

3.1 Introduction

This chapter describes the process by which the requirement for the facility has been identified. The proposed facility has the dual function of manufacturing a product (compost) and recovering biodegradable waste that may otherwise be disposed to landfill.

In the interests of sustainability, the need for the development must take account of the commercial viability of the manufacturing process as well as the need to manage biodegradable waste. The need for the facility has taken account of the existing and projected biodegradable fraction of waste arisings both Nationally and in the Midlands Region and the requirement to divert these wastes from landfill.

Having established the need for recovery of biodegradable waste, this chapter also examines alternative ways to meet that need. The alternatives considered include alternative locations, alternative scale of development, alternative waste treatment options and alternative technologies/processes.

3.2 Methodology

Several documents and a number of sources of information have been considered to assess the need for the proposed development at Kilbride. These documents include:

1. Government Policy Statement - Waste Management, Changing Our Ways - September 1998.
2. Government Policy Statement - Preventing and Recycling Waste, Delivering Change - March 2002
3. Government Policy Statement - Waste Management, Taking Stock and Moving Forward - April 2004.
4. The Government Report, National Overview of Waste Management Plans, April 2004; and
5. National Strategy on Biodegradable Waste - Draft Strategy Report - April 2004.
6. The Waste Management Plan for the Midlands Region, Adopted by Westmeath County Council, 12th September 2001;
7. EPA National Database 2001 Report;
8. EPA National Database 2002 Interim Report;
9. Westmeath County Development Plan 2002-2008;
10. The EPA website list of licensed waste facilities in Ireland (www.epa.ie/waste/wastesearch/)

These sources of information have been reviewed fully to assess the requirement for this facility in the Midlands Region and to establish that, as a minimum, it meets the Best Practicable Environmental Option (BPEO) while fulfilling the policy requirements for the county and the region as a whole.

3.3 Need for the Development

3.3.1 Thorntons Waste Management Plan

Thorntons is currently the third largest waste management company in Ireland, handling over 300,000 tonnes of waste per annum. Approximately 100,000 tonnes/annum of this material is recycled or recovered in the company's existing waste management facilities which consist of:

- **Thorntons Recycling Centre, Killeen Road, Dublin 10.** This is a licensed recycling, transfer and baling station in West Dublin that handles 250,000 t/a of waste.
- **Westside Waste, Maynooth, County Kildare.** This is a licensed recycling and transfer station handling approximately 35,000 t/a of waste.
- **Wood Recycling at PDM, Kill, Co. Kildare.** This is a permitted recycling centre for processing approximately 15,000 t/a of waste wood.
- **Dunboyne Civic Amenity and Recycling Centre, County Meath.** This purpose built facility is due to open in August 2004 and will initially handle 5,000 t/a of household recyclables and skip waste. Additional planning and a waste licence application have been applied for to increase the tonnage to 50,000 t/a. The facility is designed to recycle over 80% of the input materials.
- **Ringsend Civic Amenity Site.** This site is owned by Dublin City Council, but operated under contract by Thorntons. It currently handles approximately 1,200 t/a of household recyclables.

The company has plans to develop a number of additional sites to provide a fully integrated and comprehensive network of waste management facilities that can handle and treat waste in line with National and EU Policy. These proposed developments include:

- **Kilbride Compost Manufacturing Plant.** The subject development.
- **Calf Field Integrated Waste Management Facility, Moyvalley, Co. Kildare.** This consists of recycling facilities for end-of-life vehicles, waste vegetable oils, wood, tyres and packaging wastes in addition to a residual waste landfill. The site is designed to handle 270,000 t/a of waste. Planning permission and a waste licence were applied for in the Summer of 2002. To date no decisions have been reached by the authorities.
- **Celbridge Civic Amenity and Recycling Centre, County Kildare.** Thorntons have been selected by Kildare County Council as preferred bidder to provide this facility in Celbridge. Details are currently under negotiation.
- **Civic Amenity Site, West Dublin.** Thorntons have made a proposal to Dublin City Council to jointly provide a civic amenity site in West Dublin.

The company currently handles more municipal waste than many of the ten waste management regions and like each region has formulated a plan that will allow for growth while ensuring high levels of recycling. The 2013 targets that the company has set comply with Ireland National targets. Projections made in 2002 estimated that the company would handle 440,000 t/a by 2013 and 50% of this material would be recycled. Current figures are ahead of schedule on both these counts. The provision of the Kilbride composting facility will play an important role in achieving these goals.

The proposed development is a compost manufacturing plant that will use green wastes and catering wastes as raw material. The viability of the plant will depend upon the availability of sufficient quantities of these raw materials. A reduced input would drive up the unit cost of the process. This would reduce the competitiveness of composting against other less favourable waste management options such as incineration and landfill disposal. It is therefore imperative that the company has access to the proposed 90,000 tonnes per annum of raw material. Sourcing this material will partly serve the objectives of several waste management plans.

3.3.2 National Policy

The Government approach to waste management, as set out in the Policy Statement 'Changing Our Ways', in September 1998, is to reduce our national dependence on landfill, and to move towards a modernised integrated waste management system in line with the recognised EU hierarchy that promotes prevention over reduction over recycling over recovery over disposal.

The importance of the regional approach to waste management is underlined and support is also expressed for increased private sector involvement. The policy sets out the national targets which will apply to waste management by local authorities including: diversion of 50% of overall household waste away from landfill; minimum of 65% reduction in biodegradable waste consigned to landfill; development of waste recovery facilities employing environmentally beneficial technologies, as an alternative to landfill; and recycling of 35% of municipal waste. These targets are to be achieved before 2013 and are intended to fulfil Ireland's obligations under EU legislation.

