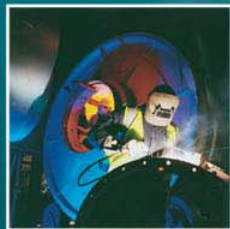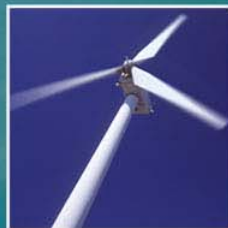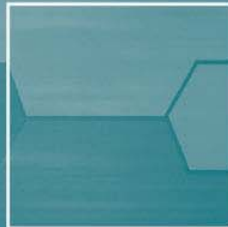# Merseyside and Halton Waste Partnership

The Composition of Residual Waste Arising at Household Waste Recycling Centres in Merseyside

Final Report

September 2010

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Document Revisions

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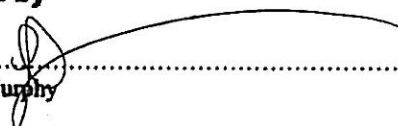
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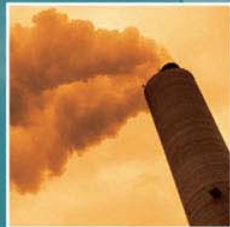reports\mhwp hwrc final report 10364i1.doc

Merseyside and Halton Waste Partnership

The Composition of Residual Waste Arising at Household Waste Recycling Centres in Merseyside

Final Report

September 2010

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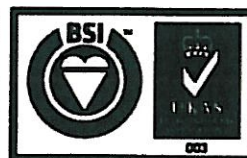
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Executive Summary

In November 2009 MWDA, in partnership with Halton Borough Council commissioned Entec UK Ltd to undertake a two season waste composition analysis. This report has been produced for the purpose of presenting the results from the Household Waste Recycling Centre (HWRC) residual waste composition exercises carried out in March 2010 and June 2010.

The HWRC sites were chosen according to various factors including; tonnage throughput, recycling provision and performance, demographics of HWRC catchment area, geography of HWRC catchment area (i.e. urban or rural) and design of HWRC (e.g. 'split level' site layout). Samples were collected from one site for each District ensuring that each District's HWRC provision was represented giving a total of 6 samples that were used for analysis in each season. Samples (approximately 3-4 tonnes of material) from each HWRC were delivered by MWDA's waste disposal contractor to the sorting site, South Sefton Recycling Park, for analysis.

During the March 2010 waste sort the main materials arising as HWRC residual waste were; inert material at 15.7%, bagged waste at 15.1%, flooring at 9.7% and textiles at 9.4%. The BMW element of the HWRC residual waste stream in March 2010 was calculated to be 35.2%. This was primarily bagged waste, paper and card, textiles and furniture. In March 2010 only 1.7% of the material present in the HWRC residual waste stream was potentially compostable. Of the material present in the HWRC residual waste stream in March 2010, 51.7% was potentially recyclable. This was primarily inert material, textiles, furniture, paper and card and wood.

During the June 2010 waste sort the main waste categories arising as HWRC residual waste included; bagged waste at 33.0%, flooring at 10.3%, furniture at 9.9% and inert waste at 8.5%. In June 2010 the BMW element of the HWRC residual waste stream was calculated to be 43.6%. This was primarily bagged waste, paper and card and garden waste. In June 2010 5.1% of the material present in the HWRC residual waste stream was potentially compostable. Of the material present in the HWRC residual waste stream in June 2010, 33.9% was potentially recyclable. This was primarily furniture, paper and card, textiles and inert material.

The modelled study average shows that the main waste categories arising in HWRC residual waste included; bagged waste at 24.0%, inert material at 12.1% and flooring at 10.0%. The study average BMW element of the HWRC residual waste stream was calculated to be 39.4%. This was primarily bagged waste, paper and card and furniture. Only 3.4% of the material present in the modelled study average HWRC residual waste stream was potentially compostable. This was all garden waste. Of the material present in the study average HWRC residual waste stream 42.8% was potentially recyclable. This was primarily furniture, inert material, textiles and paper and card.

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Contents

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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 Borough Council. 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. MWDA is the client in partnership with Halton Borough Council. 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 and organic waste and Household Waste Recycling Centres (HWRCs) residual waste produced in Merseyside and Halton.

This report has been produced for the purpose of presenting indicative waste compositional information from the second seasonal analysis of Household Waste Recycling Centre (HWRC) residual waste, undertaken in June 2010. Residual waste refers to domestic waste disposed of by the public at HWRCs not destined for either recycling or composting processes. The report also includes a modelled study average calculated using the data collected during both seasons.

Under Entec's guidance, the MWDA identified representative HWRCs from which residual HWRC waste samples could be analysed. During the three week waste composition exercise residual waste samples from the selected HWRCs were delivered by MWDA's contractors to the sorting facility. This material was then manually sorted into the material categories agreed by Entec and MWDA.

The data gathered during the March 2010 and June 2010 waste sort exercises and the analysis results are presented in this report along with the modelled study average for MHWP. It should be noted that the results from the waste composition surveys presented in this report were produced from limited 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 HWRC waste streams in Merseyside and Halton.

1.2 Report Structure

This Report is organised into the following sections:

- Introduction;

- Methodology;

- Waste Composition Results – March 2010;

- Waste Composition Results – June 2010;

- Waste Composition Results – Study Average; and

- Conclusion;

The Methodology Section outlines how the sampling strategy was designed and samples collected. Key sample information and results from the data analysis is detailed in the Results Sections. The Conclusion Section summarises the results for each season and also the study average at the Partnership level.

Summary and study average assay data for each of the HWRCs and the Partnership are presented in Appendices A to C.

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2. Methodology

2.1 Waste Sampling

2.1.1 Introduction

This study looks at residual waste arising at Household Waste Recycling Centres (HWRC). MWDA provides 14 HWRCs within Merseyside and Halton Borough Council provides 2, with differing throughputs and various recycling facilities. All sixteen HWRCs across the Partnership are managed under the Waste Management and Recycling Contract awarded to Veolia Environmental Services in April 2009. With a population of only 16 a sample of 14 would be required to provide a result precision of ±10% at a confidence level of 95%. Although this may be the preferred option in terms of accuracy of results the costs of such a sampling strategy would be prohibitively expensive. Therefore, to ensure best value, Entec used judgemental (or purposeful) sampling to select typical/representative HWRC sites, in conjunction with the Partnership.

2.1.2 Sample Strategy

When choosing between sites various factors will influence selection including; tonnage throughput, recycling provision and performance, demographics of HWRC catchment area, geography of HWRC catchment area (i.e. urban or rural) and design of HWRC (e.g. 'split level' site layout). For this exercise samples were collected from one site in each District ensuring that each District's HWRC provision is represented giving a total of 6 samples for analysis.

2.1.3 Selection of HWRCs

MWDA identified the HWRCs from which samples could be collected. The HWRCs were chosen according to three primary considerations:

1. District HWRC located in;

2. Whether residual waste is compacted or non-compacted at HWRC; and

3. How typical the HWRC is in comparison to overall HWRC provision considering factors including tonnage throughput, recycling provision and performance, demographics of HWRC catchment area, geography of HWRC catchment area (i.e. urban or rural) and design of HWRC (e.g. 'split level' site layout).

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In some cases the sites selected were easily identifiable once the criteria above were considered, for instance Liverpool has only one HWRC in the District. Where more than one HWRC in a District met the criterion above MWDA identified and selected the most typical, and therefore representative, HWRC for sampling.

2.1.4 Sample Collection

A part-filled non-compacted 24m^3 residue skip (approximately 3-4 tonnes of material) constituted one sample. Samples were delivered by MWDA's waste disposal contractor to the sorting site for analysis.

2.1.5 Sample Sorting and Waste Material Classification

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

As each sample was delivered the Entec Consultant acquired and noted the approximate weight of the sample. The load was then tipped across the floor of the sort facility, and the empty container placed along side the pile of material. HWRC sample analysis took place in two stages:

Stage one analysed the bulky materials in the sample. For this work bulky items are defined as 'items larger than a house brick and weighing more than fifty grams'. All of the bagged materials and bulky items are systematically removed from the sample. Single items - such as furniture or carpet - are categorised, weighed and disposed of. Bags of waste were inspected to determine their contents. Bags containing a single type of material e.g. garden waste, rubble or clothes are weighed, categorised as that material type and disposed of. Bags containing domestic waste are weighed and recorded as 'bagged domestic waste'. Bags containing a mixture of waste other than normal domestic waste (e.g. house clearance materials) are weighed and recorded as 'bagged clearance waste'. Any remaining non-bulky material is analysed in stage two.

Stage two analysed the non-bulky material remaining on the floor after analysing the bulky materials. For all but one sample there was too much non-bulky material to be analysed within the time constraints, so the first step was to reduce the amount of material to be analysed. This was achieved by coning and quartering the non-bulky material to remove a representative sub-sample of approximately 100 kg. The excess material is weighed, recorded and disposed of. The sub-sample material is then hand sorted to the same categories used to analyse the bulky material in stage 1.

During the sort weighed material was be deposited back into the empty container, which at the end of the sort was removed for disposal in the normal manner.

The waste categories used for the HWRC waste composition survey were drawn up and agreed by MWDA and Entec prior to the sorting exercise. Table 2.5 below presents the primary and secondary waste material categories used for the HWRC sorting exercise.

