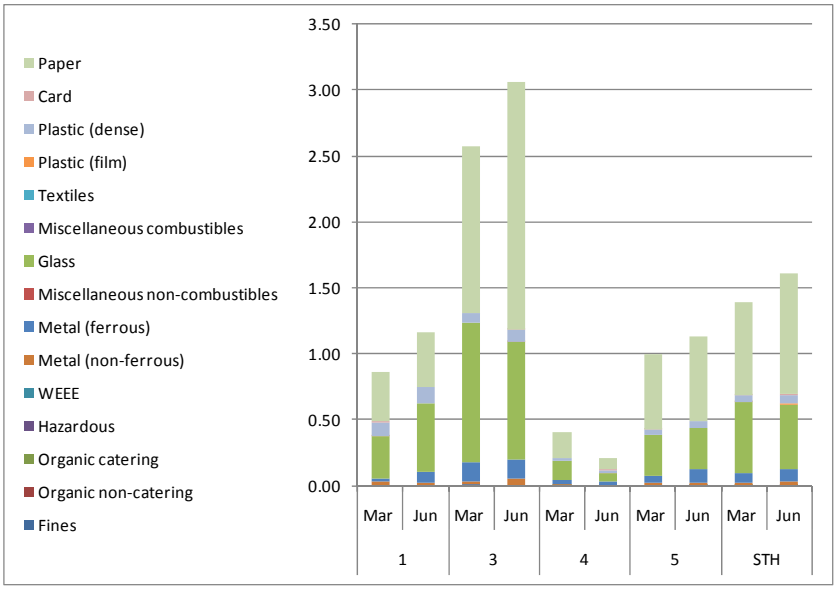

Table 7.14 St Helens Kerbside Stream 3 (Red Bag) Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		St Helens	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	43.7%	35.4%	49.3%	61.2%	49.0%	38.2%	57.2%	57.2%	50.5%	56.9%
Card	0.2%	0.0%	0.0%	0.2%	0.0%	4.4%	0.3%	0.0%	0.1%	0.2%
Plastic (dense)	12.9%	10.8%	2.7%	2.9%	4.6%	13.6%	3.8%	4.4%	4.0%	4.3%
Plastic (film)	0.0%	0.0%	0.0%	0.1%	0.0%	0.8%	0.0%	0.0%	0.0%	0.1%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	37.7%	45.2%	41.1%	29.2%	35.6%	28.8%	31.8%	27.2%	38.4%	30.5%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	2.3%	7.0%	5.5%	5.0%	9.3%	12.0%	4.7%	9.2%	5.2%	6.3%
Metal (non-ferrous)	3.2%	1.6%	0.9%	1.5%	1.2%	2.3%	2.2%	1.9%	1.4%	1.6%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.12 St Helens Combined Kerbside Dry Recyclables Arisings (kg/hh/wk), Study Average

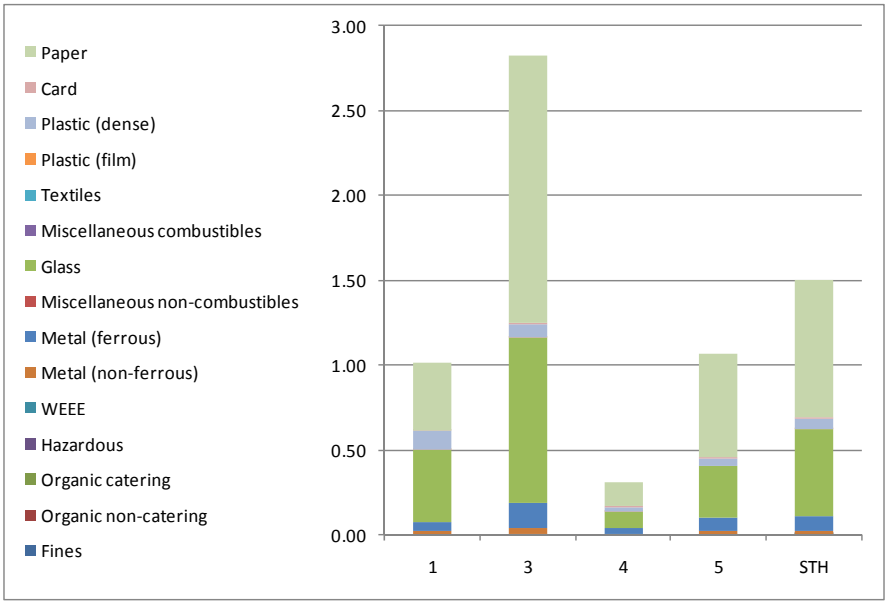

Table 7.15 St Helens Combined Kerbside Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Sefton
Paper	38.9%	55.8%	45.3%	57.2%	53.9%
Card	0.1%	0.1%	1.5%	0.2%	0.2%
Plastic (dense)	11.7%	2.8%	7.6%	4.1%	4.2%
Plastic (film)	0.0%	0.0%	0.3%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	42.0%	34.6%	33.3%	29.4%	34.1%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	5.0%	5.2%	10.2%	7.1%	5.8%
Metal (non-ferrous)	2.3%	1.3%	1.6%	2.0%	1.5%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.2%	0.0%	0.0%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.2%	0.0%	0.0%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 187 kg of dry recyclables was collected from ACORN 1 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average dry recyclables arising per household was 1.01 kg/hh/wk. The dominant primary waste categories identified within the sample were glass, paper and dense plastic at 42.0%, 38.9% and 11.7% respectively.

ACORN 3 Study Average

A total of 413 kg dry recyclables was collected from ACORN 3 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 2.82 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 55.8%, glass at 34.6% and ferrous metal at 5.2%.

ACORN 4 Study Average

A total of 173 kg dry recyclables was collected from ACORN 4 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±17% at a confidence level of 95%.

The average dry recyclables arising per household was 0.31 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and ferrous metal at 45.3%, 33.3% and 10.2% respectively.

ACORN 5 Study Average

A total of 233 kg of dry recyclables was collected from ACORN 5 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±31% at a confidence level of 95%.

The average dry recyclables arising per household was 1.06 kg/hh/wk. The dominant primary waste categories identified within the sample were glass, paper and ferrous metal at 57.2%, 29.4% and 7.1% respectively.

St Helens Study Average

A total of 1,005 kg of dry recyclables was collected from representative households within the District of St Helens providing a result precision (Confidence Interval) of ±11% at a confidence level of 95%.

The average dry recyclables arising per household was 1.50 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 53.9%, glass at 34.1% and ferrous metal at 5.8%.

7.11 Combined Kerbside Waste Streams

7.11.1 Summary Results

During the March 2010 analysis a total of 223 samples containing 2,179 kg of kerbside waste was collected and analysed from within the District of St Helens.

In June 2010 202 samples containing 2,320 kg of kerbside waste were collected and analysed from within the District of St Helens.

Figure 7.13 and Table 7.16 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

7.11.2 Study Average Results

A total of 425 waste samples containing 4,499 kg of kerbside waste were collected from within the District of St Helens during the March 2010 and June 2010 waste composition exercises.

Figure 7.14 and Table 7.17 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

Figure 7.13 St Helens Combined Kerbside Waste Arisings (kg/hh/wk), March & June 2010

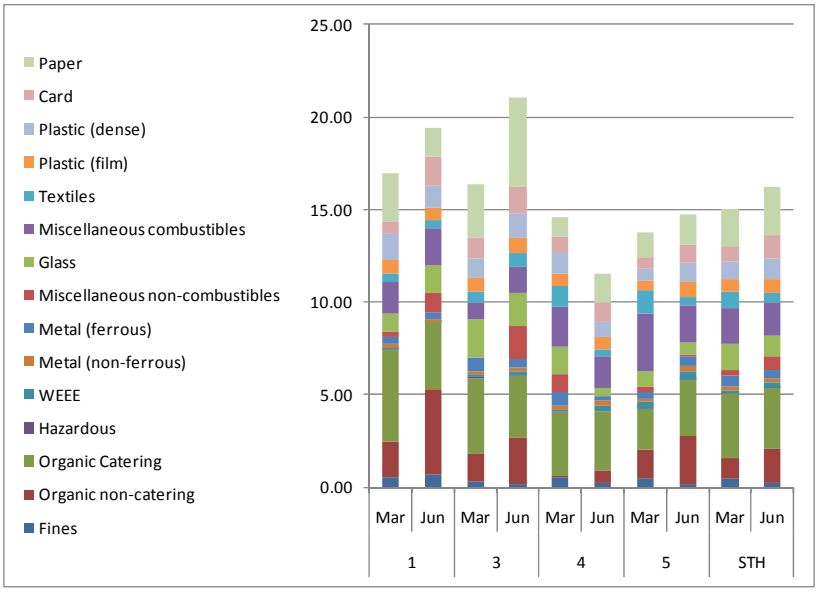

Table 7.16 St Helens Combined Kerbside Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		St Helens	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	15.3%	7.9%	17.5%	23.0%	7.3%	13.4%	9.7%	10.9%	13.2%	16.4%
Card	4.3%	8.3%	6.8%	6.4%	6.0%	9.2%	4.2%	6.9%	5.3%	7.5%
Plastic (dense)	8.1%	5.9%	6.2%	6.6%	7.5%	7.1%	4.9%	6.9%	6.5%	6.9%
Plastic (film)	4.3%	3.3%	4.8%	3.7%	4.9%	5.6%	3.6%	5.7%	4.5%	4.6%
Textiles	3.0%	2.5%	3.7%	3.6%	7.5%	3.4%	9.5%	2.7%	6.0%	3.3%
Misc. Combustibles	9.8%	10.4%	5.2%	6.8%	14.7%	15.0%	22.6%	13.9%	12.9%	10.9%
Glass	5.7%	7.7%	12.7%	8.4%	10.1%	3.8%	6.1%	4.3%	9.3%	6.8%
Misc. Non-combustibles	1.8%	5.4%	0.0%	8.4%	6.7%	0.0%	2.2%	0.5%	2.2%	4.8%
Metal (ferrous)	2.1%	1.8%	4.6%	2.2%	5.0%	1.6%	2.5%	3.5%	3.7%	2.5%
Metal (non-ferrous)	1.4%	0.6%	1.2%	0.9%	1.6%	2.7%	1.2%	2.3%	1.3%	1.5%
WEEE	0.4%	0.1%	0.7%	1.1%	0.5%	2.6%	2.5%	2.8%	1.1%	1.7%
Hazardous	0.2%	0.2%	0.3%	0.1%	0.7%	0.0%	0.2%	0.1%	0.3%	0.1%
Organic Catering	29.2%	18.7%	25.4%	15.8%	23.5%	27.5%	16.1%	20.8%	23.3%	20.0%
Organic Non-catering	11.5%	23.8%	8.8%	12.1%	0.4%	5.8%	11.3%	18.0%	7.3%	11.4%
Fines	3.0%	3.4%	2.0%	0.7%	3.6%	2.2%	3.4%	0.9%	2.9%	1.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.14 St Helens Combined Kerbside Waste Arisings (kg/hh/wk), Study Average

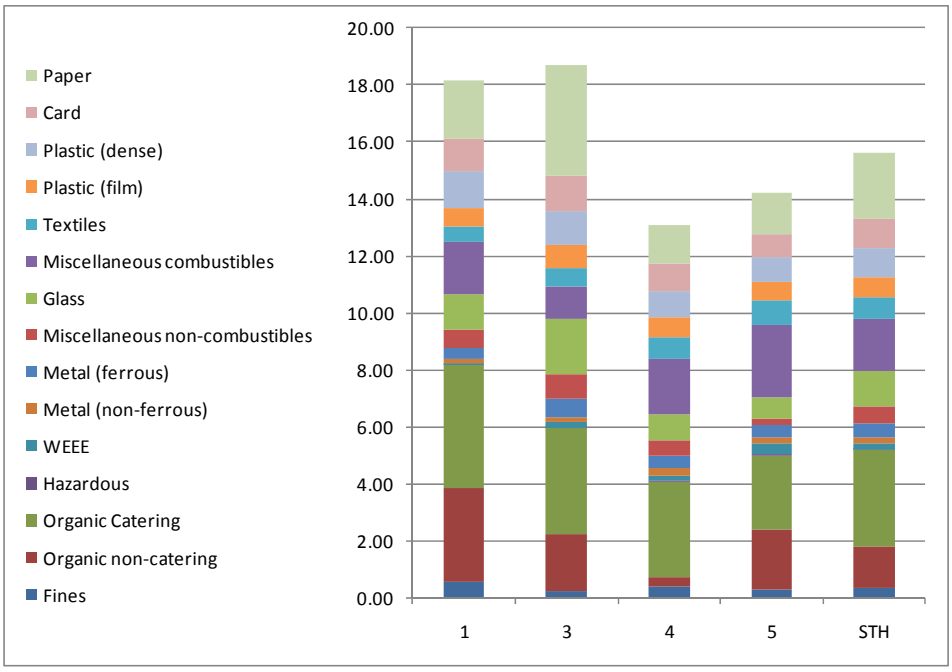

Table 7.17 St Helens Combined Kerbside Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	St Helens
Paper	11.3%	20.6%	10.0%	10.3%	14.9%
Card	6.4%	6.6%	7.4%	5.6%	6.5%
Plastic (dense)	6.9%	6.5%	7.3%	5.9%	6.7%
Plastic (film)	3.8%	4.2%	5.2%	4.7%	4.5%
Textiles	2.7%	3.6%	5.7%	6.0%	4.6%
Miscellaneous Combustibles	10.1%	6.1%	14.9%	18.1%	11.9%
Glass	6.8%	10.3%	7.3%	5.2%	8.0%
Miscellaneous Non-combustibles	3.7%	4.7%	3.7%	1.3%	3.5%
Metal (ferrous)	2.0%	3.3%	3.5%	3.0%	3.1%
Metal (non-ferrous)	0.9%	1.0%	2.1%	1.8%	1.4%
WEEE	0.3%	0.9%	1.4%	2.6%	1.4%
Hazardous	0.2%	0.2%	0.4%	0.1%	0.2%
Organic Catering	23.6%	20.0%	25.3%	18.5%	21.6%
Organic Non-catering	18.1%	10.6%	2.8%	14.8%	9.5%
Fines	3.2%	1.3%	3.0%	2.1%	2.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 112 samples containing 1,214 kg of kerbside waste were collected from ACORN 1 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 18.18 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 23.6%, organic non-catering at 18.1% and paper at 11.3%.

ACORN 3 Study Average

A total of 135 samples containing 1,453 kg of kerbside waste were collected from ACORN 3 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±7% at a confidence level of 95%.

The average kerbside waste arising per household was 18.67 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, organic catering and organic non-catering at 20.6%, 20.0% and 10.3% respectively.

ACORN 4 Study Average

A total of 81 samples containing 824 kg of kerbside waste were collected from ACORN 4 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average kerbside waste arising per household was 13.08 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 25.3%, miscellaneous combustibles at 14.9% and paper at 10.0%.

ACORN 5 Study Average

A total of 97 samples containing 1,008 kg of kerbside waste were collected from ACORN 5 sample households within the District of St Helens providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 14.22 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, miscellaneous combustibles and organic non-catering at 18.5%, 18.1% and 14.8% respectively.

St Helens Study Average

A total of 425 samples containing 4,499 kg of kerbside waste were collected from sample households within the District of St Helens providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average kerbside waste arising per household was 15.63 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 21.6%, paper at 14.9% and miscellaneous combustibles at 11.9%.

7.12 Biodegradable Municipal Waste (BMW) Content in St Helen's Kerbside Waste Streams

The BMW content was calculated using the study average results for the St Helens waste streams. Please refer to Section 2.9 for an explanation of how BMW is calculated. The results are presented in Figure 7.15 and Table 7.18.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix D.

Figure 7.15 Arisings (kg/hh/wk) of BMW in St Helen's Kerbside Waste Streams

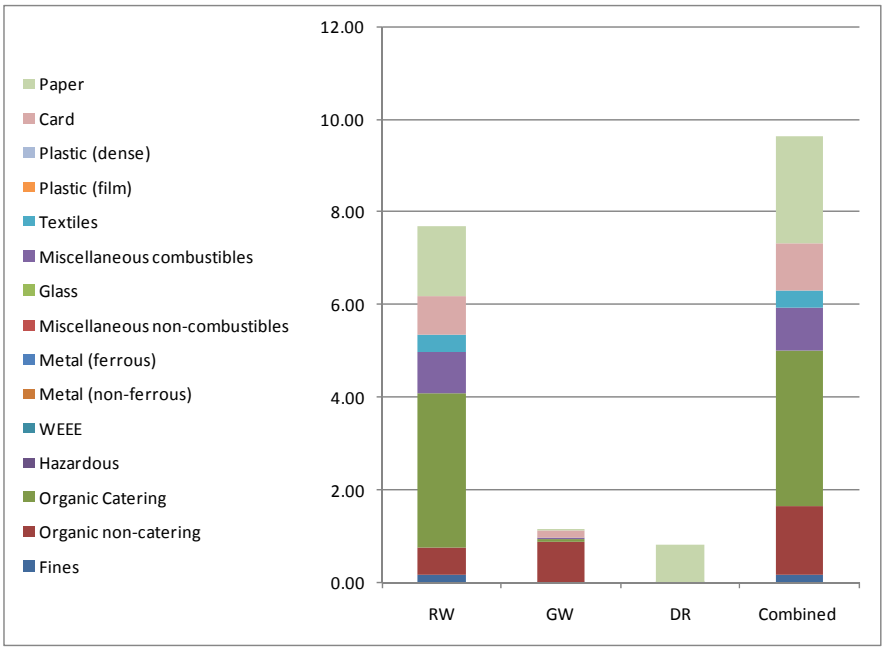

Table 7.18 Proportion (% wt.) of BMW in St Helen's Kerbside Waste Streams

Primary Category	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Combined
Paper	11.7%	0.4%	53.9%	14.9%
Card	6.4%	14.9%	0.2%	6.5%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%
Textiles	2.8%	0.0%	0.0%	2.3%
Miscellaneous Combustibles	6.9%	2.5%	0.0%	5.9%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	25.6%	5.1%	0.0%	21.6%
Organic Non-catering	4.7%	73.7%	0.0%	9.5%
Fines	1.3%	0.0%	0.1%	1.1%
Total	59.4%	96.6%	54.2%	61.7%

7.13 Calorific Value

Entec calculated residual waste CVs based on the study average residual waste composition for St Helens and using reference values for the CV of individual waste materials. A summary of the CV estimated by Entec is presented in Table 7.19 below.

Table 7.19 St Helens Residual Waste Calorific Value

Analyte		Values
Hydrogen	% wt.	3.36
Carbon	% wt.	23.38
Nitrogen	% wt.	0.70
Oxygen	% wt.	14.90
Sulphur	% wt.	0.12
Chlorine	% wt.	0.75
Ash	% wt.	21.83
Moisture	% wt.	34.95
Net CV	MJ/kg	8.57

7.14 St Helens Dry Recyclables Content and Capture

The dry recyclables content and capture was calculated using the study average results for the St Helens waste streams. The results for capture of dry recyclables are shown in Table 7.20 below. Please refer to Appendix A for an explanation of the table layout and content.

Table 7.20 Kerbside Dry Recyclables Content and Capture, St Helens Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
St Helens											
Material sub-category	Arisings (kg/hh/wk)				Assay	Targetable DR		Captured Target DR		Captured Non-Target	
	RW	GW	DR	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	kg/hh/wk	wt.% of Material Fraction	Arisings, kg/hh/wk	wt.% of DR
Newspapers	0.39	0.00	0.50	0.90	5.7%	0.90	5.7%	0.50	55.7%	-	-
Magazines	0.33	0.00	0.25	0.58	3.7%	0.58	3.7%	0.25	43.0%	-	-
Other recyclable paper	0.37	0.00	0.04	0.41	2.6%	0.41	2.6%	0.04	9.6%	-	-
Paper packaging	0.01	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	0.0%	-	-
Non-recyclable paper	0.41	0.00	0.02	0.43	2.8%	-	-	-	-	0.02	1.3%
Subtotal Paper	**1.51**	**0.01**	**0.81**	**2.33**	**14.9%**	**1.89**	**12.1%**	**0.79**	**33.9%**	**0.02**	**1.3%**
Liquid cartons	0.03	0.00	0.00	0.04	0.2%	-	-	-	-	0.00	0.0%
Board packaging	0.23	0.11	0.00	0.34	2.2%	-	-	-	-	0.00	0.1%
Card packaging	0.52	0.06	0.00	0.59	3.8%	-	-	-	-	0.00	0.0%
Other card	0.04	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Card	**0.83**	**0.18**	**0.00**	**1.01**	**6.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.2%**
Plastic Bottles: PET	0.17	0.00	0.02	0.20	1.3%	0.20	1.3%	0.02	12.5%	-	-
PET Coloured	0.03	0.00	0.01	0.04	0.2%	0.04	0.2%	0.01	18.3%	-	-
HDPE	0.08	0.00	0.02	0.10	0.6%	0.10	0.6%	0.02	19.1%	-	-
HDPE Coloured	0.05	0.00	0.01	0.06	0.4%	0.06	0.4%	0.01	16.1%	-	-
Other	0.03	0.00	0.00	0.03	0.2%	0.03	0.2%	0.00	7.9%	-	-
Other packaging	0.35	0.00	0.00	0.35	2.3%	-	-	-	-	0.00	0.0%
Other dense plastic	0.28	0.00	0.00	0.28	1.8%	-	-	-	-	0.00	0.0%
Subtotal Dense Plastic	**0.99**	**0.00**	**0.06**	**1.05**	**6.7%**	**0.42**	**2.7%**	**0.06**	**5.9%**	**0.00**	**0.0%**
Packaging film	0.36	0.00	0.00	0.36	2.3%	-	-	-	-	0.00	0.0%
Other plastic film	0.34	0.00	0.00	0.35	2.2%	-	-	-	-	0.00	0.0%
Subtotal Plastic Film	**0.70**	**0.01**	**0.00**	**0.71**	**4.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Textiles	0.60	0.00	0.00	0.60	3.8%	0.60	3.8%	0.00	0.0%	-	-
Shoes	0.12	0.00	0.00	0.12	0.8%	0.12	0.8%	0.00	0.0%	-	-
Subtotal Textiles	**0.72**	**0.00**	**0.00**	**0.72**	**4.6%**	**0.72**	**4.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Treated wood	0.34	0.06	0.00	0.40	2.5%	-	-	-	-	0.00	0.0%
Untreated wood	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	1.21	0.00	0.00	1.21	7.7%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.10	0.00	0.00	0.10	0.6%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.12	0.00	0.00	0.12	0.8%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.80**	**0.06**	**0.00**	**1.86**	**11.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Glass bottles	0.50	0.00	0.43	0.92	5.9%	0.92	5.9%	0.43	46.1%	-	-
Glass jars	0.22	0.00	0.09	0.31	2.0%	0.31	2.0%	0.09	27.9%	-	-
Other glass	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.74**	**0.00**	**0.51**	**1.25**	**8.0%**	**1.23**	**7.9%**	**0.51**	**40.8%**	**0.00**	**0.0%**
Construction and demolition	0.50	0.00	0.00	0.50	3.2%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.05	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.55**	**0.00**	**0.00**	**0.55**	**3.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.21	0.00	0.07	0.28	1.8%	0.28	1.8%	0.07	23.5%	-	-
Ferrous beverage cans	0.04	0.00	0.02	0.06	0.4%	0.06	0.4%	0.02	28.3%	-	-
Ferrous aerosols	0.03	0.00	0.00	0.03	0.2%	0.03	0.2%	0.00	11.9%	-	-
Other ferrous metal	0.12	0.00	0.00	0.12	0.8%	-	-	-	-	0.00	0.2%
Subtotal Ferrous Metals	**0.40**	**0.00**	**0.09**	**0.49**	**3.1%**	**0.37**	**2.3%**	**0.08**	**17.4%**	**0.00**	**0.2%**
Non-ferrous food cans	0.02	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	4.3%	-	-
Non-ferrous beverage cans	0.10	0.00	0.02	0.12	0.7%	0.12	0.7%	0.02	15.2%	-	-
Non-ferrous aerosols	0.01	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	23.5%	-	-
Other non-ferrous metal	0.07	0.00	0.00	0.07	0.5%	0.07	0.5%	0.00	1.2%	-	-
Subtotal Non-Ferr Metals	**0.20**	**0.00**	**0.02**	**0.22**	**1.4%**	**0.22**	**1.4%**	**0.02**	**10.4%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.02	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.02	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.04	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Lighting	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.10	0.00	0.00	0.10	0.6%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.22**	**0.00**	**0.00**	**0.22**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.03**	**0.00**	**0.00**	**0.03**	**0.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.15	0.04	0.00	1.19	7.6%	-	-	-	-	0.00	0.0%
Unused home compostable food	0.44	0.01	0.00	0.45	2.9%	-	-	-	-	0.00	0.0%
Non-home compostable food	1.06	0.01	0.00	1.06	6.8%	-	-	-	-	0.00	0.0%
Unused non-home compostable food	0.67	0.00	0.00	0.67	4.3%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**3.31**	**0.06**	**0.00**	**3.37**	**21.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Garden	0.16	0.76	0.00	0.92	5.9%	-	-	-	-	0.00	0.0%
Soil	0.10	0.09	0.00	0.20	1.3%	-	-	-	-	0.00	0.0%
Other organic	0.35	0.01	0.00	0.36	2.3%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.61**	**0.87**	**0.00**	**1.48**	**9.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Material less than 10mm	0.34	0.00	0.00	0.34	2.2%	-	-	-	-	0.00	0.1%
Subtotal Fines	**0.34**	**0.00**	**0.00**	**0.34**	**2.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Totals	**12.95**	**1.18**	**1.50**	**15.63**	**100.0%**	**4.85**	**31.0%**	**1.47**	**30.3%**	**0.03**	**1.9%**

7.15 St Helens Organic Material Content and Capture

The organic material content and capture was calculated using the study average results for the St Helens waste streams. The results for capture of organic material (garden and kitchen waste) are shown in Table 7.21 below. Please refer to Appendix B for an explanation of the table layout and content.

Table 7.21 Kerbside Organic Material Content and Capture, St Helens Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
St Helens											
Material sub-category	kg/hh/wk				Assay	Targetable Bio Waste		Targetable Bio Waste		Non-Target Materials in Bio Waste	
	RW	GW	DR	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	GW kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% Bio Waste
Newspapers	0.39	0.00	0.50	0.90	5.7%	-	-	-	-	0.00	0.2%
Magazines	0.33	0.00	0.25	0.58	3.7%	-	-	-	-	0.00	0.0%
Other recyclable paper	0.37	0.00	0.04	0.41	2.6%	-	-	-	-	0.00	0.0%
Paper packaging	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Non-recyclable paper	0.41	0.00	0.02	0.43	2.8%	-	-	-	-	0.00	0.3%
Subtotal Paper	**1.51**	**0.01**	**0.81**	**2.33**	**14.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.4%**
Liquid cartons	0.03	0.00	0.00	0.04	0.2%	-	-	-	-	0.00	0.3%
Board packaging	0.23	0.11	0.00	0.34	2.2%	0.34	2.2%	0.11	31.6%	-	-
Card packaging	0.52	0.06	0.00	0.59	3.8%	0.59	3.8%	0.06	10.9%	-	-
Other card	0.04	0.00	0.00	0.04	0.3%	0.04	0.3%	0.00	2.2%	-	-
Subtotal Card	**0.83**	**0.18**	**0.00**	**1.01**	**6.5%**	**0.97**	**6.2%**	**0.17**	**17.1%**	**0.00**	**0.3%**
Plastic Bottles: PET	0.17	0.00	0.02	0.20	1.3%	-	-	-	-	0.00	0.0%
PET Coloured	0.03	0.00	0.01	0.04	0.2%	-	-	-	-	0.00	0.0%
HDPE	0.08	0.00	0.02	0.10	0.6%	-	-	-	-	0.00	0.0%
HDPE Coloured	0.05	0.00	0.01	0.06	0.4%	-	-	-	-	0.00	0.0%
Other	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Other packaging	0.35	0.00	0.00	0.35	2.3%	-	-	-	-	0.00	0.0%
Other dense plastic	0.28	0.00	0.00	0.28	1.8%	-	-	-	-	0.00	0.1%
Subtotal Dense Plastic	**0.99**	**0.00**	**0.06**	**1.05**	**6.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.2%**
Packaging film	0.36	0.00	0.00	0.36	2.3%	-	-	-	-	0.00	0.4%
Other plastic film	0.34	0.00	0.00	0.35	2.2%	-	-	-	-	0.00	0.4%
Subtotal Plastic Film	**0.70**	**0.01**	**0.00**	**0.71**	**4.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.7%**
Textiles	0.60	0.00	0.00	0.60	3.8%	-	-	-	-	0.00	0.0%
Shoes	0.12	0.00	0.00	0.12	0.8%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.72**	**0.00**	**0.00**	**0.72**	**4.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Treated wood	0.34	0.06	0.00	0.40	2.5%	-	-	-	-	0.06	4.9%
Untreated wood	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	1.21	0.00	0.00	1.21	7.7%	-	-	-	-	0.00	0.1%
Other misc. comb.	0.10	0.00	0.00	0.10	0.6%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.12	0.00	0.00	0.12	0.8%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.80**	**0.06**	**0.00**	**1.86**	**11.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.06**	**5.0%**
Glass bottles	0.50	0.00	0.43	0.92	5.9%	-	-	-	-	0.00	0.0%
Glass jars	0.22	0.00	0.09	0.31	2.0%	-	-	-	-	0.00	0.0%
Other glass	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.74**	**0.00**	**0.51**	**1.25**	**8.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Construction and demolition	0.50	0.00	0.00	0.50	3.2%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.05	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.55**	**0.00**	**0.00**	**0.55**	**3.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.21	0.00	0.07	0.28	1.8%	-	-	-	-	0.00	0.0%
Ferrous beverage cans	0.04	0.00	0.02	0.06	0.4%	-	-	-	-	0.00	0.0%
Ferrous aerosols	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Other ferrous metal	0.12	0.00	0.00	0.12	0.8%	-	-	-	-	0.00	0.0%
Subtotal Ferrous Metals	**0.40**	**0.00**	**0.09**	**0.49**	**3.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Non-ferrous food cans	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Non-ferrous beverage cans	0.10	0.00	0.02	0.12	0.7%	-	-	-	-	0.00	0.0%
Non-ferrous aerosols	0.01	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other non-ferrous metal	0.07	0.00	0.00	0.07	0.5%	-	-	-	-	0.00	0.0%
Subtotal Non-Ferr Metals	**0.20**	**0.00**	**0.02**	**0.22**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.02	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.02	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.04	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Lighting	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.10	0.00	0.00	0.10	0.6%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.22**	**0.00**	**0.00**	**0.22**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.03**	**0.00**	**0.00**	**0.03**	**0.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.15	0.04	0.00	1.19	7.6%	1.19	7.6%	0.04	3.6%	-	-
Unused home compostable food	0.44	0.01	0.00	0.45	2.9%	0.45	2.9%	0.01	2.7%	-	-
Non-home compostable food	1.06	0.01	0.00	1.06	6.8%	-	-	-	-	0.01	0.4%
Unused non-home compostable food	0.67	0.00	0.00	0.67	4.3%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**3.31**	**0.06**	**0.00**	**3.37**	**21.6%**	**1.64**	**10.5%**	**0.06**	**1.6%**	**0.01**	**0.4%**
Garden	0.16	0.76	0.00	0.92	5.9%	0.92	5.9%	0.76	82.9%	-	-
Soil	0.10	0.09	0.00	0.20	1.3%	0.20	1.3%	0.09	48.3%	-	-
Other organic	0.35	0.01	0.00	0.36	2.3%	-	-	-	-	0.01	1.0%
Subtotal Org.Non Catering	**0.61**	**0.87**	**0.00**	**1.48**	**9.5%**	**1.12**	**7.2%**	**0.86**	**58.2%**	**0.01**	**1.0%**
Material less than 10mm	0.34	0.00	0.00	0.34	2.2%	-	-	-	-	0.00	0.0%
Subtotal Fines	**0.34**	**0.00**	**0.00**	**0.34**	**2.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Totals	**12.95**	**1.18**	**1.50**	**15.63**	**100.0%**	**3.73**	**23.9%**	**1.09**	**29.1%**	**0.10**	**8.1%**

7.16 Conclusion

Figure 7.16 and Table 7.22 present the final modelled waste composition arisings and assay data for the District of St Helens.

