

## PART 2



## 4 WASTE GENERATION

### 4.1 DUBLIN REGIONAL WASTE QUANTITIES

Since the adoption of the previous Waste Management Plan (1998) waste arisings have continued to grow in the Region reflecting the national trend. Since then the reporting and recording mechanisms for waste data have improved significantly for household, commercial and construction & demolition waste streams. Nevertheless there is significant room for improvement in waste reporting, particularly for the private waste management sector.

The waste quantities presented in this Plan are for the year 2003 and were obtained from numerous sources that are referenced throughout this document. The key sources include:

- Local Authority (EPA) National Waste Database Returns 2003;
- Waste Licensed Facilities – Annual Environmental Reports (AERs) 2003;
- Waste Collection Permits – AERs 2003;
- EPA National Hazardous Waste Management Plan 2001;

The format for the presentation of waste quantities is set out in the Waste Management (Planning) Regulations, 1997.

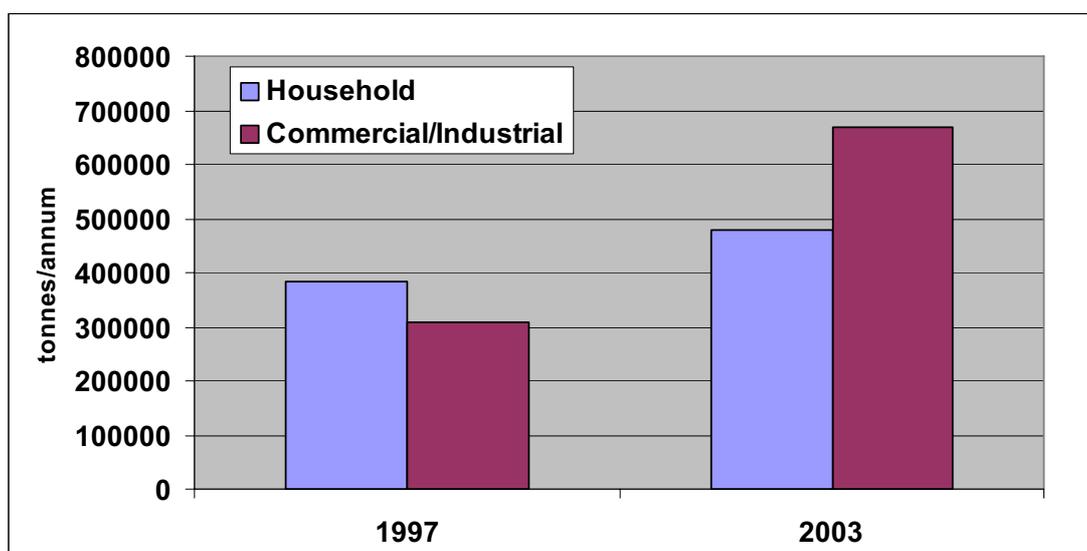
Table 4.1 outlines the key waste categories, and corresponding waste arisings reported to each Local Authority in Dublin Region for the year ended 2003.

**Table 4.1 Waste Arisings in the Dublin Region, 2003**

Waste Type	Total (Tonnes)	Source
Household Waste Arisings	459,579	Local Authority data. See Table 4.3
Litter and Street Sweepings	30,235	Local Authority Questionnaires
Commercial Waste	480,682	Waste Collection Permits AER, Waste Permitted and EPA licensed sites AERs
Industrial Waste not elsewhere specified	188,910	Waste Collection Permits AER, Waste Permitted and EPA licensed sites AERs
Construction and Demolition Waste	3,965,922	Local Authority data including the GDA, plus private facility data/ contact
Contaminated Soils	179,416	Local Authority data – from waste TFS and C1 Forms
Ash and Incinerator Residues	536	ESB and waste collection company AERs
Mining and Quarry Waste	5,468	Estimated using employee numbers and EPA per capita factor
Healthcare Waste	13,253	Contact with health boards, private companies managing healthcare waste
Sewage Sludges	23,228	Local Authority data. Expressed as tonnes of dry solids
Water Treatment Sludges	1,500	SDCC Leixlip plant
Industrial Sludges	1,485	AERs from waste collection companies
Agricultural Waste	22,676	Agricultural census and waste generation factors. Expressed as tonnes of dry solids

Note – sludge and agricultural waste is expressed as 'Tonnes Dry Solids' which is the dry weight equivalent of the material.

**Figure 4.1 Summary of Municipal Waste Growth, 1997 – 2003\***



\*Note – reporting for commercial/ industrial waste has changed, which accounts for some of the steep increase in this sector.

#### 4.1.1 Household Waste

The quantity of household waste generated in the Region in 2003 is estimated at 459,579 tonnes. This is 20% higher than in 1997. The increase is due to the growth in the number of households, and a growth of 1.6% per annum in the amount of waste each household is generating. Table 4.2 details household waste growth since 1997, and Table 4.3 presents a breakdown of household waste by category. (A further breakdown of household waste generation is provided in Table 7.1).

**Table 4.2 Growth in Household Waste Arisings\* 1997 – 2003**

Local Authority	Household Waste 1997 (Tonnes)	Household waste 2003 (Tonnes)*
DCC	173,333	201,133
DLRCC	69,292	81,587
FCC	61,601	78,181
SDCC	78,846	98,678
<b>TOTAL</b>	<b>383,072</b>	<b>459,579</b>
<i>Waste per Household</i>	<i>1.10</i>	<i>1.21</i>
<i>HH Waste per Capita</i>	<i>0.36</i>	<i>0.41</i>

\*Refer to Table 7.1 for more detail on the breakdown of household waste.

**Table 4.3 Breakdown of Household Waste by Category, 2003**

Category	Tonnage
Household Waste Collected	369,786
Household Waste Delivered to Bring and Other Facilities	89,793
Other Household Waste	0

### 4.1.2 Commercial Waste

With the exception of some commercial waste collected by Dublin City Council, the majority of commercial waste is collected and handled by private waste companies. In 2003, 480,682 tonnes of commercial waste was generated in the Region, this is 56% (171,036 tonnes) more than what was quoted in the last Plan (1997 data). This figure needs to be viewed with caution however, as it is likely that a large volume of industrial waste is being reported as 'commercial'. In addition improved reporting by private waste collectors through the waste collection permitting system has led to the marked increase in the quantity of commercial waste being reported. In Table 4.4 below we have included estimated data for the waste collected in both Commercial and Industrial sectors, although the split between C&I is estimated in some cases.

In general, there is a poor differentiation between waste defined as *Commercial* (generated by commercial enterprises such as shops, offices, administration etc.) and *Industrial* (generated by industry). Much of the non-process waste generated by industries is similar to that generated in commerce, and is collected by private or 'commercial' waste companies. Such waste includes packaging, office waste, canteen waste etc. and hence is dealt with at the same facilities as municipal waste.

**Table 4.4 Commercial/Industrial Waste Arisings 2003 (Tonnes)**

Source	Commercial Waste	Industrial Waste*	C&I Total
Private Collection	440,789	188,910	629,699
Local Authority Collection	39,893	0	39,893
<b>Total</b>	<b>480,682</b>	<b>188,910</b>	<b>669,592</b>

\* The figure presented includes industrial waste collected by main waste contractors.

### 4.1.3 Industrial Waste

The industrial waste quantity of 188,910 tonnes presented in Table 4.4 represents the total amount of non-hazardous industrial waste reported by the Local Authorities for the Region in 2003. This figure is primarily the industrial waste that enters the 'municipal' waste collection system and which is reported through the collection permits and permitted facility Annual Environmental Reports (AERs).

In 1997, an estimated 408,156 tonnes of industrial waste was generated, this figure was estimated from employee numbers, so cannot be directly compared with the 2003 figure. In future it is recommended that the actual quantities of commercial/ industrial waste reported by waste management companies be used as the basis for waste planning, as reported in Table 4.4 above.

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

The primary source of data regarding the generation of C&D waste is from the records of licensed facilities and permitted sites (incl. data from counties Kildare, Meath and Wicklow). The best estimate of C&D waste arisings for the Region in 2003 is 3.96 million tonnes. A major difference in the management of this waste stream is the treatment of C&D waste in landfills. In 1997 1,223,013 tonnes were disposed of in landfills, in 2003 715,000 tonnes was sent to landfill, however the vast majority of this material was reported as being used in landfill engineering or site restoration works. One other factor in the large increase in the estimate of C&D waste has been the volumes of material sent to sites under Waste Permit. Records indicate that large volumes of material are being deposited in Counties Kildare, Wicklow and Meath, as well as in Fingal and to a lesser extent in South Dublin and Dun Laoghaire-Rathdown. More details are provided in Section 10.

#### 4.1.5 Agricultural Waste

The principal agricultural wastes in the Region are as follows:

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

**Table 4.5 Agricultural Waste Quantities Generated in the Dublin Region, 2003**

Waste Type	Tonnes Dry Solids per Annum
Agricultural Sludge	22,083*
Spent Mushroom Compost	593*
<b>Regional Total</b>	<b>22,676*</b>

\*Expressed as tonnes dry solids

Source: Sludge Management Plans for FCC and DLRCC and through personnel at DCC.

#### 4.1.6 Mining and Quarrying

An estimated 5,468 tonnes of waste is generated in this sector. This is based on the employee numbers, using a per capita waste generation factor for the sector.

#### 4.1.7 Sludges (Municipal/Industrial)

The Waste Management (Planning) Regulations, 1997 require that the Plan specify to the extent possible the quantities of waste arising within the relevant functional area, classified under categories in Table 4.6. ) Operational Sludge Management Plans have been prepared for both DLRCC and FCC. SDCC has not prepared a plan as no waste water/water treatment sludge is generated within the county and the water treatment sludge from the Leixlip Plant is incorporated into the FCC Plan. Dublin City Council's sludge planning arrangements have been set out in the planning and environmental impact assessment of the Ringsend facility, which includes details on the policy for treatment and disposal of sludge. Approximately 17,954 tonnes (dry-solids) of non-hazardous sludge (municipal and industrial sludge) are generated within the Region per annum according to the aforementioned reports, details of which are outlined in Table 4.6.

**Table 4.6 Sludge Quantities Generated (Tonnes, 2003)**

Sludge Type	Regional Total
Municipal Wastewater Sludge*	18,144
Water Treatment Sludge	3,599
Industrial Sludge*	1,485
Total	23,228

\*Expressed as tonnes dry solids

Source: Sludge Management Plans for FCC and DLRCC and through personnel at DCC

#### 4.1.8 Packaging Waste

Packaging waste arisings are calculated from the quantity of packaging waste landfilled plus the quantity of packaging waste recovered, both of which are derived from household and commercial/industrial (C&I) packaging waste quantities. Packaging waste arisings for the Dublin Region for 2003 are estimated at 483,896 as outlined in Table 4.7 below. More details are provided in Chapter 9.



Dublin City Council Cardboard Recycling

**Table 4.7 Estimated Packaging Waste Arisings Tonnes for the Region 2003 (Tonnes)**

Waste Type	Landfilled (Tonnes)	Recovered	Arisings (Tonnes)	Recovery Rate %
Packaging Waste	321,190	190,548	511,738	37.24%

#### 4.1.9 Ash Residue

In 1998 a total of 121 tonnes of ash/incinerator residue was reported in the Dublin Region. This figure was obtained from specific enquires related to the last plan. In 2003 this figure has risen to 536 tonnes of ash/incinerator residue. Table 4.8 shows the breakdown of ash/incinerator residue for the Region in 2003. Of the 536 tonnes of ash residue generated, 531.42 tonnes was exported for treatment to Great Britain, Belgium or Germany, while the remaining 4.7 tonnes was landfilled. The majority of the ash/incinerator residue (99.1%) is reported by two companies in the Dublin Region, MinChem in Dublin City Council's functional area and Metal Processes Ltd. in South Dublin County Council's functional area. The remaining ash is generated at ESB operated power stations in the Region.

**Table 4.8 Ash/Incinerator Residues for the Dublin Region 2003**

Type of Residue	Tonnes	Percentage
Lead Ash & Residues*	449.28	83.8%
Tin Ashes*	18.92	3.5%
Incinerator Lining*	63.22	11.8%
ESB Power Stations**	4.70	0.9%
<b>Total</b>	<b>536.12</b>	<b>100.0%</b>

\*Source: Local Authority NWD Returns, 2003.\*\*Source: ESB.

#### 4.1.10 Contaminated Soil

In 1998 a total of 16,000 tonnes of contaminated soil was produced in the Dublin Region. In 2003 a total of 179,416 tonnes of contaminated soil was reported in the Dublin Region. The majority of this was produced in the Dublin City Council functional area and almost 70% of this was generated by brownfield regeneration projects. Table 4.9(a) shows the quantity of contaminated soil arisings sent for export (reported in TFS forms) and Table 4.9(b) shows contaminated soil reported in C1 Forms and treated in Ireland.

**Table 4.9(a) Contaminated Soil Arisings in the Dublin Region 2003 – TFS Forms**

Local Authority	Company	Tonnes	Percentage
<b>DCC</b>	Cara Environmental Technology Ltd.	30.00	0.02%
	SITA Environmental Ltd. (other)	40.00	0.02%
	MinChem Environmental Service Ltd.	82.50	0.05%
	Ashden Ltd.	1,593.78	0.93%
	Dee Environmental Services Ltd.	8,216.42	4.81%
	Haytonvale Developments	13,360.86	7.83%
	SITA Environmental Ltd. (docklands)	15,565.13	9.12%
	Fabrizia Developments Ltd.	28,866.21	16.91%
	Dublin Docklands Development Authority	102,962.64	60.31%
<b>FCC</b>		0.00	0.00%
<b>DLRR</b>		0.00	0.00%
<b>SDCC</b>	Irish Environmental Services	10.79	0.01%
<b>Total</b>		<b>170,728.33</b>	<b>100.00%</b>

Source: Local Authority National Waste Database Returns, 2003.

Of the contaminated soil generated in the Dublin Region in 2003 and sent for export, 90.73% went to Germany for treatment, 9.26% to Holland and 0.01% to Finland. 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. Due to the nature of the material and the cost of remediation it is difficult to manage within Ireland and specialised treatment is required abroad.

**Table 4.9(b) Contaminated Soil Arisings in the Dublin Region 2003 – C1 Forms**

Local Authority	Tonnes
DCC	6,682.59
FCC	1,798.23
DLRCC	206.85
SDCC	0
Total	8,687.67

Adding soil treated abroad and in Ireland, the total quantity reported for 2003 was 179,416.1 tonnes.

#### 4.1.11 Healthcare Waste

Healthcare Waste comprises *non-risk waste* and *healthcare risk waste (HCRW)*. The former is similar to commercial waste, whilst risk waste which would include potentially hazardous material, is separated at source and subject to different management controls. HCRW from public hospitals is currently handled on an all-Ireland (32 counties) basis following the establishment of a Joint Waste Management Board that represents the Department of Health and Children, in the Republic of Ireland and the Department of Health and Social Services in Northern Ireland. The contract began in April 2000 and covers the collection, treatment and final disposal of HCRW to the highest environmental and health and safety standards. Sterile Technologies Ireland (STI) has secured the first contract for the management of HCRW from all of the state-funded hospitals and sources of HCRW and Clinical waste. Private hospitals employ specialised contractors to manage most waste. The non-risk

healthcare waste is collected from the relevant facilities by Local Authorities or private contractors. Table 4.10 shows the total Health Care Waste generated in the Dublin Region.

**Table 4.10 Estimated Healthcare Waste Generated in the Dublin Region 2003 (Tonnes)**

	Non-Risk waste	Risk Waste (HCRW)	Total
<b>Tonnes arising in 2003</b>	9,378	3,875	13,253

Source: HSE Waste Management Unit, Sterile Technologies Ireland Ltd (STI) and Ecosafe Systems.

#### 4.1.12 Litter and Street Sweepings

The quantity of litter and street sweepings for the Region totalled 30,235 in 2003. This data comes from the Local Authority landfill records.

## 4.2 HAZARDOUS COMPONENT OF WASTE ARISING IN THE DUBLIN REGION

In accordance with the Waste Management (Planning) Regulations, 1997 it is required that the hazardous component, if any, of the wastes in Table 4.11 are identified.

**Table 4.11 Hazardous Component of Wastes Arising in the Region (Tonnes 2003)**

Waste Type	Total	Source of Estimate
Household Waste	5,049	Special municipal waste component of household waste collected in Dublin: Total 'black bin' waste collected multiplied by % 'special waste' identified in 2004 characterisation studies, carried out according to EPA Municipal Waste Characterisation Manual.
Litter and Street Sweepings	903	Estimated using Local Authority Questionnaires and Street Litter-Bin surveys
Commercial and Industrial Waste	27,678	Reported in C1forms to Local Authority
Construction and Demolition Waste	163	Local Authority Questionnaires
Contaminated Soils	179,416	Assumes all arisings to be hazardous
Ash and Incinerator Residues	512	Local Authority Ash/Incineration Residue data
Mining and Quarry Waste	1,836	Local Authority Questionnaires
Healthcare Waste	3,875	HEA Waste Management Unit –all risk waste assumed to be hazardous for simplicity
Sewage Sludges	0	Local Authority Questionnaires
Water Treatment Sludges	0	Local Authority Questionnaires
Industrial Sludges	9,212	Local Authority Questionnaires (bulk tonnes)
Agricultural Waste	N/A	No information available-

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

- Table 4.12 (b): Movements of Hazardous Wastes
- Chapter 7: Section 7.6 Hazardous Waste Recovery and Recycling (for Households)
- Chapter 19: Policy on Hazardous Waste Collection, Disposal Requirements and Section 26 Registers
- Chapter 20 – Reference to National Hazardous Waste Management Plan

### 4.3 NON-HAZARDOUS WASTE MOVEMENTS TO & FROM DUBLIN REGION

Table 4.12 summarises the estimated 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 2003. The quantities shown represent the majority of the waste movements into and out of the Region.

**Table 4.12(a) Estimated Non-Hazardous Waste Movements to & from the Dublin Region (2003)**

Waste Type	Quantity Imported into Region Tonnes	Quantity Exported from Region Tonnes
Household	50,000-100,000	200,000-250,000 (Arthurstown)
Commercial	75,000-125,000	300,000-350,000
C&D	50,000-100,000	2,600,000
Industrial	25,000-50,000	100,000-150,000

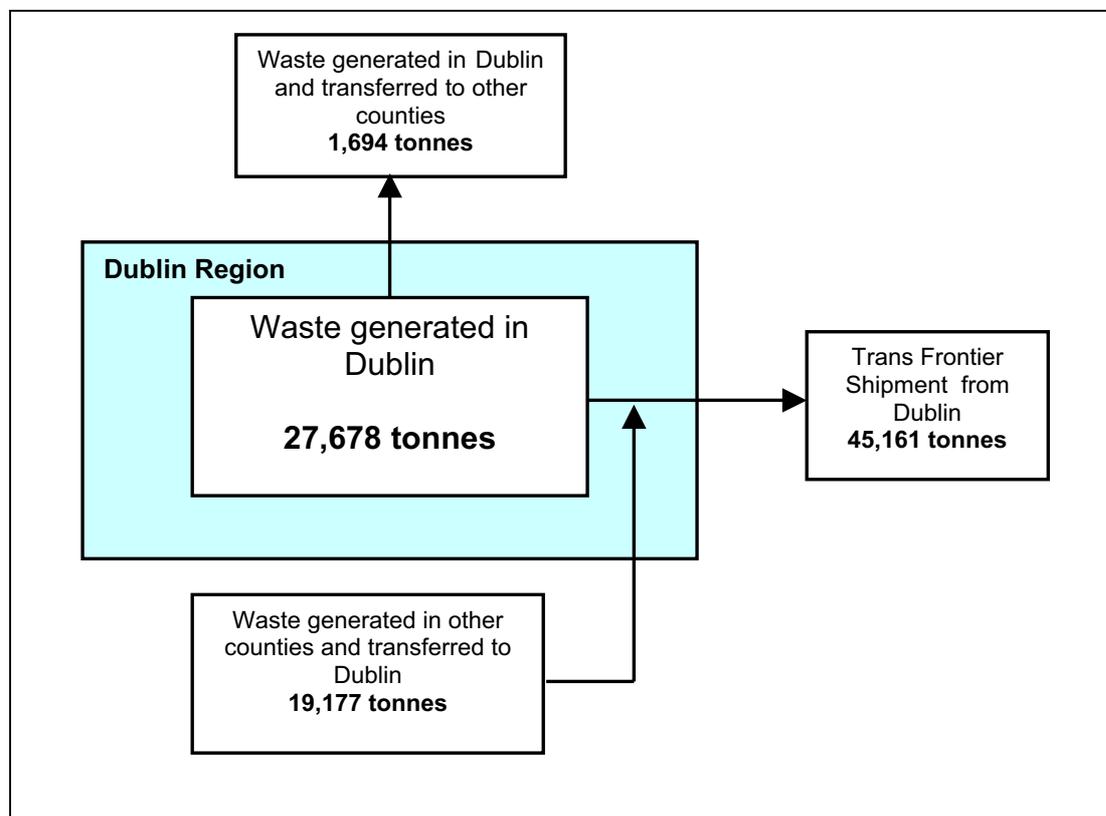
Source: Waste Collection permits, Waste Permits and EPA licences Annual Environmental Reports

**Table 4.12(b) Hazardous Component of Waste Moving to and from the Dublin Region (2003)\***

Description	Total (Tonnes)
Trans-Frontier Shipment of hazardous waste from Dublin (notified in TFS forms)	45,161
Hazardous waste generated in Dublin (notified in C1 forms)	27,678
Hazardous waste transferred to Dublin from other counties	19,177
Hazardous waste generated in Dublin transferred to other counties (notified in C1 forms)	1,694

\*Excludes contaminated soil referred to in Table 4.9

**Figure 4.2 Hazardous Waste Flow to and from the Dublin Region 2003**



#### 4.4 WASTE COMPOSITION IN DUBLIN REGION

Surveys have been carried out in the Dublin Region in 2004 on the composition of household waste in both the household grey/black bin and household green bin collection system. The results are summarised in Table 4.13 below. The last column presents the composition of commercial waste reported nationally by the EPA.

**Table 4.13 Dublin Region Waste Composition (RPS-MCOS 2004)**

Waste Categories	Household Grey/Black Bin (Residual Waste)	Household Green Bin (Dry Recyclables)	Commercial Waste (EPA data 2001)
Food & Garden Waste	34%	2%	21%
Papers & Cards	20%	88%	49%
Textiles	8%	1%	1%
Plastics	14%	2%	10%
Glass	6%	0%	7%
Metals	4%	3%	3%
Others	11%	4%	9%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

#### 4.5 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. Table 4.14 estimates the waste arisings for the wastes that have not already been referenced.

**Table 4.14 Estimated Quantities of Priority Waste Arising in the Dublin Region, 2003**

Waste Type	Total	Source
Waste Electrical and Electronic Equipment	11,822 – 29,374	“Waste from Electrical and Electronic Equipment: A Status Report” (EPA, 2001)
Batteries and Accumulators	4,887	EPA NWD 2001 using kg-per-capita to calculate figure
Oils	6,878	EPA NWD 2001 using kg-per-capita to calculate figure
PCBs	0.03	Local Authorities 2003 NWD returns \ (C1 forms)
Tyres	8,554	Extrapolated from CSO import statistics and ELV calculation (as per EPA methodology)
End of Life Vehicles	56,493	Calculated as per Method 3 in “End of Life Vehicles in Ireland: A Sectoral Report” (EPA, 2002)

#### 4.6 DEFICIENCIES IN WASTE STATISTICS

Since the adoption of the previous Dublin Waste Management Plan in 1998/ 2001, there has been a significant improvement in the reporting systems for waste arisings in the Region. The Waste Collection Permit and Waste 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.

Improvement in data reporting and analysis is required in the following areas:

- AERs from permitted waste collection companies
- AERs from permitted waste facilities
- Reporting of commercial and industrial waste separately
- Reporting of C&D waste: differentiate between soil/stones and other C&D waste, recording of the sector of origin
- Local Authorities – recording of various waste streams at Recycling Centres.

Currently Local Authorities submit annual reports detailing waste quantity arisings to the EPA that feed into the National Waste Database. These returns were used as the primary source of data for this Plan.