Table 2.1   HWRC Waste Classification

Primary Category	Secondary Category	Examples
Garden Waste		Twigs, leaves, grass cuttings, hedges trimmings, cut flowers
Wood	Wood	
	Chipboard, MDF, etc.	
Scrap Metal	Ferrous	Attracted to magnets
	Non-Ferrous	Not attracted to magnets
Paper & Card	Paper	All paper
	Card	All card
Plastic	Plastic Film	Packaging film, carrier bags and all other film
	Dense Plastic Packaging	Expanded polystyrene packaging, food trays, yoghurt pots, other plastic packaging
	Other Dense Plastic	Video tapes, CD cases, CD's , toys, disposable razors, all non-packaging dense plastic
	Other Plastic	Fibreglass and other composites
Glass	Packaging Glass	Bottles and jars
	Non-packaging Glass	Flat glass, glass ornaments, etc.
Textiles	Textiles	Clothing, rags, sheets, towels, fabric off cuts, balls of wool, wash cloths
	Shoes	All footwear
Bric-a-brac	Books	
	Other Bric-a-brac	Board games, statuettes and other ornaments, decorative items, etc.
Furniture	Hard furniture	
	Soft Furnishings	Cushions, curtains, duvets, etc.
	Other furnishings	Mattresses
Ceramics		Crockery and ornaments, toilets and wash basins
Inert Material	Soil	Soil, compost, soil laden plant roots
	Construction and Demolition	Hardcore, rubble, sawdust, gravel, sand, cement
	Plasterboard	Plasterboard, plaster
Flooring		Carpet and lino
Insulation Materials		Mineral fibre or fibreglass matting and loose materials
Bicycles		Bicycles
Toys, Leisure and Sports Equipment		Toys (excluding those with electronic components), footballs and other balls, sport bats or rackets, etc.
WEEE	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.
	Lighting	Light fixtures and lamps
	Electrical & Electronic Tools	Drills, electrical saws, sewing machines etc.
	Toys, Leisure & Sports Equip	Electronic toys, video games, sports equipment with electric or electronic components
Hazardous	Fluorescent tubes	
	Cooking oil	Cooking oils
	Engine Oil	Engine oil
	Household Batteries	Non-lead acid batteries
	Car Batteries	Lead-acid batteries
	Identifiable Clinical Waste	Drugs, tablets & packaging, dressings, syringes, medical items, blood soiled waste
	Other Potentially Hazardous	White spirit, thinners, paint, insecticides, bleach, chemicals, asbestos
Other Liquid Waste		Washing liquids, shampoo and other non-hazardous liquid wastes.
Organic	Food	All food products
	Other organic	Dead animals, excrement, organic animal bedding, bone
Disposable Nappies		Disposable nappies and other sanitary products
Bagged Waste	Residual Waste	Normal household residual waste
	Clearance Waste	Other general household waste
Fines	Fines	Fine material less than 10 mm

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2.2 Data Analysis

The data collected using the methodology described above was entered into Excel spreadsheets. A modelled average for MHWP was calculated for each season. This was done by combining the assay data for the sample sites in each District with the HWRC disposal tonnages for each District. These calculated tonnages were then divided by total tonnage to calculate the assay (% wt.) for each material category. Table 2.2 presents the tonnages used in calculating the modelled average for each season. Using the modelled averages calculated from March 2010 and June 2010 waste sorts, a study average was calculated.

Modelled average data for each season was calculated as follows:

(Assay reporting to material category, Otterspool x Liverpool Tonnage) + (Assay reporting to material category, Sefton Meadows x Sefton Tonnage) + (Assay reporting to material category, Clatterbridge x Wirral Tonnage) + (Assay reporting to material category, Rainhill x St Helens Tonnage) + (Assay reporting to material category, Kirkby x Knowsley Tonnage) + (Assay reporting to material category, Johnsons Lane x Halton Tonnage)

= Modelled Season Average Tonnage reporting to material category, expressed as an assay (% wt.)

Study average data was calculated as follows:

$$\frac{\text{(Arisings reporting to material category March 2010, kg)} + \text{(Arisings reporting to material category June 2010, kg)}}{\text{(Total arisings March 2010, kg)} + \text{(Total arisings June 2010, kg)}} = \text{Study Average Material Arisings, expressed as an assay (\% wt.)}$$

Table 2.2   HWRC Residual Waste Arisings (t) in Merseyside and Halton Waste Partnership, 2009/10

District	Tonnage	Proportion of HWRC Residual Waste
Knowsley	13560	15.6%
Liverpool	7286	8.4%
Sefton	32957	38.0%
St Helens	11402	13.1%
Wirral	17723	20.4%
Halton	3853	4.4%
Total	86780	100.0%

2.3 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 Entec for different waste fractions are presented in Table 2.3. The biodregradability factor assigned to bagged waste is the BMW content calculated for MHWP study average residual waste arisings (see Kerbside Household Waste Composition Analysis Report, Section 10.3). Biodegradability of the HWRC residual waste is calculated by multiplying the individual primary waste components by its biodegradability factor.

Table 2.3   HWRC Biodegradable Content Factors

Primary Material Category	Biodegradability Factor
Garden Waste	100%
Wood	50%
Scrap Metal	0%
Paper & Card	100%
Plastics	0%
Glass	0%
Textiles	50%
Bric-a-brac	50%
Furniture	50%
Ceramics	0%
Inert Material	0%
Flooring	0%
Insulation Material	0%
Bicycles	0%
Toys, leisure and sports equip	0%
WEEE	0%
Hazardous	0%
Other Liquid Waste	0%
Organic	100%
Nappies	50%
Bagged Waste	61.5%
Fines	50%

2.4 Quality Control Measures

Entec provided the waste sorting team with an induction session, which included a presentation and a practical workshop focussed on health, safety and project protocols. 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.

2.5 Project Limitations

This study only provides a 'snapshot' of the composition of waste generated at the selected HWRCs in MHWP. 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; and.

- 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.

3. Waste Composition Results - March 2010

3.1 Results

A summary of the HWRC compositional results for March 2010 are presented in Figure 3.1 and Table 3.1.

Information on the secondary categories is presented in Appendix A.

Figure 3.1   HWRC Residual Waste Assay (% wt.) – March 2010
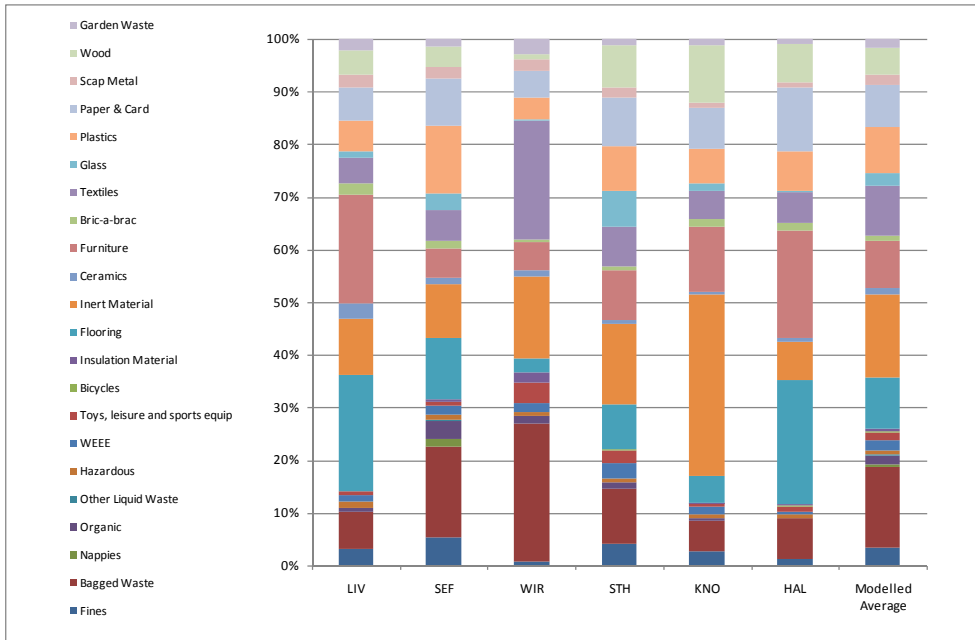
Table 3.1   HWRC Residual Waste Assay (% wt.) – March 2010

Primary Category	Otters-pool (LIV)	Sefton Meadows (SEF)	Clatter-bridge (WIR)	Rainhill (STH)	Kirkby (KNO)	Johnsons Lane (HAL)	Modelled Average
Garden Waste	2.3	1.4	2.9	1.3	1.3	1.0	1.7
Wood	4.4	4.1	0.9	8.0	10.8	7.2	5.2
Scrap Metal	2.6	2.1	2.2	1.9	0.9	1.0	1.9
Paper & Card	6.1	9.0	5.3	9.2	7.9	11.9	8.0
Plastics	5.9	12.7	4.0	8.5	6.5	7.6	8.6
Glass	1.2	3.2	0.3	6.7	1.4	0.2	2.5
Textiles	4.8	5.9	22.7	7.6	5.3	6.0	9.4
Bric-a-brac	2.1	1.4	0.3	0.7	1.4	1.3	1.1
Furniture	20.6	5.5	5.4	9.3	12.4	20.5	9.0
Ceramics	3.0	1.2	1.3	0.9	0.5	0.8	1.2
Inert Material	10.8	10.3	15.4	15.2	34.6	7.3	15.7
Flooring	21.9	11.5	2.7	8.5	5.0	23.5	9.7
Insulation Material	0.0	0.5	1.9	0.0	0.1	0.1	0.6
Bicycles	0.0	0.0	0.0	0.3	0.0	0.4	0.1
Toys etc	0.8	0.8	3.9	2.4	0.7	0.9	1.7
WEEE	1.2	1.8	1.6	2.9	1.5	0.5	1.8
Hazardous	1.2	0.9	0.9	0.7	0.6	0.6	0.9
Other Liquid Waste	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Organic	0.9	3.4	1.3	1.2	0.5	0.0	1.9
Nappies	0.0	1.4	0.0	0.0	0.0	0.0	0.5
Bagged Waste	6.9	17.3	26.2	10.2	5.7	7.9	15.1
Fines	3.2	5.4	0.8	4.2	2.8	1.1	3.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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Otterspool (Liverpool)

A total of 2,795 kg of HWRC residual waste from Otterpool HWRC was analysed. The dominant primary waste categories identified within the sample were flooring at 21.9%, furniture at 20.6% and inert material at 10.8%.

