

## 6 WASTE GENERATION

### 6.1 INTRODUCTION

Since the adoption of the Waste Management Plan (2001), waste arisings have continued to grow in the Region reflecting the national trend. The first Plan predicted a growth of over 2-3% annually in household waste to 2004. This is reflected in the current figures which show that there has been a 15% increase in household waste arisings since 1999.

The waste quantities in the 2001 Plan were based on the best available data from 1998/1999. The sources included the Limerick, Clare and Kerry Waste Management Strategies prepared individually by the Local Authorities; Regional surveys and questionnaires; and the *EPA National Waste Database (1995)*.

Since then the reporting and recording mechanisms for waste data have improved significantly for household; commercial; and construction and demolition waste streams. Nevertheless in the Limerick/Clare/Kerry Region there remains a lack of consistent data and poor reporting systems for specific waste streams such as industrial waste, sludges and priority waste streams.

### 6.2 LIMERICK/CLARE/KERRY REGIONAL WASTE QUANTITIES

The waste quantities presented in this Plan are for the year 2004 and were obtained from numerous sources that are referenced throughout this document. The key sources include:

- *EPA National Waste Database 2004,*
- *EPA National Waste Database 2001, Report*
- *EPA National Hazardous Waste Management Plan, 2001*
- Local Authority (EPA) National Waste Database Returns 2004
- Waste Licensed Facilities – Annual Environmental Reports (AERs)

- Waste Collection Permits – AERs.

The format for the presentation of waste quantities is set out in the Waste Management (Planning) Regulations, 1997 and this format has been followed throughout this document.

Table 6.1 outlines the key waste categories, and corresponding waste arisings reported to each Local Authority in the Limerick/Clare/Kerry Region for the year ended 2004. The total waste generated in the Region for that year was 2,427,269 tonnes of municipal and industrial waste. This includes an estimated 563,101 tonnes Dry Solids of agricultural waste arising in the four Local Authority areas. The sources of agricultural waste include cattle, sheep, pigs, poultry, horses and spent mushroom compost.

Both public and private waste collectors collect household and commercial waste generated within the Region. The figures reported below include all waste collected through traditional collection methods as well as those from Bring Bank, Recycling Centres, special collection events (e.g. domestic heavy goods, farm plastics) and Chemcar collections.

Priority wastes (as designated by the EU), which include: tyres, end of life vehicles, electronic/electrical equipment, packaging waste, batteries, accumulators, PCB's (polychlorinated biphenyls) and waste oils, are considered in Section 6.6.

**Table 6.1 Waste Arisings in Limerick/Clare/Kerry 2004**

Waste Type	Total (Tonnes)	Source
Household waste collected by or on behalf of Local Authority	116,530	Local Authority EPA National Waste Database Returns 2004
Household waste delivered to civic waste facilities and other bring facilities	9,811	Local Authority EPA National Waste Database Returns 2004
Other Household Waste Home composted	3,080	Local Authority EPA National Waste Database Returns 2004
Other Household Waste Estimation of uncollected fraction	39,618	Local Authority EPA National Waste Database Returns 2004
Litter and Street Sweepings	5,358	Local Authority EPA National Waste Database Returns 2004
Commercial and Industrial Waste	196,694	Local Authority EPA National Waste Database Returns 2004
Construction and Demolition Waste	580,960	Local Authority EPA National Waste Database Returns 2004
Contaminated Soils	0	TFS data 2004
Ash and Incinerator Residues	233,619*	Local Authority EPA National Waste Database Returns 2003 (Kerry); EPA National Waste Database figure for county Clare, 2001
Mining and Quarry Waste	n/a	No information was available for this waste stream
Healthcare Waste	455*	Local Authority EPA National Waste Database Returns 2003; Sterile Technologies Group (STG); Ecosafe
Sewage Sludges	10,597*	Local Authority EPA National Waste Database Returns 2004
Water treatment Sludges	1,266*	Local Authority EPA National Waste Database Returns 2004
Industrial Sludges	666,181*	Sludge Management Plans
Agricultural Waste	563,101*	Sludge Management Plans
<b>Total</b>	<b>2,427,269</b>	

Source: National Waste Database Returns for each Local Authority, 2003\* and 2004.