There is a lack of information on former waste management sites including former landfill and recovery facilities – this is due to the absence of comprehensive regulatory systems for waste management prior to 1996.

## 5 WASTE PREVENTION AND MINIMISATION

### 5.1 INTRODUCTION

Prevention has the highest priority in the EU Waste Management Hierarchy. Whilst progress in waste minimisation and prevention over the life of the current plan has been positive, waste prevention and minimisation will be a key target area for further improvement, particularly with the development of national programmes and initiatives whose underlying goal is to decouple waste generation from economic growth.

Some of the main barriers to waste prevention have been the low level of understanding of the concept and the lack of a standardised definition and method of measurement. A major aim of this Plan is to increase such an understanding and to promote and utilise a standard definition.

Currently, the National Waste Prevention Programme is developing a national definition for waste prevention. The definition recommended in the Clean Technology Centre Prevention Framework Document was:

***Prevention: Elimination or reduction at source of material and energy consumption, waste arisings (solid, gaseous, heat and liquid), and harmful substances***

It is clear from this definition that the primary emphasis should be on prevention, reduction at source, and re-use of products. Although considerable attention has been paid to recycling in Ireland in recent years, it can be seen that this is a lower priority. However, it is still defined as a form of waste minimisation and so should be promoted.

### 5.2 PROGRESS TO DATE AND INITIATIVES

Waste Prevention was in its infancy as a waste management option both regionally and nationally, during the period 1997/1998 when the individual waste strategies were being developed. Most Local Authorities at the time had very little experience of prevention. Similarly there were neither clear national definitions of prevention, nor any coherent guidelines for Local Authorities. The plan outlined a number of potentially effective measures for prevention/minimisation for the Dublin Region over the plan period. There has been positive progress made in this area over the course of the plan since its adoption.

#### 5.2.1 Household/Community Level

The achievements in waste prevention and minimisation have improved greatly since the appointment of the Environmental Awareness Officer (EAO) in each Local Authority. The EAOs have had a positive impact on waste minimisation and prevention on their primary focus group – the public. The EAOs are responsible for raising awareness among the public on best practice in waste management, consequently awareness and education programmes have been developed and are being implemented in each Local Authority.



Home composting workshop organised by DLRCC



School Green Bin Launch

To date, waste minimisation initiatives in Dublin Region have primarily been aimed at diverting waste from disposal by encouraging the use of kerbside recycling, bring banks, recycling centres and home compost bins which are provided at a reduced price to encourage diversion of organic waste. The EAOs have played an important role in the progress achieved to date. Tables 5.1-5.3 outline the achievements of each Local Authority with respect to Green Schools, home compost bins and Local Agenda 21 Funded projects.

Dublin City Council also has an Environmental Liaison Officer located in each of the five electoral areas of the City Council. These Officers assist in the co-ordination of waste management matters at a community level, particularly matters relating to the recycling of household waste. These positions have the potential to become more involved with prevention projects at the community level.

**Table 5.1 Green School Registrations and Green Flags Awarded (2004)**

Local Authority	Total Number of Schools in each Local Authority			Number of Schools Registered (Sept 2004)			Green Flags Awarded (Sept 2004)
	Primary	Secondary	Total	Primary	Secondary	Total	
<b>DCC</b>	220	105	325	83	21	104	19
<b>SDCC</b>	92	39	131	60	20	80	10
<b>DLRCC</b>	61	36	97	48	22	70	16
<b>FCC</b>	84	28	112	44	15	59	9
<b>TOTAL</b>	<b>457</b>	<b>208</b>	<b>665</b>	<b>235</b>	<b>78</b>	<b>313</b>	<b>54</b>

A new generation of children is emerging for whom waste prevention, minimisation and recycling behaviour is becoming second nature. The An Taisce Green Schools Programme has played a major role in changing children's attitude towards waste and environmental issues. Due to the efforts of the pupils and teachers, assisted by the EAOs, a total of 313 schools in the Region are now engaged in the programme, and 54 'green flags' have been awarded.

**Table 5.2 Number of Compost Bins Sold through each Local Authority (2001-2004)\***

Year/Council	2001	2002	2003	2004	Total bins sold (2004)
<b>DCC</b>	1,320	1,803	5,279	8,324	16,726
<b>SDCC</b>	200	200	300	2,466	3,166
<b>DLRCC</b>	NA	500	650	1,305	2,455
<b>FCC</b>	1,200	1,179	527	654	3,560
<b>TOTAL</b>	<b>2,720</b>	<b>3,682</b>	<b>6,756</b>	<b>12,749</b>	<b>25,907</b>

\* An additional 10,614 bins have been sold in the region as of September 2005.

The number of bins sold at a subsidised rate or given away each year continues to increase and is well supported by home composting courses and workshops throughout the Region. In 2004 the 12,749 bins supplied above will have led to an estimated 2,550 tonnes\*\* of organic waste being diverted from landfill each year.

\*\*based on estimate in the Draft National Biodegradable Waste Strategy that one home compost bin diverts 0.2tonnes of organic waste each year from landfill

**Table 5.3 Local Agenda 21 Environment Fund 2004 Projects and Funding**

Local Authority	Total number of projects (Sept 04)	Total spend on funding (Sept 04)	Waste related projects
DCC	13	€21,320.00	10
SDCC	9	€9,304.60	6
DLRCC	9	€15,069.80	7
FCC	12	€11,932.00	9
<b>TOTAL</b>	<b>43</b>	<b>€57,626.40</b>	<b>32</b>

The Local Agenda 21 Environment Fund promotes sustainable development by assisting small-scale environmental projects at the local level which involve partnerships between Local Authorities and local community groups, schools and environmental NGO's. Almost 75% of the projects have been waste related.

### 5.2.2 Waste Charges

The previous Waste Management Plan in accordance with the Polluter Pays Principle, supported the introduction of use related charges in order to encourage waste reduction and recycling. Since 1<sup>st</sup> January 2005 use-related charges have been introduced to householders across the country either through a weight or volume based system and to date has been effective in reducing the quantity of waste disposed of in the grey/black bin. The Local Authorities are operating a variety of systems in accordance with the Polluter Pays Principle, refer to Chapter 7, Table 7.5 for details of the different household charging systems.

### 5.2.3 Industry and Commerce



With regard to waste prevention within commerce and industry the achievements have been modest, with some exceptions. While some success has been achieved with IPC Licensed companies through the work of the EPA, waste prevention is still not being widely implemented within Small to Medium Sized Enterprises (SMEs) and this needs to be addressed. However some private waste companies do provide on-site education to their commercial customers.

The primary aim of IPC licensing is to prevent or reduce emissions to air, water and land, to reduce waste and to use energy

efficiently and to secure, from licensees an Annual Environmental Report (AER) on these issues. In the Dublin Region 107 companies have applied for or been issued IPC licenses, since this system was implemented. This constitutes approximately 17% of all licences issued nationally.

The IPC licensing system, implemented by the EPA, has brought about a major change in environmental practices in a wide spread of companies across several sectors in the Dublin Region and elsewhere. It has mainstreamed the concept of cleaner production (CP) in these sectors and CP includes waste prevention as a central tenet. It has also brought about a new level of transparency and openness in how private companies meet their environmental requirements and responsibilities. It is perceived internationally as an excellent example of a legislative-based system for the promotion of pollution prevention.

Several worthwhile initiatives and actions with regard to business were proposed in the previous Plan, but progress in this sector has been less than for the household sector. Most progress was achieved in the Dun Laoghaire-Rathdown area, where a designated Green Business Officer was appointed, whose sole role was to support business in improved waste management, through various initiatives and activities. These included awareness raising programmes and events for business, visits and support to companies, training, a waste characterisation study, promotion of best practice examples and the setting up of a green business network in the Region. Table 5.4 shows the achievements in SME waste prevention for each Local Authority.

**Table 5.4 Local Authority Achievements in SME Waste Prevention**

Local Authority	Initiatives
DLRCC	Hospital Waste Reduction Course Presentation to local businesses Green Business Network Waste Characterisation Study (42 businesses)
FCC	Green Fingal Week Waste Characterisation Study (35 businesses) Green Business Forum Distribution of "Small Change Guide"

#### 5.2.4 Within the Local Authority

An Environmental Management System (EMS) provides business with a framework to systematically evaluate, manage and minimise the environmental impacts of its activities. The four Dublin Local Authorities are major organisations within the Region and it is considered essential that each Local Authority develops a comprehensive EMS in order to lead by example to the business community.

Within the Local Authorities themselves, the environment departments - especially the EAOs - have been active in the promotion of better waste management approaches; in particular the promotion of higher recycling levels. Each of the four Local Authorities has reported that informal (non-certified) green procurement strategies and/or environmental policies have been developed but progress on implementation is slow. Some green procurement is evident, in particular regarding the purchasing of recycled paper and toners, as well as double-sided photocopiers and printers. However this is mainly in the Environment Departments and is not formally or systematically applied throughout the Local Authorities. In general in Ireland, the Local Authorities need to progress further in providing the kind of exemplary behaviour that would support change in the general public and among businesses.

**Table 5.5 EMS Progress in Local Authorities**

Local Authority	Environmental Management System	Progress
DLRCC	EMS for all council buildings Green Purchasing Policy Sustainable Energy Policy	Draft environmental policy written. Training of staff & councillors Green procurement strategy has been developed Improved energy management has been addressed
FCC	EMS for all council buildings	No developments to date
DCC	City of Dublin Energy Management Agency	Energy efficiency programme in place in Civic Offices
SDCC	EMS for all council offices and depots	Interdepartmental team developed. Waste auditing and procurement underway

### 5.2.5 Regional Website – Dublin Regional Waste Awareness Campaign

The [www.dublinwaste.ie](http://www.dublinwaste.ie) website, a joint venture with the four Local Authorities, was launched in May 2004. The aim of the website was to create a central point of information for the four authorities that would provide householders with good information on Regional waste management issues. The website search engine provides information on prevention, minimisation, collections systems for household rubbish, recycling and hazardous waste and locations of bring banks and Recycling Centres. There are also regular updates on Regional activities and new facilities. The site has had 46,446 hits since May 2004 with 10,500 in January 2005 coinciding with the introduction of use related charging.



### 5.2.6 National Programmes and Initiatives

A number of national initiatives have been introduced since the publication of the previous Dublin Waste Management Plan. Amongst these are:

- The Environment Partnership Fund;
- Environmental Research Technological Development and Innovation Research Programme (ERTDI);
- Cleaner Greener Production Programme;
- National Waste Prevention Programme
- Enforcement Legislation;
- Race Against Waste.

The Environmental Partnership Fund (Local Agenda 21) promotes sustainable development by assisting small-scale environmental projects at local level, which involve partnerships between Local Authorities and local community groups, schools and environmental NGOs.

The ERTDI Research Programme is conducted by the EPA and supports R&D projects through grants. The *Cleaner Greener Production Programme* would fall under this programme, with a specific focus on cleaner more sustainable production in SMEs.

In April 2004, the Minister for the Environment Heritage and Local Government launched the National Waste Prevention Programme (NWPP). The Programme will be implemented by the Environmental Protection Agency and aims to deliver substantive results on waste prevention and minimisation and will integrate a range of initiatives addressing awareness raising, technical and financial assistance, training and incentive mechanisms. Currently the most relevant component of the NWPP for the Dublin Waste Management Plan is the development of the Local Authority Prevention Demonstration Programme (LAPD). This programme to be launched in early 2006 provides Local Authorities with an opportunity to apply for funding for prevention projects/programmes that demonstrate practical measures for preventing waste.

It is anticipated that the introduction of the EPA Office of Environmental Enforcement and Pay by Use waste collection services at household level over 2004/2005 will have an effect on waste prevention and minimisation at every level, as householders, business and industry attempt to reduce waste costs by reducing their waste volumes.

The introduction of the Plastic Bag Levy in March 2002 whereby shoppers are charged 15 cent per plastic bag has had a dramatic impact on Irish shopping lifestyles and has resulted in a significant decrease in the quantity of plastic generated. It is a successful economic tool which at the same time increases public awareness of the need to reduce waste on a daily basis.

### 5.2.7 Race Against Waste Campaign

In 2003 the DOEHLG launched a national level drive at improved awareness of the waste issues and to dispel misconceptions about waste. The Race Against Waste campaign has gathered momentum and support since its launch. The Dublin Local Authorities have engaged well with the campaign and have carried out a supporting awareness campaign of its own assisted by DOEHLG funding, together with using the Race Against Waste branding. This engagement and branding should continue and Local Authorities will see benefit from the high profile advertising and media campaign. The communications campaign consists of number of programmes and tools, which can be used both now and in the future to target several different sectors including the householder. The website [www.raceagainstwaste.ie](http://www.raceagainstwaste.ie) and the hotline should be promoted and linked through the Local Authorities as they provide relevant information for householders, business and others alike. The various programmes provide a ready-made platform into which Local Authorities should tap are outlined below.



#### Small Change for Businesses

The Small Change programme launched in February 2004 was developed with input from stakeholders within the SME sector and is a partnership with the Chambers of Commerce of Ireland (CCI). The programme consists of:

- A guide – outlines how to carry out a waste audit and set up an action plan, tips on how to reduce, reuse and recycle business waste, how to deal with waste contractors and a synopsis of waste legislation as it applies to SMEs;
- A website – the website provides backup to the guide, posters available to download along with a variety of case studies, which give information on what businesses around the country are doing.
- Seminars – these are run in partnership with local Chambers of Commerce and are an important element of the programme, bringing the information out to the public.

#### Programme for Action (Large Organisations)

The Programme for Action launched in March 2005, targets organisations such as the health service, third level institutes, government departments, prisons, The Defence Forces, Gardaí, transport services and Local Authorities themselves and has been developed with representatives from these sectors. The programme is similar to the Small Change programme and consists of:

- A guide – to help organisations set up a waste team, carry out an audit, put a programme of action in place, address green procurement and how to deal with specific waste streams;
- A website – part of [www.raceagainstwaste.ie](http://www.raceagainstwaste.ie), as above.
- Seminars – these are an important element of the programme. These seminars are sectoral in nature and have been organised together with various representative organisations to bring the information out to their members/staff.

### **Tidy Towns – Race Against Waste Module**

The Race Against Waste module of the Tidy Towns competition was first introduced for the 2004 competition. It was an optional pilot component of the competition for 2004 and will stay in this format for the 2005 competition with a view to integrating it into the competition proper following that. It aims to put across the message about working together as a community, with each sector targeting their own areas and working with other sectors. The criteria for the competition are based around the various sectors of the community:

- Schools – number of Green Schools;
- Business – number implementing Small Change;
- Residents – household composting, recycling;
- Institutions – implementing Programme for Action.

### **5.2.8 Other Initiatives and Activities that support Prevention and Minimisation**

A number of other organisations and companies are helping to promote sustainable lifestyles and waste prevention/minimisation in the Region. The Local Authorities recognise the positive impact this bottom-up movement for change can have. Examples include:

#### **Cultivate Centre**

The Cultivate Sustainable Living Centre is a Sustainable Ireland project. The Centre is located in Temple Bar and has:

- A resource centre with regular exhibitions featuring sustainable solutions
- A large selection of books and products to help you make the shift to a more sustainable and satisfying lifestyle,
- Regular workshops, talks, and cultural events throughout the year
- A resource and information hub for the network of projects and individuals across the island working to create a more sustainable world.
- The Dublin Green Map Project is a major feature of the Cultivate Centre – The map locates recycling centres, environmental business, and eco organisations in Dublin.

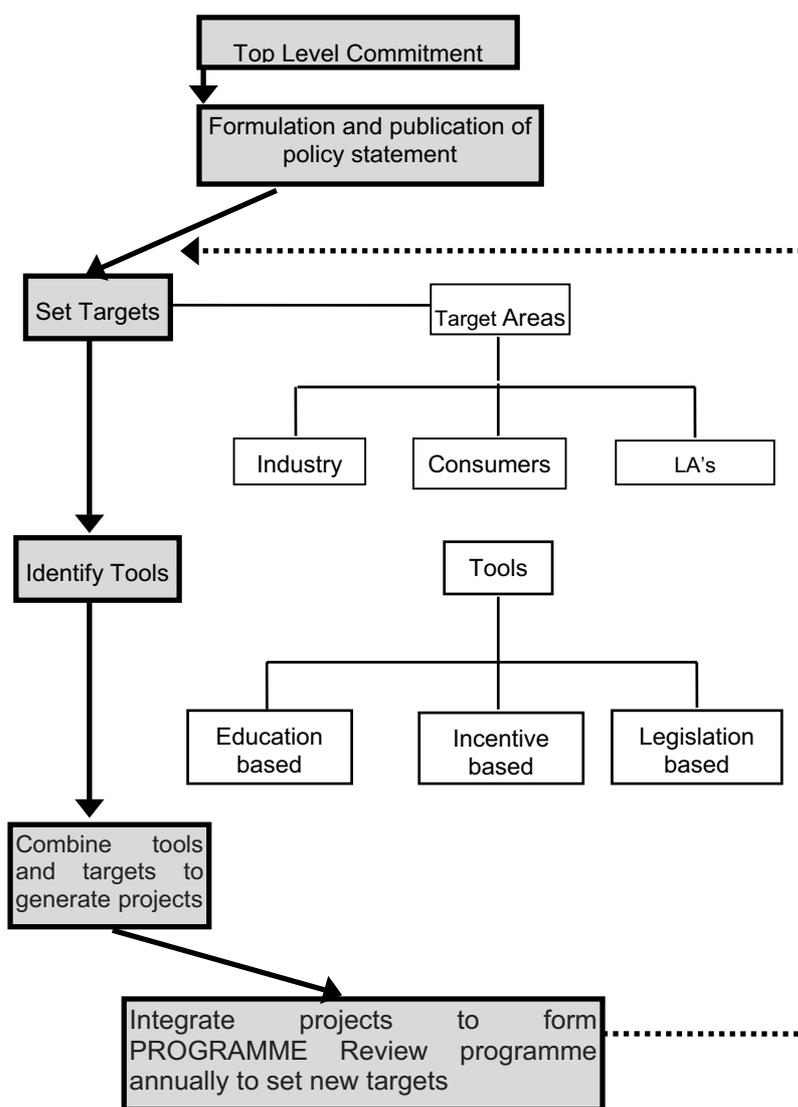
**St. Andrew’s Resource Centre**

This co-operative centre on Pearse Street hosts a market each Saturday which features sustainable and organic products. The centre enables networking and exchange of information on issues such as waste management.

**5.3 WAY FORWARD**

It is important that a waste prevention programme is developed by the Local Authorities (EAOs and GBOs and GSOs) for the Dublin Region. This plan will require top level support, the formulation and publication of a policy the setting of targets and key performance indicators (Chapter 22), identifying the tools necessary to meet these targets, combining the tools and targets to generate projects and actions, integrating these actions into a coherent programme and reviewing the results of the programme for future revision and adaptation. Figure 5.1 provides an overview of the stages of a waste prevention programme.

**Figure 5.1 Waste Prevention Programme**



## 6 COMMUNITY BASED WASTE MANAGEMENT PROJECTS

### 6.1 INTRODUCTION

Community based waste management initiatives are slowly evolving in Ireland. Many of these are serving to increase employment and minimise social exclusion. To date we have several case studies of small-scale projects that have got off the ground due to partnerships with Local Authorities, FAS or through central government funding. There are bound to be many more examples happening throughout the country but due to limited funds, advertising, media and annual reports are not readily available or accessible.

The new Waste Management Plans for Ireland need to address the role the community can play in reducing the quantity of waste buried in landfill. Excellent kerbside recycling schemes have been rolled out the length and breadth of the country, however there is still a need for householders to think twice before they put electrical goods, bulky waste (furniture), books, scrap metal/parts toys, clothes etc in the rubbish bin. This 'trash' can be another man's 'treasure'.

Community groups/partnerships and Not for Profit groups are in an ideal position to set up small-scale facilities to receive this waste. The opportunities for repair and resale are great and will go a long way towards diverting waste from landfill and improving the local environment and is also an effective way of creating a strong sense of identity and community spirit.

The previous plan included objectives to promote community partnerships and initiatives, below are three examples of successful community recycling/recovery schemes in Dublin that have emerged since the previous plan.

#### 6.1.1 Sunflower Recycling - Dublin

Sunflower Recycling was established to create employment in Dublin's inner city in 1995. The project employs 26 long-term unemployed via Community Employment and 3 through the Full Time Jobs Initiative. The project collects recyclable material from inner city offices and community groups. These are brought back to the depot to be sorted, graded and baled. The main funding for the project is through FAS and the project is operated in partnership with the Dublin City Council.

The project has achieved a lot in a relatively short period. Two separate EU Projects were created, INTERGRA and YOUTHSTART both aimed at training the long-term unemployed. 42 people have been employed within the recycling industry, 39 have trained and moved on to further employment and 9 have gone on to further education. The project has also gained recognition for recycling as an option for future job creation.

#### 6.1.2 Project HeatSun



This project is funded under the European Commission's LIFE Environment programme and brings together Dublin City Council, Dun Laoghaire/Rathdown Council, Fingal County Council, Fingal Recycling, Micropro, Sunflower Recycling and SwITch\*. It is an innovative partnership initiative to tackle the problem, and harness the opportunity, of waste IT management. The aims of the Project based on the recommendations of the WEEE Directive are:

- Reduction of waste IT equipment
- Re-use of waste IT equipment
- Recycling of waste IT equipment



With support from FáS, the project is also creating training opportunities and jobs in a sustainable recycling enterprise, (swITch) and promoting the setting up of state-of-the-art installations for:



- Re-use of equipment and components
- The recycling of what cannot be re-used
- The safe disposal of what cannot be recycled, and
- The reduction of waste and hazardous materials in a new Green Computer design

The project aims to demonstrate that dealing with social and environmental priorities is sustainable and can make good business sense. The project aims to employ 20 people and provide 20 training opportunities during its life span (currently 2001-2005). During this time the project aims to recycle 10,000 units of IT equipment and to make available 2,000 reusable computer to local training and community organisations.

\*Created under Project HeatSun, swITch (Saving Waste IT Can Help) is a computer refurbishment company benefiting businesses and the environment. swITch endeavours to collect, recycle and refurbish I.T. equipment to sell back in to the community.

### 6.1.3 Clondalkin Community Recycling Initiative

The Clondalkin Partnership with support from South Dublin County Council and under the auspice of the FAS Social Economy Programme has created the successful Clondalkin Community Recycling Initiative. 10 staff from the South Dublin Area are trained and employed to collect white and electrical goods for recycling and resale. This initiative is providing a necessary service to those who cannot access a recycling centre or suitable service. The scheme has put South Dublin at the top of the league for management of WEEE in the Region and Nationally.

### 6.1.4 Unused Medicines - D.U.M.P project

'The Disposal of Unused Medications Properly' project was initially started, by the South Western Area Health Board (SWAHB), to combat the high rate of parasuicide attempts involving drug overdoses and also the number of accidental poisoning of small children (10% of accidental deaths in childhood relate to poisoning).

A significant number of people are unaware that pharmacies will dispose of unused medicines for them (however, the pharmacies are not obliged to do this). Consequently medication accumulates in the home thus being present for attempted suicide or as a risk of accidental poisoning. Alternatively, it would appear that people flush unused medication down the toilet or dispose of them in the rubbish bin, which can pose a significant risk to the environment

A publicity campaign aimed at the catchment area of the Region was run, with the six pharmacies involved in the project provided with waste disposal containers. The general consensus amongst the pharmacists was that the campaign was a success. The results of the trial are as follows:

- The average collection yielded 9 kg per pharmacist per collection. To put this into perspective, if the trial had been carried out with the 168 pharmacies in the whole SWAHB Region, the quantity per collection would have been 1,512 kg. Other estimates suggest an annual collection of 35.15 kg per pharmacist per annum
- A correlation was observed between the medication returned and the medication of choice as a method of overdose.

Recommendations as a result of the trial:

- The prescribing and dispensing practices of medicines, that have a high return rate, should be reviewed
- There is a need to raise awareness about why unused medicines should be returned

The East Coast Area Health Board (the East Coast Area ranges from Ringsend in the north to Carnew in the south, and from the east coast of Wicklow to the borders of West Wicklow and Carlow) intends to begin a DUMP project in 2005 with the help of the Shared Services Eastern Region. There are 76 pharmacies in this area and several will be in the DCC, DLRCC and the SDCC Regions.