Sefton Meadows (Sefton)

A total of 4,827 kg of HWRC residual waste from Sefton Meadows Recycling Park was analysed. The dominant primary waste categories identified within the sample were bagged waste, plastics, flooring and inert material at 17.3%, 12.7%, 11.5% and 10.3% respectively.

Clatterbridge (Wirral)

A total of 1,259 kg of HWRC residual waste from Clatterbridge HWRC was analysed. The dominant primary waste categories identified within the sample were bagged waste at 26.2%, textiles at 22.7% and inert material at 15.4%.

Rainhill (St Helens)

A total of 3,396 kg of HWRC residual waste from Rainhill HWRC was analysed. The dominant primary waste categories identified within the sample were inert material, bagged waste, furniture and paper at 15.2%, 10.2%, 9.3% and 9.2% respectively.

Kirkby (Knowsley)

A total of 2,767 kg of HWRC residual waste from Kirkby HWRC was analysed. The dominant primary waste categories identified within the sample were inert material at 34.6%, furniture at 12.4% and wood at 10.8%.

Johnsons Lane (Halton)

A total of 3,513 kg[1] of HWRC residual waste from Johnsons Lane HWRC was analysed. The dominant primary waste categories identified within the sample were flooring, furniture and paper and card 23.5%, 20.5% and 11.9% respectively.

Average Result

The HWRC average dominant primary waste categories include inert material at 15.7%, bagged waste at 15.1%, flooring at 9.7% and textiles at 9.4%.

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[1] from an estimated 5,800 kg

3.2   Biodegradable Municipal Waste (BMW)

3.2.1   BMW content of HWRC Residual Waste

The BMW content of the MHWP HWRC residual waste stream is presented in Figure 3.2 and Table 3.2. These values were calculated by multiplying the individual primary waste components by the relevant biodegradability factor.

Figure 3.2   Proportion (% wt.) of BMW in MHWP HWRC Waste Stream – March 2010
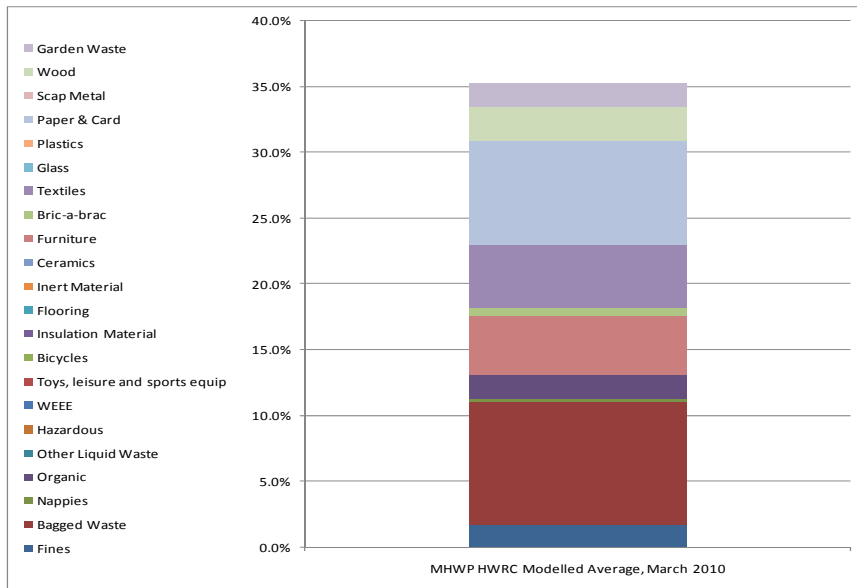
Table 3.2   Proportion (% wt.) of BMW in MHWP HWRC Waste Stream – March 2010

Primary Category	HWRC Average
Garden Waste	1.7%
Wood	2.6%
Scrap Metal	0.0%
Paper & Card	8.0%
Plastics	0.0%
Glass	0.0%
Textiles	4.7%
Bric-a-brac	0.6%
Furniture	4.5%
Ceramics	0.0%
Inert Material	0.0%
Flooring	0.0%
Insulation Material	0.0%
Bicycles	0.0%
Toys etc	0.0%
WEEE	0.0%
Hazardous	0.0%
Other Liquid Waste	0.0%
Organic	1.9%
Nappies	0.3%
Bagged Waste	9.3%
Fines	1.8%
Total	35.2%

3.3 Potentially Recyclable and Compostable Material

Further analysis of the HWRC residual waste composition data was undertaken to calculate the presence of potentially recyclable/compostable material. The following text explains the content of Table 3.3 below.

Column 1 - Sets out the primary material categories

Column 2 - Sets out the 50 material sub-categories into which samples of waste were sorted.

Column 3 - Gives the assay, or waste composition. Sub-totals are given for the headline categories.

Column 4 - Shows the level of potentially recyclable material present in the waste stream.

Column 5 - Shows the level of potentially compostable organic present in the waste stream.

The results for the presence of potentially recyclable and compostable material are shown in Table 3.3 below.

3.4 Summary – March 2010

The results presented in Section 3 can be summarised as follows:

- The main materials arising as residual waste at HWRCs in Merseyside, March 2010, were:

    o inert material at 15.7%;

    o bagged waste at 15.1%;

    o flooring at 9.7%; and,

    o textiles at 9.4%.

- The BMW element of the HWRC residual waste stream was calculated to be 35.2%. This was primarily bagged waste, paper and card, textiles and furniture;

- Only 1.7% of the material present in the HWRC residual waste stream was potentially compostable; and,

- Of the material present in the HWRC residual waste stream 51.7% was potentially recyclable. This was primarily inert material, textiles, furniture, paper and card and wood.

Table 3.3   Potentially Recyclable and Compostable Material – March 2010

Primary Category	Secondary Category	Assay (wt%)	Potentially Recyclable (wt%)	Potentially Compostable (wt%)
Garden Waste		1.7%	-	1.7%
Subtotal Garden		**1.7%**	**-**	**1.7%**
Wood	Wood	2.3%	2.3%	-
	MDF, Chipboard, other	2.9%	2.9%	-
Subtotal Wood		**5.2%**	**5.2%**	**-**
Scrap Metal	Ferrous	1.3%	1.3%	-
	Non-ferrous	0.6%	0.6%	-
Subtotal Scrap Metal		**1.9%**	**1.9%**	**-**
Paper and Card	Paper	4.7%	4.7%	-
	Card	3.3%	3.3%	-
Subtotal Paper and Card		**8.0%**	**8.0%**	**-**
Plastics	Plastic Film	2.1%	-	-
	Densne Plastic Packaging	1.5%	-	-
	Dense Plastic Non-Packag	4.6%	-	-
	Other Plastic	0.4%	-	-
Subtotal Plastics		**8.6%**	**-**	**-**
Glass	Bottles & Jars	0.6%	0.6%	-
	Other Glass	1.9%	-	-
Subtotal Glass		**2.5%**	**0.6%**	**-**
Textiles	Textiles	8.6%	8.6%	-
	Shoes	0.8%	0.8%	-
Subtotal Textiles		**9.4%**	**9.4%**	**-**
Bric-a-brac	Books	0.8%	0.8%	-
	Other bric-a-brac	0.4%	-	-
Subtotal Bric-a-brac		**1.1%**	**0.8%**	**-**
Furniture	Hard Furniture	3.7%	3.7%	-
	Soft furnishings	2.4%	2.4%	-
	Other furnishings	2.9%	2.9%	-
Subtotal Furniture		**9.0%**	**9.0%**	**-**
Ceramics		1.2%	-	-
Subtotal Ceramics		**1.2%**	**-**	**-**
Inert Material	Soil	2.2%	-	-
	C&D (rubble, hardcore, etc	12.5%	12.5%	-
	Plasterboard	0.9%	0.9%	-
Subtotal Inert Material		**15.7%**	**13.4%**	**-**
Flooring	Carpet & lino	9.7%	-	-
Subtotal Flooring		**9.7%**	**-**	**-**
Insulation Material		0.6%	-	-
Subtotal Insulation		**0.6%**	**-**	**-**
Bicycles		0.1%	0.1%	-
Subtotal Bicycles		**0.1%**	**0.1%**	**-**
Toys, leisure and sports equip		1.7%	1.7%	-
ubtotal Toys, leisure and sports equip		**1.7%**	**1.7%**	**-**
WEEE	Large household appliance	0.3%	0.3%	-
	small household appliance	0.2%	0.2%	-
	IT & Telecoms Equip	0.4%	0.4%	-
	Consumer Equip	0.1%	0.1%	-
	Lighting	0.1%	0.1%	-
	Elec & Electronic Tools	0.1%	0.1%	-
	Toys, Leisure & sports Equ	0.5%	0.5%	-
Subtotal WEEE		**1.8%**	**1.8%**	**-**
Hazardous	Flourescent tubes	0.0%	-	-
	Cooking oil	0.1%	-	-
	Engine oil	0.1%	-	-
	Household batteries	0.0%	-	-
	Car batteries	0.1%	-	-
	Clinical	0.0%	-	-
	Other potentially hazardou	0.6%	-	-
Subtotal Hazardous		**0.9%**	**-**	**-**
Other Liquid Waste		0.0%	-	-
Subtotal Liquid Waste		**0.0%**	**-**	**-**
Organic	Food	1.3%	-	-
	Other Organic	0.6%	-	-
Subtotal Organic		**1.9%**	**-**	**-**
Nappies		0.5%	-	-
Subtotal Nappies		**0.5%**	**-**	**-**
Bagged Waste	Residual	10.9%	-	-
	Clearance	4.2%	-	-
Subtotal Bagged Waste		**15.1%**	**-**	**-**
Fines	Material less than 10 mm	3.5%	-	-
Subtotal Fines		**3.5%**	**-**	**-**
Total		**100.0%**	**51.7%**	**1.7%**

