

KILDARE COUNTY COUNCIL

WASTE MANAGEMENT PLAN

Prepared For:
Kildare County Council,
St. Mary's,
Naas,
Co. Kildare

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REVISION CONTROL TABLE

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PREAMBLE

Kildare County Council is required under Section 23 (1) of the Waste Management Act, 1996 to prepare a Waste Management Plan, having due regard to the Waste Management (Planning) Regulations, 1997. Kildare County Council have prepared a Waste Management Strategy Study and now compliments that study with the preparation of a Waste Management Plan.

The main objectives in developing a waste management plan for Kildare are to:

- comply with the principles of sustainable development;
- offer the best available environmental option not involving excessive cost;
- apportion costs in an equitable fashion;
- promote participation in waste management by the public at large and private/commercial organisations; and
- comply with current and impending national and EU policy and legislation concerning waste management.

The Plan is required to address the management of all non-hazardous waste to which the Waste Management Act 1996 refers, i.e. waste (including sludges) arising from household, commercial, industrial and agricultural sources other than sewage effluent or radioactive substances.

Kildare County Council invited interested parties to make submissions or representations in writing in relation to the proposed Plan by way of public advertisement. The Draft Waste Management Plan was put on public display and copies forwarded to the Prescribed Persons for the purpose of section 23(1) of the Act. As a result of the above, submissions were received on behalf of the following:

- Mr. L.C. Kelly BE
- Tir Na Mona
- The Eastern Health Board
- Thermal Waste Management
- Mr. J. Kavanagh
- Mr. E. Goodwin
- The North Kildare and South Meath Alliance against Incineration Ltd.
- Kilcock and Community Districts Council
- The Environmental Protection Agency
- Cllr. John McGinley
- Voice of Irish Concern for the Environment.

Where relevant, revisions have now been made to the Plan, to incorporate the views of the respondents.

1.0 PREFACE TO THE WASTE MANAGEMENT PLAN

1. (a) Description of the County

Location and Principal Towns

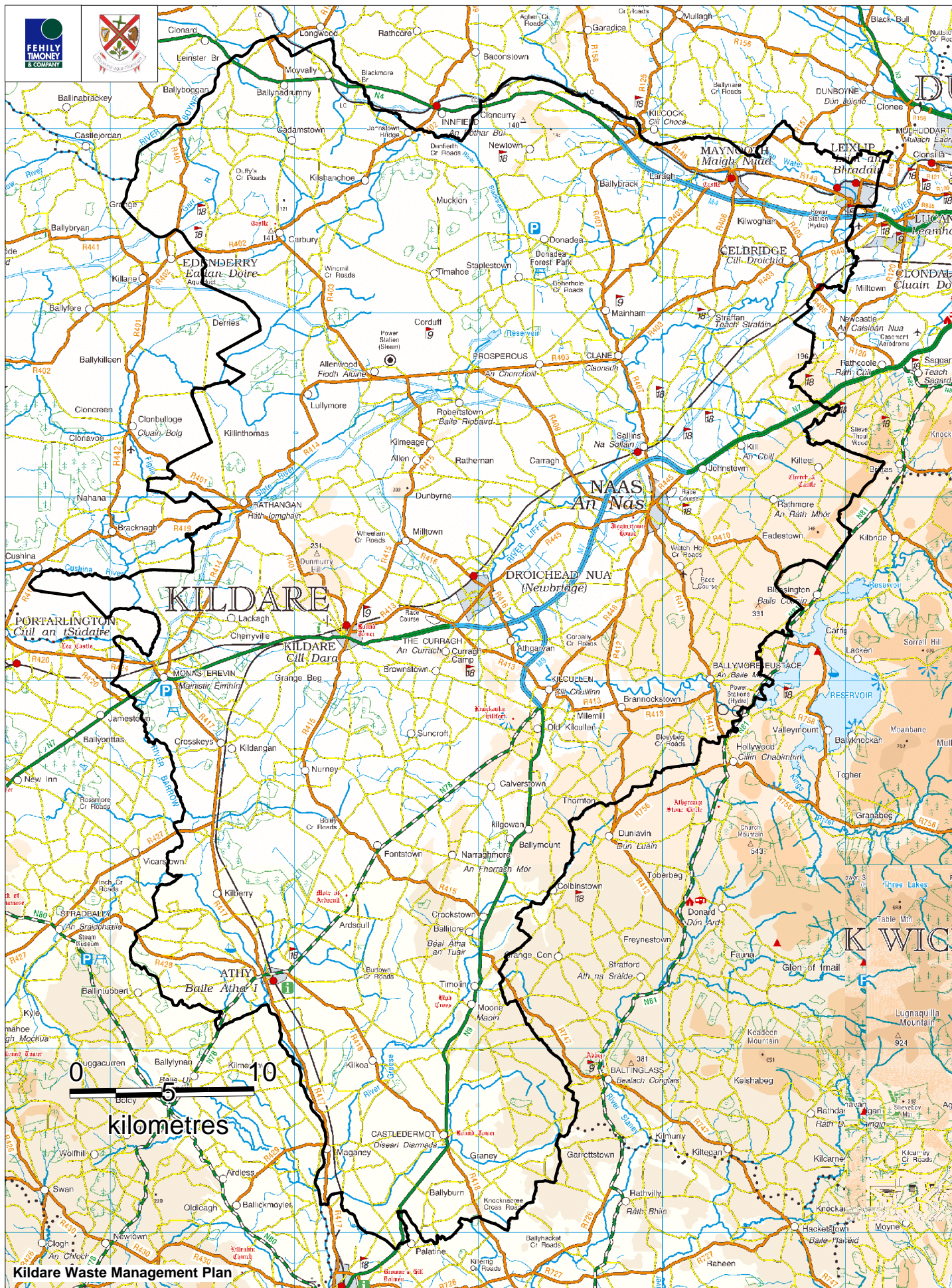
County Kildare is an inland county in the east of Ireland between 275 494 E and 268 653 N and 215 390 E and 222 058 N. It is bounded on the south by County Carlow, to the west by counties Laois and Offaly and to the east by counties Dublin and Wicklow. Meath bounds Kildare to the north (Fig 1.1).

The county is 1,688km² in area. The principal towns within County Kildare are Naas, Leixlip, Newbridge, Kildare, Maynooth and Athy. Co. Kildare has a population of 134,992 (Census of Population, 1996) which accounts for 3.7% of the total population of the State.

Topographic Features

The county may be divided into three main physiographic regions as follows:

- (i) The Plainlands – County Kildare is dominated by a lowlying and flat topography. Approximately two thirds of the county is less than 100m ordnance datum (OD). The Plainlands of County Kildare can be subdivided into three regions. These are the central and southern plains, the west central lowlands and the northwest boglands. The plain of central and southern Kildare varies from very flat to strongly undulating. The west central lowlands are characterised by raised bogland which formed after the last glaciation. This region is drained by the River Barrow and its tributaries. In northwest Kildare relief is low and elevations in this area are between 60m and 120m OD.
- (ii) The East Kildare Uplands – These uplands occupy a narrow strip which runs along the Kildare/Wicklow county boundary to the southeast of Kill. The highest elevation in County Kildare occurs in this region at 349m OD. These hills can be considered as the foothills of the Wicklow Mountains. The hills of the East Kildare Uplands follow a northeast-southwest trend. Elevations range from approximately 140 to 350 m OD. The strongest relief occurring in Kildare is seen in this region. To the east lie the Wicklow Mountains and to the west are the plains of Kildare.



Topography

Figure 1.1

- (iii) The Chair of Kildare and the Newtown Hills comprise a ridge of low hills trending northeast-southwest between Kildare and Rathangan. Redhills, the most southerly of the hills, rises to a height in excess of 138m OD. Dunmurray Hill immediately to the north of Redhills, reaches 234m OD and Grange Hill (also known as the Chair of Kildare) reaches 226m OD. These three hills are separated from the Hill of Allen (202m OD) by almost 3km of lower ground (92m OD).

Geology

The bedrock geology of County Kildare can be divided into four associations based on lithological variation. Refer to Figure 1.2.

- (i) Lower Palaeozoic slates, volcanic rocks and old red sandstone formations.
- (ii) Silurian calcareous greywackes, silstones and shales.
- (iii) Tullow Granite Pluton.
- (iv) Carboniferous Limestone.

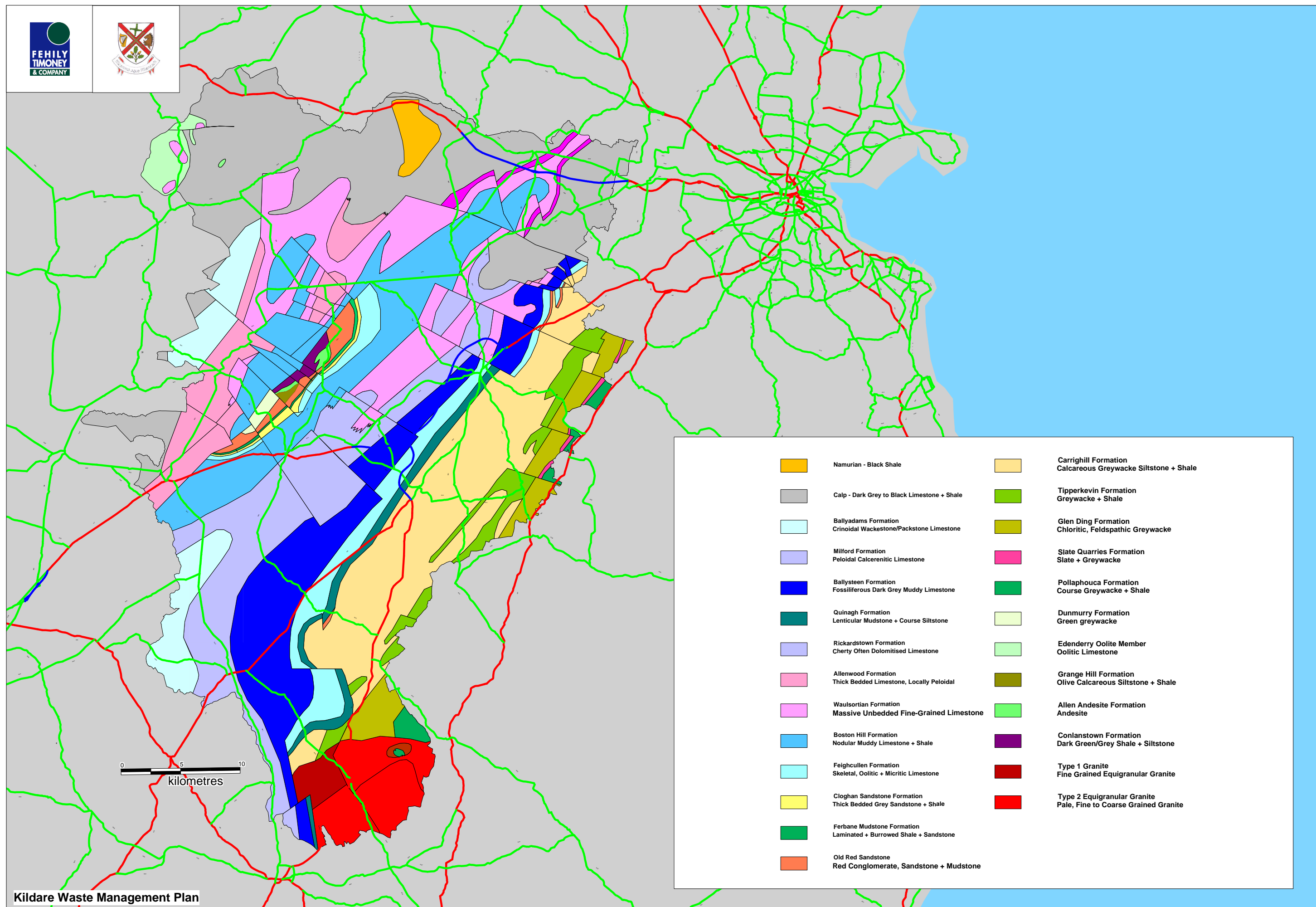
The main quarternary sediments identified in County Kildare are gravel deposits, glaciolacustrine deposits, peat, till and alluvial deposits.

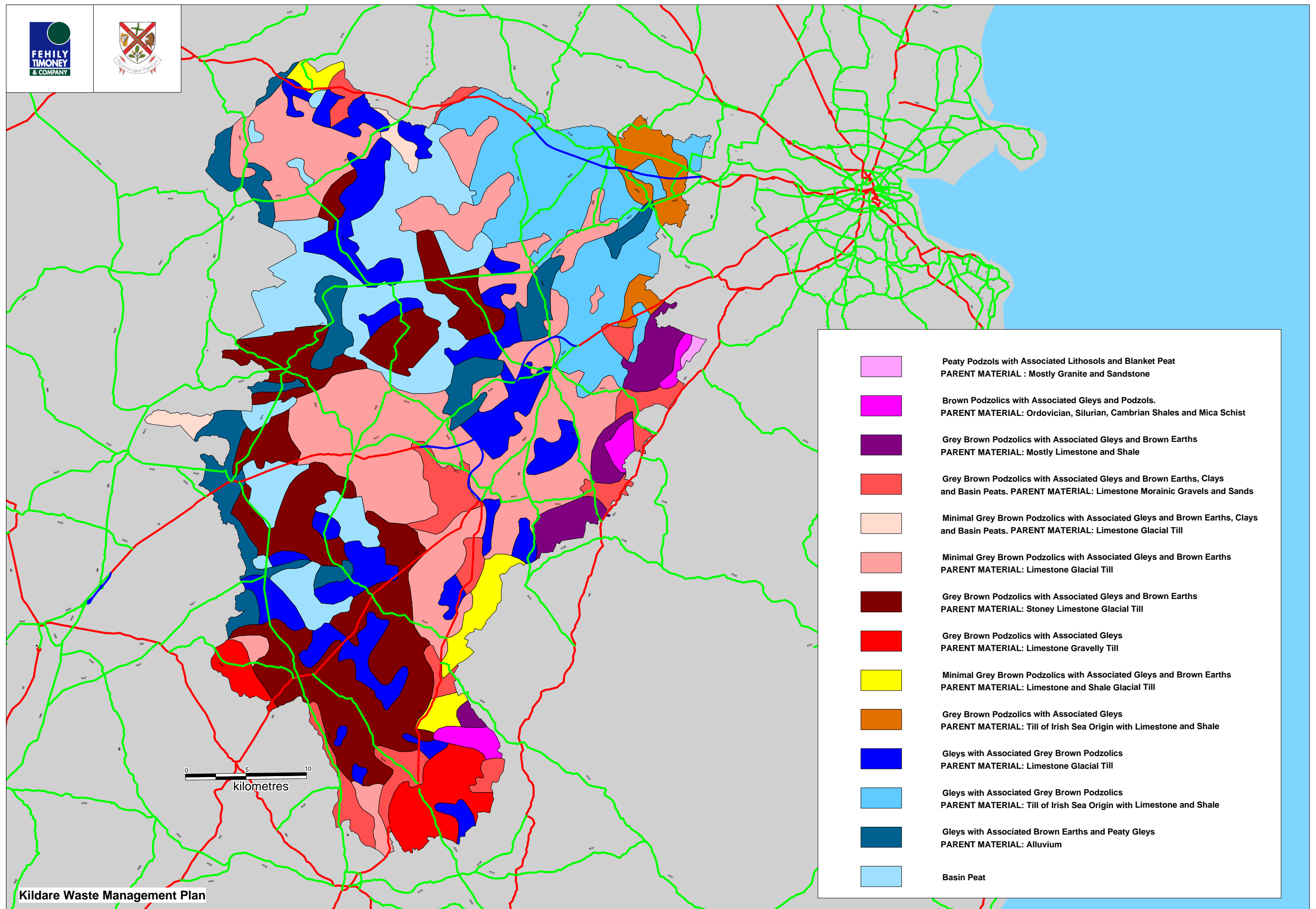
Soil Associations

The main soil associations in County Kildare belong to three physiographic divisions. These are the flat to undulating lowlands with mainly dry mineral soils; and the flat to undulating lowlands with mainly wet mineral soils and organic soils. Relatively small areas covered by the hill physiographic division. Figure 1.3 shows the generalised distribution of the soil associations in County Kildare.