### 6.1.5 Charity/Second Hand Shops

Charity shops such as the Irish Cancer Society, Oxfam, Cerebral Palsy, Barnados, Gorta and St Vincent de Paul, provide outlets for second hand clothing and in some cases furniture and household goods to be sold for reuse. There are also a number of textile bins throughout the Region, which supply a number of charity and second hand shops with reusable clothing. These activities contribute to the reuse of significant volumes of materials. These shops are generally manned by volunteers and where possible involvement in these facilities should be encouraged as they provide both a successful way to prevent waste and also support community involvement in waste prevention and reuse.



## 6.2 WHERE TO FROM HERE?

The research has shown that what is found lacking in Ireland and is perhaps hindering the progress of other community initiatives (both large and small scale) is the lack of a robust support structure to ensure the community groups initiatives are successful and most importantly sustainable.

In Europe there are many examples of community initiatives in action and their longevity and success is due to the support networks available to them from the initial planning stages through to ongoing funding and ultimately assisting other community groups to do the same.

The following organisations from the UK provide three examples of support structures that have led to many successful community composting and recycling initiatives:

### **6.2.1 Community Composting Network**

The Community Composting Network (CCN) provides help and support to over 200 community groups which are in some way involved in organic waste management. CCN is a member's organisation self managed by an elected committee of members. The CCN has expertise in the following

- Establishment and development of composting projects
- Promotion of home composting
- Composting policy and legislation
- Development of innovative composting solutions
- Centralised composting
- Building links with the sector and local, Regional and national government

Ultimately CCN provide:

- Information and support to new and existing community composting projects.
- Promote community composting at a national level (government and public)
- Put new groups in touch with experienced composters
- Provide a consultancy service to members
- Provide basic business support and funding advice

[www.communitycomposting.org](http://www.communitycomposting.org)

### **6.2.2 Community Recycling Services**

Community Recycling Services Ltd (CRS) is a partnership of seven leading edge practitioners from the community and not-for-profit sectors. It is dedicated to providing high quality services to Local Authorities. The aim is to support and develop local community based solutions to meet current and future sustainable 'waste' resource management methods. CRS works closely with existing organisations to build their capacity or to establish new ones with local partners to deliver recycling and reuse services.

[www.communtiyrecyclingservices.co.uk](http://www.communtiyrecyclingservices.co.uk)

### **6.2.3 The Furniture Reuse Network**

The FRN is a co-ordinating body for furniture recycling projects that collect a wide range of household items to pass onto people in need. The objectives are to:

- Provide information services, training and support to furniture recycling projects.

- Promote the reuse of unwanted furniture and household effects for the alleviation of need, hardship and distress.
- Promote a national identity for furniture recycling and to be the media contact on generic rules.
- Campaign and raise public awareness on those issues that affect the FRN members and those people in receipt of their services.
- Promote good practice and high quality standards of service delivery from member projects and those people to which they provide a service.

[www.frn.org.uk](http://www.frn.org.uk)

These models can be considered when building upon the good progress already made in the Dublin Region



Reuse Centre in Germany



St Andrews Resource Centre, Dublin

## 7 HOUSEHOLD WASTE COLLECTION AND RECYCLING

### 7.1 HOUSEHOLD REFUSE COLLECTION SERVICE

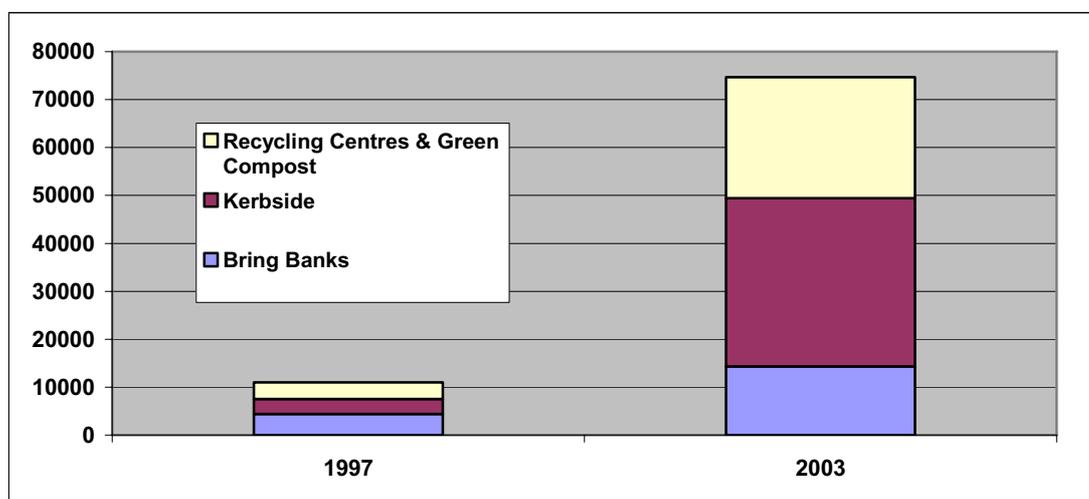
Household waste generated in the Dublin Region is collected, treated and disposed of through an increasingly integrated system, which has developed since the completion of the previous Waste Management Plan (1998). Householders now have a separate green bin for mixed dry recyclables as well as the normal grey bin for mixed household waste. In addition a comprehensive network of recycling centres and bring banks have been developed in the Region and recycling of household waste is increasing. Table 7.1 summarises the situation in the Dublin Region regarding household waste in 2003. The household recycling rate for the Region in 2003 is 16%, and this is expected to have increased further during 2004. Figure 7.1 below outlines the rise in household recycling tonnages since 1996/1997.

**Table 7.1 Recycling Rate for Household Waste in 2003**

Waste Source	DCC	DLRCC	FCC	SDCC	Region
Bring Banks	4,856	4,424	3,346	2,003	14,629
Recycling Centre & Green Composting	17,215	508	444	7,068	25,235
Kerbside	14,252	6,398	7,243	7,967	35,860
Mobile Hazardous Waste Collection	25	6	0	8	39
<b>Total Recycled</b>	<b>36,348</b>	<b>11,336</b>	<b>11,033</b>	<b>17,046</b>	<b>74,714</b>
Residual waste kerbside collection	164,785	64,558	62,916	77,527	369,786
Delivered for disposal		5,693	4,232	4,105	14,030
<b>Total Disposed</b>	<b>164,785</b>	<b>70,251</b>	<b>67,148</b>	<b>81,632</b>	<b>383,816</b>
<b>Total Arisings</b>	<b>201,133</b>	<b>81,587</b>	<b>78,181</b>	<b>98,678</b>	<b>459,579</b>
<b>Recycling Rate %</b>	<b>18%</b>	<b>14%</b>	<b>14%</b>	<b>17%</b>	<b>16%</b>

Source: Local Authority 'National Waste Database' questionnaires 2003

**Figure 7.1 Recycling Tonnages for Household Waste: 1997 and 2003**



### 7.1.1 Household Collection Service

Household waste collection in the Dublin Region is predominantly operated directly by the individual Local Authorities for residual household waste. In 2002, the Central Statistics Office reported a total of 379,372 households in the Dublin Region and the majority of these households avail of the service. Table 7.2 outlines the approximate number of households serviced as of 2005.

**Table 7.2 Number of Households provided with a waste collection service (2005)**

Local Authority	Households Served
DCC	165,000
SDCC	81,000
DLRCC	65,000
FCC	80,000
<b>TOTAL</b>	<b>391,000</b>

## 7.2 HOUSEHOLD KERBSIDE RECYCLING COLLECTION

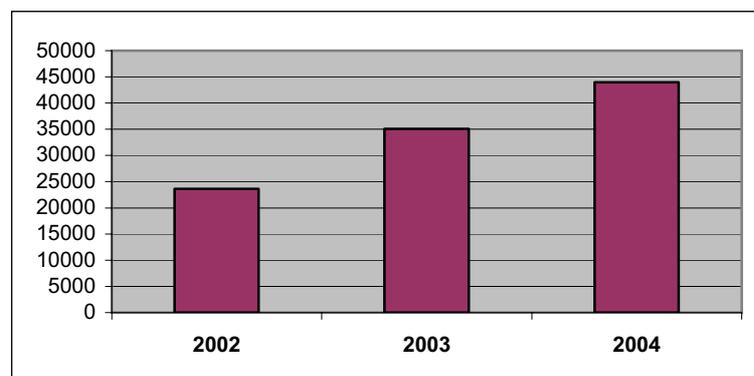
The four Local Authorities have developed a multi year contract to collect, process and market dry recyclables. The service is currently carried out by Oxigen Environmental Ltd and Bailey Waste Paper Ltd. The (240 litre) monthly 'Green Bin' recycling service is now offered to 289,214 households in the Dublin Region. The Oxigen 'Green Bin' collection for households collects approximately 35,073 tonnes per annum. A commercial service was also begun in 2001 with a phased roll out since then. Table 7.3 shows the recyclables collected per Local Authority and Figure 7.2 shows the change in the quantities of recyclables collected since 2002.

**Table 7.3 Kerbside Recyclables Collected per Local Authority 2003**

Local Authority	Kerbside Recycling Collection 2003 (tonnes)
DCC	14,252
SDCC	7,967
DLRCC	6,398
FCC	7,243
<b>TOTAL</b>	<b>35,860</b>



**Figure 7.2 Recyclables Collected by the 'Green Bin' Service 2002-2004 (Tonnes/Annum)**



Initially the 'Green Bin' service was available to single households that could accommodate a wheeled bin. Over 2003-2004 this has been extended to apartments in Dublin City Council, South Dublin and in 2005, Fingal. In DCC the service has extended to include 'green bags' for appropriate terraced housing. As a result the tonnage collected is rising steadily.

#### Public Information

The Environmental Awareness Officers will be responsible for regular targeted information campaigns at both local and regional level for current and proposed recycling collections. The campaigns using a variety of media; radio, newspaper, brochures, mail drops, community groups, neighbourhood champions etc will ensure that the public are motivated to recycle and are well informed of where, how and when they can recycle.

### 7.3 RECYCLING CENTRES

There are currently 7 full scale Recycling Centres (previously known as Civic Amenity Centres) operating in the Dublin Region and a further 9 are Bring Centres at a community level. A list of the Recycling Centres is presented in Table 7.4. Recycling Centres are distinct from Bring Banks in that they are generally located within purpose built sites, are manned by permanent full-time staff – either from the Local Authority or private contractor, have restricted opening hours, and accept an extensive range of materials. The waste quantities collected through the Regional recycling centres in 2003 are reported in Table 7.4.

**Table 7.4 Recycling Centres in the Region (as of 2004)**

Local Authority	Name/Location	Waste Collected 2003 (Tonnes)
<b>DCC</b>	<b>Shamrock Terrace, North Strand Road</b>	17,215 (all centres including green waste from St Anne's)
	<b>Pigeon House Road, Ringsend</b>	
	Collins Avenue Extension	
	Oscar Traynor Road, Coolock	
	Upper Grangegorman Road	
	Gullistan Terrace, Rathmines	
	London Bridge Road, Ringsend	
	Orwell Road, Rathgar	
	Windmill Road, Crumlin	
	Eamon Ceant Park	
	Kylemore Park, North Ballyfermot	
	Sweeney's Terrace	
<b>FCC</b>	<b>Balleally Landfill</b>	479 (444 recycled)
	<b>Coolmine</b>	
	<b>Balbriggan (open 2005)</b>	
<b>SDCC</b>	<b>Ballymount</b>	6,528 (2,068 recycled)
<b>DLRCC</b>	<b>Ballyogan</b>	6,201 (508 recycled)

(Full scale Recycling Centres in bold)

With the exception of facilities at Ballyogan, Ballymount and Balleally, all of these facilities have been opened within the last 2-3 years, the most recent being Coolmine which opened on the 2<sup>nd</sup> January 2004 and Pigeon House Road, Ringsend which opened on the 26<sup>th</sup> February 2004. Coolmine replaced the facility at Dunsink which closed at the end of December 2003. The Recycling Centres at Ballyogan and Balleally have both been in existence as part of the landfilling operations for at least 20 years operating as 'Civic Amenity Sites', but now the emphasis is firmly on recycling.



Shamrock Terrace Recycling Centre

### Ballyogan Recycling Park



This facility has been developed by Dun Laoghaire Rathdown County Council as part of the overall approach to the closure of Ballyogan Landfill and the implementation of the integrated recycling elements of the Dublin Waste Plan. The development was complete in 2004. Operation has been contracted to Greenstar Ltd.

The BRP comprises a new Recycling Centre (Civic Waste Facility) accepting an extensive range of recyclable materials from householders. Since opening it has met with great success in particular improving recycling rates and collection of priority wastes streams.

The facility also comprises a municipal baling station accepting waste for baling and transfer to Arthurstown Landfill. Once fully commissioned this will enable closure of the municipal landfill which has been in operation since 1975. Further elements of the BRP which will be realised over 2005 – 2007 include an Organic Waste Composting Plant, and potentially a Materials Recovery Facility for recyclable waste.

## 7.4 BRING BANKS

In 1996 there were 134 bring banks in Dublin Region. The development of bring banks has continued to grow steadily over the last 5 years. In 2003 there were 263 bring banks in the Region. This represents a 2-fold increase in since 1996. The management costs are borne by the Local Authorities, however Repak provides part capital funding in conjunction with the DoEHLG to provide 100 containers and is committed to funding another 100 containers in 2004/2005. Table 7.5 shows the number of bring banks and tonnes collected in each Local Authority area. The current bring bank

density is one per 4,445 persons. The previous Plan recommended one bring bank per 1,000 population not serviced by segregated collection.

The majority of bring banks consist of receptacles for glass and cans only, with other materials such as textiles and paper being accepted to a much lesser degree. SDCC have recently introduced receptacles for plastic bottles to 8 of their bring banks, with an additional 2 planned in the near future. Two of the bring banks in DCC also accept plastics. Bring banks are operated by a number of different companies, with the contracts either made by each Local Authority (Rehab Recycling Partnership, Greenstar) or on a Regional basis (recent Oxigen bring banks). The operating costs are mainly financed by the Local Authority with some contribution from Repak. Some banks have been established with capital funding from DOEHLG and Repak.

**Table 7.5 Number of Bring Banks and Tonnes Collected in each Local Authority Area**

Local Authority	Bring Banks 2003	Tonnes collected 2003
DCC	73	4,856
SDCC	50	2,003
DLRCC	64	4,424
FCC	76	3,346
<b>TOTAL</b>	<b>263</b>	<b>14,629</b>

## 7.5 WASTE CHARGES

Since 1<sup>st</sup> January 2005 use-related charges have been introduced to householders across the country either through a weight or volume based system. The development of direct user charges was supported by the previous Waste Management Plan and aims to encourage waste reduction and recycling. In the Dublin Region each of the Local Authorities are operating a variety of weight/ volume based systems. Table 7.6 provides details of the current household charging system. Local Authorities have fixed costs in relation to collection and management of waste – such as staff, vehicles, depots, equipment etc. – as well as variable elements (e.g. landfill charges per tonne of waste). It is therefore appropriate for Local Authorities to have a fixed element in their charging systems in addition to a variable element.

### 7.5.1 Use-Related Charging for Household Waste

During the preparation of the first set of Regional Waste Management Plans, a common theme in the submissions from the Public was the need to link waste charges to the amount of waste generated. This represents a logical way to implement the 'polluter pays principle', and can offer a real incentive to waste producers to minimise waste. The introduction of use-related charges became a policy of the Plans. In 2004 the Minister for Environment Heritage and Local Government, Mr Martin Cullen requested Local Authorities to implement use-related charging for household waste in their areas by January 1st 2005. The policy was given further elaboration in the 2004 Government Policy Statement 'Taking Stock and Moving Forward'. The positive impacts of use-related charging for household waste are:

- It provides an impetus for reduction of waste, by changing shopping and lifestyle habits;
- Householders have an incentive to recycle as much waste as possible;
- The need for a full 'integrated' range of recycling collections becomes more important.

The Local Authorities and waste collection companies will respond to this new system, by providing support and information to householders on how best to reduce and recycle waste. This means an extra demand on the Environmental Awareness activities of the Local Authorities. Some negative side

effects may occur when use-related charging is introduced. Householders may be tempted to reduce waste bills by inappropriate use of recycling bins, or illegal dumping or burning of waste. The Local Authority has a role in ensuring that waste is managed responsibly, which will require additional regulation and enforcement for waste. Householders need clear information on what forms of waste management are or are not acceptable. The general public ultimately has the role of ensuring household waste is managed responsibly.

It is possible that charging mechanisms and collection systems may change over the coming years as new recycling services are introduced.

**Table 7.6 Household Waste Use-Related Charging Schemes (2005)**

<b>DCC</b>	The billing of the wheelie bin service consists of a Standing Charge per year and a Charge per Lift. 240l €80 per year standing charge and €5 per collection. 140l €65 per year standing charge and €3 per collection. A Pre-paid tagging system is in place for bags and Eurobins. The charge for a bag tag is €2.50 and a Eurobin tag is €28
<b>DLRCC</b>	Fixed standing charge of €80 per annum per household availing of the service plus charge per bin lift @ €4.00 per lift for each 140/240 litre bin or €18 for each 1,100 litre bin plus charge per Kilogram of household waste collected @ 20 cent per Kilogram
<b>FCC</b>	Householders with a 240L grey/black wheelie bin must put a €6 bin tag on the bin each time it is put out for collection. Householders with the smaller 140L grey/black bin must put a €3 bin tag on the prior to collection. A reduced charge of €3.50 applies for the 240L bin and €1.75 for the 140L bin, where green bins have not yet been delivered.
<b>SDCC</b>	In February 2004 council introduced a pay by volume/use system with pre paid tags for wheelie bins 240l bin €6 and 120l bin €3

The household waste charges are levied against the grey bin service, but the money collected is used to support all other forms of household waste management (collection and disposal), including Bring Banks, Recycling Centres, the 'Green Bin' Service, Mobile Collections, and Bulky Waste Collections.

**Other household charges** - most Recycling Centres are currently free of charge for the householder bringing recyclable waste, but fees apply to waste that is deposited for disposal and for specific items e.g. bulky waste. The Local Authorities will continue to employ, adjust and introduce user fees for waste services and facilities provided in order to deliver a cost effective and affordable system having regard to the polluter pays principle.

**WEEE Regulations** - On August 13, 2005, the new Waste Electrical and Electronic Equipment (WEEE) Regulations came into effect, transposing the EU WEEE Directive into Irish law. The new Regulations are based on the principle of producer responsibility and include specific provisions for householders and retailers. As a result a new Environmental Management Cost (EMC) will be applied to the retail price of new electrical and electronic equipment. The extent of the EMC is relevant to the type of material being purchased.

Householders can recycle WEEE free of charge at any of the 6 major Recycling Centres across the Dublin Region or can take back WEEE to retailers free of charge. Take back will be on a one-for-one basis only, provided the WEEE returned is of a similar type or performed the same function as the new item purchased.

Retailers can bring the take back WEEE to a designated Local Authority Recycling Centre for recovery provided they have registered their shop/retail unit with the relevant Local Authority. Any retailer who has not registered with their Local Authority will not be able to bring WEEE to a designated Collection Centre.

## 7.6 HAZARDOUS WASTE RECOVERY AND RECYCLING

Two systems are in place to collect household hazardous waste from households: through Recycling Centres (where batteries, oil, fluorescent tubes can be deposited) and also through a mobile service.

Up to 2003, three of the four Local Authorities uses a privately operated mobile collection service ('Cara ChemCar') to provide a drop off facility for household hazardous waste. Fingal County Council also commenced the service in 2004. The Chemcar is available at publicised sites throughout the Region during the year, and is manned by a trained and experienced chemical operator. Hazardous materials are accepted, packed and segregated for transfer to facilities that can properly treat these substances. Table 7.7 shows the waste accepted at the Chemcar and how each is treated.

**Table 7.7 Waste Acceptance and Treatment through Cara ChemCar**

Waste Type	Treatment	Location
Energy Saving Lights, Fluorescent Lights, Thermometers	Recycling	Ireland
Cleaning Agents, Disinfectants, Cleaners, Bleaches, Caustic Soda	Energy Recovery	Denmark
Waste Medicines, Waste Cosmetics	Energy Recovery	Denmark
Antifreeze, Herbicides, Pesticides, Weed Killer, Insecticides, Poisons, Fungicides	Energy Recovery	Denmark
Aerosols	Energy Recovery	Denmark
Paints, Paint Stripper / Thinner, Varnishes	Energy Recovery	Germany/Denmark
Wastes Oils (engine, gear & lubricating)	Energy Recovery	Denmark
Batteries (Lead, Ni-Cd, Mercury Dry Cells)	Recycling	Ireland
Electrolyte from batteries & accumulators	Recycling	Denmark

Source: Cara Chemcar Ltd.

Table 7.8 shows the number of collections and the quantity of hazardous waste collected in each Local Authority area, while Table 7.9 presents the total collected at Recycling Centres in 2004.

**Table 7.8 Number of Mobile Collections and Tonnages of Household Hazardous Waste 2003**

Council	Number of Collections 2003	Weight (Kg) 2003
DCC	22	24,870
SDCC	5	7,601
DLRCC	2	6,368
FCC	*	*
<b>TOTAL</b>	<b>29</b>	<b>38,839</b>

\*Commenced 2004

**Table 7.9 Household hazardous waste collected via Recycling Centres (2004)**

Waste Type	Tonnes collected 2004
Batteries	125
Oils	194
Fluorescent tubes	3
Other Hazardous waste	273
Subtotal	595

(Source- Local Authorities)

## **7.7 BULKY WASTE COLLECTION**

Bulky household waste is collected by one of two methods: either by delivery to recycling centres (formerly Civic Amenity Sites) or by Local Authority collection.

South Dublin County Council operate a periodic collection of bulky waste from households. This takes place from October – December each year in 'RAPID' areas, and every five years in other areas. Customers are notified in advance and leave material out for collection.

Fingal County Council commenced a bulky waste collection in 2004 on a call-out basis.

Dublin City Council operates a city-wide bulky waste collection service for its household customers – this operates on a 3-yearly cycle. In Dun Laoghaire Rathdown, Bulky Waste is delivered to Ballyogan Recycling Park.

## **7.8 RECOGNITION OF RECYCLING ACHIEVEMENTS**

The annual Repak Recycling Awards which acknowledge: Best Practice (in packaging reduction recovery and recycling) in Small, Medium and Large Companies, Small Retailers and the Hospitality Industry along with the Repak National Recycling Week, Repak Cash for Cans Education Programme, Repak Green Christmas all assist in raising awareness of recycling and provide an incentive to get involved in recycling.

## 8 COMMERCIAL & INDUSTRIAL WASTE COLLECTION AND RECYCLING, & PRIORITY WASTES

### 8.1 COMMERCIAL AND INDUSTRIAL WASTE

Since the previous Plan recovery and recycling rates have increased significantly in the C/I waste stream. This is in part due to legislative and enforcement measures such as the implementation of the Waste Management (Packaging) Regulations, 2003, and waste acceptance restrictions on certain waste streams at landfills. These factors coupled with the dramatic rise in landfill gate charges have seen waste collectors reduce their reliance on landfill.

Dublin City Council has responsibility for issuing and renewing Waste Collection Permits on behalf of the four Local Authorities. There are more than 400 companies holding Collection Permits, these cover a range of materials including household, commercial/ industrial and construction/ demolition waste (Appendix D).

*The private waste collection sector has responded positively and proactively towards achieving the recycling targets through provision of materials recovery facilities and separate collection systems. Several companies have invested in facilities and technologies aimed at extracting resources from waste and minimising landfill.*

Table 8.1 shows the commercial and industrial waste quantities generated and recovered in the Dublin Region in 2003. The quantities are based on Annual Environmental Reports from the main licensed and permitted C/I waste facilities.

**Table 8.1 Commercial/Industrial Waste Recycling in the Region in 2003**

Waste Type	Tonnes Collected	Tonnes Recycled	% Recycled
Commercial	480,682	159,526	33%
Industrial	188,910	68,368	36%
<b>C/I Total</b>	<b>669,592</b>	<b>227,894</b>	<b>34%</b>

Source: Annual Environmental reports

The main materials recovered by the C/I recyclers is summarised in Table 8.2. It has been assumed that the separately collected C/I fraction is recovered/recycled in Ireland or abroad. Based on these assumptions, the recovery rate for C/I waste generated in the Region is estimated to be approximately 34%.