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4. Waste Composition Results - June 2010

4.1 Results

A summary of the compositional results are presented in Figure 4.1 and Table 4.1.

Information on the secondary categories is presented in Appendix B.

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Figure 4.1   HWRC Residual Waste Assay (% wt.) – June 2010
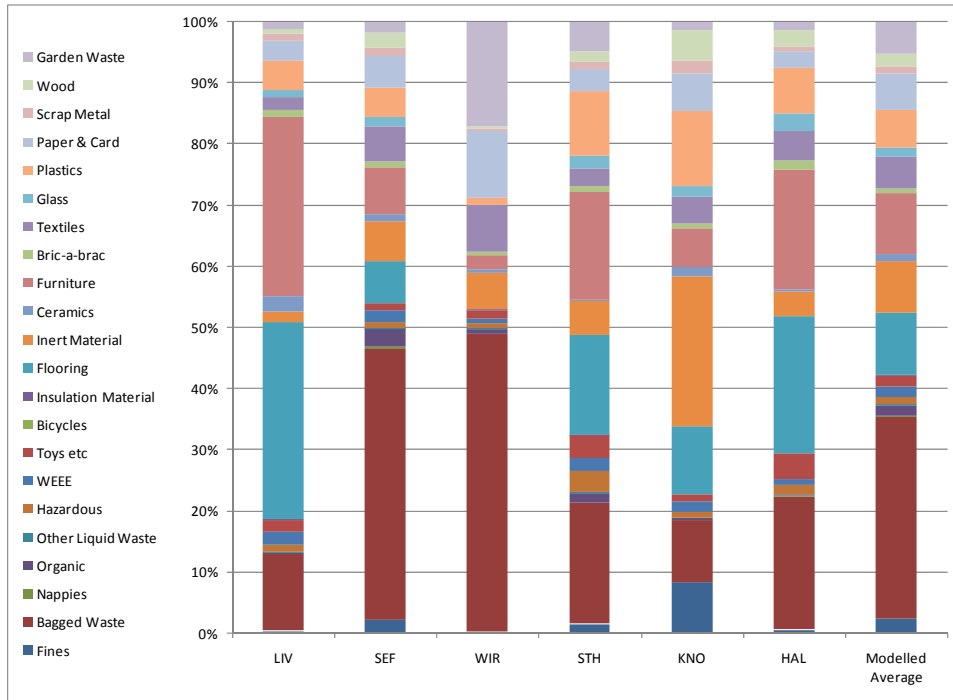
Table 4.1   HWRC Residual Waste Assay (% wt.) – June 2010

Primary Category	Otters-pool (LIV)	Sefton Meadows (SEF)	Clatter-bridge (WIR)	Rainhill (STH)	Kirkby (KNO)	Johnsons Lane (HAL)	Modelled Average
Garden Waste	1.2	1.7	17.1	4.8	1.4	1.3	5.1
Wood	0.8	2.6	0.4	1.8	5.0	2.8	2.2
Scrap Metal	1.0	1.2	0.4	1.0	2.0	0.7	1.1
Paper & Card	3.4	5.3	10.8	3.8	6.2	2.6	6.1
Plastics	4.7	4.8	1.2	10.4	12.2	7.6	6.1
Glass	1.1	1.5	0.0	2.1	1.8	2.9	1.4
Textiles	2.1	5.8	7.7	2.9	4.4	4.8	5.2
Bric-a-brac	1.3	0.9	0.6	1.1	0.7	1.4	0.9
Furniture	29.3	7.6	2.2	17.6	6.3	19.7	9.9
Ceramics	2.5	1.3	0.6	0.2	1.7	0.3	1.1
Inert Material	1.8	6.4	6.0	5.5	24.4	4.0	8.5
Flooring	32.2	7.0	0.0	16.3	11.2	22.5	10.3
Insulation	0.1	0.0	0.2	0.1	0.0	0.0	0.1
Bicycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Toys etc	2.0	1.1	1.2	3.8	1.1	4.2	1.7
WEEE	2.2	1.9	0.8	2.2	1.8	1.0	1.7
Hazardous	1.1	0.9	0.8	3.4	0.9	1.4	1.3
Other Liquid	0.1	0.1	0.1	0.2	0.0	0.0	0.1
Organic	0.3	3.1	0.9	1.5	0.3	0.3	1.7
Nappies	0.0	0.4	0.0	0.0	0.0	0.1	0.2
Bagged Waste	12.5	44.2	48.7	19.8	10.2	21.8	33.0
Fines	0.3	2.2	0.1	1.5	8.3	0.5	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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Otterspool (Liverpool)

A total of 2,845 kg of HWRC residual waste from Otterpool HWRC was analysed. The dominant primary waste categories identified within the sample were flooring at 32.2%, furniture at 29.3% and bagged waste at 12.5%.

Sefton Meadows (Sefton)

A total of 4,536 kg of HWRC residual waste from Sefton Meadows Recycling Park was analysed. The dominant primary waste categories identified within the sample were bagged waste, furniture, flooring and inert material at 44.2%, 7.5%, 7% and 6.4% respectively.

Clatterbridge (Wirral)

A total of 752 kg of HWRC residual waste from Clatterbridge HWRC was analysed. The dominant primary waste categories identified within the sample were bagged waste at 48.7%, garden waste at 17.1%, paper and card at 10.8% and textiles at 7.7%.

Rainhill (St Helens)

A total of 1,490 kg of HWRC residual waste from Rainhill HWRC was analysed. The dominant primary waste categories identified within the sample were bagged waste, furniture, flooring and plastics at 19.8%, 17.6%, 16.3% and 10.5% respectively.

Kirkby (Knowsley)

A total of 1,891 kg of HWRC residual waste from Kirkby HWRC was analysed. The dominant primary waste categories identified within the sample were inert material at 24.4%, plastics at 12.2%, flooring at 11.2% and bagged waste at 10.2%.

Johnsons Lane (Halton)

A total of 1,590 kg of HWRC residual waste from Johnsons Lane HWRC was analysed. The dominant primary waste categories identified within the sample were flooring, bagged waste and furniture at 22.6%, 21.8% and 19.7% respectively.

Average Result

The HWRC average dominant primary waste categories include bagged waste at 33.0%, flooring at 10.3%, furniture at 9.9% and inert waste at 8.5%.

4.2 Biodegradable Municipal Waste (BMW)

4.2.1 MHWP HWRC Residual Waste BMW

The BMW content of the MHWP HWRC residual waste stream is presented in Figures 4.2 and Table 4.2. These values were calculated by multiplying the individual primary waste components by the relevant biodegradability factor.

Figure 4.2   Proportion (% wt.) of BMW in MHWP HWRC Waste Stream – June 2010
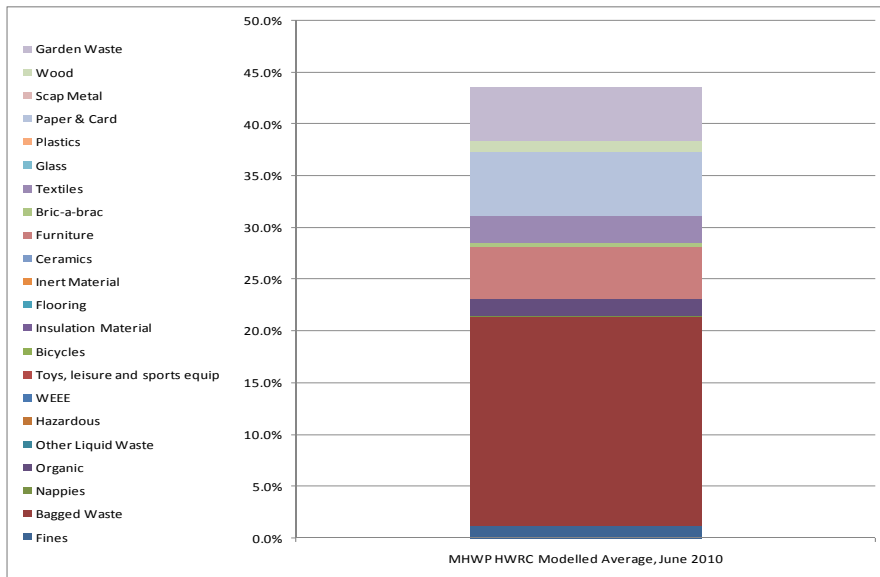
Table 4.2   Proportion (% wt.) of BMW in MHWP HWRC Waste Stream – June 2010

Primary Category	HWRC Average
Garden Waste	5.1%
Wood	1.1%
Scap Metal	0.0%
Paper & Card	6.1%
Plastics	0.0%
Glass	0.0%
Textiles	2.6%
Bric-a-brac	0.4%
Furniture	5.0%
Ceramics	0.0%
Inert Material	0.0%
Flooring	0.0%
Insulation Material	0.0%
Bicycles	0.0%
Toys etc	0.0%
WEEE	0.0%
Hazardous	0.0%
Other Liquid Waste	0.0%
Organic	1.7%
Nappies	0.1%
Bagged Waste	20.3%
Fines	1.2%
Total	43.6%

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4.3   Potentially Recyclable and Compostable Material

Further analysis of the HWRC residual waste composition data was undertaken to calculate the presence of potentially recyclable/compostable material. The following text explains the content of Table 4.3 below.