Hydrogeology

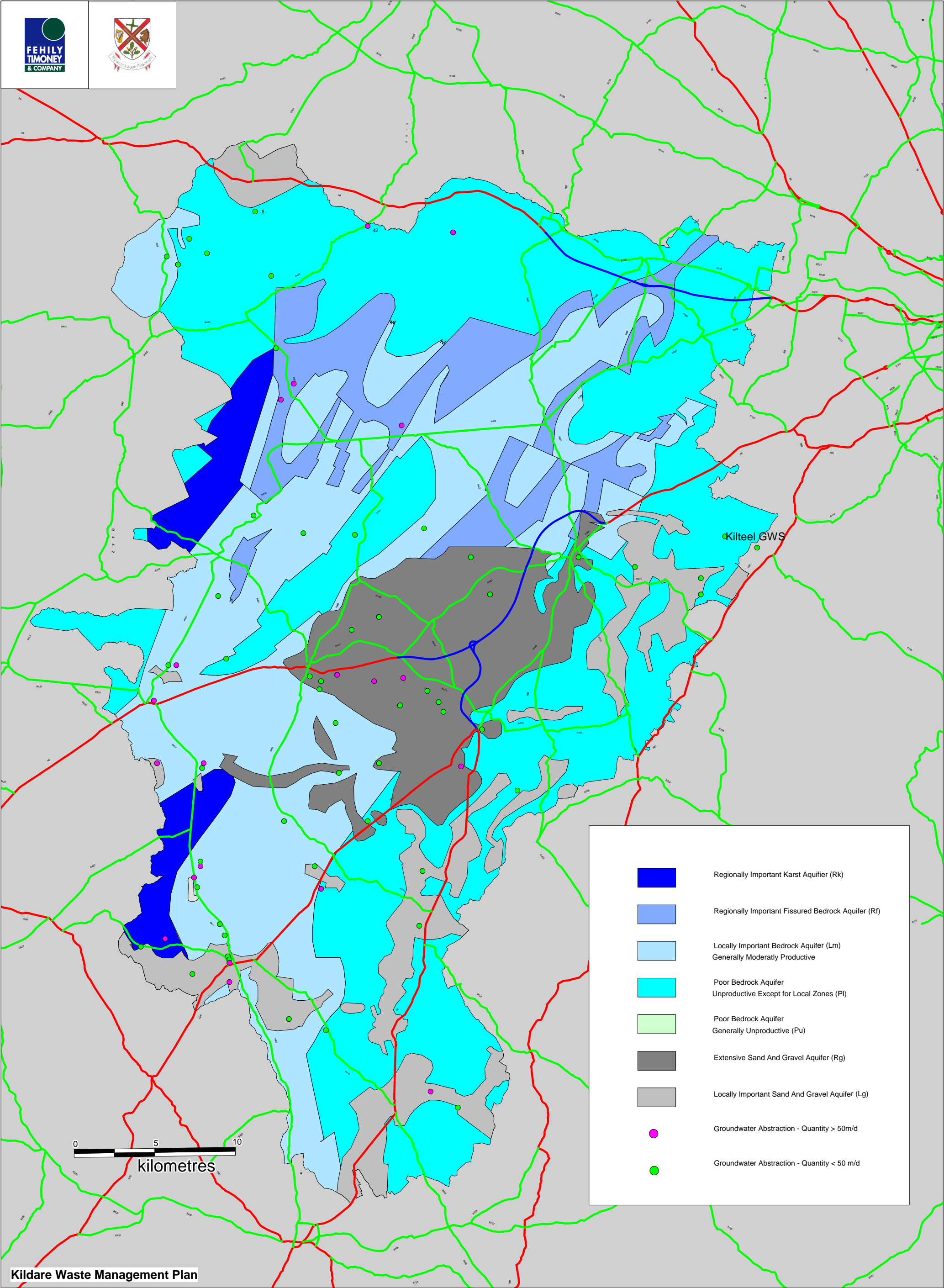
County Kildare is fortunate to have extensive and valuable groundwater resources. The most important aquifer units are the sand and gravel deposits which overlie limestone bedrock in the central area of the county. The accumulations of stored groundwater in County Kildare are very large compared with annual recharge and therefore they can act as a balance for fluctuations in recharge rates. Figure 1.4 is a generalised Aquifer Classification Map of County Kildare. Aquifer categories are designated based on the aquifer classification system of the Geological Survey of Ireland (GSI). The GSI categorises aquifers as regionally important, locally important or poor. Each category is subdivided based on the value of the resource and hydrogeological characteristics.





General Soils Map

Figure 1.3



Aquifer Classification and Groundwater Abstraction Points

Figure 1.4

Hydrology

The major rivers draining County Kildare are the Liffey, the Boyne and the Barrow. The Liffey rises in the Wicklow Mountains; and flows west before swinging to the north at Kilcullen. It meanders through Kildare before turning east towards Dublin. The Liffey drains a catchment of 1,122 km² above Islandbridge Weir, Dublin. The catchment of the Liffey is 872 km², 631 km² of which is in County Kildare.

The Barrow flows through part of the western side of County Kildare. It rises in the Slieve Bloom Mountains in County Laois and flows in a southerly direction. This river has a total catchment of 3,068 km² of which 818 km² lies upstream of Carlow. This includes a part of County Laois.

The upper catchment area of the River Boyne, which rises near Newburyhall, Carbury in Kildare, and its tributaries, including the River Blackwater, drain the northern area of County Kildare. Approximately 8% of the Boyne catchment lies within County Kildare. This amounts to 216 km² of the total catchment of the Boyne (2,700 km²).

Annual rainfall averages for County Kildare vary between 746 mm and 932 mm. The higher rainfall averages generally correspond to elevated areas. For example, at Pollaphouca (elevation 174 mm OD) the annual average rainfall is 932 mm, the highest recorded annual average. The highest monthly averages occur between August and January.

There is no synoptic weather station in Kildare. However, those at Casement Aerodrome, Co. Dublin and at Kilkenny provide useful data. Potential evapotranspiration ranges between 5 mm in winter months and 90 mm in summer months. Yearly totals for Casement Aerodrome and Kilkenny were 530 mm and 459 mm, respectively. Using these values, available precipitation for recharge (to groundwater and surface water) is estimated at 180 mm and 363.8 mm for Casement Aerodrome and Kilkenny, respectively.

1. (b) Population Size and Distribution

Population Size

The population of County Kildare according to the 1996 Census is 134,992. Numbers increased by 12,336 persons or 10.1% during the intercensal period 1991-1996. This large growth is due in part to the proximity of Kildare to Dublin. The records for comparison with earlier years are illustrated below.

Figure 1.5: Historical Population of Co. Kildare 1956-1996

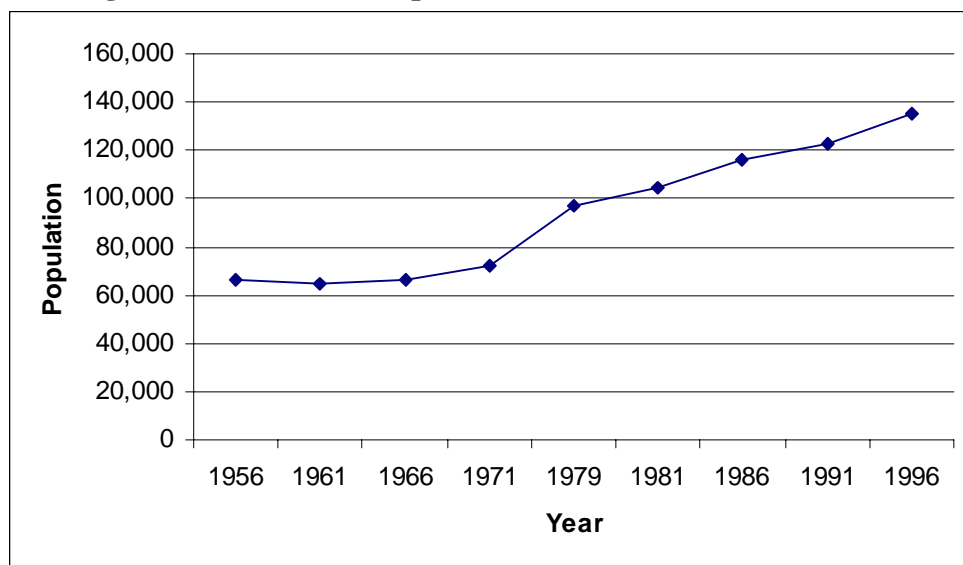


Figure 1.5 illustrates the population trends for the county over the last forty years. The overall population can be seen to have remained quite stable from 1956-1971. It was from this point that the population began to rise steadily. Unlike most other counties and the State, Co. Kildare did not experience a slight fall in population between 1986-1991. The current population settlement is focused in urban areas, the urban/rural split favoring urban 60.6% to 39.4%. This compares with the State population distribution of urban 58% to rural 42%.

With respect to future population numbers in the County, reference was made to the projections in the County Development Plan 1999. The County Development Plan used two different projections, Projection A which is based on a natural increase throughout the County and Projection B which is based on migration patterns area by area.

Population and Household Distribution

Kildare may be divided into six main districts, namely Athy and Naas urban districts and Athy No. 1, Celbridge No. 1, Eddenderry No.1 and Naas No.1 rural districts.

Athy No.1 rural district has a population of 14,748 which is 11% of the county population. Athy urban district has a population of 5306, 4% of the county total.

Naas No.1 rural district has a population of 50,208 which is 37% of the county population. Naas urban district has a population of 14,074, 10% of the county total. The latter shows a 26.3% rise in population in the Naas Urban Area since 1991. The town of Clane shows an increase of 44% in 1991-1996.

Celbridge No. 1 rural district has a population of 43,237 which is 32% of the county total. This figure represents an increase in population of 15.3% since 1991 with the Celbridge urban area showing an increase of 27.2% rising from 8,763 to 11,143. The population of Maynooth increased by 36.4% between 1991 and 1996.

Edenderry No.2 rural district has a population of 7,419 which is 5% of the total population of the county.

The number of households in aggregate town areas (i.e. population clusters of 1,500 or more inhabitants) is 23,920 and that in aggregate rural areas is 13,507. The average number of persons per household in the county is 3.39, i.e. 3.35 in the aggregate town areas and 3.47 in the aggregate rural areas. Table 1.2 gives the number of households in each town in Kildare with a population greater than 10,000.

Table 1.2: Number of Households in Towns of Population > 10,000

TOWN	NO. OF HOUSEHOLDS
Naas	4,380
Leixlip	3,543
Droichead Nua	4,015
Celbridge	3,465

1. (c) Industrial, Commercial, Agricultural and Tourist Activity in the County

Industrial

Industrial activity in Co. Kildare is represented by a number of sectors including *high technology* (e.g. Intel, Hewlett Packard), *food processing* (Green Isle), *engineering* (Master Plant, Moovmor), *pharmaceutical* (Wyeth and Oral-B) and *services* (e.g. Bord na Mona HQ, Council Offices).

Apart from the major names referred to above the majority of industrial concerns may be classified as small to medium enterprises. (Source: Industrial Development Authority, and Forbairt)

Commercial

Commercial businesses are also significant in both number and distribution within the county. Each of the main towns, i.e. Athy, Newbridge, Naas has in the region of 100 – 150 commercial businesses. Of these, grocery (18%) and public houses (18%) are in the highest proportion. Other important commercial businesses include clothing, footwear and newsagents. (Source: Central Statistics Office).

Agricultural

Kildare has 123,000 ha of farmed land. Of this 33,000 ha consists of crops, fruit and horticulture, 85,000 ha of silage, hay and pasture (of which 16,000 ha is silage) and 5,000 ha of rough grazing (in use).

Total number of cattle in the county is 140,000, while sheep number 281,000 and pigs total 26,200. Poultry, deer and goats are also farmed and these number 95,000, 100 and 300 respectively. (Source: Central Statistics Office).

Tourism

A number of festivals and events take place around the county each year. Major events include the race meetings at the Curragh, Naas and Punchestown race courses. Kildare has a worldwide reputation for its equine industry arising from the county's concentration of stud farms, equestrian centres and race courses. Other activities which attract tourists include the excellent angling and facilities. Kildare offers an interesting and contrasting countryside made up of agricultural land, peatlands, forests, rivers and canals, the low-lying Curragh Plain and the Hill of Allen.

Composite Map

Figure 1.6 is a composite map indicating the general distribution of activities under appropriate headings.

1. (d) Transport Infrastructure

Road Network

County Kildare is serviced by a network of national, regional and county roads as shown on Figure 1.7. These routes may be described as follows:

- (i) The Motorways primarily serve long and medium distance traffic. They are characterised by legal definition, by having no access except at interchanges and having no at-grade junctions. Special care is required with regard to building lines, signs and external lighting when considering development near this type of road.
- (ii) National Primary routes in the county are the N4 (Dublin – Galway), N7 (Dublin – Cork/Limerick) and N9 (Naas – Waterford). These roads primarily serve long and medium distance traffic passing through the county. Certain sections of these roads are reaching the limits of their traffic bearing capacity.
- (iii) There are two National Secondary Roads passing through the county, the N78 (Kilcullen - Athy) and the N81 (Dublin – Baltinglass). They serve long and medium distance traffic and also cater for local traffic.