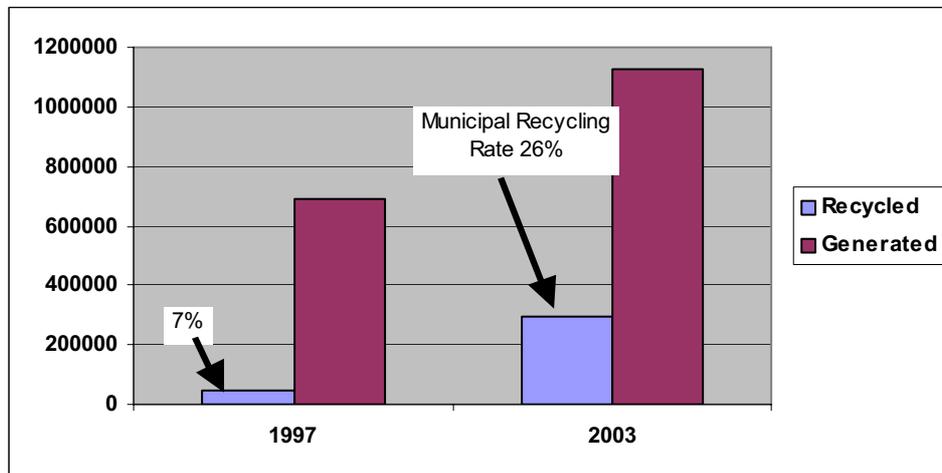
**Table 8.2 Materials Recovered from Commercial/Industrial Waste (Tonnes/Annum 2003)**

Garden	Organic	Paper/ Cardboard	Plastic	Glass	Metal	Timber	Other	Total
5,219	6,500	172,623	6,049	2,465	12,615	22,422	-	227,894

Local Authority charging mechanisms are in accordance with the Polluter Pays Principle in that the charges for collection of separated recyclable waste are favourable compared to residual waste. Charging for residual waste is according to use, which provides an incentive to reduce waste. In general it is believed that the private waste collection companies also follow this approach although details of costs and charging systems are generally held as confidential.

By combining the household and commercial/industrial waste streams a figure for overall municipal waste recycling in the Region can be presented, as in Figure 8.1 below. The current municipal recycling rate is 26% when household and commercial recycling is combined. Comparison with 1997 data is not entirely accurate, since a different level of data was available in 1997 and the C/I recycling rate has been estimated.

**Figure 8.1 Municipal (Household & C/I) Recycling Rate – 1997 and 2003**



## 8.2 RECOVERY OF SPECIFIC WASTES

### 8.2.1 Electrical and Electronic goods

Waste Electrical and Electronic Equipment (WEEE) generated by households is currently accepted at 6 of the Recycling Centres in the Region and the SDCC Clondalkin Community Recycling Initiative collects WEEE directly from householders and commercial premises for a small charge. The figures recorded at each Recycling Centre are inconsistent, with some recording the number of units and others recording tonnages. Table 8.3 shows the WEEE arising at each Recycling centre for 2003. In addition, WEEE generated by business is handled by private waste management companies.

In terms of WEEE from commercial/ industrial activities, a number of private companies collect and manage this waste stream. The local authority database for C1 forms (movement of hazardous waste) reports 500.81 tonnes of fridges and other hazardous white goods and 91.63 tonnes of other WEEE being managed in 2003.

**Table 8.3 WEEE Arisings\* at Recycling Centres in the Region 2003**

	Ballymount	CCRI (May- Dec 03)	Ballyogan	Shamrock Terrace	Ringsend	Coolmine	Balleally
Fridges	1153	5000	1742	2490	Open 2004	Open 2004	216
TVs	549			3437			431
White Goods	1603	4500					1027
Other Large Appliances				119.79 tonnes			
PC Monitors/ VDUs	437						214
Other ITC	18						305
Mixed WEEE	14.546 tonnes			35.55 tonnes			740

\* Numbers are in units of WEEE unless otherwise specified

### 8.2.2 Batteries and Accumulators

Batteries (domestic and car) are accepted at 6 of the Recycling Centres in the Dublin Region. The CaraChem Car also accepts batteries and accumulators. In 2003 7.8 tonnes of batteries and accumulators were collected using the Chemcar service. An estimated 125 tonnes were collected from recycling centres in 2004.

Commercial and Industrial Sector – the reported arisings of batteries and accumulators in 2003 was 1,259.26 tonnes, which includes a variety of battery types mainly from commerce (e.g. garages) and industry.

### 8.2.3 Oils

The household hazardous waste drop off service provided by the Cara Chemcar accepts among other hazardous chemicals most forms of oil. In 2003 a total of 6.9 tonnes of waste oil was collected using this service. Waste Oils are also accepted at the following Recycling Centres, North Strand, Ringsend, Ballyogan, Balleally and Ballymount, however quantities of waste oil delivered to these sites is not available. An estimated 194 tonnes was collected at such facilities across the region in 2004.

Commercial and Industrial Sector – the reported arisings of waste oils are 1894.69 tonnes in 2003, with an additional 3848.45 tonnes of other hydrocarbon related hazardous material (oily sludge, oil-contaminated soil etc.) also being reported.

### 8.2.4 PCBs

The reported arisings for 2003 was 30 Kg (0.03 tonnes) for containers contaminated with PCB materials.

### 8.2.5 Vehicles

There are currently 11 facilities registered in the Dublin Region involved in the recovery and dismantling of end-of-life vehicles. They are not permitted to shred the ELVs. There are only 4 shredding facilities on the island of Ireland, and only one of these is in Dublin (Hammond Lane Metal Company, Ringsend, Dublin 4). At these facilities, the metal is shredded and processed to required

standard before shipping to recyclers abroad. It is estimated that there was a total of 56,560 End of Life Vehicles arising in the Dublin Region in 2003.

At present, all 4 Local Authorities in the Dublin Region have services that cater for the removal of ELVs. There are 3 types of situations that arise:

- 1. Removed with the owner's consent** – the owner of an EOLV can contact the Local Authority and ask to have their vehicle removed, at a cost, i.e. currently €50 in South Dublin and Dun Laoghaire/Rathdown or €30 in Fingal and Dublin City. A contracted company is given the details of the vehicle and they deal with its collection and anything else thereafter.
- 2. Abandoned vehicles** – abandoned vehicles are brought to the attention of the Litter Warden Section in the Local Authority. The litter warden investigates and obtains whatever details it can about the owner of the vehicle. The owner is then notified and given 21 days to remove the vehicle or have it removed, after which time, the details will be passed onto the Gardaí so as to protect the Local Authority from potential litigation for losses in removing the abandoned vehicle. A 7-day notice is placed on the vehicle and then removed by the company contracted to the Local Authority, and the owner prosecuted.
- 3. Burnt out vehicles** – the vehicle would be investigated, but in the case of burnt out vehicles, there is generally no means of identifying the owner. The contracted company then removes the vehicle as litter, and the Local Authority has to foot the bill. This also applies if the vehicle has been abandoned, but not burnt out, and there's no way of identifying the owner.

The four Local Authorities in the Dublin Region dealt with, approximately 6,200 ELVs, in 2003. It is estimated that the costs for only 3,480 of these are covered to any extent. Assuming a real cost of €60/car, the system costs the 4 Local Authorities in Dublin in excess of €160,000 annually (not including the administrative time involved).



### 8.2.6 Tyres

It has been estimated that in 2001, 34,934 tonnes of waste tyres were generated in Ireland. 17,860 tonnes (52%) would have been from cars whilst the remaining 48% would have come from buses, bicycles, motorcycles etc. An estimated 2 million tyres are discarded each year and only 5% of these are being recycled, whilst the rest are kept in depots or used in agriculture on silage pits. It is estimated that 8,554 tonnes of scrap tyres were generated in the Dublin Region in 2003. (Data estimated from CSO data on total national imported tyre numbers and vehicle registration numbers and apportioned to Dublin based on end-of-life vehicle figures)

## 8.3 COMMERCIAL AND INDUSTRIAL INFRASTRUCTURE

From a position in 1997/1998 when almost all C/I waste was delivered to municipal landfills and recycling was very low there is now approximately 34% recycling of the C/I waste stream. Most of this has been achieved by the private waste sector, who have also managed to deliver significant MRF capacity.

In order to achieve greater recycling rates for C/I waste in the Dublin Region additional infrastructure is required in the following areas:

- Materials Recovery Capacity - for dry recyclables from Commerce and Industry, will be required as collection services are phased in
- Recycling Parks for C&I waste for small scale producers to deliver waste for recycling and treatment.

- Biological Treatment Capacity – Source separated collection for commercial organic waste is to be introduced and treatment capacity will be required as the roll out progresses.

## 8.4 CASE STUDIES OF COMMERCIAL WASTE MANAGEMENT

The following case studies highlight the achievements and contributions the commercial/industrial sector is making towards waste minimisation and recycling in the Dublin Region. These examples are taken from the Race Against Waste 'Small Change' brochure for business.

### **EASON - Dun Laoghaire, County Dublin**

Before implementing their recycling system, Eason of Dun Laoghaire were buying one packet of trade waste labels per month from the council at 300. Now they only use one or two packets a year! That's a reduction in waste to landfill of almost 90% and a saving of 3,150. These savings more than cover the cost of recycling collections which are approximately 2,360 for the year (weekly collections at 45.40 inc. VAT). According to the Shop Manager, Michelle Delaney, 'We are at least breaking even now if not saving money as compared to when we sent everything to landfill. The company that collects is very flexible and has met all our needs'. The materials separated out for recycling are: plastic sheeting and strips, paper and cardboard. Newspapers supplied by Eason Wholesale division are returned for recycling. Other non-returnable newspapers are included in the recycling collections. The store now creates about 12 units of recyclables a week (bags or bundles) and 2 bags for landfill.

### **Spar Supermarket – Clonskeagh, Dublin 14**

The shop has 2,000 square foot of sales and storage space with an annual turnover in excess of 3m, a staff of 20-25 and is open 7am- 10pm seven days a week. In 1999 an instore compactor was installed to reduce and bale cardboard to allow more product to fit in the bins. However, continued escalating waste costs alerted management to the need for more change. In March-June 2001 their monthly bill rose from £800 to £1,200 due to increased landfill costs passed on. Everything then was going straight into the bin and then into landfill. A waste audit showed they produced 90% cardboard, 5% plastic and 5% residual waste. The cardboard and plastic was mainly packaging from suppliers, with most residual waste produced in store, including staff food leftovers and a small amount of metal. They looked at various waste management companies offering a recycling service for clients who separated their waste and shopped around for the best deal. "We are paying out two thirds less than two years ago - a 65% saving. In terms of management, there is ongoing staff education, but as I say, we keep it simple, it's not rocket science and the staff are committed to it too," – Anthony Walsh, Manager. So began the new regime. Cardboard is torn and placed in the compactor for baling; there are white sacks for plastic waste and black sacks for residual rubbish. The shop now bales plastics as well. The compactor can take 10-12 sacks, which greatly reduce the volume for disposal. Surplus newspapers and magazines are also recycled.

### **Children's University Hospital, Temple Street**

The Children's University Hospital (TCUH) convened an Environment Committee in September 2003, which included representatives from across the board within the hospital. In February 2004 a complete waste audit of all hospital waste was undertaken to establish how much is generated. Two porters weighed all waste for the month of February gathering details of the amount of clinical and non-clinical waste arising from each area of the hospital and the amount of recyclable waste. The waste was then examined and categorised and potential recyclable components were identified. The hospital engaged the assistance of its existing domestic waste contractor. This contractor now takes cardboard, non-confidential waste paper, plastic, aluminium and polystyrene for recycling along with residual domestic waste. In addition to this the hospital undertook to contract with other specialist waste contractors for recycling services for the following materials: glass, clinical waste, batteries, confidential waste, electronic and electrical equipment. To date there has been a significant diversion of waste from landfill to recycling with an increase in recycling rates from 12% to 38% in less than a year. There also has been a reduction in clinical waste of approximately 15% and a reduction in the associated risk.

## 9 PACKAGING WASTE

### 9.1 INTRODUCTION

Packaging is defined in the Waste Management Act, 1996, as “any material, container or wrapping, used for or in connection with the containment, transport, handling, protection, promotion, marketing or sale of any product or substance, including such packaging as may be prescribed”. Hence this includes a very broad amount of waste ranging from food wrapping and shopping bags to the containers and boxes used in industry. The European Commission considers packaging waste a priority waste.

### 9.2 LEGISLATIVE ENVIRONMENT

#### 9.2.1 European Packaging Waste Directive

European Parliament and Council Directive 94/62/EC 1994, as amended in February 2004 sets out targets for the recovery of packaging waste. Ireland (together with Greece and Portugal) received a derogation resulting in less stringent targets than those imposed on other member states. This derogation recognises Ireland’s situation with respect to demographics, geography and lack of infrastructure with approximately 80% of packaged goods being imported. Ireland’s targets are as follows:

**Table 9.1 European Packaging Waste Directive Targets**

Date	Target
30 <sup>th</sup> June 2001	25% recovery of packaging waste by weight (achieved)
31 <sup>st</sup> December 2005	50% to 65% recovery of packaging waste by weight
	25% recycling of packaging waste by weight
	15% recycling for each packaging material
31 <sup>st</sup> December 2011	60% recovery of packaging waste by weight
	55% recycling of packaging waste by weight
	60% recycling by weight for glass
	60% recycling by weight for paper and board
	50% recycling by weight for metals
	22.5% recycling by weight for plastics (applies exclusively for material that is recycled back into plastics)
	15% recycling by weight for wood

The Directive also emphasises prevention and reuse of packaging in Articles 4 and 5 respectively. Article 13 of the Directive states that measures must be taken within two years of 30<sup>th</sup> June 2001 (in the case of Ireland) to ensure that users of packaging, including, in particular, consumers, obtain necessary information about the following:

- The return, collection and recovery systems available to them
- Their role in contributing to reuse, recovery and recycling of packaging and packaging waste

- The meaning of markings on packaging existing on the market
- The appropriate elements of the management plans for packaging and packaging waste to be incorporated into Waste Management Plans (i.e. Articles 4 & 5).

### **9.2.2 Waste Management (Packaging) Regulations, 2003**

The Waste Management (Packaging) Regulations 2003 which supersedes the 1997 Regulations are focussed on ensuring that the end of 2005 target of 50% packaging waste recovery is met. The Regulations place an onus on producers/suppliers of packaging or packaged products to take back packaging waste from customers. Producers with a company turnover greater than €1M and who place 25 tonnes or more of packaging onto the Irish Market each year are considered to be a “Major Producer” and are bound by the requirements of the Regulations.

Specified categories according to the Regulations include glass, aluminium, steel, paper and fibreboard, plastics, wood and textiles or such other categories as may be specified by the Minister. A further Amendment to the Packaging Regulations was issued by the Minister for the Environment in late 2004, the main changes were to increase the registration fees payable by self complying Major Producers to Local Authorities, and to advertise the take back facilities operated by self complying Major Producers. Local Authorities are responsible for enforcing the Regulations, which is now overseen by the EPA.

### **9.3 REPAK**

REPAK is the only approved packaging compliance scheme in the country. It was established by a voluntary agreement between industry and the Department of the Environment and Local Government in response to the EU Directive on Packaging and Packaging Waste (94/62/EC).

REPAK's role is to fulfil the recycling and recovery obligations for packaging waste on behalf of industry. One of the ways this is achieved is by funding recycling by means of a subsidy to individual waste recovery operators for each tonne of commercial packaging waste that they demonstrate they have sent for recovery and/or recycling. The level of subsidy is based on the material type, recovery activity for that material, the market value of the material and the tonnage that REPAK is committed to achieving within the current year. The subsidy is paid on six of the specified packaging materials: glass, paper, plastic, steel, aluminium and wood.

In recent years, most of the progress across Ireland has been in the commercial sector, but subsidies for these materials have gradually been scaled back. In the short term the subsidy will be concentrated more on the household sector.

Under the Repak Payment Scheme (RPS), Repak and its members have invested €73 million country-wide in packaging support and infrastructure in Ireland in the past five years. A significant portion of this has been invested in the Dublin Region and has significantly contributed to the continuing positive recovery and recycling rates for packaging waste.

### **9.4 PACKAGING WASTE ARISING**

Packaging waste arisings are calculated from the quantity of packaging waste landfilled plus the quantity of packaging waste recovered, both of which are derived from household and C/I packaging waste quantities. Packaging waste arisings for the Dublin Region for 2003 are outlined in Table 9.2.

**Table 9.2 Estimated Packaging Waste Arisings for the Dublin Region 2003 (Tonnes)**

	Landfilled	Recovered	Arisings	Recovery Rate
Packaging Waste	321,190	190,548	511,738	37.24%

In 2001, Ireland recovered 25.3% of packaging waste, thus achieving our target. The recovery rate for the Dublin Region for 2003 of 37.24% indicates that the Region is contributing positively to Ireland achieving its 2005 targets (50%-65% recovery by weight).

## 9.5 ESTIMATE OF PACKAGING WASTE LANDFILLED

The quantity of packaging waste landfilled is determined using data compiled from composition studies carried out on household and C&I municipal waste. For household waste, the composition data is taken from studies carried out on the 'black bin' by the Dublin Local Authorities in 2004. For C&I waste, the composition data is taken from studies on waste destined for landfill, commissioned by the EPA in 2001, as outlined in the EPA National Waste Database Report 2001. Table 9.3 outlines the packaging factors and the proportion of packaging waste, determined from these composition studies.

**Table 9.3 Packaging Factors for Landfilled Household and C&I Waste**

Packaging Material	Household <sup>1</sup> %	C/I <sup>2</sup> %
Paper & Cardboard	7	30.1
Plastic	12	7.9
Glass	6	1.2
Metals	3	1.9
Wood	0	1
Textiles	0	0.1
Composites	1	-
Other	1	2.6
TOTAL %	30	44.8

1 Source: RPS-MCOS 'Black Bin' Waste Composition Study 2004 (DCC area)

2 Source: EPA National Waste Database Report 2001

Table 9.4 outlines the quantity of packaging waste landfilled in 2003, which is estimated by applying the above factors to the total quantities of household and commercial waste landfilled.

**Table 9.4 Quantity of Packaging Waste Landfilled in Dublin Region in 2003**

	Household	Commercial/Industrial	Street Cleaning
Total Waste Landfilled (Tonnes)	383,816	441,698	30,235 <sup>1</sup>
% Packaging	30	44.8	-
Packaging Waste Landfilled (Tonnes)	115,145	197,881	8,164
<b>Total Packaging Waste Landfilled</b>	<b>321,190</b>		

1 Source: Local Authority EPA Questionnaires.

## 9.6 PROGRESS AGAINST TARGETS

The Dublin Waste Management Plan 1998 adopted the targets set down under the EU Packaging Directive (94/62/EC). Under a voluntary agreement between Industry and the DEHLG, Repak

undertook to achieve these targets. The initial target of 25% recovery of packaging waste by December 2001 has been achieved, and with an estimated 39.7% recovery achieved in the Dublin Region by the end of 2003, Ireland is well on the way to achieving at least 50% recovery by December 2005.

Public awareness campaigns run by the DEHLG, Local Authorities and Repak have contributed to the achievement of the targets, as has the steady increase in the number of bring banks and recycling facilities and in particular the growing coverage of the 'Green Bin' kerbside collection scheme. Improvements in enforcement of the Regulations by the Local Authorities, as well as the provision of energy recovery capacity which will contribute significantly to the continued increase in recovery of packaging waste through to 2011 and beyond.

With respect to prevention and minimisation of packaging waste, as mentioned above, public awareness campaigns have been stepped up a great deal since 1998. The introduction of the plastic bag levy in March 2002 has resulted in a significant decrease in the quantity of plastic generated.

## 9.7 FUTURE DIRECTION

It is recognised that industry, primarily through Repak, is actively improving the situation as regards recovery of packaging waste by financial support of public and private sector initiatives. However the majority of the costs of household packaging waste recycling schemes are financed by Local Authorities, the funds sourced mainly from user-fees, and businesses themselves bear the bulk of their packaging waste recovery costs.

There is scope for improvement by industry in a number of key areas. The following suggestions are proposed as methods by which *producer responsibility* can be further advanced by industry.

**Prevention and Minimisation of Packaging** – applying research and technology to avoid or reduce packaging waste

**Reuse schemes for Packaging** – high profile examples of reuse of packaging at consumer level to be developed

**Making Packaging Recyclable in practice** – we continue to produce many forms of packaging that aren't recyclable in the practical sense: i.e. there is no current effective recycling system in Ireland. The variety in packaging materials, and use of composite packaging containers, may suit marketing and brand differentiation, but it makes it more difficult for consumers to identify and separate out packaging for recycling. Separation and grading of packaging, particularly plastics and composites, is difficult and in some cases mixed packaging streams are impossible or too expensive to recycle and instead are sent for recovery. Many of the most common day to day consumer goods - water, milk, bread, for example, are largely packaged here in Ireland. There is an opportunity to introduce a consistency in packaging materials and to limit packaging to categories that can be recycled in practice.

The Local Authorities for their part are committed to a vigorous enforcement of packaging legislation and the continued improvement of packaging recycling for both households and business.

Further details on the development of policies and actions for prevention/minimisation and recovery of packaging from household, commercial and industrial waste can be found in Chapters 18 and 19.

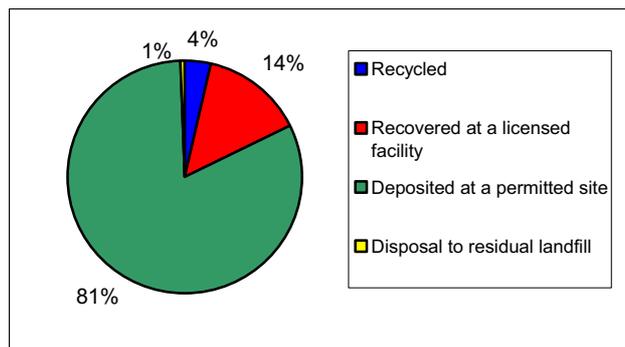
## 10 CONSTRUCTION AND DEMOLITION WASTE

### 10.1 CURRENT MANAGEMENT METHODS

The C&D waste stream is very significant in terms of meeting National and Regional targets due to its high recycling potential. At the time of preparing the previous Dublin Waste Management Plan, reporting systems were not in place to record this waste stream and a figure of 1,223,013 tonnes was estimated for the Region. The situation has improved and the current Waste Permit and Waste Collection Permit systems ensure that accurate quantities of C&D waste arisings should now be available.

It is estimated that a total of 3.9 million tonnes of C&D waste was generated in the Region in 2003. Galway Mayo Institute of Technology in association with the EPA are currently developing a Waste Audit Methodology to identify and quantify C&D wastes arising on construction sites in Ireland. This methodology should be used in the future to estimate C&D waste not entering the controlled waste stream. Figure 10.1 provides a breakdown of the management methods for C&D waste in the Region – an estimated 18% is currently recycled.