Column 1 - Sets out the primary material categories

Column 2 - Sets out the 50 material sub-categories into which samples of waste were sorted.

Column 3 - Gives the assay, or waste composition. Sub-totals are given for the headline categories.

Column 4 - Shows the level of potentially recyclable material present in the waste stream.

Column 5 - Shows the level of potentially compostable material present in the waste stream.

The results for the presence of potentially recyclable and compostable material are shown in Table 4.3 below.

4.4   Summary – June 2010

The results presented in Section 4 can be summarised as follows:

- The main materials arising as residual waste at HWRCs in Merseyside, June 2010, were:

    o bagged waste at 33.0%;

    o flooring at 10.3%;

    o furniture at 9.9%; and,

    o inert waste at 8.5%;

- The BMW element of the HWRC residual waste stream was calculated to be 43.6%. This was primarily bagged waste, paper and card and garden waste;

- 5.1% of the material present in the HWRC residual waste stream was potentially compostable; and,

- Of the material present in the HWRC residual waste stream 33.9% was potentially recyclable. This was primarily furniture, paper and card, textiles and inert material.

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Table 4.3   Potentially Recyclable and Compostable Material – June 2010

Primary Category	Secondary Category	Assay (wt%)	Potentially Recyclable (wt%)	Potentially Compostable (wt%)
Garden Waste		5.1%	-	5.1%
Subtotal Garden		**5.1%**	**-**	**5.1%**
Wood	Wood	0.8%	0.8%	-
	MDF, Chipboard, other	1.4%	1.4%	-
Subtotal Wood		**2.2%**	**2.2%**	**-**
Scrap Metal	Ferrous	0.8%	0.8%	-
	Non-ferrous	0.3%	0.3%	-
Subtotal Scrap Metal		**1.1%**	**1.1%**	**-**
Paper and Card	Paper	4.6%	4.6%	-
	Card	1.5%	1.5%	-
Subtotal Paper and Card		**6.1%**	**6.1%**	**-**
Plastics	Plastic Film	1.2%	-	-
	Densne Plastic Packaging	0.7%	-	-
	Dense Plastic Non-Packag	4.3%	-	-
	Other Plastic	0.0%	-	-
Subtotal Plastics		**6.1%**	**-**	**-**
Glass	Bottles & Jars	0.5%	0.5%	-
	Other Glass	0.8%	-	-
Subtotal Glass		**1.4%**	**0.5%**	**-**
Textiles	Textiles	4.7%	4.7%	-
	Shoes	0.5%	0.5%	-
Subtotal Textiles		**5.2%**	**5.2%**	**-**
Bric-a-brac	Books	0.1%	0.1%	-
	Other bric-a-brac	0.8%	-	-
Subtotal Bric-a-brac		**0.9%**	**0.1%**	**-**
Furniture	Hard Furniture	4.5%	4.5%	-
	Soft furnishings	2.9%	2.9%	-
	Other furnishings	2.6%	2.6%	-
Subtotal Furniture		**9.9%**	**9.9%**	**-**
Ceramics		1.1%	-	-
Subtotal Ceramics		**1.1%**	**-**	**-**
Inert Material	Soil	3.3%	-	-
	C&D (rubble, hardcore, etc	5.1%	5.1%	-
	Plasterboard	0.2%	0.2%	-
Subtotal Inert Material		**8.5%**	**5.2%**	**-**
Flooring	Carpet & lino	10.3%	-	-
Subtotal Flooring		**10.3%**	**-**	**-**
Insulation Material		0.1%	-	-
Subtotal Insulation		**0.1%**	**-**	**-**
Bicycles		0.0%	0.0%	-
Subtotal Bicycles		**0.0%**	**0.0%**	**-**
Toys, leisure and sports equip		1.7%	1.7%	-
Subtotal Toys, leisure and sports equip		**1.7%**	**1.7%**	**-**
WEEE	Large household appliance	0.2%	0.2%	-
	small household appliance	0.4%	0.4%	-
	IT & Telecoms Equip	0.1%	0.1%	-
	Consumer Equip	0.1%	0.1%	-
	Lighting	0.1%	0.1%	-
	Elec & Electronic Tools	0.2%	0.2%	-
	Toys, Leisure & sports Equ	0.5%	0.5%	-
Subtotal WEEE		**1.7%**	**1.7%**	**-**
Hazardous	Flourescent tubes	0.0%	-	-
	Cooking oil	0.0%	-	-
	Engine oil	0.0%	-	-
	Household batteries	0.0%	-	-
	Car batteries	0.0%	-	-
	Clinical	0.0%	-	-
	Other potentially hazardou	1.2%	-	-
Subtotal Hazardous		**1.3%**	**-**	**-**
Other Liquid Waste		0.1%	-	-
Subtotal Liquid Waste		**0.1%**	**-**	**-**
Organic	Food	1.0%	-	-
	Other Organic	0.6%	-	-
Subtotal Organic		**1.7%**	**-**	**-**
Nappies		0.2%	-	-
Subtotal Nappies		**0.2%**	**-**	**-**
Bagged Waste	Residual	26.4%	-	-
	Clearance	6.5%	-	-
Subtotal Bagged Waste		**33.0%**	**-**	**-**
Fines	Material less than 10 mm	2.4%	-	-
Subtotal Fines		**2.4%**	**-**	**-**
Total		**100.0%**	**33.9%**	**5.1%**

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5. Waste Composition Results – Study Average

5.1 Results

A summary of the compositional results are presented in Figure 5.1 and Table 5.1.

Information on the secondary categories is presented in Appendix C.

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Figure 5.1   HWRC Residual Waste Assay (% wt.) – Study Average
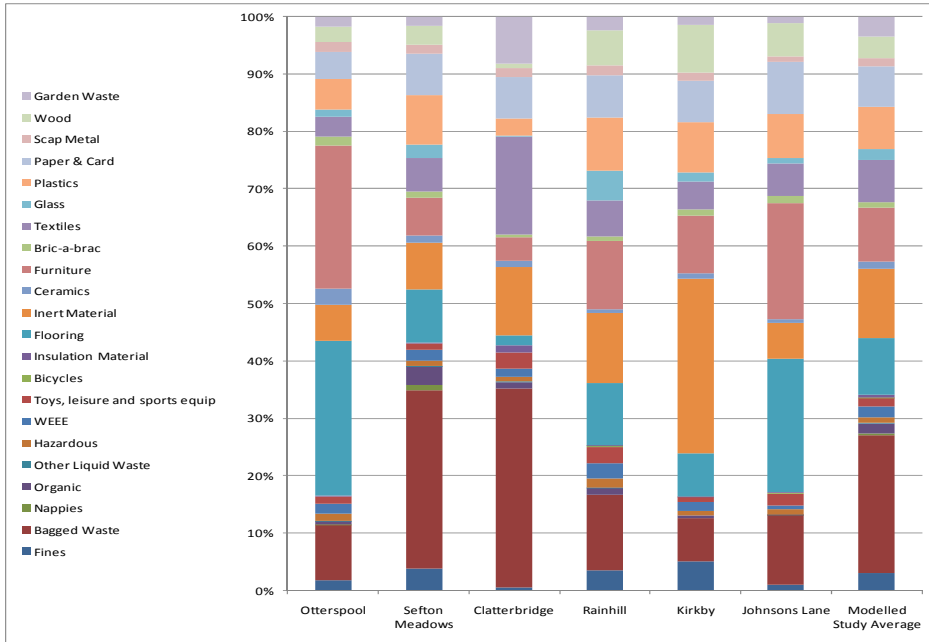
Table 5.1   HWRC Residual Waste Assay (% wt.) – Study Average