- (iv) Regional roads link the principal towns in the county and also serve local traffic. They are generally of a high standard and in some cases carry very considerable volumes of traffic.
- (v) County Roads serve local traffic.

Kildare County Council has a number of plans underway with regard to road improvement, extensions etc. Proposals for the by-pass of Kildare Town have received ministerial approval and construction has started. Plans have been approved for the extension of the Kilcock – Kinnegad Motorway (M4).

It is proposed to locate an interchange at Kilcock west of where the Courtown Road crosses the M4. It is also proposed to locate an interchange between Maynooth and Leixlip, to serve, inter alia, Celbridge. A plan is currently being prepared in respect of all regional and county roads in the county. Improvements will be required at specific locations where local traffic conditions and other considerations dictate.

Rail Network

The railway network makes a significant contribution to the economic activity of the county. The main lines (see Fig. 1.7) are:

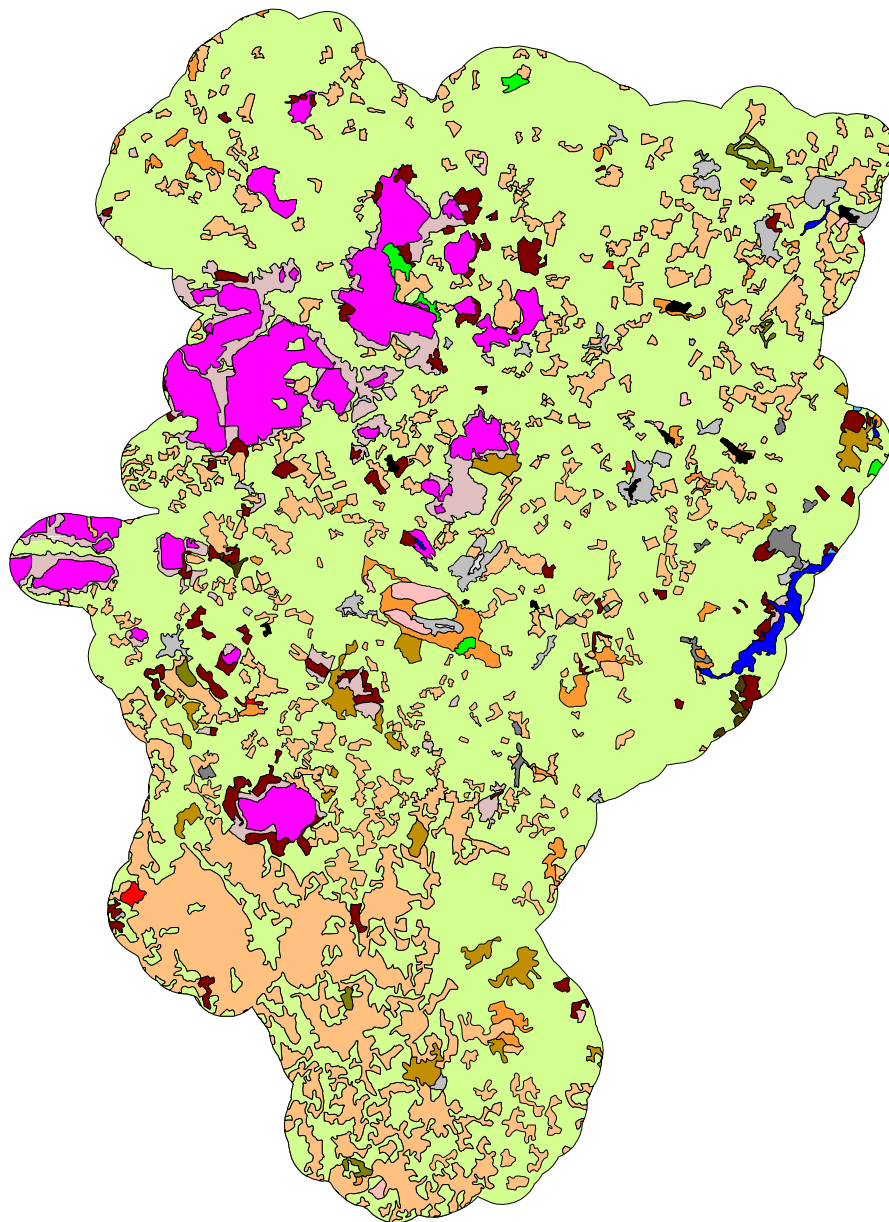
- (i) Dublin – Limerick/Cork;
- (ii) Dublin – Mullingar – Sligo; and
- (iii) Dublin – Carlow – Kilkenny – Waterford.



















There are stations at Newbridge, Kildare, Athy and at Maynooth. In addition there are commuter services utilising the main lines. In the case of North Kildare that serves Leixlip and Maynooth, and in the case of Central Kildare Celbridge, Sallins and Naas, Newbridge and Kildare.

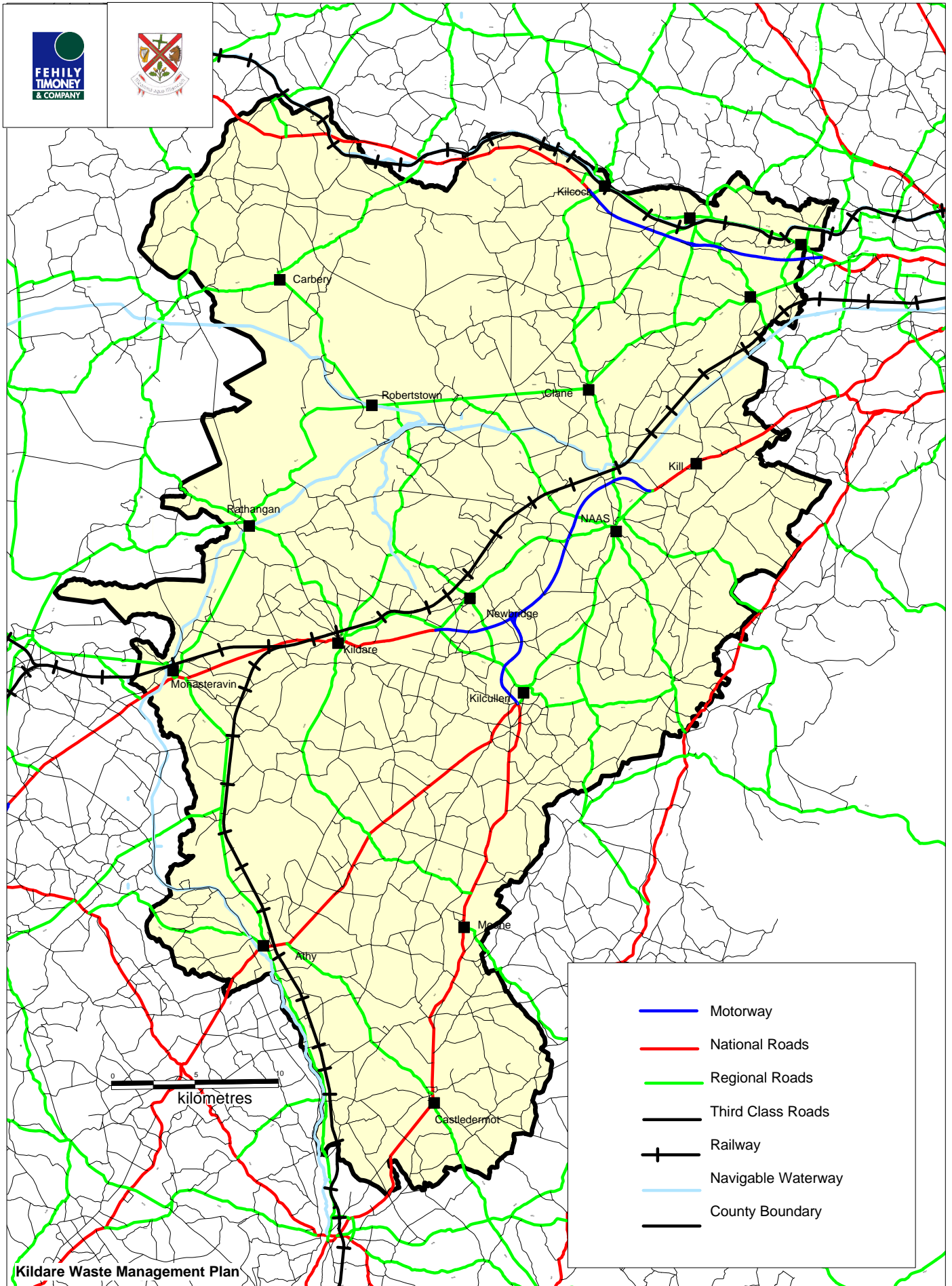
It is likely that demand for these services, and particularly the commuter services, will increase due to increased population in the towns served, and due to changing patterns of commuting and economic activity. Usage of the line serving Maynooth, for example, increased by 14% in 1996.

A minimal amount of abandoned broad-gauge line (double/single track) also exists which previously linked Naas with Tullow in County Carlow.

There are no rail freight depots in County Kildare. Opportunities for the transport of waste by rail would require considerable development of existing stations and the creation of new depots.



	Pasture High Productivity		Transitional Woodlands/Scrub
	Coniferous Forest		Sparsely Vegetated Areas
	Mixed Forest		Continuous Urban Fabric
	Broadleaved Forest		Discontinuous Urban Fabric
	Peat Bogs		Green Urban Areas
	Land Principally Occupied by Agriculture		Industrial or Commercial Units
	Complex Cultivation Patterns		Sport And Leisure Facilities
	Natural Grasslands		Mineral Extraction Points
	Moors and Heathland		Water Bodies



Transport Infrastructure

Figure 1.7

Ports and Navigable Waterways

Kildare is an inland county and therefore has no ports. The River Barrow is the main river flowing through the County. It is navigable throughout its course in Kildare. The Royal Canal and the Grand Canal are also significant navigable waterways in the county giving passage to both Dublin and the Shannon.

1. (e) Groundwater

The major groundwater abstraction points for County Kildare are shown on Figure 1.4. As of April 1995 it was estimated that 25,000 persons in the county depended on groundwater for their water supply. Private wells supplied water to approximately 11,000 persons and the mains supply from 21 local authority groundwater abstraction points served a population of approximately 10,000. It is estimated that 4.0Mm³ of groundwater is abstracted annually.

Groundwater quality from the highly permeable aquifers of County Kildare is generally excellent. Groundwater from these aquifers tends to be very hard, a characteristic which, although beneficial to health, can cause problems to pipes, hot water systems and some industrial processes. Groundwater from the less permeable aquifers is poor and is often characterised by low pH values and high concentrations of iron, manganese and sulphates.

Many aquifers in County Kildare are vulnerable to pollution. Water-bearing glacial deposits (sand and gravels), particularly where the water table is shallow, can be at risk from landspreading of fertilisers or septic tank effluents. Aquifer vulnerability may be increased by activities such as quarrying and mining or excavation works, where some of the natural protection provided by overlying soil is removed. Human activities affect the natural purity of groundwater so that groundwater quality varies throughout County Kildare. As of June 1992 all of the County's public groundwater sources provided water which satisfied the European Community Regulations of 1988. Several abstraction points have nitrate levels close to EC maximum allowable concentrations (MAC). This high level is probably due to fertilisers or sewage entering the groundwater.

The nature of the soil and the underlying subsoil play an important role in determining the vulnerability of groundwater. Groundwater is most at risk where subsoils are absent or thin and in areas of karstic limestone. For a contained waste disposal site, the best rock types are the finer grained variety such as slates, shales, mudstones, siltstones and clayey glacial till or clays. In County Kildare these rock types are not widespread. A more common scenario in County Kildare is limestone bedrock covered by a thick sand and gravel aquifer. Much of the land is low-lying and the water table tends to be relatively shallow. In some cases, a thin sand and gravel covering lies on karstified limestone or fractured sandstone. In this scenario the bedrock often exhibits secondary permeability and this will encourage rapid

contaminant movement particularly when the overlying sand and gravel is clean and well sorted. These sites constitute the major aquifers in County Kildare and are the most vulnerable to pollution.

1. (f) Land Use Considerations and Designated Environmental Protection Areas

Particular regard is given by Kildare County Council to the siting, design and visual impact of proposed developments when assessing proposals for areas of special amenity value or special interest. Consideration is given to the high amenity value, scenic quality, recreational attractiveness, historic or scientific value of each area, the protection of groundwater resources and traffic safety.

Areas of special control and environmental protection include:

- Areas of landscape importance;
- Natural Heritage Areas;
- Exposed mountain slopes;
- Heath lands;
- Buildings and other structures of artistic, architectural or historic interest (including national monuments) and their environs;
- Areas of woodlands;
- The environs of important tourist facilities;
- The banks and escarpments of adjoining rivers; and
- Estuarine wetlands.

Appendix III shows ecological sites, mountains and grasslands which are proposed Natural Heritage Areas on the grounds of importance for wildlife conservation.

1. (g) List of Waste Management Legislation

Waste Management Act 1996

The enactment of the Waste Management Act 1996 has put in place one of the most powerful pieces of legislation since the inauguration of the Planning Acts in 1963. For the first time, waste has been comprehensively defined and the requirements for management of waste strictly laid down. The Act and subsequent Regulations set out a comprehensive regulatory framework for waste management in Ireland. Roles are defined for the Minister (of the Environment and Local Government), the Environmental Protection Agency (EPA), local authorities and other public authorities.

These roles may be summarised as follows:-

(i) The Minister for the Environment and Local Government

- Policy direction;
- Assist and support waste prevention and recovery initiatives;
- Make regulations.

(ii) The EPA

- Licensing of all significant waste disposal and recovery activities;
- Planning management and control in relation to hazardous waste;
- IPC licensing of certain waste-related activities, e.g. incineration.

(iii) Local Authorities (Counties and County Boroughs)

- Make waste management plans;
- Operate a permit system for waste collectors;
- Collect, or arrange for the collection of, household waste;
- Provide and operate, or arrange for the provision and operation of, such facilities as appear necessary for the disposal and recovery of household waste.

Section 38 of the Act, to which the last item above refers, provides a mechanism whereby local authorities may enter into agreements with other local authorities or “other persons” for the recovery or disposal of waste. The Act permits what it terms “joint provision and operation” for any relevant facility.