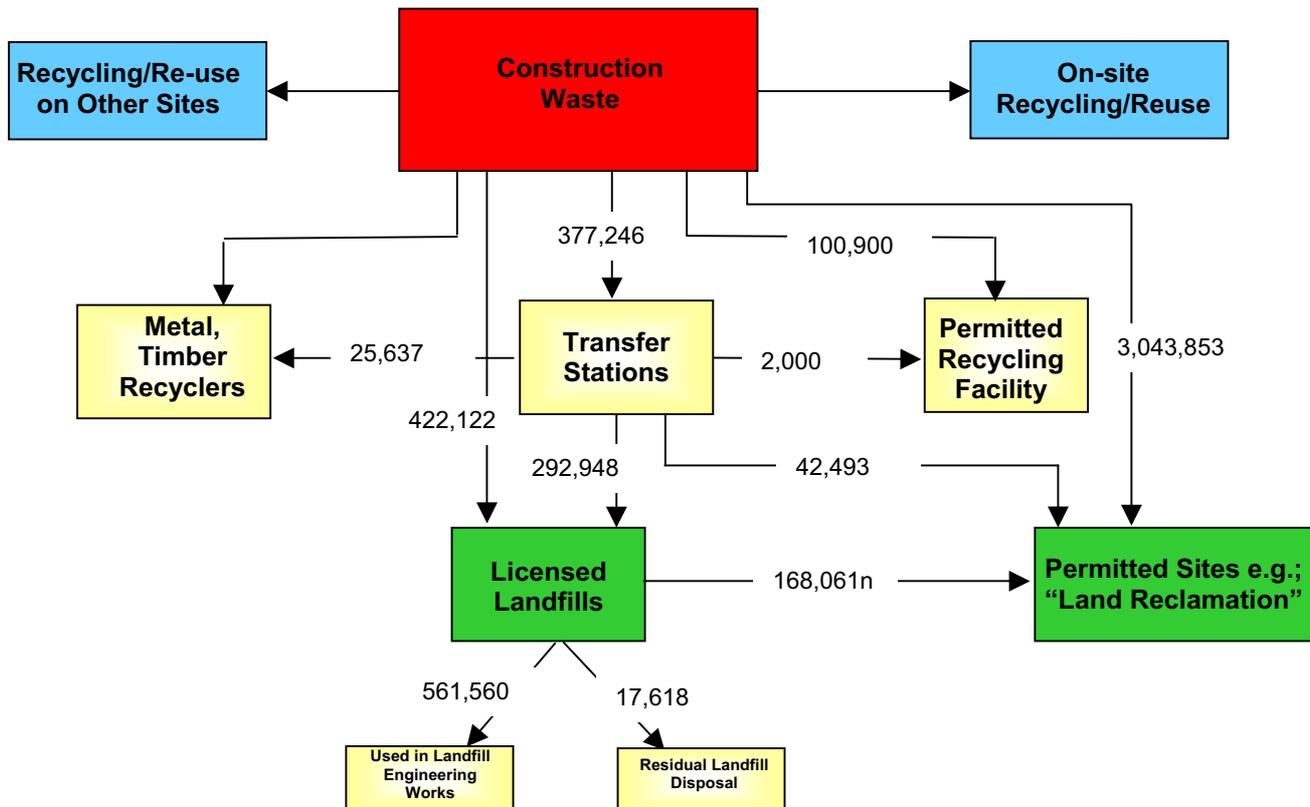
**Figure 10.1 Recycling, Recovery and Disposal of C&D Waste in Dublin Region 2003**



The range of methods for management of C&D waste has increased during the period 1998-2003. The principal methods for management of this waste stream are illustrated in Figure 10.2



Roadstone C&D Waste Recycling in South Dublin

**Figure 10.2 Material Flows for C&D Waste 2003 (Tonnes)**

Source: Local Authority National Waste Database Returns, Local Authority records.

Large volumes of C&D waste are generated from road construction, general excavation and land-clearing works. A significant proportion of this material does not enter the controlled waste stream; it is typically reused as fill material on site, used for land reclamation or fill material on other non-permitted sites.

A feature of the construction industry is that the larger companies are increasingly segregating waste at the point of generation. This behavioural change was driven as a commercial necessity due to the dramatic increase in the cost of waste disposal in recent years. However, this does not extend to the whole industry and smaller operators are still less inclined to segregate and recycle waste material.

There has been an increase in recycling activity in recent years. In particular, there appears to be an increase in the number of mobile crushers in use. These machines are used to crush primarily concrete and masonry components of the waste stream, and the material produced is generally used as low-grade fill for backfilling purposes or for use as sub-base material for site roads or car parks. Screeners are also increasingly being used to separate stones from soil and boulder clay, thus minimising the volume of material to be removed from the site.

Demolition companies are increasingly employing more sophisticated demolition methods and site practices, which can facilitate the recovery of recyclable materials. Selective demolition methods and increased source segregation of C&D waste on sites reduces the volumes of waste sent to residual landfill.

## 10.2 CURRENT FACILITIES IN PLACE TO MANAGE C&D WASTE

### 10.2.1 Permitted Recycling Facilities

Roadstone Dublin Ltd operates two permitted recycling facilities in the Dublin Region; Belgard Quarry, Tallaght, with a Permit from South Dublin County Council and Huntstown Quarry, Finglas, under Permit from Fingal County Council. By imposing strict acceptance criteria on the incoming material, they can ensure a relatively clean feedstock material of inert pre-segregated C&D waste. Between the two facilities approximately 90,000 tonnes of C&D waste is processed annually. This material is generally used as fill material or in the construction of site roads by their existing customers in place of virgin material. Several demolition contractors have also obtained permits to operate crushers on construction sites in the Dublin Region. For example, over 8,000 tonnes of material from the Spencer Dock Development was crushed and reused.

### 10.2.2 Transfer Stations/Material Recovery Facilities

Transfer stations took in approximately 380,000 tonnes of C&D waste in 2003. This material was either processed on site or sent to other authorised facilities for further processing. C&D waste is generally undergoing more processing/handling than was typical before the advent of the 1998 Plan. Recyclable elements such as metal/timber/inert material may be transferred to recyclers, and the residual material sent to licensed landfills or permitted sites. Operators of Waste Transfer Stations reported an increase in the volumes of C&D waste handled at these types of facilities quoting the increasing awareness within the industry of the economic benefits of wastes segregation as the main reason.

The main handlers of C&D waste in the Region are Dean Waste Co. Ltd, Greenstar, Thorntons, Oxigen and Panda Waste. Dean Waste Ltd. (trading as A1 Waste) take in approximately 200,000 tonnes of material between their two facilities. A certain amount of this material is recycled directly but most is transferred to an Integrated Waste Management Facility near Naas Co. Kildare where further recycling facilities are in place. Greenstar move large quantities of material from the WTS/MRFs to their other facilities where the material is landfilled or subjected to further recovery. **Map 7** has a list of licensed transfer stations and MRFs accepting C&D waste.

### 10.2.3 Metal, Timber Recyclers

An estimated 25,000 tones of C&D waste was sent to metal/timber recyclers from Transfer Station/Material Recovery Facilities in 2003. It is difficult to estimate the volumes of materials being recycled directly.

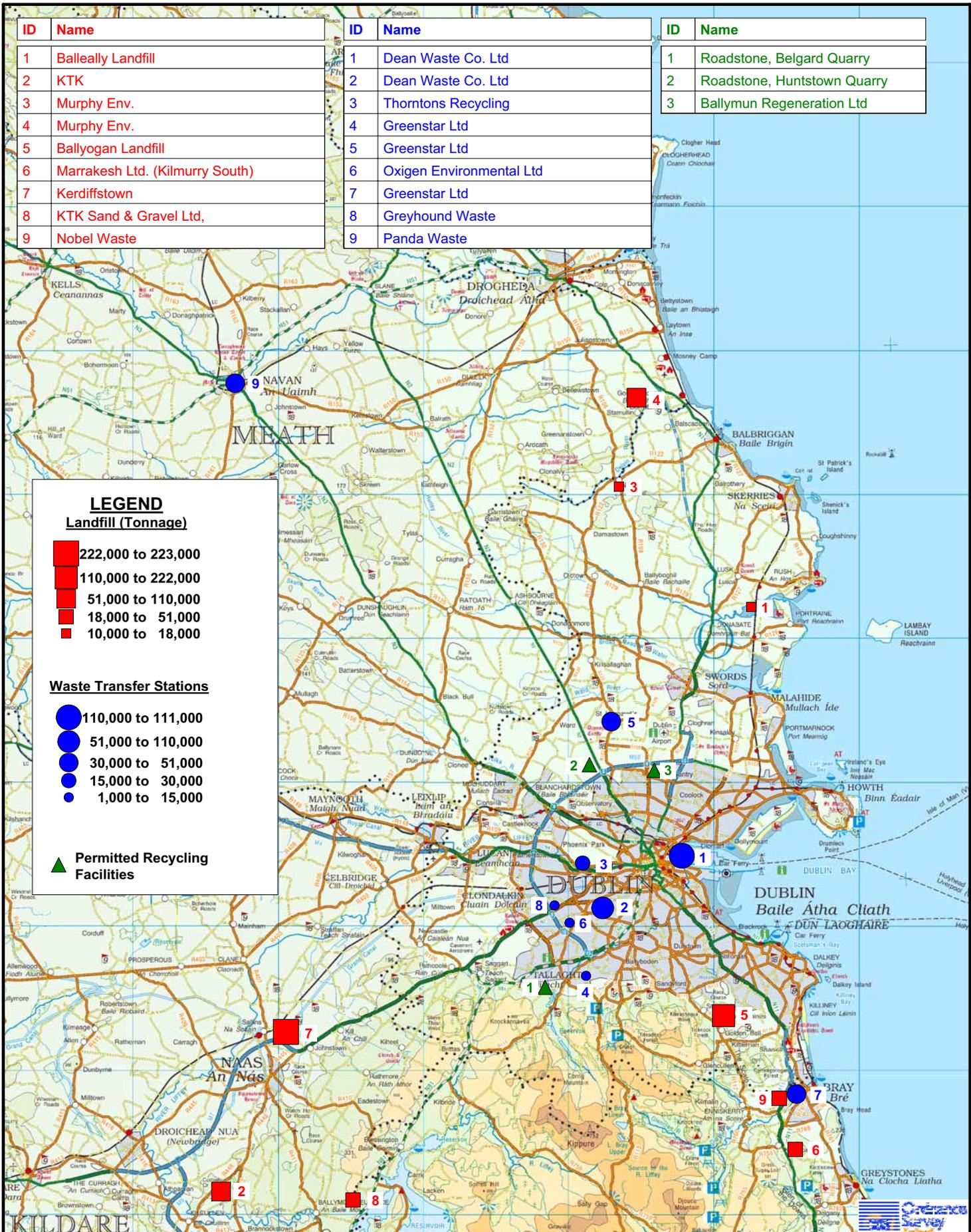
### 10.2.4 Permitted Sites

Sites with a waste permit where material may be deposited are the largest outlet for C&D waste from the Dublin Region. The permitted material is primarily soil/stones, however some inert C&D waste may also be permitted. Significant volumes of this material originating from the Dublin Region is sent to neighbouring counties. This material was predominantly recorded as soil and stones. It is possible that significant quantities of concrete and other C&D waste was deposited in these sites without authorisation in contravention to the waste permits under which they operate.

ID	Name
1	Balleally Landfill
2	KTK
3	Murphy Env.
4	Murphy Env.
5	Ballyogan Landfill
6	Marrakesh Ltd. (Kilmurry South)
7	Kerdiffstown
8	KTK Sand & Gravel Ltd,
9	Nobel Waste

ID	Name
1	Dean Waste Co. Ltd
2	Dean Waste Co. Ltd
3	Thorntons Recycling
4	Greenstar Ltd
5	Greenstar Ltd
6	Oxigen Environmental Ltd
7	Greenstar Ltd
8	Greyhound Waste
9	Panda Waste

ID	Name
1	Roadstone, Belgard Quarry
2	Roadstone, Huntstown Quarry
3	Ballymun Regeneration Ltd



**LEGEND**  
**Landfill (Tonnage)**

- 222,000 to 223,000
- 110,000 to 222,000
- 51,000 to 110,000
- 18,000 to 51,000
- 10,000 to 18,000

**Waste Transfer Stations**

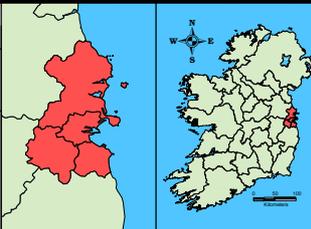
- 110,000 to 111,000
- 51,000 to 110,000
- 30,000 to 51,000
- 15,000 to 30,000
- 1,000 to 15,000

Permitted Recycling Facilities

Project **Dublin Waste Plan**

Figure **Map 7**

Title **Location of Facilities Handling C/D Waste**



Issue Details	
Drawn: SK	Project No. MDR0310
Checked: CB	File Ref.
Approved: CB	MDR0310MI0010D01
Scale: NTS	Drawing No. Rev.
Date: 24/03/2005	MI0010 D01

**Notes**

- This drawing is the property of RPS-MCOS Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
- All levels are referred to Ordnance Datum, Mean Head.
- NOT TO SCALE, use figured dimensions only, if in doubt ask.
- Ordnance Survey Ireland Licence No. EN 0005004 Copyright Government of Ireland.



West Pier Business Campus  
Dun Laoghaire  
Co. Dublin  
Ireland  
Phone: 01 - 2884499  
Fax No. 01 - 2835676  
rpsmcos@rpsgroup.ie

### 10.2.5 Licensed Landfills

The vast majority of the C&D material being sent to landfills from the Dublin Region is being used for landfill engineering/site restoration works. The disposal of C&D waste to residual landfill space has decreased dramatically in the period since the introduction of the previous Waste Management Plan. Several facilities have recovery operations on site which can process the material and enable them to consign it to other permitted sites and divert the material from residual landfill disposal.

## 10.3 SCOPE FOR IMPROVEMENTS IN C&D WASTE MANAGEMENT

C&D waste is the single largest waste stream moving on the streets and roads of Dublin. The disposal of C&D waste to residual landfill space has decreased dramatically in recent years. However, there is scope for huge improvements in the way this waste stream is managed. An essential characteristic of recovery/recycling operations is that the waste treated serves a useful purpose in replacing other materials which would have had to be used for that purpose, thereby conserving natural resources. This is one of the primary challenges to improving the way C&D waste is handled at present. There is a sense that depositing soil to local authority-permitted sites in many cases is merely a convenient outlet for C&D waste, it is unlikely that for many of these sites that virgin resources would have been used.

Improved practices such as selective demolition, source separation and extraction of recyclable elements, such as steel and timber, from the C&D waste stream have become more commonplace. Waste management companies are also applying more sophisticated sorting processes to mixed C&D waste. These activities, which represent real recycling, need to be differentiated from activities classified as recovery in presentation of statistics on waste management in the construction industry.

In order to achieve the targets set out in *Changing Our Ways*, of 85% recycling of C&D waste by 2013, the following needs to occur (see also Section 19.2):

### 10.3.1 Prevention and Minimisation

The generation of C&D waste due to careless on site management of building materials is a still an issue that needs further attention in terms of awareness programmes within the construction industry. Continued emphasis and training of designers, planners, and developers is required to 'design out' waste in construction and demolition works where possible.

The forms of contracts used to administrate civil engineering projects are beginning to change. Traditionally, a contractor may have passed the costs of waste disposal directly to the client. However, in Design and Build Contracts there is a better relationship between the designer and the contractor so there may be greater opportunities to use site-won recycled materials in a meaningful way in the course of the contract.

### 10.3.2 Source Separation

Source separation is already being practiced by the more progressive construction and demolition contractors who recognise the cost benefits that can be achieved. However, the practice is far from widespread, materials are frequently mixed together in a skip, which reduces the quality of raw material for recycling.

Bigger companies are responding and separating recyclables but many smaller builders and smaller projects still used a mixed waste skip. The original intention of the waste management plan was to introduce a Waste Bye Law requiring separation of recyclable C&D waste at source, this has not been implemented to date.

In 2001 the EPA recommended that the targets set out in '*Changing Our Ways*' should be applied to individual fractions that make up the waste stream, such as concrete, bricks, gypsum-based material, metal etc.

The Institution of Civil Engineers (ICE) in the UK in collaboration with the Construction Confederation and the Scottish Waste Awareness Group (SWAG) has launched a new, easy and simple initiative to tackle construction waste by introducing colour-coding for skips. This type of programme should be promoted in the region in consultation with the NCDWC and CIF see the following website for further information <http://www.wasteawareconstruction.com>.

### **10.3.3 Material Deposited at Permitted Sites**

This represents the largest outlet for C&D waste in the Region. However, due to the nature of the process the data available is both qualitatively and quantitatively unreliable. An issue reported by the NCDWC is the lack of consistency in terms of recording the tonnages on an annual basis into permitted sites. The NCDWC has recommended that Waste Permit and Registration Regulations be reassessed to include a requirement for tonnages to be recorded by Local Authorities. The DoEHLG is currently reviewing the Waste Management (Permit) Regulations, a draft revision was subject to public consultation during July – September 2005.

Currently soil/ stones deposited on land under Permit is mainly regarded as a 'recovery' operation and the sites are nominally using the soil for beneficial agricultural use. Arguably a better approach (and a more sustainable land-use) would be to have a smaller number of C&D waste management points, for example situated in old quarries. Mixed C&D waste could be screened and materials, such as concrete, brick and stones, could be used to produce granular material suitable for engineering fill. The soil could be used to reinstate and restore the quarry. Fewer sites would be easier to regulate and permitted sites for C&D waste are demanding on Local Authority resources and closely inspecting a large number of sites is challenging. The Region needs to consult with the NCDWC and the CIF to encourage the establishment of a number of additional large scale processing facilities e.g. in old quarries or other areas in the Dublin Region to screen out recyclable materials before deposition in permitted sites.

### **10.3.4 Enforcement by Local Authorities**

An issue raised by operators of EPA-licensed facilities was the perceived lack of enforcement by the Local Authorities, this extended to both the tonnages being accepted and the nature of material being deposited. The issue of illegal dumps and operation of concrete crushing plant without proper permits was also an issue raised by authorised operators. Illegal activities may serve to undermine the commercial viability of these authorised recyclers.

### **10.3.5 Landfill Levy**

The increased costs of disposing of C&D waste to residual landfill had led to a change in behaviour and an increase in recycling/recovery of this waste stream in recent years which is in line with the 'polluter pays principle'. The introduction of the Landfill Levy also contributed to the increase in disposal costs, however, C&D waste may be exempt from the Levy if certain conditions are met and it is to be used in landfill engineering works. These factors may partially explain the high level of recovery reported of construction and demolition waste at landfills in comparison to the volume of waste reported as sent to residual landfill.

### 10.3.6 Network of C&D Waste Recycling Centres

In addition to the 'Inert C&D Waste Management Points' a network of C&D waste recycling centres should be established where public and small and medium sized industry can bring C&D waste for collection and recycling at regional sites. The provision of a relatively clean feedstock will provide an impetus for market-led development of recycling activities such as an increased recycling of materials such as gypsum, steel, concrete etc. The Private Sector will be best placed to provide these facilities.

### 10.3.7 Guidelines for C&D Developments

Guidelines for Construction and Demolition Waste Management Plans have been developed by the NCDWC and formally submitted to DoEHLG. The DoEHLG has developed 'Draft Project C&D Waste Guidelines' which have been issued for public consultation.

The NCDWC guidelines will initially operate on a voluntary trial basis at commencement notice stage, however planning authorities may attach a condition to permissions on projects exceeding the thresholds indicated. Section 34 (4)(l) of the Planning and Development Act, 2000 permits the attachment of conditions relation to construction and demolition waste management.

Thresholds for the application of a Waste Management Plan proposed are as follows:

1. New residential development of 10 houses or more
2. New developments, other than (1) above, with an aggregate floor-area in excess of 1,250m<sup>2</sup>;
3. Demolition projects generating in excess of 500 tonnes of C&D waste;
4. Civil Engineering projects producing in excess of 500m<sup>3</sup> of waste (equivalent to 1,000 tonnes), excluding waste materials used for development works on the site.

The Local Authority role in the new scheme will be:

- Checking Planning Applications to see whether thresholds for C&D waste plans are exceeded (the City or County Development Plan should be updated to reflect the new requirements)
- Assessing the C&D waste plans submitted at Planning stage
- Monitoring and inspecting construction sites and disposal sites to ensure the developer is implementing the plan.

Therefore a lot more interaction with the Planning process will be required and Planning Staff will need to be made aware of the new initiative and its implications. The complete document on Best Practice Guidelines on the preparation of Waste Management Plans for Construction and Demolition Projects is available at [www.ncdwc.ie](http://www.ncdwc.ie)



Minimising Waste by Reuse of old bricks



Source separation of recyclable C&D waste

## 11 WASTE RECYCLING AND RECOVERY INFRASTRUCTURE

### 11.1 INTRODUCTION

The number and variety of waste management facilities in the Dublin Region has grown dramatically since the previous Plan was adopted in 1998, reflecting a more diversified approach to managing waste. Waste facilities can be placed in two broad categories:

- Licensed Waste Facilities – by virtue of their large scale and type of activity, these are regulated by the Environmental Protection Agency. There are 34 Licensed facilities in the Region
- Permitted Waste Facilities – these are generally smaller facilities involved in recycling, materials recovery or waste transfer, regulated by the Local Authority. There are 107 sites permitted in the Region, 48 of which are for soil and typically of a temporary nature.

**Table 11.1 Permitted Facilities in the Region in 2003**

Local Authority	No. of Permitted Facilities (Soil/Land Reclamation)	Quantity of Soil/Land Reclamation (Tonnes)	Estimated Tonnage 2003
DCC	17 (0)	-	71,574
DLRCC	3 (3)	-	- N/A
FCC	57 (38)	1,650,952	1,837,061
SDCC	30 (7)	13,950	304,036
<b>Total</b>	<b>107 (48)</b>	<b>1,664,902</b>	<b>2,212,671</b>

Source: Local Authority records of AERs from permitted facilities

**Maps 8 and 9** give the position of the Licensed and Permitted facilities in the Region. The permitted sites that are established on a temporary basis to place soil on land are not included, there are several of these in Fingal and South Dublin and a small number in Dun Laoghaire Rathdown. In so far as it is possible additional information has been obtained from the Permitted and Licensed facilities referred to in Maps 8 and 9 and is contained in Appendix D.

**Map 10** includes existing/ proposed licensed facilities in the Greater Dublin Area.

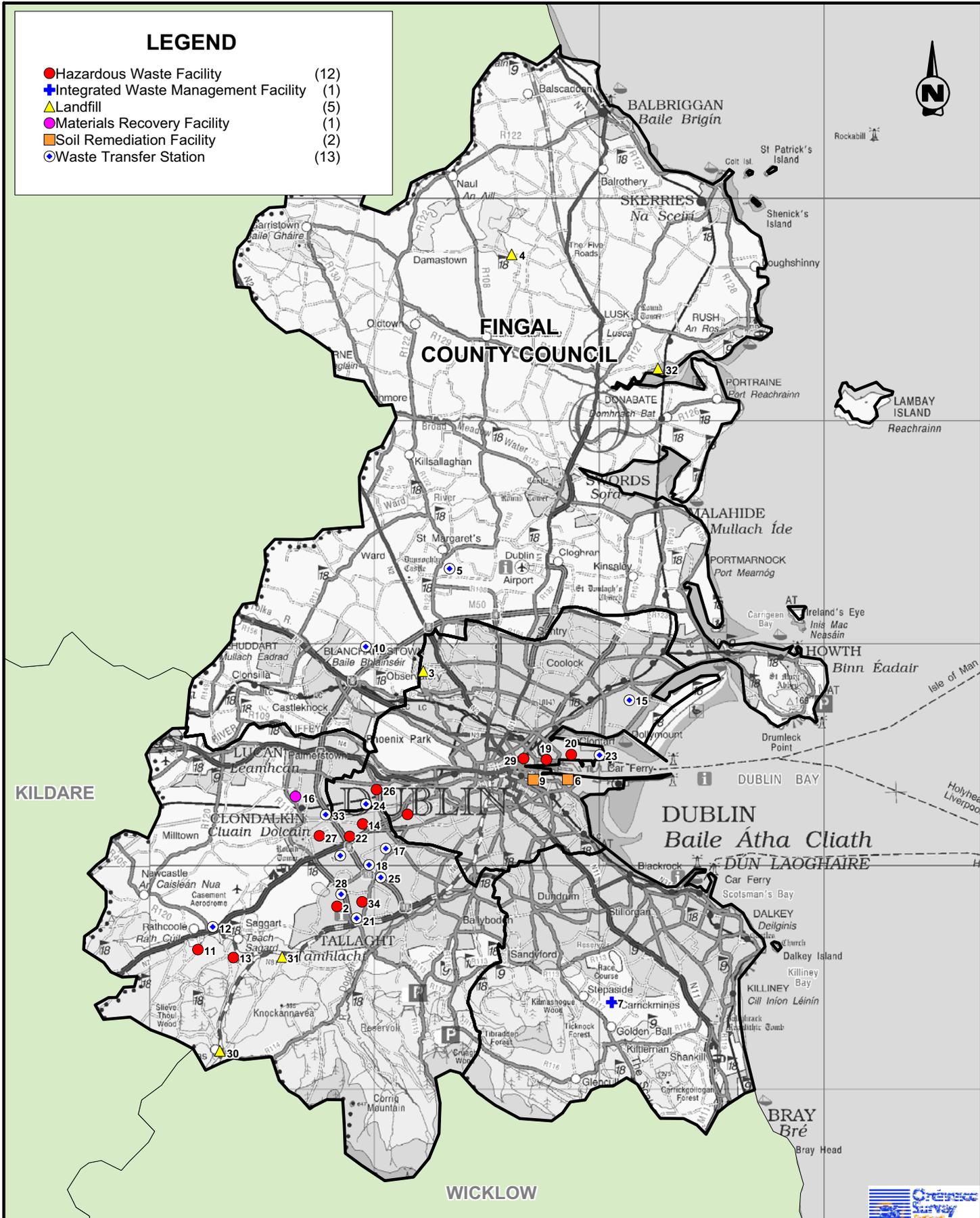
### 11.2 WASTE RECYCLING, MATERIALS RECOVERY

#### 11.2.1 Public Recycling Facilities

The position regarding Bring Banks and Recycling Centres is outlined in Chapter 7. The Waste Management Plan set an objective to establish 10 full-scale Recycling Centres: to date 6 are in place, complimented by 9 community level 'Bring Centres' in the DCC area. Further development of this network of facilities is required both for household waste and for commercial/industrial waste (e.g. from SMEs and small industry).

