2.0 PRESENT POSITION REGARDING WASTE MANAGEMENT

2.1 (a) Waste Arisings

Household Waste

The Waste Management Act 1996 defines household waste as waste produced within the curtilage of a building or self-contained part of a building used for the purposes of living accommodation. Household waste arising in Co. Kildare may be divided into three broad categories, namely:

1) Household waste collected by or on behalf of the local authority;
2) Household waste delivered to civic waste facilities and other bring facilities; and
3) Other household waste generated in the County that is not managed by Kildare County Council at present.

1) Household waste collected by or on behalf of the local authority and by private collectors.

The quantity of household waste collected in Co. Kildare, estimated from landfill weighbridge records, is 42,000 tonnes/annum (1998). This quantity consists of household waste collected by or on behalf of the local authority and by private waste collectors operating in the County.

2) Household waste delivered to civic waste facilities and other bring facilities.

Household waste delivered to civic waste facilities in 1998 amounted to approximately 4,000 tonnes. An additional 500 tonnes was collected at bring centres and by Kerbside Dublin in the county (Kerbside Dublin have since ceased operations).

3) Other household waste generated in the County that is not managed by Kildare County Council at present.

Household waste generation is a function of population. The average per capita rate of household waste generation in Co. Kildare in 1999 is taken as 330 kg per annum (Waste Management Strategy, 1999). In estimating the total quantity of waste arising in Kildare the population projections postulated in the Development Plan for the county were used (Projection B). A total quantity of household waste arising in the County of 46,730 tonnes was estimated for 1999 using a projected population of 141,600 persons.

Thus the estimated quantity arising compares favourably with the recorded totals, (42,000 + 4,000 + 500 =46,500 tonnes).

Litter and Street Sweepings

Kildare County Council, Athy U.D.C. and Naas U.D.C. provide a street cleaning service in the county. Street cleaning is operated by the Urban Councils or the Area Offices of the County Council. Approximately 1,000 tonnes of this material is collected and landfilled annually.

Commercial Waste

Commercial waste is defined as waste from premises used wholly or mainly for the purposes of a trade or for the purposes of sport, recreation, education or entertainment but does not include household, agricultural or industrial waste. Commercial waste in Kildare is collected by private waste collectors. Most, if not all of this waste category is disposed of to landfill.

The EPA Waste Licence Application (Table E.1.1) for the site stated that inputs of commercial waste to Silliot Hill in 1998 would total 11,387 tonnes. This total appears low with respect to the amounts of commercial waste generated in other Irish authorities where quantities are typically some 50% of the household waste total. Applying this ratio to Kildare provides an estimate of overall commercial waste production in the County for 1999 in the order of 23,365 tonnes.

Weighbridge records for 1998 suggested a total quantity of commercial waste of 20,200 tonnes. This figure compares favourably with the estimated quantity arising in the county.

Industrial Waste

Industrial waste may be defined as waste which is produced or which arises from manufacturing or industrial activities or processes.

IPC-licensed industries in Co. Kildare (see Appendix IV) generate 68,000 tonnes of waste per annum – according to returns made to the EPA. Some 20% of this total, or 14,000 tonnes, is indicated as being landfilled at local authority disposal site(s) – presumably Silliot Hill. Details of the various management methods used by IPC-licensed industries are given in Table 2.1.

The Council examined the level of industrial waste production in the County when preparing the Draft Waste Strategy of 1995. Records of inputs to Silliot Hill landfill were compared with the results of a questionnaire survey of industrial concerns. Both sources produced similar results, i.e. approximately 30,000 tonnes per annum. In the absence of alternative data this total is applied herein to represent arisings of industrial waste in the County requiring off-site

disposal. Weighbridge records for 1998 suggested that approximately 17,000 tonnes was disposed of at Silliot Hill. The balance was presumably managed privately within the County or at public landfill sites outside the County.

Table 2.1: Management Methods for Industrial Waste Arising from IPC licensed companies .

MANAGEMENT METHOD	QUANTITY (tonnes)	% DISPOSAL
Agriculture	29,680	43.6
Chemical/Biological Treatment	1,670	2.5
Incineration	1,390	2.0
Landfill (Local Authority Site)	14,100	20.7
Landfill on-site	1,240	1.8
Re-use	270	0.4
Recycled	7,100	10.4
Rendered/Felmongers & Tannery	11,900	17.5
Other	650	1.0
Total	68,000	100

Construction and Demolition Waste

The National Waste Database (EPA, 1998) estimated that 0.74 tonnes/capita of construction and demolition (C & D) waste was generated in 1998

If this figure is applied to County Kildare, , then total arisings of 99,894 tonnes of C & D waste are indicated.

Weighbridge records for 1998 show a total of 3,230 tonnes of C&D waste entering the landfill site. This material largely consisted of fines (2,640 tonnes) and clay (525 tonnes) the remaining quantity was made up of rubble, sawdust and gravel.

An additional quantity of 84,145 tonnes of construction type material was also recorded on the weighbridge records in 1998. This material consisted of 72,590 tonnes of soil and clay used for rehabilitation of the site, 609 tonnes of material used for access road construction within the site and finally 10,946 tonnes of material used for daily cover.

Contaminated Soils

There were no reported incidents of wastes arising from contaminated soils in Co. Kildare during 1998. Such incidents are rare and will be dealt with on an individual basis with regard to landfill disposal where they may not be treated on the site on which they arise. A single tonne of material described as contaminated soil was recorded at the Silliot Hill landfill site in 1998.

Recommendations have also been made with regards to hazardous waste disposal sites in the Proposed National Hazardous Waste Management Plan published by the EPA (September, 1999). The National Hazardous Waste Management Plan will be finalised and published once the outcome of the public consultation process has been considered. Kildare Co.Council at that time, will consider the adoption of the plan.

Ash and Other Incineration Residues

There are no records of ash and other incineration residues entering the County Council landfill apart from the ash found in household domestic waste (particularly during the winter months).

Mining and Quarry Waste

Quantities of waste arising from gravel extraction and quarrying in Kildare are currently unavailable. Waste arisings from these industrial activities are typically landfilled on-site or reused in land reclamation projects on other sites.

Healthcare Wastes (clinical, dental, veterinary)

Healthcare waste arising from these facilities consists of domestic hospital waste and healthcare risk waste. Domestic hospital waste consists mainly of kitchen and packaging waste and is normally disposed of to landfill. The healthcare risk waste consists of untreated waste in the following categories:

- Biological;
- Infectious;
- Chemical, toxic or pharmaceutical waste;
- Sharps (e.g. needles, scalpels, sharp broken materials); and
- Radioactive waste.