The second in a series of Government Policy Statements, 'Preventing and Recycling Waste - Delivering Change', was published in March 2002. Chapter 7 of the document is devoted to promoting biological treatment of organic waste. Section 7.2 introduces the concept of the 'National Strategy on Biodegradable Waste' which was expected to be finalised by July 2003. However, the delay in finalising the strategy should not delay the development of composting facilities. The document states (Section 7.2):

"Increased diversion of organic waste from landfill does not have to await the preparation of the National Strategy on Biodegradable Waste. The regional and local waste management plans already provide generally for the introduction of segregated collection systems for dry and organic recyclables (which is essential to ensure a clean feedstock and a quality, uncontaminated compost product), and the development of a network of:

- *centralised biological treatment facilities for organic municipal waste - mainly food/kitchen wastes; and*
- *separate smaller facilities for composting garden (green) wastes.*

These measures will be supported by the funding provided under the National Development Plan."

The most recent Government Policy Statement on waste management, 'Taking Stock and Moving Forward', was published in April 2004. The report contains a total of 21 Key Points that represent current National Policy. Key Points relevant to the proposed development include the following:

- **Key Point 3:** An examination of the issues arising in terms of the interrelationship between **regional boundaries** and waste facilities will be completed with a view to providing guidance to the relevant authorities by end-Summer 2004.
- **Key Point 4:** Local authority **waste management plans are to be updated** to take account of more recent data on current and likely future waste arisings - this will commence once guidance on this and other waste management planning issues is provided to local authorities.
- **Key Point 7:** The draft **National Biodegradable Waste Strategy** now being published for consultation will be finalised by end-June 2004. Implementation of the Strategy (aspects of which are already in progress) will move ahead in accordance with the timetable set out in the Strategy itself.

- **Key Point 12:** In updating waste management plans the local authorities will pay particular attention to ensuring effective engagement with the private waste industry; and the outcome of this engagement, together with other relevant factors, will be reflected in the final updated waste management plans adopted.

The introduction of the EU Landfill Directive which was adopted in 1999 has the greatest potential impact on waste management policy in County Westmeath and the Midlands Region as a whole, as diversion of organic waste from landfill has become a legal requirement. This will require diversion from landfill for increasing proportions of municipal biodegradable waste based on 1995 waste production levels. By the years 2006, 2009 and 2016, biodegradable municipal wastes sent to landfill must be reduced to 75%, 50% and 35% of the 1995 base figure respectively.

The National Strategy on Biodegradable Waste - Draft Strategy Report - April 2004, has analysed the requirement for diversion of biodegradable municipal waste (BMW) from landfill based on an annual growth in municipal waste of 3.8%. Section 3.3 of that document contains a 'Gap Assessment' which is explained as follows:

"The 'gap' represents the amount of biodegradable municipal waste that must be channelled away from landfill in order for our mandatory requirements to be met. The gap points out the capacity that must be put in place to deal with biodegradable municipal waste diverted from landfill. Currently c.440,000 tonnes/annum of BMW are diverted from landfill (mainly in favour of recycling and recovery). This must increase to 1,000,000 tonnes in 2006, rising to 1.5 million tonnes by 2009. This represents a huge challenge to the Irish waste industry."

The 'Gap Analysis' suggests that the following levels of treatment capacity for BMW will be required to meet the Landfill Directive Targets:

Table 3.1 - Mandatory Requirements for Diversion of BMW from Landfill

Region	2006 Gap	2009 Gap	2016 Gap
Nationally	1,202,947	1,726,297	2,577,661
Midlands	83,003	119,114	177,859
Kildare	30,074	43,157	64,442
North East	93,830	134,651	201,058
Dublin	395,770	567,952	848,050

Source: National Strategy on Biodegradable Waste - Draft Strategy Report - April 2004.

Whilst this gap can be theoretically closed by incineration (thermal treatment), it is both EU and National Policy to employ prevention, reduction and recycling measures before resorting to the option of incineration. The composting of 90,000 tonnes per annum of BMW at Kilbride will make a significant contribution towards meeting our mandatory targets under the Landfill Directive.

As the site is located in County Westmeath, the facility is expected to attract BMW from the Midlands Region and contribute significantly towards the diversion targets of that Region. The local authorities have the power under the waste collection permitting system to direct separately collected catering wastes to this type of facility and can also send green waste from the CA sites in the Region to the facility.

The developer, on the other hand, has no control over waste collected in the Midlands Region and its influence on the geographical source of raw materials is limited to the agreement of commercial contracts with local waste collectors. In the absence of such agreements or the local authority's influence, the developer would seek to source raw material from other neighbouring counties such as Meath and Kildare and if necessary from Dublin. In this scenario, the facility would contribute towards meeting the landfill diversion targets for the

Kildare Region, the North East Region and the Dublin Region. It is likely that the raw materials will be sourced from private companies and local authorities in the Midlands and other regions. Experience to date in recycling has found that sourcing material is a dynamic exercise in a highly competitive market and sources will vary from year to year.

3.3.3 Regional Policy

The local authorities of counties Westmeath, Laois, Offaly, Longford and Tipperary (North Riding) prepared the Waste Management Plan for the Midlands Region in compliance with the Waste Management Act 1996 and the Waste Management (Planning) Regulations, 1997.

The Waste Management Policy Statement highlights the following benefits from adopting a regional approach (ref. Section 1.3):

- "A viable framework in planning and volume terms for the development of integrated and innovative waste management solutions, facilitating segregated collection and incorporating materials recycling, organic waste composting, other treatment technologies and residual landfill.
- A favourable climate for the creation of beneficial partnership arrangements between local authorities and the private sector."