### 6.2.1 Household Waste

The quantity of household waste generated in the Region in 2004 is estimated at 169,039 tonnes. This figure consists of: traditionally collected mixed household waste, separately collected household waste, uncollected household waste (estimated) and home composted organic waste (estimated).

The quantity of household waste collected in the Region by both public and private services, (including Recycling Centres, bring banks, and Chemcar) totals 126,341 tonnes, or 75%, of the total household waste generated in the Region. Including an estimate of the fraction of waste that is home composted this percentage rises to 76%.

However, if we compare the number of households availing of a waste collection service with the total number of households in the Region we get a 62% coverage rate. This, as the EPA state in the 2003 National Waste Database Interim Report, "illustrates the potential scale of backyard burning of waste or other environmentally unfriendly waste practices at household level".

It is estimated that at least 17.4% of the uncollected household waste is brought by householders to one of the three Regional landfills and/or Recycling Centres. There remains a significant quantity of material that is being disposed of illegally.

The Local Authorities recognise that whilst a high proportion of households in the Region do not avail of a collection service, it should be recognised that many of these households dispose of/recycle their waste at local transfer stations/Recycling Centres or directly to the regional landfills. In addition, there may be sharing of waste collection services by neighbours in both rural and urban areas to reduce the charges that they have to pay. It is likely therefore that the true level of waste being disposed of illegally, i.e. through illegal dumping, 'backyard' burning etc., is in the region of 5-15%. Further studies/surveys are required to determine the true situation.

Such studies should also focus on services currently available for the rapidly increasing number of smaller households – almost half of all households are now single or two person. Innovative approaches for collection services

to smaller households and apartments will be required in the future.

### 6.2.2 Commercial and Industrial Waste

The quantity of commercial and industrial waste recorded in the Region in 2004 was estimated to be 196,694 tonnes. This figure consists of mixed commercial and industrial waste and separately collected commercial and industrial waste, and represents an increase of almost 200%, or 130,844 tonnes from the figures quoted in the 2001 Plan.

It should be noted however, that the industrial portion of this waste stream is largely of a commercial nature. The 1996 figure represents the commercial fraction of this waste stream alone and not the combined commercial and industrial waste streams. If the total commercial and industrial figures for 1996 are compared with the same figure in 2004 the percentage increase is 15.7% or 26,714 tonnes.

Improved reporting by private waste collectors through the waste collection permitting system has led to the marked increase in the quantity of commercial and industrial waste being reported.

### 6.2.3 Industrial Waste

Industrial Waste has not been reported as a separate entity due to the lack of information available to separate the commercial and industrial waste streams reported in Section 6.2.2. Industrial waste of a commercial nature (office paper, canteen waste etc) which enters the 'municipal' waste collection system is reported through the collection permit and permitted facility Annual Environmental Reports (AERs) and is often reported as commercial waste. Much of the waste arising within the industrial sector is either recycled on site or stockpiled/stored/disposed off site.

### 6.2.4 Construction and Demolition (C&D) Waste

Construction and Demolition waste arisings generated in the Region in 2004 are estimated

to be 580,960 tonnes. This figure includes C&D waste recovered at waste permitted facilities, landfill remediation sites and separately collected C&D waste in the Region. This represents a growth of 460,960 tonnes from the available figures reported in the 2001 Waste Management Plan. Much of this increase is due to the reporting systems that are now in place through the Waste Permit Regulations. However there is also likely to have been a significant 'real' increase in C&D waste generated due to the economic growth that has been experienced in the Region.