The Department of Health estimates that risk waste usually comprises approximately 20% of the total hospital waste produced. The total quantity of healthcare risk waste arising in County Kildare was approximately 39 tonnes, of which 31 tonnes was generated at Naas Hospital. The remaining 8 tonnes arising from health centres, clinics and long-stay hospitals

In September 1998 the Joint Waste Management Board, (JWMB) representing the Department of Health appointed Sterile Technologies (Ireland) Ltd (STI). to provide a national service for the transport, treatment and disposal of healthcare risk waste. Healthcare risk waste generated in the Kildare region will be collected and taken either directly to S.T.I's waste treatment centre or to one of the Board's four waste transfer stations. All healthcare risk waste transported from County Kildare will require a Consignment Form (C 1 Form) from the

Local Authority. The C 1 form will track healthcare risk waste movements and record waste data for Kildare County Council and the EPA. Refer to Appendix VI where the Eastern Health Boards Waste Management Policy Document is enclosed.

Wastewater and Water Treatment Sludges

There are a total of 34 municipal sewage treatment works (STWs) operating in Co. Kildare. All but two of these, i.e. Osberstown and Leixlip, are relatively small in scale. Sludge from many of the smaller sites is brought to one or other of these larger plants for dewatering.

At present some 9,000 tonnes (@ c. 20% dry solids content or DS) is landfilled in the County. This figure is expected to increase to 12,000 tonnes by 2000 due to the impending impact of the Urban Wastewater Directive (91/271/EC).

The principal source of sewage sludge in the County in future will be the Osberstown and Leixlip plants. It is intended that sludges generated at those sites will be treated using a mesophilic anaerobic digestion process. This process destroys pathogens in the sludge. The methane gas liberated in the digestion process may be used as a source of power.

The quantity of water treatment plant sludges landfilled in the county is currently 1860 t DS or 9,000 wet tonnes per annum. The principal source of this sludge is the Ballymore-Eustace water treatment plant (operated by Dublin Corporation). Quantities are not anticipated to increase significantly in the future.

Industrial Sludges

The quantity of industrial sludges generated in the county was estimated from the findings of the Inventory of Non-hazardous Sludges in Ireland (DoELG, 1997). This inventory presents the quantities in tonnes dry solids (tDS) as opposed to wet tonnes. The total quantity of industrial sludges produced in the county in 1998 was 8,685 tDS, comprising of 7,395 tDS of animal slaughtering sludges, 10 tDS from biological sources, 970 tDS from industrial chemical sources and 310 tDS from food industries.

Typically, the animal slaughtering sludges (which consist of blood, offal, paunch and lairage) are managed by a combination of methods, namely, rendering, and land-spreading. Industrial biological sludges are also disposed of by land-spreading. Industrial chemical sludges are managed by a combination of further treatment, landfilling and land-spreading (depending on analytical results).

Agricultural Sludges

General agricultural waste consists mainly of animal slurries, plastic wrap/bags for silage, fertiliser bags and mushroom compost.

Data on agricultural wastes was obtained from:-

- The Central Statistics Office (CSO);
- The Irish Farmers Association (IFA);
- Teagasc;
- The Department of Agriculture, Food and Forestry; and
- An Bord Glas.

Animal Slurries

The quantities of animal slurries produced in the county were estimated from data on livestock numbers and estimates of the type and quantity of slurries produced by different animal types.

Livestock numbers for County Kildare were taken from the Census of Agriculture of June 1991. The Department of Agriculture, Food and Forestry provided information regarding quantities of wastes produced by different farm animals. Table 2.3 summarises the livestock numbers and the quantity of neat slurry produced. Assumptions were made concerning the quantities of neat slurry produced by the different classes of livestock. These are given along with a detailed breakdown of the quantities of neat slurry in Appendix V.

At present all neat slurry from livestock produced in County Kildare is disposed of by landspreading.

Table 2.3: Livestock Numbers and Slurry Quantities for Co. Kildare

LIVESTOCK TYPE	NO. OF ANIMALS	SLURRY QUANTITY M^3/ANNUM
Cattle and Cows	140,021	741,860
Sheep	137,057*	23,056
Pigs	26,297	55,150
Horses and Ponies	5,904	20,207
Poultry	94,819	3,758**
Total		840,273

*Ewes (2 years and over) only, all other sheep kept outdoors all year round.
**Includes both poultry litter and poultry slurry.

Spent Mushroom Compost

There are approximately 27 mushroom growers in County Kildare according to the census of mushroom production carried out by Teagasc from 1st January 1997 to 31th December 1997. This survey also estimated the quantity of compost used in the County at 17,294 tonnes per annum (6,053 tonnes dry solids per annum).

It is important that SMC not be spread on land close to where it was produced as the material remains active and populated with spores and bacteria. Deposition close to the source could result in flies and birds returning contaminants to the source and infecting new compost.

Nearly all of the spent mushroom compost (SMC) is spread on land and ploughed in although a proportion in undoubtedly landfilled without licence due to the difficulty the grower may have in finding landspreading outlets.

Summary of Waste Generation

Table 2.4 Summary of Waste Arisings in County Kildare for 1998 (tonnes/annum)

WASTE TYPE	ESTIMATED QUANTITY ARISING	MANAGED BY THE COUNTY COUNCIL IN 1998
Household	46,730	46,500*
Commercial	25,649	20,200
Industrial	30,000	17,000
Litter & Street Sweepings	1,000	1,000
Construction & Demolition	99,894	3,230
Municipal Sludges[2]	18,045	18,045
Contaminated Soils	1	1
Ash & Other Incineration Residues	0	0
Mining & Quarry Waste	Unavailable	0
Healthcare Risk Waste	39	0
Industrial Sludge[1]	8,686	-
Agricultural Waste	90,660	-
Total	**324,495**	**109,767**

*This quantity includes household waste collected at civic amenity sites, bring centres and household waste collected by Kerbside Dublin.

[1] Quantity arisings obtained from 'Inventory of Non-hazardous Sludges in Ireland (DoELG)'

[2] This includes 1,931 tonnes of sewage sludge & 1,860 tonnes of water treatment sludge

Table 2.5 Summary of Agricultural Slurries and Sludges

SLUDGES & AGRICULTURAL WASTES	ESTIMATED QUANTITY ARISING (tonnes dry solid)
Cattle & Cow Slurry	74,186
Pig Slurry	3,309
Sheep Dung	5,756
Horse & Pony Manure	202
Poultry Litter & Slurry	1,154
Spent Mushroom Compost	6,053
Total	**90,660**

Hazardous Components of Wastes Generated in County Kildare.

Very little information is currently available on the hazardous components of all the waste categories described in Section 2.1(a) above. The movement of hazardous wastes within Ireland and outside of the State are regulated and controlled by C1 Notes and Transfrontier Shipment notes, respectively. As hazardous wastes moved under these controls tend to be from industrial sources primarily, the most information is available for this sector in Kildare.

C1 Notes were received for the movement of 270 tonnes approximately of hazardous waste in Kildare during 1998. In addition a total of 219 TFS notes was recorded for the movement of 2,840 tonnes of hazardous waste originating in Co. Kildare in 1998.