# LEGEND

- Hazardous Waste Facility (12)
- ⊕ Integrated Waste Management Facility (1)
- ▲ Landfill (5)
- Materials Recovery Facility (1)
- Soil Remediation Facility (2)
- ⊙ Waste Transfer Station (13)



Project **Dublin Waste Plan**

Figure **Map 8**

Title **Dublin Region - Licensed Waste Facilities**

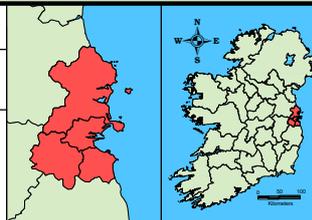
Issue Details	
Drawn: RH	Project No. MDR0310
Checked: CB	File Ref.
Approved: CB	MDR0310MI0007D01
Scale: NTS	Drawing No. Rev.
Date: 08/02/2005	MI0007 D01

**Notes**

1. This drawing is the property of RPS-MCOS Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
2. All levels are referred to Ordnance Datum, Mean Head.
3. NOT TO SCALE, use figured dimensions only. If in doubt ask.
4. Ordnance Survey Ireland Licence No. EN 0005050 copyright Government of Ireland.



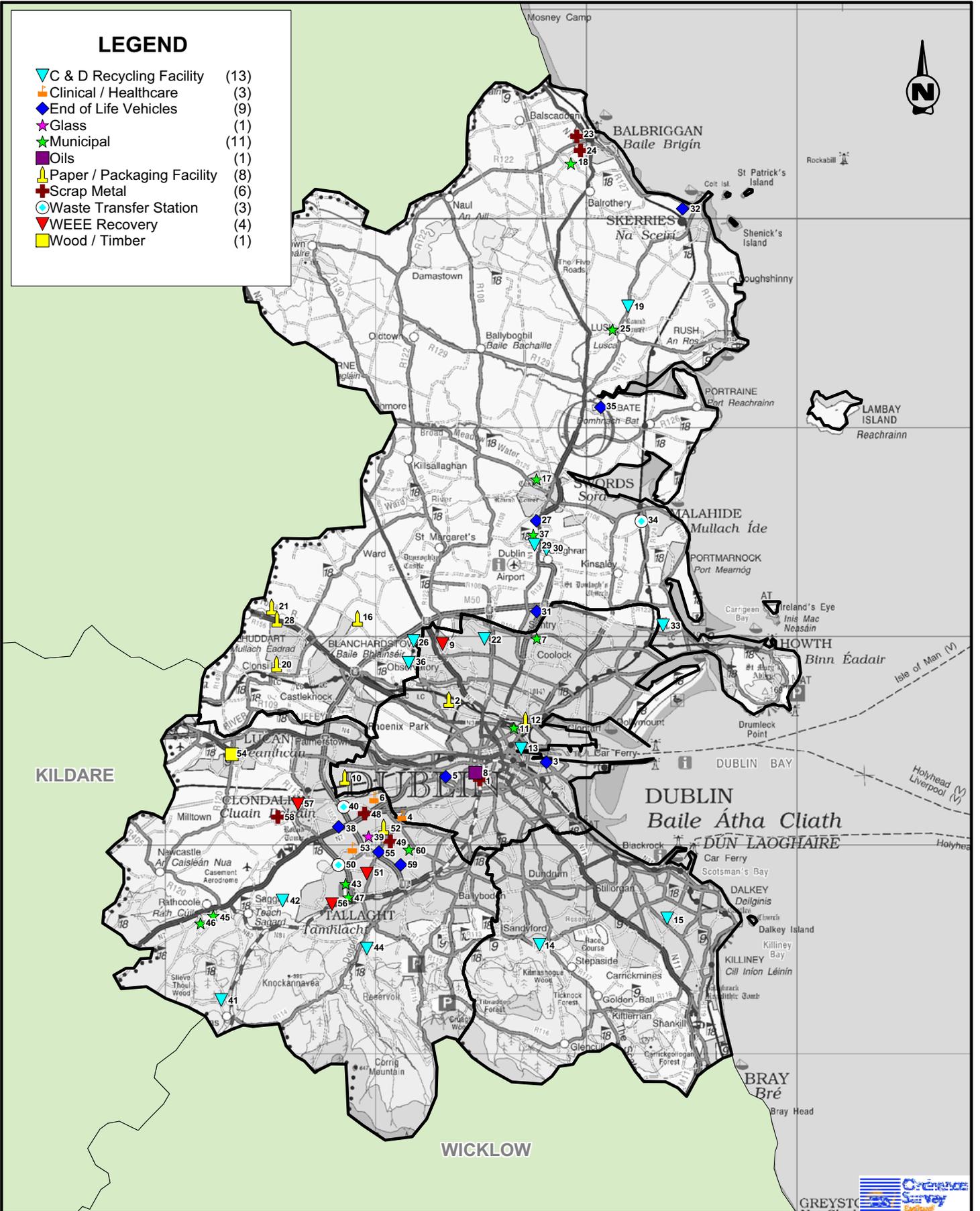
Carnegie House  
Dun Laoghaire  
Co. Dublin  
Ireland  
Phone: 01 - 2020870  
Fax No. 01 - 2020707  
rpsmcos@rpsgroup.ie



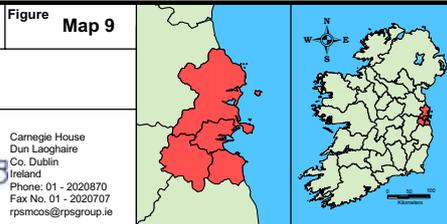
ID	FACILITY_NAME	LOCATION	COUNTY	REG_NO	FACILITY_TYPE
1	National Recycling & Environmental Protection Ltd.	John F Kennedy Drive, JFK Industrial Estate, Naas Road	Dublin	112-1	Hazardous Waste Facility
2	Silver Lining Industries (Ireland) Ltd.	Unit 61, Cookstown Ind. Estate, Belgard Road, Tallaght	Dublin	122-1	Hazardous Waste Facility
3	Dunsink Landfill	Dunsink Lane, Finglas	Dublin	127-1	Landfill
4	Murphy Concrete Manufacturing Ltd.	Hollywood Great, Nags Head, The Naul	Dublin	129-1	Landfill
5	N. Murphy Waste Disposal Ltd.	Sandyhill, St. Margarets, Co. Dublin	Dublin	134-1	Waste Transfer Station
6	Site contained by Street Frontages	28 & 29 Sir John Rogersons Quay, Dublin 2	Dublin	137-1	Soil Remediation Facility
7	Ballyogan Landfill Facility & Recycling Park	Ballyogan Road, Carrickmines, Dublin 18	Dublin	15-1	Integrated Waste Management Facility
8	Oxigen Environmental Ltd.	Robinhood Ind. Estate, Robinhood Road, Dublin 22	Dublin	152-1	Waste Transfer Station
9	Molloy & Sherry Site	Sir John Rogersons Quay, Dublin 2	Dublin	164-1	Soil Remediation Facility
10	Greenstar Recycling Holdings Ltd.	Millenium Business Park, Grange, Ballycoolin, Dublin 11	Dublin	183-1	Waste Transfer Station
11	Cara Waste Management Ltd.	Greenogue Business Park, Rathcoole, Co. Dublin	Dublin	185-1	Hazardous Waste Facility
12	Greenstar Material	Greenogue Ind. Estate, Rathcoole	Dublin	188-1	Waste Transfer Station
13	SITA Environmental Ltd.	Greenogue Ind. Estate, Rathcoole	Dublin	192-1	Hazardous Waste Facility
14	MacAnulty Clear Drains	JFK Industrial Estate, Naas Road, Dublin 12	Dublin	196-1	Hazardous Waste Facility
15	Green Waste & Civic Amenity Recycling Facility	St. Annes Park, All Saints Road, Raheny	Dublin	203-1	Waste Transfer Station
16	Greyhound Recycling & Recovery Ltd.	Crag Avenue, Clondalkin Ind. Estate, Clondalkin	Dublin	205-1	Materials Recovery Facility
17	Oxigen Environmental Ltd.	Ballymount Road Lower, Clondalkin, Dublin 22	Dublin	208-1	Waste Transfer Station
18	Ballymount Baling Station	Ballymount Road, Walkinstown, Dublin 12	Dublin	3-3	Waste Transfer Station
19	Upper Sheriff Street	Upper Sheriff Street, Dublin 1	Dublin	35-1	Hazardous Waste Facility
20	Tolka Quay Road	Dublin Port, Dublin 1	Dublin	36-2	Hazardous Waste Facility
21	ONYX Ireland Ltd.	Ballymount Cross, Tallaght, Dublin 24	Dublin	39-2	Waste Transfer Station
22	520 Beech Road	520 Beech Road, Western Ind. Estate, Naas Road	Dublin	40-1	Hazardous Waste Facility
23	Dean Waste Co. Ltd.	Upper Sheriff Street, Dublin 1	Dublin	42-1	Waste Transfer Station
24	Thorntons Recycling Centre	Killeen Road, Ballyfermot, Dublin 10	Dublin	44-2	Waste Transfer Station
25	Dean Waste Co. Ltd.	Greenview, Greenhills Road, Walkinstown, Dublin 12	Dublin	45-1	Waste Transfer Station
26	Eco-Safe Systems Ltd.	Allied Ind. Estate, Kylemore Road, Ballyfermot, Dublin 10	Dublin	54-2	Hazardous Waste Facility
27	Sterile Technologies Ireland Ltd.	Western Ind. Estate, Naas Road, Dublin 12	Dublin	55-2	Hazardous Waste Facility
28	Greenstar Materials Recovery Ltd.	Cookstown Ind. Estate, Tallaght, Dublin 24	Dublin	79-1	Waste Transfer Station
29	Lower Oriel Street	North Wall, Dublin 1	Dublin	83-1	Hazardous Waste Facility
30	Hegarty Demolition Ltd.	Brittas, Co. Dublin	Dublin	84-1	Landfill
31	Corbally	Blessington Road, Tallaght	Dublin	88-1	Landfill
32	Balleally Landfill	Balleally, Lusk, Co. Dublin	Dublin	9-2	Landfill
33	Waste Management Centre	Knockmitten Lane, Western Ind. Estate, Dublin 12	Dublin	95-2	Waste Transfer Station
34	Unit 5, Airton Road	Tallaght, Dublin 24	Dublin	99-1	Hazardous Waste Facility

# LEGEND

- ▼ C & D Recycling Facility (13)
- ▲ Clinical / Healthcare (3)
- ◆ End of Life Vehicles (9)
- ★ Glass (1)
- ★ Municipal (11)
- Oils (1)
- ▲ Paper / Packaging Facility (8)
- Scrap Metal (6)
- Waste Transfer Station (3)
- ▼ WEEE Recovery (4)
- Wood / Timber (1)



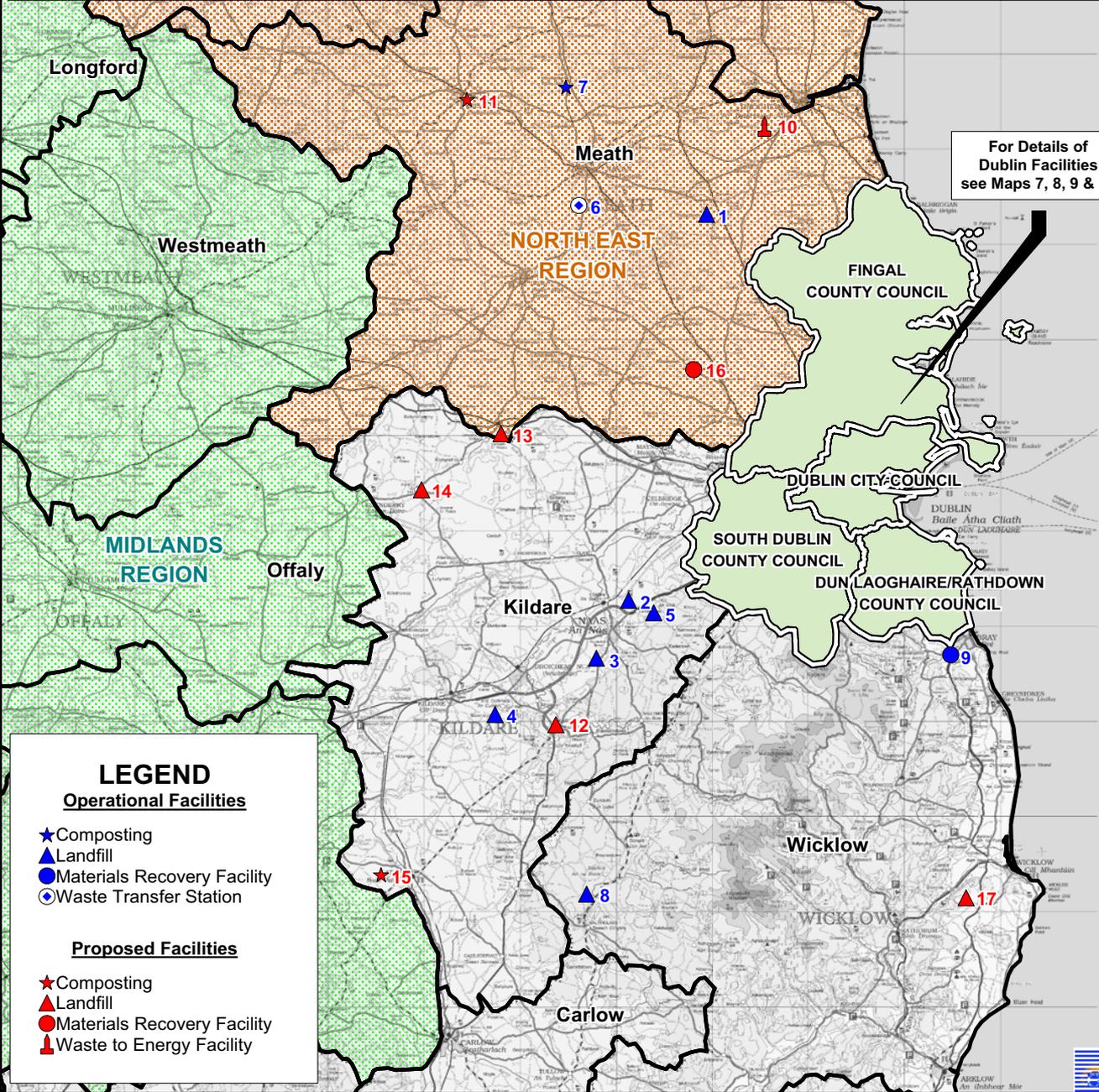
Project <b>Dublin Waste Plan</b>	Figure <b>Map 9</b>
Title <b>Dublin Region - Permitted Waste Facilities</b>	
	
	
Carnegie House Dun Laoghaire Co. Dublin Ireland Phone: 01 - 2020870 Fax No. 01 - 2020707 rpsmos@rpsgroup.ie	



Issue Details	
Drawn: RH	Project No. MDR0310
Checked: CB	File Ref.
Approved: CB	MDR0310MI0008D01
Scale: NTS	Drawing No. Rev.
Date: 14/02/05	MI0008 D01
Notes	
1. This drawing is the property of RPS-MCOS Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent. 2. All levels are referred to Ordnance Datum, Mean Head. 3. NOT TO SCALE, use figured dimensions only, if in doubt ask. 4. Ordnance Survey Ireland Licence No. EN 0005005 Copyright Government of Ireland.	

ID	FACILITY_NAME	LOCATION	COUNTY	PERMIT_NO	FACILITY_TYPE
1	Mullins Metals	Blackpitts	Dublin	WP 98008	Scrap Metal
2	John W. Hannay & Co. Ltd.	Bannow Road, Cabra, Dublin 7	Dublin	WP 98016	Paper / Packaging Facility
3	O'Connor & Murphy Auto Recyclers	9A Fitzwilliam Street, Ringsend, Dublin 4	Dublin	WP 98025	End of Life Vehicles
4	Woods	78 Walkinstown Road, Dublin 12	Dublin	WP 98026	Clinical / Healthcare
5	South Dublin Autos	South Circular Road, Rialto, Dublin 8	Dublin	WP 98030	End of Life Vehicles
6	Martin Services Ltd.	Bluebell Business Park, Dublin 12	Dublin	WP 98040	Clinical / Healthcare
7	JVC Ltd.	Clonshaugh Industrial Estate	Dublin	WP 98042	Municipal
8	M. T. Oils Ltd.	Newmarket, Dublin 8	Dublin	WP 98045	Oils
9	Electronic Recycling	Jamestown Business Park, Finglas, Dublin 11	Dublin	WP 98051	WEEE Recovery
10	Shred-It	53 Parkwest, Dublin 12	Dublin	WP 98052	Paper / Packaging Facility
11	IPODEC	North Richmond Street, Dublin 1	Dublin	WP 98056	Municipal
12	Leech Papers Ltd.	Shamrock Terrace, North Strand Road, Dublin 1	Dublin	WP 98066	Paper / Packaging Facility
13	Spencer Dock	Spencer Dock	Dublin	WP 98074	C & D Recycling Facility
14	Mardown Ltd.	Total Fitness, Blackglan Road, Sandyford, Dublin 18	Dublin	W4/4(18)	C & D Recycling Facility
15	St. Joseph's Boys AFC Ltd.	Pearse Park, Rochestown Avenue, Sallynoggin	Dublin	W4/4(19)	C & D Recycling Facility
16	Bailey Waste Recycling Ltd.	Rosemount Business Park, Dublin 11	Dublin	1	Paper / Packaging Facility
17	Fingal Recycling	Feltrim Industrial Park, Swords	Dublin	2	Municipal
18	Fingal Recycling	Stephenstown, Dublin Road, Balbriggan	Dublin	4	Municipal
19	Fajon Construction Ltd.	Skerries Road, Lusk	Dublin	12	C & D Recycling Facility
20	Carno International Ltd.	Barnhill, Clonsilla, Dublin 15	Dublin	14	Paper / Packaging Facility
21	Alldocs Ltd.	Damastown Business Park, Dublin 15	Dublin	16	Paper / Packaging Facility
22	Ballymun Regeneration Ltd.	Balcurris, Ballymun, Dublin 9	Dublin	35	C & D Recycling Facility
23	Techmatic Ltd.	Balbriggan Business Park	Dublin	37	Scrap Metal
24	Irish Metal Refineries	Balbriggan Business Park	Dublin	39	Scrap Metal
25	Greenclean Ltd.	Blakes Cross, Lusk	Dublin	41	Municipal
26	Roadstone Dublin Ltd.	Huntstown Quarry, Finglas	Dublin	45	C & D Recycling Facility
27	Joe Boland Motor Salvage	Nevistown, Swords	Dublin	45	End of Life Vehicles
28	Glenbeigh Records	Damastown Business Park, Dublin 15	Dublin	46	Paper / Packaging Facility
29	McHale	St. Annes, Cloghran	Dublin	47	C & D Recycling Facility
30	Irish Kennel Club	Show Centre, Cloghran	Dublin	48	C & D Recycling Facility
31	Summerhill Spares	Ballymun Cross, Santry	Dublin	60	End of Life Vehicles
32	North County Dublin Car Parts	Man O War, Skerries	Dublin	62	End of Life Vehicles
33	Barnmore Demolition	21 Baldoyle Industrial Estate	Dublin	62	C & D Recycling Facility
34	Peter O'Brien & Sons Ltd.	Streamstown, Malahide	Dublin	69	Waste Transfer Station
35	Gannons City Recovery Ltd.	Turvey, Donabate	Dublin	70	End of Life Vehicles
36	Roadstone Dublin Ltd.	Huntstown Quarry, Finglas	Dublin	72	C & D Recycling Facility
37	International Plant Hire Ltd.	St. Annes, Cloghran	Dublin		Municipal
38	Westlink Recovery Services Ltd.	Red Cow, Naas Road	Dublin	WPR 006	End of Life Vehicles
39	Rehab Glass	Ballymount Avenue, Clondalkin	Dublin	WPR 004	Glass
40	Lawlor Brothers	Unit 28, JFK Ind. Estate, Naas Road	Dublin	WPR 027	Waste Transfer Station
41	Francis Greaney	Glenaraneen, Brittas	Dublin	WPR 036	C & D Recycling Facility
42	Roadstone Dublin Ltd.	Fortunestown, Belgard Quarry, Co. Dublin	Dublin	WPR 025	C & D Recycling Facility
43	JVC Recycling Ltd.	Unit 8, Cookstown Ind. Estate, Dublin 24	Dublin	WPR 023	Municipal
44	Mr. Paul Cooke	Glassamucky, Bohernabreena, Co. Dublin	Dublin	WPR 026	C & D Recycling Facility
45	Burns Waste Recycling Ltd.	Greenogue Ind. Estate, Rathcoole	Dublin	WPR 024	Municipal
46	Bailey Waste Recycling Ltd.	Unit 14A, Greenogue Business Park, Rathcoole	Dublin	WPR 029	Municipal
47	TPH Recycling Ltd. / Goatstown Waste	Unit 51 Fourth Avenue, Cookstown Ind. Estate	Dublin	WPR 031	Municipal
48	Cummins Metals Recycling Ltd.	JFK Drive, Naas Road, Dublin 12	Dublin	WPR 002	Scrap Metal
49	Recoverable Resources Co-op Ltd.	Hibernian Insurance Ind. Estate, Greenhills Road	Dublin	WPR 015	Scrap Metal
50	Textile Recycling Ltd.	Glen Abbey Complex, Belgard Road, Tallaght	Dublin	WPR 014	Waste Transfer Station
51	Gandon Enterprises Ltd.	Unit 77, Broomhill Road, Tallaght	Dublin	WPR 033	WEEE Recovery
52	Smurfit Ireland Ltd. / Smurfit Recycling Ltd.	Lower Ballymount Road, Walkinstown, Dublin 12	Dublin	WPR 021	Paper / Packaging Facility
53	Rentokil Initial Ltd.	Merrywell Business Park, Ballymount Road, Dublin 12	Dublin	WPR 034	Clinical / Healthcare
54	Barina Pellets Ireland	Newcastle Road, Lucan, Co. Dublin	Dublin	WPR 037	Wood / Timber
55	Greenhill Motor Spares	Greenhills Road, Tallaght	Dublin	WPR 010	End of Life Vehicles
56	Smart Waste Solutions	Whitestown Ind. Estate, Tallaght, Dublin 24	Dublin	WPR 042	WEEE Recovery
57	Clondalkin Community Recycling Initiative	Clondalkin, Dublin 22	Dublin	WPR 043	WEEE Recovery
58	Cummins Metals Recycling Ltd.	Clondalkin, Dublin 22	Dublin	WPR 045	Scrap Metal
59	Tallaght Truck Dismantlers	Greenhills Road, Tallaght	Dublin	WPR 047	End of Life Vehicles
60	KPD Ltd.	Greenhills Road, Walkinstown	Dublin	WPR046	Municipal

ID	NEIGHBOURING_REGIONS_FACILITIES	LOCATION	COUNTY	REG_NO	FACILITY_TYPE
1	Greenstar	Knockharley, Brownstown, Navan	Meath	146-1	Landfill
2	Kerdiffstown Landfill	Naas, Co. Kildare	Kildare	47-1	Landfill
3	KTK Sand & Gravel	Killcullen	Kildare	81-2	Landfill
4	Siliot Hill Landfill	Brownstown	Kildare	14-1	Landfill
5	Arthurstown Landfill	Kill	Kildare	4-3	Landfill
6	Midlands Waste Disposal Co. Ltd.	Proudstown, Navan	Meath	131-1	Waste Transfer Station
7	Organic Gold	Wilkinstown, Navan	Meath	219-1	Composting
8	Wicklow County Council	Rampere	Wicklow	66-2	Landfill
9	Greenstar	Fassaroe, Bray	Wicklow	53-2	Materials Recovery Facility
ID	NEIGHBOURING_REGIONS_FACILITIES	LOCATION	COUNTY	REG_NO	FACILITY_TYPE
10	Indaver Ireland	Carranstown, Dunboyne	Meath	167-1	Waste to Energy Facility
11	McGill Environmental	Kells, Co. Meath	Meath	195-1	Composting
12	Greenstar	Usk, off N9, near Kilcullen, Co Kildare	Kildare	168-1	Landfill
13	Padraig Thornton Waste Disposal	Calfield, Enfield	Kildare	179-1	Landfill
14	Bord Na Mona	Drehid, Carbury	Kildare	201-1	Landfill
15	Bord Na Mona	near Athy, Co Kildare	Kildare	198-1	Composting
16	Padraig Thornton Waste Disposal	Dunboyne	Meath	206-1	Materials Recovery Facility
17	Greenstar	Ballynagran	Wicklow	165-1	Landfill



**LEGEND**

**Operational Facilities**

- ★ Composting
- ▲ Landfill
- Materials Recovery Facility
- Waste Transfer Station

**Proposed Facilities**

- ★ Composting
- ▲ Landfill
- Materials Recovery Facility
- ▲ Waste to Energy Facility

Project **Dublin Waste Plan** Figure **Map 10**

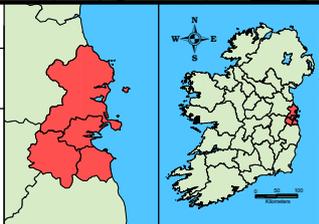
Title **Existing / Proposed Licensed Facilities outside Dublin Region**



Carrigle House  
Dun Laoghaire  
Co. Dublin  
Ireland  
Phone: 01 - 2020870  
Fax No. 01 - 2020707  
rpsmcos@rpsgroup.ie



**WASTE MANAGEMENT PLAN**  
Working for the Dublin Region



Issue Details	
Drawn: RH	Project No. MDR0310
Checked: CB	File Ref.
Approved: CB	MDR0310MI0012D02
Scale: NTS	Drawing No. Rev.
Date: 17/08/2005	MI0012 D01
<b>Notes</b>	
1. This drawing is the property of RPS-MCOS Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent. 2. All levels are referred to Ordnance Datum, Malin Head. 3. NOT TO SCALE: use figured dimensions only, if in doubt ask. 4. Ordnance Survey Ireland Licence No. EN 0005005 Copyright Government of Ireland.	