### 6.2.5 Agricultural Waste

In the Limerick/Clare/Kerry Region, agricultural waste primarily consists of:

- Agricultural Sludges (Animal slurries/manure)
- Spent Mushroom Compost
- Farm Plastics

Animal slurries and spent mushroom compost arisings for the Limerick/Clare/Kerry Region have been sourced from the two Sludge Management Plans relevant to the Region: The Regional Sludge Management Plan for Clare County Council, Limerick County Council and Limerick City Council; and the Sludge Management Plan for County Kerry. These plans are operational subsets to be implemented as part of the overall Limerick/Clare/Kerry Waste Management Plan.

The National Waste policy for the management of farm films is set out in the Waste Management (Farm Plastics) Regulations, 2001, which revised and replaced the previous 1997 Regulations. Since 1997 a government approved body known as the Irish Farm Film Producers Group (IFFPG) has established a nationwide collection scheme. In 2003, over 9,500 tonnes nationally were recycled which is an increase of 32% on 2002 and is 36% over the government target. Up to 2004 this scheme diverted over 33,000 tonnes of plastic from landfill. The scheme encountered financial difficulties in 2005; subsequently a pilot scheme has been set up in co-operation between local authorities, the DEHLG and the IFFPG.

**Table 6.2 Agricultural Waste Quantities Generated in the Region 2003**

Waste Type	Tonnes Dry Solids per Annum
Agricultural Sludge	561,014
Spent Mushroom Compost	2,087
<b>Regional Total</b>	<b>563,101</b>

Source: Sludge Management Plan for Clare County Council, Limerick County Council and Limerick City Council; and Sludge Management Plan for County Kerry. (2004 figures not available).

Potential hazardous agricultural wastes, such as sheep dip and veterinary medicines that arise on farms, are included in the EPA National Hazardous Waste Management Plan.

### 6.2.6 Mining and Quarrying

The EPA reported in the National Waste Database 2001 that 1.7 million tonnes of mining and quarrying waste was generated in Ireland, all outside the Limerick/Clare/Kerry Region. There are 39 registered mines and quarries within the Region but no data is currently available.

### 6.2.7 Sludges (Municipal/Industrial)

The Municipal and Industrial Sludge arisings recorded for the Limerick/Clare/Kerry Region in 2003 are shown in Table 6.3. Figures for 2004 are not yet available. The total sludges generated within the Region includes a figure of 660,000 tDS/yr generated at Aughinish Alumina. Setting the Aughinish figure aside, which is disposed of on-site, the Regional total is reduced to 586,112 tDS for 2003.

**Table 6.3 Sludge Quantities Generated**

Sludge Type	Regional Total (Tonnes)
Municipal Sludge	16,829
Agricultural Sludge	561,014
Industrial Sludge	666,181
Spent Mushroom Compost	2,087
<b>Total</b>	<b>1,246,111</b>

Source: Sludge Management Plan for Clare County Council, Limerick County Council and Limerick City Council; and Draft Sludge Management Plan for County Kerry.

## 6.2.8 Packaging Waste

The quantity of packaging waste generated annually in the Region is estimated by assuming packaging accounts for a fixed percentage of each waste stream.

The EPA has commissioned a report to research the composition of waste streams including recyclables and residual waste. Some provisional results for the Limerick area have been used in order to estimate the quantity of packaging waste within the mixed and separately collected waste streams for both household and commercial waste, the results of which are illustrated in Table 6.4.

**Table 6.4 Estimated Annual Arisings of Packaging Waste in the Region**

Description of Waste Stream	Domestic (tonnes)	Commercial (tonnes)	Street Sweepings (tonnes)	Total (tonnes)
Total Quantity of Waste Collected and Uncollected	165,959	196,694	5,358	368,010
Total Packaging Waste Generated	45,782	88,119	1,447	135,347

Note: Household Waste figure excludes estimates of home composted fraction.

## 6.2.9 Ash Residue

Kerry County Council was the only Local Authority to report ash residue generation within the Limerick/Clare/Kerry Region in 2003. Using the information supplied in the Local Authorities National Waste Database Returns 2003, and following specific enquiries with the ESB, ash residues for the Region have been obtained, the results of which are outlined in Table 6.5.