The composition and quantity of household hazardous waste in Kildare is estimated using EPA data. The EPA includes the following main category headings in its definition of household hazardous waste:

- household cleaning agents
- batteries and accumulators;
- paints, inks, adhesives and resins;
- pesticides and herbicides;
- Medicines; and
- Other (fluorescent tubes and other mercury containing waste like thermometers).

Using Agency sources it is estimated that a 0.475% by weight of household waste in the County may be classified as “hazardous”. Applying this factor to the quantity of household waste suggests a total quantity of 220 tonnes per annum.

Other hazardous wastes include the healthcare risk waste (39 tonnes) and contaminated soil (1 tonne) recorded in the county in 1998. Further recommendations are contained within the Proposed National Hazardous Waste Management Plan which Kildare Co. Council will consider in due course.

2.1 (b) Waste Movements into and out of the County

(i) Household waste

Material deposited at the Arthurstown landfill, Kill (operated by South Dublin County Council) constitutes one of the largest imports into County Kildare of non-hazardous waste generated outside the county. This facility commenced operation in October 1997 and currently accepts approximately 200,000 tonnes/annum of baled municipal waste collected by the Dublin authorities.

(ii) Commercial/Industrial/Construction and Demolition waste

Planning permission for a landfill site at Kerdiffstown Road, Johnstown (planning ref. 871/97) was granted on the 6th February 1998. The developers, Nephin Trading lodged an appeal with an Bord Pleanala on the 5th March 1998 against conditions 2, 4, 16 and 19. An Bord Pleanala granted the appeal on the 3rd June 1998, whereby conditions 4 and 16 were removed and conditions 2 and 19 were amended. An EPA Licence is currently being sought for this site which accepts 200,000 tonnes of commercial, industrial and construction and demolition waste per annum.

Messrs Michael and Padraig Munnelly, Bush Bury Ltd. operated a disposal site at Pollardstown, Co. Kildare. This site is closed, pending adjudication on the licence application by the EPA.

Messrs Thomas and Patrick Munnelly operated a disposal facility on lands in the vicinity of the Curragh.This site has been closed as of from 30/6/00 by court order, until a licence is issued by the EPA or a permit is issued by the Council.

(iii) Healthcare Waste

The healthcare risk waste from Eastern Health Board hospitals and community centres in County Kildare is currently sent to Blandchardstown Hospital in Dublin where it is shredded and sterilised by micro-waving prior to disposal to landfill. The quantity of healthcare risk waste arising in the County is approximately 39 tonnes per annum.

Healthcare risk wastes arising from general practitioners and dental surgeries are collected by a private waste collector specialising in clinical wastes for disposal in the U.K. Quantities of healthcare risk waste arising from these sources are not currently available.

(iv) Hazardous Wastes.

The movement of Hazardous wastes into and out of Kildare are controlled and regulated by Consignment Notes (C1 Forms) and Transfrontier Shipment Notes which may be described as follows:

- Consignment Notes:- The movement of hazardous wastes within the Republic of Ireland is controlled and regulated by the Waste Management (Movement of Hazardous Waste) Regulations 1998. Under these Regulations, consignment forms shall be issued by the local authority in whose functional area the consignment of hazardous waste originates.

- Transfrontier Shipment Notes:- The European Communities (Transfrontier Shipment of Waste) Regulations came into operation on 6th May 1994. These Regulations give effect to Council Regulation (EEC) No. 259/93 of 1st February 1993 on the supervision and control of shipments of waste within, into and out of the European Community. The Waste Management (Transfrontier Shipment of Waste) Regulations 1998 give effect to provisions of the afore mentioned Council Regulations.

  The transfrontier control system for wastes is based on the principle of "prior informed consent". Three competent authorities are involved; those of despatch, destination and transit. Movement of wastes is controlled by notification and tracking documents (the transfrontier shipment or TFS note).

  The relevant competent authority must consent to the movement and only then may the waste be shipped. Subsequently the consignee must inform the relevant competent authorities that the consignment of waste has been received and must specify the method of disposal or treatment used.

2.1 (c) Quantities of Component Wastes Arising

Household Waste

Household waste composition has been analysed in Kildare by the County Council on three occasions in the recent past. The first survey was carried out in February 1995 and was relatively small in scale. Waste collected from 30 houses was collected and separated into various categories and weighed. In November 1995 a more detailed survey was undertaken using procedures recommended by the EPA.

In the latter case waste from 336 houses – representing both urban and rural dwellers - was collected and analysed. The components were categorised in

accordance with the European Waste Catalogue. The third analysis was undertaken on 24/02/1999 using a sample of waste from the Newbridge area.

There are significant differences in the results of the three surveys as may be seen in Table 2.6 where these are compared with each other and with average national figures.

Table 2.6: Household Waste Composition in Co. Kildare (% by weight)

ITEM	FEBRUARY 1995	NOVEMBER 1995	FEBRUARY 1999	NATIONAL WASTE DATABASE (1998)
Glass packaging		7.59	1.63	
All glass	**4.20**	**7.59**	**1.72**	**5.5**
Aluminium packaging		0.73	0.95	
Ferrous packaging		6.84	1.53	
All metal	**2.90**	**7.57**	**3.31**	**3.5**
Newspaper		14.85	7.12	
Magazines		0.60	2.32	
Paper packaging		4.50	1.83	
Cardboard packaging		8.92	1.81	
Paper composite packaging		2.28	1.46	
All paper	**16.60**	**35.68**	**16.55**	**19.5**
Plastic bottles		3.16	1.04	
Other plastic packaging		8.23	7.83	
All plastic	**11.40**	**18.47**	**9.07**	**11.9**
Textiles	**2.20**	**6.74**	**4.14**	**2.9**
Organic waste	**39.80**	**13.36**	**23.95**	**32.9**
Miscellaneous combustible	0	0	1.51	0
Other materials	22.90	10.59	39.75	23.8
Total	**100.00**	**100.00**	**100.00**	**100.00**

Sources: Kildare County Council, 1995 and 1999; National Waste Database, (EPA, 1998).

It is proposed to employ an average of the results of the three surveys in this Plan as indicated in Table 2.7.

Table 2.7: Average Composition of Household Waste in Co. Kildare

ITEM	% BY WEIGHT
Glass	**4.50**
Metal	**4.60**
Newspaper	10.99
Magazines	1.46
Paper packaging	3.17
Cardboard packaging	5.37
Composite packaging	1.87
All Paper	**22.94**
Plastic bottles	2.10
Other plastic packaging	8.03
All Plastic	**12.98**
Textiles	**4.36**
Organic waste	**25.70**
Miscellaneous combustible	1.51
Other miscellaneous	23.41
Total	100.00

These data indicate that potentially recyclable material (glass, metals, etc.) constitutes over 40% of household waste. Both practical difficulties and economic circumstances may dictate that only a proportion of this total can be recovered. The composition data in Table 2.5 are applied in Table 2.6 to the total quantity of household waste estimated to arise annually, at present in Co. Kildare (46,730 t).