St Helen's average residual waste arisings were 12.95 kg/hh/wk. Overall there were lower arisings of residual waste during March 2010 (12.73 kg/hh/wk) in comparison with the June 2010 study (13.17 kg/hh/wk). The most prominent materials were organic catering waste at 25.6% (3.31 kg/hh/wk), miscellaneous combustibles at 13.9% (1.80 kg/hh/wk) and paper at 11.7% (1.51 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the residual waste stream was determined to be 59.4%. The calorific value of the residual waste was calculated to be 8.57 MJ/kg.

Average arisings of garden waste in St Helens were 1.18 kg/hh/wk. Overall there was higher arisings of garden waste during the June 2010 study (1.48 kg/hh/wk) in comparison to March 2010 (0.89 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. The most prominent materials were organic non-catering at 73.7% (0.87 kg/hh/wk) and card at 14.9% (0.18 kg/hh/wk). The composition of the waste stream varied between the seasons with significantly less non-target material in the garden waste stream during the June 2010 exercise. The kerbside organic material capture was 29.1% of targeted material. Non-target materials constituted 8.1% of the organic stream. The biodegradable municipal waste (BMW) content of the garden waste stream was calculated to be 96.6%.

St Helen's average dry recyclables arisings were 1.50 kg/hh/wk. Overall there were higher arisings of dry recyclables during June 2010 (1.61 kg/hh/wk) in comparison with the March 2010 study (1.39 kg/hh/wk). The most prominent materials were paper at 53.9% (0.81 kg/hh/wk) and glass at 34.2% (0.51 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The kerbside dry recyclables material capture was 30.3% of targeted material. Non-target materials constituted 1.9% of the dry recyclables stream. The biodegradable municipal waste (BMW) content of the dry recyclables stream was calculated to be 54.2%.

The modelled arisings for the combined kerbside waste streams were 15.63 kg/hh/wk. Overall there were higher arisings of kerbside waste during June 2010 (16.25 kg/hh/wk) in comparison with the March 2010 study (15.01 kg/hh/wk) which is due to increased arisings for all waste streams during June 2010. The most prominent materials were organic catering waste at 21.6% (3.37 kg/hh/wk), paper at 14.9% (2.33 kg/hh/wk) and miscellaneous combustibles at 11.9% (1.86 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season with the exception of organic non-catering which constituted 7.3% (1.10 kg/hh/wk) of the waste in March 2010 and 11.4% (1.86 kg/hh/wk) in June 2010. The biodegradable municipal waste (BMW) content of the combined kerbside waste stream was calculated to be 61.7%.

Figure 7.16 St Helens Waste Arisings (kg/hh/wk), Study Average

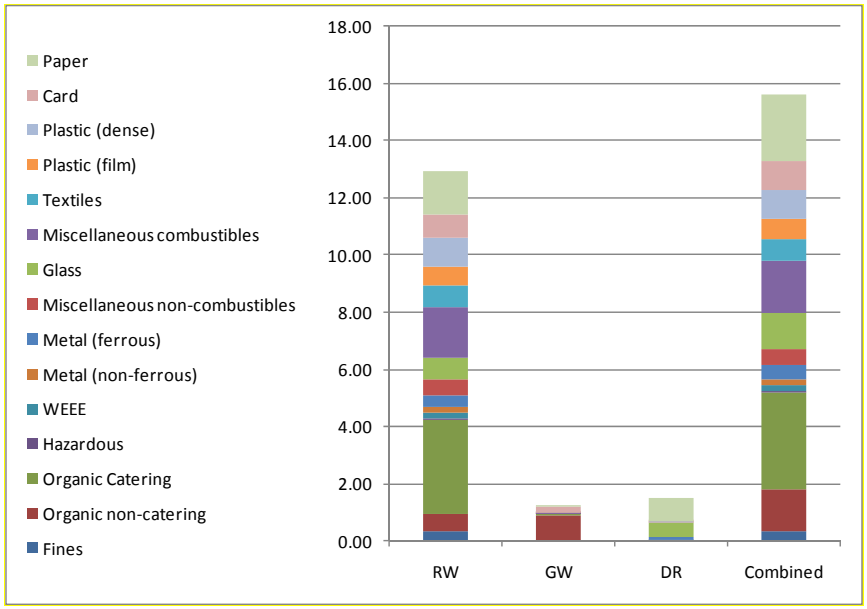

Table 7.22 St Helens Waste Assay (% wt.), Study Average

Primary Category	Residual Waste	Garden Waste	Dry Recyclables	Combined
Paper	11.7%	0.4%	53.9%	14.9%
Card	6.4%	14.9%	0.2%	6.5%
Plastic (dense)	7.6%	0.2%	4.2%	6.7%
Plastic (film)	5.4%	0.7%	0.0%	4.5%
Textiles	5.5%	0.0%	0.0%	4.6%
Miscellaneous Combustibles	13.9%	5.0%	0.0%	11.9%
Glass	5.7%	0.0%	34.2%	8.0%
Miscellaneous Non-combustibles	4.3%	0.0%	0.0%	3.5%
Metal (ferrous)	3.1%	0.0%	5.8%	3.1%
Metal (non-ferrous)	1.6%	0.0%	1.5%	1.4%
WEEE	1.7%	0.0%	0.0%	1.4%
Hazardous	0.2%	0.0%	0.0%	0.2%
Organic Catering	25.6%	5.1%	0.0%	21.6%
Organic Non-catering	4.7%	73.7%	0.0%	9.5%
Fines	2.6%	0.0%	0.1%	2.2%
Total	100.0%	100.0%	100.0%	100.0%

8. Wirral Kerbside Household Waste Composition Results

8.1 Introduction

This chapter looks at kerbside residual, recyclable and organic household waste collected within the District of Wirral. Table 8.1 summarises the kerbside schemes operated in Wirral.

Table 8.1 Kerbside Household Waste Collection Schemes in Wirral, Collection Frequency and Receptacle Type

District	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)
Wirral	Fortnightly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Wheeled bin	n/a

8.2 Wirral Sample Profile

Entec's sample design is based upon stratified sampling of the prominent ACORN categories in each District. District waste arisings are modelled using the sample data obtained for each strata and combining it in proportion to the District's sample profile (Table 8.2).

Table 8.2 Wirral Sample Profile

District	ACORN Category	Households in ACORN Category (%)	Sample Profile
Wirral	1	20.8	21.8
	3	37.5	38.5
	4	16.6	17.6
	5	21.1	22.1
	Total	96.0	100.0

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

8.3 Set Out

Table 8.3 presents the set out rates for March and June 2010 of kerbside collected services in Wirral.

Table 8.3 Wirral Set Out Rates

ACORN	Garden Waste		Dry Recyclables	
	March	June	March	June
1	20.0%	49.1%	90.6%	92.5%
3	29.0%	88.6%	67.1%	87.3%
4	13.5%	25.0%	46.2%	34.6%
5	3.3%	23.3%	50.0%	90.0%

Note: 100% set out assumed for residual waste

8.4 Residual Waste

8.4.1 Summary Results

During the March 2010 analysis a total of 1,497 kg of residual waste was collected and analysed from 75 sample households within the District of Wirral.

In June 2010 1,615 kg of dry recyclables was collected and analysed from 95 sample households within the District of Wirral.

Figure 8.1 and Table 8.4 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

8.4.2 Study Average Results

A total of 3,112 kg of residual waste was collected and analysed from 170 sample households within the District of Wirral during the March 2010 and June 2010 waste composition exercises.

Figure 8.2 and Table 8.5 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

Figure 8.1 Wirral Kerbside Residual Waste Arisings (kg/hh/wk), March & June 2010

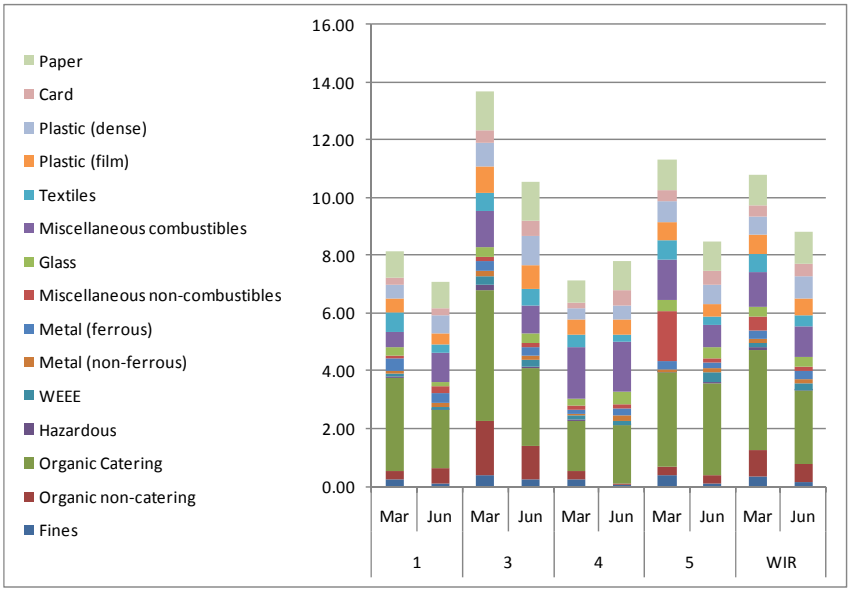

Table 8.4 Wirral Kerbside Residual Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Wirral	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	11.3%	12.7%	9.8%	12.6%	10.8%	13.0%	9.2%	12.0%	10.0%	12.5%
Card	3.1%	3.8%	3.4%	5.0%	2.6%	6.3%	3.3%	5.6%	3.2%	5.1%
Plastic (dense)	5.9%	8.4%	6.0%	9.8%	5.3%	6.5%	6.7%	7.6%	6.1%	8.6%
Plastic (film)	5.7%	5.9%	6.5%	7.8%	7.5%	6.7%	5.5%	5.7%	6.3%	6.8%
Textiles	8.5%	3.8%	4.5%	5.3%	6.4%	3.1%	6.0%	2.9%	5.7%	4.2%
Misc. Combustibles	6.5%	14.7%	9.3%	9.4%	24.9%	22.0%	12.2%	9.6%	11.3%	12.3%
Glass	3.5%	1.7%	2.5%	3.0%	3.6%	5.9%	3.5%	4.4%	3.0%	3.5%
Misc. Non-combustibles	1.2%	3.6%	1.1%	1.5%	1.7%	1.8%	15.2%	1.5%	4.4%	1.9%
Metal (ferrous)	5.2%	4.3%	2.4%	2.8%	1.8%	3.2%	2.8%	2.6%	2.9%	3.1%
Metal (non-ferrous)	1.5%	2.4%	1.3%	1.4%	0.7%	2.4%	0.5%	1.6%	1.1%	1.8%
WEEE	1.2%	1.2%	2.3%	1.9%	2.1%	2.0%	0.1%	4.1%	1.6%	2.3%
Hazardous	0.3%	0.4%	1.4%	0.6%	0.6%	0.1%	0.3%	0.2%	0.8%	0.4%
Organic Catering	39.7%	28.4%	33.0%	25.7%	24.9%	25.8%	28.7%	37.6%	32.1%	28.7%
Organic Non-catering	3.4%	7.2%	13.7%	10.8%	4.0%	0.8%	2.8%	3.2%	8.3%	7.0%
Fines	3.2%	1.7%	2.9%	2.4%	3.2%	0.3%	3.3%	1.4%	3.1%	1.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 8.2 Wirral Kerbside Residual Waste Arisings (kg/hh/wk), Study Average

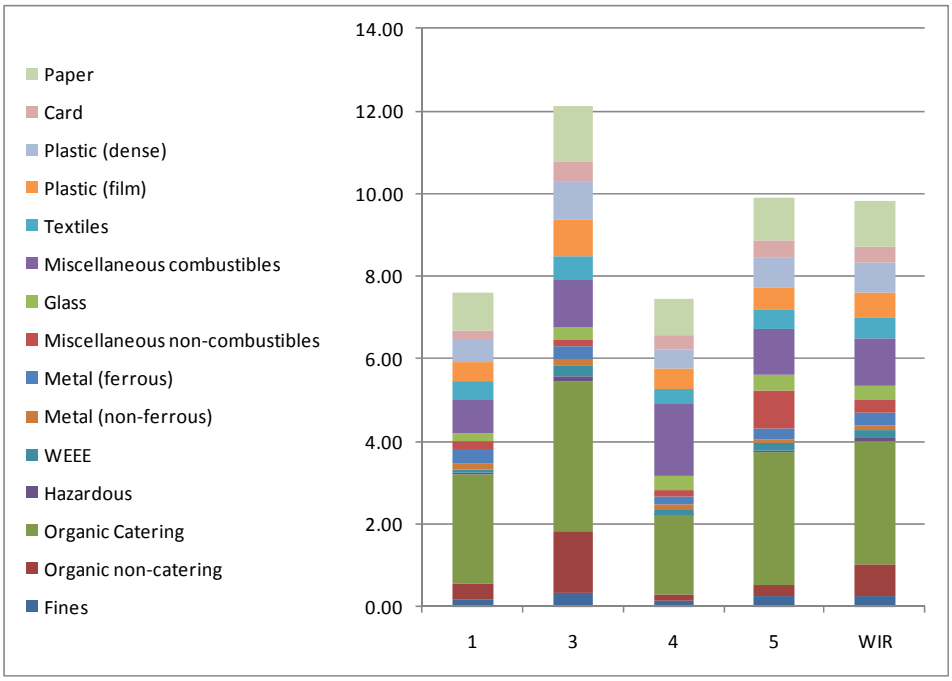

Table 8.5 Wirral Kerbside Residual Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Wirral
Paper	11.9%	11.0%	12.0%	10.4%	11.2%
Card	3.4%	4.1%	4.5%	4.3%	4.1%
Plastic (dense)	7.1%	7.7%	5.9%	7.1%	7.2%
Plastic (film)	5.8%	7.1%	7.0%	5.6%	6.5%
Textiles	6.3%	4.8%	4.7%	4.6%	5.0%
Miscellaneous Combustibles	10.3%	9.3%	23.4%	11.1%	11.8%
Glass	2.6%	2.7%	4.8%	3.9%	3.2%
Miscellaneous Non-combustibles	2.3%	1.3%	1.7%	9.3%	3.3%
Metal (ferrous)	4.7%	2.6%	2.5%	2.7%	3.0%
Metal (non-ferrous)	1.9%	1.4%	1.6%	0.9%	1.4%
WEEE	1.2%	2.1%	2.1%	1.8%	1.9%
Hazardous	0.3%	1.0%	0.3%	0.3%	0.6%
Organic Catering	34.4%	29.8%	25.4%	32.5%	30.6%
Organic Non-catering	5.1%	12.4%	2.3%	3.0%	7.7%
Fines	2.5%	2.7%	1.7%	2.5%	2.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 680 kg of residual waste was collected from 45 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 7.61 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 34.4%, paper at 11.9% and miscellaneous combustibles at 10.3%.

ACORN 3 Study Average

A total of 1,073 kg of residual waste was collected from 45 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±18% at a confidence level of 95%.

The average residual waste arising per household was 12.11 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, organic non-catering and paper at 29.8%, 12.4% and 11.0% respectively.

ACORN 4 Study Average

A total of 596 kg of residual waste was collected from 40 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 7.45 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 25.4%, miscellaneous combustibles at 23.4% and paper at 12.0%.

ACORN 5 Study Average

A total of 763 kg of residual waste was collected from 40 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average residual waste arising per household was 9.89 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, miscellaneous combustibles and paper at 32.5%, 11.1% and 10.4% respectively.

Wirral Study Average

A total of 3,112 kg of residual waste was collected from 170 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±11% at a confidence level of 95%.

The average residual waste arising per household was 9.82 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 30.6%, miscellaneous combustibles at 11.8% and paper at 11.2%.

8.5 Garden Waste

8.5.1 Summary Results

During the March 2010 analysis a total of 485 kg of garden waste was collected and analysed from 29 sample households within the District of Wirral.

In June 2010 629 kg of garden waste was collected and analysed from 62 sample households within the District of Wirral.

Figure 8.3 and Table 8.6 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

8.5.2 Study Average Results

A total of 1,114 kg of garden waste was collected and analysed from 91 sample households within the District of Wirral during the March 2010 and June 2010 waste composition exercises.

Figure 8.4 and Table 8.7 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

Figure 8.3 Wirral Kerbside Garden Waste Arisings (kg/hh/wk), March & June 2010

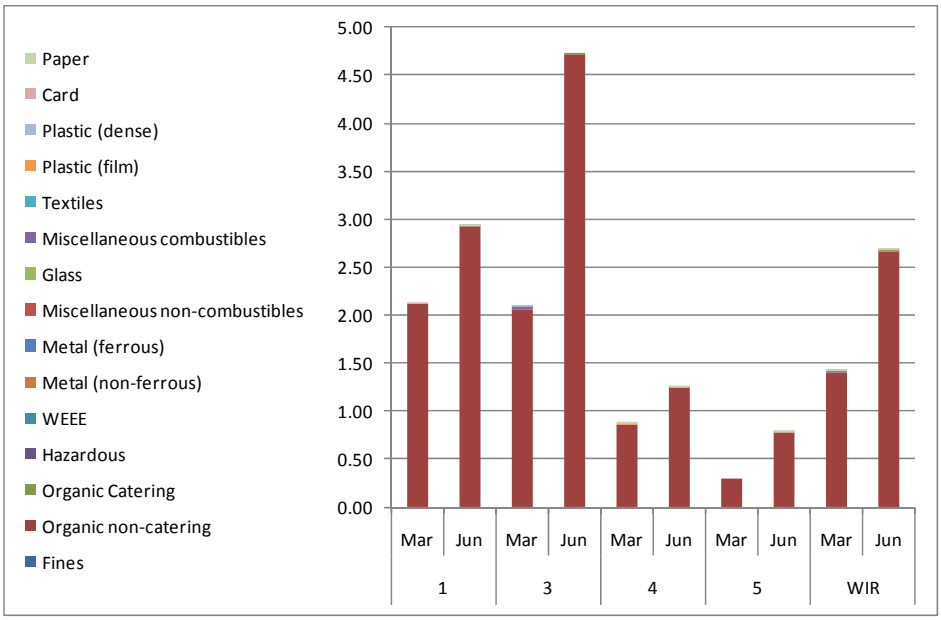

Table 8.6 Wirral Kerbside Garden Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Wirral	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.2%	0.0%	0.0%	0.6%	0.3%	0.0%	0.1%	0.1%	0.1%
Card	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.1%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
Organic Non-catering	99.6%	99.7%	98.3%	99.9%	99.3%	99.5%	100.0%	99.8%	98.8%	99.8%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 8.4 Wirral Kerbside Garden Waste Arisings (kg/hh/wk), Study Average

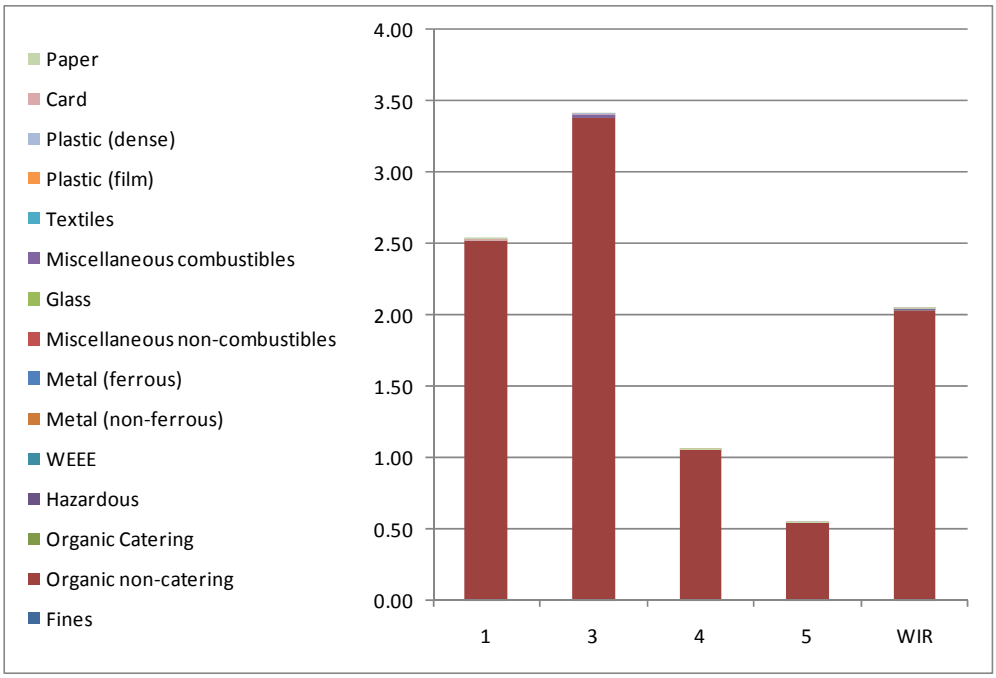

Table 8.7 Wirral Kerbside Garden Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Wirral
Paper	0.1%	0.0%	0.4%	0.1%	0.1%
Card	0.2%	0.0%	0.0%	0.0%	0.1%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.1%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.5%	0.0%	0.0%	0.3%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.1%	0.1%	0.0%	0.1%
Organic Non-catering	99.7%	99.4%	99.4%	99.9%	99.5%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 406 kg of garden waste was collected from 30 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average garden waste arising per household was 2.53 kg/hh/wk. The dominant primary waste categories were organic non-catering at 99.7%, card at 0.2% and paper at 0.1%.

ACORN 3 Study Average

A total of 178 kg of garden waste was collected from 15 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±17% at a confidence level of 95%.

The average garden waste arising per household was 3.40 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.4%. A small amount of miscellaneous combustibles and organic catering was present equating to 0.5% and 0.1% respectively of the total sample weight.

ACORN 4 Study Average

A total of 220 kg of garden waste was collected from 20 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average garden waste arising per household was 1.06 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.4%. A small amount of paper, organic catering and plastic film material was present equating to 0.4%, 0.1% and 0.1% respectively of the total sample weight.

ACORN 5 Study Average

A total of 310 kg of garden waste was collected from 26 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average garden waste arising per household was 0.54 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.9%. A small amount of paper was present equating to 0.1% of the total sample weight.

Wirral Study Average

A total of 1,114 kg of garden waste was collected from 91 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±6% at a confidence level of 95%.

The average garden waste arising per household was 2.05 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.5%. Other primary categories present in the sample include miscellaneous combustibles at 0.3% and paper, card and organic catering each at 0.1% of total sample weight.

8.6 Dry Recyclables

8.6.1 Summary Results

During the March 2010 analysis a total of 897 kg of dry recyclables was collected and analysed from 84 sample households within the District of Wirral.

In June 2010 876 kg of dry recyclables was collected and analysed from 90 sample households within the District of Wirral.

Figure 8.5 and Table 8.8 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

8.6.2 Study Average Results

A total of 1,773 kg of dry recyclables was collected and analysed from 174 sample households within the District of Wirral during the March 2010 and June 2010 waste composition exercises.

Figure 8.6 and Table 8.9 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

Figure 8.5 Wirral Kerbside Dry Recyclables Arisings (kg/hh/wk), March & June 2010

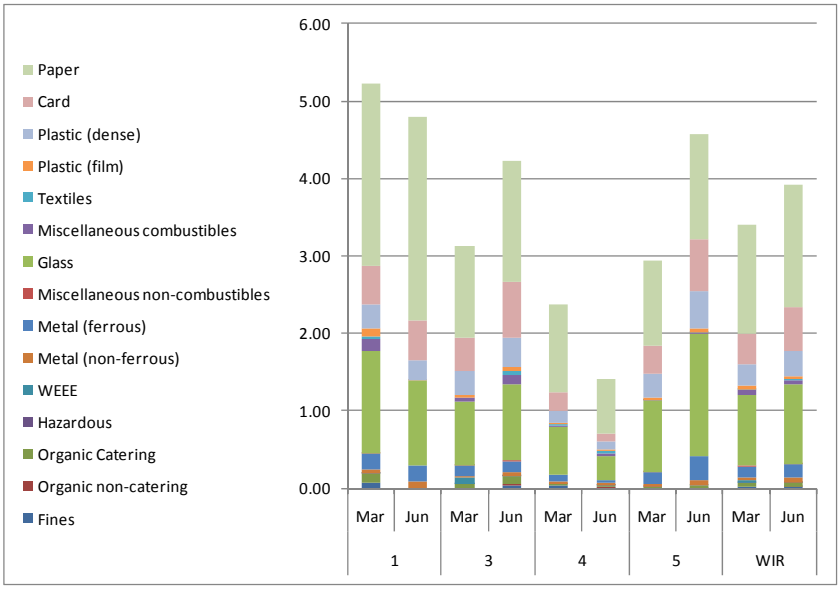

Table 8.8 Wirral Kerbside Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Wirral	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	45.1%	54.8%	37.6%	36.9%	48.0%	49.6%	37.1%	29.4%	41.3%	40.6%
Card	9.7%	10.8%	13.8%	17.2%	9.9%	7.9%	12.5%	14.7%	11.7%	14.3%
Plastic (dense)	5.9%	5.2%	10.0%	9.0%	6.2%	7.4%	10.6%	10.6%	8.3%	8.3%
Plastic (film)	1.9%	0.1%	1.1%	0.9%	1.1%	1.2%	0.8%	1.1%	1.3%	0.7%
Textiles	0.4%	0.0%	0.0%	1.5%	0.4%	2.0%	0.0%	0.1%	0.2%	0.8%
Misc. Combustibles	3.3%	0.0%	2.0%	2.8%	0.9%	3.0%	0.6%	0.3%	2.0%	1.4%
Glass	25.0%	23.0%	26.1%	23.4%	26.5%	21.5%	31.2%	34.8%	26.7%	26.1%
Misc. Non-combustibles	0.2%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%
Metal (ferrous)	3.9%	4.2%	4.5%	3.3%	3.8%	3.0%	5.5%	6.5%	4.4%	4.4%
Metal (non-ferrous)	1.0%	2.0%	0.5%	1.1%	0.9%	1.6%	1.0%	1.5%	0.8%	1.5%
WEEE	0.0%	0.0%	2.5%	0.0%	0.1%	0.5%	0.0%	0.2%	0.9%	0.1%
Hazardous	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
Organic Catering	2.3%	0.0%	1.7%	2.3%	1.1%	1.1%	0.7%	0.5%	1.6%	1.2%
Organic Non-catering	0.0%	0.0%	0.0%	0.3%	0.0%	0.5%	0.0%	0.0%	0.0%	0.1%
Fines	1.3%	0.0%	0.0%	0.9%	1.2%	0.6%	0.0%	0.2%	0.6%	0.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 8.6 Wirral Kerbside Dry Recyclables Arisings (kg/hh/wk), Study Average

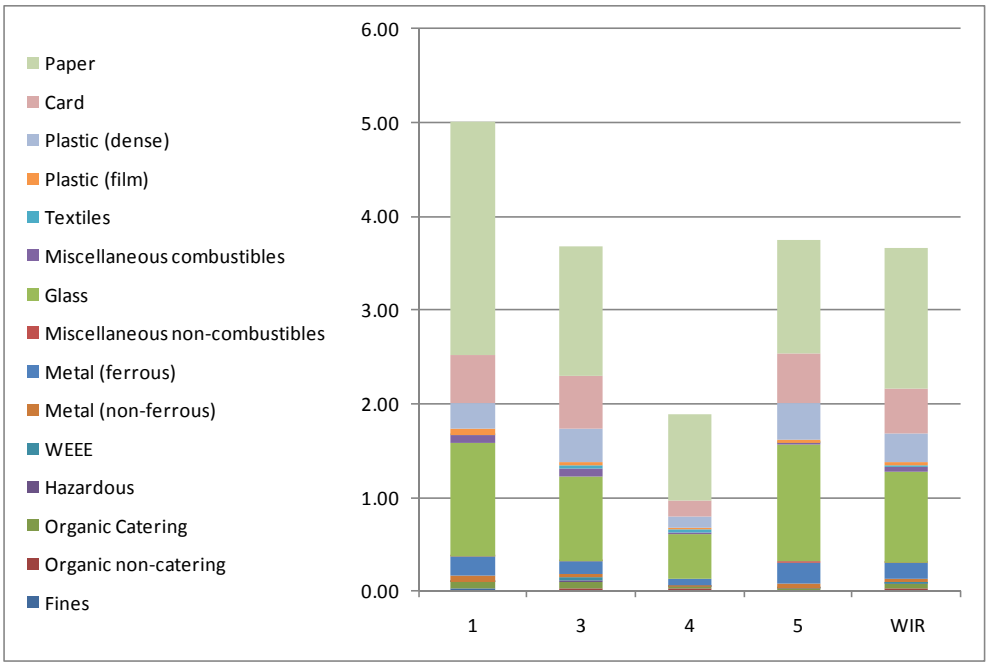

Table 8.9 Wirral Kerbside Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Wirral
Paper	49.7%	37.2%	48.6%	32.4%	40.9%
Card	10.2%	15.7%	9.2%	13.9%	13.1%
Plastic (dense)	5.6%	9.4%	6.6%	10.6%	8.3%
Plastic (film)	1.0%	1.0%	1.1%	1.0%	1.0%
Textiles	0.2%	0.8%	1.0%	0.0%	0.5%
Miscellaneous Combustibles	1.7%	2.4%	1.7%	0.4%	1.7%
Glass	24.0%	24.5%	24.6%	33.4%	26.4%
Miscellaneous Non-combustibles	0.1%	0.2%	0.0%	0.0%	0.1%
Metal (ferrous)	4.0%	3.8%	3.5%	6.1%	4.4%
Metal (non-ferrous)	1.5%	0.8%	1.2%	1.3%	1.2%
WEEE	0.0%	1.1%	0.3%	0.1%	0.5%
Hazardous	0.0%	0.1%	0.0%	0.0%	0.1%
Organic Catering	1.2%	2.1%	1.1%	0.6%	1.4%
Organic Non-catering	0.0%	0.2%	0.2%	0.0%	0.1%
Fines	0.7%	0.5%	1.0%	0.1%	0.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 490 kg of dry recyclables was collected from 45 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average dry recyclables arising per household was 5.01 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 49.7%, glass at 24.0% and card at 10.2%.