Moneypoint Power Generating Station in County Clare is known to be the largest producer of ash residue in the Region with much of its ash being landfilled on-site. In 2003 the station produced a total of 219,710 tonnes of non-hazardous ash. Of this 8,325 tonnes was sent to PFA Ireland Ltd. for reuse; 85,975 tonnes was sent to Irish Cement Ltd.; and the

remainder, 125,410 tonnes, was disposed of to landfill.

**Table 6.5 Ash Residue Arisings, 2003**

County	Waste Description	Tonnes
Kerry	Hazardous Waste	307
Kerry	Non-Hazardous Ash Residue	7,887
Clare	Non-Hazardous Ash Residue	219,710
<b>Total</b>		<b>227,904</b>

The Regional total is 227,597 tonnes of non-hazardous ash residue and 307 tonnes of hazardous ash residue, (227,904 tonnes in total). This represents an increase of almost 8.8% between the period 2001 and 2003.

## 6.2.10 Contaminated Soil

Limerick City Council and Clare County Council were the only Local Authorities in the Region to report contaminated soil arisings in 2003. Of the 10,004 tonnes reported in the Region 10,003.6 tonnes was classified as a hazardous material with the remainder being non-hazardous.

Contaminated soil is not generated on a continual basis and tends to result from once off construction projects. For this reason it is impossible to predict the quantities that may be generated in the future.

## 6.2.11 Healthcare Waste

According to C1 forms submitted by each of the Local Authorities to the EPA a total of 455 tonnes of Healthcare Risk Waste was generated in the Region in 2003. Figures for 2004 are not yet available. Municipal waste collectors are also responsible for collecting non-risk waste from healthcare facilities.

## 6.2.12 Litter and Street Sweepings

The quantity of litter and street sweepings for the Region totalled 5,358 in 2004 according to the National Waste Database Returns.

### 6.3 HAZARDOUS COMPONENT OF WASTE ARISING IN THE REGION

In accordance with the Waste Management (Planning) Regulations, 1997 it is required that the hazardous component, if any, of the wastes are identified. These are listed in Table 6.6.

**Table 6.6 Hazardous Components of Wastes Arising in the Region (2003)**

Waste Type	Hazardous Component (Tonnes)
Household	15.52
Commercial	n/a
Industrial	n/a
C&D Waste	132
Contaminated Soil	10,004
Ash Residue	307
Healthcare Waste	455
Industrial Sludges	617
Unspecified Hazardous Waste	1,153

Source: National Waste Database Returns for each Local Authority, 2003.

The following list outlines where Hazardous Wastes are referred to throughout the Plan:

- Chapter 7: Section 7.4 Hazardous Waste Recovery and Recycling (for Households)
- Chapter 13: Section 13.11 Reference to National Hazardous Waste Management Plan - Waste Collection, Disposal Requirements and Section 26 Registers
- Chapter 16: Section 16.2 Policy objectives and targets for Hazardous Waste

### 6.4 NON-HAZARDOUS WASTE MOVEMENTS WITHIN THE REGION

The movement of non-hazardous wastes into and out of the Limerick/Clare/Kerry Region can be difficult to identify as almost 85% of the waste generated in the Region is collected and managed by the private sector. The private sector operating in the Region comprises a mix of Local, Regional and National waste collectors and waste can often be transported across Regional boundaries for treatment or disposal in neighbouring regions.

Table 6.7 summarises the movement of non-hazardous waste quantities into and out of the Region for household, commercial, industrial, and C&D waste as recorded by the Local Authorities in 2004. The quantities shown represent the majority of the waste movements into and out of the Region.