### 11.2.2 Materials Recovery Facilities (MRFs)

These facilities are required to accept, sort and bale recyclable materials for transfer to reprocessing markets. There has been rapid growth in the number of MRFs in the Region, handling mainly commercial waste but also some household recyclables. Throughput of commercial/ industrial recyclables in MRFs was in the Region of 230,000 tonnes in 2003. Since further growth in recycling is required under the Plan, it is envisaged that further expansion of MRF capacity will be required. Typically MRFs and transfer stations are located in industrial areas.

Mixed dry recyclable waste collected in the Green Bin service is taken to a MRF operated by private company Oxigen/Bailey Waste Paper at Clonsaugh, where it is sorted into recoverable fractions which are baled and transferred to reprocessing facilities. The tonnage handled is approximately 45,000 tonnes per annum. A residue remains to be landfilled.

### 11.2.3 Reuse and Repair

There is no direct involvement by Local Authorities or waste management companies in reuse and repair of goods (furniture, equipment etc.). This role is served by two separate sectors:

- **Voluntary Sector** – charity shops and charitable organisations, who accept some household items for re-sale depending on quality and space available
- **Private Sale** – classified advertisements in publications such as 'Buy and Sell' enable items to be traded or sometimes given away free. There are also a small number of businesses involved in resale of office furniture, and 'architectural salvage' where interesting pieces of furniture or appliances are kept in circulation.

## 11.3 BIOLOGICAL TREATMENT FACILITIES

### 11.3.1 Green Waste Composting

Up until 2004, two facilities were in place in the Region:

- **St Anne's Park** in Raheny, operated by DCC with a capacity of approximately 20,000 tonnes/ annum. This facility was forced to close in 2004.
- **Esker Lane, Lucan**, operated by South Dublin County Council with a capacity of approximately 5,000 tonnes/annum. This facility may be relocated to an alternative location in the County.

The 1998 Waste Management Plan had called for an expansion of green waste composting capacity. The Esker facility in South Dublin has provided some of this extra capacity, but the demand for green waste composting services is increasing with the growing numbers of suburban gardens and expanding landscaping industry. With the closure of St Anne's Park, the Region may have to rely on facilities in adjoining counties for green waste composting, until capacity can be developed closer to the source of the waste.

### 11.3.2 Biowaste Composting

Biowaste is a term that includes the organic food waste generated by households and commerce/industry. At present there is no capacity in the Region to biologically treat biowaste.

In accordance with the previous Waste Plan, the Dublin Local Authorities have carried out a feasibility study for biological waste, which recommended developing two facilities each with a capacity of up to 45,000 tonnes/annum of source separated municipal organic waste. This is being implemented by DLRCC (at Ballyogan) and by FCC (at Kilshane). The Ballyogan facility is expected to become available in 2007, with Kilshane in 2007/ 2008.

A number of private waste collection companies are employing mechanical pre-processing (shredding, screening) of mixed commercial waste collected in the Dublin Region, which enables the 'fines' to be separated and sent to off-site facilities, typically composting sites outside the Dublin Region. The practice reduces the amount of waste sent directly to landfill, but the quality of the product is questionable due to high levels of contamination, and as a result markets are limited.

Private company Greenstar has received Planning Permission and a waste Licence for an organic waste treatment facility for commercial waste at Ballycoolin in Fingal. The capacity is up to 50,000 tonnes/annum. This company is already collecting some source separated commercial organics for treatment at a facility in County Kildare. Further composting capacity is under planning by private companies A1 Waste, Bord Na Mona, Thornton Waste and McGill Environmental in the counties neighbouring Dublin.

## 11.4 WASTE TRANSFER/ BALING FACILITIES/LIQUID WASTES

### 11.4.1 Baling Stations

There are four facilities in the Region with capacity to bale municipal waste for transfer to the municipal landfill at Arthurstown, County Kildare (operated by SDCC in conjunction with the private company ONYX). These are:

**Ballymount Baling Station** – during the Plan period SDCC invested in a facility upgrade and extended the capacity throughput up to 324,480 tonnes per annum of municipal waste (mainly household waste from South Dublin and DCC on behalf of the Region)

**Ballyogan Baling Station** – commissioned in 2004 and operational in 2005, this Regional facility is managed by DLRCC and operated on their behalf by a private contractor Greenstar. The capacity is 120,000 tonnes/ annum. The facility is part of the Ballyogan Recycling Park developed by DLRCC.

**Thornton Waste Facility** – situated in Ballyfermot, this private facility has installed baling capacity for 250,000 tonnes/ annum. As well as some commercial waste from the Dublin Region, the facility also accepts household waste from Kildare, Meath and Wicklow for baling and transfer to the Arthurstown landfill.

**Oxigen Waste Facility** – situated in Ballymount, this baler is currently being commissioned (2005) and has a capacity of approximately 100,000 tonnes/ annum

### 11.4.2 Transfer Facilities

There are several large scale transfer facilities in the Region, operated by the private sector. The current throughput of commercial/ industrial waste through MRFs and transfer facilities combined is estimated to be between 450,000-500,000 tonnes in 2003.

The typical purpose of these facilities is to accept waste from collection vehicles and to bulk and compact the material into trailers for onward transport to disposal. Transfer facilities are becoming more sophisticated and generally the operators have introduced a materials recovery stage whereby recyclables such as cardboard, timber, metals etc. are removed for recycling. In some cases waste is shredded to make transfer more efficient. With some commercial waste facilities, a mechanical process is employed (shredding followed by screening and magnetic removal of metals) to separate the finer fraction of the waste which is mainly organic material (outlined in 11.3 above).

### 11.4.3 Liquid Wastes

A number of companies are involved in collection of liquid waste generated for example by cleaning of drains and de-sludging of equipment and grease traps. At present there is poor access to facilities within the Region for treatment of this waste, which forces additional transportation and cost to access other Regions.

## 11.5 ENERGY RECOVERY

The previous Waste Management Plan set out an objective to develop thermal treatment capacity for municipal waste:

*“Because of the critical shortage of disposal capacity and in order to satisfy the requirements of the Packaging Waste Directive and the proposed EU Landfill Directive, **the provision of thermal treatment with energy recovery, for a capacity in the Region of 500,000 – 700,000 tonnes per annum**”*

It is intended in the Plan that recyclable waste and organic waste will be separated for recycling first, and the thermal treatment capacity will be for residual waste collected otherwise. The target date for implementation of the facility was 2004.

Following from the Waste Management Plan in 1998, Feasibility Studies on thermal treatment were carried out in 1999. These reports examined what technology would be capable of thermally treating 25% of Dublin's waste and what would be the best location for the plant. The studies concluded that a number of thermal treatment technologies (including incineration) could possibly be employed in Dublin but that an open procurement process where all the best technologies could compete for the project would make the decision. The studies also concluded, based on the criteria set out in the report, that the preferred location for the proposed plant is the Poolbeg Peninsula.

Relevant excerpts from the Feasibility Study for Thermal Treatment of Waste for the Dublin Region – Report on Siting and Environmental Issues (1999) are included in Appendix F of the Plan. The facility siting will be addressed and updated in the EIS Report for the Dublin WTE facility.

Dublin City Council appointed a consultancy joint venture to act as Client Representative to select a service provider and establish a Public Private Partnership to design, build, operate and finance the plant. The consortium includes expertise in environmental science, waste management, procurement and public involvement.

Tender Documents were then drawn up for the 'Dublin Waste to Energy Project', drawing on a wide range of expertise including legal, financial and engineering. Dublin City Council advertised for 'expressions of interest' in 2002. Several international consortia made submissions to the project team. All of the submissions were examined and four consortia were short listed primarily on the environmental performance of their existing plants. Tender Documents were issued to the shortlisted consortia. Following submission of bids, negotiations took place with the final two tenderers, resulting in a preferred Service Provider emerging. The proposal had been forwarded to the DEHLG for approval, and the Department confirmed in September 2005 it had no objection to the proposal. The preferred Service Provider was announced in September 2005 as Elsam Ireland.

Following the Award of Contract (October 2005), the Service Provider will undertake the Statutory Planning and Environmental Licensing for the facility. Initial baseline monitoring of the environment has been underway to facilitate the preparation of an EIS. The earliest point construction can begin is 2008. Construction and commissioning must follow, meaning the plant would be available in 2010 – 2011.

A proactive Public Involvement Process has been underway to assist development of the Dublin WTE project since 2001.

An information service was opened in the Ringsend Regional Office in 2001. The office has a full time staff including a senior official from Dublin City Council and an environmental scientist from the Project Team. The information service is available to all members of the community.

Initiatives carried out include:

- Project Open Days
- Community Interest Group Process
- Independent Specialist Expertise (environmental, scientific, legal etc.) provided for the community
- Waste Information Day
- Information Sessions (covering Air Quality, Ecology, Health, and Traffic)

Further public involvement will be included in the statutory phases of the project development.

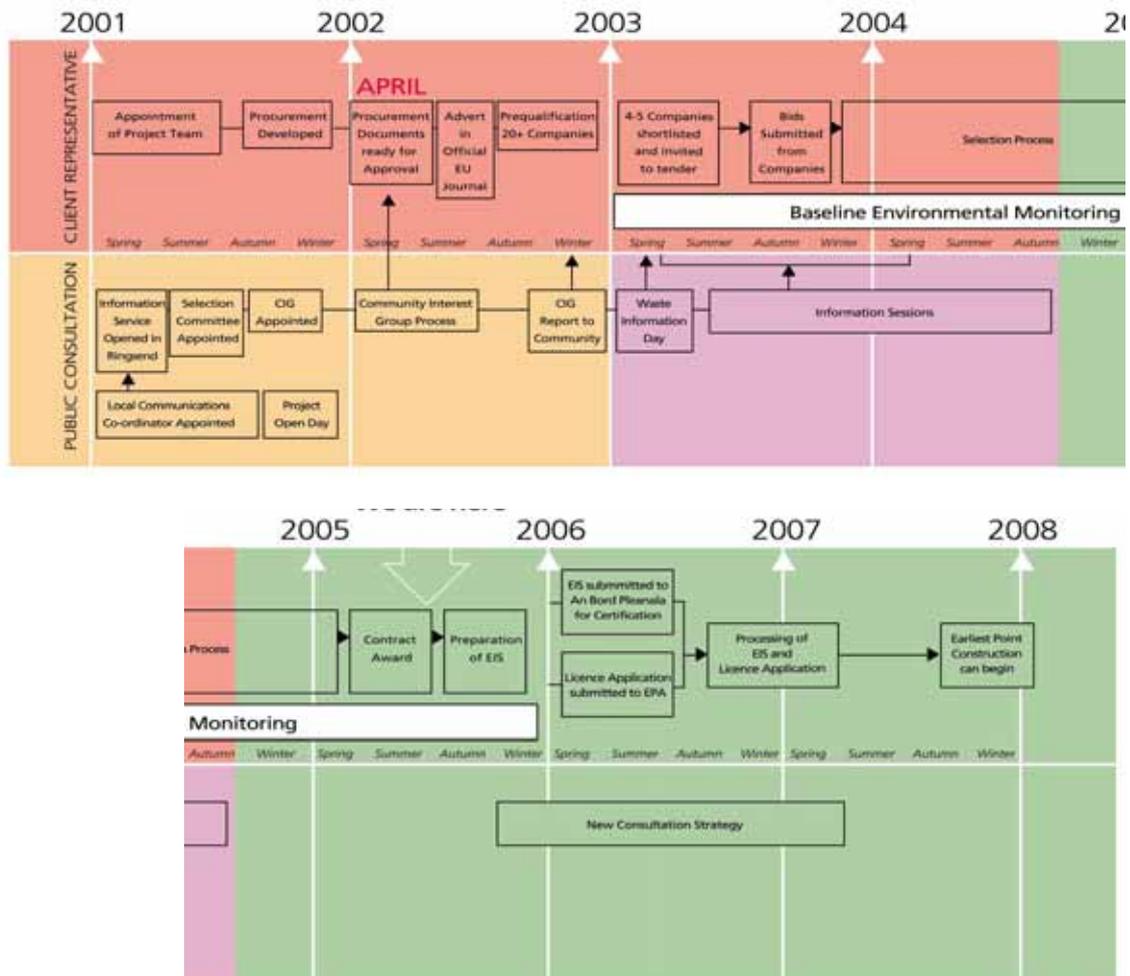


Esker Lane Compost, South Dublin



Waste Delivery to Ballymount Baling Station

Figure 11.1 Summary Dublin Waste to Energy Project Development (Oct. 2005)



### 11.6 RECYCLING/RECOVERY INFRASTRUCTURE DEFICIENCIES

While recycling of waste has improved dramatically over the past 6 years, the Region is still a long way from reaching its recycling and recovery goals. Waste growth is set to continue with increases in population and economic activity, so the infrastructure required must also expand to cope with these pressures.

The following deficiencies have been identified:

**Bring Banks and Recycling Centres** – further facilities required, and other improvements in the accessibility and range of materials collected are required.

**Re-use and Repair** – there are limited options in place in the Region, further delivery and sale points would be beneficial.

**Materials Recovery Facilities** – a reasonable level of capacity is available but further increase in recycling will require more MRF capacity.

**Green Waste Composting** – a significant deficit now exists in the Region for green waste composting. This will force expensive additional transport to facilities outside the Region until capacity is increased.

**Biowaste Composting** – a significant deficit exists. Facilities to manage household biowaste are in development by the Local Authorities. Facilities to manage commercial/ industrial biowaste are being advanced by the private sector.

**Waste to Energy/Thermal Treatment Facility** – urgently required to meet Plan targets and EU Landfill Directive targets. This is being advanced by the Local Authorities through a PPP contract.

**Transfer facilities** – reasonable level of capacity available but further expansion/ upgrading including new facilities is likely to maximise the efficiency of waste transfer.

**Liquid Wastes** – little capacity in the Region to manage liquid wastes such as grease-trap waste etc.

**Reprocessing** (recycling facilities) – almost all waste is recycled outside the Dublin Region. Access to indigenous recycling capacity would be beneficial. A particular challenge exists with regard to Construction & Demolition waste which requires greatly increased recycling capacity in lieu of recovery to permitted sites for agricultural reclamation.

## 12 WASTE DISPOSAL

### 12.1 INTRODUCTION

The previous Dublin Waste Management Plan (1998) aimed to reduce the Region’s over dependence on landfill through waste prevention, re-use and recycling. The Plan set a target for the landfilling of 16% of the total household, commercial and industrial waste arisings to 2004. Although the situation has improved with increased awareness and recycling, there are now 4 landfills in place and over 74% of the household, commercial and industrial waste streams is disposed of to these landfills.

### 12.2 QUANTITIES OF WASTE LANDFILLED

The total quantities of household, commercial and industrial waste disposed of to landfill in the Region in 1997 and 2003 are shown in Table 12.1.

**Table 12.1 Waste Disposal to Landfill in the Dublin Region 1997 – 2003**

Waste Type	1997 (Tonnes)	2003* (Tonnes)
Household Waste	352,000	383,816*
Commercial/ Industrial Waste	364,000	342,829**
Street Cleaning	21,800	30,325
<b>Total</b>	<b>737,800</b>	<b>756,970</b>

\*Excludes an estimated 90,000 tonnes coming from Meath, Kildare and Wicklow transferred to Dublin baling stations

\*\*Estimates include 140,000 tonnes landfilled at KTK from Dublin Region.

**Figure 12.1 Landfill Tonnages 1997 and 2003**

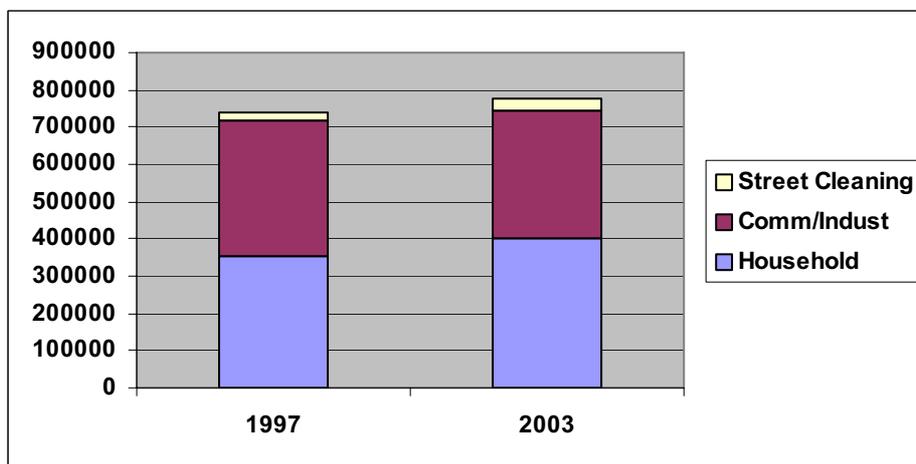


Figure 12.1 shows that the level of waste disposal in the Region has increased from 1997, and landfilling remains the primary treatment route for municipal and industrial waste in the Region. During 2001-2004, controls have been put in place on the types of materials accepted at landfill facilities, e.g. landfills can no longer accept C&D waste for disposal and municipal sludges are not disposed of at landfill facilities.

## 12.3 HOUSEHOLD WASTE DISPOSAL

The total household waste landfilled in 2003 represents 84% of the total household waste arising in 2003. Due to lack of disposal capacity, household waste from Counties Kildare, Meath and Wicklow has been landfilled at the Arthurstown landfill in recent years, (via Thornton Waste transfer station) by agreement of the Dublin Local Authorities.

## 12.4 COMMERCIAL AND INDUSTRIAL WASTE DISPOSAL

Table 12.1 shows that the quantity of mixed commercial and industrial waste landfilled in the Region in 2003 has decreased slightly since 1997 however it represents 51% of the total collected commercial and industrial arisings. The dramatic increase in the cost of landfill since the last Plan has encouraged the private sector to seek alternative treatment outlets, as has the introduction of restrictions on landfilling of certain waste streams, and the ban on the collection and disposal of mixed packaging waste from commercial companies. There is a gap of 98,000 tonnes (15%) between commercial/industrial waste collected and estimated as recycled or landfilled in the Dublin landfills (Balleally, Ballyogan, Arthurstown and KTK). This is thought to be due to: organic waste tromelling/composting, and use of landfills or other disposal outlets outside the Region.

## 12.5 CURRENT PRINCIPAL LANDFILLS IN OPERATION

Waste disposal by landfill remains the main method of waste management in the Dublin Region. There are currently four principal non-hazardous waste landfills serving the Dublin Region:

- Balleally Landfill,
- Arthurstown Landfill
- Ballyogan Landfill (landfilling ceased in 2005)
- KTK Landfill

Balleally landfill accepts household, commercial and industrial waste from both public and private operators. It also accepts wastes that arise from Local Authority activities, for example litter and street sweepings.

Arthurstown landfill located near Kill in Co. Kildare accepts only baled municipal waste. Three baling stations are currently in operation: Ballymount operated by SDCC/ ONYX joint venture and Thornton Waste Transfer on Killeen Road, Ballyfermot. In the past 2-3 years, some municipal waste from counties Meath, Kildare and Wicklow has been accepted for baling at the Thornton facility and landfilled at Arthurstown.

The Ballyogan baling station is in operation since early 2005, operated by Greenstar on behalf of DLRCC. Up to this, Ballyogan landfill accepted household and commercial waste collected by Dun Laoghaire Rathdown County Council as well as some wastes delivered by individual householders.

The KTK landfill at Kilcullen, Co. Kildare, is licensed to accept non-hazardous commercial and industrial waste excluding putrescible wastes, and is operated by Greenstar.

Significant progress has been made in the Region regarding the improvement of standards at landfills in the Region, including the use of landfill gas to create energy for the national grid.

### 12.5.1 Landfill Gate Fees

In Dublin, landfill gate fees are in the range of €140 to €200 per tonne of waste. This charge includes a €15 per tonne landfill levy introduced under the Waste Management (Landfill Levy) Regulations 2002. Landfill gate fees have escalated steeply in the last 5 years.

### 12.5.2 Remaining Void Capacity

Details of each facility and their remaining capacities are outlined in Table 12.2 below.

**Table 12.2 Remaining Municipal Capacity from January 2005 for Landfills Serving the Dublin Region**

Facility	Approx. remaining total landfill capacity	Expected year of closure
Ballyogan Landfill	<25,000 tonnes*	(now closed, 2005)
KTK Landfill	500,000 tonnes	2008
Arthurstown Landfill	1,000,000 tonnes	2007
Balleally Landfill	804,000 tonnes	2009

\* Required until baling station has been commissioned

The majority of these landfills are currently nearing capacity and under current authorisations will close within 3 years. South Dublin County Council are considering the possibility of a short term extension to Arthurstown landfill (see Section 18.9). Balleally Landfill is licensed to accept 451,000 tonnes of waste per year, and has an expected closure date sometime in 2008/2009, but this depends on the rate of filling of cells.