Table 2.8 Results of Waste Characterisation Data as Applied to the Total Quantity of Household Waste Landfilled in Kildare.

WASTE FRACTION	AVERAGE % BY WEIGHT	QUANTITY (TONNES)	% PACKAGING	QUANTITY (TONNES)
Glass	4.5	2,103	4.5	2,103
Paper/Cardboard	22.94	10,720	8.54	3,991
Plastic	12.98	6,066	12.98	6,066
Metal	4.6	2,150	4.3	2,009
Textile	4.36	2,037	0	0
Organic	25.7	12,010	0	0
Other	24.92	11,645	0	0
	100	46,730	30.32	14,169

The total quantity of packaging waste arising from household waste is estimated in Table 2.8 to be 14,169 tonnes per annum.

Commercial Waste Composition

The composition of commercial waste in Co. Kildare was estimated using data presented in the National Waste Database. Table 2.9 shows the compositional analysis together with the percentage of packaging waste in commercial waste. The quantity of packaging waste arising from commercial waste in Kildare is thus estimated as 7,907 tonnes.

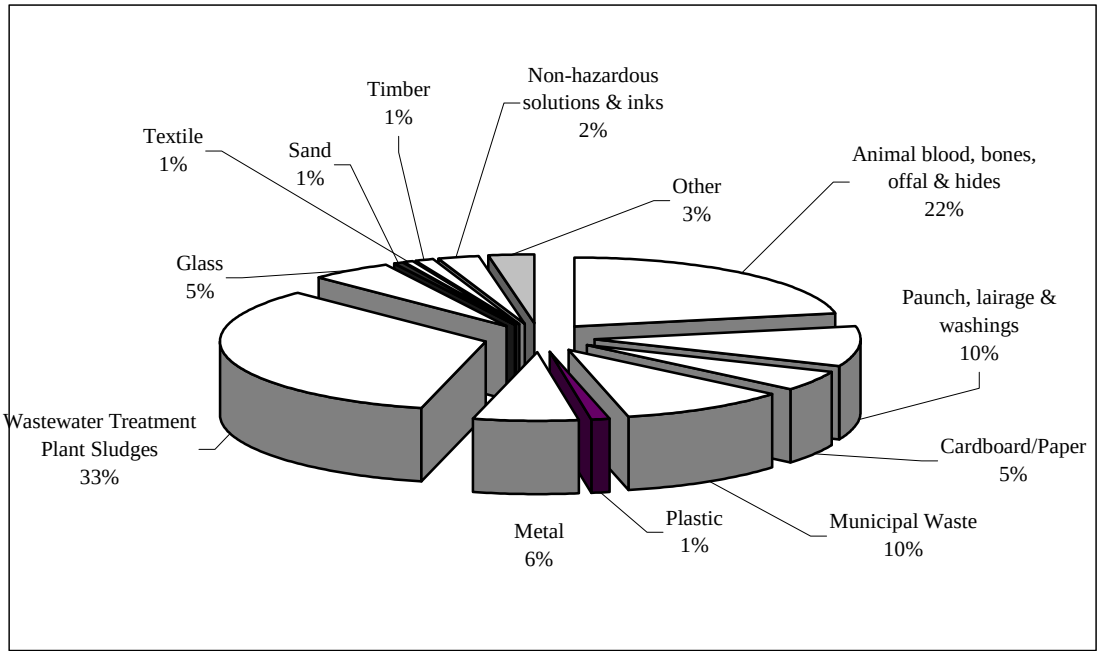
Table 2.9: Compositional Analysis Including Packaging Waste of Commercial Waste in Co. Kildare

WASTE TYPE	% OF TOTAL	QUANTITY (TONNES)	% PACKAGING	QUANTITY (TONNES)
Glass	6	1,539	5	1,285
Paper/Cardboard	60	15,389	34	8,720
Plastic	10	2,565	7	1,795
Metal	2	513	1	256
Organic	12	3,078	0	-
Other	10	2,565	4	1,026
Total	100	25,649	51	13,222

Industrial Waste Composition

IPC Licence holding industries must provide data on the composition of the wastes they generate. These data have been assessed for Kildare and allow an overview of the (IPC) industrial waste stream to be developed (Fig. 2.1).

Figure 2.1: Composition of Industrial Waste in County Kildare (IPC Licence Holders)



Summary of Quantities of Classified Wastes

Table 2.10 provides a summary of waste arising within the county, classified under the following headings: paper; glass; plastic; metals; textiles and putrescible waste.

Table 2.10: Quantities of Waste Arising Classified Under Various Waste Fractions, i.e. paper, glass, etc.

WASTE TYPE	HOUSEHOLD	COMMERCIAL	TOTAL
Glass	2,103	1,539	3,642
Paper/Cardboard	10,720	15,389	26,109
Plastic	6,066	2,565	8,631
Metal	2,150	513	2,663
Textile	2,037	-	2,037
Organic	12,010	3,078	15,088
Other	11,645	2,565	14,210
Total	46,730	25,649	72,379

2.1 (d) Other Priority Wastes Arising

Electrical and electronic goods

Electrical and electronic equipment is defined as equipment using electricity or through which electricity flows and/or which contain an electronic circuit. The list of such equipment is very broad and includes the following items:

- data processing equipment;
- office and service equipment;
- telecommunications equipment;
- video and sound equipment;
- household appliances;
- light sources;
- toys.

The EU has estimated the total quantity of waste electrical and electronic equipment (WEEE) arising in Ireland at 49,000 tonnes annually. Of this total an estimated 2,000 tonnes may be generated in Co. Kildare (on a per capita basis).

Facilities are provided by the County Council at Silliot Hill landfill site for the reception of redundant domestic appliances, such as old fridges, freezers, cookers and washing machines. The coolant gases (CFCs) in the old fridges are removed by a specialist company and the carcases are collected by the Hammond Lane Metal Co. for processing and the recycling of metal components.

A draft EU Directive is in preparation relating to the management of WEEE. It is anticipated that manufacturers will be required in future to accept back old products from consumers and to ensure that these are recycled.

Batteries and accumulators

The Returnbatt company currently holds a valid waste permit to collect waste batteries in County Kildare. Returnbatt have applied to the EPA for a licence. The exact number collected is currently unavailable. Using statistics presented in the National Waste Database the quantity of waste batteries arising can be estimated at approximately 270 tonnes/annum. There is a collection point for used batteries at the Silliot Hill. These batteries are collected periodically and the Hammond Lane Metal Co recovers their lead content.

The Council has also recently installed small battery collection boxes at schools and libraries and a single unit in the County Council Office at Naas. Further units will be installed depending on the success of the initial pilot programme.