Local Agenda 21

In June 1995 the Minister for the Environment published a document entitled ‘Local Authorities and Sustainable Development, Guidelines on Local Agenda 21’. The document recommends that all developments should be sustainable with due regard to balancing the capacity of the environment to sustain human activity against the requirement to meet social, economic and cultural aspirations.

Sustainable development was defined as “development which meets the needs of the present without comprising the ability of future generations to meet their own needs”. One of the aims of Agenda 21 is to reduce the amount of energy and raw materials society consumes, as well as the pollution and waste it produces. It was stated that sustainable development can only be brought about by co-operation and partnership between all social and economic groups and interests.

The following guidance to the elements involved in Local Agenda 21 was given:

- Relevant policies, plans or programmes should be reviewed or developed to address environment and development concerns fully and reflect the overall vision of the community regarding sustainable development;
- The main issues of concern in the local authority area, and objectives and specific targets for achieving sustainable development, should be identified;
- The action to be taken, and by whom, to work towards these objectives and targets should be specified;
- Details of how progress will be assessed, and a review process, should be defined;
- Finished products encapsulating the above (such as an environmental charter, a policy document, a review of the Local Agenda 21 process and future outlook) should be clear, simple and acceptable to the wider community, and should be published and made widely available.

The importance of the role of local government was stressed in that local authorities play a vital role in educating and mobilising the public around sustainable development. It is suggested that the balance be a broad collaborative approach guided and facilitated by local authorities, key words being:-

- Information;
- Awareness;
- Consultation;
- Feedback;
- Partnership;
- Monitoring;
- Progress.

It is suggested that the local authority should lead by example by:

- Adopting an environment charter or mission statement;
- Adopting a voluntary environment management system;
- Pursuing green housekeeping measures;
- Staff training and information; and
- Budgeting.

Local authorities are to consider the aims of Local Agenda 21 in formulating policies on:-

- Land use/development;
- Urban development;
- Provision of services;
- Transport policy and traffic management;
- Housing;
- Tourism;
- Health;
- Action for equality; and
- Environmental activities.

Much of the (recent) environmental legislation is founded on the principles embodied in Local Agenda 21. Relevant waste management legislation is listed below.

National Policy and Legislation

- Environmental Protection Agency Act 1992;
- Health, Safety & Welfare at Work Act 1989 & Regulations;
- The Local Government (Planning & Development) Acts and Regulations 1963-1993;
- Litter Pollution Act 1997;
- The Water Pollution Act 1977 (amended 1990);
- Waste Management Act 1996;
- Waste Management Regulations (Farm Plastic) 1997;
- Waste Management Regulations (Packaging) 1997;
- Waste Management (Licensing) Regulations 1997;
- Waste Management (Planning) Regulations 1997;
- European Communities (Amendment of Waste Management Act, 1996) Regulations, 1998;
- Waste Management (Amendment of Waste Management Act, 1996) Regulations, 1998;
- Waste Management (Movement of Hazardous Waste) Regulations, 1998;
- Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998;
- Waste Management (Transfrontier Shipment of Waste) Regulations, 1998;
- Waste Management (Permit) Regulations, 1998;
- Waste Management (Miscellaneous Provisions) Regulations, 1998;
- A Policy Statement:- Management Changing Our Ways, DoELG 1998.
- Recycling for Ireland, DoE 1994
- Proposed National Hazardous Waste Management Plan, EPA 1999

EU Waste Strategy and Policy

General: -

- The Framework Directive on Waste. Council Directive 75/442/EEC as amended by 91/156/EEC;
- The Framework Directive on Hazardous Waste i.e., Council Directive 91/689/EEC;
- The Fifth Action Programme on the Environment “Towards Sustainability” (5EAP) 1992;
- Council Regulations (EEC) No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community;
- European Waste Catalogue (1993), the Hazardous Waste List (1994).

Specific: -

- 87/101/EEC The Disposal of Waste Oils;
- 86/278/EEC The Protection of the Environment, and in particular of the soil, when sewage sludge is used in agriculture;
- 91/157/EEC On batteries and accumulators containing certain dangerous substances;
- 76/403/EEC (to be replaced in March 1998 by 96/59/EC) The disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT);
- 94/62/EC Packaging and Packaging Waste;
- 81/972/EEC The re-use of waste paper and the use of recycled paper; and
- 1999/31/EC EU Directive on the Landfilling of Waste.

Other Legislation

- 81/369/EEC The Prevention of Air Pollution from New Waste Incineration Plants;
- 89/429/EEC The Prevention of Air Pollution from Existing Waste Incineration Plants;
- 94/67/EC Incineration of Hazardous Waste (under review)
- 91/271/EEC Urban Wastewater Treatment;
- 90/667/EEC Animal waste;
- 96/61/EC Integrated Pollution Prevention and Control Directive (IPPC); and
- 97/11/EC Environmental Impact Assessment (EIA).

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 is 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.

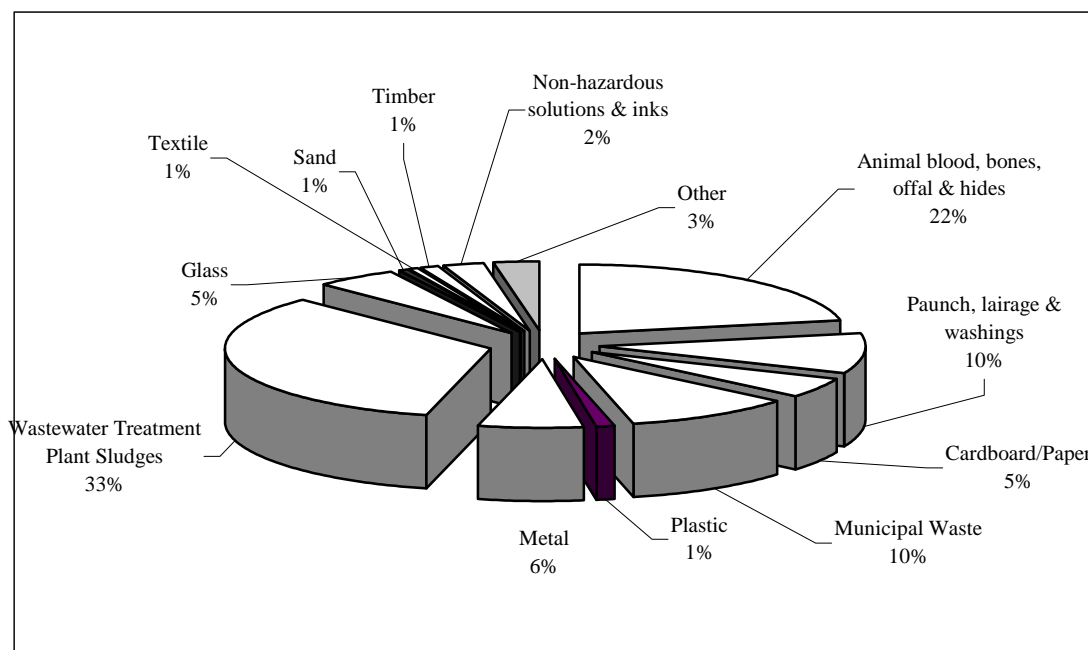
Table 2.9: Compositional Analysis Including Packaging Waste of Commercial Waste in Co. Kildare

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 carcasses 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

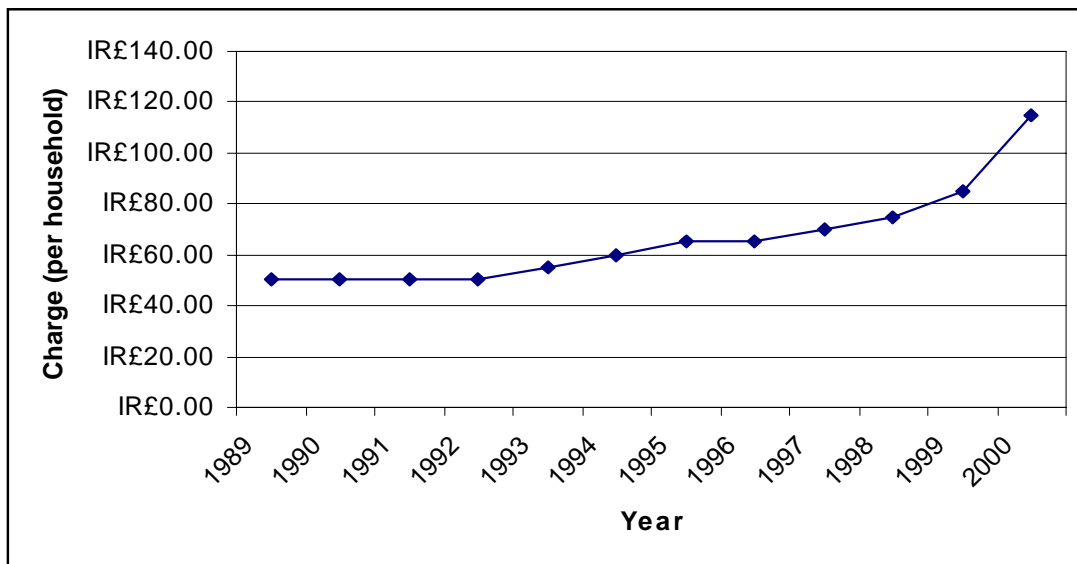
PRIORITY WASTE	ESTIMATED QUANTITY ARISING (tonnes)
Electrical & Electronic Goods	2,000
Batteries & Accumulators	270
Oils	211
Polychlorinated Biphenyls (PCB's)	0
Tyres	662
End-of-Life Vehicles	300
Packaging Waste	35,911
Total	39,534

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, Portarlinton, 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.

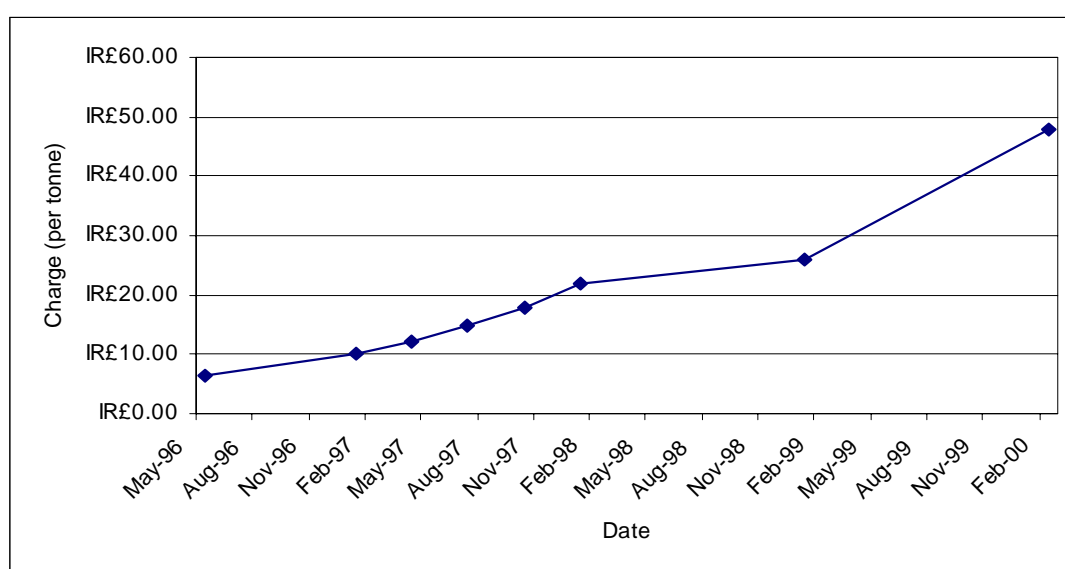
The Cleaner Production Demonstration Programme is also designed to encourage small and medium size enterprises (SMEs) and those not subject to IPC licensing to take a greater interest in clean production technology and to demonstrate the benefits of this approach and that of environmental management 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 (1 st 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 (2 nd 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
- Rahadoon, 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 otherwise 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.

3.0 ANTICIPATED DEVELOPMENTS OVER THE PERIOD OF THE PLAN

3.1 The effect of measures to reduce waste arisings or the harmfulness of waste

The effect of measures to prevent or minimise waste production or the harmfulness of waste will be discussed in the following sections 3.3, 3.4, 5.3 (a), 5.3 (b).

3.2 Trends in population distribution and commercial/industrial/agricultural activity

Trends in Population Size and Distribution

With respect to future population numbers in the County reference was made to the projections in the County Development Plan 1999. It is prudent to assume the higher of the two growth rates (Projection B) made in the Plan for the purposes of waste planning.

Using these data the County population in 1999 is estimated at 141,600 while forecast numbers in the period to 2018 are given in Table 3.1 (the Plan's projections have been extended from 2016 to 2018).

Table 3.1: Projected Population for Co. Kildare, 1996-2018

1996	1999	2001	2006	2011	2016	2018
135,000	141,600	146,203	155,817	165,123	172,753	175,903

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). The annual rate of growth in household waste quantities nationally has averaged in excess of 2% over the past 10 years (EPA, 1995). For the present purposes a rate of 2.25% per annum is assumed for the period to 2006. Thereafter the growth rate is assumed to slacken to 1.5% per annum between 2007 and 2011 and to 1% per annum from 2012 to 2018. These data are applied to the projected County population in Table 3.2.

Table 3.2: Forecast Arisings of Household Waste 1999-2018

	1999	2001	2006	2011	2016	2018
Per capita arisings, kg/a	330	353	395	426	448	457
Population (est.)	141,600	146,203	155,817	165,123	172,753	175,903
Total arisings, t/a	46,728	52,774	65,175	73,868	77,393	80,388
% increase from 1999	-	13.5	40.1	58.75	66.33	72.76

The gross quantity of household waste forecast to arise in the County in the period 1999-2018 incl. is thus estimated at 1.27 million tonnes or about 63,500 tonnes per annum on average during that period.

Trends in activity in the commercial, industrial and agricultural sectors

The Economic and Social Research Institute (ESRI) provides growth forecasts per annum for specific sectors in its Medium Term Review (1997).

A very vigorous growth in “market services” is predicted with annual rates as high as 6.9% in the period to 2000 and averaging 5.7% per annum overall in the period to 2011. It can be assumed that the generation of commercial waste is linked to the performance of the services sector of the economy. However it is difficult to say exactly how much of the predicted growth in market services will translate into increased quantities of commercial waste. The high growth rate predicted in the period to 2000 is likely to increase volumes rapidly over the same period with a gradual reduction in rates in the medium to long term.

Future quantities of commercial wastes arising have been estimated on the basis that commercial waste arisings are typically 50% of household waste arisings (as found in other counties). These quantities are presented in Table 3.3.

