

## EXECUTIVE SUMMARY

### INTRODUCTION

The Environment and Heritage Service (EHS) identified the need to obtain information on the composition and characteristics of the municipal waste collected in Northern Ireland, in particular relating to the biodegradable fraction of the waste. The biodegradable fraction of the waste collected is of particular importance when considered in the context of the Landfill Directive targets of the reduction in the biodegradable waste to landfill implemented through the Northern Ireland Landfill Allowance Scheme (NILAS) Regulations. Regulation 12 of the NILAS Regulations states that “*the amount of biodegradable municipal waste in an amount of collected municipal waste is 71% by weight*”. This figure was determined from a previous Northern Ireland Household Waste Composition Study conducted in 2000.

EHS, commissioned RPS Consulting Engineers in September 2007, to carry out a Household Waste Compositional Analysis for Northern Ireland in order to review the Biodegradable Municipal Waste (BMW) fraction for Municipal Solid Waste (MSW) in Northern Ireland.

### AIM

The aim of the project was two-fold; firstly, to determine the composition of municipal waste in Northern Ireland; and secondly, to review the percentage of municipal waste which is biodegradable.

### METHODOLOGY

The project reviewed available data on kerbside collected household waste arisings and wastes accepted at municipal bring bank facilities and Civic Amenity Sites. The composition of mixed municipal waste collected for disposal was obtained by a physical sort of waste from both households and Civic Amenity Sites from district councils within all three Waste Management Groups (arc21, Southern Waste Management Partnership (SWaMP) and North West Region Waste Management Group (NWRWMG). All 26 district councils in Northern Ireland report their municipal waste arisings data, on a quarterly basis, through a national on-line database called WasteDataFlow (WDF). Through WDF each district council provides a detailed breakdown on the quantity of waste, by material type, separately collected for recycling or composting. The study looked at this operational data in relation to kerbside collected household waste, bring bank facilities and CA Sites.

#### ***Kerbside Collected Household Waste***

A “grouped household-based” approach was employed for the collection and analysis of samples for the physical hand sorting of waste, in accordance with best practice and European Commission guidance for analysis of waste. Samples were taken from thirty-five households, a representative

number, for analysis. A total of 560 households across Northern Ireland were included in the Study. Background research was carried out on the waste management infrastructure and socio-economic make up of each district council in Northern Ireland in order to establish a representative sample for each waste management group. A socio-demographic area profiling system called ACORN (A Classification Of Residential Neighbourhoods) was also used. ACORN groups the population into five categories, namely: Wealthy Achievers; Urban Prosperity; Comfortably Off; Moderate Means and Hard Pressed.

The physical sorting was carried out into dedicated waste stream containers on site at licensed Waste Transfer Facilities in each waste management group. Following this, comprehensive statistical analysis was undertaken and the results were expressed as a 95% confidence level.

The kerbside collected residual waste composition results are from the statistical analysis of the raw data from the physical hand sorting of the waste during the Study. The composition has been determined from selected representative sample areas throughout Northern Ireland. The kerbside collected mixed dry recyclable waste composition results and kerbside collected compostable waste composition results for Northern Ireland are also obtained from the statistical analysis of the raw data through physical hand sorting of the waste in order to provide a more detailed level of compositional data than what is currently available through WDF. However, it should be noted that in order to calculate the overall total municipal waste composition the data from WDF returns has been used.

### **CA Site Waste**

The composition of residual waste collected at six Civic Amenity (CA) Sites (two in each waste management group) throughout Northern Ireland has been obtained from the physical hand sorting of a sample of the mixed waste (collected for disposal). Waste Data Flow (WDF) operational data has been obtained for the period 2006/2007 for separately collected recyclable materials (broken down by material type) and the total amount of residual waste collected at CA Sites by each district council in Northern Ireland.