**Table 6.7 Inter-Regional Non-Hazardous Waste Movements in the Region (2004)**

Local Authority	Imported	Exported
Limerick City	0	0
Limerick County	0	0
Kerry County	488	23,556
Clare County	12,789	0
<b>Total</b>	<b>13,277</b>	<b>23,556</b>

Source: National Waste Database Returns for each Local Authority, 2004.

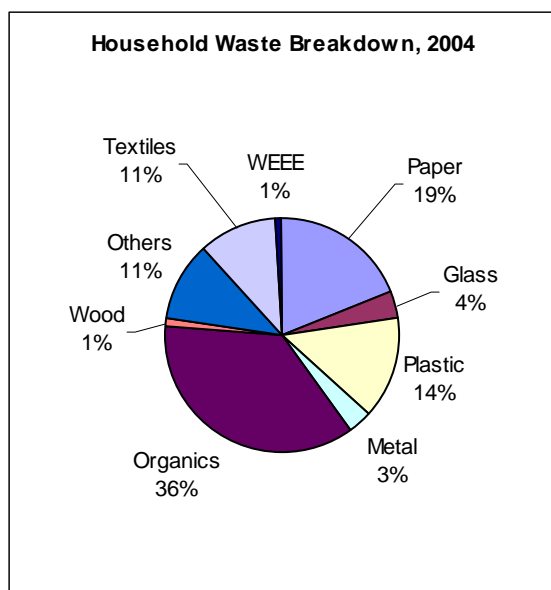
### 6.5 WASTE COMPOSITION IN LIMERICK/CLARE/KERRY

In addition to the overall waste categories, the Waste Management (Planning) Regulations, 1997 require that a Waste Management Plan must quantify the waste arisings in the Region for:

- Paper
- Glass
- Plastic
- Metals
- Textiles
- Putrescible waste.

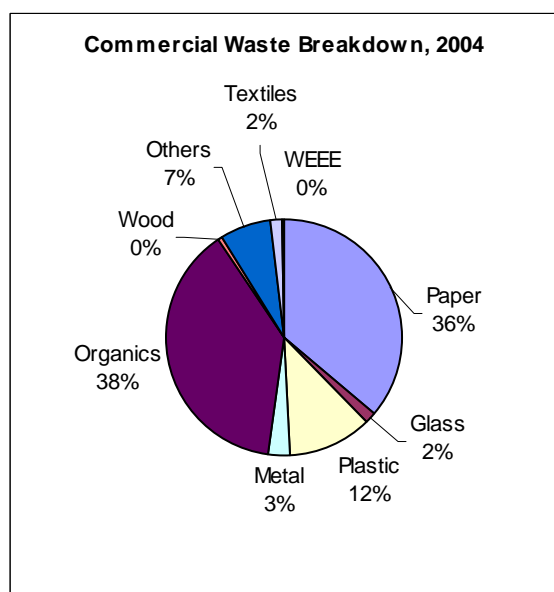
To estimate quantities for each of the waste streams, waste compositional data for household and commercial waste sourced from the *EPA National Waste Database 2003 Interim Report* has been used. Figures 6.1 and 6.2 illustrate the EPA compositional data for household and commercial wastes. The compositions are based on waste characterisation surveys carried out by Local Authorities under EPA guidance from 1995 to 2002.

**Figure 6.1 Composition of Household Waste 2004**



\*Composition of household waste taken from Table 4, EPA National Waste Database 2003, Interim Report

**Figure 6.2 Composition of Commercial Waste 2004**



\*Composition of commercial waste taken from Table 4, EPA National Waste Database 2003, Interim Report

A new programme of municipal waste characterisation surveys is currently underway (under the National Waste Prevention Programme) and revised compositional factors will be published in the next National Waste Database report. Currently, accurate compositional data for industrial waste has not

been compiled. This sector would appear to be too heterogeneous and inhibits the development of representative waste composition data for all sectors within industry. Table 6.8 provides a waste tonnage estimate for the listed waste streams.