Table 3.3: Forecast Arisings of Commercial Waste 1999-2018, tonnes

1999	2001	2006	2011	2016	2018
23,364	26,387	32,588	36,934	38,697	40,194

The total amount produced up to 2018 is thus estimated at 635,580 tonnes or an average of 31,779 tonnes per annum.

The ESRI also provides forecasts of economic output from the various industrial sectors for the period to 2011. A growth rate of 2.5% pa in industrial waste production is proposed for the period 1999-2006 based on a consideration of the ESRI's economic projections. A lower rate of growth of 1.5% per annum is proposed for the period to 2011 followed by an average of 1% per annum between 2011 and 2018. The fall-off in the growth rate over time is based on the

assumption that minimisation and clean technologies will progressively impact on waste production by all industrial sectors as the new century progresses. These assumptions allow projections of future arisings of industrial waste in the County to be developed as indicated in Table 3.4.

Table 3.4: Forecast Arisings of Industrial Waste, 1999-2018.

YEAR	1999	2001	2006	2011	2016	2018
Arisings, t	30,000	32,300	36,500	39,300	41,300	42,100
% increase on 1999	-	+7.67	+21.67	+31.0	+37.7	+40.34

3.3 Trends in Waste Management and Private Sector Involvement

Trends in waste management are dictated largely by policy and legislation

The Irish Government published an Environmental Action Programme in 1990 in order to provide a comprehensive and systematic framework for environmental protection in Ireland. The programme is based on the principles of sustainable development, precautionary action and the integration of environmental considerations in all policy areas. It is broadly consistent with the EU Fifth Programme of Policy and Action on the Environment which was adopted in 1992.

National policy on waste management recognises the need to reflect the primacy accorded in EU policy to waste prevention, reduction and reuse. The Government actively promotes waste management programmes which include recycling and reuse. Financial assistance was available under the Operational Programme for Environmental Services 1994-1998 to develop recycling/reuse initiatives and it is anticipated such support will continue to be forthcoming under Agenda 2000.

The Environmental Protection Agency Act 1992 makes important provisions with regard to the waste hierarchy by incorporating waste prevention and elimination programmes into the integrated pollution control licensing system for industry.

In addition to the requirements of the Waste Management Act, Ireland is also required to meet EU targets on recycling and reuse of packaging materials set out in the Packaging Waste Directive. National recycling and recovery targets set out in the government policy statement “Recycling for Ireland” in 1994.

As this document pre-dated the Packaging Directive it has been amended in the light of the requirements of the latter instrument. Further amendments are likely as a result of the implementation of the EU Landfill Directive in relation to the removal of organics from landfill.

In 1997, the Irish Government published “*Sustainable Development – A Strategy for Ireland*”. Under the section on waste management, the Government reiterated its commitment to the EU hierarchy of waste management and cited the acceptance of appropriate responsibility on a shared basis of all sectors of society for more sustainable practices in waste management to be a major general objective. Particular objectives of the strategy were cited as:-

- A stabilisation and reversal of the growth in waste production;
- An intensification of reuse and recycling activity;
- Implementation of improved planning and organisational arrangements provided for in the Waste Management Act 1996;
- The use of economic instruments to reduce waste, promote reuse/recycling, and increase management efficiency.

The Minister of the Environment and Local Government issued a policy statement on waste in September 1998 entitled “Waste Management – Changing Our Ways”. The statement sets out national objectives in relation to the future management of waste. A key objective of the policy is to stabilise, and in the longer term reverse, the growth in waste generation. Specific targets to be achieved over a fifteen year time-scale were established (see Section 4.1(c)).

In areas served by private collectors considerable scope will be provided to Kildare County Council by the forthcoming Waste Management (Collection Permits) Regulations to ensure that public policy decisions in this matter are carried out by contractors.

Private sector involvement in the operation of waste disposal facilities in the County is increasing greatly. A number of private sites as discussed earlier are briefly described below:

- (i) Nephin Trading were granted planning permission (on appeal to an Bord Pleanála) for a disposal site at Kerdiffstown Road, Johnstown. This site receives large quantities of construction and commercial waste from the Dublin region. An EPA Licence is currently being sought for this site.
- (ii) KTK Sand and Gravel Ltd were granted planning permission for a disposal facility at Brownstown, Kilcullen by Kildare County Council in August 1998. The site is permitted to accept “imported dry waste materials arising from construction and demolition sites, road and pipeline projects, and commercial/industrial premises”. A full Licence was issued in April 1999.

3.4 Pending Community Acts

The introduction of the EU Landfill Directive will have a great impact on waste management in County Kildare. The EU Landfill Directive contains stringent controls regarding acceptance at landfill under the following headings:

(i) Biodegradable waste

- Reduction of 25% by 2006 of the quantity being disposed of in 1995
- Reduction of 50% by 2009 of the quantity being disposed of in 1995
- Reduction of 75% by 2016 of the quantity being disposed of in 1995

(ii) Prohibited Waste

Disposal of the following waste to landfill will not be permitted;

- Liquid wastes;
- Explosive, corrosive, oxidising or flammable wastes;
- Infectious Hospital or other clinical waste;
- Old tyres (two years after the date of entry into force of the Directive);
- Shredded used tyres (five years after entry into force of the Directive);
- C&D Wastes unless agreed;
- Glass;
- Recyclable corrugated cardboard;
- Recyclable paper fibres, wood;
- Dead Animals;
- Ferrous/ non-ferrous metals; and
- Hazardous or toxic wastes.

(iii) Treatment of Waste

If the Directive is adopted it will be imperative that all waste being landfilled has been subject to treatment. It is presumed that treatment may include diversion of a portion of the original waste stream to recovery or recycling.

3.5 Relevant Developments in Other Local Authorities

The current status of waste-related infrastructure (existing/proposed) in adjoining local authorities is explored in Table 3.4.

Table 3.4: Summary Details of Developments in Neighbouring Local Authorities.

AUTHORITY/ DEVELOPER	STATUS	POTENTIAL FOR KILDARE
Dublin Region	Severe restriction on landfill capacity – except Arthurstown (see below) Proposals advanced to develop major waste-to-energy facility by 2004.	None – except Arthurstown (see below). Possible outlet for all or part of County's waste if and when waste-to-energy proposals advance.
South Dublin	Operators of Arthurstown Landfill site. Would probably welcome inputs to site. However, all inputs must be baled. Baling capacity extremely limited at present. Planning permission for landfill site runs out in July 2004.	Good if access to baling facility can be achieved.
Wicklow	Currently involved in long-running attempt to develop a new landfill site.	None. (West Wicklow may require medium term outlet in Co. Kildare).
Laois	Operates own landfill. Part of Midland Region for waste planning purposes.	Poor at present. Awaiting regional waste strategy proposals.
Carlow	Landfill capacity restricted. Part of South-East Region for waste planning purposes.	Poor at present. Waste strategy for SE Region envisages integrated treatment plant (incl. waste-to-energy). Possible medium term outlet for south County. Awaiting formal adoption of strategy.
Meath	Currently involved in developing new landfill site at Knockharley. Part of the North-East Region for waste management purposes.	Poor at present
Offaly	Operates own landfill. Part of Midland Region for waste planning purposes.	Poor at present. Awaiting regional waste strategy proposals.
Bord na Mona (Midlands)	Previous proposals for a large-scale landfill in midland bogs in abeyance.	Poor at present – Uncertain in the medium term.
Waste Management Ireland Limited (WMIL) (Silvermines)	Company advancing proposals for major landfill on site of Magcobar mine. (Estimated capacity 7-8Mm ³). Planning application to be lodged. Rail connection.	Possible long term outlet for residual waste from Co. Kildare if approved. Short-term potential depends on progress of planning/licensing.

4.0 WASTE MANAGEMENT POLICY

4.1 Evaluation of Policy Options

4.1 (a) Provision of Services and Waste Management Facilities

The Waste Management Strategy Study for Co. Kildare (1999) addresses the following waste management options in detail:

- Materials recycling facility;
- Composting facility;
- Anaerobic digestion facility;
- Waste-to-energy plant;
- New landfill site;
- Civic amenity sites;
- Other available waste treatment facilities;
- Some combination of the above options.

The above options are discussed in more detail in Appendix VII, Options for the future management of waste in County Kildare.

The collection systems, pre-treatment requirements, outlets for segregated materials, disposal residues and capital and operating costs associated with each option were examined in the strategy study report.

The recommendations of the strategy study report in relation to the provision of services and waste management facilities to be provided by Kildare County Council in order to effectively manage its waste in the period to 2018 are as follows:

1. The provision of kerbside type collection in the following towns; Naas, Newbridge, Kildare, Celbridge, Leixlip, Maynooth and Athy. These towns had a combined population in excess of 70,000 persons in 1996 representing 52% of the total county population.
2. An intensive bring system for the remaining population of approximately 67,000 persons. This represents a requirement for 67 neighbourhood recycling centres based on the 1996 population records.
3. The Council should also provide at least 3 No. Civic Amenity sites located as to provide ease of access to the majority of the county's population.
4. Provide, or arrange for the provision of, a waste processing and biological treatment plant. The facility should be capable of being extended in future if or when additional organic wastes are directed there.

5. Provide, or arrange for the provision of, a new engineered landfill disposal site capable of accepting residual waste material generated in the County over a 20-year period. It is recommended that this facility be developed as a residual site and so a transfer station will also be required.
6. Notwithstanding recommendations 4 and 5 above it was also recommended that an examination be undertaken of the feasibility of directing all, or a significant proportion, of Co. Kildare's waste to suitable facilities in the Dublin, Midlands and South-East regions, as and when these are proposed/developed.

The costs incurred in establishing the recommended waste management infrastructure estimated in the Strategy Study are presented in Table 4.1.

Table 4.1: Estimated Capital and Operating Costs of Recommended Waste Management Infrastructure

ITEM	CAPITAL COST, IR£	ANNUAL OPERATING COST, IR£
Rural Bring Network	300,000	75,000
Urban Kerbside Recycling	400,000	300,000
Civic Amenity Sites (3 no.)	800,000	175,000
Materials Processing Plant (cap. 150,000 tpa)	3,000,000	450,000
Biological Treatment Facility (cap. 25,000 tpa)	3,170,000	306,250
Baling Transfer Station (cap. 100,000 tpa)	3,500,000	1,000,000
Landfill (cap. 100,000 tpa) (phased over 20 years)	12,000,000	1,000,000
Landfill Aftercare	2,000,000*	300,000
Totals	25,170,000	3,606,250

* Dependant on EPA waste licence requirements

The recommendations as presented in the Strategy Study report were based on:

- the requirements of national and EU policy and legislation;
- the appreciation of the waste types and quantities generated in Co. Kildare, both currently and in the future;
- the nature of the existing arrangements in the County;
- the review of the available management options carried out; and on
- the economic assessment made of those options.

4.1 (b) The Management of Individual Waste Streams

The Council has the option of arranging that individual waste fractions such as organic, inert, hazardous or recyclable wastes be dealt with separately. Separation of the waste fractions can be done either at source or at destination, e.g. waste management facility. Dealing with individual waste fractions separately is environmentally more favourable but inevitably more costly. The Council will encourage and seek to expand on the existing home composting trials and will introduce community-based green waste composting during the period of the plan on a trial basis.

The separate collection of (kerbside collection) will be provided in all major towns during the period of the Plan. The number of bring centres will be increased from 23 to 67.

4.1 (c) Objectives of Section 22(6) of the Act

Section 22(6) of the Act stipulates that the Waste Management Plan shall contain reasonable and necessary objectives. Assuming that the period of the Plan is five years, then the objectives and targets as set for the period 1999 to 2004 under the following headings:

- Prevention;
- Minimisation;
- Encouragement and support of recovery;
- Safe disposal; and
- Implementation of the polluter pays principle in respect of non-hazardous waste.

The binding objectives of the Council are those required to meet national targets (Recycling for Ireland, 1994 as amended), the Packaging Directive, the EU Landfill Directive and the objectives set out in the recent policy statement entitled “Waste Management – Changing Our Ways”.

The national recycling targets currently are as follows:-

- 20% of combined household waste/commercial waste to be recycled by 1999;
- 50% of household waste to be diverted from landfill by 2013;
- 100,000 tonnes of organic waste to be diverted from landfill by 1999,
- 27% of packaging waste to be recycled by 1999.

In response to the Packaging Directive (94/62/EC) the Irish targets are:-

- 25% recycling rate for packaging waste by 2001,

- 50-65% recovery rate by the year 2005;
- 25-45% recycling rate by the year 2005;
- 15% minimum recycling rate for each material by 2005.

The Landfill Directive proposes the following targets:-

- By the year 2006, reduce amount of biodegradable material going to landfill to 75% of the total amount of biodegradable material produced in 1995.
- By the year 2009, reduce amount of biodegradable waste going to landfill to 50% of 1995 levels.
- By the year 2016, reduce amount of biodegradable waste going to landfill to 25% of 1995 levels.

Section 4 of the Minister of the Environment and Local Government's policy statement on waste in September 1998 entitled "Waste Management – Changing Our Ways" defines clear targets for the management of waste in Ireland over the next fifteen years as follows ;

- A major general objective is to stabilise, and in the longer term reverse, the growth in waste generation, though it is recognised that achievement of this objective will require determined and ambitious measures from producers and consumers, as well as local authorities. In addition, and in the shorter term, more sustainable practices need to be applied in relation to the management of waste arisings. An adequate, national infrastructure to meet modern waste management needs should facilitate the achievement of the following targets over a fifteen year timescale:
 - a diversion of 50% of overall household waste away from landfill,
 - a minimum 65% reduction in biodegradable wastes consigned to landfill,
 - the development of waste recovery facilities employing environmentally beneficial technologies, as an alternative to landfill, including the development of composting and other feasible biological treatment facilities capable of treating up to 300,000 tonnes of biodegradable waste per annum,
 - recycling of 35% of municipal waste,
 - recycling at least 50% of C&D waste within a five year period, with a progressive increase to at least 85% over fifteen years,
 - rationalisation of municipal waste landfills, with progressive and sustained reduction in numbers, leading to an integrated network of some 20 state-of-the-art facilities incorporating energy recovery and high standards of environmental protection, and
 - an 80% reduction in methane emissions from landfill, which will make a useful contribution to meeting Ireland's international obligations.

Table 4.2 summarises these targets as they apply to County Kildare..