Oils

Atlas Waste Oil Ltd. has been involved in the collection and recycling of waste oil, oil filters, general oil tank cleaning and interceptor clean up in Kildare for a number of years. The Laois based company is fully licensed and has over one hundred depots set up at various locations throughout the County. Approximately 246,475 litres (211 tonnes) of waste oil was collected by Atlas Oil for reprocessing in Co. Kildare during the period April-December 1998. The total quantity collected for the same period in 1997 was very similar, i.e. 247,388 litres (212 tonnes).

Polychlorinated biphenyls (PCBs)

There are no known sources of PCB waste in County Kildare. PCBs were previously used in electrical transformers throughout the country but have been eradicated following an intensive programme by the ESB.

Tyres

In estimating the number of used tyres arising in County Kildare it is assumed that each car in the County will change two tyres per annum on average. This assumption is based on the experience of a number of tyre fitting companies operating in the County. The numbers of vehicles in the county were sourced from the Irish Bulletin of Vehicle and Driver Statistics (DoELG, 1992-1997). Table 2.11 shows the number of used tyres arising in the County from 1992 to 1997.

Table 2.11: Numbers of Used Tyres Generated in Co. Kildare 1992-1997

YEAR	1992	1993	1994	1995	1996	1997
Tyres	59,936	63,650	69,802	75,044	81,848	88,286

The average weight of a car tyre is 7.5 kg, applying this figure to the number of scrap tyres generated in County Kildare yields a quantity of 662 tonnes/annum (1997).

It is clear from these data that the numbers of scrap tyres generated in the County is increasing rapidly – up over 40% in 5 years.

In the past scrap tyres have been used for a variety of functions including ballast on silage pits and as collision buffers on jetties and boats. It is unclear whether such outlets will be capable of absorbing the increasing numbers of scrap tyres entering the marketplace as both the population and the number of vehicles in the County continue to grow. Other potential outlets include re-treading and conversion to crumb for use as paving material.

End-of-life Vehicles

The number of end of life vehicles arising in County Kildare was calculated from Department of the Environment and Local Government figures published in the Irish Bulletin of Vehicle and Driver Statistics 1991-1996 (for private cars only). The number of vehicles shown in Table 2.12 represents the deficit between increases in vehicle numbers from year to year and the number of new vehicles licensed. This deficit includes vehicles that may have been removed from the county, taken off the road and/or scrapped vehicles.

Table 2.12: End of Life Vehicles

YEAR	1991	1992	1993	1994	1995	1996
Kildare	-1785*	1022	123	-326*	287	492

** Negative deficit - The number of new cars was less than the overall increase in car numbers for that year.*

Taking the average weight of an end-of-life vehicle to be 0.6 tonnes the quantity arising in the county is estimated to be approximately 300 tonnes per annum.

Packaging waste

Packaging is described by the National Waste Database (NWD) as “any material, container or wrapping used for or in connection with the containment transport, handling, protection, marketing or sale of any product or substance”.

The most common materials used in packaging are paper, glass, plastic, metals, ferrous metal and aluminium.

The estimated total packaging waste arisings in Ireland is approximately 0.68 million tonnes per annum (NWD, 1998), this equates to 0.182 tonnes per capita per annum. The theoretical quantity of packaging waste arising in Kildare is therefore estimated to be in the region of 24,500 tonnes per annum, based on the National Waste Database

The total quantity of packaging waste estimated from household and commercial sources is 27,391 tonnes.

The total quantity of industrial packaging waste arising from IPC industries only is approximately 8,520 tonnes/annum. Of this total approximately 4,030 tonnes is disposed of to landfill. The remaining quantity is either reused (300 tonnes) or recycled (4,190 tonnes).

The estimated total quantity of packaging waste arising in County Kildare from all sources is 35,911 tonnes per annum.

Summary of Priority Waste Quantities

A summary of quantities of priority wastes arising in County Kildare as described above is provided in Table 2.13.

Table 2.13 Summary of Priority Waste Quantities

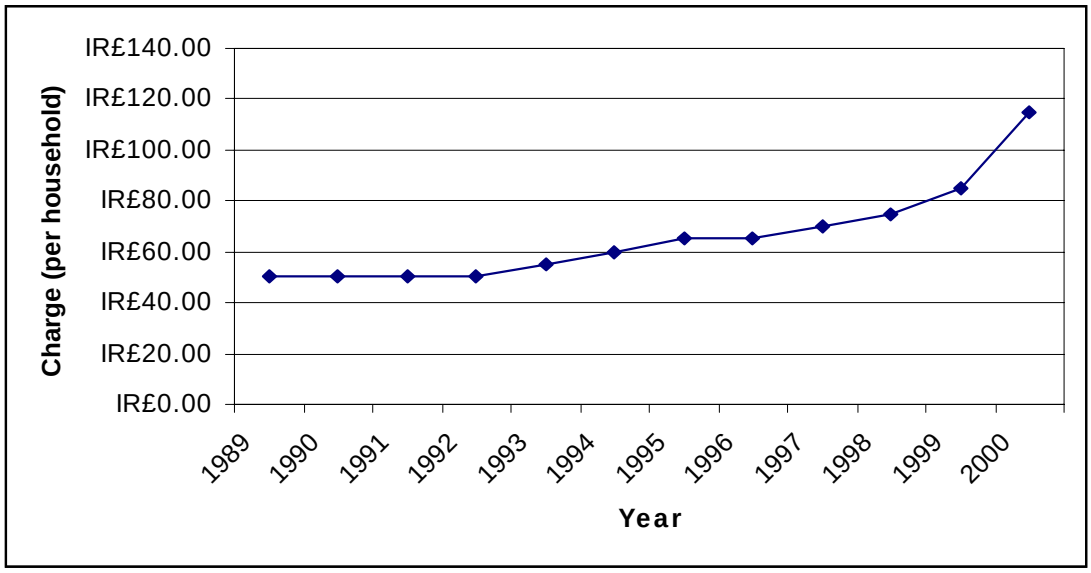
PRIORITY WASTE	ESTIMATED QUANTITY ARISING (tonnes)
Electrical & Electronic Goods	2,000
Batteries & Accumulators	270
Oils	211
Polychlorinated Biphenyls (PCB's)	0
Tyres	662
End-of-Life Vehicles	300
Packaging Waste	35,911
Total	**39,534**

2.2 Waste Collection

Kildare County Council and Athy U.D.C. provide a refuse collection service to householders, as well as commercial and industrial premises. The refuse collection service provided is contracted out to refuse collectors by means of a competitive tender procedure administered by the respective councils.

Approximately 18,500 households are serviced on behalf of the County Council, with the remaining households being serviced by private independent operators. The collection service operated on behalf of the Council also collects refuse from approximately 120 commercial premises at a higher charge rate. The method of collection used for these services is based on wheeled bins. Charges levied by the County Council for the collection of waste from households for the past ten years are shown in Figure 2.2.