**Table 6.8 Waste Compositional Quantities for Household and Commercial Waste (2004).**

Waste Type	Household (Tonnes)	Commercial (Tonnes)	Total (Tonnes)
Paper	32,456	71,203	103,659
Glass	6,254	3,147	9,402
Plastic	23,327	22,620	45,947
Metal	5,578	5,704	11,282
Organics	61,192	75,530	136,722
Wood	1,521	787	2,308
Others	20,115	14,555	34,671
Textiles	18,594	3,147	21,741
<b>Total</b>	<b>169,039</b>	<b>196,694</b>	<b>365,733</b>

## 6.6 PRIORITY WASTE STREAMS

The EU Resolution of May 7<sup>th</sup>, 1990 on Waste Management Policy within the Community considered that it was desirable to establish programmes to deal with certain types of wastes. In 1991, the Commission initiated its programme on Priority Wastes Streams whereby project groups were established to determine solutions for a number of waste streams. The following waste streams were given priority in the EU Resolution:

- Scrapped cars (or 'end of life' vehicles)
- Tyres
- Batteries
- Electrical and electronic waste
- Construction/demolition waste
- Hospital waste (healthcare waste)
- Polychlorinated Biphenyls (PCBs)
- Packaging and packaging waste
- Waste Oils.

Table 6.9 estimates the waste arisings for those wastes that have not already been referenced. The presented quantities for the Limerick/Clare/Kerry Region are based on figures calculated from the *EPA National Waste Database Returns 2004*. Current indications show a significant increase in the quantity of priority wastes recovered in the Region.

**Table 6.9 Estimated Quantities of Priority Waste arising in Limerick/Clare/Kerry**

Waste Stream	Total (Tonnes)	Information Source
WEEE	2,618	<i>Local Authority EPA National Waste Database Returns 2004</i>
Batteries	193	<i>Based on collection figures and average weights as well as TFS information</i>
Oils	2,537	<i>Local Authority EPA National Waste Database Returns 2004</i>
PCBs	NA	<i>Information not available</i>
Tyres	599	<i>Local Authority EPA National Waste Database Returns 2004</i>
ELVs	9,545	<i>Vehicle Registration Unit, and follows the method used in the EPA's NWD, 2001.</i>
Healthcare	665	<i>Local Authority EPA National Waste Database Returns 2003</i>

## 6.7 DEFICIENCIES IN WASTE STATISTICS

Since the adoption of the Limerick/Clare/Kerry Waste Management Plan in 2001, there has been a significant improvement in the reporting systems for waste arisings in the Region. The waste collection and facility permit mechanisms are in place to ensure that waste collectors report waste collected and treated on an annual basis. Figures for household wastes in particular have improved. However, there remains a lack of reliable data for key waste streams such as commercial and industrial; C&D; and priority waste such as WEEE, Batteries and accumulators, PCBs, Tyres, Sludges and Waste Oils.

Currently Local Authorities submit annual reports detailing waste quantity arisings to the EPA that feed into the National Waste Database and these returns were used as the primary source of data for this Plan. The Local Authorities accept that there have been

inconsistencies in the quality of data being submitted to the EPA for the Region, however measures are underway to improve regional consistency.

The submission of AERs from private waste collectors is an area that needs particular attention. These documents need to be submitted to the Local Authorities as a matter of course. Failure to provide the required information should be looked on as a breach of the permitting regulations and appropriate steps should be taken to ensure compliance from all sectors. In many instances the reported quantities in the AERs cannot be qualified and as such, difficulties arise when compiling data. With the introduction of chipped bins the degree of accuracy, traceability and accountability of data should improve.

Reporting of Trans-Frontier Shipments (TFS) for the movement of waste out of the Region and C1 forms also needs particular attention. These forms are often incomplete or not included. Categorisation of the waste, particularly with regard to the European Waste Code (EWC) system can be erratic, with large amounts of information, including a description of the waste stream, being omitted.

This Plan will aim to improve the data collection and reporting procedures further to ensure that the current deficiencies are eliminated.