Table 4.2: Summary of the Targets to be met by County Kildare

WASTE	2001	2005/6	2009	2013	2016
Municipal to be recycled	20% ¹			35% ⁴	
Household to be diverted from landfill				50% ⁴	
Packaging Waste to be recycled	25% ²	50% ²			
Biodegradable Municipal waste to be diverted from landfill		25% ³	50% ³		75% ³
Biodegradable waste to be diverted from landfill. (<i>Municipal & Industrial</i>)				65% ⁴	

All targets based upon 1998 arisngs apart from Landfill Directive Targets

Notes:-

1. “*Recycling for Ireland*” (1994)
2. Packaging Directive Targets
3. Landfill Directive Targets (based upon 1995 arisings)
4. “*Changing Our Ways*” (1998)

Of the obligatory targets set out in Table 4.1 those in the Packaging Directive and those in the EU Directive on the Landfill of Waste are most pertinent during the period of this Plan. Kildare County Council will therefore concentrate on these objectives for the period of this Plan. The Council will also have regard to the later target dates required by the “Changing Our Ways” policy document and will seek to meet the interim targets necessary to ensure these targets will be fully met by their respective dates.

4.1 (d) Enforcement and Implementation of the Act

The Council will adopt a policy of information such that all waste producers in the County will be made fully aware of their responsibilities. The Council’s approach will be to introduce procedures for information and advice prior to enforcement. To this end the Council has already issued leaflets on ‘Litter and The Law’.

Litter Wardens will also play an important role in the enforcement of the Waste Management Act. Their initial role has included an information campaign, advising commercial and industrial premises and the general public of their responsibilities under the Litter Pollution Act 1997. The Wardens are also responsible for the investigation of reports of illegal dumping and prosecution where evidence is found under both the Litter Pollution and Waste Management Acts.

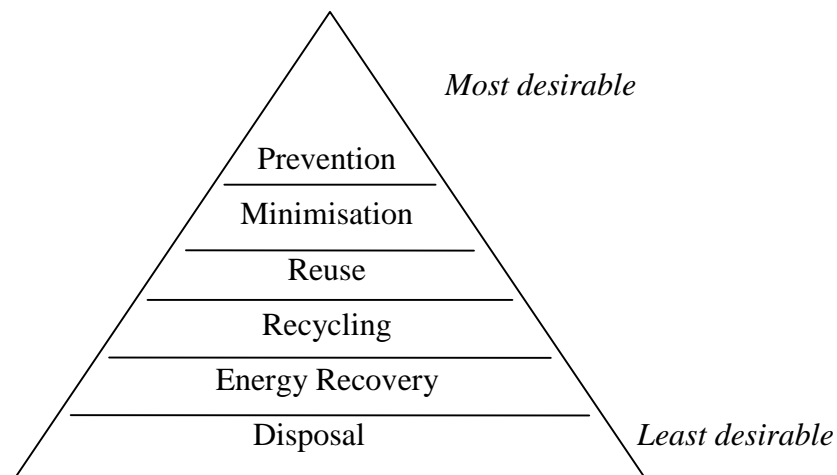
The Council will seek to ensure that the requisite staff and resources are made available so that its responsibilities under the following statutes and statutory instruments are fully and effectively discharged:

- ◆ Litter Pollution Act 1997;
- ◆ Waste Management (Planning) Regulations 1997;
- ◆ Waste Management (Packaging) Regulations 1997;
- ◆ Waste Management (Farm Plastics) Regulations 1997;
- ◆ Waste Management (Use of Sewage Sludge in Agriculture) Regulations 1998;
- ◆ Waste Management (Movement of Hazardous Waste) Regulations 1998;
- ◆ Waste Management (Permit) Regulations 1998;
- ◆ Waste Management (Miscellaneous Provisions) Regulations 1998.

4.2 Statement of Policy

Kildare County Council's waste management policy for the period of this Plan will comprise the following specific policy actions (as recommended in the Waste Management Strategy, 1999). These actions are prioritised in accordance with the Government's policy objectives as stated in the document "Changing Our Ways" (DoELG, September 1998). Figure 4.1 below shows the hierarchy of waste management.

Figure 4.1: Hierarchy of Waste Management



Specific Policy on Waste Prevention

1. The Council will continue to operate its schools programme, and will endeavour to step up its information and advisory campaign through the media, environmental bulletins, the internet and its staff. The Council will establish a task force to oversee this campaign.
2. The Council will continually review disposal charges as an economic incentive for waste prevention.
3. The Council will review the recommendations of the “Consultancy Study on Plastic Bags” (currently available for public consultation) and which has been prepared by the Department of Environment and Local Government.

Specific Policy on Waste Minimisation

1. The County Council will carry out a detailed eco-audit of its activities in order to identify baseline conditions concerning its in-house purchasing policies, consumption patterns and waste production. The audit and its findings will be widely publicised in order to provide an example to the wider community and in particular to small and medium enterprises in the County. The audit will provide sustainability indicators such as amount of waste produced, recovered and landfilled.
2. Based on the findings of the audit targets will be established for in-house waste minimisation and recovery; purchasing policies and working procedures will be amended progressively in accordance an agreed implementation plan.
3. The audit process will be viewed as the first step in the achievement of full certification via an Environmental Management System such as ISO 14001.
4. The County Council will seek to capitalise on the presence in the County of major companies recognised as world-leaders in the application of waste minimisation techniques to disseminate the message to small and medium sized enterprises.
5. The County Council will initiate a public information programme for environmental issues in general and waste management in particular. The programme should be designed to be informative and attractive and be aimed at specific sectors such as householders, small businesses, schools.
6. The County Council will ensure that economic instruments, and in particular the price mechanism, are applied to waste services in such a manner as to encourage and promote waste minimisation and waste recovery.

Specific Policy on Recovery/Reuse

1. The Council will provide facilities at its civic amenity centres to recover reusable materials such as clothing and books.
2. The Council will develop a repair and renovation centre where goods or furniture may be deposited for repair by the voluntary sector – possibly in conjunction with FAS.

Specific Policy on Recovery/Recycling

1. The County Council will support and encourage commerce and industry in the achievement of statutory targets for the recovery and recycling of packaging waste.
2. The County Council will liaise with and support REPAK with respect to the implementation of the Waste Management (Packaging) Regulations 1997.
3. The Council will arrange for the provision of a kerbside type collection system for packaging waste and newsprint to all households in the following towns:

- Naas;
- Newbridge
- Kildare;
- Celbridge;
- Leixlip;
- Maynooth;
- Athy.

4. The Council will arrange for the provision of an intensive bring system for the recovery of household recyclable material in the remainder of the County. As the population of the remainder of the County is currently estimated at 67,000 persons this will necessitate the development of 67 neighbourhood recycling centres. These centres should provide, at a minimum, receptacles for the collection of glass, beverage cans and textiles.

It is anticipated that this system will necessitate capital expenditure, by or on behalf of the Council, of approximately IR£250,000. Operating costs are estimated at IR£50,000 per annum. This measure is designed to recover a further 10% of household waste.

5. The Council will arrange for the provision of a minimum of 3 No. dedicated Civic Amenity sites so located as to provide ease of access to the majority of the County's population. These sites should incorporate comprehensive bring facilities for recyclable materials, green waste and household hazardous wastes. Green waste is to be shredded and composted. Consideration will be

given to 'Community Composting' schemes. Such schemes may be carried out in schools, institutions or in small rural villages.

Provision will be made at Civic Amenity Sites for the reception and further management of household hazardous materials in accordance with the recommendations of the Proposed National Hazardous Waste Management Plan. These measures should ensure that a further 5-10% of household waste is removed from the waste stream.

Specific Policy on Energy Recovery

1. Kildare County Council in the short-term will dispose of municipal solid waste arisings (upon closure of Silliot Hill Landfill) through landfill in adjacent authorities. Particular consideration will be given to disposal at Arthurstown Landfill. South Dublin County Council have indicated their agreement in principle to use of this disposal outlet. Energy recovery from landfill gas at Silliot Hill will be explored and, if feasible, implemented.

In the short to medium term, Kildare County Council will provide a materials recovery facility, biological treatment centre and residual landfill to enable the County to achieve recycling targets as outlined in the Government Policy Document "Changing Our Ways".

In the medium to long term, Kildare County Council will consider alternative arrangements for the disposal of residual waste in co-operation with neighbouring Local Authorities.

Specific Policy on Disposal

1. The Council will provide restoration and aftercare for the Silliot Hill landfill post closure.
2. Kildare County Council in the short-term will dispose of municipal solid waste arisings (upon closure of Silliot Hill Landfill) through landfill in adjacent authorities. Particular consideration will be given to disposal at Arthurstown Landfill. South Dublin County Council have indicated their agreement in principle to use of this disposal outlet. In order to ensure that the waste transfer can be achieved, a waste transfer facility will be required at Silliot Hill. Energy recovery from landfill gas at Silliot Hill will be explored and, if feasible, implemented.

In the short to medium term, Kildare County Council will provide a materials recovery facility, waste transfer facilities, biological treatment centre and residual landfill to enable the County to achieve recycling targets as outlined in the Government Policy Document "Changing Our Ways".

In the medium to long term, Kildare County Council will consider alternative arrangements for the disposal of residual waste in co-operation with neighbouring Local Authorities.

3. The Council will encourage private sector collectors in the use of approved privately operated disposal facilities
4. The Council will provide, or arrange for the provision of, a waste processing and biological treatment plant.
5. All municipal solid waste, collected by or on behalf of the County Council, will be directed to this facility where the organic fraction and certain recyclables may be extracted by processing. The feasibility of directing digested sewage sludge and/or industrial organic wastes at this facility will be examined. The facility will be capable of being extended in future if or when additional organic wastes are directed there.
6. The Council will provide, or arrange for the provision of, a new engineered landfill disposal site capable of accepting residual waste material generated in the County over a 20-year period. This facility will be developed as a residual site and so a transfer station will also be required. The Council has already initiated site selection for a waste management facility.
7. Notwithstanding the Council's efforts to establish a waste management facility, the Council will have due regard to developments by or in adjoining local authorities.
8. The County Council is developing measures designed to limit the quantity of construction and demolition (C&D) waste landfilled in the County. The measures under consideration include a ban on:
 - (i) the acceptance of such materials at public site(s) apart from material required for engineering purposes and
 - (ii) the granting of planning permissions for the landfilling of such material at private sites – except where such development is a necessary and minimal adjunct to a C&D waste recycling undertaking.

The Council is also considering the inclusion of a condition in planning permissions for all major development proposals requiring the developer to submit a Construction Waste Management Report prior to the commencement of activity.

Specific Policy on Waste Collection

1. The County Council will ensure that all householders within its administrative area are provided with a regular and efficient system for the collection of waste.
2. The Council is currently reviewing waste collection services in the county. On-vehicle-weighing is being considered as an option. The Council considers this approach appropriate to the application of the 'polluter pays principle'.
3. The Council will regulate all waste collectors in accordance with the waste collection (permitting) regulations as and when they are implemented.

Specific Policy on Animal Slurries

Spreading of Slurry related materials can contribute to elevated nutrient levels in freshwaters and groundwaters. Where these conditions exist, the following will be considered:

- (a) requirement of nutrient management plans under the 1990 Local Government (Water Pollution) (Amendment) Act 1990 as inserted by the Waste Management Act 1996
- (b) enactment of bye-laws under the Local Government Act, 1994 (Bye-Laws) Regulations 1999
- (c) Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorous) Regulations 1998

Recommendations as contained in the following documents will be implemented:

- Protection of our Freshwaters (nutrient management planning guidelines for local authorities), DoELG
- Managing Irelands Rivers and Lakes (a catchment based strategy against eutrophication), DoELG
- Code of Good Agricultural Practice (to protect waters from pollution by nitrates), DoAFF, DoELG
- Groundwater Protection Schemes, DoELG, EPA, GSI

Specific Policy on Sludge

A Sludge Management Plan for County Kildare is currently being prepared in accordance with the guidance document *Sludge Management Plans: A Guide to their Preparation and Implementation (DoELG 1998)* with reference to the recommendations in the *Strategy Study On Options For The Treatment And Disposal of Sewage Sludge In Ireland (DoELG 1998)*. The Sludge Management Plan considers all forms of non-hazardous sludge arising and predicted to arise in the county over the next 20 years and proposes sustainable management strategies for them. The following are the main subjects addressed within the document:

- Quantities of non hazardous sludge arising in County Kildare
- Existing strategies for management of non hazardous sludges
- Continuation of existing management strategies
- Sludges requiring new management strategies
- The potential for agricultural use of biosolids
- Sludge hub centres and satellites
- Evaluation of new management strategies
- Procurement Strategy
- Synergies and other counties
- Implementation Procedures
- Public information Strategy
- Quality Control
- Specific recommendations of the sludge management plan

In the interim, Kildare County Council intend to enter into a service contract for two years, extendable on a yearly basis for the treatment of digested sludge arisings from the main wastewater treatment plants at Osberstown and Leixlip. The preferred treatment process is the in-vessel composting process and it is intended to locate this temporary plant at the landfill site at Silliot Hill. On completion of the contract period the plant will be decommissioned and removed off site.

Specific Policy on Hazardous Waste

1. The County Council will review and consider the objectives of the Proposed National Hazardous Waste Management Plan and the County Council will implement any action statutorily required of it under section 22(8) of the Waste Managment Act.
2. The Council will provide appropriate facilities for the collection of waste oils and household hazardous waste. The Council has also introduced a number of collection points for batteries. Battery collection facilities will be increased depending on the success of the initial trials.

Specific Policy on Litter Prevention

1. A programme of education will be undertaken in both primary and secondary schools. The programme will include visits to schools countywide, with the objective of involving the students in litter surveys, plans and schemes to make their towns or specific areas litter free. The involvement of these groups will have a wider effect, through influence on adults and younger people with whom they come in contact.
2. The Council has arranged to have a leaflet “*Litter and the Law*” printed and distributed to householders, business and schools in the county to remind members of the public of their duties under the Litter Pollution Act 1997. It is anticipated that this leaflet will also promote public awareness of the

responsibility of individuals to keep their property (including footpaths and grass margins outside same) free of litter.

3. The Council will continue to operate a number of schemes as described in Section 5.3 (b) which are designed to assist the community in their endeavours to clean up their areas. These schemes include the following:
 - Skips Scheme;
 - Litter Bins Scheme;
 - Wheeled Bins for Residents Associations;
 - Cemetery Clean Ups;
 - Tidy Estates Competition/Grants Scheme;
 - Tidy Towns Grants Scheme; and
 - Clean Up Week.
4. The Council will continue to operate a street cleaning programme throughout the period of this plan. The Council have provided new mechanised litter sweepers in Newbridge, Celbridge and Kildare/Monasterevan.
5. The number of litter bins and their location shall be reviewed and additional bins will be provided, as required, in all towns.
6. The Council appointed two full-time Litter Warden to patrol the county. In addition, a number of Council staff members have been appointed as part-time litter wardens, which will further strengthen the Council's anti-litter policy.

5.0 IMPLEMENTATION OF WASTE MANAGEMENT POLICY OVER THE RELEVANT PERIOD

5.1 General

5.1 (a) Proposals for Monitoring of Implementation of the Plan

The Council will establish a Steering Committee to progressively set and review targets for waste reduction, waste disposal and other related matters. The steering committee will be required to report on a bi-annual basis to the Council.

5.1 (b) Measures to Provide Ongoing and Improved Data Regarding Waste Management

Under the Waste Management Act the Council's powers with regard to the permitting of private operators have been strengthened. The Council will insist that accurate data on collection recovery and disposal be reported on a regular basis and included in an overall database. The Council will incorporate information being collated by industries as part of their IPC licensing procedures. This data will be collected by the Steering Committee and included in the six-monthly reports to Council. A programme will be established to collect information on waste flows and correlate TFS and C1 shipment information and, in particular, the collection of information on waste production from non-IPC licensed industries.

5.2 Roles and Responsibilities

5.2 (a) Description of Roles

The roles of participants in waste management in the County are set out in Table 5.1.

Table 5.1 Roles of participants in waste management.

AGENCY	ROLES
Kildare County Council,	Overall control of waste management in the County. Planning and control of developments within its own functional area. Control of C1 and TFS notes. Implementation of the Waste Management (Packaging) Regulations. Waste Collection. Recovered waste collection. Final disposal of waste. Educational programmes and dissemination of information. Litter Control.
Athy U.D.C., Naas U.D.C.	Planning and control of developments within its own functional area. Waste Collection. Recovered waste collection. Litter Control. Educational programmes and dissemination of information.
Private Interests	Waste Collection. Recovered waste collection. Waste minimisation (packaging). Segregation and collection of selected recyclables. Establishment of selected bring banks. Final disposal of waste.
Environmental Protection Agency	Waste management licensing, Overview of waste management planning, Publication of waste management guidance documentation or codes of practice, Monitoring and investigation of environmental quality and pollution, Proposed National Hazardous Waste Management Plan
The Public	Participation in waste minimisation programmes. Home composting. Separation at source. Litter control.

5.2 (b) Organisational Arrangements and responsibilities within the Local Authority

The organisational arrangements in Co. Kildare are summarised in Figure 5.1..
The proposed programme for implementation is given in Figure 5.2

Fig. 5.1 Waste Management Organisation

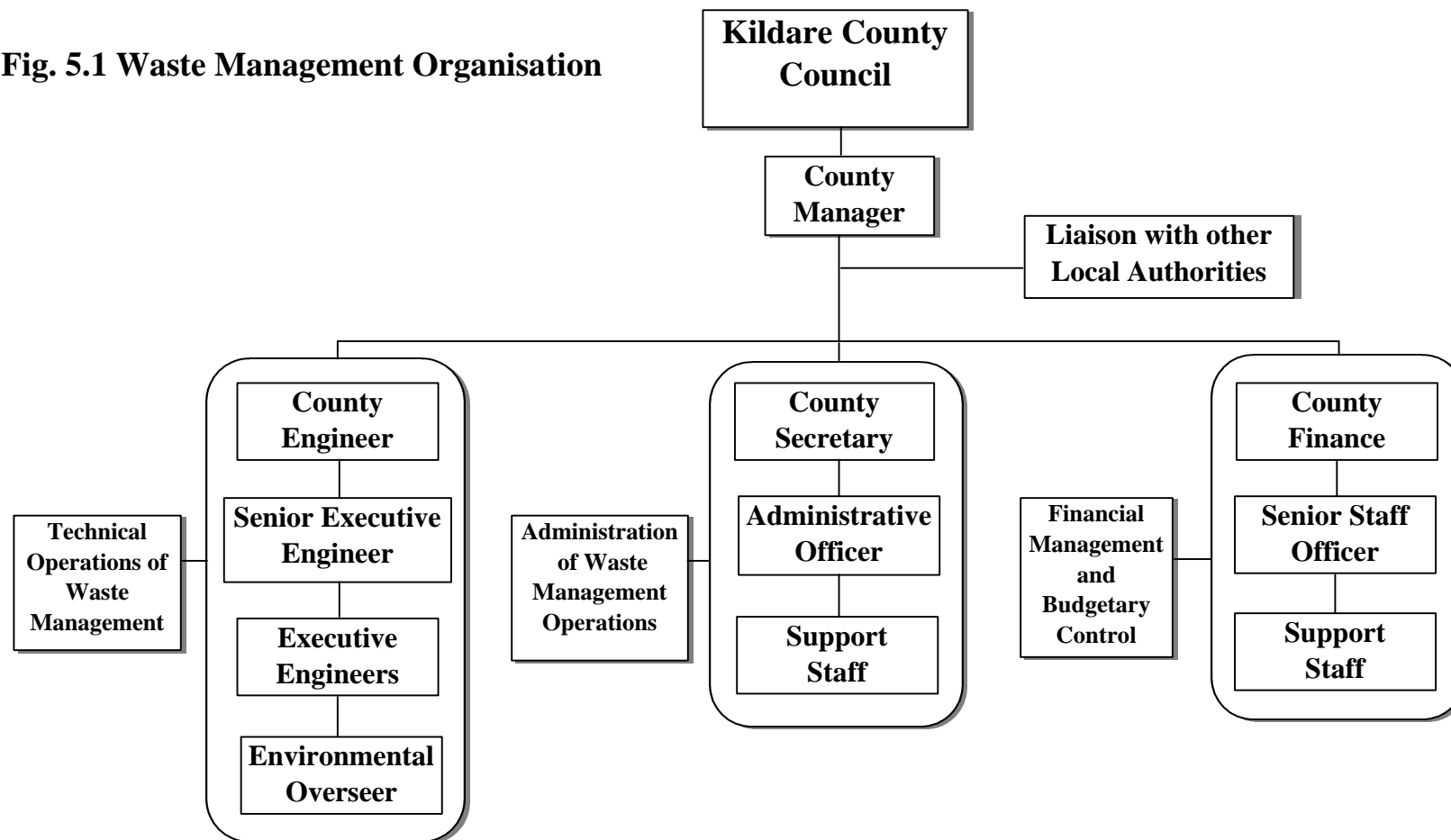


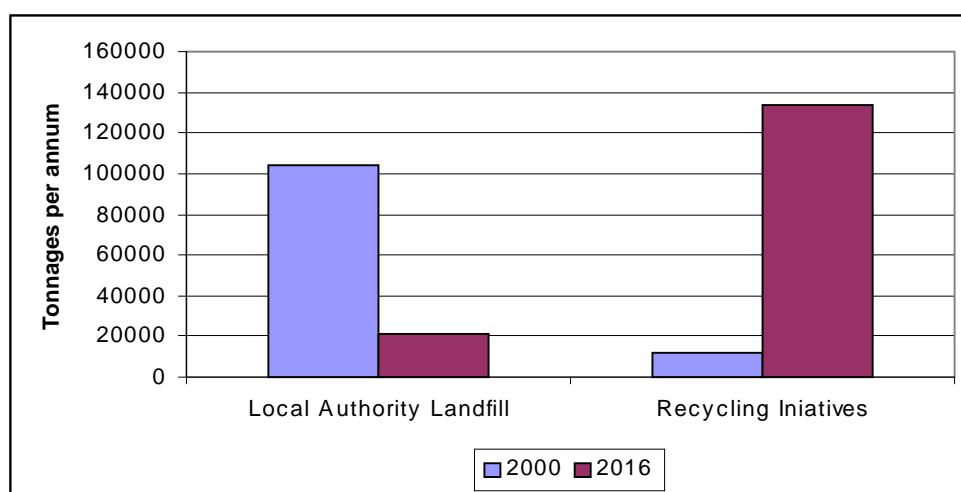
Figure 5.2 Implementation Plan

[illegible]

5.2 (c) Encouragement of Support of Waste Management Policies

The Council is aware of the need to promote participation in waste avoidance, reduction, reuse and recycling, if the regulatory targets are to be met. It is the Councils hope that by presenting a pro-active environmental awareness campaign, behavioural changes will be encouraged and the people of Kildare will take ownership of the existing waste management problems. Figure 5.3 illustrates some of the important required changes in waste management practice to be achieved.

Figure 5.3 Required Change in Waste Management Practise, 2000-2016



Based on 1998 waste arisings

The Council will **require** private interests and the public to support waste management policies by:-

- the further development and implementation of the polluter pays principle (weighing);
- identification of the sources of waste so that specific streams, e.g. packaging waste can be eliminated at source;
- notification/liaison with waste producers in order to encourage compliance with policies;
- recourse to law particularly with regard to litter and reduction of packaging waste;
- consider the prohibition of certain waste streams from disposal to landfill (C&D Waste);
- permitting of private waste operators.

The Council will **encourage** support of waste management policies through:-

- education, particularly at school level;
- advice, particularly in relation to outlets for recyclables;
- publication of newsletters and web page;
- development of a logo for waste management;

- leadership by introducing an environmental management system to cover all of the Council's activities;
- continued encouragement for the introduction of home-based biodegradable waste composting.

The Council will continue to **support** the public involvement in the implementation of waste management policies by:-

- co-financing (with community groups) the establishment of litter bins and community composting facilities in remote areas;
- assisting community groups (provision of schemes, described later in 5.3(b)) in local clean-up campaigns;
- the development of civic amenity facilities in conjunction with the provision of premises for recycling and repair/renovation activities;
- upgrading of information technology to permit efficient access to information;
- increasing the density of drop-off centres in rural areas;
- introducing kerbside collection in several towns;

5.3 Waste Prevention and Recovery

5.3 (a) Promotion of Public Awareness

Kildare County Council operates and sponsors a number of programmes which are aimed at increasing public awareness and the availability of information on matters relating to the management of waste in the County. The Council believes the public will make more informed decisions and understand the decisions that the local authority makes by educating them with regard waste management issues and strategies.

The Council is also aware of the need to promote participation in waste reduction and recycling, if the regulatory targets are to be met. It is the Council's hope that by presenting pro-active and consistent messages repeatedly, behavioural changes will be encouraged, acknowledged and reinforced. Promotion of public awareness with regard to waste management in the county will be achieved by deployment of a three-way campaign incorporating information, education and enforcement.

The Council has an active information programme on waste management that includes:

- Internet Web-Site, this continually updated site gives details of waste management schemes and services provided by the Council (www.kildare.ie/CountyCouncil).
- The publication of a quarterly environmental newsletter (also reproduced on the Internet web-site). The newsletter gives details and contacts for

various schemes and provides information on up-coming environmental events within the Council.

- An advertising campaign which includes advertisement of National Spring Clean, assistance Schemes and recycling.
- The Council has fully supported National Spring Clean in 1999 and 2000 by supplying skips and materials for organised clean-up events.

The Council's schools programme includes the following events and schemes:

- Schools Education Programme for primary and secondary schools. This initiative focuses on litter and recycling. It enables students to develop their own ideas on these topics.
- Primary schools poster competition. This is an annual competition with a different theme each year. In 1998, the theme was 'litter'. In 1999, the theme was 'Clean up Kildare'. It is hoped to run this competition again.
- Secondary school debating competition. This competition, held in 1999 and 2000 was co-sponsored by the Educational Building Society. Wide ranges of environmental issues were debated over the course of these debates.
- The Green Schools Programme, run jointly with An Taisce, aims to promote sustainability within schools. To date, 30 schools have registered for this programme.
- The Down to Earth Theatre Company has been retained to perform their "Bin There – Dump That" play in six schools in 1998 and 1999. The new production for 2000 "Message in a Bottle" will be booked for 2000.
- A Junior Litter Warden Scheme will be introduced in schools in September 1999 involving primary school students in litter awareness and localised clean-ups. Prizes will be awarded to the best kept schools.
- A Christmas Card Competition will be run in secondary schools in September, the winning entry may be chosen as the Kildare County Council Christmas card.

Enforcement of the Litter Pollution Act is effected by means of:

- *The appointment of Litter Wardens.* The Council's first full-time Litter Warden was appointed in June 1998. A second Litter Warden was appointed in May 1999. The Litter Wardens also have the responsibility for investigating reports of illegal dumping and the issuing of litter fines where evidence is found. To date, 2000 fines have been issued. One of the first duties of the Litter Wardens is to embark on an information campaign, advising the general public, commercial and industrial premises of their responsibilities under the Litter Pollution Act.
- *Schools Visits.* The Litter Wardens will also be engaged on school visits as part of the education programme and will be involved in the Junior Litter Warden Scheme.
- Unpaid litter fines and more serious littering offences will be prosecuted through the court system as necessary.

5.3 (b) Infrastructural Support of Waste Minimisation and Recovery

The Council operates a number of infrastructural support schemes that are designed to assist the local community in their endeavours to clean up their environment and recover wastes. These schemes may be briefly summarised as follows:

- (i.) *Home Composting Scheme.* The Council has supplied over 600 composting bins at a subsidised price of IR£20. The Council holds a strong view on the benefits of composting the organic fraction of household waste and will be advertising the scheme again in 1999.
- (ii.) *Skips Scheme.* The Council provided 183 skips to residents associations and community groups for 'clean-up' initiatives in 1998. The scheme will be run again in 1999 in conjunction with the National Spring Clean.
- (iii.) *Litter Bins Scheme.* The Council provides grants of 50% up to a maximum of IR£400 towards the provision of litter bins by residents and community groups. A total of 6 bins were supplied in 1998. The Council will be advertising the scheme again this year, seeking sponsorship from businesses.
- (iv.) *Wheeled Bins for Residents Associations/Tidy Towns Groups.* Under this scheme, which operates all year round, the Council provides wheeled bins and free collection to residents associations and tidy towns groups to assist in on-going anti-litter endeavours. Forty-three bins were supplied in 1998.
- (v.) *Tidy Towns Grants.* The Council has provided grants to participants in the National Tidy Towns Competition (IR£300 per participant) with prizes of IR£300 presented in December. This year the Council proposes to pay initial grants on entry to enable the group carry out work prior to adjudication.
- (vi.) *Kerbside Type Collection:-* Kerbside collection will be introduced to Naas; Newbridge; Kildare; Celbridge; Leixlip; Maynooth and Athy within the period of this plan.
- (vii.) *Recycling Bring Centres.* There are currently 20 bring centres located throughout the county for the recovery of recyclable materials such as glass, cans and textiles. These collection centres are provided and operated by private concerns assisted by Kildare County Council. It is the Council's intention to increase the number of these sites so as to provide one per 1,000 population in rural areas.