Waste management policy for County Westmeath is contained within this Plan, which was adopted by Westmeath County Council on 12th September 2001. The Plan has regard to all non-hazardous waste generated within the functional areas of the five local authorities. The purpose of the Plan is to provide a framework for the management of these wastes in the Midlands Region in accordance with current national and EU waste legislation/policy.

The Kilbride facility is not specifically identified in the Midlands Waste Management Plan. However, under Section 26 (2) of the Protection of the Environment Act 2003, the planning authority is obliged to give planning permission to a facility that furthers the objectives of the Waste Management Plan, even if that development is not specifically identified in the plan, so long as there are no other grounds for refusal. Section 26 (2) of the 2003 Act amends Section 22 of the Waste Management Act 1996 and states, inter alia:

"(10AA) An application for permission under Part III of the Planning and Development Act, 2000 shall not be refused by a planning authority or An Bord Pleanála solely on the ground that the development to which the application relates is not specifically referred to in the waste management plan in force in relation to the functional area of the planning authority if the planning authority or the Board, as the case may be, considers the development will facilitate the achievement of the objectives of that waste management plan."

The objectives of each of the regional waste management plans are derived from Section 22(6) of the Waste Management Act 1996, where it states:

"A waste management plan shall, in respect of non-hazardous waste, contain such objectives as seem to the local authority or local authorities concerned to be reasonable and necessary -

- to prevent or minimise the production or harmful nature of waste,
- to encourage and support the recovery of waste,
- to ensure that such waste as cannot be prevented or recovered is disposed of without causing environmental pollution, and
- to ensure in the context of waste disposal that regard is had to the need to give effect to the polluter pays principle,

and shall specify such measures or arrangements as are to be taken or entered into by the local authority or local authorities, with a view to securing the objectives of the plan."

Whilst the proposed facility at Kilbride is not specifically referred to in the Midlands Waste Management Plan, the plan does propose a centralised biological treat plant within the region and no such plant currently exists. The facility is needed to support the recovery of waste, in line with the objectives of each of the regional waste management plans. It also provides the best practicable environmental option for treating biodegradable waste that cannot be prevented.

The preferred scenario for handling waste in the Midlands Region is described in Section 9.2.1 of the Waste Management Plan as follows:

"Scenario 3: Achieve maximum landfill diversion through implementation of maximum recycling and the introduction of thermal treatment of combustible wastes."

The rationale for selecting this scenario is presented in Section 9.2.5 of the Plan as follows:

"In comparing the scenarios it was found that waste management options favouring high levels of recycling combined with thermal treatment were necessary to meet the requirements of the new waste policy.

The following considerations determined the selection of the preferred waste management scenario for the Midlands Region:

- *The scenario must respect the EU Waste Hierarchy so that re-use and recycling is preferred as far as possible (Best Practicable Environmental Option).*
- *The ultimate solution must be robust, providing a secure route for all waste streams.*
- *Thermal treatment is favoured for the following reasons:*
- *The ambitious targets set out in the new Irish Waste Policy Statement cannot be achieved in practice without thermal treatment.*
- *It is a form of energy recovery, hence it is higher in the National and EU Waste Hierarchy than landfill.*
- *Thermal treatment with energy recovery is a more desirable environmental option than landfill (provided hazardous wastes are diverted from the process).*
- *It achieves substantial bulk reduction in final waste volumes having regard to the limited availability of landfill capacity in the Region and the high level of public resistance to new landfill development.*
- *Thermal treatment will not compromise the meeting of waste recycling targets and will achieve higher waste recovery resulting in lower landfill requirements.*
- *Optimum location of thermal treatment facilities can maximise energy recovery, including the use of heat for industry, potential use of heat in new residential/commercial developments and electricity production."*

The Plan is designed to encourage the re-use or recycling of wastes that cannot be prevented. After the maximum recycling has been achieved the plan promotes thermal treatment ahead of landfill as this provides opportunities for energy recovery. However, the plan recognises the fact that whilst thermal treatment is necessary to handle residual wastes, the availability of thermal treatment should not compromise recycling, which includes composting.

The need for robust facilities is also recognised in Scenario 3 above. In the case of the Kilbride development the robustness of the facility will depend on the availability of raw materials and the markets for the finished product. The facility will need the freedom to source raw materials based on commercial factors as well as geographical ones and limiting the source of these raw materials to the Midlands Region would compromise the robustness of the development.

The proposed facility at Kilbride has the potential to meet the biological treatment requirements as set out in the Midland Waste Management Plan. The facility will serve part (if not all) of the Midlands waste management region. Green waste generated in the Midlands will primarily arise from deliveries to recycling centres and segregation from skips also at recycling centres or transfer stations. The catering wastes will be collected via the proposed 'brown bin' domestic collection in urban areas and by collection of segregated organics from commercial premises.

Figure 3.1 shows the location of existing and future recycling centres and transfer stations in the region as indicated in the Midlands Waste Management Plan. The Kilbride site is ideally located to receive material from the northern half of the Midlands region. The ease of access to the N4 and the N6 will allow transport of green waste from recycling centres in Mullingar, Longford, Granard, Tullamore and Athlone via a good road network.

Access to the N6 and the new M4/M6 motorway will also be of benefit in sourcing material from the Meath, Kildare and Dublin in the event that insufficient material is available in the Midlands Region, particularly in the short term. In this scenario the facility would contribute towards the objectives of the North East, Kildare and Dublin Waste Management Plans in addition to the objectives of the Midlands Waste Management Plan.