ACORN 3 Study Average

A total of 428 kg of dry recyclables was collected from 45 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average dry recyclables arising per household was 3.67 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and card at 37.2%, 24.5% and 15.7% respectively.

ACORN 4 Study Average

A total of 368 kg of dry recyclables was collected from 39 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±16% at a confidence level of 95%.

The average dry recyclables arising per household was 1.89 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 48.6%, glass at 24.6% and card at 9.2%.

ACORN 5 Study Average

A total of 488 kg of dry recyclables was collected from 45 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 3.75 kg/hh/wk. The dominant primary waste categories identified within the sample were glass, paper and card at 33.4%, 32.4% and 13.9% respectively.

Wirral Study Average

A total of 1,773 kg of dry recyclables was collected from 174 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±11% at a confidence level of 95%.

The average dry recyclables arising per household was 3.67 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 40.9%, glass at 26.4% and card at 13.1%.

8.7 Combined Kerbside Waste Streams

8.7.1 Summary Results

During the March 2010 seasonal analysis a total of 188 samples containing 2,879 kg of kerbside waste were collected and analysed from within the District of Wirral.

In June 2010 247 samples containing 3,121 kg of kerbside waste were collected and analysed from within the District of Wirral.

Figure 8.7 and Table 8.10 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

8.7.2 Study Average Results

A total of 435 waste samples containing 6,000 kg of kerbside waste were collected from within the District of Wirral during the March 2010 and June 2010 waste composition exercises.

Figure 8.8 and Table 8.11 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

Figure 8.7 Wirral Combined Kerbside Waste Arisings (kg/hh/wk), March & June 2010

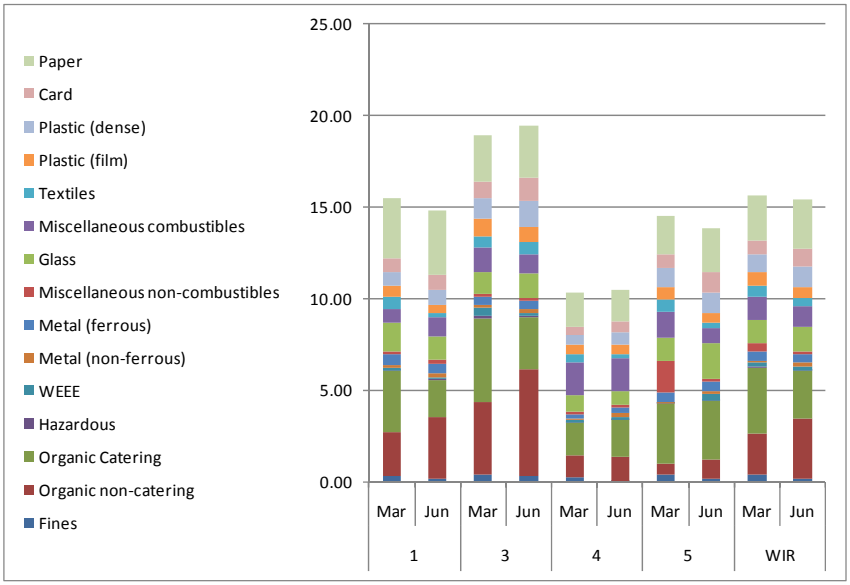

Table 8.10 Wirral Combined Kerbside Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Wirral	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	21.1%	23.8%	13.3%	14.8%	18.4%	16.5%	14.6%	17.1%	15.9%	17.5%
Card	5.0%	5.3%	4.7%	6.4%	4.0%	5.8%	5.1%	8.3%	4.8%	6.6%
Plastic (dense)	5.1%	5.7%	6.0%	7.3%	5.0%	5.8%	7.4%	8.2%	6.0%	7.0%
Plastic (film)	3.7%	2.8%	4.9%	4.4%	5.4%	5.1%	4.4%	3.8%	4.6%	4.1%
Textiles	4.6%	1.8%	3.2%	3.2%	4.5%	2.6%	4.6%	1.8%	4.0%	2.6%
Misc. Combustibles	4.5%	7.0%	7.2%	5.7%	17.3%	16.8%	9.6%	5.9%	8.3%	7.4%
Glass	10.3%	8.2%	6.1%	6.7%	8.5%	7.3%	9.0%	14.2%	7.9%	8.7%
Misc. Non-combustibles	0.7%	1.7%	0.8%	0.8%	1.2%	1.3%	11.8%	0.9%	3.1%	1.1%
Metal (ferrous)	4.0%	3.4%	2.4%	2.3%	2.1%	2.8%	3.3%	3.8%	2.9%	2.9%
Metal (non-ferrous)	1.1%	1.8%	1.0%	1.0%	0.7%	2.0%	0.6%	1.4%	0.9%	1.4%
WEEE	0.6%	0.6%	2.1%	1.1%	1.5%	1.6%	0.1%	2.6%	1.3%	1.3%
Hazardous	0.2%	0.2%	1.0%	0.3%	0.4%	0.1%	0.2%	0.1%	0.6%	0.2%
Organic Catering	21.6%	13.6%	24.2%	14.5%	17.3%	19.4%	22.4%	23.2%	22.6%	16.8%
Organic Non-catering	15.4%	23.2%	20.7%	30.1%	11.1%	12.5%	4.2%	7.7%	14.7%	21.3%
Fines	2.1%	0.8%	2.1%	1.5%	2.5%	0.3%	2.5%	0.9%	2.3%	1.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 8.8 Wirral Combined Kerbside Waste Arisings (kg/hh/wk), Study Average

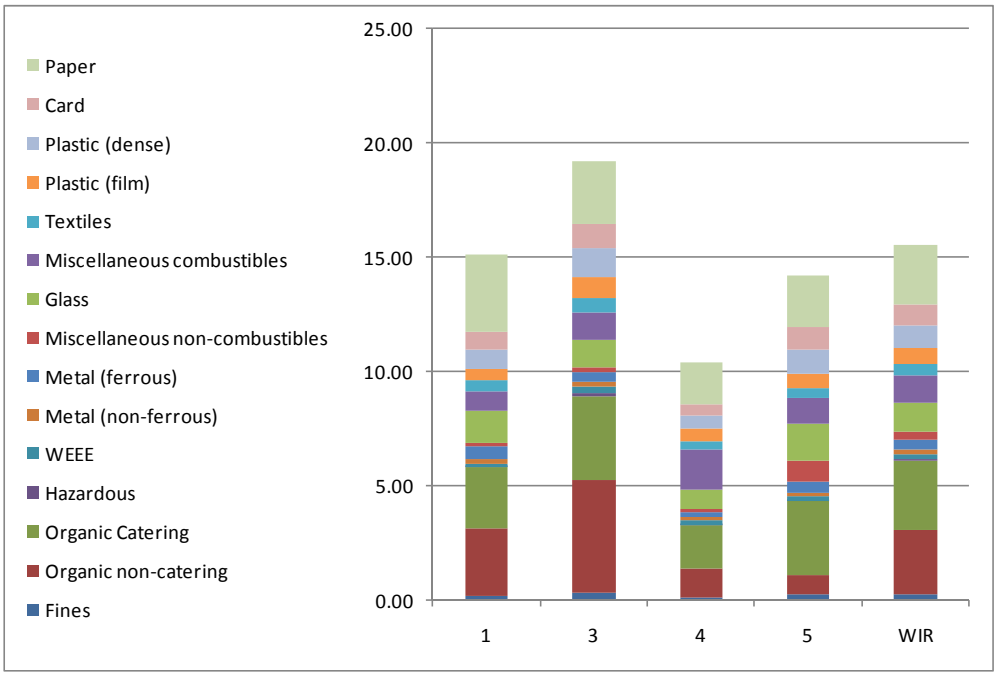

Table 8.11 Wirral Combined Kerbside Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Wirral
Paper	22.5%	14.1%	17.4%	15.8%	16.7%
Card	5.1%	5.6%	4.9%	6.7%	5.7%
Plastic (dense)	5.4%	6.7%	5.4%	7.8%	6.5%
Plastic (film)	3.3%	4.7%	5.3%	4.1%	4.4%
Textiles	3.2%	3.2%	3.5%	3.2%	3.3%
Miscellaneous Combustibles	5.7%	6.4%	17.1%	7.8%	7.9%
Glass	9.3%	6.4%	7.9%	11.5%	8.3%
Miscellaneous Non-combustibles	1.2%	0.8%	1.3%	6.5%	2.1%
Metal (ferrous)	3.7%	2.4%	2.4%	3.5%	2.9%
Metal (non-ferrous)	1.4%	1.0%	1.4%	1.0%	1.2%
WEEE	0.6%	1.6%	1.5%	1.3%	1.3%
Hazardous	0.2%	0.7%	0.2%	0.2%	0.4%
Organic Catering	17.7%	19.2%	18.4%	22.8%	19.7%
Organic Non-catering	19.2%	25.5%	11.8%	5.9%	18.0%
Fines	1.5%	1.8%	1.4%	1.8%	1.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 120 samples containing 1,574 kg of kerbside waste were collected from ACORN 1 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 15.15 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 22.5%, organic non-catering at 19.2% and organic catering at 17.7%.

ACORN 3 Study Average

A total of 105 samples containing 1,679 kg of kerbside waste were collected from ACORN 3 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±9% at a confidence level of 95%.

The average kerbside waste arising per household was 19.18 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering and organic catering and paper at 25.5%, 19.2% and 14.1% respectively.

ACORN 4 Study Average

A total of 99 samples containing 1,184 kg of kerbside waste were collected from ACORN 4 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 10.40 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 18.4%, paper at 17.4% and miscellaneous combustibles at 17.1%.

ACORN 5 Study Average

A total of 111 samples containing 1,562 kg of kerbside waste were collected from ACORN 5 sample households within the District of Wirral providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 14.18 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and glass at 22.8%, 15.8% and 11.5% respectively.

Wirral Study Average

A total of 435 samples containing 6,000 kg of kerbside waste were collected from sample households within the District of Wirral providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average kerbside waste arising per household was 15.53 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 19.7%, organic non-catering at 18.0% and paper at 16.7%.

8.8 Biodegradable Municipal Waste (BMW) Content in Wirral's Kerbside Waste Streams

The BMW content was calculated using the study average results for the Wirral waste streams. Please refer to Section 2.9 for an explanation of how BMW is calculated. The results are presented in Figure 8.9 and Table 8.12.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix E.

Figure 8.9 Arisings (kg/hh/wk) of BMW in Wirral's Kerbside Waste Streams

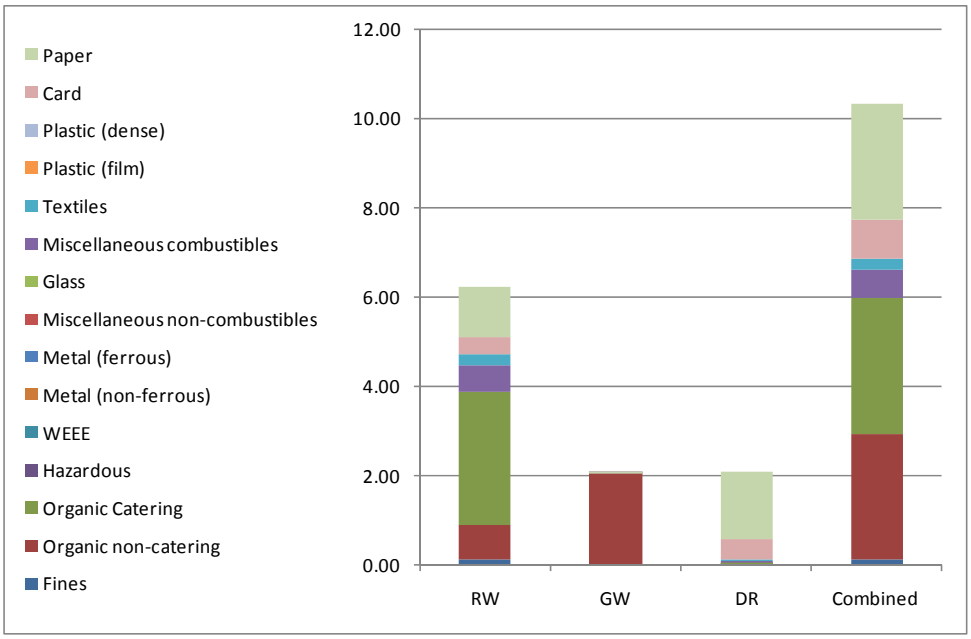

Table 8.12 Proportion (% wt.) of BMW in Wirral's Kerbside Waste Streams

Primary Category	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Combined
Paper	11.2%	0.1%	40.9%	16.7%
Card	4.1%	0.1%	13.1%	5.7%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%
Textiles	2.5%	0.0%	0.2%	1.6%
Miscellaneous Combustibles	5.9%	0.2%	0.8%	3.9%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	30.6%	0.1%	1.4%	19.7%
Organic Non-catering	7.7%	99.5%	0.1%	18.0%
Fines	1.2%	0.0%	0.3%	0.8%
Total	63.2%	99.8%	56.8%	66.5%

8.9 Calorific Value

Entec calculated residual waste CVs based on the study average residual waste composition for Wirral and using reference values for the CV of individual waste materials. A summary of the CV estimated by Entec is presented in Table 8.13 below.

Table 8.13 Wirral Residual Waste Calorific Value

Analyte		Values
Hydrogen	% wt.	3.27
Carbon	% wt.	22.65
Nitrogen	% wt.	0.74
Oxygen	% wt.	14.38
Sulphur	% wt.	0.12
Chlorine	% wt.	0.74
Ash	% wt.	18.60
Moisture	% wt.	39.50
Net CV	MJ/kg	8.15

8.10 Wirral Dry Recyclables Content and Capture

The dry recyclables content and capture was calculated using the study average results for the Wirral waste streams. The results for capture of dry recyclables are shown in Table 8.14 below. Please refer to Appendix A for an explanation of the table layout and content.

Table 8.14 Kerbside Dry Recyclables Content and Capture, Wirral Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
Wirral											
Material sub-category	Arisings (kg/hh/wk)				Assay	Targetable DR		Captured Target DR		Captured Non-Target	
	RW	GW	DR	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	kg/hh/wk	wt.% of Material Fraction	Arisings, kg/hh/wk	wt.% of DR
Newspapers	0.22	0.00	0.76	0.99	6.3%	0.99	6.3%	0.76	77.3%	-	-
Magazines	0.12	0.00	0.38	0.50	3.2%	0.50	3.2%	0.38	76.6%	-	-
Other recyclable paper	0.23	0.00	0.28	0.51	3.3%	0.51	3.3%	0.28	54.5%	-	-
Paper packaging	0.01	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	30.6%	-	-
Non-recyclable paper	0.52	0.00	0.08	0.59	3.8%	-	-	-	-	0.08	2.1%
Subtotal Paper	**1.10**	**0.00**	**1.50**	**2.60**	**16.7%**	**2.00**	**12.9%**	**1.42**	**54.8%**	**0.08**	**2.1%**
Liquid cartons	0.02	0.00	0.01	0.03	0.2%	-	-	-	-	0.01	0.3%
Board packaging	0.10	0.00	0.19	0.29	1.9%	0.29	1.9%	0.19	65.2%	-	-
Card packaging	0.26	0.00	0.25	0.51	3.3%	0.51	3.3%	0.25	48.5%	-	-
Other card	0.02	0.00	0.03	0.05	0.3%	0.05	0.3%	0.03	63.3%	-	-
Subtotal Card	**0.40**	**0.00**	**0.48**	**0.88**	**5.7%**	**0.85**	**5.5%**	**0.47**	**53.0%**	**0.01**	**0.3%**
Plastic Bottles: PET	0.07	0.00	0.10	0.17	1.1%	0.17	1.1%	0.10	58.2%	-	-
PET Coloured	0.02	0.00	0.02	0.04	0.3%	0.04	0.3%	0.02	41.6%	-	-
HDPE	0.05	0.00	0.08	0.13	0.9%	0.13	0.9%	0.08	59.9%	-	-
HDPE Coloured	0.02	0.00	0.02	0.05	0.3%	0.05	0.3%	0.02	51.8%	-	-
Other	0.02	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	14.1%	-	-
Other packaging	0.35	0.00	0.05	0.39	2.5%	-	-	-	-	0.05	1.3%
Other dense plastic	0.17	0.00	0.03	0.21	1.3%	-	-	-	-	0.03	0.9%
Subtotal Dense Plastic	**0.71**	**0.00**	**0.30**	**1.01**	**6.5%**	**0.41**	**2.6%**	**0.22**	**22.0%**	**0.08**	**2.2%**
Packaging film	0.35	0.00	0.02	0.37	2.4%	-	-	-	-	0.02	0.6%
Other plastic film	0.29	0.00	0.01	0.31	2.0%	-	-	-	-	0.01	0.4%
Subtotal Plastic Film	**0.64**	**0.00**	**0.04**	**0.68**	**4.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.04**	**1.0%**
Textiles	0.41	0.00	0.01	0.42	2.7%	-	-	-	-	0.01	0.3%
Shoes	0.08	0.00	0.01	0.09	0.6%	-	-	-	-	0.01	0.2%
Subtotal Textiles	**0.49**	**0.00**	**0.02**	**0.51**	**3.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.5%**
Treated wood	0.12	0.01	0.04	0.16	1.0%	-	-	-	-	0.04	1.0%
Untreated wood	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.1%
Furniture	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	0.90	0.00	0.01	0.91	5.9%	-	-	-	-	0.01	0.2%
Other misc. comb.	0.07	0.00	0.01	0.08	0.5%	-	-	-	-	0.01	0.3%
Carpet and underlay	0.04	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.15**	**0.01**	**0.06**	**1.22**	**7.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.06**	**1.7%**
Glass bottles	0.11	0.00	0.78	0.89	5.7%	0.89	5.7%	0.78	87.7%	-	-
Glass jars	0.18	0.00	0.18	0.36	2.3%	0.36	2.3%	0.18	50.2%	-	-
Other glass	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.1%
Subtotal Glass	**0.32**	**0.00**	**0.97**	**1.29**	**8.3%**	**1.25**	**8.1%**	**0.96**	**75.0%**	**0.00**	**0.1%**
Construction and demolition	0.24	0.00	0.00	0.25	1.6%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.1%
Subtotal Misc.Non-Comb	**0.32**	**0.00**	**0.00**	**0.33**	**2.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Ferrous food cans	0.14	0.00	0.13	0.27	1.7%	0.27	1.7%	0.13	47.5%	-	-
Ferrous beverage cans	0.03	0.00	0.02	0.05	0.3%	0.05	0.3%	0.02	48.8%	-	-
Ferrous aerosols	0.02	0.00	0.00	0.02	0.2%	0.02	0.2%	0.00	20.0%	-	-
Other ferrous metal	0.11	0.00	0.00	0.11	0.7%	-	-	-	-	0.00	0.1%
Subtotal Ferrous Metals	**0.29**	**0.00**	**0.16**	**0.45**	**2.9%**	**0.34**	**2.2%**	**0.16**	**34.6%**	**0.00**	**0.1%**
Non-ferrous food cans	0.00	0.00	0.00	0.01	0.0%	0.01	0.0%	0.00	29.9%	-	-
Non-ferrous beverage cans	0.06	0.00	0.03	0.09	0.6%	0.09	0.6%	0.03	37.3%	-	-
Non-ferrous aerosols	0.01	0.00	0.00	0.01	0.1%	0.01	0.1%	0.00	23.6%	-	-
Other non-ferrous metal	0.06	0.00	0.00	0.07	0.4%	-	-	-	-	0.00	0.1%
Subtotal Non-Ferr Metals	**0.14**	**0.00**	**0.04**	**0.18**	**1.2%**	**0.11**	**0.7%**	**0.04**	**22.2%**	**0.00**	**0.1%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.1%
IT & Telecoms Equip.	0.01	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.02	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Lighting	0.01	0.00	0.01	0.02	0.1%	-	-	-	-	0.01	0.3%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.04	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.19**	**0.00**	**0.02**	**0.20**	**1.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.5%**
Household batteries	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.02	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.06**	**0.00**	**0.00**	**0.06**	**0.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Home Compostable food	1.03	0.00	0.03	1.06	6.8%	-	-	-	-	0.03	0.7%
Unused home compostable food	0.44	0.00	0.00	0.44	2.9%	-	-	-	-	0.00	0.1%
Non-home compostable food	1.01	0.00	0.02	1.04	6.7%	-	-	-	-	0.02	0.6%
Unused non-home compostable food	0.52	0.00	0.00	0.52	3.3%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**3.01**	**0.00**	**0.05**	**3.06**	**19.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.05**	**1.4%**
Garden	0.26	1.86	0.00	2.13	13.7%	-	-	-	-	0.00	0.1%
Soil	0.04	0.01	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Other organic	0.46	0.16	0.00	0.63	4.0%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.76**	**2.04**	**0.00**	**2.80**	**18.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Material less than 10mm	0.24	0.00	0.02	0.26	1.7%	-	-	-	-	0.02	0.5%
Subtotal Fines	**0.24**	**0.00**	**0.02**	**0.26**	**1.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.5%**
Totals	**9.82**	**2.05**	**3.67**	**15.53**	**100.0%**	**4.97**	**32.0%**	**3.27**	**65.9%**	**0.39**	**10.7%**

8.11 Wirral Organic Material Content and Capture

The organic material content and capture was calculated using the study average results for the Wirral waste streams. The results for capture of organic material (garden and kitchen waste) are shown in Table 8.15 below. Please refer to Appendix B for an explanation of the table layout and content.

Table 8.15 Kerbside Organic Material Content and Capture, Wirral Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
Wirral											
Material sub-category	kg/hh/wk				Assay	Targetable Bio Waste		Captured Target Bio Waste		Non-Target Materials in Bio Waste	
	RW	GW	DR	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	GW kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% Bio Waste
Newspapers	0.22	0.00	0.76	0.99	6.3%	-	-	-	-	0.00	0.0%
Magazines	0.12	0.00	0.38	0.50	3.2%	-	-	-	-	0.00	0.0%
Other recyclable paper	0.23	0.00	0.28	0.51	3.3%	-	-	-	-	0.00	0.0%
Paper packaging	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Non-recyclable paper	0.52	0.00	0.08	0.59	3.8%	-	-	-	-	0.00	0.0%
Subtotal Paper	**1.10**	**0.00**	**1.50**	**2.60**	**16.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Liquid cartons	0.02	0.00	0.01	0.03	0.2%	-	-	-	-	0.00	0.0%
Board packaging	0.10	0.00	0.19	0.29	1.9%	-	-	-	-	0.00	0.0%
Card packaging	0.26	0.00	0.25	0.51	3.3%	-	-	-	-	0.00	0.1%
Other card	0.02	0.00	0.03	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Card	**0.40**	**0.00**	**0.48**	**0.88**	**5.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Plastic Bottles: PET	0.07	0.00	0.10	0.17	1.1%	-	-	-	-	0.00	0.0%
PET Coloured	0.02	0.00	0.02	0.04	0.3%	-	-	-	-	0.00	0.0%
HDPE	0.05	0.00	0.08	0.13	0.9%	-	-	-	-	0.00	0.0%
HDPE Coloured	0.02	0.00	0.02	0.05	0.3%	-	-	-	-	0.00	0.0%
Other	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other packaging	0.35	0.00	0.05	0.39	2.5%	-	-	-	-	0.00	0.0%
Other dense plastic	0.17	0.00	0.03	0.21	1.3%	-	-	-	-	0.00	0.0%
Subtotal Dense Plastic	**0.71**	**0.00**	**0.30**	**1.01**	**6.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Packaging film	0.35	0.00	0.02	0.37	2.4%	-	-	-	-	0.00	0.0%
Other plastic film	0.29	0.00	0.01	0.31	2.0%	-	-	-	-	0.00	0.0%
Subtotal Plastic Film	**0.64**	**0.00**	**0.04**	**0.68**	**4.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Textiles	0.41	0.00	0.01	0.42	2.7%	-	-	-	-	0.00	0.0%
Shoes	0.08	0.00	0.01	0.09	0.6%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.49**	**0.00**	**0.02**	**0.51**	**3.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Treated wood	0.12	0.01	0.04	0.16	1.0%	-	-	-	-	0.01	0.3%
Untreated wood	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	0.90	0.00	0.01	0.91	5.9%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.07	0.00	0.01	0.08	0.5%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.04	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.15**	**0.01**	**0.06**	**1.22**	**7.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Glass bottles	0.11	0.00	0.78	0.89	5.7%	-	-	-	-	0.00	0.0%
Glass jars	0.18	0.00	0.18	0.36	2.3%	-	-	-	-	0.00	0.0%
Other glass	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.32**	**0.00**	**0.97**	**1.29**	**8.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Construction and demolition	0.24	0.00	0.00	0.25	1.6%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.32**	**0.00**	**0.00**	**0.33**	**2.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.14	0.00	0.13	0.27	1.7%	-	-	-	-	0.00	0.0%
Ferrous beverage cans	0.03	0.00	0.02	0.05	0.3%	-	-	-	-	0.00	0.0%
Ferrous aerosols	0.02	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
Other ferrous metal	0.11	0.00	0.00	0.11	0.7%	-	-	-	-	0.00	0.0%
Subtotal Ferrous Metals	**0.29**	**0.00**	**0.16**	**0.45**	**2.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Non-ferrous food cans	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Non-ferrous beverage cans	0.06	0.00	0.03	0.09	0.6%	-	-	-	-	0.00	0.0%
Non-ferrous aerosols	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Other non-ferrous metal	0.06	0.00	0.00	0.07	0.4%	-	-	-	-	0.00	0.0%
Subtotal Non-Ferr Metals	**0.14**	**0.00**	**0.04**	**0.18**	**1.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.01	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.02	0.00	0.00	0.02	0.2%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Lighting	0.01	0.00	0.01	0.02	0.1%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.04	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.19**	**0.00**	**0.02**	**0.20**	**1.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.02	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.06**	**0.00**	**0.00**	**0.06**	**0.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.03	0.00	0.03	1.06	6.8%	-	-	-	-	0.00	0.1%
Unused home compostable food	0.44	0.00	0.00	0.44	2.9%	-	-	-	-	0.00	0.0%
Non-home compostable food	1.01	0.00	0.02	1.04	6.7%	-	-	-	-	0.00	0.0%
Unused non-home compostable food	0.52	0.00	0.00	0.52	3.3%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**3.01**	**0.00**	**0.05**	**3.06**	**19.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Garden	0.26	1.86	0.00	2.13	13.7%	2.13	13.7%	1.86	87.6%	-	-
Soil	0.04	0.01	0.00	0.04	0.3%	0.04	0.3%	0.01	18.9%	-	-
Other organic	0.46	0.16	0.00	0.63	4.0%	-	-	-	-	0.16	8.0%
Subtotal Org.Non Catering	**0.76**	**2.04**	**0.00**	**2.80**	**18.0%**	**2.17**	**14.0%**	**1.87**	**66.9%**	**0.16**	**8.0%**
Material less than 10mm	0.24	0.00	0.02	0.26	1.7%	-	-	-	-	0.00	0.0%
Subtotal Fines	**0.24**	**0.00**	**0.02**	**0.26**	**1.7%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Totals	**9.82**	**2.05**	**3.67**	**15.53**	**100.0%**	**2.17**	**14.0%**	**1.87**	**86.2%**	**0.18**	**8.6%**

8.12 Conclusion

Figure 8.10 and Table 8.16 present the final modelled waste composition arisings and assay data for the District of Wirral.

Wirral's average residual waste arisings were 9.82 kg/hh/wk. Overall there were higher arisings of residual waste during March 2010 (10.79 kg/hh/wk) in comparison with the June 2010 study (8.84 kg/hh/wk). The most prominent materials were organic catering waste at 30.6% (3.01 kg/hh/wk), miscellaneous combustibles at 11.8% (1.15 kg/hh/wk) and paper at 11.2% (1.10 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the residual waste stream was determined to be 63.2%. The calorific value of the residual waste was calculated to be 8.15 MJ/kg.

Average arisings of garden waste in Wirral were 2.05 kg/hh/wk. Overall there was higher arisings of garden waste during the June 2010 study (2.67 kg/hh/wk) in comparison to March 2010 (1.42 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. The most prominent material was organic non-catering at 99.5%. The composition of this waste stream showed a similar pattern in each season. The kerbside organic material capture was 86.2% of targeted material. Non-target materials constituted 8.6% of the organic stream. The biodegradable municipal waste (BMW) content of the garden waste stream was calculated to be 99.8%.

Wirral's average dry recyclables arisings were 3.67 kg/hh/wk. Overall there were higher arisings of dry recyclables during June 2010 (3.93 kg/hh/wk) in comparison with the March 2010 study (3.41 kg/hh/wk). The most prominent materials were paper at 40.9% (1.50 kg/hh/wk) and glass at 26.4% (0.97 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The kerbside dry recyclables material capture was 65.9% of targeted material. Non-target materials constituted 10.7% of the dry recyclables stream. The biodegradable municipal waste (BMW) content of the dry recyclables stream was calculated to be 56.8%.

The modelled arisings for the combined kerbside waste streams were 15.53 kg/hh/wk. Overall there were higher arisings of kerbside waste during March 2010 (15.62 kg/hh/wk) in comparison with the June 2010 study (15.44 kg/hh/wk). The most prominent materials were organic catering waste at 19.7% (3.06 kg/hh/wk), organic non-catering at 18.0% (2.80 kg/hh/wk) and paper at 16.7% (2.60 kg/hh/wk). The composition of this waste stream varied in each season. In March 2010 organic catering was the most prominent category at 22.6% (3.53 kg/hh/wk) and organic non-catering was third most prominent category at 14.7% (2.30 kg/hh/wk). In June 2010 organic non-catering was the most prominent category at 21.3% (3.29 kg/hh/wk) and organic catering was third most prominent category at 16.8%(2.59 kg/hh/wk). Paper remained second most prominent category in both seasons. The biodegradable municipal waste (BMW) content of the combined kerbside waste stream was calculated to be 66.5%.

Figure 8.10 Wirral Waste Arisings (kg/hh/wk), Study Average

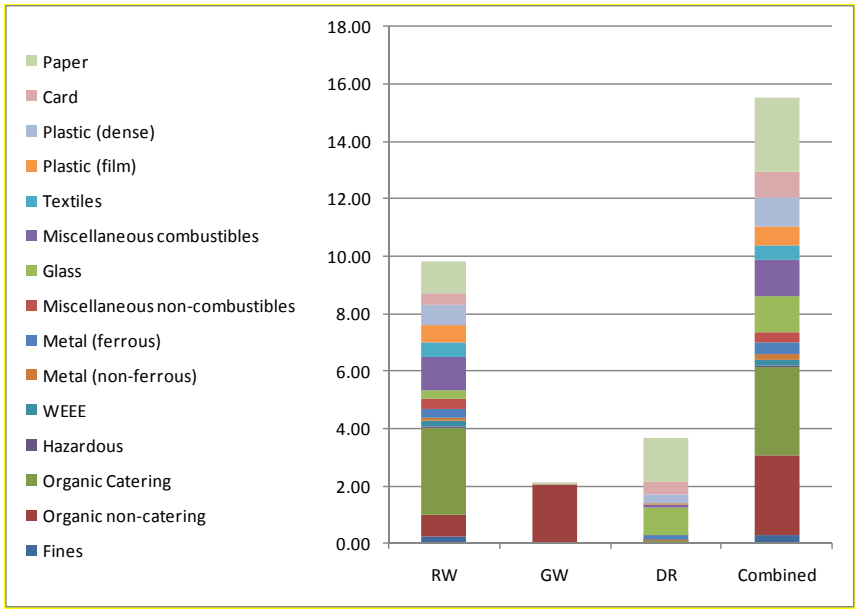

Table 8.16 Wirral Waste Assay (% wt.), Study Average

Primary Category	Residual Waste	Garden Waste	Dry Recyclables	Combined
Paper	11.2%	0.1%	40.9%	16.7%
Card	4.1%	0.1%	13.1%	5.7%
Plastic (dense)	7.2%	0.0%	8.3%	6.5%
Plastic (film)	6.5%	0.0%	1.0%	4.4%
Textiles	5.0%	0.0%	0.5%	3.3%
Miscellaneous Combustibles	11.8%	0.3%	1.7%	7.9%
Glass	3.2%	0.0%	26.4%	8.3%
Miscellaneous Non-combustibles	3.3%	0.0%	0.1%	2.1%
Metal (ferrous)	3.0%	0.0%	4.4%	2.9%
Metal (non-ferrous)	1.4%	0.0%	1.2%	1.2%
WEEE	1.9%	0.0%	0.5%	1.3%
Hazardous	0.6%	0.0%	0.1%	0.4%
Organic Catering	30.6%	0.1%	1.4%	19.7%
Organic Non-catering	7.7%	99.5%	0.1%	18.0%
Fines	2.5%	0.0%	0.5%	1.7%
Total	100.0%	100.0%	100.0%	100.0%

9. Halton Kerbside Household Waste Composition Results

9.1 Introduction

This chapter looks at kerbside residual, recyclable and organic household waste collected within the District of Halton. Table 9.1 summarises the kerbside schemes operated in Halton.

Table 9.1 Kerbside Household Waste Collection Schemes in Halton, Collection Frequency and Receptacle Type

District	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Food Waste (FW)
Halton	Weekly	Fortnightly	Fortnightly	n/a
	Wheeled bin	Wheeled bin	Wheeled bin	n/a

9.2 Halton Sample Profile

Entec's sample design is based upon stratified sampling of the prominent ACORN categories in each District. District waste arisings are modelled using the sample data obtained for each strata and combining it in proportion to the District's sample profile (Table 9.2).

Table 9.2 Wirral Sample Profile

District	ACORN Category	Households in ACORN Category (%)	Sample Profile
Halton	1	17.6	17.8
	3	25.4	25.6
	4	18.9	19.1
	5	37.2	37.5
	Total	99.2	100.0

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

9.3 Set Out

Table 9.3 presents the set out rates for March and June 2010 of kerbside collected services in Halton.

Table 9.3 Halton Set Out Rates

ACORN	Garden Waste		Dry Recyclables	
	March	June	March	June
1	30.8%	54.2%	92.3%	85.4%
3	33.3%	67.7%	85.7%	66.7%
4	18.8%	16.5%	59.6%	55.3%
5	17.0%	40.9%	26.1%	26.1%

Note: 100% set out assumed for residual waste

9.4 Residual Waste

9.4.1 Summary Results

During the March 2010 analysis a total of 1,260 kg of residual waste was collected and analysed from 95 sample households within the District of Halton.

In June 2010 1,161 kg of residual waste was collected and analysed from 95 sample households within the District of Halton.

Figure 9.1 and Table 9.4 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

9.4.2 Study Average Results

A total of 2,421 kg of residual waste was collected and analysed from 190 sample households within the District of Halton during the March 2010 and June 2010 waste composition exercises.

Figure 9.2 and Table 9.5 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

Figure 9.1 Halton Kerbside Residual Waste Arisings (kg/hh/wk), March & June 2010

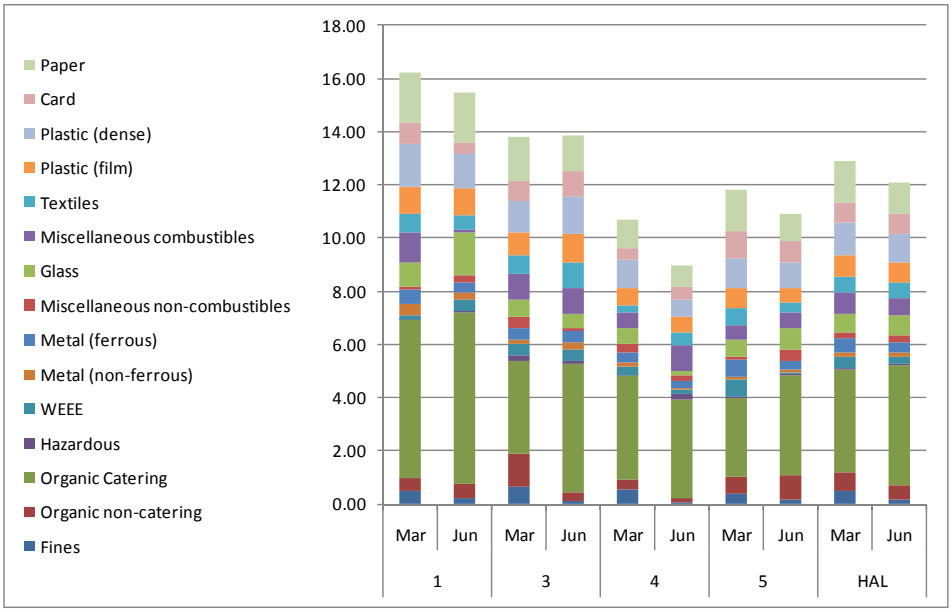

Table 9.4 Halton Kerbside Residual Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Halton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	11.4%	12.3%	12.1%	9.6%	10.3%	8.9%	13.3%	9.4%	12.1%	10.1%
Card	5.0%	2.7%	5.3%	7.0%	4.1%	5.1%	8.3%	7.7%	6.1%	6.0%
Plastic (dense)	10.1%	8.5%	8.7%	10.2%	9.8%	7.6%	9.8%	8.8%	9.6%	9.0%
Plastic (film)	6.3%	6.5%	6.0%	7.6%	6.2%	6.3%	6.2%	5.0%	6.2%	6.3%
Textiles	4.2%	3.4%	5.2%	6.9%	2.5%	5.2%	5.4%	3.2%	4.6%	4.6%
Misc. Combustibles	7.0%	0.8%	6.9%	7.2%	5.6%	11.0%	4.9%	5.5%	6.0%	5.7%
Glass	5.5%	10.4%	4.9%	3.6%	5.4%	1.9%	5.5%	7.2%	5.3%	6.1%
Misc. Non-combustibles	0.8%	1.7%	3.0%	1.0%	3.2%	2.3%	0.7%	3.7%	1.8%	2.2%
Metal (ferrous)	3.3%	2.5%	3.0%	2.8%	3.4%	3.0%	5.7%	3.0%	4.1%	2.9%
Metal (non-ferrous)	2.7%	1.6%	1.3%	2.1%	1.3%	0.8%	0.9%	1.1%	1.5%	1.5%
WEEE	0.8%	2.8%	3.2%	3.1%	2.8%	1.8%	5.3%	0.4%	3.4%	1.9%
Hazardous	0.2%	0.2%	1.3%	0.6%	0.2%	2.4%	0.3%	0.4%	0.5%	0.7%
Organic Catering	36.7%	41.8%	25.3%	35.1%	36.7%	41.2%	25.1%	34.5%	29.6%	37.3%
Organic Non-catering	3.0%	3.4%	9.1%	2.2%	3.2%	1.7%	5.2%	8.5%	5.4%	4.5%
Fines	2.9%	1.5%	4.7%	1.0%	5.2%	0.7%	3.4%	1.4%	3.9%	1.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 9.2 Halton Kerbside Residual Waste Arisings (kg/hh/wk), Study Average

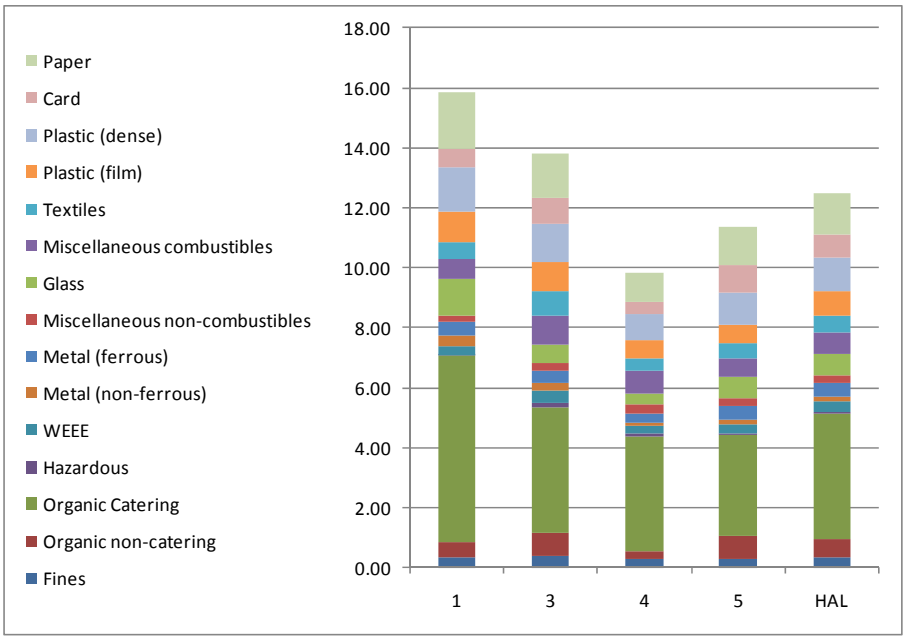

Table 9.5 Halton Kerbside Residual Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Halton
	% wt.	% wt.	% wt.	% wt.	% wt.
Paper	11.8%	10.8%	9.7%	11.4%	11.1%
Card	3.9%	6.2%	4.6%	8.0%	6.0%
Plastic (dense)	9.3%	9.4%	8.8%	9.3%	9.3%
Plastic (film)	6.4%	6.8%	6.2%	5.7%	6.2%
Textiles	3.8%	6.0%	3.7%	4.4%	4.6%
Miscellaneous Combustibles	4.0%	7.0%	8.1%	5.2%	5.9%
Glass	7.9%	4.3%	3.8%	6.3%	5.7%
Miscellaneous Non-combustibles	1.2%	2.0%	2.8%	2.2%	2.0%
Metal (ferrous)	2.9%	2.9%	3.2%	4.4%	3.5%
Metal (non-ferrous)	2.2%	1.7%	1.1%	1.0%	1.5%
WEEE	1.8%	3.2%	2.4%	3.0%	2.7%
Hazardous	0.2%	1.0%	1.2%	0.3%	0.6%
Organic Catering	39.2%	30.2%	38.8%	29.6%	33.3%
Organic Non-catering	3.2%	5.6%	2.5%	6.8%	5.0%
Fines	2.2%	2.8%	3.2%	2.5%	2.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 792 kg of residual waste was collected from 49 sample households within the District of Halton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 15.84 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 39.2%, paper at 11.8% and dense plastic at 9.3%.

ACORN 3 Study Average

A total of 622 kg of residual waste was collected from 44 sample households within the District of Halton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 13.82 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and dense plastic at 30.2%, 10.8% and 9.4% respectively.

ACORN 4 Study Average

A total of 482 kg of residual waste was collected from 50 sample households within the District of Halton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average residual waste arising per household was 9.83 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 38.8%, paper at 9.7% and dense plastic at 8.8%.

ACORN 5 Study Average

A total of 525 kg of residual waste was collected from 50 sample households within the District of Halton providing a result precision (Confidence Interval) of ±13% at a confidence level of 95%.

The average residual waste arising per household was 11.37 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, paper and dense plastic at 29.6%, 11.4% and 9.3% respectively.

Halton Study Average

A total of 2,421 kg of residual waste was collected from 190 sample households within the District of Halton providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average residual waste arising per household was 12.50 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 33.3%, paper at 11.1% and dense plastic at 9.3%.

9.5 Garden Waste

9.5.1 Summary Results

During the March 2010 analysis a total of 834 kg of garden waste was collected and analysed from 52 sample households within the District of Halton.

In June 2010 1,308 kg of garden waste was collected and analysed from 79 sample households within the District of Halton.

Figure 9.3 and Table 9.6 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

9.5.2 Study Average Results

A total of 2,142 kg of garden waste was collected and analysed from 131 sample households within the District of Halton during the March 2010 and June 2010 waste composition exercises.

Figure 9.4 and Table 9.7 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

Figure 9.3 Halton Kerbside Garden Waste Arisings (kg/hh/wk), March & June 2010

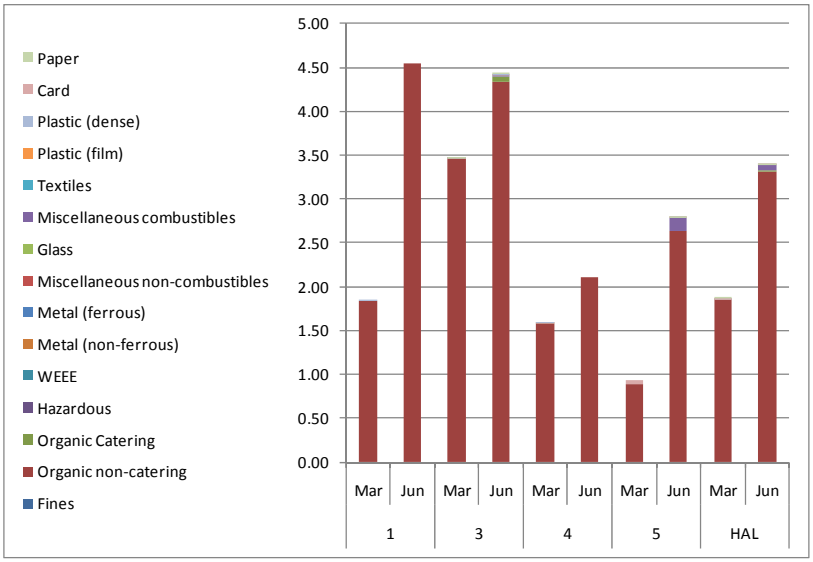

Table 9.6 Halton Kerbside Garden Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Halton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	0.0%	0.9%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	0.0%	0.1%	0.0%	0.2%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	5.3%	0.0%	1.7%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%
Organic Non-catering	100.0%	100.0%	99.9%	97.8%	99.9%	100.0%	95.4%	94.6%	99.0%	97.6%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 9.4 Halton Kerbside Garden Waste Arisings (kg/hh/wk), Study Average

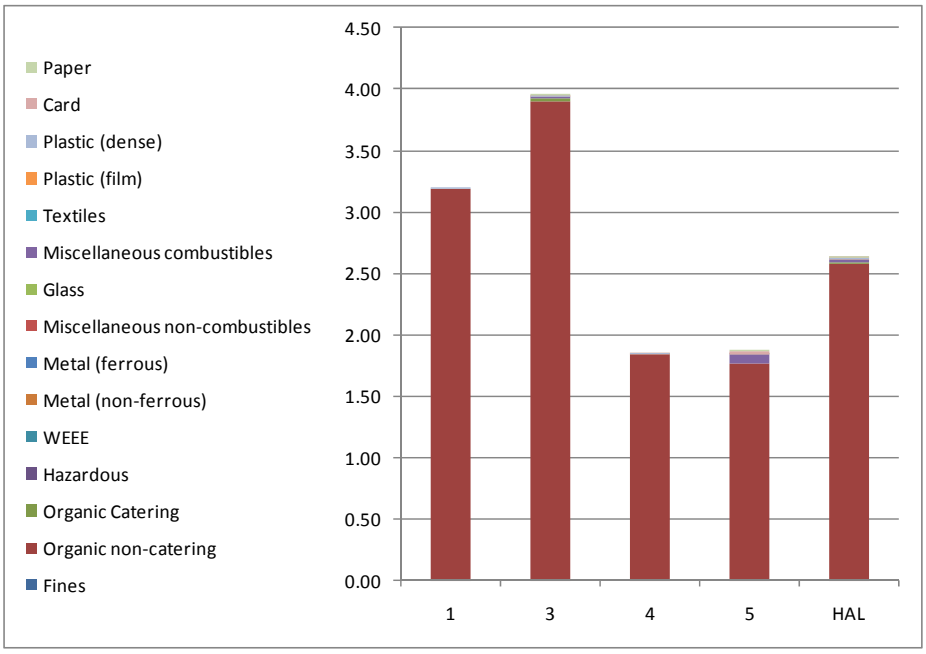

Table 9.7 Halton Kerbside Garden Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Halton
Paper	0.0%	0.0%	0.0%	0.0%	0.0%
Card	0.0%	0.0%	0.0%	1.2%	0.3%
Plastic (dense)	0.0%	0.3%	0.0%	0.1%	0.1%
Plastic (film)	0.0%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Combustibles	0.0%	0.1%	0.0%	4.0%	1.1%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.9%	0.0%	0.0%	0.4%
Organic Non-catering	100.0%	98.7%	99.9%	94.8%	98.1%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 564 kg of garden waste was collected from 37 sample households within the District of Halton providing a result precision (Confidence Interval) of ±9% at a confidence level of 95%.

The average garden waste arising per household was 3.19 kg/hh/wk. The dominant primary waste category was organic non-catering at 100.0%.

ACORN 3 Study Average

A total of 659 kg of garden waste was collected from 41 sample households within the District of Halton providing a result precision (Confidence Interval) of ±9% at a confidence level of 95%.

The average garden waste arising per household was 3.94 kg/hh/wk. The dominant primary waste category was organic non-catering at 98.7%. A small amount of organic catering, dense plastic and miscellaneous combustible material was present equating to 0.9%, 0.3% and 0.1% respectively of the total sample weight.

ACORN 4 Study Average

A total of 627 kg of garden waste was collected from 30 sample households within the District of Halton providing a result precision (Confidence Interval) of ±11% at a confidence level of 95%.

The average garden waste arising per household was 1.84 kg/hh/wk. The dominant primary waste category was organic non-catering at 99.9%.

ACORN 5 Study Average

A total of 293 kg of garden waste was collected from 23 sample households within the District of Halton providing a result precision (Confidence Interval) of ±18% at a confidence level of 95%.

The average garden waste arising per household was 1.86 kg/hh/wk. The dominant primary waste categories were organic non-catering at 94.8%, miscellaneous combustibles at 4.0% and card at 1.2%.

Halton Study Average

A total of 2,142 kg of garden waste was collected from 131 sample households within the District of Halton providing a result precision (Confidence Interval) of ±6% at a confidence level of 95%.

The average garden waste arising per household was 2.63 kg/hh/wk. The dominant primary waste categories were organic non-catering at 98.1%, miscellaneous combustibles at 1.1%, organic catering at 0.4% and card at 0.3%.

9.6 Dry Recyclables

9.6.1 Summary Results

During the March 2010 analysis a total of 1,058 kg of dry recyclables was collected and analysed from 98 sample households within the District of Halton.

In June 2010 884 kg of garden waste was collected and analysed from 95 sample households within the District of Halton.

Figure 9.5 and Table 9.8 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

9.6.2 Study Average Results

A total of 1,942 kg of dry recyclables was collected and analysed from 193 sample households within the District of Halton during the March 2010 and June 2010 waste composition exercises.

Figure 9.6 and Table 9.9 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

Figure 9.5 Halton Kerbside Dry Recyclables Arisings (kg/hh/wk), March & June 2010

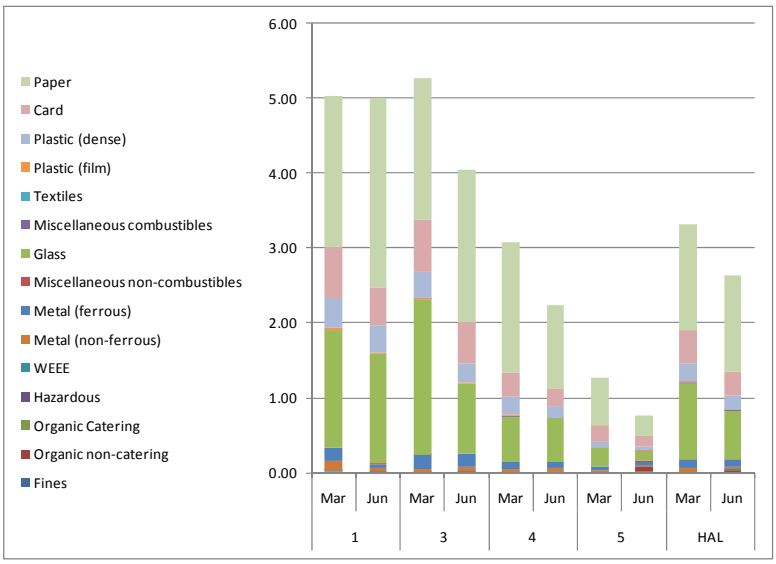

Table 9.8 Halton Kerbside Dry Recyclables Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Halton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	40.0%	50.4%	35.8%	50.1%	56.5%	49.6%	50.1%	36.2%	42.6%	48.6%
Card	13.7%	10.1%	13.3%	13.9%	10.5%	10.5%	16.9%	17.2%	13.4%	12.4%
Plastic (dense)	8.0%	7.4%	6.6%	6.3%	7.8%	7.0%	6.7%	7.9%	7.2%	6.9%
Plastic (film)	0.5%	0.4%	0.3%	0.2%	0.5%	0.5%	0.5%	0.8%	0.4%	0.4%
Textiles	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.8%	0.1%	0.1%
Glass	31.2%	29.1%	39.4%	23.2%	19.1%	25.9%	19.2%	16.8%	30.7%	24.9%
Misc. Non-combustibles	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.9%	0.1%	0.2%
Metal (ferrous)	3.3%	1.1%	3.4%	4.5%	3.3%	3.6%	4.6%	6.8%	3.5%	3.5%
Metal (non-ferrous)	2.6%	0.9%	1.0%	1.4%	1.6%	2.0%	1.8%	1.6%	1.6%	1.4%
WEEE	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.1%	0.0%	0.1%	0.2%	0.0%	0.6%	0.3%	0.9%	0.1%	0.3%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.6%	0.0%	0.9%
Fines	0.4%	0.1%	0.0%	0.0%	0.0%	0.3%	0.0%	1.2%	0.1%	0.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 9.6 Halton Kerbside Dry Recyclables Arisings (kg/hh/wk), Study Average

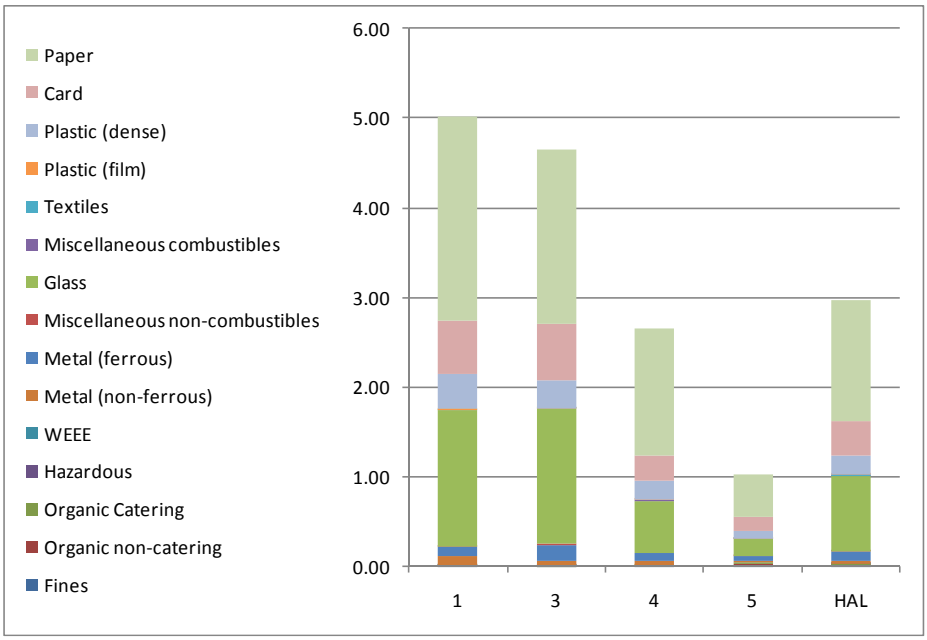

Table 9.9 Halton Kerbside Dry Recyclables Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Halton
Paper	45.2%	42.0%	53.6%	44.8%	45.3%
Card	11.9%	13.6%	10.5%	17.0%	13.0%
Plastic (dense)	7.7%	6.4%	7.5%	7.2%	7.1%
Plastic (film)	0.4%	0.3%	0.5%	0.6%	0.4%
Textiles	0.1%	0.0%	0.0%	0.1%	0.0%
Miscellaneous Combustibles	0.0%	0.0%	0.4%	0.3%	0.1%
Glass	30.1%	32.4%	21.9%	18.3%	28.1%
Miscellaneous Non-combustibles	0.2%	0.1%	0.0%	0.3%	0.1%
Metal (ferrous)	2.2%	3.8%	3.4%	5.4%	3.5%
Metal (non-ferrous)	1.8%	1.2%	1.8%	1.7%	1.5%
WEEE	0.0%	0.1%	0.0%	0.0%	0.1%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.1%	0.1%	0.3%	0.5%	0.2%
Organic Non-catering	0.0%	0.0%	0.0%	3.2%	0.4%
Fines	0.3%	0.0%	0.1%	0.5%	0.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 587 kg of dry recyclables was collected from 49 sample households within the District of Halton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 5.01 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 45.2%, glass at 30.1% and card at 11.9%.

ACORN 3 Study Average

A total of 537 kg of dry recyclables was collected from 44 sample households within the District of Halton providing a result precision (Confidence Interval) of ±15% at a confidence level of 95%.

The average dry recyclables arising per household was 4.65 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and card at 42.0%, 32.4% and 13.6% respectively.

ACORN 4 Study Average

A total of 427 kg of dry recyclables was collected from 50 sample households within the District of Halton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 2.66 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 53.6%, glass at 21.9% and card at 10.5%.

ACORN 5 Study Average

A total of 391 kg of dry recyclables was collected from 50 sample households within the District of Halton providing a result precision (Confidence Interval) of ±14% at a confidence level of 95%.

The average dry recyclables arising per household was 1.02 kg/hh/wk. The dominant primary waste categories identified within the sample were paper, glass and card at 44.8%, 18.3% and 17.0% respectively.

Halton Study Average

A total of 1,942 kg of dry recyclables was collected from 193 sample households within the District of Halton providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average dry recyclables arising per household was 2.98 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 45.3%, glass at 28.1% and card at 13.0%.

9.7 Combined Kerbside Waste Streams

9.7.1 Summary Results

During the March 2010 analysis a total of 245 samples containing 3,152 kg of kerbside waste were collected and analysed from within the District of Halton.

In June 2010 269 samples containing 3,352 kg of kerbside waste were collected and analysed from within the District of Halton.

Figure 9.7 and Table 9.10 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

9.7.2 Study Average Results

A total of 514 waste samples containing 6,504 kg of kerbside waste were collected from within the District of Halton during the March 2010 and June 2010 waste composition exercises.

Figure 9.8 and Table 9.11 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

Figure 9.7 Halton Combined Kerbside Waste Arisings (kg/hh/wk), March & June 2010

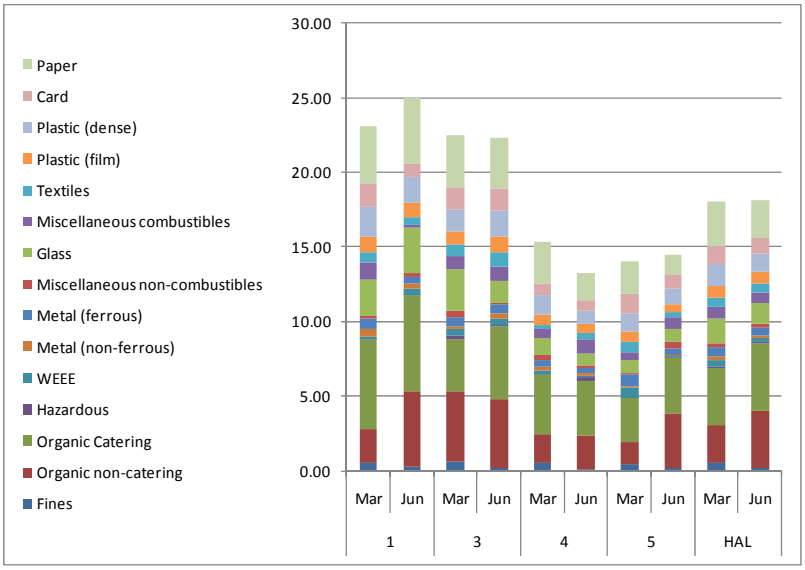

Table 9.10 Halton Combined Kerbside Waste Assay (% wt.), March & June 2010

Primary Category	ACORN 1		ACORN 3		ACORN 4		ACORN 5		Halton	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	16.7%	17.7%	15.8%	15.0%	18.5%	14.4%	15.7%	9.0%	16.4%	13.8%
Card	6.5%	3.7%	6.4%	6.9%	5.0%	5.2%	8.8%	6.7%	6.9%	5.8%
Plastic (dense)	8.9%	6.7%	6.9%	7.5%	8.4%	6.3%	8.8%	7.1%	8.1%	7.0%
Plastic (film)	4.6%	4.1%	3.8%	4.8%	4.4%	4.3%	5.3%	3.8%	4.5%	4.3%
Textiles	3.0%	2.1%	3.2%	4.3%	1.7%	3.5%	4.5%	2.5%	3.3%	3.1%
Misc. Combustibles	4.9%	0.5%	4.2%	4.5%	4.0%	7.4%	4.1%	5.2%	4.3%	4.1%
Glass	10.7%	12.3%	12.2%	6.5%	7.6%	5.6%	6.3%	6.3%	9.4%	7.7%
Misc. Non-combustibles	0.6%	1.1%	1.9%	0.6%	2.2%	1.5%	0.6%	2.8%	1.3%	1.5%
Metal (ferrous)	3.0%	1.8%	2.6%	2.6%	3.0%	2.6%	5.2%	2.6%	3.5%	2.4%
Metal (non-ferrous)	2.5%	1.2%	1.0%	1.6%	1.3%	0.9%	0.9%	1.0%	1.3%	1.2%
WEEE	0.6%	1.8%	2.0%	1.9%	2.0%	1.2%	4.5%	0.3%	2.4%	1.3%
Hazardous	0.1%	0.1%	0.8%	0.4%	0.1%	1.6%	0.2%	0.3%	0.4%	0.5%
Organic Catering	25.8%	25.8%	15.5%	22.1%	25.6%	27.9%	21.2%	26.1%	21.2%	25.0%
Organic Non-catering	10.1%	20.3%	20.9%	20.7%	12.5%	16.9%	10.8%	25.1%	14.1%	21.4%
Fines	2.1%	1.0%	2.9%	0.6%	3.6%	0.5%	2.9%	1.1%	2.8%	0.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 9.8 Halton Combined Kerbside Waste Arisings (kg/hh/wk), Study Average

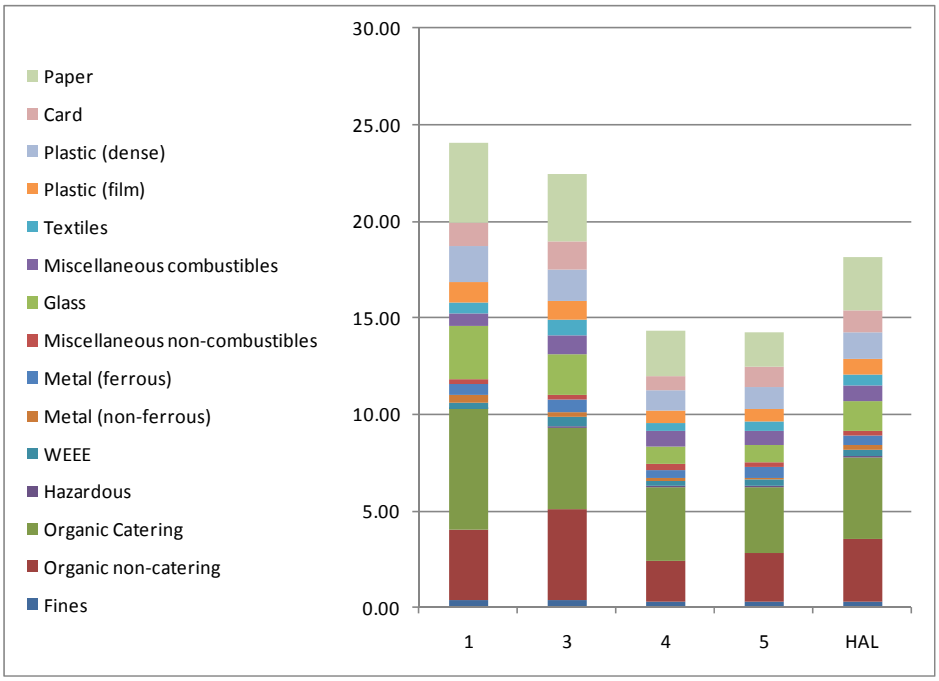

Table 9.11 Halton Combined Kerbside Waste Assay (% wt.), Study Average

Primary Category	ACORN 1	ACORN 3	ACORN 4	ACORN 5	Halton
Paper	17.2%	15.4%	16.6%	12.3%	15.1%
Card	5.0%	6.6%	5.1%	7.7%	6.3%
Plastic (dense)	7.8%	7.2%	7.4%	7.9%	7.6%
Plastic (film)	4.3%	4.3%	4.4%	4.6%	4.4%
Textiles	2.5%	3.7%	2.5%	3.5%	3.2%
Miscellaneous Combustibles	2.6%	4.3%	5.6%	4.7%	4.2%
Glass	11.5%	9.3%	6.7%	6.3%	8.6%
Miscellaneous Non-combustibles	0.8%	1.2%	1.9%	1.7%	1.4%
Metal (ferrous)	2.4%	2.6%	2.9%	3.9%	3.0%
Metal (non-ferrous)	1.8%	1.3%	1.1%	0.9%	1.3%
WEEE	1.2%	2.0%	1.6%	2.4%	1.9%
Hazardous	0.1%	0.6%	0.8%	0.3%	0.4%
Organic Catering	25.8%	18.8%	26.7%	23.7%	23.1%
Organic Non-catering	15.4%	20.8%	14.6%	18.0%	17.8%
Fines	1.5%	1.7%	2.2%	2.0%	1.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

ACORN 1 Study Average

A total of 136 samples containing 1,909 kg of kerbside waste were collected from ACORN 1 sample households within the District of Halton providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 24.05 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 25.8%, paper at 17.2% and organic non-catering at 15.4%.

ACORN 3 Study Average

A total of 130 samples containing 1,818 kg of kerbside waste were collected from ACORN 3 sample households within the District of Halton providing a result precision (Confidence Interval) of ±7% at a confidence level of 95%.

The average kerbside waste arising per household was 22.42 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering, organic catering and paper at 20.8%, 18.8% and 15.4% respectively.

ACORN 4 Study Average

A total of 125 samples containing 1,525 kg of kerbside waste were collected from ACORN 4 sample households within the District of Halton providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 14.33 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 26.7%, paper at 16.6% and organic non-catering at 14.6%.

ACORN 5 Study Average

A total of 123 samples containing 1,252 kg of kerbside waste were collected from ACORN 5 sample households within the District of Halton providing a result precision (Confidence Interval) of ±8% at a confidence level of 95%.

The average kerbside waste arising per household was 14.25 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, organic non-catering and paper at 23.7%, 18.0% and 12.3%.

Halton Study Average

A total of 514 samples containing 6,504 kg of kerbside waste were collected from sample households within the District of Halton providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average kerbside waste arising per household was 18.11 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering, organic non-catering and paper at 23.1%, 17.8% and 15.1%.

9.8 Biodegradable Municipal Waste (BMW) Content in Halton's Kerbside Waste Streams

The BMW content was calculated using the study average results for the Halton waste streams. Please refer to Section 2.9 for an explanation of how BMW is calculated. The results are presented in Figure 9.9 and Table 9.12.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix F.

Figure 9.9 Arisings (kg/hh/wk) of BMW in Halton's Kerbside Waste Streams

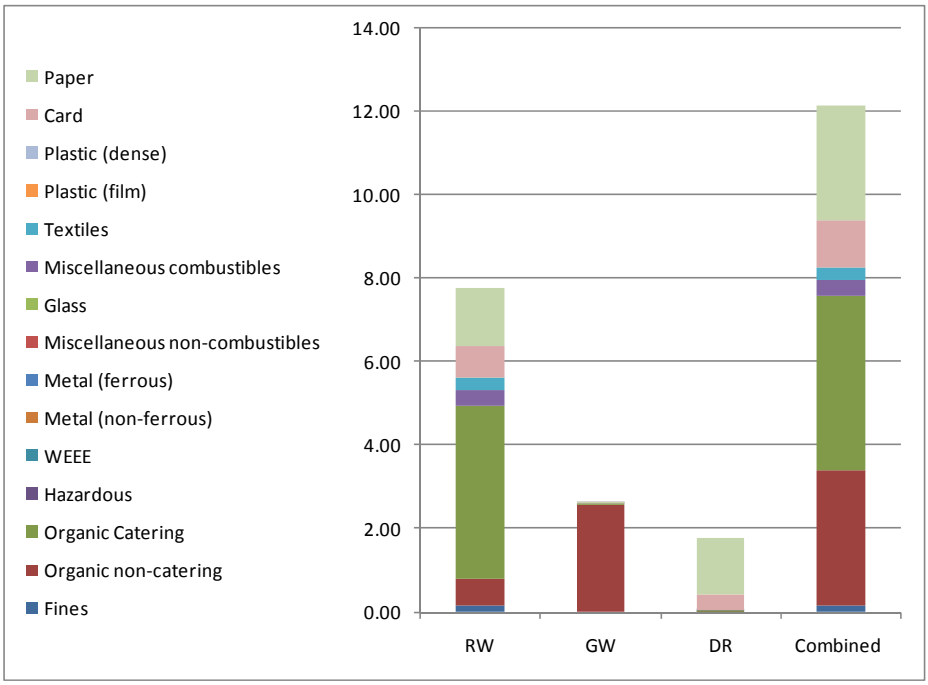

Table 9.12 Proportion (% wt.) of BMW in Halton's Kerbside Waste Streams

Primary Category	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Combined
Paper	11.1%	0.0%	45.3%	15.1%
Card	6.0%	0.3%	13.0%	6.3%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%
Textiles	2.3%	0.0%	0.0%	1.6%
Miscellaneous Combustibles	2.9%	0.5%	0.1%	2.1%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	33.3%	0.4%	0.2%	23.1%
Organic Non-catering	5.0%	98.1%	0.4%	17.8%
Fines	1.3%	0.0%	0.1%	0.9%
Total	62.0%	99.3%	59.0%	66.9%

9.9 Calorific Value

Entec calculated residual waste CVs based on the study average residual waste composition for Halton and using reference values for the CV of individual waste materials. A summary of the CV estimated by Entec is presented in Table 9.13 below.

Table 9.13 Halton Residual Waste Calorific Value

Analyte		Values
Hydrogen	% wt.	3.27
Carbon	% wt.	23.11
Nitrogen	% wt.	0.74
Oxygen	% wt.	14.77
Sulphur	% wt.	0.12
Chlorine	% wt.	0.86
Ash	% wt.	20.70
Moisture	% wt.	36.44
Net CV	MJ/kg	8.55

9.10 Halton Dry Recyclables Content and Capture

The dry recyclables content and capture was calculated using the study average results for the Halton waste streams. The results for capture of dry recyclables are shown in Table 9.14 below. Please refer to Appendix A for an explanation of the table layout and content.

Table 9.14 Kerbside Dry Recyclables Content and Capture, Halton Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
Halton											
Material sub-category	**Arisings (kg/hh/wk)**				**Assay**	**Targetable DR**		**Captured Target DR**		**Captured Non-Target**	
	RW	**GW**	**DR**	**Combined**	**wt. %**	**kg/hh/wk**	**wt.% of Total Arisings**	**kg/hh/wk**	**wt.% of Material Fraction**	**Arisings, kg/hh/wk**	**wt.% of DR**
Newspapers	0.26	0.00	0.65	0.91	5.0%	0.91	5.0%	0.65	71.6%	-	-
Magazines	0.19	0.00	0.46	0.65	3.6%	0.65	3.6%	0.46	71.1%	-	-
Other recyclable paper	0.36	0.00	0.21	0.57	3.1%	0.57	3.1%	0.21	36.2%	-	-
Paper packaging	0.01	0.00	0.00	0.01	0.0%	0.01	0.0%	0.00	14.4%	-	-
Non-recyclable paper	0.57	0.00	0.03	0.60	3.3%	-	-	-	-	0.03	0.9%
Subtotal Paper	**1.39**	**0.00**	**1.35**	**2.73**	**15.1%**	**2.13**	**11.8%**	**1.32**	**48.3%**	**0.03**	**0.9%**
Liquid cartons	0.05	0.00	0.01	0.05	0.3%	-	-	-	-	0.01	0.3%
Board packaging	0.28	0.01	0.19	0.48	2.6%	0.48	2.6%	0.19	39.2%	-	-
Card packaging	0.39	0.00	0.18	0.57	3.2%	0.57	3.2%	0.18	32.2%	-	-
Other card	0.04	0.00	0.01	0.04	0.2%	0.04	0.2%	0.01	16.8%	-	-
Subtotal Card	**0.75**	**0.01**	**0.39**	**1.15**	**6.3%**	**1.09**	**6.0%**	**0.38**	**33.0%**	**0.01**	**0.3%**
Plastic Bottles: PET	0.18	0.00	0.09	0.27	1.5%	0.27	1.5%	0.09	34.6%	-	-
PET Coloured	0.03	0.00	0.01	0.04	0.2%	0.04	0.2%	0.01	29.3%	-	-
HDPE	0.07	0.00	0.05	0.12	0.7%	0.12	0.7%	0.05	41.3%	-	-
HDPE Coloured	0.06	0.00	0.02	0.08	0.4%	0.08	0.4%	0.02	20.7%	-	-
Other	0.04	0.00	0.00	0.04	0.2%	0.04	0.2%	0.00	8.1%	-	-
Other packaging	0.45	0.00	0.02	0.47	2.6%	-	-	-	-	0.02	0.8%
Other dense plastic	0.34	0.00	0.01	0.35	1.9%	-	-	-	-	0.01	0.4%
Subtotal Dense Plastic	**1.16**	**0.00**	**0.21**	**1.37**	**7.6%**	**0.55**	**3.0%**	**0.18**	**12.8%**	**0.04**	**1.2%**
Packaging film	0.42	0.00	0.01	0.42	2.3%	-	-	-	-	0.01	0.2%
Other plastic film	0.36	0.00	0.01	0.37	2.0%	-	-	-	-	0.01	0.2%
Subtotal Plastic Film	**0.78**	**0.00**	**0.01**	**0.79**	**4.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.4%**
Textiles	0.51	0.00	0.00	0.51	2.8%	-	-	-	-	0.00	0.0%
Shoes	0.07	0.00	0.00	0.07	0.4%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.58**	**0.00**	**0.00**	**0.58**	**3.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Treated wood	0.11	0.00	0.00	0.11	0.6%	-	-	-	-	0.00	0.1%
Untreated wood	0.03	0.00	0.00	0.03	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.03	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Nappies/ Sanitary	0.41	0.00	0.00	0.41	2.3%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.14	0.00	0.00	0.14	0.8%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.05	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**0.73**	**0.03**	**0.00**	**0.76**	**4.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Glass bottles	0.46	0.00	0.76	1.22	6.8%	1.22	6.8%	0.76	62.4%	-	-
Glass jars	0.22	0.00	0.07	0.29	1.6%	0.29	1.6%	0.07	25.6%	-	-
Other glass	0.04	0.00	0.00	0.04	0.2%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.71**	**0.00**	**0.84**	**1.55**	**8.6%**	**1.51**	**8.3%**	**0.84**	**53.9%**	**0.00**	**0.0%**
Construction and demolition	0.14	0.00	0.00	0.15	0.8%	-	-	-	-	0.00	0.1%
Other misc.non.comb	0.10	0.00	0.00	0.11	0.6%	-	-	-	-	0.00	0.1%
Subtotal Misc.Non-Comb	**0.25**	**0.00**	**0.00**	**0.25**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Ferrous food cans	0.25	0.00	0.07	0.32	1.8%	0.32	1.8%	0.07	22.4%	-	-
Ferrous beverage cans	0.06	0.00	0.03	0.09	0.5%	0.09	0.5%	0.03	34.0%	-	-
Ferrous aerosols	0.05	0.00	0.00	0.05	0.3%	0.05	0.3%	0.00	2.7%	-	-
Other ferrous metal	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.1%
Subtotal Ferrous Metals	**0.44**	**0.00**	**0.10**	**0.54**	**3.0%**	**0.45**	**2.5%**	**0.10**	**18.9%**	**0.00**	**0.1%**
Non-ferrous food cans	0.01	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	24.8%	-	-
Non-ferrous beverage cans	0.05	0.00	0.04	0.09	0.5%	0.09	0.5%	0.04	42.1%	-	-
Non-ferrous aerosols	0.03	0.00	0.00	0.03	0.2%	0.03	0.2%	0.00	1.7%	-	-
Other non-ferrous metal	0.09	0.00	0.00	0.09	0.5%	-	-	-	-	0.00	0.1%
Subtotal Non-Ferr Metals	**0.19**	**0.00**	**0.05**	**0.23**	**1.3%**	**0.14**	**0.8%**	**0.04**	**18.8%**	**0.00**	**0.1%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.08	0.00	0.00	0.08	0.4%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.12	0.00	0.00	0.12	0.6%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Lighting	0.06	0.00	0.00	0.06	0.3%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.33**	**0.00**	**0.00**	**0.34**	**1.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Household batteries	0.01	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.06	0.00	0.00	0.06	0.3%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.08**	**0.00**	**0.00**	**0.08**	**0.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.26	0.00	0.00	1.26	7.0%	-	-	-	-	0.00	0.1%
Unused home compostable food	0.74	0.00	0.00	0.74	4.1%	-	-	-	-	0.00	0.0%
Non-home compostable food	1.14	0.00	0.00	1.15	6.3%	-	-	-	-	0.00	0.1%
Unused non-home compostable food	1.03	0.00	0.00	1.03	5.7%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**4.17**	**0.01**	**0.01**	**4.18**	**23.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.2%**
Garden	0.27	2.31	0.00	2.58	14.3%	-	-	-	-	0.00	0.1%
Soil	0.05	0.27	0.01	0.33	1.8%	-	-	-	-	0.01	0.3%
Other organic	0.30	0.00	0.00	0.30	1.7%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.62**	**2.58**	**0.01**	**3.22**	**17.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.4%**
Material less than 10mm	0.33	0.00	0.00	0.33	1.8%	-	-	-	-	0.00	0.2%
Subtotal Fines	**0.33**	**0.00**	**0.00**	**0.33**	**1.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.2%**
Totals	**12.50**	**2.63**	**2.98**	**18.11**	**100.0%**	**5.88**	**32.5%**	**2.86**	**48.6%**	**0.12**	**4.0%**

9.11 Halton Organic Material Content and Capture

The organic material content and capture was calculated using the study average results for the Halton waste streams. The results for capture of organic material (garden and kitchen waste) are shown in Table 9.15 below. Please refer to Appendix B for an explanation of the table layout and content.

Table 9.15 Kerbside Organic Material Content and Capture, Halton Waste Streams

1	2	3	4	5	6	7	8	9	10	11	12
Halton											
Material sub-category	kg/hh/wk				Assay	Targetable Bio Waste		Captured Target Bio Waste		Non-Target Materials in Bio Waste	
	RW	GW	DR	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	GW kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% Bio Waste
Newspapers	0.26	0.00	0.65	0.91	5.0%	-	-	-	-	0.00	0.0%
Magazines	0.19	0.00	0.46	0.65	3.6%	-	-	-	-	0.00	0.0%
Other recyclable paper	0.36	0.00	0.21	0.57	3.1%	-	-	-	-	0.00	0.0%
Paper packaging	0.01	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Non-recyclable paper	0.57	0.00	0.03	0.60	3.3%	-	-	-	-	0.00	0.0%
Subtotal Paper	**1.39**	**0.00**	**1.35**	**2.73**	**15.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Liquid cartons	0.05	0.00	0.01	0.05	0.3%	-	-	-	-	0.00	0.0%
Board packaging	0.28	0.01	0.19	0.48	2.6%	-	-	-	-	0.01	0.3%
Card packaging	0.39	0.00	0.18	0.57	3.2%	-	-	-	-	0.00	0.0%
Other card	0.04	0.00	0.01	0.04	0.2%	-	-	-	-	0.00	0.0%
Subtotal Card	**0.75**	**0.01**	**0.39**	**1.15**	**6.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Plastic Bottles: PET	0.18	0.00	0.09	0.27	1.5%	-	-	-	-	0.00	0.0%
PET Coloured	0.03	0.00	0.01	0.04	0.2%	-	-	-	-	0.00	0.0%
HDPE	0.07	0.00	0.05	0.12	0.7%	-	-	-	-	0.00	0.0%
HDPE Coloured	0.06	0.00	0.02	0.08	0.4%	-	-	-	-	0.00	0.0%
Other	0.04	0.00	0.00	0.04	0.2%	-	-	-	-	0.00	0.0%
Other packaging	0.45	0.00	0.02	0.47	2.6%	-	-	-	-	0.00	0.1%
Other dense plastic	0.34	0.00	0.01	0.35	1.9%	-	-	-	-	0.00	0.0%
Subtotal Dense Plastic	**1.16**	**0.00**	**0.21**	**1.37**	**7.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Packaging film	0.42	0.00	0.01	0.42	2.3%	-	-	-	-	0.00	0.0%
Other plastic film	0.36	0.00	0.01	0.37	2.0%	-	-	-	-	0.00	0.0%
Subtotal Plastic Film	**0.78**	**0.00**	**0.01**	**0.79**	**4.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Textiles	0.51	0.00	0.00	0.51	2.8%	-	-	-	-	0.00	0.0%
Shoes	0.07	0.00	0.00	0.07	0.4%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.58**	**0.00**	**0.00**	**0.58**	**3.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Treated wood	0.11	0.00	0.00	0.11	0.6%	-	-	-	-	0.00	0.0%
Untreated wood	0.03	0.00	0.00	0.03	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.03	0.00	0.03	0.2%	-	-	-	-	0.03	1.1%
Nappies/ Sanitary	0.41	0.00	0.00	0.41	2.3%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.14	0.00	0.00	0.14	0.8%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.05	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**0.73**	**0.03**	**0.00**	**0.76**	**4.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.03**	**1.1%**
Glass bottles	0.46	0.00	0.76	1.22	6.8%	-	-	-	-	0.00	0.0%
Glass jars	0.22	0.00	0.07	0.29	1.6%	-	-	-	-	0.00	0.0%
Other glass	0.04	0.00	0.00	0.04	0.2%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.71**	**0.00**	**0.84**	**1.55**	**8.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Construction and demolition	0.14	0.00	0.00	0.15	0.8%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.10	0.00	0.00	0.11	0.6%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.25**	**0.00**	**0.00**	**0.25**	**1.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.25	0.00	0.07	0.32	1.8%	-	-	-	-	0.00	0.0%
Ferrous beverage cans	0.06	0.00	0.03	0.09	0.5%	-	-	-	-	0.00	0.0%
Ferrous aerosols	0.05	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Other ferrous metal	0.08	0.00	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
Subtotal Ferrous Metals	**0.44**	**0.00**	**0.10**	**0.54**	**3.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Non-ferrous food cans	0.01	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Non-ferrous beverage cans	0.05	0.00	0.04	0.09	0.5%	-	-	-	-	0.00	0.0%
Non-ferrous aerosols	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Other non-ferrous metal	0.09	0.00	0.00	0.09	0.5%	-	-	-	-	0.00	0.0%
Subtotal Non-Ferr Metals	**0.19**	**0.00**	**0.05**	**0.23**	**1.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.08	0.00	0.00	0.08	0.4%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.12	0.00	0.00	0.12	0.6%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.02	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Lighting	0.06	0.00	0.00	0.06	0.3%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.03	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.33**	**0.00**	**0.00**	**0.34**	**1.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.01	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.06	0.00	0.00	0.06	0.3%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.08**	**0.00**	**0.00**	**0.08**	**0.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.26	0.00	0.00	1.26	7.0%	-	-	-	-	0.00	0.1%
Unused home compostable food	0.74	0.00	0.00	0.74	4.1%	-	-	-	-	0.00	0.1%
Non-home compostable food	1.14	0.00	0.00	1.15	6.3%	-	-	-	-	0.00	0.2%
Unused non-home compostable food	1.03	0.00	0.00	1.03	5.7%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**4.17**	**0.01**	**0.01**	**4.18**	**23.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.4%**
Garden	0.27	2.31	0.00	2.58	14.3%	2.58	14.3%	2.31	89.5%	-	-
Soil	0.05	0.27	0.01	0.33	1.8%	0.33	1.8%	0.27	81.5%	-	-
Other organic	0.30	0.00	0.00	0.30	1.7%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.62**	**2.58**	**0.01**	**3.22**	**17.8%**	**2.91**	**16.1%**	**2.58**	**80.2%**	**0.00**	**0.0%**
Material less than 10mm	0.33	0.00	0.00	0.33	1.8%	-	-	-	-	0.00	0.0%
Subtotal Fines	**0.33**	**0.00**	**0.00**	**0.33**	**1.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Totals	**12.50**	**2.63**	**2.98**	**18.11**	**100.0%**	**2.91**	**16.1%**	**2.58**	**88.6%**	**0.05**	**1.9%**

9.12 Conclusion

Figure 9.10 and Table 9.16 present the final modelled waste composition arisings and assay data for the District of Halton.

Halton's average residual waste arisings were 12.50 kg/hh/wk. Overall there were higher arisings of residual waste during March 2010 (12.90 kg/hh/wk) in comparison with the June 2010 study (12.11 kg/hh/wk). The most prominent materials were organic catering waste at 33.3% (4.17 kg/hh/wk) and paper at 11.1% (1.39 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the residual waste stream was determined to be 62.0%. The calorific value of the residual waste was calculated to be 8.55 MJ/kg.

Average arisings of garden waste in Halton were 2.63 kg/hh/wk. Overall there was higher arisings of garden waste during the June 2010 study (3.39 kg/hh/wk) in comparison to March 2010 (1.87 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. The most prominent material was organic non-catering at 98.1%. The composition of this waste stream showed a similar pattern in each season. The kerbside organic material capture was 88.6% of targeted material. Non-target materials constituted 1.9% of the organic stream. The biodegradable municipal waste (BMW) content of the garden waste stream was calculated to be 99.3%.

Halton's average dry recyclables arisings were 2.98 kg/hh/wk. Overall there were higher arisings of dry recyclables during March 2010 (3.31 kg/hh/wk) in comparison with the June 2010 study (2.64 kg/hh/wk). The most prominent materials were paper at 45.3% (1.35 kg/hh/wk) and glass at 28.1% (0.84 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The kerbside dry recyclables material capture was 48.6% of targeted material. Non-target materials constituted 4.0% of the dry recyclables stream. The biodegradable municipal waste (BMW) content of the dry recyclables stream was calculated to be 59.0%.

The modelled arisings for the combined kerbside waste streams were 18.11 kg/hh/wk. Overall there were higher arisings of kerbside waste during June 2010 (18.14 kg/hh/wk) in comparison with the March 2010 study (18.08 kg/hh/wk). The most prominent materials were organic catering waste at 23.1% (4.18 kg/hh/wk), organic non-catering at 17.8% (3.22 kg/hh/wk) and paper at 15.1% (2.73 kg/hh/wk). The composition of this waste stream was similar in each season with the exception of organic non-catering which constituted 14.1% (2.56 kg/hh/wk) of the waste in March 2010 and 21.4% (3.88 kg/hh/wk) in June 2010. The biodegradable municipal waste (BMW) content of the combined kerbside waste stream was calculated to be 66.9%.

Figure 9.10 Halton Waste Arisings (kg/hh/wk), Study Average

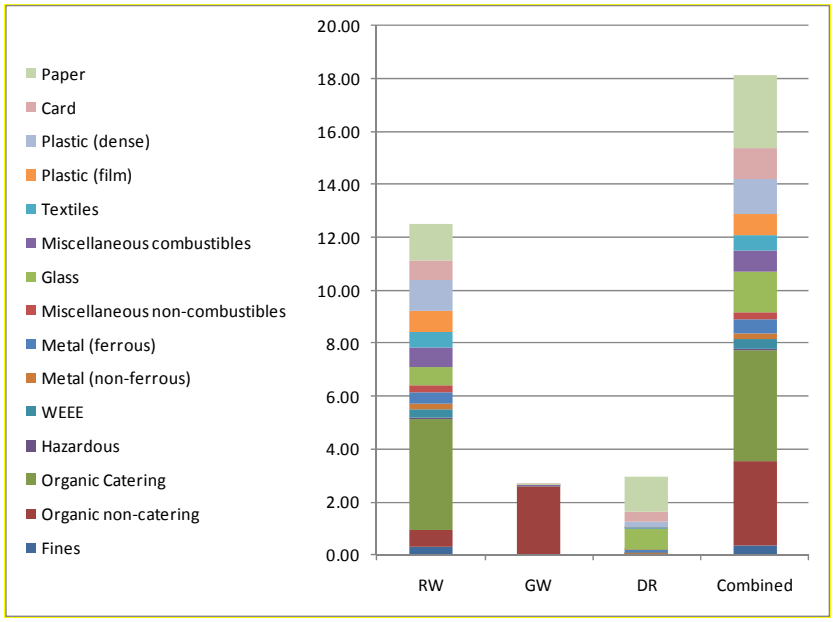

Table 9.16 Halton Waste Assay (% wt.), Study Average

Primary Category	Residual Waste	Garden Waste	Dry Recyclables	Combined
Paper	11.1%	0.0%	45.3%	15.1%
Card	6.0%	0.3%	13.0%	6.3%
Plastic (dense)	9.3%	0.1%	7.1%	7.6%
Plastic (film)	6.2%	0.0%	0.4%	4.4%
Textiles	4.6%	0.0%	0.0%	3.2%
Miscellaneous Combustibles	5.9%	1.1%	0.1%	4.2%
Glass	5.7%	0.0%	28.1%	8.6%
Miscellaneous Non-combustibles	2.0%	0.0%	0.1%	1.4%
Metal (ferrous)	3.5%	0.0%	3.5%	3.0%
Metal (non-ferrous)	1.5%	0.0%	1.5%	1.3%
WEEE	2.7%	0.0%	0.1%	1.9%
Hazardous	0.6%	0.0%	0.0%	0.4%
Organic Catering	33.3%	0.4%	0.2%	23.1%
Organic Non-catering	5.0%	98.1%	0.4%	17.8%
Fines	2.6%	0.0%	0.2%	1.8%
Total	100.0%	100.0%	100.0%	100.0%

10. Merseyside and Halton Waste Partnership Kerbside Household Waste Composition Results

10.1 Introduction

Arisings and assay data for kerbside collected waste at the Partnership level are presented in this section. Arisings at the Partnership level were modelled using composition data from the Districts combined proportionally according to their Household Profile (Table 10.1).

Table 10.1 Partnership Household Profile

Authority	Households*	Household Profile
Knowsley	62,175	7.7%
Liverpool	197,995	30.9%
Sefton	119,154	21.4%
St Helens	75,461	11.8%
Wirral	137,219	18.6%
Halton	49,497	9.7%
MHWP	**641,483**	**100.0%**

Note (*): ACORN 2009 database

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

10.1.1 Summary Results

During the March 2010 analysis a total of 1,437 samples containing 16,364 kg of kerbside waste were collected and analysed from within the Merseyside and Halton waste Partnership (MHWP).

In June 2010 1,556 samples containing 18,203 kg of kerbside waste were collected and analysed from within the MHWP.

Figure 10.1 and Table 10.2 present the results of the March and June 2010 waste composition analyses.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix G.

10.1.2 Study Average Results

A total 2,993 samples containing 34,567 kg of kerbside waste were collected for analysis from within the Merseyside and Halton Waste Partnership (MHWP) during the March 2010 and June 2010 waste composition exercises.

Figure 10.2 and Table 10.3 present the study average results of the waste composition analysis.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix G.

Figure 10.1 MHWP Kerbside Waste Arisings (kg/hh/wk), March & June 2010

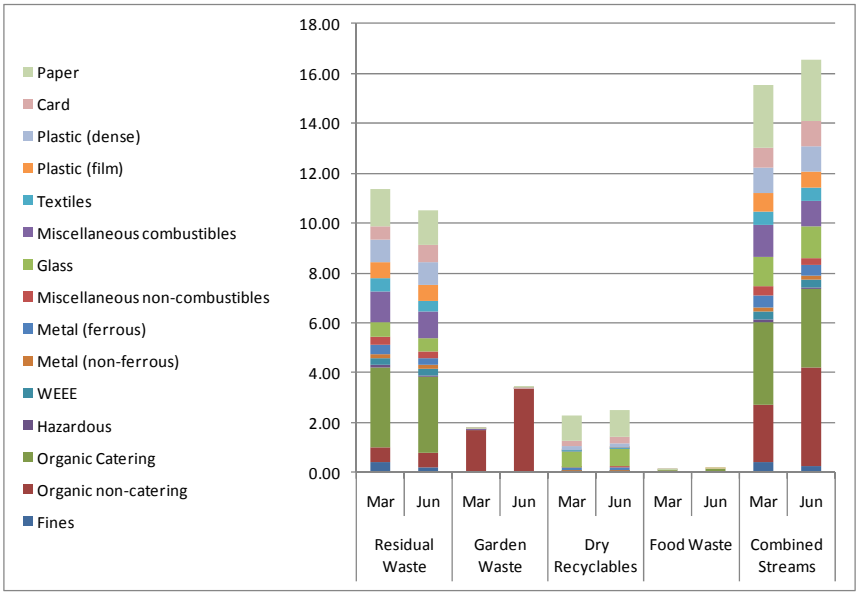

Table 10.2 MHWP Kerbside Waste Assay (% wt.), March & June 2010

Primary Category	RW		GW		DR		FW		Combined	
	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun	Mar	Jun
Paper	13.1%	13.1%	0.4%	0.2%	44.4%	43.2%	0.8%	0.5%	16.2%	14.8%
Card	4.9%	6.7%	1.1%	0.8%	9.9%	10.5%	0.0%	0.0%	5.2%	6.0%
Plastic (dense)	7.8%	8.5%	0.1%	0.1%	6.7%	6.4%	0.0%	0.0%	6.7%	6.4%
Plastic (film)	6.0%	6.0%	0.2%	0.0%	0.8%	0.6%	0.0%	0.1%	4.5%	3.9%
Textiles	4.5%	4.5%	0.3%	0.0%	0.6%	0.6%	0.0%	0.0%	3.4%	3.0%
Misc. Combustibles	11.0%	9.8%	1.1%	0.3%	1.0%	0.8%	0.0%	0.0%	8.3%	6.4%
Glass	4.8%	5.0%	0.0%	0.0%	28.1%	28.7%	0.0%	0.0%	7.7%	7.5%
Misc. Non-combustibles	3.1%	2.6%	0.0%	0.0%	0.2%	0.6%	0.0%	0.0%	2.3%	1.7%
Metal (ferrous)	3.1%	2.7%	0.1%	0.0%	5.1%	5.3%	0.0%	0.0%	3.0%	2.5%
Metal (non-ferrous)	1.3%	1.4%	0.0%	0.0%	1.4%	1.8%	0.0%	0.0%	1.2%	1.1%
WEEE	2.7%	2.7%	0.0%	0.0%	0.4%	0.2%	0.0%	0.0%	2.0%	1.7%
Hazardous	1.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.3%
Organic Catering	28.0%	28.7%	0.8%	0.3%	1.0%	0.6%	99.2%	99.5%	21.3%	19.3%
Organic Non-catering	5.1%	5.6%	95.8%	98.5%	0.0%	0.3%	0.0%	0.0%	14.6%	23.8%
Fines	3.7%	2.2%	0.1%	0.0%	0.5%	0.5%	0.0%	0.0%	2.8%	1.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 10.2 MHWP Kerbside Waste Arisings (kg/hh/wk), Study Average

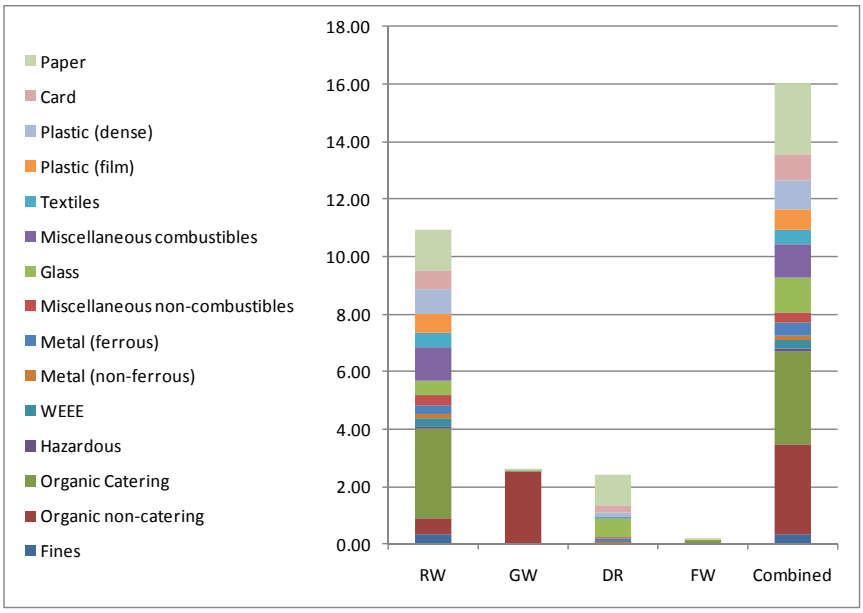

Table 10.3 MHWP Kerbside Waste Assay (% wt.), Study Average

Primary Category	Residual Waste	Garden Waste	Dry Recyclables	Food Waste	Combined Kerbside Waste Streams
Paper	13.1%	0.2%	43.7%	0.6%	15.5%
Card	5.8%	0.9%	10.2%	0.0%	5.6%
Plastic (dense)	8.1%	0.1%	6.5%	0.0%	6.5%
Plastic (film)	6.0%	0.1%	0.7%	0.1%	4.2%
Textiles	4.5%	0.1%	0.6%	0.0%	3.2%
Miscellaneous Combustibles	10.4%	0.6%	0.9%	0.0%	7.3%
Glass	4.9%	0.0%	28.4%	0.0%	7.6%
Miscellaneous Non-combustibles	2.8%	0.0%	0.4%	0.0%	2.0%
Metal (ferrous)	2.9%	0.0%	5.2%	0.0%	2.8%
Metal (non-ferrous)	1.3%	0.0%	1.6%	0.0%	1.2%
WEEE	2.7%	0.0%	0.3%	0.0%	1.9%
Hazardous	0.7%	0.0%	0.0%	0.0%	0.5%
Organic Catering	28.3%	0.5%	0.8%	99.4%	20.3%
Organic Non-catering	5.3%	97.5%	0.1%	0.0%	19.4%
Fines	2.9%	0.0%	0.5%	0.0%	2.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Residual Waste Study Average

A total of 1,087 samples containing 14,856 kg of kerbside residual waste were collected from sample households within the Merseyside and Halton Waste Partnership area providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average residual waste arising per household was 10.95 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 28.3%, paper at 13.1% and miscellaneous combustibles at 10.4%.

Garden Waste Study Average

A total of 619 samples containing 10,490 kg of kerbside garden waste were collected from sample households within the Merseyside and Halton Waste Partnership area providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average garden waste arising per household was 2.59 kg/hh/wk. The dominant primary waste categories identified within the sample were organic non-catering at 97.5%, card at 0.9%, miscellaneous combustibles at 0.6% and organic catering at 0.5%.

Dry Recyclables Study Average

A total of 1,049 samples containing 8,624 kg of kerbside dry recyclables were collected from sample households within the Merseyside and Halton Waste Partnership area providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average dry recyclables arising per household was 2.39 kg/hh/wk. The dominant primary waste categories identified within the sample were paper at 43.7%, glass 28.4% and card at 10.2%.

Food Waste Study Average

A total of 238 samples containing 597 kg of kerbside food waste were collected from sample households within the Merseyside and Halton Waste Partnership area providing a result precision (Confidence Interval) of ±10% at a confidence level of 95%.

The average food waste arising per household was 0.12 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 99.4% and paper at 0.6%.

Combined Kerbside Waste Streams Study Average

A total of 2,993 samples containing 34,567 kg of kerbside waste were collected from sample households within the Merseyside and Halton Waste Partnership area providing a result precision (Confidence Interval) of ±5% at a confidence level of 95%.

The average kerbside waste arising per household was 16.04 kg/hh/wk. The dominant primary waste categories identified within the sample were organic catering at 20.3%, organic non-catering at 19.4% and paper at 15.5%.

10.2 Organic Catering Waste

This section examines the composition of the organic catering fraction in more detail. MHWP requested that organic catering waste was sorted so that avoidable/wholly unused food waste was analysed separately from unavoidable/used food waste. This resulted in the following four subcategories being used for organic catering during the seasonal waste sort exercises:

- home compostable food waste;
- unused/avoidable home compostable food waste;
- non-home compostable food waste; and,
- unused/avoidable non-home compostable food waste.

The following table presents the relative proportions of each type of food waste arising in the MHWP combined kerbside waste streams study average. According to these results 6.47% of the total waste in MHWP and 32.0% of the organic catering fraction consists of unused/avoidable food waste.

Table 10.4 Organic Catering Waste Fraction, Combined Kerbside Waste Streams Study Average

Material Category	Combined Kerbside Waste Stream		Organic Catering Fraction
	Kg/hh/wk	% wt.	% wt.
Home compostable food waste	1.16	7.25%	35.69%
Unused/avoidable home compostable food waste	0.47	2.92%	14.46%
Non-home compostable food waste	1.05	6.55%	32.31%
Unused/avoidable non-home compostable food waste	0.57	3.55%	17.54%
Organic Catering Total	3.25	20.27%	100.00%

10.3 Biodegradable Municipal Waste (BMW) Content in Merseyside and Halton Waste Partnership's Kerbside Waste Streams

The BMW content was calculated using the study average results for the Merseyside and Halton Waste Partnership (MHWP) waste streams. Please refer to Section 2.9 for an explanation of how BMW is calculated. The results are presented in Figure 10.3 and Table 10.5.

Information on the secondary categories is presented in Waste Analysis Results Tables document Appendix G.

Figure 10.3 Arisings (kg/hh/wk) of BMW in MHWP's Kerbside Waste Streams

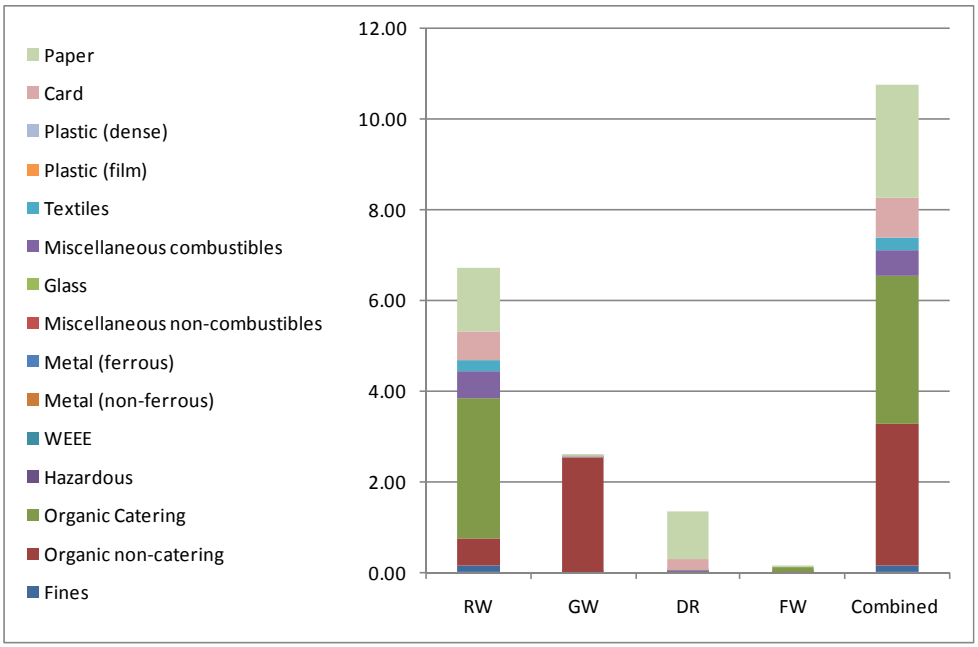

Table 10.5 Proportion (% wt.) of BMW in Halton's Kerbside Waste Streams

Primary Category	Residual Waste (RW)	Garden Waste (GW)	Dry Recyclables (DR)	Combined
Paper	13.1%	0.2%	43.7%	0.6%
Card	5.8%	0.9%	10.2%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.0%	0.0%
Textiles	2.3%	0.0%	0.3%	0.0%
Miscellaneous Combustibles	5.2%	0.3%	0.5%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%
Miscellaneous Non-combustibles	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%
Organic Catering	28.3%	0.5%	0.8%	99.4%
Organic Non-catering	5.3%	97.5%	0.1%	0.0%
Fines	1.5%	0.0%	0.2%	0.0%
Total	61.5%	99.5%	55.8%	99.9%

10.4 Calorific Value

Entec calculated residual waste CVs based on the study average residual waste composition for MHWP and using reference values for the CV of individual waste materials. A summary of the CV estimated by Entec is presented in Table 10.6 below.

Table 10.6 MHWP Residual Waste Calorific Value

Analyte		Values
Hydrogen	% wt.	3.35
Carbon	% wt.	23.20
Nitrogen	% wt.	0.69
Oxygen	% wt.	15.18
Sulphur	% wt.	0.12
Chlorine	% wt.	0.78
Ash	% wt.	19.99
Moisture	% wt.	36.69
Net CV	MJ/kg	8.49

10.5 MHWP Dry Recyclables Content and Capture

The dry recyclables content and capture was calculated using the study average results for the MHWP waste streams. The results for capture of dry recyclables are shown in Table 10.7 below. Please refer to Appendix A for an explanation of the table layout and content.

Table 10.7 Kerbside Dry Recyclables Content and Capture, MHWP Waste Streams

1	2	3	4	4a	5	6	7	8	9	10	11	12
MHWP												
Material sub-category	Arisings (kg/hh/wk)					Assay	Targetable DR		Captured Target DR		Captured Non-Target	
	RW	GW	DR	FW	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% of DR
Newspapers	0.38	0.00	0.56	0.00	0.95	5.9%	0.95	5.9%	0.56	59.0%	-	-
Magazines	0.21	0.00	0.28	0.00	0.49	3.1%	0.49	3.1%	0.28	57.5%	-	-
Other recyclable paper	0.28	0.00	0.15	0.00	0.43	2.7%	0.43	2.7%	0.15	34.7%	-	-
Paper packaging	0.03	0.00	0.00	0.00	0.03	0.2%	0.03	0.2%	0.00	6.6%	-	-
Non-recyclable paper	0.53	0.00	0.05	0.00	0.59	3.6%	-	-	-	-	0.05	2.1%
Subtotal Paper	**1.43**	**0.01**	**1.05**	**0.00**	**2.49**	**15.5%**	**1.90**	**11.8%**	**0.99**	**40.0%**	**0.05**	**2.1%**
Liquid cartons	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.2%
Board packaging	0.20	0.01	0.10	0.00	0.32	2.0%	0.32	2.0%	0.10	33.0%	-	-
Card packaging	0.38	0.01	0.12	0.00	0.51	3.2%	0.51	3.2%	0.12	23.9%	-	-
Other card	0.03	0.00	0.01	0.00	0.04	0.3%	0.04	0.3%	0.01	29.9%	-	-
Subtotal Card	**0.63**	**0.02**	**0.24**	**0.00**	**0.90**	**5.6%**	**0.87**	**5.4%**	**0.24**	**26.6%**	**0.00**	**0.2%**
Plastic Bottles: PET	0.17	0.00	0.05	0.00	0.22	1.4%	0.22	1.4%	0.05	23.8%	-	-
PET Coloured	0.02	0.00	0.01	0.00	0.03	0.2%	0.03	0.2%	0.01	30.4%	-	-
HDPE	0.08	0.00	0.04	0.00	0.12	0.7%	0.12	0.7%	0.04	30.9%	-	-
HDPE Coloured	0.04	0.00	0.01	0.00	0.06	0.4%	0.06	0.4%	0.01	25.7%	-	-
Other	0.02	0.00	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	9.7%	-	-
Other packaging	0.34	0.00	0.02	0.00	0.37	2.3%	-	-	-	-	0.02	1.0%
Other dense plastic	0.21	0.00	0.02	0.00	0.23	1.4%	-	-	-	-	0.02	0.7%
Subtotal Dense Plastic	**0.89**	**0.00**	**0.16**	**0.00**	**1.04**	**6.5%**	**0.45**	**2.8%**	**0.11**	**11.0%**	**0.04**	**1.7%**
Packaging film	0.34	0.00	0.01	0.00	0.35	2.2%	-	-	-	-	0.01	0.4%
Other plastic film	0.32	0.00	0.01	0.00	0.32	2.0%	-	-	-	-	0.01	0.3%
Subtotal Plastic Film	**0.66**	**0.00**	**0.02**	**0.00**	**0.68**	**4.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.7%**
Textiles	0.42	0.00	0.01	0.00	0.44	2.7%	0.44	2.7%	0.01	2.7%	-	-
Shoes	0.07	0.00	0.00	0.00	0.07	0.5%	0.07	0.5%	0.00	2.6%	-	-
Subtotal Textiles	**0.50**	**0.00**	**0.01**	**0.00**	**0.51**	**3.2%**	**0.51**	**3.2%**	**0.01**	**2.7%**	**0.00**	**0.0%**
Treated wood	0.09	0.01	0.01	0.00	0.11	0.7%	-	-	-	-	0.01	0.4%
Untreated wood	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Furniture	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.1%
Nappies/ Sanitary	0.88	0.00	0.01	0.00	0.89	5.5%	-	-	-	-	0.01	0.2%
Other misc. comb.	0.10	0.00	0.00	0.00	0.11	0.7%	-	-	-	-	0.00	0.1%
Carpet and underlay	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.14**	**0.01**	**0.02**	**0.00**	**1.18**	**7.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.9%**
Glass bottles	0.36	0.00	0.55	0.00	0.90	5.6%	0.90	5.6%	0.55	60.5%	-	-
Glass jars	0.16	0.00	0.13	0.00	0.29	1.8%	0.29	1.8%	0.13	45.0%	-	-
Other glass	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.1%
Subtotal Glass	**0.54**	**0.00**	**0.68**	**0.00**	**1.22**	**7.6%**	**1.19**	**7.4%**	**0.68**	**55.5%**	**0.00**	**0.1%**
Construction and demolition	0.24	0.00	0.00	0.00	0.24	1.5%	-	-	-	-	0.00	0.1%
Other misc.non.comb	0.07	0.00	0.01	0.00	0.08	0.5%	-	-	-	-	0.01	0.3%
Subtotal Misc.Non-Comb	**0.31**	**0.00**	**0.01**	**0.00**	**0.32**	**2.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.4%**
Ferrous food cans	0.17	0.00	0.10	0.00	0.27	1.7%	0.27	1.7%	0.10	36.1%	-	-
Ferrous beverage cans	0.04	0.00	0.02	0.00	0.06	0.4%	0.06	0.4%	0.02	31.0%	-	-
Ferrous aerosols	0.02	0.00	0.00	0.00	0.03	0.2%	0.03	0.2%	0.00	12.6%	-	-
Other ferrous metal	0.09	0.00	0.01	0.00	0.09	0.6%	-	-	-	-	0.01	0.3%
Subtotal Ferrous Metals	**0.32**	**0.00**	**0.12**	**0.00**	**0.44**	**2.8%**	**0.35**	**2.2%**	**0.12**	**26.5%**	**0.01**	**0.3%**
Non-ferrous food cans	0.01	0.00	0.00	0.00	0.01	0.0%	0.01	0.0%	0.00	27.7%	-	-
Non-ferrous beverage cans	0.05	0.00	0.03	0.00	0.09	0.5%	0.09	0.5%	0.03	37.5%	-	-
Non-ferrous aerosols	0.02	0.00	0.00	0.00	0.02	0.1%	0.02	0.1%	0.00	10.1%	-	-
Other non-ferrous metal	0.07	0.00	0.00	0.00	0.07	0.5%	-	-	-	-	0.00	0.1%
Subtotal Non-Ferr Metals	**0.15**	**0.00**	**0.04**	**0.00**	**0.19**	**1.2%**	**0.11**	**0.7%**	**0.04**	**19.7%**	**0.00**	**0.1%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.00	0.04	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.15	0.00	0.00	0.00	0.15	0.9%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Lighting	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.1%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.1%
Subtotal WEEE	**0.30**	**0.00**	**0.01**	**0.00**	**0.30**	**1.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Household batteries	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.05	0.00	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.08**	**0.00**	**0.00**	**0.00**	**0.08**	**0.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.08	0.01	0.01	0.06	1.16	7.2%	-	-	-	-	0.01	0.4%
Unused home compostable food	0.45	0.00	0.00	0.01	0.47	2.9%	-	-	-	-	0.00	0.0%
Non-home compostable food	1.01	0.00	0.01	0.04	1.05	6.6%	-	-	-	-	0.01	0.3%
Unused non-home compostable food	0.56	0.00	0.00	0.01	0.57	3.6%	-	-	-	-	0.00	0.0%
Subtotal Org.Catering	**3.10**	**0.01**	**0.02**	**0.12**	**3.25**	**20.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.8%**
Garden	0.27	2.22	0.00	0.00	2.49	15.5%	-	-	-	-	0.00	0.1%
Soil	0.06	0.26	0.00	0.00	0.32	2.0%	-	-	-	-	0.00	0.0%
Other organic	0.26	0.04	0.00	0.00	0.30	1.9%	-	-	-	-	0.00	0.0%
Subtotal Org.Non Catering	**0.59**	**2.52**	**0.00**	**0.00**	**3.11**	**19.4%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Material less than 10mm	0.32	0.00	0.01	0.00	0.34	2.1%	-	-	-	-	0.01	0.5%
Subtotal Fines	**0.32**	**0.00**	**0.01**	**0.00**	**0.34**	**2.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.5%**
Totals	**10.95**	**2.59**	**2.39**	**0.12**	**16.04**	**100.0%**	**5.39**	**33.6%**	**2.19**	**40.7%**	**0.20**	**8.3%**

10.6 MHWP Organic Material Content and Capture

The organic material content and capture was calculated using the study average results for the MHWP waste streams. The results for capture of organic material (garden and kitchen waste) are shown in Table 10.8 below. Please refer to Appendix B for an explanation of the table layout and content.

Table 10.8 Kerbside Organic Material Content and Capture, MHWP Waste Streams

1	2	3	4	4a	5	6	7	8	9	10	11	12
Knowsley												
Material sub-category	kg/hh/wk					Assay	Targetable Bio Waste		Captured Target Bio Waste		Non-Target Materials in Bio Waste	
	RW	GW	DR	FW	Combined	wt. %	kg/hh/wk	wt.% of Total Arisings	GW kg/hh/wk	wt.% of Material Fraction	kg/hh/wk	wt.% Bio Waste
Newspapers	0.38	0.00	0.56	0.00	0.95	5.9%	-	-	-	-	0.00	0.2%
Magazines	0.21	0.00	0.28	0.00	0.49	3.1%	-	-	-	-	0.00	0.0%
Other recyclable paper	0.28	0.00	0.15	0.00	0.43	2.7%	-	-	-	-	0.00	0.0%
Paper packaging	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Non-recyclable paper	0.53	0.00	0.05	0.00	0.59	3.6%	-	-	-	-	0.00	0.1%
Subtotal Paper	**1.43**	**0.01**	**1.05**	**0.00**	**2.49**	**15.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.3%**
Liquid cartons	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Board packaging	0.20	0.01	0.10	0.00	0.32	2.0%	-	-	-	-	0.01	0.5%
Card packaging	0.38	0.01	0.12	0.00	0.51	3.2%	-	-	-	-	0.01	0.3%
Other card	0.03	0.00	0.01	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Card	**0.63**	**0.02**	**0.24**	**0.00**	**0.90**	**5.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.02**	**0.8%**
Plastic Bottles: PET	0.17	0.00	0.05	0.00	0.22	1.4%	-	-	-	-	0.00	0.0%
PET Coloured	0.02	0.00	0.01	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
HDPE	0.08	0.00	0.04	0.00	0.12	0.7%	-	-	-	-	0.00	0.0%
HDPE Coloured	0.04	0.00	0.01	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Other	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other packaging	0.34	0.00	0.02	0.00	0.37	2.3%	-	-	-	-	0.00	0.0%
Other dense plastic	0.21	0.00	0.02	0.00	0.23	1.4%	-	-	-	-	0.00	0.1%
Subtotal Dense Plastic	**0.89**	**0.00**	**0.16**	**0.00**	**1.04**	**6.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Packaging film	0.34	0.00	0.01	0.00	0.35	2.2%	-	-	-	-	0.00	0.0%
Other plastic film	0.32	0.00	0.01	0.00	0.32	2.0%	-	-	-	-	0.00	0.0%
Subtotal Plastic Film	**0.66**	**0.00**	**0.02**	**0.00**	**0.68**	**4.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Textiles	0.42	0.00	0.01	0.00	0.44	2.7%	-	-	-	-	0.00	0.1%
Shoes	0.07	0.00	0.00	0.00	0.07	0.5%	-	-	-	-	0.00	0.0%
Subtotal Textiles	**0.50**	**0.00**	**0.01**	**0.00**	**0.51**	**3.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.1%**
Treated wood	0.09	0.01	0.01	0.00	0.11	0.7%	-	-	-	-	0.01	0.4%
Untreated wood	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.1%
Furniture	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.1%
Nappies/ Sanitary	0.88	0.00	0.01	0.00	0.89	5.5%	-	-	-	-	0.00	0.0%
Other misc. comb.	0.10	0.00	0.00	0.00	0.11	0.7%	-	-	-	-	0.00	0.0%
Carpet and underlay	0.04	0.00	0.00	0.00	0.04	0.3%	-	-	-	-	0.00	0.0%
Subtotal Misc.Comb	**1.14**	**0.01**	**0.02**	**0.00**	**1.18**	**7.3%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.01**	**0.5%**
Glass bottles	0.36	0.00	0.55	0.00	0.90	5.6%	-	-	-	-	0.00	0.0%
Glass jars	0.16	0.00	0.13	0.00	0.29	1.8%	-	-	-	-	0.00	0.0%
Other glass	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal Glass	**0.54**	**0.00**	**0.68**	**0.00**	**1.22**	**7.6%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Construction and demolition	0.24	0.00	0.00	0.00	0.24	1.5%	-	-	-	-	0.00	0.0%
Other misc.non.comb	0.07	0.00	0.01	0.00	0.08	0.5%	-	-	-	-	0.00	0.0%
Subtotal Misc.Non-Comb	**0.31**	**0.00**	**0.01**	**0.00**	**0.32**	**2.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Ferrous food cans	0.17	0.00	0.10	0.00	0.27	1.7%	-	-	-	-	0.00	0.0%
Ferrous beverage cans	0.04	0.00	0.02	0.00	0.06	0.4%	-	-	-	-	0.00	0.0%
Ferrous aerosols	0.02	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Other ferrous metal	0.09	0.00	0.01	0.00	0.09	0.6%	-	-	-	-	0.00	0.0%
Subtotal Ferrous Metals	**0.32**	**0.00**	**0.12**	**0.00**	**0.44**	**2.8%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Non-ferrous food cans	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Non-ferrous beverage cans	0.05	0.00	0.03	0.00	0.09	0.5%	-	-	-	-	0.00	0.0%
Non-ferrous aerosols	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Other non-ferrous metal	0.07	0.00	0.00	0.00	0.07	0.5%	-	-	-	-	0.00	0.0%
Subtotal Non-Ferr Metals	**0.15**	**0.00**	**0.04**	**0.00**	**0.19**	**1.2%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Fridges, Freezers	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Large hh Appliances	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Small hh Appliances	0.03	0.00	0.00	0.00	0.04	0.2%	-	-	-	-	0.00	0.0%
IT & Telecoms Equip.	0.01	0.00	0.00	0.00	0.01	0.1%	-	-	-	-	0.00	0.0%
Consumer Equip.	0.15	0.00	0.00	0.00	0.15	0.9%	-	-	-	-	0.00	0.0%
Elec. & Electonic Tools	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Toys,Leisure & Sports Equip.	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Lighting	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Monitoring & Ctl. Inst.	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other WEEE	0.03	0.00	0.00	0.00	0.03	0.2%	-	-	-	-	0.00	0.0%
Subtotal WEEE	**0.30**	**0.00**	**0.01**	**0.00**	**0.30**	**1.9%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Household batteries	0.01	0.00	0.00	0.00	0.01	0.0%	-	-	-	-	0.00	0.0%
Car batteries	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Identifiable clinical waste	0.02	0.00	0.00	0.00	0.02	0.1%	-	-	-	-	0.00	0.0%
Engine oil	0.00	0.00	0.00	0.00	0.00	0.0%	-	-	-	-	0.00	0.0%
Other pntl. haz.	0.05	0.00	0.00	0.00	0.05	0.3%	-	-	-	-	0.00	0.0%
Subtotal Hazardous	**0.08**	**0.00**	**0.00**	**0.00**	**0.08**	**0.5%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Home Compostable food	1.08	0.01	0.01	0.06	1.16	7.2%	1.16	7.2%	0.07	6.2%	-	-
Unused home compostable food	0.45	0.00	0.00	0.01	0.47	2.9%	0.47	2.9%	0.02	3.5%	-	-
Non-home compostable food	1.01	0.00	0.01	0.04	1.05	6.6%	1.05	6.6%	0.04	3.6%	-	-
Unused non-home compostable food	0.56	0.00	0.00	0.01	0.57	3.6%	0.57	3.6%	0.01	1.1%	-	-
Subtotal Org.Catering	**3.10**	**0.01**	**0.02**	**0.12**	**3.25**	**20.3%**	**3.25**	**20.3%**	**0.13**	**4.1%**	**0.00**	**0.0%**
Garden	0.27	2.22	0.00	0.00	2.49	15.5%	2.49	15.5%	2.22	89.2%	-	-
Soil	0.06	0.26	0.00	0.00	0.32	2.0%	0.32	2.0%	0.26	80.5%	-	-
Other organic	0.26	0.04	0.00	0.00	0.30	1.9%	-	-	-	-	0.04	1.5%
Subtotal Org.Non Catering	**0.59**	**2.52**	**0.00**	**0.00**	**3.11**	**19.4%**	**2.81**	**17.5%**	**2.48**	**79.8%**	**0.04**	**1.5%**
Material less than 10mm	0.32	0.00	0.01	0.00	0.34	2.1%	-	-	-	-	0.00	0.0%
Subtotal Fines	**0.32**	**0.00**	**0.01**	**0.00**	**0.34**	**2.1%**	**0.00**	**0.0%**	**0.00**	**0.0%**	**0.00**	**0.0%**
Totals	**10.95**	**2.59**	**2.39**	**0.12**	**16.04**	**100.0%**	**6.07**	**37.8%**	**2.62**	**43.1%**	**0.09**	**3.4%**

10.7 Conclusion

Merseyside and Halton Waste Partnership's (MHWP's) average residual waste arisings were 10.95 kg/hh/wk. Overall there were higher arisings of residual waste during March 2010 (11.38 kg/hh/wk) in comparison with the June 2010 study (10.51 kg/hh/wk). The most prominent materials were organic catering waste at 28.4% (3.10 kg/hh/wk), paper at 13.1% (1.43 kg/hh/wk) and miscellaneous combustibles at 10.4% (1.14 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the residual waste stream was determined to be 61.5%. The calorific value of the residual waste was calculated to be 8.49 MJ/kg.

Average arisings of garden waste in MHWP were 2.59 kg/hh/wk. Overall there was higher arisings of garden waste during the June 2010 study (3.41 kg/hh/wk) in comparison to March 2010 (1.77 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. The most prominent material was organic non-catering at 97.1% (2.52 kg/hh/wk). The composition of the waste stream varied between the seasons with significantly less non-target material in the garden waste stream during the June 2010 exercise. The kerbside organic material capture was 43.1% of targeted material (garden and food waste). Non-target materials constituted 3.4% of the organic stream. The biodegradable municipal waste (BMW) content of the garden waste stream was calculated to be 99.5%.

MHWP's average dry recyclables arisings were 2.39 kg/hh/wk. Overall there were higher arisings of dry recyclables during June 2010 (2.49 kg/hh/wk) in comparison with the March 2010 study (2.29 kg/hh/wk). The most prominent materials were paper at 43.8% (1.05 kg/hh/wk) and glass at 28.4% (0.68 kg/hh/wk). The composition of this waste stream showed a similar pattern in each season. The kerbside dry recyclables material capture was 40.7% of targeted material. Non-target materials constituted 8.3% of the dry recyclables stream. The biodegradable municipal waste (BMW) content of the dry recyclables stream was calculated to be 55.8%.

Average arisings of food waste in MHWP were 0.12 kg/hh/wk. Overall there were higher arisings of food waste during June 2010 (0.14 kg/hh/wk) in comparison with the March 2010 study (0.10 kg/hh/wk). The most prominent material was organic catering at 99.3%. The composition of this waste stream showed a similar pattern in each season. The biodegradable municipal waste (BMW) content of the food waste stream was calculated to be 99.9%.

The modelled arisings for the combined kerbside waste streams were 16.04 kg/hh/wk. Overall there were higher arisings of kerbside waste during June 2010 (16.55 kg/hh/wk) in comparison with the March 2010 study (15.54 kg/hh/wk) which is mainly due to increased arisings of garden waste during June 2010. The most prominent materials were organic catering waste at 20.3% (3.25 kg/hh/wk), organic non-catering at 19.2% (3.11 kg/hh/wk) and paper at 15.5% (2.49 kg/hh/wk). The composition of this waste stream varied with the seasons due to increased arisings of organic non-catering which constituted 14.6% (2.28 kg/hh/wk) of the waste in March 2010 and 23.8% (3.95 kg/hh/wk) in June 2010. The biodegradable municipal waste (BMW) content of the combined kerbside waste stream was calculated to be 67.1%.

11. Discussion

11.1 Study Averages Comparisons

In this section the modelled study average arisings and assay results for the Districts and Partnership are presented and compared.

Study averages have been calculated by summing the arisings (kg/hh/wk) reporting to each material category and dividing between the summed total arisings (kg/hh/wk) reported in March and June waste composition analyses (see Section 2.9).

Arisings and assay at the district level were modelled based on the sample profile of each district in the Partnership (Table 3.1). At the Partnership level arisings and assay data was modelled using the Partnership household profile (see Table 10.1).

11.1.1 Residual Waste

Figure 11.1 and Table 11.1 present the residual waste study average results for each District and the Partnership.

Residual waste arisings for MHWP are 10.95 kg/hh/wk ranging from 8.09 kg/hh/wk in Sefton to 12.95 kg/hh/wk in St Helens. Sefton and Wirral have the lowest weekly residual waste arisings most likely due to the alternate weekly nature of their collection systems.

Organic catering was the most prominent primary category in the residual waste for MHWP at 28.4% ranging from 24.1% in Sefton to 33.3% in Halton. Paper was the second most prominent primary category for MHWP at 13.1% ranging from 11.1% in Halton to 15.5% in Sefton. Miscellaneous combustibles were the third most prominent category for MHWP at 10.4% ranging from 5.9% in Halton to 13.9% in St Helens.

Figure 11.1 Residual Waste Arisings (kg/hh/wk), Study Average Results

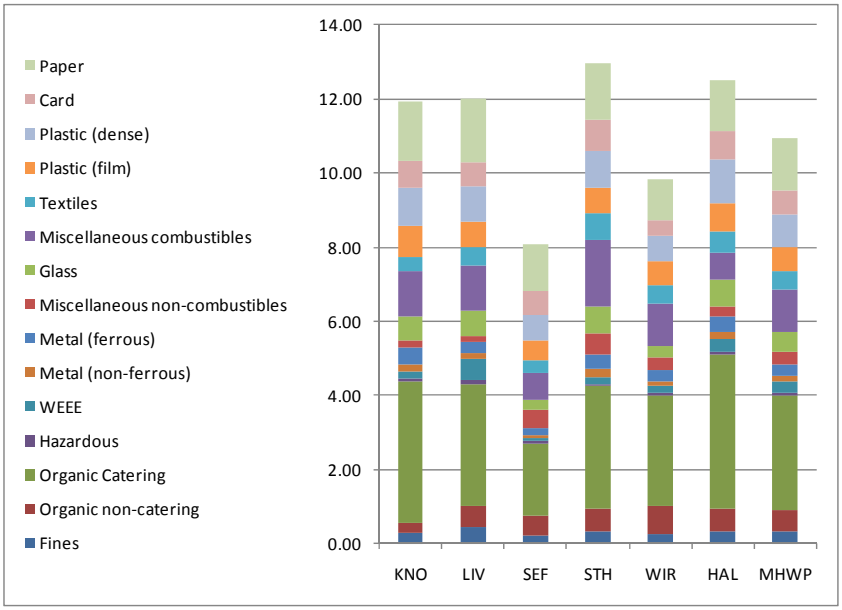

Table 11.1 Residual Waste Assay (% wt.), Study Average Results

Primary Category	KNO	LIV	SEF	STH	WIR	HAL	MHWP
Paper	13.3%	14.3%	15.5%	11.7%	11.2%	11.1%	13.1%
Card	6.1%	5.3%	8.2%	6.4%	4.1%	6.0%	5.8%
Plastic (dense)	8.8%	8.1%	8.7%	7.6%	7.2%	9.3%	8.1%
Plastic (film)	7.0%	5.5%	6.3%	5.4%	6.5%	6.2%	6.0%
Textiles	3.3%	4.3%	4.4%	5.5%	5.0%	4.6%	4.5%
Misc. Combustibles	10.0%	10.1%	9.0%	13.9%	11.8%	5.9%	10.4%
Glass	5.5%	5.8%	3.4%	5.7%	3.2%	5.7%	4.9%
Misc. Non-combustibles	1.8%	1.4%	5.8%	4.3%	3.3%	2.0%	2.8%
Metal (ferrous)	3.6%	2.6%	2.6%	3.1%	3.0%	3.5%	2.9%
Metal (non-ferrous)	1.6%	1.2%	1.0%	1.6%	1.4%	1.5%	1.3%
WEEE	1.7%	4.6%	0.9%	1.7%	1.9%	2.7%	2.7%
Hazardous	0.7%	1.0%	0.7%	0.2%	0.6%	0.6%	0.7%
Organic Catering	31.8%	27.5%	24.1%	25.6%	30.6%	33.3%	28.4%
Organic Non-catering	2.4%	4.8%	6.6%	4.7%	7.7%	5.0%	5.4%
Fines	2.4%	3.6%	2.9%	2.6%	2.5%	2.6%	2.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

11.1.2 Garden Waste

Figure 11.2 and Table 11.2 present the garden waste study average results for each District and the Partnership.

Garden waste arisings for MHWP are 2.59 kg/hh/wk ranging from 1.18 kg/hh/wk in St Helens to 3.85 kg/hh/wk in Sefton.

Organic non-catering was the most prominent primary category in the garden waste for MHWP at 97.1% ranging from 73.7% in St Helens to 99.5% in Wirral.

The kerbside organic material capture rate of targeted material for MHWP was 43.1 % which varied from 29.1% in St Helens to 88.6% in Liverpool. St Helens capture rate is low because card and home compostable food waste are also targeted by this service. Equally Knowsley capture rate of 30.4% is low because organic catering material is targeted for collection via the food waste collection scheme which is a relatively new and immature service. Capture of non-target materials in the organic waste stream for MHWP was 3.4% which varied from 0.6% in Sefton to 8.6% in Wirral (due to a large arisings of other organic material in the form of animal bedding within this stream).

Figure 11.2 Garden Waste Arisings (kg/hh/wk), Study Average Results

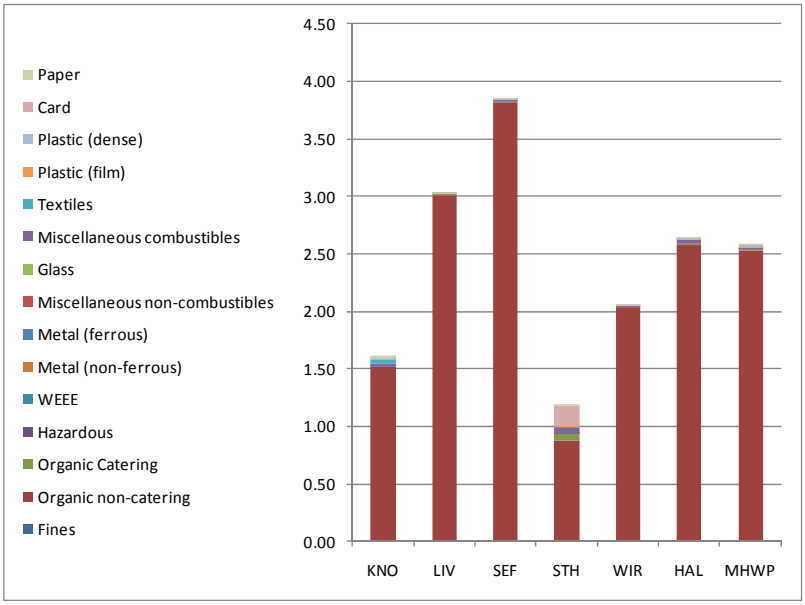

Table 11.2 Garden Waste Assay (% wt.), Study Average Results

Primary Category	KNO	LIV	SEF	STH	WIR	HAL	MHWP
Paper	1.8%	0.0%	0.3%	0.4%	0.1%	0.0%	0.3%
Card	0.0%	0.1%	0.0%	14.9%	0.1%	0.3%	0.9%
Plastic (dense)	0.6%	0.0%	0.0%	0.2%	0.0%	0.1%	0.1%
Plastic (film)	0.1%	0.0%	0.0%	0.7%	0.0%	0.0%	0.1%
Textiles	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Misc. Combustibles	1.6%	0.0%	0.1%	5.0%	0.3%	1.1%	0.7%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	0.0%	0.3%	0.2%	5.1%	0.1%	0.4%	0.6%
Organic Non-catering	94.1%	99.4%	99.1%	73.7%	99.5%	98.1%	97.1%
Fines	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

11.1.3 Dry Recyclables

Figure 11.3 and Table 11.3 present the dry recyclables study average results for each District and the Partnership.

Dry recyclables arisings for MHWP are 2.39 kg/hh/wk ranging from 1.25 kg/hh/wk in Liverpool to 3.67 kg/hh/wk in Wirral.

Paper was the most prominent primary category in the dry recyclables for MHWP at 43.8% ranging from 35.3% in Liverpool to 53.9% in St Helens. Glass was the second most prominent primary category for MHWP at 28.4% ranging from 21.2% in Knowsley to 37.2% in Sefton.

The kerbside dry recyclables capture rate of targeted material for MHWP was 40.7% which varied from 25.2% in Liverpool to 65.9% in Wirral. Capture of non-target materials in the dry recyclables stream for MHWP was 8.3% which varied from 1.9% in St Helens to 14.9% in Liverpool.

Figure 11.3 Dry Recyclables Arisings (kg/hh/wk), Study Average Results

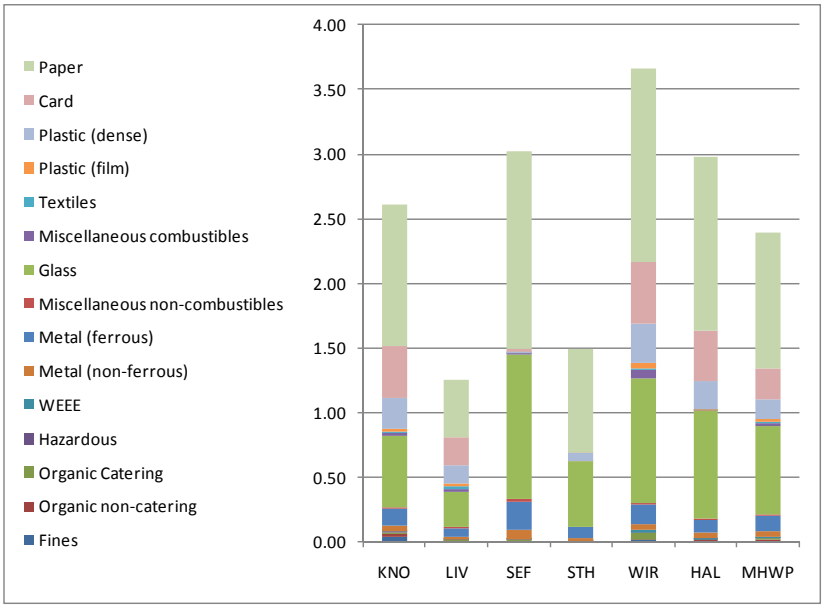

Table 11.3 Dry Recyclables Assay (% wt.), Study Average Results

Primary Category	KNO	LIV	SEF	STH	WIR	HAL	MHWP
Paper	41.9%	35.3%	50.6%	53.9%	40.9%	45.3%	43.8%
Card	15.4%	17.9%	0.5%	0.2%	13.1%	13.0%	10.2%
Plastic (dense)	9.0%	10.8%	0.4%	4.2%	8.3%	7.1%	6.5%
Plastic (film)	1.1%	1.3%	0.2%	0.0%	1.0%	0.4%	0.7%
Textiles	0.3%	2.3%	0.1%	0.0%	0.5%	0.0%	0.6%
Misc. Combustibles	1.0%	1.3%	0.1%	0.0%	1.7%	0.1%	0.9%
Glass	21.2%	22.0%	37.2%	34.2%	26.4%	28.1%	28.4%
Misc. Non-combustibles	0.5%	1.1%	0.6%	0.0%	0.1%	0.1%	0.4%
Metal (ferrous)	4.7%	4.9%	7.3%	5.8%	4.4%	3.5%	5.2%
Metal (non-ferrous)	1.6%	1.6%	2.3%	1.5%	1.2%	1.5%	1.6%
WEEE	0.3%	0.4%	0.0%	0.0%	0.5%	0.1%	0.3%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Organic Catering	0.8%	0.5%	0.5%	0.0%	1.4%	0.2%	0.8%
Organic Non-catering	0.6%	0.0%	0.0%	0.0%	0.1%	0.4%	0.1%
Fines	1.6%	0.5%	0.2%	0.1%	0.5%	0.2%	0.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

11.1.4 Food Waste

Figure 11.4 and Table 11.4 present the food waste study average results for each District and the Partnership.

Food waste arisings varied from 0.53 kg/hh/wk in Sefton to 0.23 kg/hh/wk in Knowsley. Only Sefton and Knowsley collect food waste at the kerbside hence the low average food waste arisings for the Partnership of 0.12 kg/hh/wk.

Organic catering was the most prominent primary category in the food waste for MHWP at 99.3% ranging from 99.2% in Sefton to 99.9% in Knowsley. Paper was the second most prominent category as some households use this material to contain their food waste within the caddy. The proportion of paper in the MHWP food waste was 0.6% which ranged from 0.7% in Sefton to 0.1% in Knowsley.

Figure 11.4 Food Waste Arisings (kg/hh/wk), Study Average Results

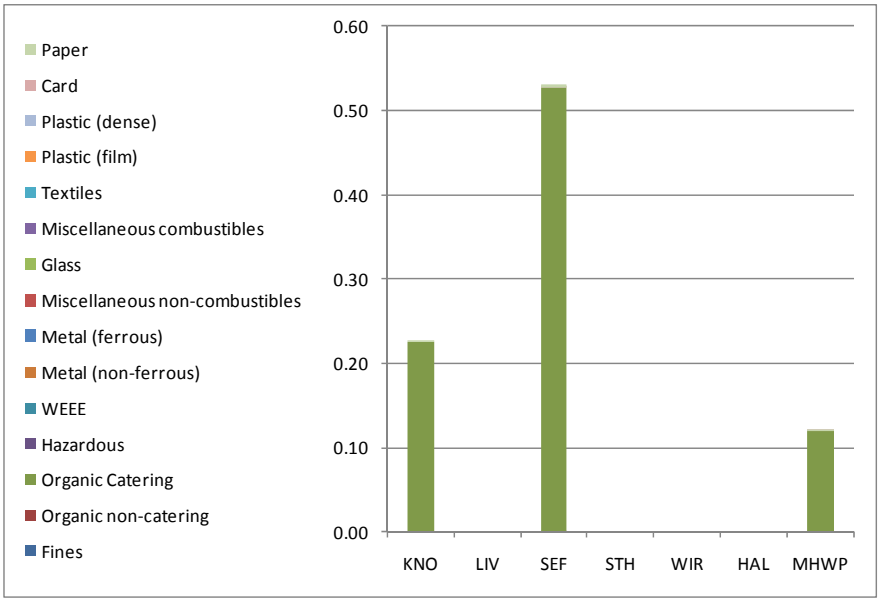

Table 11.4 Food Waste Assay (% wt.), Study Average Results

Primary Category	KNO	LIV	SEF	STH	WIR	HAL	MHWP
Paper	0.1%	0.0%	0.7%	0.0%	0.0%	0.0%	0.6%
Card	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (dense)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plastic (film)	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc. Non-combustibles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Metal (non-ferrous)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WEEE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic Catering	99.9%	0.0%	99.2%	0.0%	0.0%	0.0%	99.3%
Organic Non-catering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%

11.1.5 Combined Kerbside Waste Streams

Figure 11.5 and Table 11.5 present the combined kerbside waste study average results for each District and the Partnership.

Combined kerbside waste arisings for MHWP are 16.04 kg/hh/wk ranging from 15.49 kg/hh/wk in Sefton to 18.11 kg/hh/wk in Halton.

Organic catering was the most prominent primary category in the combined kerbside waste for MHWP at 20.3% ranging from 16.1% in Sefton to 24.7% in Knowsley. Organic non-catering was the second most prominent primary category for MHWP at 19.2% ranging from 9.5% in St Helens to 28.1% in Sefton. Paper was the third most prominent category for MHWP at 15.5% ranging from 13.2% in Liverpool to 18.0% in Sefton.

Figure 11.5 Combined Kerbside Waste Arisings (kg/hh/wk), Study Average Results

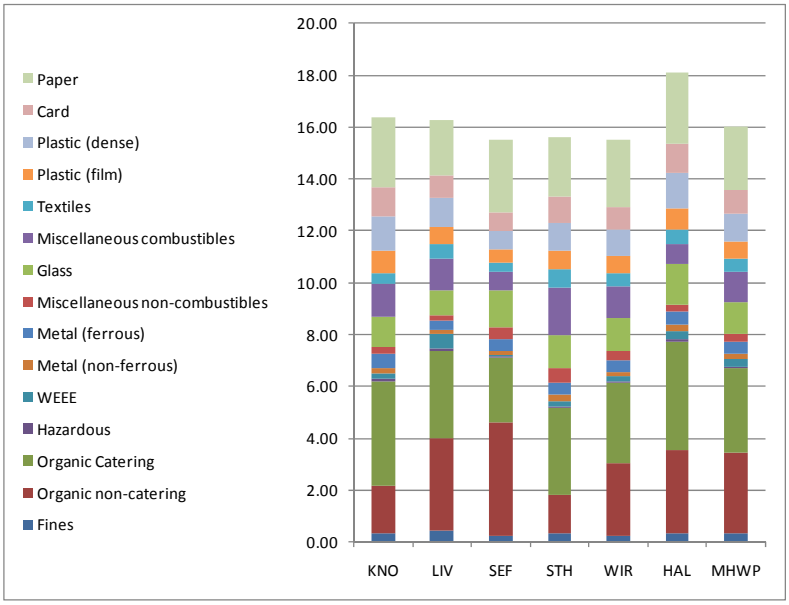

Table 11.5 Combined Kerbside Waste Assay (% wt.), Study Average Results

Primary Category	KNO	LIV	SEF	STH	WIR	HAL	MHWP
Paper	16.5%	13.2%	18.0%	14.9%	16.7%	15.1%	15.5%
Card	6.9%	5.3%	4.4%	6.5%	5.7%	6.3%	5.6%
Plastic (dense)	7.9%	6.8%	4.6%	6.7%	6.5%	7.6%	6.5%
Plastic (film)	5.3%	4.2%	3.3%	4.5%	4.4%	4.4%	4.2%
Textiles	2.6%	3.3%	2.3%	4.6%	3.3%	3.2%	3.2%
Misc. Combustibles	7.6%	7.6%	4.8%	11.9%	7.9%	4.2%	7.4%
Glass	7.4%	6.0%	9.0%	8.0%	8.3%	8.6%	7.6%
Misc. Non-combustibles	1.4%	1.1%	3.1%	3.5%	2.1%	1.4%	2.0%
Metal (ferrous)	3.4%	2.3%	2.8%	3.1%	2.9%	3.0%	2.8%
Metal (non-ferrous)	1.4%	1.0%	1.0%	1.4%	1.2%	1.3%	1.2%
WEEE	1.3%	3.4%	0.5%	1.4%	1.3%	1.9%	1.9%
Hazardous	0.5%	0.7%	0.4%	0.2%	0.4%	0.4%	0.5%
Organic Catering	24.7%	20.4%	16.1%	21.6%	19.7%	23.1%	20.3%
Organic Non-catering	11.1%	22.0%	28.1%	9.5%	18.0%	17.8%	19.2%
Fines	2.0%	2.7%	1.5%	2.2%	1.7%	1.8%	2.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

11.2 Comparison with England Kerbside Waste Composition 2006/07

In this section the modelled combined kerbside waste streams study average assay results for the Districts and Partnership are presented and compared to the estimated waste composition (assay) of kerbside waste in England 2006/07[1].

In order to allow direct comparison of the MHWP results with the England Kerbside Waste Composition 2006/07 it was necessary to reconcile the waste composition categories. The primary categories of ferrous and non-ferrous metals have been combined into a single category 'metals'. Equally dense plastic and plastic film have been combined into the category 'plastics'. Finally the England Kerbside Waste Composition 2006/07 includes the category 'other wastes' however there is no comparable category in the waste categorisation used in the MHWP project. Therefore the 'other wastes' category has been retained in the England Kerbside Waste Composition 2006/07 results for reference.

Figure 11.6 and Table 11.6 present the combined kerbside waste study average results (assay, % wt.) for each District, the Partnership and the England Kerbside Waste Composition 2006/07.

[1] Defra (2009) Municipal Waste Composition: Review of Municipal Waste Component Analyses (WR0119), http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=15133#RelatedDocuments [accessed 20th July 2010]

Figure 11.6 Kerbside Waste Assay (% wt.), MHWP Study Averages and England 2006/07 Results

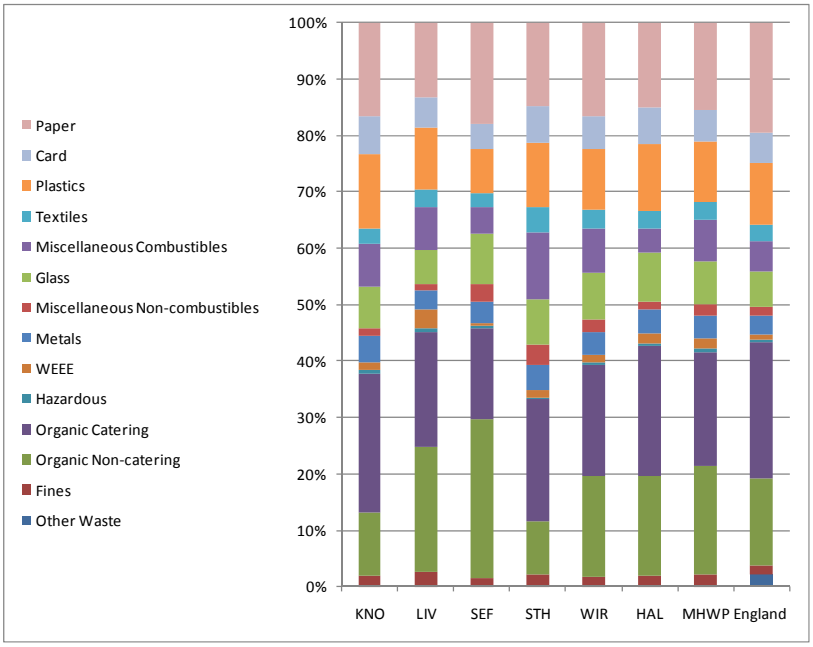

Table 11.6 Kerbside Waste Assay (% wt.), MHWP Study Averages and England 2006/07 Results

Primary Category	KNO	LIV	SEF	STH	WIR	HAL	MHWP	England
Paper	16.5%	13.2%	18.0%	14.9%	16.7%	15.1%	15.5%	19.4%
Card	6.9%	5.3%	4.4%	6.5%	5.7%	6.3%	5.6%	5.4%
Plastics	13.1%	10.9%	7.9%	11.3%	10.9%	12.0%	10.7%	10.9%
Textiles	2.6%	3.3%	2.3%	4.6%	3.3%	3.2%	3.2%	2.9%
Misc. Combustibles	7.6%	7.6%	4.8%	11.9%	7.9%	4.2%	7.4%	5.5%
Glass	7.4%	6.0%	9.0%	8.0%	8.3%	8.6%	7.6%	6.2%
Misc. Non-combustibles	1.4%	1.1%	3.1%	3.5%	2.1%	1.4%	2.0%	1.5%
Metals	4.8%	3.3%	3.8%	4.5%	4.1%	4.2%	3.9%	3.3%
WEEE	1.3%	3.4%	0.5%	1.4%	1.3%	1.9%	1.9%	1.0%
Hazardous	0.5%	0.7%	0.4%	0.2%	0.4%	0.4%	0.5%	0.4%
Organic Catering	24.7%	20.4%	16.1%	21.6%	19.7%	23.1%	20.3%	24.1%
Organic Non-catering	11.1%	22.0%	28.1%	9.5%	18.0%	17.8%	19.2%	15.5%
Fines	2.0%	2.7%	1.5%	2.2%	1.7%	1.8%	2.1%	1.5%
Other Wastes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The majority of results are comparable to the England Kerbside Waste Composition 2006/07 however there are several key differences discussed below.

The proportion of paper was significantly lower in MHWP and the Districts than in for England 2006/07. There is likely to be a number of reasons for this difference however one reason may be the continuation of the long term decline in newspaper and magazine circulation over the past decade as competition from digital news sources has grown coupled with the effects of the recent recession further reducing circulation contributing to an overall fall in waste paper arisings. Local factors may also contribute such as preferences for print media.

The proportions of card, plastic and textiles are broadly comparable in MHWP and the Districts to England 2006/07. Exceptions include Knowsley which contains a higher proportion and Sefton which contains a lower proportion of both card and plastic in comparison to England 2006/07. In addition, it should be noted that in St Helens the proportion of textiles in the kerbside waste stream is high when compared to England 2006/07.

Miscellaneous combustibles and miscellaneous non-combustibles make up a higher proportion of MHWP's waste when compared to England 2006/07 average however this difference may be tempered somewhat as the 'other wastes' category includes materials that are reported to be a mixture of combustible and non-combustible elements.

The proportion of garden waste was significantly higher in MHWP and the Districts than in England 2006/07 while the proportion of organic catering is significantly lower. There are no clear reasons for these differences however one contributory factor is likely to be the impact of time and the recent recession. Waste statistics from Defra suggest that total household waste arisings in England fell by 5.6% between 2006/07 and 2008/09. Such decreases could have a significant effect on the composition of waste particularly if other trends, such as changes in consumption behaviour, significantly alter waste disposal behaviours. For example, the Love Food Hate Waste campaign may have contributed to changes in consumer behaviour resulting in the lower proportion of organic waste in MHWP 2010 kerbside waste composition average when compared to the England 2006/07 average. In addition reductions in waste arisings of key materials, such as paper and organic catering, will contribute to increases in the relative proportions of other materials, such as garden waste.

Finally, it should be noted that the England Kerbside Waste Composition 2006/07 was compiled using hundreds of datasets from studies undertaken over a number of years while the MHWP results are compiled from data from two seasonal sampling exercises and represent a snap shot of the MHWP's waste.

12. Overall Composition of Household Waste

12.1 Introduction

This Section presents the composition of the overall household waste stream arising within the Merseyside and Halton Waste Partnership (MHWP). The overall composition the household waste stream can be estimated using the composition of each stream and data on the tonnage arisings of each of these waste streams.

12.2 Data Sources and Collation

Table 12.1 presents the data sources for each waste stream included within this model.

Table 12.1 Data Sources

Waste Stream	Data Source	
	Tonnage	Composition
Kerbside Household Waste	WasteDataFlow (WDF) Jan-09 to Dec-09	MHWP Kerbside Household Waste Composition Analysis Report, 2010
HWRC Residual Waste	WDF Jan-09 to Dec-09	Residual HWRC Waste Composition Analysis Report, 2010
HWRC Recycling	WDF Jan-09 to Dec-09	WDF material returns, 2009
Bring Banks	WDF Jan-09 to Dec-09	WDF material returns, 2009
Litter Bins	MWDA Apr-09 to Mar-10	Proxy data from large Metropolitan Authority in UK, 2009
Street Sweepings	MWDA Apr-09 to Mar-10	Data on materials recovered from street sweepings recycling contractor, 2009/10
Bulky Waste	WDF Jan-09 to Dec-09	n/a
Gully Waste	WDF Jan-09 to Dec-09	n/a
Fly Tipped Waste	WDF Jan-09 to Dec-09	n/a
Other Household Collected Wastes	WDF Jan-09 to Dec-09	n/a

As no MHWP compositional data is available for Bulky, Gully, Fly tipped and Other Household Collected Wastes these streams are included for reference only.

12.3 Methodology

The methodology for estimating overall household waste composition involves the integration of WDF tonnage data for MHWP with supporting compositional data. Tonnages for each of the material categories were calculated and summed together to provide the arisings of each material within the household waste stream. Table 12.2 summarises the tonnages of the relevant waste streams.

Table 12.2 Summary of Household Waste Stream Arisings, tpa

Waste Stream	MWDA	Halton	Total	% wt.
Kerbside Household Residual	338,937	31,122	370,059	45.1%
Kerbside Household Recycling and Composting	172,989	11,119	184,108	22.4%
HWRC Household Residual	87,299	3,663	90,962	11.1%
HWRC Recycling (excluding rubble)	67,406	7,317	74,723	9.1%
HWRC Rubble	31,441	3,222	34,664	4.2%
Bring Banks	4,867	638	5,505	0.7%
Litter Bins	31,121	2,099	33,220	4.0%
Street Sweepings	7,273	1,455	8,119*	1.0%
Bulky Waste	1,534	384	1,918	0.2%
Gully Waste	2,331	-	2,331	0.3%
Fly Tipped Waste	15,088	-	15,088	1.8%
Other Household Collected Wastes	521	149	669	0.1%
Totals	760,806	61,169	821,365*	100.0%

Note (*): Approximately 7% by weight of street sweepings is lost as moisture and is not included in the final totals

12.4 Reconciliation of Compositional Categories

Variation in the component categories across the datasets required reconciliation in order to compile MHWP's overall household waste composition. These inconsistencies reflect the different levels of detail in reporting between household waste composition analyses, WasteDataFlow reporting and contractor returns. In view of this a primary category list, set out in Table 12.3, was adopted and amended for the purpose of producing MHWP's overall waste composition estimate. The 'other waste' category only includes waste reported as 'other/landfill' in the data including 'other materials' reported for bring banks and HWRC recycling, 'bric-a-brac' and 'toys, leisure and sports equipment' reported for residual HWRC waste and material reported as 'landfilled' in the street sweepings data. It was also necessary to include categories for the waste streams without compositional data.

Table 12.3 Material Categories

Material Category
Paper
Card
Plastic (dense)
Plastic (film)
Textiles
Miscellaneous combustibles
Glass
Miscellaneous Non-combustibles
Metal
WEEE
Hazardous
Organic Catering
Organic Non-catering
Fines
Other
Bulky Waste
Gully Waste
Fly Tipped Waste
Other Household Collected Wastes

12.5 Overall Household Waste Composition Results

The waste composition results for each stream are presented in this section and discussed in the Conclusion section. Figure 12.1 and Table 12.4 present the results.

Figure 12.1 Arisings of Household Waste Streams, tpa

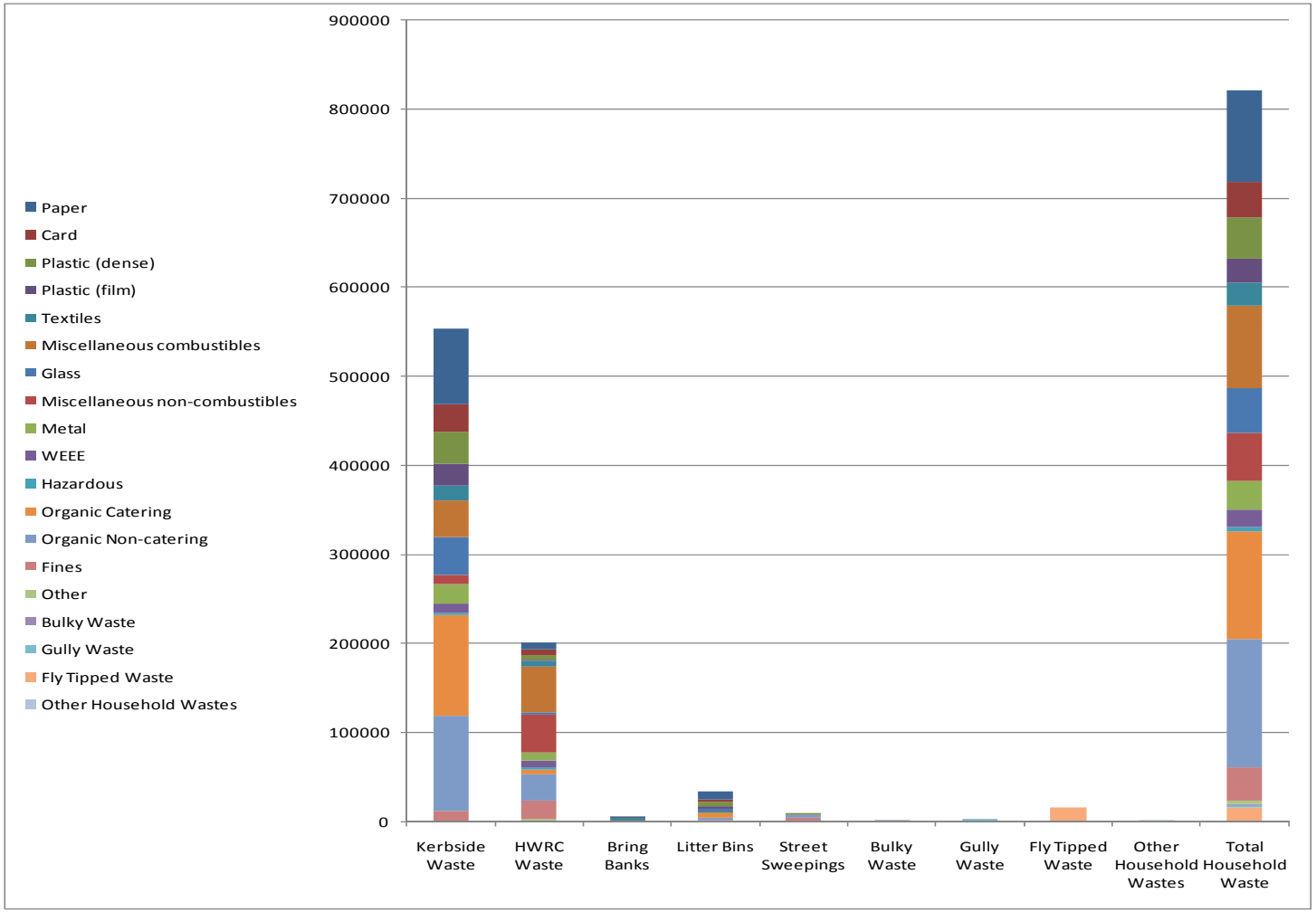

Table 12.4 Assay of Household Waste Streams, % wt.

Primary Category	Kerbside Waste	HWRC Waste (incl. Rubble)	Bring Banks	Litter Bins	Street Sweepings	Bulky Waste	Gully Waste	Fly Tipped Waste	Other Household Collected Wastes	Total Household Waste
Weight	554,167	200,348	5,505	33,220	8,119	1,918	2,331	15,088	669	821,365
% Wt.	67.5%	24.4%	0.7%	4.0%	1.0%	0.2%	0.3%	1.8%	0.1%	100.0%
Paper	15.5%	3.3%	28.8%	25.4%	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%
Card	5.6%	3.3%	0.4%	8.4%	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%
Plastic (dense)	6.5%	2.9%	6.8%	14.4%	1.0%	0.0%	0.0%	0.0%	0.0%	5.7%
Plastic (film)	4.2%	0.5%	0.0%	7.5%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%
Textiles	3.2%	3.1%	27.6%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%
Miscellaneous Combustibles	7.3%	25.8%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	11.3%
Glass	7.6%	1.6%	32.9%	9.4%	0.0%	0.0%	0.0%	0.0%	0.0%	6.1%
Miscellaneous Non-combustibles	2.0%	21.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	6.5%
Metal	3.9%	4.2%	1.7%	5.8%	0.8%	0.0%	0.0%	0.0%	0.0%	3.9%
WEEE	1.9%	4.2%	1.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%
Hazardous	0.5%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%
Organic Catering	20.3%	2.4%	0.0%	14.1%	0.0%	0.0%	0.0%	0.0%	0.0%	14.8%
Organic Non-catering	19.4%	15.2%	0.0%	6.3%	40.5%	0.0%	0.0%	0.0%	0.0%	17.4%
Fines	2.1%	10.2%	0.0%	6.1%	52.4%	0.0%	0.0%	0.0%	0.0%	4.7%
Other	0.0%	1.2%	0.2%	0.0%	5.3%	0.0%	0.0%	0.0%	0.0%	0.4%
Bulky Waste	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.2%
Gully Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.3%
Fly Tipped Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	1.8%
Other Household Collected Wastes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Kerbside waste equates to 67.5% by weight of the household waste. The dominant categories include organic catering at 20.3%, organic non-catering at 19.4% and paper at 15.5%.

HWRC waste including rubble comprises 22.4% by weight of the household waste. The dominant categories include miscellaneous combustibles, miscellaneous non-combustibles and organic non-catering at 25.8%, 21.2% and 15.2% respectively.

The bring bank stream comprises 0.7% by weight of the household waste. The dominant waste categories are glass at 32.9%, paper at 28.8% and textiles at 27.6%.

The litter bin waste stream equates to 4.0% by weight of the household waste. The dominant waste categories in the reference data set used include paper, dense plastic and organic catering at 25.4%, 14.4% and 14.1% respectively.

Street sweepings comprise 1.0% by weight of the household waste stream. The dominant waste categories include fines at 52.4% and organic non-catering at 40.5%.

Bulky waste, gully waste, fly tipped waste and other household collected waste streams comprise 2.4% by weight of the household waste stream. As no MHWP compositional data exists for these waste streams they have been categorised as distinct waste streams so that individuals or organisations using this data can apply their own assumptions or proxy compositional data to them.

The overall household waste stream for the Partnership during the period examined (Jan-09 to Dec-09) is 821,365 tonnes. The dominant categories in the overall household waste stream include organic non-catering, organic catering, paper and miscellaneous combustibles at 17.4%, 14.8%, 12.5% and 11.3% respectively.

The aim of this exercise was to estimate the composition of MHWP's overall household waste stream and quantify the contribution of each individual household waste stream to the overall household waste stream, in particular street cleansing (litter bins and street sweepings), HWRC recycling and bring banks. However, caution must be exercised when using these figures as, due to the large quantity of data collated and differences in how waste streams are reported and categorised, it was not possible to analyse waste components to a more detailed level of categorisation than the primary categories adopted. For example, it should not be assumed that all the paper will be potentially recyclable as this primary category includes materials such as non-recyclable paper and telephone directories which either cannot be, or are difficult to, recycle. However, further analysis of the datasets from the 2010 Waste Composition Analysis may provide additional insights into variation in waste generation and composition.

13. Conclusions

This report presents the results from the Merseyside and Halton Waste Partnership (MHWP) Kerbside Household Waste Analysis. It is the second part of a two-part study and includes summary and study average results (Sections 3 to 10). In addition, the study average results for the Districts and Partnership are compared to each other and the estimated waste composition of kerbside waste in England 2006/07 (Section 11).

The study average figures for the Districts and Partnership were calculated by combining the results from both the seasonal studies. This enables an analysis of waste composition within the Merseyside and Halton Waste Partnership which accounts for seasonality as a factor.

Merseyside and Halton Waste Partnership's average residual waste arisings were 10.95 kg/hh/wk. Sefton at 8.09 kg/hh/wk had the lowest residual waste arisings while St Helens at 12.95 kg/hh/wk had the highest. Overall the Partnership arisings of residual waste were higher during March 2010 (11.38 kg/hh/wk) in comparison with the June 2010 study (10.51 kg/hh/wk). This pattern was repeated for all the Districts with the exception of St Helens whose residual waste arisings were marginally higher in the June 2010 study. The most prominent materials at the Partnership level were organic catering waste at 28.4% (3.10 kg/hh/wk), paper at 13.1% (1.43 kg/hh/wk) and miscellaneous combustibles at 10.4% (1.14 kg/hh/wk). These materials were also the most prominent for the Districts with the exception of Halton which had lower than average arisings of miscellaneous combustibles at 5.9% (0.73 kg/hh/wk). The Biodegradable Municipal Waste (BMW) content of the Partnership's residual waste was 61.5% which ranged from 59.4% in St Helens to 63.2% in Wirral. The calorific value of the residual waste at the Partnership level was calculated to be 8.49 MJ/kg.

Average arisings of garden waste in MHWP were 2.59 kg/hh/wk. St Helens at 1.18 kg/hh/wk had the lowest garden waste arisings while Sefton at 3.85 kg/hh/wk had the highest. Overall the Partnership arisings of garden waste were higher during the June 2010 study (3.41 kg/hh/wk) in comparison to March 2010 (1.77 kg/hh/wk) however this was to be expected due to the seasonal aspect of the garden waste stream. This pattern was repeated for all the Districts. The most prominent material at the Partnership was organic non-catering at 97.1% (2.52 kg/hh/wk). At the District level organic non-catering was also the most prominent material ranging from 73.7% in St Helens to 99.5% in Wirral. In general, the composition of the waste stream varied between the seasons with significantly less non-target material in the garden waste stream during the June 2010 exercise. An average of 43.1% of the organic materials (garden and food) targeted for collection were captured in the Partnership which equates to 2.62 kg/hh/wk. At the District level Halton at 88.6% had the highest organic material capture while St Helens at 29.1% had the lowest[2]. Non-target materials constituted 3.4% of the Partnership's organic stream however this varied from 0.6% in Sefton to 8.6% in Wirral.

[2] Please note that St Helens capture rate is low because card and home compostable food waste are also targeted by this service.

MHWP's average dry recyclables arisings were 2.39 kg/hh/wk. Liverpool at 1.25 kg/hh/wk had the lowest dry recyclable arisings while Wirral at 3.67 kg/hh/wk had the highest. Overall the Partnership arisings of dry recyclables were higher during June 2010 (2.49 kg/hh/wk) in comparison with the March 2010 study (2.29 kg/hh/wk). This pattern was repeated for all the Districts with the exception of Halton and Knowsley whose dry recyclable arisings were lower in the June 2010 study. The most prominent materials at the Partnership level were paper at 43.8% (1.05 kg/hh/wk) and glass at 28.4% (0.68 kg/hh/wk). This pattern was repeated for all the Districts. Metals represented 6.8% of the Partnerships dry recyclables stream and ranged from 5.0% in Halton to 9.6% in Sefton. An average of 40.7% of the materials targeted for recycling was captured in the Partnership which equates to 2.19 kg/hh/wk. At the District level Wirral at 65.9% had the highest organic material capture while Liverpool at 25.2% had the lowest. Non-target materials constituted 8.3% of the Partnership's dry recyclables stream however this varied from 1.9% in St Helens to 14.9% in Liverpool.

Average arisings of food waste in MHWP were 0.12 kg/hh/wk. Sefton and Knowsley had the highest arisings at 0.53 kg/hh/wk and 0.23 kg/hh/wk while the other Districts had zero arisings as they do not currently collect food waste. Overall the Partnership arisings of food waste were higher during June 2010 (0.14 kg/hh/wk) in comparison with the March 2010 study (0.10 kg/hh/wk). The most prominent material at the Partnership was organic catering at 99.3% which ranged from 99.2% in Sefton to 99.9% in Knowsley.

MHWP's modelled arisings for the combined kerbside waste streams were 16.04 kg/hh/wk. Halton at 18.11 kg/hh/wk had the highest combined kerbside waste arisings while Sefton at 15.49 kg/hh/wk had the lowest. Overall the Partnership arisings of kerbside waste were higher during June 2010 (16.55 kg/hh/wk) in comparison with the March 2010 study (15.54 kg/hh/wk) which is primarily due to increased arisings of garden waste during June 2010. This pattern was repeated for all the Districts with the exception of Wirral and Knowsley whose combined kerbside waste arisings were lower in the June 2010 study. The most prominent materials at the Partnership level were organic catering waste at 20.3% (3.25 kg/hh/wk), organic non-catering at 19.2% (3.11 kg/hh/wk) and paper at 15.5% (2.49 kg/hh/wk). These materials were also the most prominent for the Districts with the exception of St Helens which had lower than average arisings of organic non-catering material at 9.5% (1.48 kg/hh/wk). The Biodegradable Municipal Waste (BMW) content of the Partnership's combined kerbside waste streams was 67.1% which ranged from 61.7% in St Helens to 71.0% in Sefton.

The estimated composition for the overall household waste stream (Section 12) includes the following streams: kerbside waste; HWRC waste; bring banks; litter bins; street sweepings; bulky waste; gully waste; fly tipped waste; and, other household collected wastes. The dominant categories in the overall household waste stream include organic non-catering, organic catering, paper and miscellaneous combustibles at 17.4%, 14.8%, 12.5% and 11.3% respectively.

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Appendix A
Dry Recyclables Content and Capture

Appendix A

The following text explains the dry recyclables content and capture table layout and content.

Column 1 - Sets out the 62 material sub-categories into which samples of waste were sorted. Sub-totals are given for the headline categories.

Column 2 - Gives the average arisings of residual waste in kilograms per household per week (kg/hh/wk).

Column 3 - Gives the average arisings of garden waste in kilograms per household per week (kg/hh/wk).

Column 4 - Gives the average arisings of dry recyclables as in kilograms per household per week (kg/hh/wk).

Column 4a - Gives the average arisings of food waste in kilograms per household per week (kg/hh/wk) *(This column will not be present for Districts which do not currently collect food waste).*

Column 5 - Shows the combined total of kerbside collected residual, garden, recyclable and food waste.

Column 6 - Gives the assay, or waste composition. (Column 5 expressed as weight percent).

Column 7 - Shows the amount of targeted dry recyclable materials present in the combined waste streams (kg/hh/wk). At the District level the materials targeted for collection have been tailored to the collection services of each District. At the Partnership level, this column reflects the materials which are collected by one or more of the Districts and, therefore, represents materials which could be potentially recyclable across the Partnership.

Column 8 - Shows the amount of targeted dry recyclable material available in the combined waste streams, as a percentage of the total arisings.

Column 9 - Gives the amount of target dry recyclable material collected in the kerbside scheme (kg/hh/wk).

Column 10 - Shows capture rates for individual target dry recyclables. (Column 9 as a percentage of Column 7). The sub-totals in this column give the capture rates for the target materials in each headline category.

Column 11 - Gives the amount of non-target material collected in the kerbside recycling scheme (kg/hh/wk).

Column 12 - Shows the level of non-target material (contamination) captured as recyclables, as a percentage of collected recyclables (Column 11 as a percentage of Column 4).

Appendix A

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Appendix B
Organic Material Content and Capture

Appendix B

The following text explains the organic material (garden and kitchen waste) content and capture table layout and content.

Column 1 - Sets out the 62 material sub-categories into which samples of waste were sorted. Sub-totals are given for the headline categories.

Column 2 - Gives the average arisings of residual waste in kilograms per household per week (kg/hh/wk).

Column 3 - Gives the average arisings of garden waste in kilograms per household per week (kg/hh/wk).

Column 4 - Gives the average arisings of dry recyclables as in kilograms per household per week (kg/hh/wk).

Column 4a - Gives the average arisings of food waste in kilograms per household per week (kg/hh/wk). *(This column will not be present for Districts which do not currently collect food waste).*

Column 5 - Shows the combined total of kerbside collected residual, garden, recyclable and food waste.

Column 6 - Gives the assay, or waste composition. (Column 5 expressed as weight percent).

Column 7 - Shows the amount of targeted organic material present in the combined waste streams (kg/hh/wk).

Column 8 - Shows the amount of targeted organic material available in the combined waste streams, as a percentage of the total arisings.

Column 9 - Gives the amount of target organic material collected in the kerbside scheme (kg/hh/wk).

Column 10 - Shows capture rates for individual target organic material. (Column 9 as a percentage of Column 7). The sub-totals in this column give the capture rates for the target materials in each headline category.

Column 11 - Gives the amount of non-target material collected in the organic kerbside streams (kg/hh/wk).

Column 12 - Shows the level of non-target material captured as food or garden waste, as a percentage of collected organic material (Column 12 as a percentage of Column 3 + Column 4a)

Appendix B