Six civic amenity sites were to be sampled on both weekdays and weekends. In order to determine which civic amenity sites, of the 110 sites in Northern Ireland were to be sampled as part of this survey, background research and a desktop study was carried out. Research was carried out, examining factors such as tonnage throughput, segregation efficiencies, location and usage with the aim of determining the most representative civic amenity sites, in each waste management group. WDF operational data for the period 2006/2007 was obtained for the purposes of selecting the CA Sites to be included in the Study. Furthermore discussions were held with technical officers from each District Council selected regarding the most representative and appropriate CA Site to sample. Supplementary data was provided by the District Councils to aid the selection process.

**Bring Bank Waste**

The waste generation and composition results contained in this section are from data supplied by EHS from WDF returns for all municipal Bring Bank facilities in Northern Ireland.

**Total Municipal Waste**

The overall composition of the total municipal waste in Northern Ireland has been obtained from a combination of all the above.

**RESULTS**

**Waste Composition - Kerbside Collected Household Waste**

**Figure ES.1 Composition of all Kerbside Collected Household Waste in Northern Ireland**

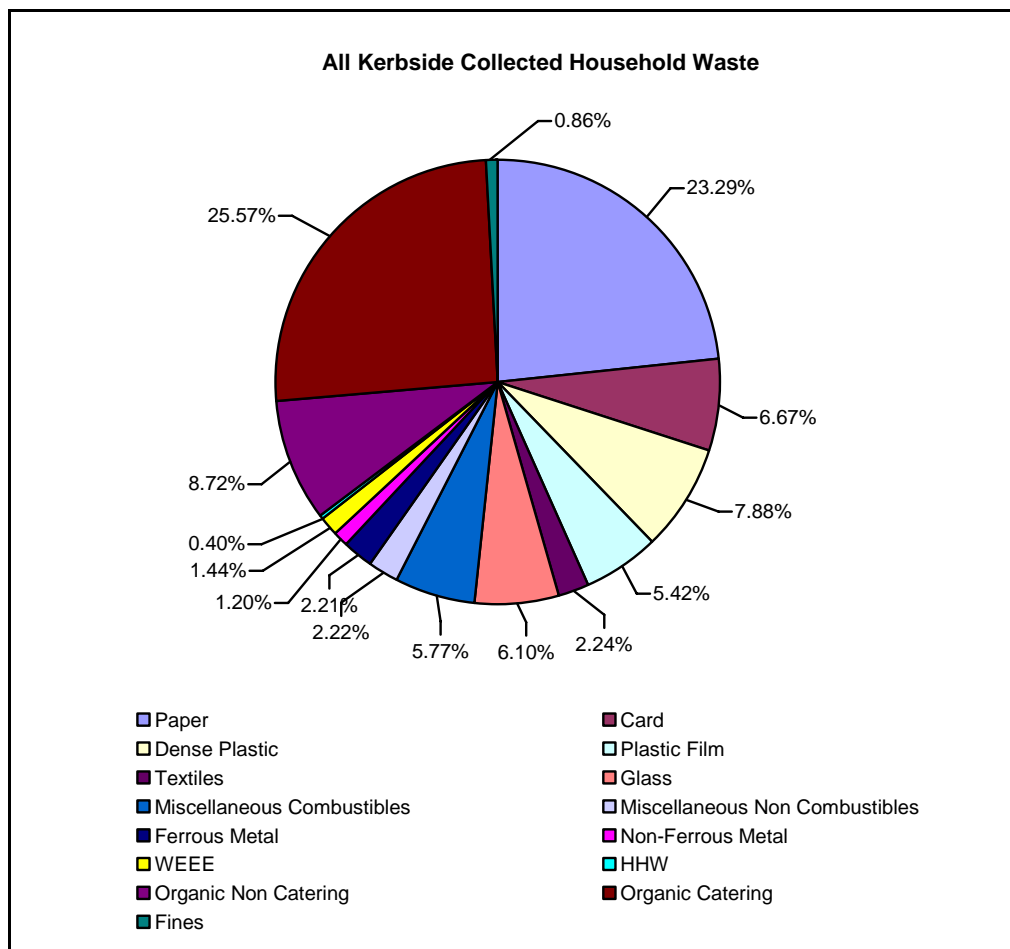


Figure ES.1 illustrates the summary composition of all kerbside collected household waste in Northern Ireland. All kerbside collected household waste includes:

- Kerbside collected household residual waste;

- Kerbside collected household mixed dry recyclable waste; and
- Kerbside collected household compostable waste.

### **Waste Composition - CA Site Waste**

Table ES.1 details the composition of wastes collected for disposal and recycled at CA Sites in Northern Ireland from April 2006 to March 2007.

**Table ES.1 Composition of CA Sites** (Separately Collected Recyclable/Compostable and Residual Waste collected for disposal)

Primary Category	CA Sites Waste Composition	
	Residual waste collected for disposal	Recycled waste <i>Rubble removed</i>
Paper	6.75%	2.42%
Card	5.23%	4.03%
Dense Plastic	7.18%	0.29%
Plastic Film	3.71%	0.03%
Textiles	5.67%	1.37%
Glass	3.15%	5.64%
Miscellaneous Combustibles	29.36%	18.99%
Miscellaneous Non-Combustibles	8.32%	1.89%
Ferrous Metal	0.93%	5.39%
Non-Ferrous Metal	1.43%	5.39%
WEEE	0.81%	6.01%
HHW	0.36%	1.20%
Organic Non-Catering	7.92%	47.29%
Organic Catering	17.74%	0.05%
Fines	1.46%	0.00%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>

### **Waste Composition - Bring Bank waste**

Table ES.2 details the annual quantity and composition of wastes collected at Bring Bank sites in Northern Ireland (April 2006 to March 2007).

**Table ES.2 Composition of Bring Bank Sites**

Categories	Bring Site Composition
Paper	14.33%
Card	2.95%
Dense Plastic	0.13%
Plastic Film	0.01%
Textiles	15.14%
Glass	66.59%
Miscellaneous Combustibles	0.00%
Miscellaneous Non-Combustibles	0.00%
Ferrous Metal	0.34%
Non-Ferrous Metal	0.50%
WEEE	0.00%
HHW	0.00%
Organic Non-Catering	0.00%
Organic Catering	0.00%
Fines	0.00%
<b>Total</b>	<b>100.00%</b>

**Total Municipal Waste Composition**

Table ES.3 below details the composition of the municipal waste in Northern Ireland.

**Table ES.3 Municipal Waste Composition for Northern Ireland**

Categories	Composition
Paper	15.93%
Card	5.10%
Dense Plastic	3.94%
Plastic Film	2.09%
Textiles	4.27%
Glass	14.59%
Miscellaneous Combustibles	9.19%
Miscellaneous Non-Combustibles	4.26%
Ferrous Metal	1.87%
Non-Ferrous Metal	1.55%
WEEE	1.36%
HHW	0.31%
Organic Non-Catering	25.77%
Organic Catering	9.34%
Fines	0.44%
<b>Total</b>	<b>100.00%</b>

***Biodegradable Municipal Waste Fraction***

The overall BMW percentage has been calculated by applying the biodegradability of each waste stream as outlined in the schedule to the NILAS Regulations. Table ES.4 summarises the biodegradable municipal waste (BMW) percentage for municipal solid waste (MSW) in Northern Ireland and shows that BMW fraction derived from the Study is **64.01%**. This is based on the waste analysed in the study via physical sorting and WDF operational data analysis, which equates to 909,359.64 tonnes (85.45%) of the total waste arisings in Northern Ireland. The biodegradability calculated from this waste is assumed to be representative of the total municipal waste.

**CONCLUSIONS**

This study has determined the composition of Municipal Solid Waste (MSW) in Northern Ireland and reviewed the percentage of Biodegradable Municipal Waste (BMW) of the MSW for Northern Ireland. The survey combined data collected for kerbside collections of residual, recyclable and compostable waste, bring bank sites and civic amenity sites to achieve these results.

In light of the results from this Study the current biodegradable municipal waste percentage of 71% would appear to be high. This study has shown that in Northern Ireland the percentage of municipal waste which is biodegradable is 64%.