## 12.6 FORMER WASTE DISPOSAL SITES

### 12.6.1 General Situation

The Waste Management Act 1996 requires information to be collected/ held by Local Authorities on all former disposal sites and presented in the Waste Management Plan. The following is the position as regards former waste disposal sites operated by the Dublin Local Authorities.

Landfills currently in operation are regulated by the EPA and closure, restoration, monitoring and aftercare is determined by the terms of the Waste Licence. In general sites in operation up to and during the 1990's have been closed and capped/ restored by the Local Authorities or the operator. Public sites are typically restored by means of soil capping and in some cases serve a use as amenity park and public open space. As well as public landfills, several private disposal sites were in use in previous decades – information on the status and history of these sites is limited.

### 12.6.2 Dublin City Council

Assessment in 1992 identified 17 closed disposal sites which were formerly operated by Dublin Corporation. Some baseline monitoring for landfill gas was carried out on 7 sites at the time. . In line with current Council policy and best environmental practice, DCC is committed to developing an integrated site assessment on all former disposal sites in order to establish baseline data and safeguard future developments. These sites are listed in Table 12.3

### 12.6.3 Dun Laoghaire Rathdown County Council

A map-based database comprising 4 layers of information is being developed by the Environment Department of the Council. The four layers are potentially contaminated sites (incl. municipal landfill), un-permitted sites (where C&D waste may have been placed without permit), permitted waste disposal sites, and producers of hazardous waste (locations where hazardous waste might be generated –e.g. hospitals, health centres, industries etc.). Sites in the first category are listed in Table 12.3

**Ballyogan Landfill** is still active under the regulation of the EPA. A capping programme is commencing in 2005, and will be completed following closure of the facility. Restoration and Aftercare will then be carried out with EPA approval.

### 12.6.4 Fingal County Council

Fingal County Council also have a database on disposal sites, this is an active tool used by the Regulation and Enforcement Unit in monitoring activities. The **Ardla Landfill** accepted commercial/ industrial waste – this privately operated landfill is currently under restoration by Onyx (Ipodec) Ltd. A number of other former municipal landfill sites are included in Table 12.3

**Dunsink Landfill** ceased accepting municipal waste in 1996. The Civic Amenity on the site continued operating until 2002 and clay continued to be imported also. Management of leachate and landfill gas is underway at the site. The site has been regulated by the EPA since 2003.

**Balleally Landfill** is still active under EPA regulation. Capping has already commenced and a Restoration and Aftercare Plan has been drawn up in consultation with interested parties, to be implemented in a phased manner over the coming 5-10 years.

A further private site formerly used for waste disposal up until the early 1990's has been identified at Belcamp Lane. A planning application for remediation of this site is expected to be made shortly by the land owner.

### 12.6.5 South Dublin County Council

Former waste disposal sites recorded as operated or owned by South Dublin County Council are listed in Table 12.3

**Friarstown Landfill** closed in 1997 after 22 years operation. Capping was completed in 2003, landfill gas is generating 1 MW of electricity and there is monitoring of emissions and a weather station on site.

In 2002 a survey was carried out by the Environment Section of SDCC South Dublin County Council. 30 sites were investigated. Most of these related to C&D waste accepted as fill, with significant quantities involved. Several of the sites were without Planning Permission or Waste Licence and were referred to the Planning Section for enforcement (including recommendation to remove material). 26 sites were deemed not to require further investigation by the Environment Section, and 3 Sites were referred to the Water Services section for possible impact on water resources.

The following table lists former public waste disposal sites in the Region and year of closure. Any sites where capping/ remediation is underway are noted.

**Table 12.3 Former Waste Disposal/Recovery Sites Operated by or Owned by the Local Authorities**

	<b>Dublin City Council</b>	<b>Closed since:</b>
1.	L'abre Park	1971
2.	Californian Hills	1975
3.	Long Meadows	1977
4.	Sundrive Road	1956
5.	Irishtown	1978
6.	Bond Road	1974
7.	East Wall Road	1974
8.	Clontarf Park	1974
9.	Mount Temple Schools	1968
10.	Artane School	1968
11.	Edenmore Park	1973
12.	Lauder's Lane	1968
13.	Ballyboggan Quarry	1965
14.	Tolka Valley	1976
15.	Merville Quarries	1976
16.	James Larkin Road	1966
17.	Bull Island Causeway	
	<b>Dun Laoghaire Rathdown County Council</b>	
1.	Cork Great	1968
2.	Kilbogget. Opened 1968.	1975
3.	Site near Sandyford School	-
4.	Johnstown Road/ Rochestown Avenue. Opened 1953	1958
5.	Pottery Road	-
6.	The Scalp (private landfill)	1984
7.	Ticknock. Opened 1980	-
8.	Cruagh, Rockbrook	Late 1970's
9.	Tirbradden Lane, near Club Italiano	Early 1980's
10.	Kimashogue	1983
11.	Curagh, Rockbrook	1981
	<b>Fingal County Council</b>	
1.	Porterstown, west of Blanchardstown	1973
2.	Barnageera	1983
3.	Dunsink	1996
	<b>South Dublin County Council</b>	
1.	Friarstown Landfill	1997
2.	Waterstown	1987
3.	Kilnamanagh, Greenhills Road	1969
4.	Greenhills Road	Late 1970's

Table 12.3 relates mainly to disposal activities as there are limited numbers of former recovery sites and they were generally not operated by the Local Authorities.

## 12.7 DEFICIENCIES IN LANDFILL DISPOSAL CAPACITY

All four landfills currently serving the Dublin Region are nearing closure, and there is an annual disposal requirement currently running at 800,000 tonnes. The provision of additional landfill void space to serve the Region is therefore critical to avoid potential environmental impacts and substantial costs if Dublin's waste has to be exported for disposal to other Regions or countries. This is being addressed by the development of the proposed Fingal Landfill (see Section 18.9). Advancing the Fingal landfill is an urgent necessity for the Dublin Local Authorities and for the Region. Refer to Appendix G for summary of the project background and facility siting.

South Dublin County Council is also considering a short term extension to Arthurstown landfill. Owing to the slight reduction in household residual waste at the facility – due to the introduction of use related charging and the growth in use of green bin recycling - extra void space capacity at Arthurstown may be possible. This, if approved in planning, may provide a short-term buffer to allow the Dublin local authorities to complete the new WTE and landfill facilities. Such an approach would provide a useful contingency as a short term measure to overcome delays in delivery of the other regional facilities without needing major investment or employing more expensive solutions requiring greater levels of waste transportation. South Dublin County Council will explore this option, requiring a planning application to be made.

Some capacity for municipal waste disposal (and energy recovery) may become available in neighbouring counties Meath, Wicklow and Kildare during the coming years, which may also provide an interim solution for commercial/industrial waste in the Region.

Ongoing remediation, restoration and aftercare of closed landfill sites will continue to be required in the decades ahead, placing a considerable financial burden on the Local Authorities.

## 12.8 FUTURE REQUIREMENT FOR RESIDUAL LANDFILL IN THE DUBLIN REGION

The capacity required depends on variable factors including the growth of waste, the level of recycling achieved, and the date when the WTE facility becomes available.

### Current Disposal Requirement

The current municipal and industrial landfill requirement in the Region is approximately 800,000 tonnes per annum, and this is currently fulfilled by the facilities at Arthurstown, Balleally, Ballyogan and KTK landfill (commercial/ industrial non-putrescible waste).

### Effect of Recycling

With increased recovery of dry-recyclables and organic waste, the percentage waste landfilled in the region will fall over the coming years. However the amount of municipal waste generated is expected to rise due to increases in population, numbers of households and economic growth, which will off-set some of the gains from recycling. If the planned recycling targets of this Plan are met, the residual disposal requirement should fall to 650,000 – 750,000 tpa by 2009.

### Effect of WTE Plant

After recycling, the main tool for reducing landfill reliance will be the Dublin WTE plant which will divert 400,000 – 600,000 tpa away from landfill, reducing the disposal requirement to 200,000 – 300,000 tpa approximately. Waste still requiring landfill at this stage will comprise any residual waste in excess of the capacity of the WTE plant, plus residues from other recycling plants (e.g. C&D waste recycling plants) or waste not suitable for WTE (e.g. non-combustible waste).

Within the contract for the WTE plant, it will be the responsibility of the contractor to manage the ash residues. It is required that the bottom ash be recycled rather than landfilled. The operator will be also be required to manage the hazardous fly-ash in an appropriate manner at authorised facilities to be approved in advance by the EPA.

### **Long Term Landfill Requirement**

In the best case scenario, landfill requirement will be between 5 – 8 million tonnes from 2009 – 2030. The requirement increases to 8 – 11 million tonnes should a contingency be allowed to cover an eventuality such as a delay in providing WTE capacity, recycling not meeting targets, or waste growth out-stripping Plan estimates. The proposed Fingal landfill will be developed with a capacity requirement of up to 10,000,000 tonnes which should provide sufficient capacity from 2009 – 2030.

The proposed measures to satisfy long-term and short-term landfill capacity requirements are set out in Section 18.9

## 13 FINANCIAL PERFORMANCE

### 13.1 EXPENDITURE AT PRESENT

Expenditure in 2004 on waste management operations in the Dublin Region is shown in Table 13.1 and this is broken down as follows:

**Table 13.1 Waste Management Expenditure, 2004**

Item	Activity	Expenditure €Million	%
1	Landfilling of Household, Commercial and Street Cleaning Waste	53.9	31%
2	Domestic Refuse Collection	38.8	22%
3	Street Cleaning	37.2	21%
4	Commercial Refuse Collection	8.3	5%
5	Education, Promotion, Regulation/ Enforcement, Miscellaneous	7.2	4%
6	Recycling and Recovery	30.5	17%
<b>Total</b>		<b>175.9</b>	<b>100%</b>

The operation of landfill sites was the largest single item of expenditure, reflecting the three sites (Arthurstown, Ballyogan and Balleally) under the management of the Local Authorities during 2004. Item 1 of Table 13.1 also includes the costs incurred in the Ballymount processing plant, where waste destined for landfill is compacted and baled.

Domestic Refuse Collection is the costs of providing the weekly “grey” bin collection service throughout the region. A small number of households, principally in apartment complexes, use private sector services, but the vast majority of households in the Dublin Region avail of the weekly Council collection service. The Domestic Refuse Collection costs do not include the cost of disposal of household waste.

Street Cleaning (Item 3 in Table 13.1) is a substantial cost element with direct costs of €37.2 million and the major portion of this expenditure is incurred in the City, again, these costs do not include the relevant disposal costs.

Expenditure on recycling activities was €30.5 million in 2004 or 17% of total expenditure. This is a substantial increase on expenditure at the start of the existing plan. This expenditure includes the costs of the four weekly household “green” bin collection service; the operation of the dry recyclables segregation facility and the operating costs of the Bring Banks and Recycling Centres, as well as the disposal costs associated with some of the materials deposited there.

#### Cost per Customer Segment

The costs shown above are based on specific activities and not on a “per customer” basis. If the costs of waste disposal (including landfill and baling) are allocated to the source of the waste in direct proportion to the relevant tonnages, the full costs of the waste management service to various customers segments would be as follows:

**Table 13.2 Waste Management Service Costs - 2004**

<i>Service</i>	<i>Expenditure €million</i>
Household Waste Service	114.9
Street Cleaning	40.8
Commercial Waste Service	13.0

The Household Waste Service as defined in Table 13.2 includes the collection of both grey bins and green bins and where applicable, bags and communal bins from households and apartment complexes; together with the disposal to landfill of the “grey bin” waste; the sorting of the “green bin” materials and the bring bank and civic amenity centre infrastructure that is provided for households. It is therefore an estimate of the full cost of providing the domestic waste management service in the region. The waste arisings managed by the Local Authorities are outlined in Table 13.3 following:

**Table 13.3 Waste Arisings Managed by Local Authorities 2003 (Tonnes)**

<i>Managed by Local Authority</i>	<i>Tonnes</i>
Household	383,816
Commercial	39,893
Street Cleaning	30,235
Green Bin Recyclables	35,860
Other Recyclables	39,864
Other	39
<b>Total</b>	<b>529,707</b>

Total waste arisings managed by the Local Authorities are 529,707 tonnes. This includes street cleanings; bring banks; recycling centres and the recyclables currently collected by Oxigen Environmental Ltd and Bailey Waste Paper Ltd. Of this amount collected, 297,592 tonnes are processed in the Ballymount baling station en route to the Arthurstown landfill facility. The balance of the household waste arisings goes to landfill at Ballealy, except for the recyclables, which are processed at the Clonsbaugh segregation facility or at other processors prior to sale.

## 13.2 INCOME AT PRESENT

The incomes generated by the four Local Authorities in 2004 were as follows:

**Table 13.4 Waste Management Income, 2004**

<i>Item</i>	<i>Activity</i>	<i>Income €Million</i>	<i>%</i>
1	Landfill fees from commercial and household waste and other income	49.2	42%
2	Domestic Refuse Collection	49.4	43%
3	Street Cleaning	0.2	0%
4	Commercial Refuse Service	15.4	13%
5	Education, Promotion, Regulation/ Enforcement	0.2	0%
6	Recycling and Recovery	2.8	2%
<b>Total</b>		<b>117.2</b>	<b>100%</b>

The four key components of income are gate fees for landfill at the various facilities in the region in 2004; gate fees and charges levied on commercial operators; domestic waste charges for household collection and disposal services, and income received from sales of recyclable materials and a contribution from Repak.

Overall cost recovery for waste services is now at 66% (i.e. a funding gap of €59m) compared with 25% in 1997, demonstrating improved implementation of the Polluter Pays Principle in accordance with the Plan objectives. Expenditure has risen from €26m to €176m in the same period, reflecting the modern day costs of managing waste to the standards required by legislation.

It can be seen that cost recovery is not being achieved in respect of the Household Waste Service. Relevant income in 2004 was €49.4 million in the region, which is just over 43% of the full cost of the service, i.e. €115.6 million as shown in Table 13.2.

However, we estimate the revenues lost through the provision of waiver schemes to low income households in the region to be of the order of €12 million to €13 million per annum. Allowing for these waivers, full cost recovery would be just in excess of €100 million per annum.

The costs of the commercial waste collection services are being recovered in full.

### 13.3 CAPITAL INVESTMENT REQUIREMENTS

The capital investment programme required on the part of the Local Authorities under the proposed new Plan is shown in Table 13.5. The key assumptions underlining this table are as follows:

1. Bring Banks and Recycling Centres will be developed on land owned at present by the four Local Authorities. No provision has been made for the acquisition of land in connection with these facilities.
2. The plant for the proposed household MRF will be acquired by the four Local Authorities, based on costs of existing plants in the U.K. we provide €6 million to include installation costs. The building required for this MRF has been acquired and we do not provide for it here.
3. The Green Waste Composting investment is a provision for potential future development.
4. The Biowaste investment is based on the assumption that the Local Authorities will acquire the plant and equipment for the proposed facility. It is also assumed that no land acquisition costs are involved, though some site and development costs will be incurred.
5. It is assumed that the capital investment on the part of the Local Authorities will be on a ten year loan basis.
6. It is assumed that the amount of the investment each year will be as shown in the following table. It is also assumed that the investment will be spread evenly within the individual years.
7. No provision has been made for grant assistance at this stage.

On the basis of these assumptions, the capital investment profile is outlined in Table 13.5:

**Table 13.5 Capital Investment Requirements and Repayment Schedule – Local Authorities**

Item	2005 €	2006 €	2007 €	2008 €
Bring Banks	662,857	1,325,714	1,325,714	1,325,714
Recycling Centres	1,329,857	2,785,714	2,785,714	2,785,714
MRF (Household)	6,000,000			
Green Waste Composting		1,000,000		
Biowaste Composting	10,000,000	10,000,000		
<b>Total</b>	<b>17,055,714</b>	<b>15,111,428</b>	<b>4,111,428</b>	<b>4,111,428</b>
Annual Repayments	498,346	2,827,509	3,888,611	4,342,465

It is assumed that all the equipment listed in the table above will be acquired by the Dublin Region Local Authorities and may therefore be eligible for grant assistance from the Department of the Environment, Heritage and Local Government, up to a grant level of 75% of the acquisition costs and installation costs of the plant and equipment. We do not assume any grant assistance in the projections of future operating costs. If grant assistance were to be available, future operating costs would be reduced by up to €3.2 million per annum from 2009 onwards.

Private sector capital investment envisaged under the plan is indicated in Table 13.6 below. There are many variables that will dictate the ultimate cost of any of the following infrastructure and consequently, these should be regarded as indicative levels of prospective investment over the Plan period.

**Table 13.6 Private Sector Investments Estimates**

Item	Est. Cost € Million
Materials Recycling	€15
Biological Treatment	€17
Waste to Energy Facility	€200
Construction & Demolition Recycling	€15
Municipal Landfill (Initial outlay)	€20
Other	€4
<b>Total</b>	<b>€271</b>

## 13.4 PROJECTED EXPENDITURE AND INCOMES FOR 2010

The arisings that will be managed by the Local Authorities in 2010 are projected as follows: It should be noted that all projections are based on current (2005) costs and have not been adjusted for inflation.

**Table 13.7 Waste Arisings Managed by the Dublin Local Authorities to 2010**

Household	Tonnes
Grey Bin	314,222
Green Bin	91,991
Brown Bin	90,283
Other (RC, Bring etc)	86,298
<b>Subtotal</b>	<b>582,794</b>
<b>Commercial</b>	
Residual	20,400
Cardboard Collection	13,303
Other	2,040
<b>Subtotal</b>	<b>35,743</b>
<b>Street Cleaning</b>	30,000
<b>TOTAL</b>	<b>648,537</b>

### 13.4.1 Infrastructure Assumptions

It is projected that by 2010, there will be a substantial change in the means of disposal of waste arisings in the Region that are under the control of the Local Authorities. The assumptions regarding projected infrastructure changes affecting the Councils are as follows:

- The Arthurstown landfill facility will close in 2007 and will be subject to aftercare management only; capping of the site will take place on closure; We provide €37 million for capping, aftercare and restoration costs for the Arthurstown and Ballealy landfill facilities together with on-going work at the Dunsink and Ballyogan facilities. We have spread this expenditure over the period 2007 to 2010.
- The existing compacting facilities will remain in operation;
- A thermal treatment plant will be operational with a capacity of approximately. 400,000 - 600,000 tonnes per annum. The plant will be developed through a Public Private Partnership (PPP) arrangement and waste from the four Local Authorities treated there will be subject to gate fees;
- A new landfill will be developed in the region through a PPP and the four Local Authorities will pay gate fees to the operators of the facility;
- Biological treatment will also be developed in the region through a PPP and once again the Local Authorities will be subject to gate fees for its use;
- Bring Centres and Recycling Centres will be developed as shown in the capital expenditure requirements;
- A new Local Authority MRF for segregating dry recyclables is being procured with an ultimate capacity of 100,000 tonnes.

### 13.4.2 Gate Fee Assumptions

It is difficult to predict what the gate fees are likely to be for the various components of the future infrastructure, as many of the projects are currently being developed and some are at the tendering stage. In addition, some of the project options have yet to be fully evaluated and the specification finalised. We do not wish to prejudice the tendering processes, but we assume, based on international experience and current Irish costs that gate fees will be in the following ranges:

Landfill (incl. landfill levy)	€140 to €160 / tonne
Thermal treatment	€90 to €110 / tonne
Biological treatment	€70 to €90 / tonne

We propose to use the centre point of each of these ranges to estimate future potential costs.

### 13.4.3 Future Operating Costs Estimate

Using these disposal costs outlined previously, we conclude that the expenditure on waste management in the Dublin Region will be as follows (all figures shown are at 2005 levels, no provision has been made for inflation):

**Table 13.8 Waste Management Expenditure, 2010**

Item	Activity	Expenditure € Million	%
1	Landfill Disposal of household, commercial and street cleaning, aftercare of closed sites and operation of the Ballymount processing facility	26.0	12
2	Domestic Refuse Collection	34.6	17
3	Street Cleaning	36.8	17
4	Commercial Refuse Collection	9.7	5
5	Education, Promotion, Regulation, Miscellaneous	11.2	5
6	Recycling and Recovery, including energy recovery	92.6	44
	<b>Total</b>	<b>210.9</b>	<b>100%</b>

This is an increase of almost 20% over the 2004 costs and the key reasons are as follows:

1. There is a substantial increase (over threefold) in the cost of recovery and recycling activities, arising from an increase in volumes of materials recovered; a major increase in bring centres and recycling centres and diversion of materials to the bio-treatment and waste-to-energy facilities. There is a very small volume being committed to landfill.
2. Landfill costs fall by just over 50% due primarily to the closure of the Local Authorities' landfill facilities in the region and the diversion of materials to the Biowaste and waste-to-energy plants. There are however capping and aftercare costs to be incurred at landfill sites. We have amortised the capping costs over a ten year period.
3. In accordance with the EU Landfill Directive, full cost of landfill development, operation and aftercare must be included in landfill fees. Projected landfill fees provide for a sinking fund for closure and aftercare.
4. The costs of the new infrastructure are spread across the relevant expenditure categories.
5. The domestic refuse collection costs shown in item 2 refer to the "Grey" bin collection only. The "Brown" and "Green" bin collections are included in the Recycling and Recovery costs.

No provision has yet been made in respect of potential remediation works on closed landfills, (as required under Section 22 (7) (h) and Section 26 (2) (c) of the Waste Management Act, 1996 and the policy direction issued by the Minister for Environment, Heritage and Local Government on 3rd May 2005 under Section 60 of the Waste Management Act, 1996) as no assessment of costs or required remediation works, if any are required, has yet been made. The approach to identifying and assessing such sites is included in Section 19.7 of this Plan.

### Cost per Customer Segment - 2010

The costs shown above are based on specific activities and not on a service basis. If the costs of landfill and waste disposal were attributed to the source of the waste – in proportion to the relevant tonnages – the full costs of the various services would be as follows:

**Table 13.9 Waste Management Service Costs – 2010**

Service	Expenditure €Million
Household Waste Service	142.4
Street Cleaning	41.9
Commercial Waste Service	15.4

The Service Costs shown in Table 13.9 are inclusive of the landfill aftercare costs discussed previously.

### 13.4.4 Income in 2010

It is anticipated that in 2010, landfill income will fall substantially as major facilities are closed. However, this will be recovered by facility fees and profit shares negotiated with the successful tenderers in respect of the proposed waste disposal facilities in the Region that will be operated through PPPs. In order not to prejudice any future tendering process or negotiations, we have made no provision in respect of such income at this time.

We have not made any provision for an increase in household or commercial waste charges in our projections. The levels of these charges are at the discretion of the Managers of the four Local Authorities and form an element of the annual budgeting process. We do note however, that while the costs of services provided to the commercial sector have to date been recovered in full, there is a substantial deficit in respect of the funding of the household waste collection and disposal service.

We provide for a relatively substantial increase in income earned from recycling operations. These revenues are dependent on world market prices for recycling materials and the prices may fluctuate like other raw materials or commodities. In summary, our projections for income from the waste management programme for 2010 is as follows:

**Table 13.10 Waste Management Income, 2010**

Item	Activity	Income € Million	%
1	Landfill fees and other income	18.3	17
2	Domestic Refuse Collection	63.4	58
3	Street Cleaning	0.2	0
4	Commercial Refuse Service	17.1	16
5	Education, Promotion, Regulation	0.2	0
6	Recycling and Recovery,	9.2	9
	<b>Total</b>	<b>108.4</b>	<b>100.0</b>

## 13.5 CONCLUSION

At present, based on 2004 data, the gap between income and expenditure in the Region's waste operations is €58.7 million. We project that in 2010, the gap will be €102.5 million. In reaching this conclusion, it should be noted that:

- Full cost recovery is not currently being achieved for the household waste management service. We have allowed for increases due to changes in the number of households in the region and changes in the tonnage of waste disposed by households.
- Costs are sensitive to the achievement of the proposed infrastructure within the plan timescale. For example, if the Waste to Energy plant is not operational as planned and if the four Dublin authorities have to rely on third party landfill sites, it is estimated that the additional waste disposal costs will be of the order of €11.5 million to €15 million per annum, depending on whether space is available in public sector or private sector sites and on the scale of the additional transport costs.