Figure 2.2: Kildare County Council Household Waste Collection Charges 1989-2000.



Athy U.D.C. employs a single refuse collection contractor to service its area. Waste is collected in wheeled bins from approximately 1,600 households and over 150 commercial premises in black bags. The collection charge imposed is the same for both commercial premises and households.

Waste collection services in Naas UDC are provided by the private sector. Refuse is collected from over 2,000 households and a number of commercial premises.

A number of private operators also provide waste collection services in addition to those provided by the local authorities. There are currently thirteen operators with a

valid permit to collect, transport and dispose of household, commercial and industrial waste in County Kildare. The operators are the primary collectors of industrial waste within the County. Household and commercial waste collected by these operators are collected in wheeled bins, while the industrial waste is generally collected in skips of various sizes.

List of Waste Contractors who collect waste within County Kildare

- A1 Waste, Walkinstown, Dublin 6
- Advanced Recycling, Maynooth, Co. Kildare
- Dublin Corporation, Ballymore Eustace, Co. Kildare
- O'Hagans Waste, Straffan, (Kildare Co. Council Contractor)
- Thorntons Recycling, Ballyfermot, Dublin 1
- Wheelbins Services, Dundalk, Co. Louth
- Erwin Cobbe, Portarlington, Co. Laois
- Yellow Bins, Naas, Co. Kildare
- Burns Waste Recycling, Saagart, Co. Dublin
- Pat Doran (Haulier for Ashbourne Meats), Naas Industrial Estate, Co. Kildare
- South Western Healthboard, Naas, Co. Kildare
- A. Phibbs, Blessington, Co. Wicklow
- Ray Whelan, Ballyharmon, Carlow
- Greenstar Recycling Ltd. Leixlip, Co. Kildare
- Westside Waste, Maynooth, Co. Kildare
- Midland Waste, Kells, Co. Meath
- Allied Waste, Oldcastle, Co. Meath
- Rentabin Ltd., Tullamore, Co. Offaly
- Eurowaste, Naas, Co. Kildare
- Blue Bins, Blessington, Co. Wicklow
- Peter Keatley, Suncroft, Co. Kildare

2.3 Waste Prevention and Minimisation

A Cleaner Production Demonstration Programme aimed at industry all over the country was run over the years 1997 and 1998. It was supported by the EPA and IBEC and has a budget of about IR£1.9 million. The pilot programme aimed to encourage more environmentally-friendly production in Irish industry.

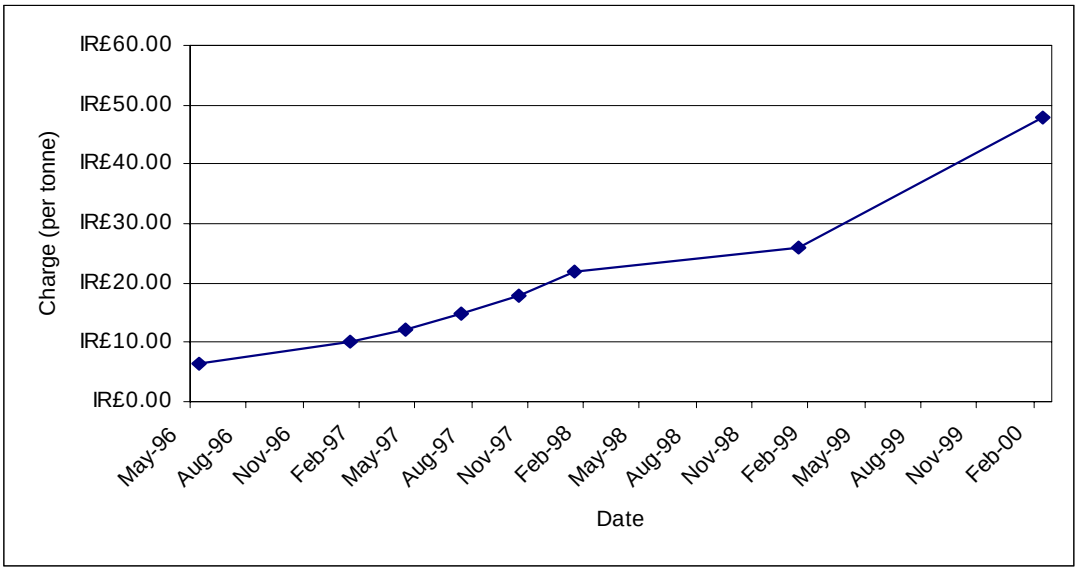
The Cleaner Production Demonstration Programme is also designed to encourage small and medium size enterprises (SMEs) and those not subject to IPC licensing to take a greater interest in clean production technology and to demonstrate the benefits of this approach and that of environmental management systems. IBEC recognises SMEs as "an important driver of economic growth" (IBEC, 1997). While the environmental impact of individual manufacturing SMEs is small compared to the larger companies it is also recognised that combined they may be significant due to their large numbers. According to IBEC SMEs represent more than 97% of all enterprises in Ireland (IBEC, 1997).

Some of the larger Irish or Irish-based companies have already undertaken significant activity in the area of waste minimisation, including some of the larger companies operating in Co. Kildare. The success of these companies provides a useful and instructive template for others. Industry is encouraged in this work by the Forbairt-sponsored *Better Environment Awards for Industry*.

It is anticipated that the achievements of industry and commerce in the field of waste minimisation will gather pace in the short to medium term as the combined influence of all of the above measures gains momentum. Future success in this field will tend to moderate the rate of growth of waste generated from these sectors.

The waste collection charges (see Fig. 2.2) and landfill disposal charges (see Fig. 2.3) are periodically reviewed by the Council to ensure that the real cost of waste disposal is met. Increased charges are also intended as an economic incentive for the reduction of waste.

Figure 2.3 Landfill Charges at Silliot Hill (per tonne) 1996-2000.



The Council also provides home composting units at a reduced rate to the general public. This scheme is intended to encourage and support the composting of the organic fraction of household waste by householders and in so doing reduce the quantity of waste left out for collection.

2.4 Waste Recovery

There are 23 bring centres located throughout the County for the collection of glass, cans and textiles. Only four of these are located on County Council/Urban Council car parks while the remainder are sited in supermarket car parks in the various towns.

The collection centres are provided and operated by private concerns assisted by Kildare County Council. Table 2.14 shows the location of bring centres in County Kildare. The current density of bring centres is one per 5,870 persons (1996 Population).

Table 2.14 Locations of Bring Centres and Materials Collected at Each Centre.