3.3.4 Existing and Predicted Waste Arisings

The Midlands Waste Management Plan predicted the growth in waste arisings between 1998 and 2001. The National Waste Database indicates that arisings in the region have already grown at a far greater rate than expected in the Waste Management Plan, as shown in Table 3.2. A total of 184,371 tonnes of municipal waste (186,405 tonnes including street cleaning waste) were reported in 2001, which is an increase of 53% from 1998 figures. In fact the 2001 level of municipal waste generation is already 96% of the waste management plan's predicted waste arisings for 2013.

Table 3.2 - Comparison of Predicted and Actual Growth in Waste Generation in the Midlands Region between 1998 and 2001

Waste Source	Predicted Growth (Midlands Waste Plan)	Actual Growth (NWD)
Household Waste	9.3%	19.8%
Commercial Waste	6.1%	194.6%
Street Cleansing	no prediction	54.3%

Furthermore, the Government Report 'National Overview of Waste Management Plans' predicts annual and cumulative growth in commercial waste arisings in the Midlands region from 2002 to 2010 (see Table 3.3). If these levels are reached, municipal waste arisings in 2010 could be 237,000 tonnes. This is significantly higher (23%) than the 192,199 tonnes which the waste management plan predicted for 2013. Biodegradable waste accounts for 65% of the municipal waste stream and therefore 154,050 tonnes of biodegradable waste could be available by 2010.

Table 3.3 - Estimated Growth in Commercial and Domestic Waste Arisings in the Midlands Region

Year	Commercial Waste		Domestic Waste	
	Annual Growth	Cumulative Growth	Annual Growth	Cumulative Growth
2002	2.0%	2.0%	2.0%	2.0%
2003	3.2%	5.3%	4.7%	6.8%
2004	1.7%	7.1%	3.9%	10.9%
2005	3.4%	10.8%	5.3%	16.7%
2006	3.3%	14.5%	5.0%	22.6%
2007	1.2%	15.8%	2.5%	25.7%
2008	1.2%	17.2%	2.5%	28.8%
2009	0.6%	18.0%	1.7%	31.0%
2010	0.4%	18.4%	1.4%	32.8%

The unforeseen high rate of growth in municipal waste generation and the expected continued growth due to the influx of Dublin commuters into the Region, places a greater pressure on the local authorities. Waste processing and treatment infrastructure above and beyond that specified in the Midlands Waste Management Plan is likely to be required of which composting facilities will play an integral part.

3.3.5 Existing Waste Management Infrastructure

Waste collection is mainly carried out by private sector firms, with Westmeath County Council and Athlone Urban District Council still operating collection services. Approximately 72% of the households in the entire region avail of a regular waste collection service and there are up to 30 private companies involved in waste collection of one or more counties in the region. A dry recyclable collection service is in operation for almost 29,000 households.

According to the National Overview of Waste Management Plans (April 2004), a segregated collection of organics has also started and is available to almost 12,000 households in the Midlands Region. However, the location of this scheme is not identified in that report and communications with the Department of the Environment Heritage and Local Government (DEHLG), local authorities and private waste companies in the region has failed to find confirmation of this statistic. The reported figure may in fact be an error.

Similar to the rest of the country, each of the counties in the region is reliant on landfill for its waste disposal. There are five waste disposal sites in the region for municipal waste, all operated by local authorities. Following the recent closure of Marlinstown landfill, Westmeath is served by only one landfill, Ballydonagh, which is located east of Athlone. The estimated remaining capacity of Ballydonagh landfill in 2003 was 134,454 tonnes which equates to approximately 3 years remaining capacity, although an application has been made to the EPA to extend the landfill to 2011.

Offaly is served by the landfill at Derryclure south of Tullamore. It is tentatively estimated that the remaining capacity at the site, including new engineered cells, will provide sufficient capacity for the next 12 years at current waste growths. Laois is currently served by Kyletalesha landfill located just north of Portlaoise and is expected to be operational until 2020. County Longford has no landfill following the closure of Drumlish in 1998. The vast majority of waste is collected by Muleady's Waste Ltd and processed for recovery and disposal at their waste transfer station at Drumlish. Tipperary NR is served by Ballaghveny landfill, north-east of Nenagh and has been identified by the council to serve the needs of the county in the medium term (8-10 years).

There are 187 bring banks in the region for recycling, mostly glass, textiles and drink cans.

Two commercial waste collectors/recyclers in the Midlands - AES in County Laois (formerly trading as E. Cobbe) and Mulleady's of County Longford are undertaking mechanical segregation of the fines and organic fraction, mainly from household waste. The segregated waste is then treated biologically in a composting plant outside the region to produce biostable daily cover for landfills. This meets the requirement to reduce the biodegradable content of waste going to landfill and substitutes for the use of virgin quarry materials of valuable soils used for daily cover.

3.3.6 Proposed Waste Facilities

The Waste Management Plan for the Midlands Region outlines a need for a green waste composting facility and a biological treatment plant for treatment of organic wastes in the Midlands region:

Section 9.3.2 of the Plan elaborates on the need for biological treatment of organic wastes. It states:

"Organic treatment shall be implemented for the biological treatment of organic kitchen and green waste. Diversion of 65% of organic waste is a target of the National waste policy and in fact will be a legal requirement under the EU Landfill Directive adopted in 1999".