5.3 (c) Co-operation with Voluntary Organisations

Every effort will be made to alert voluntary organisations within the county of the need for a greater effort at recycling. The employment of a professional public relations organisation will be considered to design and orchestrate the initial campaign. The Council's web site will advocate responsible use of the drop-off centres provided. The web site will also encourage responsibility for

the environment giving advice, news and statistics in relation to waste management.

5.3 (d) Segregation and Separate Collection of Recoverable Waste

The Council will arrange for the provision of a kerbside collection system for packaging waste and newsprint to all households in Naas; Newbridge; Kildare; Celbridge; Leixlip; Maynooth and Athy. The Council will keep under review the number and size of towns proposed.

These towns had a combined population in excess of 70,000 persons in 1996 representing 52% of the County total at that time. It is clear that both the Liffey Valley towns and the central area towns are likely to experience sustained expansion in the short to medium term. The proportion of the County population residing in these areas is thus set to increase further in future years. It is estimated that this measure will result in the recovery for recycling of 10% of household waste in the County.

The establishment of three civic amenity centres will further encourage and facilitate the segregation and separate collection of recoverable waste, as will the increased number of drop-off centres in rural areas to one for each 1,000 persons.

The Council will provide, or arrange for the provision of, a waste processing and biological treatment plant. The facility will be capable of being extended in future if or when additional organic wastes are directed there.

5.3 (e) Home Composting of Organic Household Waste

The Council currently operates a home-composting scheme whereby the Council offers composting bins at a subsidised price to the public. The Council has supplied approximately 600 bins since the scheme began. The Council holds a strong view on the benefits of composting the organic fraction of household waste and will be advertising the scheme again in 2001. A survey of users was carried out in 2000. The vast majority of people were extremely happy with the bins and intend to continue using them. It is anticipated that such a survey would look at the problems encountered by those using the bins, if any, and provide recommendations for future users of the scheme. The Council will also issue a copy of the ENFO leaflet on home composting with all new bins supplied. Furthermore the Council will consider the possibility of implementing 'Community Composting' schemes.

5.3 (f) Involvement of County Council in Waste Recovery

The establishment of three civic amenity centres will further encourage and facilitate the recovery of recyclable waste, as will the increased number of drop-off centres in rural areas to one for each 1,000 persons and the provision of a kerbside collection service in the main towns of the county. The Council will

examine the feasibility of recovering energy from the landfill gas at Silliot Hill landfill.

g) The Scope for Energy Recovery from Waste

In the medium to long term, Kildare County Council, in order to maximise diversion of waste from landfill in accordance with national policy (“Changing Our Ways”), will consider alternative arrangements for the disposal of residual waste in co-operation with neighbouring Local Authorities. The Council will examine the feasibility of recovering energy from landfill gas at Silliot Hill.

5.3 (h) Targets for Waste Recovery

Table 5.2 includes a summary of the recycling and recovery targets Kildare County Council must achieve to meet national targets (Recycling for Ireland, 1994 as amended), the Packaging Directive, the EU Landfill Directive and the objectives set out in the recent policy statement entitled “Waste Management – Changing Our Ways”.

Table 5.2 Summary of the Targets to be met by County Kildare

WASTE	2001	2005/6	2009	2013	2016
Municipal to be recycled	20% ¹			35% ⁴	
Household to be diverted from landfill				50%	
Packaging Waste to be recycled	25% ²	50% ²			
Biodegradable Municipal waste to be diverted from landfill		25% ³	50% ³		75% ³
Biodegradable (Municipal & Industrial)				65% ⁴	

All targets based upon 1998 arisings apart from Landfill Directive targets

Notes:-

1. “Recycling for Ireland” (1994)
2. Packaging Directive Targets
3. Proposed Landfill Directive Targets (based upon 1995 arisings)
4. “Changing Our Ways” (1998)

The Council seeks to achieve these targets through a combination of the following:

- The introduction of higher landfill charges as an economic incentive;
- The introduction of community based composting and the continued encouragement of home-composting;
- The development of new drop-off centres to ensure a true density of one per 1,000 population in rural areas;
- The introduction of kerbside collection of recyclables at Naas, Newbridge, Kildare, Celbridge, Leixlip, Maynooth, and Athy.

- The implementation of the Waste Management (Packaging) Regulations with particular emphasis on industrial companies that have not joined REPAK or another approved scheme.
- The establishment of state-of-the-art civic amenity centres.

5.3 (i) Consultation and Co-ordination of Measures with other Local Authorities

The Council will have due regard to developments in or by adjoining local authorities. The Council will examine the feasibility of directing all, or a proportion of, Co. Kildare's waste to suitable facilities in the Dublin, Midland or South-East Regions as and when these are proposed/developed. The possibility of co-operating with Co. Wicklow with regard to the management of waste generated in the west of that county will be examined.

5.4 Management of Packaging and Packaging Waste

Packaging is defined in the National Waste Database 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 Waste Management (Packaging) Regulations, introduced on 1 July 1997, require that a producer of packaging waste must either join an approved scheme or take steps themselves to assist the recovery of packaging waste on their own premises.

So-called *major producers* (i.e. a company which places more than 25 tonnes pa of packaging onto the Irish market and which has an annual turnover in excess of IR£1m) have additional responsibilities where they choose not to join an approved scheme. They must accept or collect packaging waste from third parties and prepare and make available waste recovery plans and reports and register with their local authority.

There is only one approved scheme in existence at present. This is the user-funded organisation, REPAK, established under the auspices of the Irish Business and Employer's Confederation (IBEC). Membership of REPAK guarantees compliance with the Regulations for member companies and releases (major) producers from the potentially onerous requirement to accept or collect waste from third parties. 82 companies operating in Kildare have joined Repak. Two companies have made inquiries with regards registration with the County under the Regulations.

Commerce and industry must thus themselves ensure compliance with the requirements of the Packaging Regulations (by joining REPAK or otherwise) including the achievement of nationally agreed recycling targets (a minimum of 27% of packaging waste to be recycled by 2001). REPAK has an additional commitment to provide (financial) support to organisations engaged in the recovery and recycling of household packaging waste.

5.5 Waste Collection and Disposal

5.5 (a) Rationalisation of Existing Waste Collection, Handling and Disposal Infrastructure

The operational efficiency of the majority of waste collection services in Co. Kildare is essentially a matter for the private sector. Kildare County Council do have a regulatory function with regard to private waste collectors and are very much involved in the management and supervision of its own waste collection service (O'Hagan). With the closure of the Silliot Hill landfill site the counties direct involvement in waste disposal operations will cease for a period. During this period, waste will be transported to a baling station and then transferred to Arthurstown Landfill for disposal.

5.5 (b) The Proximity Principle

The Council has always sought to implement the proximity principle in its management of waste and will continue to do so during the currency of the Plan.

5.5 (c) The Application of the Polluter Pays Principle

The polluter pays principle is currently being applied in the County through collection and disposal charges. During the currency of this Plan the Council will assess the feasibility of introducing more direct systems, e.g. pay by weight.

5.5 (d) Consultation and Co-ordination with other Local Authorities

The Council will have due regard to developments in adjoining authorities. In order to maximise diversion of waste from landfill in accordance with national policy ("Changing Our Ways"), the Council will consider alternative arrangements for disposal of residual waste in co-operation with neighbouring Local Authorities. The Council will co-operate with Co. Wicklow concerning the future treatment and/or disposal of wastes generated in the western part of the county.

GLOSSARY

Accumulators:-Lead acid batteries.

Aftercare: In relation to a facility which has been used for the purpose of waste recovery or disposal, any measures that are necessary to be taken in relation to the facility for the purpose of preventing environmental pollution following the cessation of the activity in question at the facility

BATNEEC: Best available technology not entailing excessive cost.

Biodegradable Waste: Waste which is capable of decomposition by living matter.

Bring Banks: Individual stand alone waste recovery units within a neighbourhood civic amenity site or drop-off centre; for example, bottle bank, can bank, textile bank.

Buy-back Centre: Centres where recyclable wastes may be brought and sold for economic reward.

Civic amenity: A specially developed location for the controlled reception of bulky wastes from both householders and small traders.

Collection Permits: Waste Collectors are required under the Waste Management (Permit) Regulations, 1998, to obtain a waste collection permit.

Commercial Waste: Waste from premises used wholly or mainly for the purposes of a trade or business or for the purposes of sport, recreation, education or entertainment but not including household; agricultural or industrial waste.

Construction & Demolition Waste: Construction and demolition (C&D) waste includes all wastes arising from construction, demolition and renovation activities.

Contaminated Soils: Land that contains substances that when present in sufficient quantity or concentration are likely to cause harm, directly or indirectly, to man, the environment or on other targets.

Disposal:-In relation to waste, includes any of the activities specified in the Third Schedule of the Waste Management Act. Waste disposal activity shall be construed accordingly.

Drop-off Centres:-A scheme which provides facilities in high density areas, where waste may be deposited by members of the public.

EMS:- An Environmental Management System (EMS) is a management system that enables an organisation to manage the environmental impacts of its products, services

and processes including developing, implementing, achieving, reviewing and maintaining an environmental policy.

Green waste:- means garden waste, including uncooked kitchen scraps (not including meat scraps).

Hazardous Waste:

- (i) hazardous waste for the time being mentioned in the list prepared pursuant to Article 1 (4) of Council Directive 91/689/EEC of 12 December, 1991, being either
- (I) Category I waste that has any of the properties specified in Part III of the Second Schedule, or
 - (II) Category II waste that
 - (a) Contains any of the constituents specified in Part II of the Second Schedule, and
 - (b) Has any of the properties specified in Part III of the said schedule,
- (ii) such other waste, having any of the properties specified in Part III of the Second Schedule, as may be prescribed for the purposes of this definition.

Healthcare:- Healthcare risk waste is defined as untreated waste from the following categories of materials:-

- Biological;
- Infectious;
- Chemical, toxic or pharmaceutical wastes including cytotoxins;
- Sharps (needles, scalpels, sharp broken waste);
- Radioactive waste.

Hospital Domestic Waste:- This waste is similar to domestic household waste in nature.

Household Waste: Waste produced within the curtilage of a building or self-contained part of a building used for the purposes of living accommodation.

Incineration:- Chemical oxidation at high temperatures where organic material is converted into heat, energy, flue gas and slag.

Industrial Waste: Waste produced or arising from manufacturing or industrial activities or processes.

Internet: A global network of connected computer networks having a collection of resources that can be reached from those networks.

IPC Licence: Under the EPA Act 1992 industries specified as having “significant polluting potential” are required to obtain an integrated pollution control (IPC) licence from the EPA in order to operate their facilities. An IPC Licence takes account of the effect the activity for which it was granted has on the environment as a whole and aims to prevent or solve pollution problems.

ISO 14001: The standard set by the International Standards Organisation which specifies the requirements of an environmental management system which can be integrated with other management requirements, to assist organisations to achieve environmental and economic goals. The overall aim of ISO 14001 is to support environmental protection and prevention of pollution in balance with socio-economic needs

IT: The production, storage, and communication of information using computers and micro-electronics.

Kerbside Collection: Householders may place recyclables in special containers, usually boxes or special bins provided by the operator. The operator collects the contents of the containers from the kerbside or doorstep. The collection may be either in conjunction with the normal refuse collection or by a separate dedicated vehicle.

Landfill: Waste disposal facility used for the deposit of waste onto or under land.

Landfill Gas: This is produced principally from the anaerobic decomposition of biodegradable organic waste and includes methane, ammonia, carbon dioxide, carbon monoxide, hydrogen, hydrogen sulphide, nitrogen and oxygen.

Landspread: The spreading of wastes on land or the injection of same into the soil.

Leachate: means any liquid percolating through deposited waste and emitted from or contained within a landfill.

Macroeconomic Indicators: Large scale economic indicators, i.e. general as opposed to specific economic indicators.

Municipal Solid Waste: Household waste as well as commercial and other waste which, because of its nature or composition, is similar to household waste.

Minimisation: Reducing the amount or toxicity of waste generated; for example, using reusable ceramic coffee mugs rather than disposable paper or polystyrene cups.

On-vehicle-weighing: This is where householders' bins are individually weighed as they are collected to enable collection charges to be allocated on a per weight basis. Every householder's bin would have individual identification, typically in the form of a bar code. Householders would be billed on a per tonne basis.

Packaging: 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.

PCB's: Polychlorinated biphenyls, a generic term covering a family of chlorinated isomers of biphenyl found in sewage outfalls and industrial and municipal solid wastes.

Proximity Principle: Principle whereby waste should be disposed of or managed close to the point at which it is generated regardless of county or regional boundaries.

Recovery: Any activity carried on for the purposes of reclaiming or re-using, in whole or in part, the waste and any activities related to such reclamation, recycling or re-use, including any of the activities specified in the Fourth Schedule of the Act, and waste recovery activity shall be construed accordingly.

Recycling: The subjection of waste to any process or treatment to make it re-usable in whole or in part; for example, melting down post-consumer glass in a furnace and making new glass containers.

Refuse Derived Fuel: A refuse derived fuel is whereby the combustible fraction is segregated from the non-combustible fraction of mixed municipal waste. Use is made of a range of processing techniques including screening, air classification, magnetic separation etc., to achieve the necessary degree of segregation. The end product has a higher calorific value than raw municipal waste.

Reuse: Reducing the amount of waste disposed by using a material again in the same form as its prior use without any process; for example, returning bottles to be refilled or donating clothes to an organisation for someone else to wear.

Source Reduction: Reducing the amount or toxicity of waste generated; for example, using reusable ceramic coffee mugs rather than disposable paper or polystyrene cups.

Sustainable Development: Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.

Transfer Station: A facility where collection vehicles bring waste where it is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere.

Waste: Any substances or object belonging to a category of waste, specified in the First Schedule (of the Waste Management Act 1996) or included in the EWC, which the holder discards or intends or is required to discard and anything which is discarded or otherwise dealt with as if it were waste shall be presumed to be waste until the contrary is proved.

Waste Management Licence: The Waste Management Act, 1996 requires that all significant waste disposal and recovery activities be licensed by the EPA. Facilities requiring licensing include landfill sites, transfer stations, storage facilities and certain types of treatment and recovery facilities. Licences are only granted when the EPA is satisfied, that the activity when operated in accordance with the conditions set by the EPA, will not cause environmental pollution.

Waste-to-energy plant: A waste disposal plant which by a given process reduces the volume and mass of waste entering it and produces/recovers energy at the same time.

Wheeled bin: A vessel of a standard size, typically manufactured from plastic used for the collection of waste. Wheeled bins have the advantage of being both highly mobile and can be emptied by mechanical means into a refuse collection vehicle.