Primary Category	Otters-pool (LIV)	Sefton Meadows (SEF)	Clatter-bridge (WIR)	Rainhill (STH)	Kirkby (KNO)	Johnsons Lane (HAL)	Modelled Study Average
Garden Waste	1.7	1.5	8.2	2.4	1.3	1.1	3.4
Wood	2.6	3.3	0.7	6.1	8.4	5.9	3.7
Scrap Metal	1.8	1.6	1.5	1.6	1.3	0.9	1.5
Paper & Card	4.7	7.1	7.4	7.5	7.2	9.0	7.0
Plastics	5.3	8.7	2.9	9.1	8.8	7.6	7.4
Glass	1.2	2.3	0.2	5.3	1.6	1.0	1.9
Textiles	3.5	5.8	17.1	6.2	4.9	5.6	7.3
Bric-a-brac	1.7	1.1	0.4	0.8	1.1	1.3	1.0
Furniture	25.0	6.6	4.2	11.9	9.9	20.3	9.5
Ceramics	2.7	1.2	1.1	0.7	1.0	0.6	1.2
Inert Material	6.2	8.3	11.9	12.3	30.5	6.3	12.1
Flooring	27.1	9.2	1.7	10.9	7.5	23.2	10.0
Insulation Material	0.0	0.2	1.3	0.0	0.0	0.1	0.3
Bicycles	0.0	0.0	0.0	0.2	0.0	0.3	0.0
Toys etc	1.4	1.0	2.9	2.8	0.9	1.9	1.7
WEEE	1.7	1.9	1.3	2.7	1.6	0.7	1.7
Hazardous	1.2	0.9	0.9	1.6	0.8	0.9	1.1
Other Liquid Waste	0.1	0.1	0.0	0.1	0.0	0.0	0.1
Organic	0.6	3.2	1.2	1.3	0.5	0.1	1.8
Nappies	0.0	0.9	0.0	0.0	0.0	0.0	0.4
Bagged Waste	9.8	31.2	34.6	13.2	7.5	12.2	24.0
Fines	1.7	3.7	0.5	3.4	5.0	0.9	2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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Otterspool (Liverpool)

The average dominant primary waste categories identified within the sample were flooring at 27.1%, furniture at 25.0% and bagged waste at 9.8%.

Sefton Meadows (Sefton)

The average dominant primary waste categories identified within the sample were bagged waste, flooring, plastics and inert material at 31.2%, 9.2%, 8.7% and 8.3% respectively.

Clatterbridge (Wirral)

The average dominant primary waste categories identified within the sample were bagged waste at 34.6%, textiles at 17.1%, inert material at 11.9% and garden waste at 8.2%.

Rainhill (St Helens)

The average dominant primary waste categories identified within the sample were bagged waste, inert material, furniture and flooring at 13.2%, 12.3%, 11.9% and 10.9% respectively.

Kirkby (Knowsley)

The dominant primary waste categories identified within the sample were inert material at 30.5%, furniture at 9.9%, plastics at 8.8% and wood at 8.4%.

Johnsons Lane (Halton)

The dominant primary waste categories identified within the sample were flooring, furniture, bagged waste and paper and card at 23.2%, 20.3%, 12.2% and 9.0% respectively.

Modelled Study Average Result

The HWRC average dominant primary waste categories include bagged waste at 24.0%, inert material at 12.1%, flooring at 10.0% and furniture at 9.5%.

5.2 Biodegradable Municipal Waste (BMW)

5.2.1 BMW Content of HWRC Residual Waste

The BMW content of the MHWP HWRC residual waste stream is presented in Figures 5.2 and Table 5.2. These values were calculated by multiplying the individual primary waste components by the relevant biodegradability factor.

Figure 5.2   Proportion (% wt.) of BMW in MHWP HWRC Waste Stream – Study Average
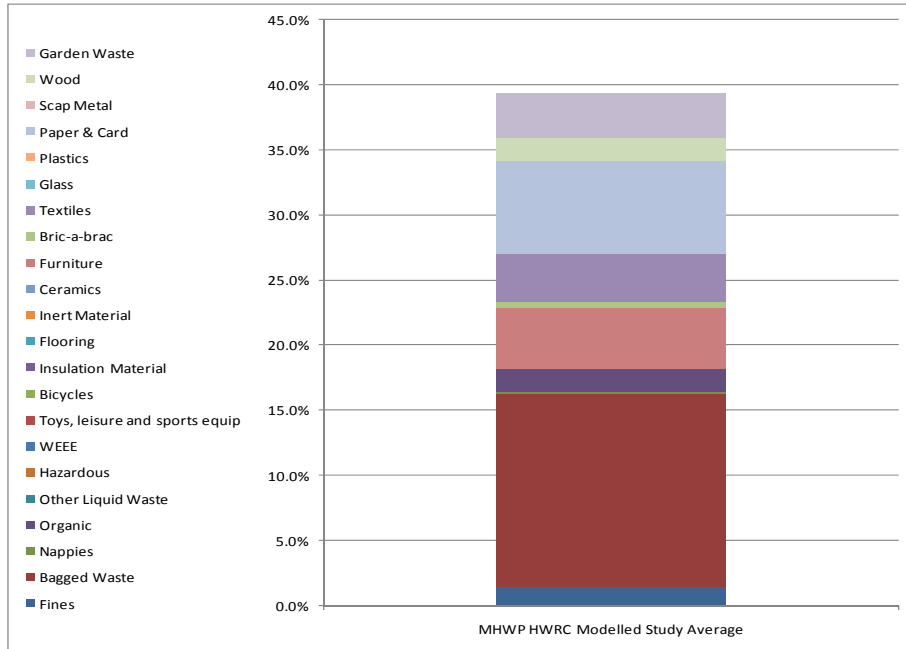
Table 5.2   Proportion (% wt.) of BMW in MHWP HWRC Waste Stream – Study Average

Primary Category	HWRC Average
Garden Waste	3.4%
Wood	1.9%
Scrap Metal	0.0%
Paper & Card	7.0%
Plastics	0.0%
Glass	0.0%
Textiles	3.7%
Bric-a-brac	0.5%
Furniture	4.7%
Ceramics	0.0%
Inert Material	0.0%
Flooring	0.0%
Insulation Material	0.0%
Bicycles	0.0%
Toys etc	0.0%
WEEE	0.0%
Hazardous	0.0%
Other Liquid Waste	0.0%
Organic	1.8%
Nappies	0.2%
Bagged Waste	14.8%
Fines	1.5%
Total	39.4%

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5.3   Potentially Recyclable and Compostable Material

Further analysis of the study average HWRC residual waste composition data was undertaken to calculate the average presence of potentially recyclable/compostable material. The following text explains the content of Table 5.3 below.

Column 1 - Sets out the primary material categories

Column 2 - Sets out the 50 material sub-categories into which samples of waste were sorted.

Column 3 - Gives the assay, or waste composition. Sub-totals are given for the headline categories.

Column 4 - Shows the level of potentially recyclable material present in the waste stream.

Column 5 - Shows the level of potentially compostable material available in the waste stream.

The results for the availability of potentially recyclable and compostable material are shown in Table 5.3 below.

5.4   Summary – Study Average

The results presented in Section 5 can be summarised as follows:

- The main materials arising as residual waste at HWRCs in Merseyside, Study Average data, were

    o   bagged waste at 24.0%;

    o   inert material at 12.1%;

    o   flooring at 10.0%; and,

    o   furniture at 9.5%.

- The BMW element of the HWRC residual waste stream was calculated to be 39.4%. This was primarily bagged waste, paper and card and furniture;

- 3.4% of the material present in the HWRC residual waste stream was potentially compostable; and

- Of the material present in the HWRC residual waste stream 42.8% was potentially recyclable. This was primarily furniture, inert material, textiles and paper and card.

Table 5.3   Availability of Potentially Recyclable and Compostable Material – Study Average

Primary Category	Secondary Category	Assay (wt%)	Potentially Recyclable (wt%)	Potentially Compostable (wt%)
Garden Waste		3.4%	-	3.4%
Subtotal Garden		**3.4%**	**-**	**3.4%**
Wood	Wood	1.6%	1.6%	-
	MDF, Chipboard, other	2.1%	2.1%	-
Subtotal Wood		**3.7%**	**3.7%**	**-**
Scrap Metal	Ferrous	1.1%	1.1%	-
	Non-ferrous	0.4%	0.4%	-
Subtotal Scrap Metal		**1.5%**	**1.5%**	**-**
Paper and Card	Paper	4.7%	4.7%	-
	Card	2.4%	2.4%	-
Subtotal Paper and Card		**7.0%**	**7.0%**	**-**
Plastics	Plastic Film	1.6%	-	-
	Densne Plastic Packaging	1.1%	-	-
	Dense Plastic Non-Packag	4.4%	-	-
	Other Plastic	0.2%	-	-
Subtotal Plastics		**7.4%**	**-**	**-**
Glass	Bottles & Jars	0.6%	0.6%	-
	Other Glass	1.4%	-	-
Subtotal Glass		**1.9%**	**0.6%**	**-**
Textiles	Textiles	6.7%	6.7%	-
	Shoes	0.7%	0.7%	-
Subtotal Textiles		**7.3%**	**7.3%**	**-**
Bric-a-brac	Books	0.5%	0.5%	-
	Other bric-a-brac	0.6%	-	-
Subtotal Bric-a-brac		**1.0%**	**0.5%**	**-**
Furniture	Hard Furniture	4.1%	4.1%	-
	Soft furnishings	2.6%	2.6%	-
	Other furnishings	2.7%	2.7%	-
Subtotal Furniture		**9.5%**	**9.5%**	**-**
Ceramics		1.2%	-	-
Subtotal Ceramics		**1.2%**	**-**	**-**
Inert Material	Soil	2.8%	-	-
	C&D (rubble, hardcore, etc	8.8%	8.8%	-
	Plasterboard	0.5%	0.5%	-
Subtotal Inert Material		**12.1%**	**9.3%**	**-**
Flooring	Carpet & lino	10.0%	-	-
Subtotal Flooring		**10.0%**	**-**	**-**
Insulation Material		0.3%	-	-
Subtotal Insulation		**0.3%**	**-**	**-**
Bicycles		0.0%	0.0%	-
Subtotal Bicycles		**0.0%**	**0.0%**	**-**
Toys, leisure and sports equip		1.7%	1.7%	-
Subtotal Toys, leisure and sports equip		**1.7%**	**1.7%**	**-**
WEEE	Large household appliance	0.3%	0.3%	-
	small household appliance	0.3%	0.3%	-
	IT & Telecoms Equip	0.3%	0.3%	-
	Consumer Equip	0.1%	0.1%	-
	Lighting	0.1%	0.1%	-
	Elec & Electronic Tools	0.2%	0.2%	-
	Toys, Leisure & sports Equ	0.5%	0.5%	-
Subtotal WEEE		**1.7%**	**1.7%**	**-**
Hazardous	Flourescent tubes	0.0%	-	-
	Cooking oil	0.0%	-	-
	Engine oil	0.1%	-	-
	Household batteries	0.0%	-	-
	Car batteries	0.0%	-	-
	Clinical	0.0%	-	-
	Other potentially hazardou	0.9%	-	-
Subtotal Hazardous		**1.1%**	**-**	**-**
Other Liquid Waste		0.1%	-	-
Subtotal Liquid Waste		**0.1%**	**-**	**-**
Organic	Food	1.2%	-	-
	Other Organic	0.6%	-	-
Subtotal Organic		**1.8%**	**-**	**-**
Nappies		0.4%	-	-
Subtotal Nappies		**0.4%**	**-**	**-**
Bagged Waste	Residual	18.7%	-	-
	Clearance	5.4%	-	-
Subtotal Bagged Waste		**24.0%**	**-**	**-**
Fines	Material less than 10 mm	2.9%	-	-
Subtotal Fines		**2.9%**	**-**	**-**
Total		**100.0%**	**42.8%**	**3.4%**

