



# **Waste Management Plan for County Kildare**

**2005 - 2010**

**Volume 2 of 4**

**Prepared for:**

Kildare County Council  
St. Mary's  
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County Kildare

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# Waste Management Plan for County Kildare

2005 - 2010

Volume 2 of 4

## REVISION CONTROL TABLE

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*Client:* Kildare County Council

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*Abstract:* A Waste Management Plan for Kildare County Council was prepared in accordance with the 1996 Waste Management Act. The Plan is valid for the period of 2000 - 2005. Section 22 of the Act requires that the Plan be reviewed at least once every five years. Kildare County Council has appointed FTC to prepare this Waste Management Plan for the period 2005 - 2010.

Kildare is not a member of any regional plan. The plan assesses the various waste management options available to Kildare County Council. The 2005 - 2010 plan also assesses progress to date in the implementation of the 2000 – 2005 Waste Management Plan. It outlines specific goals and targets as well as the infrastructure that will be required for County Kildare to meet European and National waste targets.

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## GLOSSARY

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### A

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Active Gas Collection	A technique that forcibly removes gas from a landfill by attaching a vacuum or pump to a network of pipelines in the landfill or surrounding soils to remove the gases.
Active Waste	Waste which will decompose in landfill sites.
Aerated Static Pile	Forced aeration method of composting in which a free standing composting pile is aerated by a blower moving air through perforated pipes located beneath the pile.
Aeration	The process of exposing bulk material, like compost, to air. <i>Forced aeration</i> refers to the use of blowers in compost piles.
Aerobic Decomposition	A type of biological decomposition that requires oxygen.
Anaerobic Decomposition	A type of biological decomposition that does not use oxygen.
Aquifer	A geological formation, group of formations, or portion of a formation capable of yielding significant quantities of groundwater to wells or springs.
Arisings	In relation to waste, sources of waste, e.g., industrial, agricultural, household etc.
Ash Residues	Ash from the combustion process. This can take the form of fly ash or bottom ash.
Attenuation	Depletion or dispersion of a chemical compound in this instance, often as it passes through layers of soil or rock.

### B

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BAT	<i>best available technique</i> The technology in question should be: <b>best</b> at preventing pollution <b>available</b> in the sense that it is procurable by the industry concerned <b>technique</b> itself is taken as the techniques and the use of the techniques, including training and maintenance, etc.
Baling	The compaction of solid waste (shredded or non-shredded) or plastic and metal recyclables (flattened or non-flattened) into small rectangular blocks or bales. Baled solid waste is placed in a landfill, with cover material surrounding a bale or group of bales. Baling recyclable materials makes them easier to handle and transport.
Bedrock	A general term for the rock, usually solid, that underlies soil or other unconsolidated material.
Berm	An artificial mound of soil.
Bio-Accumulation	The retaining and accumulation over time of certain chemical compounds in organic matter such as the tissues of plants and animals.
Biodegradable material	Materials that can be broken down by micro-organisms into simple, stable compounds such as carbon dioxide and water. Most organic materials such as food scraps and paper are biodegradable.
Bottom Ash	The remaining non-combustible material collected on grates or in other locations during the combustion process.

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## GLOSSARY cont'd

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Buffer Zone	An area that protects by intercepting or moderating adverse pressures or influences, in this case for the environment or public welfare. For example, a buffer zone is established between a composting facility and neighbouring residents to minimise odour problems.
Bulking Agent	In relation to waste, a material used to add volume to the primary waste material to make it more porous, which increases airflow. For example, municipal solid waste can act as a bulking agent when mixed with water treatment sludge.
Bulky Items	Large items of waste, including appliances, furniture, larger auto-parts, non-hazardous construction and demolition materials, trees, branches and stumps, etc. that cannot be handled by normal solid waste processing, collection or disposal methods.
Bring Sites	Individual stand-alone receptacles within a neighbourhood civic amenity site, recycling bring scheme etc. For example, bottle bank, can bank, textile bank.