LOCATION	SITE	MATERIALS COLLECTED
Allenwood	Kilmeague Road	Glass Textiles
Athy	Duke Street Carpark	Textiles
	Pettits Carpark	Glass, Cans, Textiles
Ballymore Eustace	Handball Alley	Glass, cans
Brownstown	Brownstown Inn	Glass, cans
Castledermot	Copes supermarket carpark	Glass, cans, textiles
Celbridge	Tesco carpark	Glass Textiles
Coil Dubh	Dag Welds Carpark	Glass, cans
Kilcock	Library	Glass, cans
Kilcullen	Church	Glass, textiles
Kildare	Beside CYMS Hall	Textiles, glass, cans
Leixlip	River Forest Carpark	Glass, cans
	Carpark, Main Street	Textiles
Maynooth	Tesco Carpark	Glass, cans, textiles
	Glenroyal carpark	Glass, cans
	Maynooth College, Noth Campus	Glass, cans
	Maynooth College, South Campus	Glass, cans
Monasterevan	St. Paul's Secondary School	Textiles
Naas	Public Carpark, Sallins Rd.	Textiles
	Tesco Carpark	Glass, cans, textiles
	K.C.C. Carpark	Glass, cans
Newbridge	Dunnes Stores Carpark	Glass, cans, textiles
	Tesco Carpark	Glass, cans, textiles
Rathangan	New Street – beside school	Glass, cans
Silliot Hill Landfill	Naas Road, Kilcullen	Glass, cans, textiles, white goods, flourescent tubes, brown cardboard, newsprint, oils, batteries, metals
The Curragh	Brownstown	Glass, cans

The quantity of material recovered from bring banks by the main operator of these sites, Rehab Recycling is shown in Table 2.15.

Table 2.15 Quantity of Material Recovered by Rehab Recycling in County Kildare (1998).

MATERIALS	QUANTITY (tonnes)
Glass	422
Cans	4
Textiles	1
Total	427

Table 2.16 details the materials recovered by Kerbside Dublin in County Kildare in 1998, (72 tonnes).Kerbside Dublin has, however, ceased operations.

Table 2.16 Composition of Materials Recovered by Kerbside Dublin in County Kildare (1998).

LOCATION	PAPER PACKAGING	GLASS	PLASTIC	STEEL CANS	ALU. CANS	TOTAL
Newbridge, Quinnsworth Car-Park (1st Saturday of the month)	4.14	4.36	1.68	0.78	0.22	11.18
Leixlip, Super Valu Car-Park (last Saturday of the month)	4.63	4.88	1.88	0.88	0.25	12.52
Naas, St. Mary's Car-Park (2nd Saturday of the month)	6.34	6.68	2.57	1.2	0.34	17.13
Naas, Sallins Road Car-Park (Last Saturday of the month)	11.66	12.29	4.73	2.21	0.63	31.52
TOTAL	26.77	28.21	10.86	5.07	1.44	72.35

The market for recyclables is in a constant state of fluctuation and change. At present the aluminium cans collected from the bring centres are passed onto a third party. Recoverable Resources in Dublin, for example, is one such company in Ireland that will receive and process aluminium cans. Depending on the quality, they will pay circa £400/tonne for the cans. If these cans are exported to Britain as much as £700/tonne can be demanded. Regardless of which route is taken, the aluminium cans will be melted down, primarily in Britain but also in Europe, and reused. Bottles collected from the bring centres are delivered to Irish Glass in Dublin for £44.50 per tonne. The glass is then processed and recycled.

With regards to textiles, Rehab pass such items on to African Textiles who are situated in Ballymena. There are other avenues however. Textile Recycling Ltd. bring the textiles to their premises where the clothes are sorted into wearable goods, goods that may be processed or those deemed unsuitable for recycling. Those that are suitable for re-wear are cleaned intensively and exported to Britain, Africa and

Pakistan. Those that are unsuitable for re-wear i.e. 'rags' are processed by G & M Industrial Cleaning into cloths, tea towels etc. The world market for textiles has, however, collapsed in recent months with a drop in prices of higher than 50%. This continuing trend may have adverse effects on the recycling of textiles for Kildare and Ireland as a whole.

At present paper/cardboard is being collected for recycling purposes by the Co. Council at Silliot Hill civic amenity centre. Approximately 5 tonnes of newsprint per month and 15 tonnes of cardboard per month are delivered to Smurfit Recycling. Smurfit Recycling at present, pays c.£24 per tonne for 'clean' paper. Smurfit Recycling will, however, actually charge for receiving 'mixed' paper (c.£20/tonne). This is a major hurdle with regards to the recycling of paper. There is, therefore, a negative value presently in place for the recycling of paper/cardboard.
The Council will continue to look at trends in the markets outlined above and will endeavour to optimise returns from recyclable materials,

2.5 Waste Management Facilities

Silliot Hill Landfill Site

Silliot Hill is the only site operated by Kildare County Council. The site is located approximately 2.5 km north of Kilcullen adjoining the N9 in a former sand and gravel quarry. The site was opened in 1984 and is now nearing closure. The landfill is centrally located to serve the county and accepted approximately 188,600 tonnes of waste in 1998. A breakdown of this waste is provided in Table 2.17.

Table 2.17: Material Recorded at Silliot Hill Landfill in 1998.

WASTE TYPE	QUANTITY
Household	42,000
Silliot Hill Civic Amenity Waste	4,000
Commercial	20,200
Industrial	17,000
Construction and Demolition	3,230
Material for Site Works*	84,145
Sludge	18,045
Total	188,620

*This included material for daily cover, road works and rehabilitation.

The older part of the site is not artificially lined, however the floor of the quarry is covered with a layer of silt/sand and clayey materials allowing attenuation of the leachate as it travels slowly through this layer. The recently developed sections have been provided with a fully engineered lining system. The site has

been provided with both passive and active gas management systems. Groundwater is monitored frequently.

The waste is covered daily to minimise wind blown litter, reduce odour and discourage vermin. The site is manned by a full time caretaker. A weighbridge was installed on the site in 1996. Charges at the site are reviewed periodically so as to meet the realistic cost of disposal and to discourage waste tourism. Charges at the site are currently levied at IR£48 per tonne.

Can, bottle and textile banks are located on site as well as facilities for the reception of waste oil, scrap cars, used car batteries and white goods before their collection by scrap merchants. There is also a receptacle for the collection of fluorescent lamps from domestic premises which are later collected by a licensed contractor for mercury removal.

An EPA Waste Licence has been sought for the site. As and from 1st September 1999, Kildare Co. Council are not accepting non-hazardous industrial waste to the landfill site. Commercial and industrial waste is now being disposed of to the KTK landfill at Kilcullen.The estimated remaining lifespan of the site is until late 2001 at the reduced inputs.

Other Landfill Sites and/or Waste Facilities

The current status of proposals for landfill sites and other waste facilities in the County as of 31st March 1999 is as follows:

(i.) *Nephin Trading, Kerdiffstown Road, Johnstown*:- Planning permission for this site (planning ref. 871/97) was granted on the 6th February 1998. Nephin Trading lodged an appeal with an Bord Pleanala on the 5th March 1998 against conditions 2, 4, 16 and 19. An Bord Pleanala granted the appeal on the 3rd June 1998, whereby conditions 4 and 16 were removed and conditions 2 and 19 were amended. An EPA Licence is currently being sought for this site.

(ii.) *KTK Sand and Gravel Ltd., Brownstown, Kilcullen*:- Planning permission granted by Kildare County Council (planning ref. 608/98) on 21 August 1998 subject to 28 conditions. The site is permitted to accept "imported dry waste materials arising from construction and demolition sites, road and pipeline projects, and commercial/industrial premises". The site operator must apply for and receive a Licence from the EPA for the proposed development. A full Licence was issued in April 1999.

(iii.) *Arthurstown Landfill, Arthurstown, Kill*:- Planning permission (planning ref. 942/92) was granted for this site under appeal by An Bord Pleanala. The site has been in operation since October 1997 for the disposal of baled municipal waste collected by the Dublin authorities. The site

acquired an EPA Licence early in 1999. Planning permission has been granted by Kildare County Council. This is currently under appeal to An Bord Pleanala.

(iv.) *Composting Facility*:- A planning application was submitted for a composting facility by Yellow Bins in January 1998. The applicant was advised that an Environmental Impact Statement would be required to validate the application. An EIS is currently in preparation for this proposed development. Kildare County Council have since granted planning permission. This is currently under appeal to An Bord Pleanala.

Historical Disposal Sites

The main historical disposal sites are located at:

- Digby Bridge
- Waterstown, Sallins
- Donore
- Moone
- Roberstown
- Yellow Bog, Kilcullen
- Rahandoon, Sallins
- Knocknagarrum
- Carrigeen, Clane
- Oghill, Monasterevan
- Mountrice, Monasterevan
- Athy Urban

The EPA has stated in the Proposed National Hazardous Waste Management Plan that sites, such as those listed above, as well as other sites which may have been used in the past for the disposal of hazardous waste, be incorporated into a register to be maintained by each local authority. The EPA recommends that the register be referred to as a 'Section 26 Register'. The 'precautionary Principle' is the underlying theory behind the compilation of such a register. The Precautionary Principle states that where 'significant evidence of environmental risk exists, appropriate precautionary action should be taken even in the absence of scientific proof of causes'. Thus it is important to stress that the inclusion of a site in a Section 26 Register does not necessarily imply that the land was contaminated, polluted or ortherwise dangerous, (EPA, 1999).

Table 2.18 Status of unauthorised sites within the County

Site	Status
Curryhills, Prosperous	Closed
Farrells Pit, Ballymore Eustace	Under investigation by Kildare Co. Council. Possible permit application pending
Millicent Cross, Clane	Under investigation by Kildare Co. Council. Section 55 notice served
Newtown, Kilcock	Closed
The Range, Donodea	Closed
Toughers, Athgarven	Under investigation by Kildare Co. Council
Bushbury, Pollardstown	Closed pending licence adjudication by the EPA
Tom and Pat Munelly	Closed until a licence is issued by the EPA or a permit is issued by the Council

Table 2.19 Summary of licensable and permittable facilities in Co. Kildare

Applicant	Facility Location	Activity Type
Kildare Co. Council	Silliot Hill Landfill, Co. Kildare	Landfill
South Dublin Co. Council	Arthurstown, Kill, Co. Kildare	Landfill
KTK Sand and Gravel Ltd.	KTK Pit, Kilcullen, Co. Kildare	Landfill
Bushbury Ltd.	The Lands, The Curragh, Co. Kildare	Landfill
Neiphin Trading Ltd	Kerdiffstown, Co. Kildare	Landfill
Returnbatt Ltd.	Kildare Enterprise Centre, Melitta Rd, Co. Kildare	Transfer Station
Yellow Bins (Waste Disposal) Ltd.	Donore, Caragh, Co. Kildare	Transfer Station
Carbury Mushrooms Ltd.	Carbury, Co. Kildare	Mushroom Composting Facility
Irish Lamps Recycling Company	Athy, Co. Kildare	Recovery Facility
Joe Delaney	Carbury, Co. Kildare	Recovery Facility

2.6 Other Relevant Matters

2.6 (a) Cost of Waste Management Activities

The following tables provide data on the level of expenditure and income relating to waste management in Co. Kildare for the years 1998 and 1999.

Table 2.20 Estimate of Expenses for the year ended 31st December 1999

Programme and Sub-programme	Code	Actual 1998		Estimate 1999		
		Adopted	**Revised**	**Total**	**Contribute**	**Exempt**
Waste Disposal	**5.1**					
Landfill Site	5.1.1	1,048,500	1,048,500	1,144,900		1,144,900
Domestic Refuse	5.1.3	470,000	470,000	550,000		550,000
Cost of Coll. Charges	5.1.3	148,000	148,000	192,000		192,000
Civic Amenity Centre	5.1.3	160,000	40,000	160,000		160,000
Cost of Waivers	5.1.3	332,000	332,000	376,000		376,000
Street Cleaning	5.1.4	337,000	337,000	358,000	295,350	62,650
Litter Warden/Mgt. Plan	5.1.5	20,000	15,100	21,500		21,500
Loan Charges/Capital	5.1.7	532,000	532,000	636,000		636,000
Loan Charges/Street Sweeper Machine	5.1.7	0	0	40,000		40,000
Salaries	5.1.8	65,000	65,000	121,000		121,000
Env. Special Projects	5.1.8	31,000	31,000	39,000		39,000
Recycling Initiatives	5.1.8	10,000	10,000	10,000		10,000
Agenda 21 Initiatives	5.1.8	10,000	10,000	10,000		10,000
Travelling Expenses	5.1.8	5,000	5,000	10,000		10,000
Total Sub-Programme		**3,168,500**	**3,043,600**	**3,668,400**	**295,350**	**3,373,050**

Table 2.21 Estimate of Income for the year ended 31st December 1999

Programme and Sub-programme	Code	Actual 1998		Estimate 1999		
		Adopted	**Revised**	**Total**	**Contribute**	**Exempt**
Waste Disposal	5.1					
Government Grants						
Goods and Services						
Commercial Refuse		1,360,000	1,360,000	1,160,000		1,160,000
Domestic Refuse		800,000	800,000	930,000		930,000
Cost of Waiver Scheme		332,000	332,000	376,000		376,000
Contrib. Other L.A.s		16,000	16,000	17,500		17,500
Litter Fines		0	0	5,000		5,000
Civic Amenity Site		120,000	0	120,000		120,000
Total Sub-Programme		**2,628,000**	**2,528,000**	**2,608,500**	**0**	**2,608,500**

2.6 (b) Deficiencies in Waste Management Infrastructure

- Severely limited remaining waste disposal capacity at existing Council landfill.
- Lack of any immediately available replacement facility in the control of the Council.
- Relatively poorly developed waste recovery infrastructure at present.
- Lack of historical statistical information regarding waste flows.