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6.   Conclusion

This report presents the results from the March 2010 and June 2010 HWRC residual waste composition exercises carried out by Entec for MWDA and Halton Borough Council. The report also provides study averages for the data collected and comparisons between the two individual sorts.

March 2010

The main materials arising as residual waste at HWRCs in Merseyside, March 2010, were: inert material at 15.7%, bagged waste at 15.1%, flooring at 9.7% and textiles at 9.4%.

The BMW element of the HWRC residual waste stream in March 2010 was calculated to be 35.2%. This was primarily bagged waste, paper and card, textiles and furniture.

In March 2010 only 1.7% of the material present in the HWRC residual waste stream was potentially compostable.

Of the material present in the HWRC residual waste stream in March 2010, 51.7% was potentially recyclable. This was primarily inert material, textiles, furniture, paper and card and wood.

June 2010

The June 2010 the main waste categories arising as residual waste at HWRCs in Merseyside included: bagged waste at 33.0%, flooring at 10.3%, furniture at 9.9% and inert waste at 8.5%.

In June 2010 the BMW element of the HWRC residual waste stream was calculated to be 43.6%. This was primarily bagged waste, paper and card and garden waste.

In June 2010 5.1% of the material present in the HWRC residual waste stream was potentially compostable.

Of the material present in the HWRC residual waste stream in June 2010, 33.9% was potentially recyclable. This was primarily furniture, paper and card, textiles and inert material.

Study Average

The modelled study average shows that the main waste categories arising in HWRC residual waste included: bagged waste at 24.0%, inert material at 12.1% and flooring at 10.0%.

The modelled study average BMW element of the HWRC residual waste stream was calculated to be 39.4%. This was primarily bagged waste, paper and card and furniture.

3.4% of the material present in the modelled study average HWRC residual waste stream was potentially compostable. This was all garden waste.

Of the material present in the study average HWRC residual waste stream 42.8% was potentially recyclable. This was primarily furniture, inert material, textiles and paper and card.

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Appendix A
March Results

Appendix A

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Appendix A

HWRC Residual Waste, March 2010

Category		HWRC Assay						
Primary Category	Secondary Category	Kirkby	Otterspool	Sefton Meadows	Rainhill	Clatterbridge	Johnsons Lane	Modelled Average
Garden Waste		1.3%	2.3%	1.4%	1.3%	2.9%	1.0%	1.7%
Wood	Wood	5.7%	0.4%	1.7%	3.8%	0.4%	3.8%	2.3%
	MDF, Chipboard, other	5.2%	4.0%	2.4%	4.2%	0.5%	3.4%	2.9%
Scrap Metal	Ferrous	0.2%	2.3%	1.5%	0.8%	1.9%	0.9%	1.3%
	Non-ferrous	0.7%	0.3%	0.7%	1.1%	0.3%	0.2%	0.6%
Paper & Card	Paper	3.1%	4.7%	4.5%	6.8%	4.5%	6.6%	4.7%
	Card	4.8%	1.4%	4.5%	2.4%	0.8%	5.3%	3.3%
Plastics	Plastic Film	2.3%	0.6%	2.6%	1.4%	1.7%	2.2%	2.1%
	Densne Plastic Packaging	0.9%	0.3%	2.4%	2.6%	0.4%	0.7%	1.5%
	Dense Plastic Non-Packaging	2.6%	4.3%	7.5%	3.5%	1.9%	3.7%	4.6%
	Other Plastic	0.6%	0.7%	0.3%	1.0%	0.0%	1.0%	0.4%
Glass	Bottles & Jars	0.2%	0.2%	0.9%	1.5%	0.0%	0.1%	0.6%
	Other Glass	1.2%	1.1%	2.3%	5.2%	0.3%	0.0%	1.9%
Textiles	Textiles	4.9%	4.7%	5.0%	6.3%	21.8%	5.1%	8.6%
	Shoes	0.4%	0.1%	0.9%	1.4%	0.8%	0.9%	0.8%
Bric-a-brac	Books	1.2%	0.8%	1.2%	0.5%	0.0%	0.4%	0.8%
	Other bric-a-brac	0.3%	1.2%	0.2%	0.2%	0.3%	0.9%	0.4%
Furniture	Hard Furniture	7.4%	13.1%	0.4%	5.8%	1.3%	5.4%	3.7%
	Soft furnishings	3.1%	2.4%	1.1%	2.2%	3.8%	5.7%	2.4%
	Other furnishings	1.9%	5.2%	4.0%	1.4%	0.3%	9.4%	2.9%
Ceramics		0.5%	3.0%	1.2%	0.9%	1.3%	0.8%	1.2%
Inert Material	Soil	0.8%	4.7%	0.1%	1.5%	7.0%	1.1%	2.2%
	C&D (rubble, hardcore, etc.)	32.3%	5.5%	9.2%	13.0%	7.9%	5.4%	12.5%
	Plasterboard	1.5%	0.6%	0.9%	0.7%	0.5%	0.8%	0.9%
Flooring	Carpet & lino	5.0%	21.9%	11.5%	8.5%	2.7%	23.5%	9.7%
Insulation Material		0.1%	0.0%	0.5%	0.0%	1.9%	0.1%	0.6%
Bicycles		0.0%	0.0%	0.0%	0.3%	0.0%	0.4%	0.1%
Toys etc		0.7%	0.8%	0.8%	2.4%	3.9%	0.9%	1.7%
WEEE	Large household appliances	0.9%	0.0%	0.3%	0.3%	0.0%	0.0%	0.3%
	small household appliances	0.3%	0.2%	0.3%	0.2%	0.2%	0.1%	0.2%
	IT & Telecoms Equip	0.0%	0.2%	0.4%	0.9%	0.4%	0.0%	0.4%
	Consumer Equip	0.0%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%
	Lighting	0.2%	0.0%	0.0%	0.3%	0.1%	0.2%	0.1%
	Elec & Electronic Tools	0.1%	0.6%	0.1%	0.3%	0.0%	0.1%	0.1%
	Toys, Leisure & sports Equip	0.0%	0.0%	0.6%	0.7%	0.8%	0.1%	0.5%
Hazardous	Flourescent tubes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Cooking oil	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
	Engine oil	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
	Household batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Car batteries	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.1%
	Clinical	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other potentially hazardous	0.6%	0.4%	0.5%	0.7%	0.9%	0.6%	0.6%
Other Liquid Waste		0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Organic	Food	0.5%	0.6%	2.6%	1.2%	0.1%	0.0%	1.3%
	Other Organic	0.0%	0.3%	0.8%	0.0%	1.2%	0.0%	0.6%
Nappies		0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.5%
Bagged Waste	Residual	3.5%	5.2%	12.5%	8.4%	18.5%	5.9%	10.9%
	Clearance	2.2%	1.8%	4.7%	1.8%	7.7%	2.0%	4.2%
Fines	Material less than 10mm	2.8%	3.2%	5.4%	4.2%	0.8%	1.1%	3.5%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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Appendix B
June Results