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## C

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CAPEX	The capital expenditure or cost for the establishment of a facility or service, e.g., refuse trucks, thermal treatment facility, etc.
Capping	The top layer of a landfill, consisting of topsoil, subsoil, geomembranes and clay used to restore the landfill.
Civic Amenity Site (Civic Waste Facility)	Site at which waste can be deposited by members of the public for: i) the segregation, mixing, baling, storage or treatment of waste prior to its recovery or disposal ii) the recovery of waste iii) the disposal of waste (other than household)
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 does not include household, agricultural or industrial waste.
Co-mingled Recyclables	Two or more recyclable materials collected together (i.e., not separated). In some types of collection programs, recyclable materials may be co-mingled, as long as they do not contaminate each other. For example, glass and plastic can be co-mingled, but glass and oil cannot.
Compacting	Closely packing materials together to ensure an efficient use of space.
Composite Liner	A landfill liner system composed of both natural soil liners and synthetic liners. The liner is laid on clay, and must be in direct and uniform contact with the clay.
Composting	The controlled biological decomposition of organic solid materials.
Construction and Demolition Waste	Materials resulting from the construction, remodelling, repair or demolition of structures such as buildings, bridges, and pavements.
Cover Material	Material, either natural soil or geosynthetic material used in a landfill to cover the waste. This impedes water infiltration, landfill gas emissions and bird and rodent congregation. It is also used to control odours and make the site more visually attractive. There are three forms of landfill cover: daily cover, intermediate cover and final cover.
Cullet	Clean, usually colour-sorted, crushed glass used to make new glass products.

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## GLOSSARY cont'd

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### D

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Daily Cover Material	Material, usually soil, used in a landfill to cover the waste after it has been compacted at the end of each day. The cover is placed mainly to ward off scavengers (birds and rodents) and for odour control.
Disposal	In relation to waste, generally refers to the final, controlled deposition of waste to land (or sea), or permanent impoundment or storage, or incineration; such waste could have been treated or untreated.
Diversion Rate	The amount of material being diverted for recycling compared to the total amount that was previously disposed of to landfill.
Drop-off Collection	A method of collecting recyclable or compostable materials in which individuals take the materials to collection sites such as civic amenity sites.
Dry Recyclables	Recyclable material normally comprising paper, cardboard, plastics, and metal cans. Glass is handled separately for safety reasons.

### E

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Electrostatic Precipitators	Devices for removing particulate matter from an incinerator facility's air emissions. It works by causing the particles to become electrostatically charged and then attracting them to an oppositely charged plate, where they are precipitated out of the flue gasses.
End of Pipe Technology	The treatment of waste as an "add on" at the end of a process.
End-Use market	A company that purchases recycled materials for use as feedstock in manufacturing new products.
Energy Recovery	Conversion of waste to energy, generally through the combustion or decomposition of processed or raw waste to produce electricity or heat.

### F

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Facility	In relation to the recovery or disposal of waste, any site or premises used for such purpose.
Fault	A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent rock surfaces are displaced relative to one another and parallel to the fracture.
Ferrous Metals	Metals derived from iron. They can be removed from co-mingled materials using large magnets at separation facilities.
Flaring	The burning of surplus and residual gases from a landfill through a flame pipe.
Flue Gas	All gasses and products of combustion that leave a furnace by way of a flue or duct.
Fly Ash	Small, solid particles of ash and soot suspended in gases resulting from the combustion of fuel. Fly ash is removed from the flue gas by pollution-control equipment.
Fly-Tipping	Illegal dumping of rubbish in unauthorised places.

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## GLOSSARY cont'd

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### G

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Gas control and Recovery System	A series of vertical wells or horizontal trenches containing permeable materials and perforated piping under negative pressure. The systems are designed to collect landfill gases for treatment or for use as an energy source.
Gate Fee	Cost per tonne of waste disposed to a waste facility.
Generation Rate	The amount of waste that is produced over a given amount of time. For example, a district could have a generation rate of 100 tonnes per day.
Geographic Information System (GIS)	A system, usually computerised, that includes locations of all geographical characteristics of an area of land. Items can include elevation, houses, public utilities, or the location of bodies of water, aquifers, and flood plains.
Geologists	A person who studies the origin, physical nature, structure and history of rock and soil formations.
Greenhouse Gases	Collective term for gases that have an influence on the Greenhouse Effect, i.e., chlorofluorocarbons (CFCs), carbon dioxide, methane, water vapour, etc.
Groundwater	Water that occupies pores and crevices in rock and soil, below the ground and above a layer of impermeable material.

### H

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Hazardous Waste	Waste which can have a harmful effect on the environment and on human health.
HGV	Heavy goods vehicle.
Home Compost Scheme	Provision of home composting units to households (often free of charge or subsidised).
Household Waste	Waste produced within the curtilage of a building or self-contained part of a building used for the purposes of living accommodation.
Hydrologist	A person who studies the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

### I

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Incineration	To burn waste materials, generally at high temperatures.
Incinerator	A facility in which solid waste is combusted.
Industrial Waste	Materials discarded from industrial operations or derived from manufacturing processes.
Inert Waste	Non-reactive wastes, e.g., rubble, brick, glass, etc.
Inorganic Waste	Waste composted of matter other than plant or animal (i.e., contains no carbon).
Integrated Solid Waste Management	A practice using several alternative waste management techniques to manage and dispose of specific components of the municipal solid waste stream. Waste management alternatives include source reduction, recycling, composting, energy recovery, and landfilling.
In-vessel Composting	A method in which compost is continuously and mechanically mixed and aerated in a large, contained area.

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## GLOSSARY cont'd

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### K

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**Kerbside Collection** Programmes in which recyclable materials are collected at the kerb (outside households), often from special containers, and then taken to various processing facilities.

### L

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**Landfill** A method of disposing of waste by burying in sites, licenced by the EPA, which have been engineered to prevent contamination of the surrounding area and water table; also refers to the sites used for such disposal.

**Landfill Gas** A mixture of primarily methane and carbon dioxide that is generated in landfills by the anaerobic decomposition of organic wastes.

**Landfill Tax** Tax on all waste entering landfills intended to encourage waste recovery.

**Leachate** Any liquid percolating through deposited waste and emitted from or contained within a landfill.

**Liner** A system of low-permeability soil and/or geosynthetic membranes used to collect leachate and minimise contaminant flow to groundwater.

### M

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**Magnetic Separation** A system to remove ferrous metals from other metals in a mixed municipal waste stream. Magnets are used to collect the ferrous materials

**Mass-Burn System** A municipal waste combustion technology in which solid waste is burned in a controlled system without prior sorting or processing.

**Materials Recovery Facility (MRF)** A facility which recovers recyclable material from waste. A clean MRF is a facility which separates dry recyclables into separate recycling streams. A dirty MRF is a facility which separates both the dry recyclable fraction and the organic fraction of waste.

**Mechanical Separation** The separation of waste into components using mechanical means, such as cyclones, trommels and screens.

**Mechanical-Biological Treatment (MBT)** This is a combination of mechanical separation and biological treatment of municipal solid waste. In the context of this plan, it means the mechanical separation and biological treatment of the residual municipal solid waste. The residual MSW is the remaining waste fraction after separation at source of the dry materials and biological fractions, (normally by means of a 3-bin system). It is not a replacement technology for 3-bin source separation.

**Methane** An odourless, colourless, flammable, explosive gas produced by municipal solid waste undergoing anaerobic decomposition. Methane is emitted from municipal solid waste landfills.

**Municipal Solid Waste (MSW)** Waste from households, shops, offices and some industrial waste, generally handled by local authorities or large waste management firms.

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## GLOSSARY cont'd

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### N

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Natural Resources                      A material source of wealth, such as timber, fresh water, or a mineral deposit that occurs in a natural state and has an economic value.

### O

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OPEX                                      Operational costs associated with operating a facility or service.

Organic Material  
(Organic Waste)                      Materials containing carbon. The organic fraction of MSW includes paper, wood, food scraps, plastics and yard trimmings.

### P

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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.

Participation Rate                      Percentage of the population within a catchment area of a particular waste management facility or service, actually using that facility or service.

Particulate Matter (PM)                Tiny pieces of matter, especially associated with atmospheric pollution, generally resulting from the combustion process. PM can have harmful health effects when breathed. Pollution control at combustion facilities is designed to limit particulate emissions.

Percolate                                 To ooze or trickle through a permeable substance.

Permeability                             A measure of how well a liquid moves through the pores of a solid. Applied to landfills in terms of how quickly water moves through soil: It is typically expressed as meters per second.

Phasing                                    A system of running a project in more than one step (phase). Each phase is generally independent of the others, which offers more flexibility in management and operation.

Pilot Program                            A trial run of the planned programme conducted on a small scale to forecast the workability of the planned program. Changes could be made to the programme depending on the results of the pilot study.

Polluter Pays Principle                The idea that parties causing pollution bear the costs of their actions.

Prevention                                The reduction of the quantity and of the harmfulness for the environment of waste products.

Proximity Principle                    The requirement to treat wastes close to where they arise, e.g., within the boundary of the plant or community in which they are generated.

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## GLOSSARY cont'd

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### R

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Recovery	In relation to waste, means any activity carried on for the purposes of reclaiming or reusing, in whole or in part, the waste and any activities related to such reclamation, recycling or re-use.
Recovery Rate	Percentage of usable material that has been removed from waste for re-use, recycling, or use for a new purpose.
Recycle/Re-use	Minimising waste generation by recovering and reprocessing usable products that might otherwise become waste (e.g., recycling of aluminium cans, paper bottles, etc.).
Recycling	The process by which materials otherwise destined for disposal are collected, re-processed, or re-manufactured, and are re-used.
Refuse-Derived Fuel (RDF)	Product of a mixed waste processing system in which certain recyclable and non-combustible materials are removed, with the remaining combustible material converted for use as a fuel to create energy.
Repak	Non-profit, voluntary, membership compliance scheme, established by the Government.
REPS	Rural Environment Protection Scheme. A Government programme to encourage farmers to carry out their activities in a less intensive and more environmentally friendly manner.
Residue/Residual	The materials remaining after processing, incineration, composting, or recycling. Residues are usually disposed of in landfills.
Resource Recovery	A term describing the extraction and use of materials and energy from the waste stream. The term is sometimes used synonymously with energy recovery.
Re-use	The use of a product more than once in its same form for the same purpose, e.g., a soft drink bottle is re-used when it is returned to the bottling company for refilling.

### S

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Sandstone	A sedimentary rock composed of abundant rounded or angular fragments of sand set in a fine-grained matrix (silt or clay) and more-or-less firmly united by a cementing material.
Scrap	Discarded or rejected industrial waste material often suitable for recycling.
Sewage Sludge	Semi-solid and solid waste matter removed from sewage at sewage treatment plants.
Shredder	A mechanical device used to break waste materials into smaller pieces by tearing and impact action. Shredding solid waste is done to minimise its volume or make it more readily combustible.
Solid Waste	Any refuse or sludge from a waste water treatment plant, water supply treatment plant or air pollution control facility, and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from domestic, commercial, industrial, or community activities
Source Reduction	The design, manufacture, acquisition, and re-use of materials so as to minimise the quantity and/or toxicity of waste produced. Source reduction prevents waste either by re-designing products or by otherwise changing societal patterns of consumption, use, and waste generation. (See also, "Waste Reduction.")
Source Separation	The segregation of specific materials at the point of generation for separate collection. Households source separate recyclables as part of kerbside recycling programs.
Special Waste	Items that require special or separate handling, such as household hazardous wastes, bulky wastes, tyres and used oil.

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## GLOSSARY cont'd

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### T

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Thermal Treatment	This term is generally taken to refer to incineration; on occasion, it is used as a generic term which also refers to gasification and pyrolysis.
Transfer Station	A permanent facility where waste materials are taken from smaller collection vehicles and placed in larger vehicles for transport to other waste facilities for recovery, treatment, or disposal.

### V

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Volatile Organics	Organic compounds that vaporise at relatively low temperatures or are readily converted into a gaseous by-product.
Volume-Based Fees	A fee paid to dispose of material at a facility such as a landfill, based on the volume of the material being disposed of.

### W

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Waste	An unusable or unwanted substance or material.
Waste Combustion	The combustion of waste in an incinerator to produce electrical or thermal energy. The waste can be sorted or non-sorted, and can also be processed before incineration.
Waste Management	Any systematic method of handling and disposing of waste.
Waste Minimisation	The re-design of a product to reduce or minimise both the amount of raw materials used and subsequent waste.
Waste Recovery/Stabilisation Facility (WR/SF)	This refers to a specific process involving removal of recyclable material at a materials recovery facility, and composting the organic waste to stabilise it. When the waste is stabilised it has a very low respiration or decay rate and therefore will produce little or no methane gas if landfilled.
Waste Reduction	Waste reduction is a broad term encompassing all waste management methods – source reduction, recycling, composting – that result in reduction of waste going to final disposal.
Waste Stream	A term describing the total flow of solid waste from homes, businesses, institutions and manufacturing plants that must be recycled, burned, or disposed of in landfills; or any segment thereof, such as the “residential waste stream” or the “recyclable waste stream.”
Waste-to-Energy (WTE) System	A method of converting waste into a usable form of energy, usually through combustion or decomposition; it could also refer to anaerobic digestion of waste.
Waste Water	Water that is generated, usually as a by-product of a process, that cannot be released into the environment without treatment.
Water Table	The level below the earth's surface at which the ground becomes saturated with water. Landfills and composting facilities are designed with respect to the water table to minimise potential contamination.
White Goods	Large household appliances such as refrigerators, cookers, air conditioners and washing machines.
Windrow	A large, elongated pile of composting material, which has a large exposed surface area to encourage passive aeration and drying.



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## **PREAMBLE**

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A Waste Management Plan for Kildare County Council was prepared in accordance with the 1996 Waste Management Act. The Plan is valid for the period of 2000 - 2005. Section 22 of the Act requires that the Plan be reviewed at least once every five years.

The purpose of the Waste Management Plan is:

- to promote waste prevention and minimisation through source reduction, producer responsibility and public awareness
- to provide for management of the recovery/recycling/disposal of waste arisings

The intention to review the Waste Management Plan was advertised. This public notice initiated the statutory planning process defined in the Waste Management Act (1996).

### **Authorisation**

Kildare County Council has commissioned Fehily Timoney & Company (FTC), consultants in engineering and environmental science, to prepare the review of the Waste Management Plan, for the period 2005 - 2010.

### **Objective**

The primary objective of the 2005 -2010 Plan is to secure the best environmental management of all waste, including preventing and minimising the generation of waste wherever practicable.

### **Methodology**

The basic methodology for producing the review is outlined below:

- public advertisement
- submissions from public and private sectors (in response to public advertisement)
- data collection
- trends
- scenarios & preliminary assessment
- options assessment
- recommendations & proposed review
- client review
- amendments
- publish proposed review
- submissions from public and private sectors (in response to public advertisement)
- finalise plan

## Background

In September 1998, the Government issued a policy statement, "Changing our Ways", detailing its objectives on waste management. The document identifies the following key considerations:

- "...opportunity provided by comprehensive waste management planning exercises..."
- "...opportunity to provide a high level of performance..."
- "...implementation of the polluter pays principle..."
- "...recognition of the importance of economies of scale..."

The policy statements expressed the Government's targets over a 15-year period as follows:

- a diversion of 50 % of overall household waste away from landfill
- a minimum 65 % reduction of 1995 arisings in biodegradable waste consigned to landfill
- 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 85 % of C&D waste by 2013
- rationalisation of municipal landfills, with progressive and sustained reductions in numbers, leading to an integrated network of some twenty state of the art facilities incorporating energy recovery and high standards of environmental protection
- 80 % reduction in methane emissions from landfill, which will make a useful contribution to meeting Ireland's international obligations

In 2002, the Government issued a policy document, "Prevention and Recycling – Delivering Change". The policy statement provides for the support and development of recovery and recycling infrastructure.

In April 2004, the Government issued a further national waste management policy document – "Waste Management: Taking Stock and Moving Forward". Taking Stock assesses progress on the implementation of a variety of aspects of the Waste Management Act 1996 over the last five years. It sets down new challenges in light of the findings of this assessment and highlights the following key issues in relation to Waste Management Plans:

- revised waste plans must better address the role and needs of private sector waste management service providers
- insufficient public awareness about waste plans
- revised waste plans must be subject to a mechanism to monitor implementation, with local authorities being obligated to prepare an annual report on waste plan progress within three months of the end of each year
- all revised waste plans are required to set out a timetable for the provision of each of the elements of the infrastructure required to make up the integrated mix of option

The policy statement also reaffirms the waste management hierarchy.

The Waste Management Act (1996) sets out the legislative framework to develop waste management policies. The statutory objectives of the Act are to:

- prevent and minimise the production of waste and its harmful effects
- encourage and support the recovery of waste
- ensure that unrecoverable waste is safely disposed of
- implement the polluter pays principle, in relation to waste disposal

The Waste Management (Planning) Regulations, 1997 set out the detailed requirements for the preparation and content of waste management plans. The 2005 - 2010 Kildare Waste Management Plan is presented in four volumes:

Volume 1 – Executive Summary

Volume 2 - Main Document

Volume 3 – Waste Policy and Legislation & Development in Waste Management Techniques

Volume 4 – Appendices.