"Green waste (i.e. garden waste) composting facilities are planned. Reception facilities will be provided at the Recycling Centres for the collection of green waste for transfer to composting plants. This form of composting is technically feasible as demonstrated by a number of Irish Local Authorities and the resulting product is likely to find acceptable uses in the region's gardens, as well as in reclamation of existing landfills or in roadside landscaping."

Table 3.4 illustrates the progress made in establishing recycling infrastructure at the end of 2003, compared to the targets set in the Midlands Waste Management Plan.

Table 3.4 - Recycling Infrastructure - Summary of Progress at end-2003

	Proposed	Implemented	%
Segregated Collection of Dry Recyclables (Number of Households)	30,000	28,975	97%
Bring Banks	174	187	107%
Recycling Centres (Civic Amenity Sites)	12	6	50%
Materials Recovery Facilities & Transfer Stations	3	3	100%
Thermal Treatment Facility (incinerator)	1	0	0%
Biological Treatment Facilities	1	0	0%

Source: National Overview of Waste Management Plans - April 2004

There are currently no existing or proposed composting facilities within the Midlands Region. Hence, the Kilbride facility can contribute significantly to the implementation of the Region's plans.

3.4 Alternatives

3.4.1 Best Practicable Environmental Option (BPEO)

BPEO is a system by which waste management options are assessed in order to identify the development providing the maximum environmental, economic and social benefits while meeting legislative and practicability constraints. BPEO is a systematic process carried out in a number of iterative stages. The general stages, for waste management are detailed below:

- Baseline waste management assessment
- Options development
- Testing and appraisal
- Selection of preferred solution

The Midlands Waste Management Strategy Study (presented in April 1999) compared three integrated scenarios in order to determine the Best Practicable Environmental Option (BPEO) for the region's waste over the following 15 - 20 years. These scenarios represented a combination of different recycling targets, the possible introduction of thermal treatment with energy recovery, leading to landfill disposal of residues only. Scenario 3 was recommended as the most favoured strategy and is designed to achieve maximum landfill diversion through implementation of maximum recycling and the introduction of thermal treatment of combustible wastes. In effect, the plan contains a balance between recycling (44.6%), thermal treatment (38.2%) and landfill disposal (17.1%).

The region's BPEO assessment identified the need for the following waste management infrastructural developments with regard to County Westmeath:

Waste Collection Policy

- Waste Recycling Centres to be established at Mullingar and Athlone where the public can bring recyclables such as glass, textiles, oils, batteries, fridges, furniture etc.;
- A door to door collection of recyclable goods such as glass and plastic and packaging to be introduced in the region's larger towns. These will be provided in Athlone, Mullingar and Moate;
- A high density system of bring banks run to a higher standard to be introduced in rural areas not served by door to door collection;
- Dual collection of organic household waste will be introduced in towns with greater than 500 households, i.e. Athlone, Mullingar and Moate. Organic waste shall be recycled at a biological treatment centre in the region;

Waste Recycling Policy

- Materials Recovery Facility will be established where the goods collected from the door to door collections and the bring banks can be sorted and prepared for recycling;
- Biological Treatment Plant shall be established in the region for treatment of organic waste collected through the separated collection system;
- Green Composting Plant for composting of garden waste in Mullingar;

Energy Recovery Policy

- Thermal Treatment of combustible waste with energy recovery shall be introduced at a plant within the Midlands;

Residual Waste Disposal Policy

- In the short to medium term (up to 2006), a programme of rationalisation of landfills in the region will be implemented. Marlinstown landfill (Mullingar) and one of Kyletalesha or Derryclure landfills shall be closed pending the realisation of the new waste collection and recycling systems outlined above.
- In the long term (2006-2014), following the introduction of thermal treatment (target date of 2006) it is envisaged that one landfill site will be sufficient to service the residual disposal requirements of the five midland counties.

The implementation schedule leaves biological treatment of commercial and industrial organic wastes to the private sector. Kilbride will provide a green composting facility and a biological treatment plant which is ideally positioned in terms of waste arisings in Co. Westmeath and will be of sufficient size to accommodate a regional facility.

3.4.2 Alternative Technologies

There are a wide range of composting technologies available, utilising different feedstock, employing different types of composting technology and with different composting capacities.

Materials most commonly composted are biowaste, green waste, commercial organics and sludge. Most biowaste received at composting facilities in Ireland is source segregated household waste. Green waste is usually supplied to composting facilities by local corporation park departments, landscape contractors, waste disposal contractors and the general public. Commercial organic feedstock is collected from food manufacturers, supermarkets and restaurants for composting. The feedstock for sludge composting consists of industrial sludge from industry.

The composting technologies proposed to be employed in this development are outlined in Chapter 4, namely in-vessel (aerated) composting and aerated static pile composting. There are also several other types of composting technologies available which are briefly described below.

Home-Composting

Of most benefit to the local authority is any form of home composting carried out by the householder as this avoids the waste entering the waste stream in the first instance and therefore removed at no extra cost by the householder. Home-composting is being promoted by Westmeath Co. Council and all other four councils in the Midlands Region and composting bins are available from every local authority. Householders are encouraged to compost all their organic waste and use the resulting mulch as soil conditioners in their gardens.

However while home composting may seem like an attractive option there are some difficulties:

- Cost of Bins - typically €30 each, the bins represent a significant investment, and any home composting programme has required the County Councils to offer bins at subsidised levels.
- Public participation - It is uncertain how public participation continues over an extended period. Home composting functions well where the householder actively utilises the composted material in the garden.
- Suitable for all housing - Home composting is suitable for single dwellings with gardens which can combine green waste with food scraps. However, not all housing will be suitable.

Windrow Composting

The compost is piled in triangular shapes and turned on a regular basis to aerate the pile. This is a common type of composting as it is relatively inexpensive to set up.

Aerated Pile Windrows

This is a variation on the windrow system, which uses a blower to supply air to the compost pile. This system allows larger piles, and composts materials in seven to eight weeks. Both positive and negative aeration systems are available.

Vertical Flow Reactor Process

This is an in-vessel system and an example of this process is the Silo-cage system from TEG Environmental plc. (England). Vertical flow systems are essentially facilities with multiple floor construction which employ an aerobic process. In the case of the Silo-cage system, the floor consists of a collection of up to 30 stainless steel perforated cages. The composting time varies from 8 to 21 days and varies with individual installation, feedstock used and quality of product required.

Agitated Bins

This is an enclosed system where shredded and blended waste is moistened and loaded into an agitated container with temperature, CO₂ and air circulation controls. The process takes between 7 and 14 days followed by a maturation period of up to 12 weeks. An example of such a system is the Rottebox system (Herhof, Germany) which is in operation in Beilstein near Frankfurt. At this plant 21,000 tonnes per year of municipal solid waste (MSW) (80%) and green waste (20%) are composted using 14 Herhof boxes. Each box has a capacity of 60m³ and can process a maximum of 1,500 tonnes of material/year.

Anaerobic Composting

An alternative to aerobic composting is an anaerobic/aerobic-combined system. The system is specifically designed to compost organic MSW and sewage sludge. The first anaerobic stage treats waste with 25-35% solid content to which a little water is added. The solid waste is changed by hydrolysis into liquid. Methanogenesis and, consequently the production of biogas, also takes place in the same reactor thus allowing biological activity to proceed undisturbed. As the system is completely enclosed, gas is collected and piped directly to the electric generator. Biogas produced during the process is pumped into the digester at high pressure from the base thereby providing mixing without costly mechanical parts. Digestion takes between 2-4 weeks and is carefully controlled to ensure complete sanitisation. After digestion, the material is transported via screw press and filter, dry material is removed and aerobically composted to 2 weeks.

Agitated windrows remain the most preferred form of composting technology used in Ireland followed by in-vessel and aerated systems such as those proposed for the Kilbride site. In summary, windrow systems are comparable in cost, labour, management and speed of process. In-vessel composting is faster, can compost more hard-to-manage materials, and is effective in excluding pests and vermin, controlling odour, ensuring pasteurisation and eliminating weed seeds.

The in-vessel system, followed by aerated static piles was selected as being the most efficient process which allowed excellent levels of environmental control. It is a significantly more expensive system to set-up but the levels of process control that can be achieved ensure that waste is composted in a relatively short time. The environmental controls such as the biofilters and water management system will provide a high level of emissions control when compared to alternative processes.

3.4.3 Alternative Locations

The site was selected due to its rural location, synergies with local peat extraction, low density of residential dwellings in the vicinity, excellent screening and its proximity to the National Road Network.

A critical factor in the location of the site was the fact that the general area has a history of peat extraction and the compost product will replace peat as a growing medium in horticulture. Peat is a non-renewable natural resource, whereas compost is renewable resource derived from a waste material. Replacing peat with compost is therefore environmentally beneficial on two counts. The availability of peat in the general area will provide opportunities to introduce the compost into peat blends for horticultural use. In this way, already established markets can be tapped into and a more environmentally beneficial product can be marketed and sold.

Distance from local houses is also a major factor in selecting a composting site. There are two potential environmental impacts associated with composting. Firstly, during shredding and screening (with a trommel) the material generates dust that can be a potential nuisance and secondly, aspergillus spores are likely to form on the composting material and these can potentially cause health impacts.

Aspergillus is a group of mould fungi that are common on decaying vegetable matter. Most people are naturally immune to these spores, however, some aspergillus spores can have a variety of health impacts on people with damaged immune systems. The potential impacts range from minor to serious depending on the type of aspergillus spore and the immune system of the receptor. As these spores form on decaying vegetable matter they are found everywhere in the environment and commonly in the air we breathe. The health risks associated with aspergillus are therefore always present, however, the agitation and screening of the composted material is likely to generate higher than average airborne aspergillus spores in the proximity of a composting plant and subsequently increase the health risk to people with damaged immune systems.

It therefore follows that these facilities should ideally be located in remote areas where the health risk is limited to the workforce, who can be issued with personal protection equipment and can be screened for potential health problems. The Kilbride site is ideal as there is forestry buffer that will shelter the process from wind and trap windblown dust or spores before they can leave the site. The nearest private dwelling will be located more than 600 metres from the composting operation and there will be just 9 houses within 1 km of the site activities.

Thorntons Recycling purchased the site with the intention of applying for planning permission for a composting facility situated in the centre of the total landholding.

The initial site location was selected because it was surrounded by mature and semi mature trees, providing a large buffer zone between the facility and the existing environment to mitigate against noise, dust, odour and visual impact.

However, trial pits and boreholes revealed that the proposed location was underlain by peat up to a depth of between 2 - 3.5m. The implications of building on the peat were unfavourable as a volume of between 75,000 and 115,000m³ of peat would have needed to be removed from the site. In turn, this could have had significant consequences for surface and groundwater flow around the site and may have impacted on the proposed NHA to the south of the site.

Further site investigations were carried out on the site that is now being proposed (which is to the east of the previously considered site). These investigations revealed a more favourable soil profile of 2.5m of limestone fill over approximately 10m of dense saturated gravels. A bank of peat exists just outside the western boundary of the site. Existing trees at the north and east of the site will provide screening as they mature. The second site location is closer to the road and about 100m closer to the nearest residential dwelling, however, on balance, it is considered that the second site could be developed in a manner that would provide better levels of mitigation against environmental effects.

3.4.4 Alternative Scale of Development

The regional approach to waste management has placed pressure on the local authorities in each of the ten waste management regions to encourage the provision of adequate waste management infrastructure for each region. This infrastructure must be designed to meet the recycling and recovery targets set in EU and National policy and legislation. The provision of centralised biological treatment facilities will play an important part in establishing integrated waste management infrastructure. To date, this element of the regional plans is well behind schedule due to fears over the viability of such facilities and a subsequent lack of capital investment. This lack of infrastructure has stifled progress on introducing separately collected organic wastes from households and commercial premises. Table 3.5 shows the progress to date in each region in this regard.

Table 3.5 - Biological Treatment Infrastructure - Summary of Progress at end-2003

Region	Proposed	Realised	%
Midlands Region			
Separate Organic Household Collection*	30,000	*12,000	*40%
Biological Treatment Facilities	1	0	0%
Kildare Region			
Separate Organic Household Collection	22,500	0	0%
Biological Treatment Facilities	1	0	0%
North East Region			
Separate Organic Household Collection	43,600	0	0%
Biological Treatment Facilities	1	0	0%
Dublin Region			
Separate Organic Household Collection	270,000	0	0%
Biological Treatment Facilities	1-2	0	0%
Wicklow Region			
Separate Organic Household Collection	22,500	0	0%
Biological Treatment Facilities	1	0	0%
Cork Region			
Separate Organic Household Collection	pilot study	0	0%
Biological Treatment Facilities	1	0	0%
Connaught Region			
Separate Organic Household Collection	100,000	21,800	22%
Biological Treatment Facilities	3	2	67%
South East Region			
Separate Organic Household Collection	59,500	16,000	27%
Biological Treatment Facilities	1	1	100%
Clare/Kerry/Limerick Region			
Separate Organic Household Collection	46,000	3,000	6.5%
Biological Treatment Facilities	1	0	0%
Donegal Region			
Separate Organic Household Collection	40,000	0	0%
Biological Treatment Facilities	1	0	0%
Nationally			
Separate Organic Household Collection	634,000	52,800	8.3%
Biological Treatment Facilities	12-13	3	23-25%

Source: National Overview of Waste Management Plans - April 2004

*The reported figure of 12,000 households with separate collection of organics in the Midlands Region may be erroneous. Confirmation of this figure was not forthcoming from communications with the DEHLG, private waste companies and local authorities within the Midlands Region.

The slow progress nationally in the provision of biological treatment infrastructure and organic waste collection is recognised in Section 12.1.1 of the National Overview of Waste Management Plans - April 2004, where it states:

"In terms of future progress, the significant challenges which arise relate to:

- The further extension of segregated collections of dry recyclables and the considerable work that remains to be done on the introduction of segregated collection of organic waste;*
- The need to make early and substantial progress on the provision of biological treatment facilities; and*
- Generally ensuring that the provision of segregated collection, bring banks and civic amenity sites takes account of the increases in waste volumes now in evidence and higher population/household numbers, the potential implications of which are outlined in the earlier sections of this document."*

The lack of progress in this area contrasts with the enormous progress in recent years in the provision of kerbside recyclable collections, bottle banks and civic amenity sites.

The reasons for slow progress in the provision of biological treatment infrastructure are as follows:

- a lack of tradition in composting in Ireland,
- the high level of capital expenditure involved,
- fears over the viability of such plants,
- the high per-unit costs (cost/tonne) experienced at small scale pilot plants,
- fears over markets for the finished products,
- uncertainty over emerging legislation,
- conflicting views on the best available technology, and
- the slow pace and uncertainty in the planning and licensing of new facilities.

Each of the waste management regions has proposed at least one biological treatment facility. However, to limit each region to one facility of a size designed to serve only that region would compromise the viability of many of these facilities and would also create a monopoly in each region. It is imperative that each region has access to biological treatment capacity, whether or not that capacity is provided within the region.

In order to meet the requirements of the EU Animal By-Products Regulations (1774/2002), high capital investment is required and economy of scale becomes a critical factor. Existing infrastructure in Ireland consists of two or three pilot scale subsidised schemes and a larger scale facility that does not meet the requirements of the Animal By-Products Regulations as the compost is produced outdoors without an in-vessel treatment stage.

In 2003, Thorntons considered developing a pilot scale composting project handling 4,000 tonnes per annum at a horticultural college in County Meath. However, on examination of the finances it was estimated that the unit cost of the process would be in excess of €150 per tonne. This was not considered viable at the time.

The composting process at Kilbride, with an input of 90,000 tonnes/annum is expected to be in the range of €55 to €70 per tonne, depending on the value and marketability of the finished compost. The cost of treatment plus the additional costs in segregated collection, front-end processing and transport from transfer stations is expected to be competitive when compared to landfill disposal. A smaller scale facility would not be competitive in this regard and consequently may not be sustainable.

3.4.5 Do-nothing Alternative

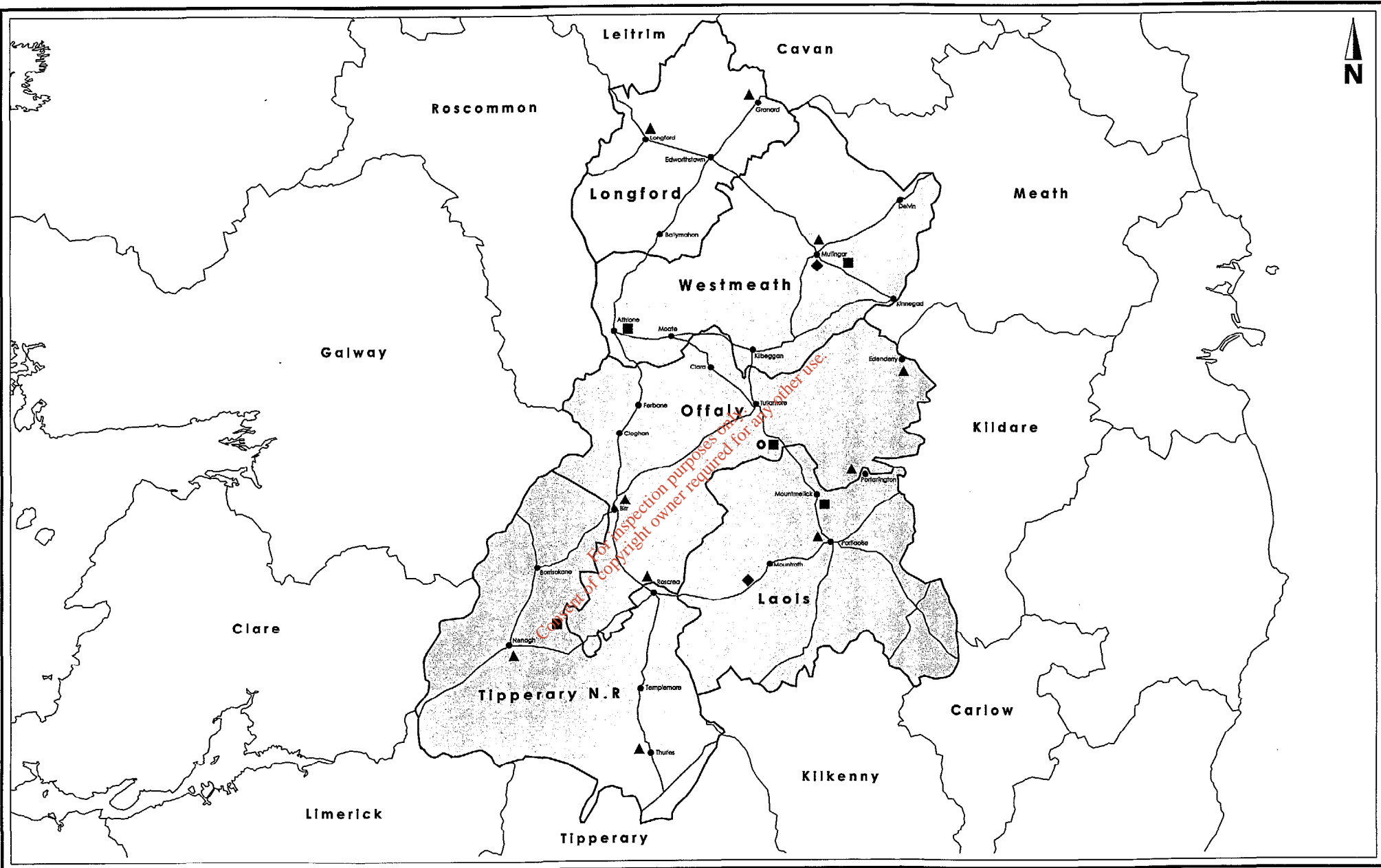
The do-nothing scenario means the situation or environment which would exist at some point in the future if no intervention were made. If the proposed composting facility at Kilbride is not developed, then organic wastes arising in Westmeath and the surrounding counties, which are not home composted will require disposal at other facilities in the area. Disposal of compostable waste will reduce the possibility of Co. Westmeath meeting their recycling and landfill diversion targets.

The do-nothing scenario is highly unfavourable in light of the increased efforts Westmeath Co. Council and the other Councils in the Midlands Region have been making to encourage the public to participate in home composting. There is also the pressure of the limited capacity remaining in the local landfill and there is therefore an urgent need to open new licensed waste management facilities such as the proposed composting facility and to begin the application processes for waste licensing and planning in 2004.

In national terms, the do-nothing scenario would represent a missed opportunity to make a significant contribution towards Ireland meeting its obligations under the EU Landfill Directive to divert biodegradable waste from landfill. The 'gap' shown in Table 3.1 above represents serious national problem that will require a combination of solutions that include paper/card recycling, home composting, centralised composting and incineration (thermal treatment).

Recycling of paper and cardboard is ever increasing and will continue to develop slowly as segregation improves. Similarly, home composting is developing gradually and is likely to increase at a greater rate with the introduction nationally of 'pay-as-you-throw' waste collection systems in 2005. Centralised composting (or other biological treatment processing) has great potential to make in-roads into closing the above-mentioned gap, however, these facilities are currently very scarce in Ireland and significant capital investment is required, particularly by the private sector, to develop infrastructure in this area. The development of a number of thermal treatment plants is likely over the next 5 to 10 years, particularly in the larger cities, such as Dublin and Cork. However, according to EU policy and legislation, thermal treatment is not the best environmental option for treating BMW and the development of composting facilities should not be compromised by the availability of thermal treatment capacity.

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FIGURE 3.1
CURRENT WASTE DISPOSAL SITES AND CURRENT WASTE FACILITIES IN THE MIDLANDS
 (Status at 2001, adapted from The Waste Management Plan for the Midlands Region)

- KEY:**
- Current interim landfills
 - Material recovery facility
 - Recycling centre
 - ◆ Transfer station