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Appendix B

HWRC Residual Waste, June 2010

Category		HWRC Assay						
Primary Category	**Secondary Category**	**Kirkby**	**Otterspool**	**Sefton Meadows**	**Rainhill**	**Clatterbridge**	**Johnsons Lane**	**Modelled Average**
Garden Waste		1.4%	1.2%	1.7%	4.8%	17.1%	1.3%	5.1%
Wood	**Wood**	1.7%	0.3%	0.8%	1.5%	0.1%	0.6%	0.8%
	MDF, Chipboard, other	3.3%	0.4%	1.8%	0.2%	0.3%	2.1%	1.4%
Scrap Metal	**Ferrous**	1.9%	0.8%	0.6%	0.8%	0.4%	0.4%	0.8%
	Non-ferrous	0.1%	0.2%	0.6%	0.2%	0.0%	0.3%	0.3%
Paper & Card	**Paper**	4.4%	2.8%	3.4%	2.9%	9.4%	2.2%	4.6%
	Card	1.7%	0.6%	1.9%	0.9%	1.4%	0.4%	1.5%
Plastics	**Plastic Film**	1.2%	0.7%	1.8%	1.5%	0.1%	1.1%	1.2%
	Densne Plastic Packaging	0.5%	0.6%	1.1%	0.5%	0.2%	0.7%	0.7%
	Dense Plastic Non-Packaging	10.6%	3.4%	2.0%	8.4%	0.9%	5.8%	4.3%
	Other Plastic	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glass	**Bottles & Jars**	0.0%	0.2%	1.0%	0.9%	0.0%	0.4%	0.5%
	Other Glass	1.8%	1.0%	0.5%	1.2%	0.0%	2.5%	0.8%
Textiles	**Textiles**	4.0%	1.9%	5.3%	2.2%	7.2%	3.9%	4.7%
	Shoes	0.4%	0.1%	0.5%	0.7%	0.5%	0.9%	0.5%
Bric-a-brac	**Books**	0.1%	0.1%	0.0%	0.2%	0.2%	0.7%	0.1%
	Other bric-a-brac	0.5%	1.3%	0.9%	0.9%	0.4%	0.8%	0.8%
Furniture	**Hard Furniture**	1.2%	17.8%	2.3%	10.1%	0.0%	13.0%	4.5%
	Soft furnishings	2.8%	3.8%	2.4%	3.9%	2.2%	5.6%	2.9%
	Other furnishings	2.3%	7.7%	2.8%	3.6%	0.0%	1.0%	2.6%
Ceramics		1.7%	2.5%	1.3%	0.2%	0.6%	0.3%	1.1%
Inert Material	**Soil**	11.5%	0.4%	3.0%	0.3%	1.5%	0.1%	3.3%
	C&D (rubble, hardcore, etc.)	12.6%	1.2%	3.4%	5.2%	4.1%	3.6%	5.1%
	Plasterboard	0.4%	0.2%	0.0%	0.0%	0.3%	0.3%	0.2%
Flooring	**Carpet & lino**	11.2%	32.2%	7.0%	16.3%	0.0%	22.5%	10.3%
Insulation Material		0.0%	0.1%	0.0%	0.1%	0.2%	0.0%	0.1%
Bicycles		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Toys etc		1.1%	2.0%	1.1%	3.8%	1.2%	4.2%	1.7%
WEEE	**Large household appliances**	0.5%	0.0%	0.5%	0.0%	0.0%	0.0%	0.2%
	small household appliances	0.6%	0.5%	0.3%	0.3%	0.3%	0.0%	0.4%
	IT & Telecoms Equip	0.2%	0.2%	0.1%	0.4%	0.0%	0.2%	0.1%
	Consumer Equip	0.0%	0.1%	0.2%	0.4%	0.0%	0.2%	0.1%
	Lighting	0.2%	0.1%	0.0%	0.2%	0.2%	0.3%	0.1%
	Elec & Electronic Tools	0.1%	0.6%	0.2%	0.6%	0.0%	0.0%	0.2%
	Toys, Leisure & sports Equip	0.2%	0.7%	0.7%	0.3%	0.3%	0.4%	0.5%
Hazardous	**Flourescent tubes**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Cooking oil	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
	Engine oil	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
	Household batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Car batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Clinical	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other potentially hazardous	0.9%	1.1%	0.9%	3.2%	0.8%	1.3%	1.2%
Other Liquid Waste		0.0%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%
Organic	**Food**	0.3%	0.3%	2.3%	0.3%	0.1%	0.3%	1.0%
	Other Organic	0.0%	0.0%	0.8%	1.2%	0.9%	0.0%	0.6%
Nappies		0.0%	0.0%	0.4%	0.0%	0.0%	0.1%	0.2%
Bagged Waste	**Residual**	8.0%	10.0%	38.2%	14.1%	35.2%	17.8%	26.4%
	Clearance	2.2%	2.5%	6.0%	5.7%	13.5%	3.9%	6.5%
Fines	**Material less than 10mm**	8.3%	0.3%	2.2%	1.5%	0.1%	0.5%	2.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix B

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Appendix B

Appendix C
Study Average Results

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Appendix C

HWRC Residual Waste, Study Average

Category		HWRC Assay						
Primary Category	**Secondary Category**	Kirkby	Otterspool	Sefton Meadows	Rainhill	Clatterbridge	Johnsons Lane	Modelled Study Average
Garden Waste		1.3%	1.7%	1.5%	2.4%	8.2%	1.1%	3.4%
Wood	**Wood**	4.1%	0.4%	1.2%	3.1%	0.3%	2.8%	1.6%
	MDF, Chipboard, other	4.4%	2.2%	2.0%	3.0%	0.4%	3.0%	2.1%
Scrap Metal	**Ferrous**	0.9%	1.6%	1.0%	0.8%	1.3%	0.7%	1.1%
	Non-ferrous	0.4%	0.2%	0.6%	0.9%	0.2%	0.2%	0.4%
Paper & Card	**Paper**	3.7%	3.7%	3.9%	5.6%	6.3%	5.2%	4.7%
	Card	3.6%	1.0%	3.2%	1.9%	1.0%	3.8%	2.4%
Plastics	**Plastic Film**	1.9%	0.7%	2.2%	1.4%	1.1%	1.9%	1.6%
	Densne Plastic Packaging	0.7%	0.5%	1.7%	1.9%	0.3%	0.7%	1.1%
	Dense Plastic Non-Packaging	5.8%	3.8%	4.6%	5.0%	1.5%	4.4%	4.4%
	Other Plastic	0.4%	0.3%	0.1%	0.7%	0.0%	0.7%	0.2%
Glass	**Bottles & Jars**	0.1%	0.2%	0.9%	1.3%	0.0%	0.2%	0.6%
	Other Glass	1.4%	1.0%	1.4%	4.0%	0.2%	0.8%	1.4%
Textiles	**Textiles**	4.5%	3.3%	5.2%	5.0%	16.4%	4.8%	6.7%
	Shoes	0.4%	0.1%	0.7%	1.2%	0.7%	0.9%	0.7%
Bric-a-brac	**Books**	0.7%	0.5%	0.6%	0.4%	0.1%	0.5%	0.5%
	Other bric-a-brac	0.4%	1.3%	0.6%	0.4%	0.3%	0.9%	0.6%
Furniture	**Hard Furniture**	4.9%	15.5%	1.4%	7.1%	0.8%	7.8%	4.1%
	Soft furnishings	3.0%	3.1%	1.8%	2.7%	3.2%	5.7%	2.6%
	Other furnishings	2.1%	6.4%	3.4%	2.0%	0.2%	6.8%	2.7%
Ceramics		1.0%	2.7%	1.2%	0.7%	1.1%	0.6%	1.2%
Inert Material	**Soil**	5.1%	2.5%	1.6%	1.2%	5.0%	0.8%	2.8%
	C&D (rubble, hardcore, etc.)	24.3%	3.3%	6.2%	10.6%	6.5%	4.8%	8.8%
	Plasterboard	1.1%	0.4%	0.5%	0.5%	0.5%	0.7%	0.5%
Flooring	**Carpet & lino**	7.5%	27.1%	9.2%	10.9%	1.7%	23.2%	10.0%
Insulation Material		0.0%	0.0%	0.2%	0.0%	1.3%	0.1%	0.3%
Bicycles		0.0%	0.0%	0.0%	0.2%	0.0%	0.3%	0.0%
Toys etc		0.9%	1.4%	1.0%	2.8%	2.9%	1.9%	1.7%
WEEE	**Large household appliances**	0.7%	0.0%	0.4%	0.2%	0.0%	0.0%	0.3%
	small household appliances	0.5%	0.3%	0.3%	0.2%	0.2%	0.1%	0.3%
	IT & Telecoms Equip	0.1%	0.2%	0.2%	0.8%	0.3%	0.1%	0.3%
	Consumer Equip	0.0%	0.1%	0.2%	0.3%	0.1%	0.1%	0.1%
	Lighting	0.2%	0.0%	0.0%	0.2%	0.2%	0.2%	0.1%
	Elec & Electronic Tools	0.1%	0.6%	0.2%	0.4%	0.0%	0.1%	0.2%
	Toys, Leisure & sports Equip	0.1%	0.4%	0.6%	0.6%	0.6%	0.2%	0.5%
Hazardous	**Flourescent tubes**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Cooking oil	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
	Engine oil	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
	Household batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Car batteries	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
	Clinical	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other potentially hazardous	0.7%	0.8%	0.7%	1.5%	0.9%	0.8%	0.9%
Other Liquid Waste		0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%
Organic	**Food**	0.5%	0.4%	2.4%	0.9%	0.1%	0.1%	1.2%
	Other Organic	0.0%	0.2%	0.8%	0.4%	1.1%	0.0%	0.6%
Nappies		0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.4%
Bagged Waste	**Residual**	5.3%	7.6%	25.8%	10.2%	24.7%	9.6%	18.7%
	Clearance	2.2%	2.2%	5.4%	3.0%	9.9%	2.6%	5.4%
Fines	**Material less than 10mm**	5.0%	1.7%	3.7%	3.4%	0.5%	0.9%	2.9%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix C