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Strategic Environmental Assessment of the Midlands Waste Management Plan Review



SCOPING REPORT

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1 INTRODUCTION

1.1 BACKGROUND

This is a Scoping Report for the non-statutory Strategic Environmental Assessment (SEA) of the Midlands Region Waste Management Plan. The Waste Management Plan is a statutory document prepared on behalf of the constituent local authorities (Offaly Co. Co., Laois Co. Co., Westmeath Co. Co., Longford Co. Co. and Tipperary NR Co. Co.) to set out the most appropriate options for the management of non-hazardous waste in the region. The contracting authority is Offaly County Council.

The Midlands Local Authorities were invited by the Department of Environment, Heritage and Local Government (DoEHLG) to pilot the Strategic Environmental Assessment (SEA) process for Waste Plans in its review of the Midlands Waste Management Plan. This is on a non-statutory basis as the review of the Midlands Waste Management Plan commenced before SEA legislation was enacted. This SEA is being carried out with funding from the EPA and under their guidance, and its purpose is to pilot the SEA process on waste management plans so that methodologies can be refined for future use on statutory waste management plan.

The scoping of the SEA is a mandatory requirement of SEA Legislation however the issuing of a Scoping Report is not a formal requirement of the SEA Directive but is recommended as good practice.

1.2 STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

SEA is a process for evaluating at the earliest appropriate stage, the environmental impact, and consequences, of policies, plan or programmes initiatives. The purpose is to ensure that the environmental consequences of plans or programmes are assessed during their preparation and before they are adopted. It also gives the public and other interested parties an opportunity to comment and to be kept informed of decisions and how they were made. SEA is defined as 'the formal, systematic and comprehensive process of evaluating the effects of a proposed policy, plan or programme or its alternatives, including the written report on the findings of that evaluation, and using the findings in publicly accountable decision making' (Thérivel *et al.*, 1992).

The European Directive on SEA (2001/42/EC) was adopted into Irish Legislation on the 21st of July 2004. Certain plans and programmes prepared by statutory bodies and which are likely to have a significant impact on the environment will now require an SEA to be carried out, where the preparation of such plans and programmes is started after that date. The SEA comprises of the following outputs:

- An assessment of the likely significant impacts on the environment of the plan or programme.
- An Environmental Report (a report containing the findings of the Assessment on the likely significant effects of the Draft Waste Plan).
- Consultation on the Draft Waste Plan and associated Environmental Report.
- An SEA Statement (identifying how environmental considerations and consultation have been integrated into the Final Plan).
- Monitoring.

1.3 PURPOSE OF SCOPING REPORT

The objective of scoping is to identify key issues of concern that should be addressed in the environmental assessment of the Waste Plan so that they can be considered in appropriate detail in the SEA. Scoping also aids in the identification of information sources and data gaps that may require to be filled by studies or surveys to underpin the assessment. This stage determines the key elements of the Plan and correspondingly identifies the likely environmental receptors that will be affected. **Figure 1.1** shows an overview of the SEA Process. The following elements are included in this Scoping Report:

- 1) Outline **extent of Plan review**
- 2) Outline potential **Waste Plan policies** based on Previous Plan
- 3) Provide general **assessment methodology** and **assessment criteria**
- 4) Determine the **environmental issues** to be assessed and included in the Environmental Report

A required output of scoping is to compile a preliminary list of reasonable alternatives to be considered in the SEA. The waste plan policies were not available at the time of scoping, therefore a preliminary list of policies is given later in the report and these will be refined and alternatives investigated later in the assessment process.

This scoping report has largely followed the Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland- Synthesis Report (Environmental Protection Agency) and is constrained by the following;

- The scope of the existing Waste Management Plan and review of that Plan (which will be based on the existing long term (15-20 years) national integrated waste management strategy);
- The time frame for the review of the Waste Management Plan and the time frame and budgetary constraints on the resources for the preparation of the SEA;
- The information currently available and the time frame for obtaining additional information.

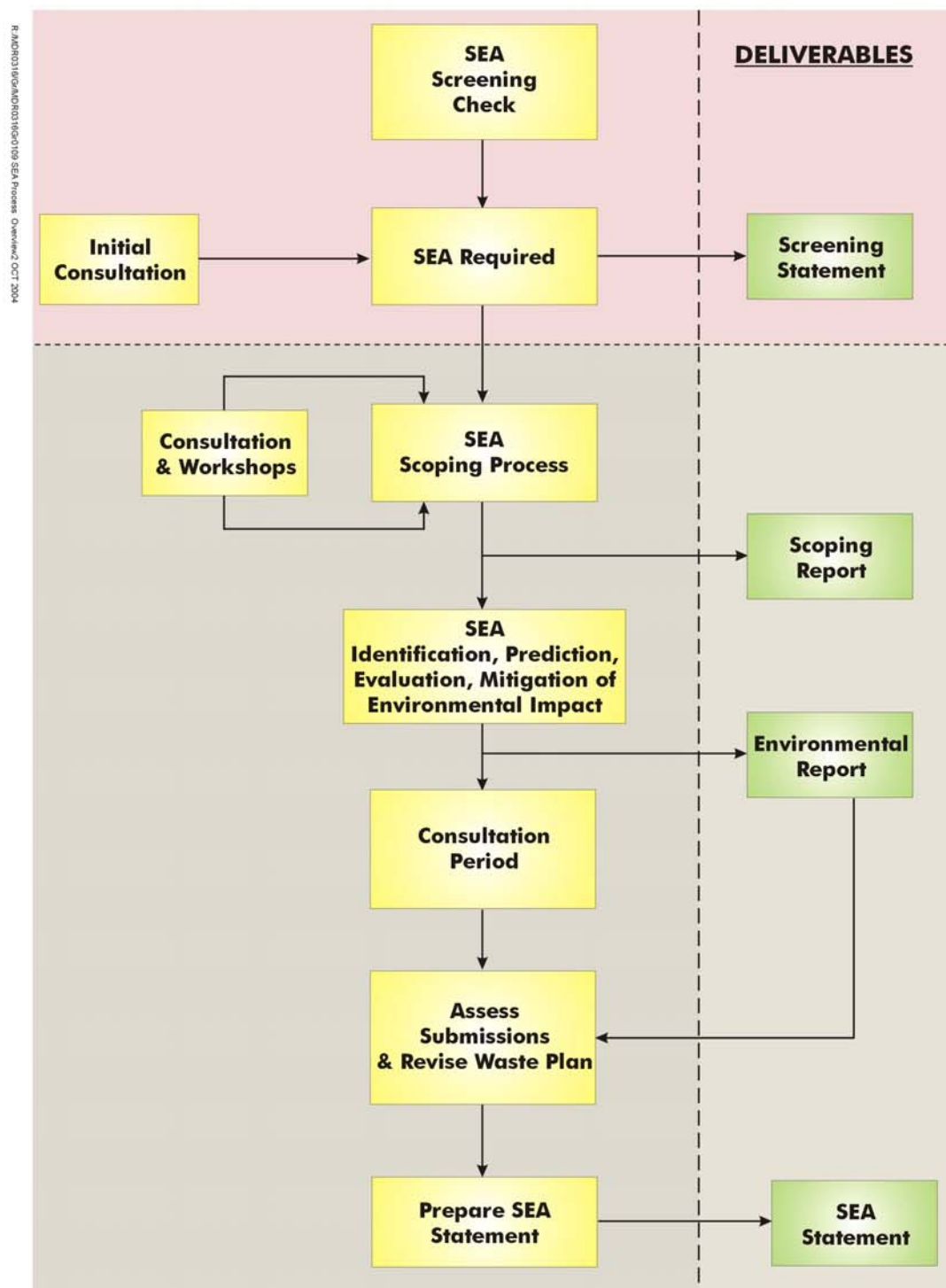
1.4 CONSULTEES

Under SEA Regulations SI No. 435 of 2004, designated environmental authorities must be consulted in relation to the scope and level of detail to be included in the Environmental Report. In the case of regional Waste Management Plans the following authorities have been identified as statutory consultees; The Environmental Protection Agency (EPA); The Department of the Environment, Heritage and Local Government (DoEHLG) and The Department of Communications, Marine and Natural Resources (DoCMNR).

A Workshop was held on 3rd November 2004 to determine the key elements of the Plan, SEA Methodology, Objectives, Indicators and Targets, and the level of environmental information to be included in the SEA. The workshops included members of the SEA study team, the Waste Plan review team, and representatives from each of the Environmental Authorities and the Midlands Local Authorities.

1.5 TIME FRAME

The Waste Management Plan Review and SEA commenced in September 2004 and a Draft Waste Plan and Environmental Report (a report containing the findings of the SEA) will be published for public consultation in January 2005. Following a consultation process the Waste Plan and SEA Statement (identifying how environmental considerations have been integrated into the Plan) will be published in April 2005.



SEA Process - Overview



Figure 1.1: Overview of SEA Process

2 MIDLANDS REGIONAL WASTE MANAGEMENT PLAN

2.1 KEY ELEMENTS OF THE PLAN

In 1998 the counties of Laois, Longford, Offaly, Westmeath and North Tipperary joined together to prepare the Midlands Waste Management Strategy Study, which set out the framework for informed decision-making as to the most appropriate management of non-hazardous waste over the following 20 years.

The Waste Management Strategy Study was the basis for the Waste Management Plan for the Midlands Region, a statutory document prepared in accordance with the Waste Management Act, 1996 and Waste Management (Planning) Regulations, 1997. This set out ambitious targets for the management of waste based on an integrated waste management approach including 46% recycling, 37% thermal treatment and a reduction in landfill disposal to just 17%. The extent of the Midlands Plan study area is shown in **Figure 1.1**.

The Midlands Local Authorities have been implementing the Plan jointly and significant progress has been made towards achieving the overall targets set out in the Plan. However the targets set for recycling have not been reached and no thermal treatment facility has yet been considered. The review of the existing Waste Plan will detail the current situation in the Midlands with respect to non-hazardous waste generated, having regard to current EU and National Policy and targets set out in the original Strategy and Plan.

2.2 PLAN OBJECTIVES

The key goals, strategies and objectives of the plan will be based on the current national waste strategy, relevant legislation (Waste Management Act and Waste Management (Planning) Regulations) and recent DOEHLG document National Overview of Waste Management Plans.

The key objectives of the Midland Waste Management Plan are:

- Implement the national waste management strategies in the Midlands Region
- Provide for the sustainable management of waste arisings in the Midlands Region
- Prevent and minimise the production and harmful nature of waste,
- Encourage and support waste recovery
- Safe disposal of residual wastes
- Implement the Polluter Pays Principle

The current national waste management policy is based on “integrated waste management” with the major focus on reducing reliance on landfill as the primary means of disposing of household and industrial waste. The overall approach will follow the Irish and European Waste Hierarchy shown in **Figure 2.1**, i.e.

- The prevention and minimisation of waste

- The recovery of waste by reuse and recycling
- The recovery of waste as a source of energy
- The safe disposal of residual wastes, which cannot be prevented, recycled or recovered.

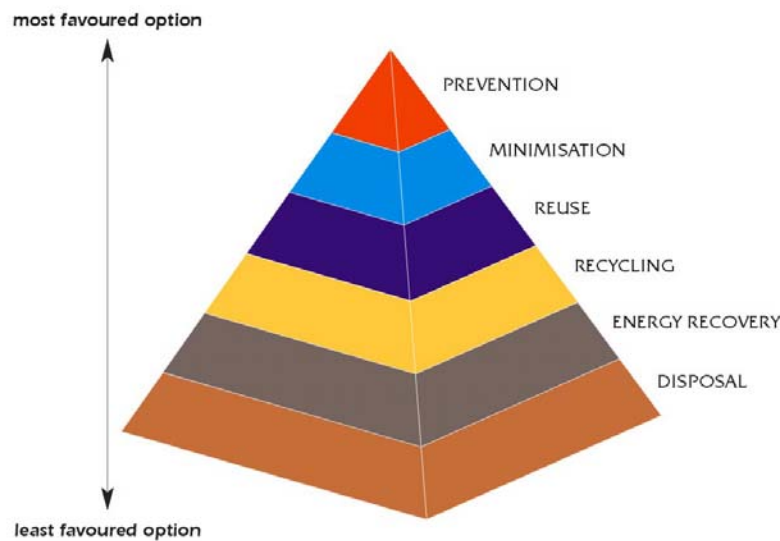


Figure 2.1: Waste Hierarchy

2.3 EXTENT OF PLAN REVIEW

The review of the existing Midlands Waste Management Plan will address all aspects of the minimisation, collection, transport, recovery including recycling, treatment and disposal of waste in accordance with the Waste Management Act, 1996 and various Waste Regulations, published from 1997 - 2003. This will also include an assessment of the need for waste management facilities having regard to the existing public and private infrastructure.

The original Midlands Waste Management Strategy and Plan were based on a 15-20 year Strategy for the Region, which was founded on an integrated approach to waste management. An environmental and modelling assessment was carried out using three alternative methods or scenarios for delivering this integrated solution. These scenarios represented a combination of different recycling targets with the possible introduction of thermal treatment with energy recovery leading to landfill disposal of non-combustible residues. The scenarios were as follows:

- **Scenario 1:** *Achieve maximum realistic recycling, continue with landfill disposal.*
- **Scenario 2:** *Achieve national and EU targets for recycling and introduce thermal treatment of combustible wastes.*
- **Scenario 3:** *Achieve maximum landfill diversion through implementation of maximum recycling and the introduction of thermal treatment of combustible wastes.*

Scenario 3 was considered the Best Practicable Environmental Option (BPEO) and is the basis for waste policy in the Midlands. The assessment was based on waste flows, environmental and economic impacts with diversion of waste from landfill as a primary objective.

As not all waste is recyclable and it is not possible to achieve 100% sorting efficiency, bulk reduction methods such as thermal treatment had to be considered. Thermal treatment is favoured for the following reasons:

- The ambitious targets set out in the National Waste Policy Document 'Changing our Ways' (1999) 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.
- 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.

Overall National and EU policies have not changed in the intervening period since the publication of the original waste Plan was adopted therefore the model will not be re-run as part of the Plan Review. However outputs or the method of reaching waste targets may change due to new approaches/technologies (e.g. Biological treatment/MBT (mechanical biological treatment) vs. WTE) taking account of current proposals by private sector. The environmental impacts of each step to achieving the Best Practicable Environmental Option will be assessed in the SEA.

2.4 WASTE MANAGEMENT POLICY

As the waste policies for the Plan review were not available at the time of writing this scoping document we have assumed that the policies for the existing waste plan will be largely readopted. Likely new policies to be included in the revised Plan include for example new technologies now available, new initiatives for prevention/minimisation and recycling/ recovery.

2.4.1 Existing Waste Plan

Collection System

- Door to door collection for segregation and collection of household recyclables.
- The above to be matched by provision of recycling, reception and sorting facilities. Provision was made for development of a new central Materials Recovery Facility (MRF) in the Region.
- Bring Bank systems to be established and concentrated in areas where no door-to-door collection.

Materials Recovery and Recycling Facilities

- Home composting strategy for rural areas as opposed to a separate organic collection.
- Green waste composting facilities planned with reception facilities provided at the Recycling Centres for the collection of green waste for transfer to the composting plants.
- Dual collection and central biological treatment of organic household waste will be implemented for households and suitable businesses in the main urban centres in the region.

Treatment and Energy Recovery Facilities

- Policy in favour of energy recovery of residual waste adopted, in preference to landfill
- A thermal treatment plant with capacity of 150,000-200,000 tonnes was proposed, with a target date of 2006.

Rationalisation of Landfill Disposal Facilities

- The Midlands Waste Management Strategy found that the best policy landfill disposal capacity in the region was to concentrate resources into three landfill sites in the short-medium term – one in the north (Ballydonagh), one central site (Derryclure or Kyletalesha) and one in the south (Ballaghveny).
- Following the introduction of thermal treatment, the requirement for landfill capacity will again be reduced and the Plan recommends one long-term facility for the disposal of non-combustible and other residual wastes.

2.4.2 Policy Options – Waste Plan Review

A selection of the waste policies, which will be included in the Plan review and assessed by the SEA, include the following:

A. Strategies for waste Prevention/ Minimisation/ Reuse

1. The promotion of waste minimisation.
2. The promotion of reuse, recycling and recovery of resources.
3. The use of incentives, charges and taxes.

B. Strategies for waste Recycling / Energy Recovery / Disposal

1. Continue previously adopted Three Bin System (Separate bins for dry recyclables, organics and residual materials) followed by composting.

2. A Two Bin System (dry recyclables and residual waste bin)- followed by a centralised sorting mechanism through Mechanical Biological Treatment.
3. Civic amenity sites/Recycling centres and bring banks.
4. Waste Transfer Stations/Material Recovery Facilities (MRF).
5. Employing different composting methods – Composting, Anaerobic Digestion with biogas recovery.
6. Impact of landfill with and without gas recovery.
7. Other technologies that may be identified in Waste Plan
8. The impact of increasing the diversion of waste from landfill.
9. The environmental impacts of Thermal Treatment with energy recovery against having no Thermal Treatment will be assessed.
10. The impacts of improving the collection of previously uncollected waste and therefore reducing illegal burning of waste.

At this stage the preferred actions or policies for each stage of the waste hierarchy have not been identified, however they are likely to include a range of the above. The preferred policy will be assessed and the likely significant impacts of other options will be assessed as practical alternatives. Both collection and disposal phases will be considered where possible and where data is readily available.

The new Waste Plan will set interim targets within the Plan as performance indicators, which will ensure that the 2013 targets are met. If this is the case, the SEA will look at the impact of achieving these targets and also the impacts of certain targets not being met within the period of the Plan.

The SEA will also take into account the following where relevant in relation to the Waste Plan:

- Regional Waste Management Plan Boundaries - Revised plans will revisit this issue and a more flexible approach may be introduced taking into account the proximity principle and rationalisation of infrastructure across regions.
- Landfill capacity available in the region and adjoining regions and the possibility of landfill rationalisation following the introduction of thermal treatment.

2.5 WASTE STREAMS TO BE INCLUDED IN THE PLAN

While the Waste Management (Planning) Regulations 1997, require that Waste Management Plans quantify the arisings from 15 different waste streams, the initial Waste Plans focused on waste reduction programmes and waste infrastructure to collect, recycle and dispose of household and industrial wastes. The plans reflected the emphasis of government policies on these areas.

In relation to the review of Waste Management Plans, Government Circular WIR 06/04 identifies issues to be taken into account in the review process based on existing waste legislation and instructs that local authorities should pay particular attention to the following issues;

- Data on Waste Arisings
- The Biodegradable Waste Strategy
- Report of the Task Force on Waste Electrical and Electronic Equipment (WEEE)
- Roles and Responsibilities (in relation to the local authority and the private waste sector)
- Construction and Demolition Waste

The Plan will focus on the following key Waste Streams

- Municipal waste arisings
- Household waste (including household hazardous materials)
- Commercial/ Industrial (including Industrial sludges)
- Construction and Demolition
- Waste Electrical and Electronic Equipment (WEEE)
- Packaging Waste
- Special Waste streams –Non-hazardous healthcare waste, contaminated soils, ash and incinerator waste residue, Meat and bone meal, Litter and street sweepings, End of Life Vehicles etc.

The plan does not cover the management of certain waste streams identified in **Table 2.1**. Agricultural wastes will not be dealt with in the Waste Plan and therefore not by the SEA. Government policy will be referred to. Management policies for wastes arising from agriculture, sewage sludges and other streams have been formulated under Sludge Management Plans (SMP). Local authorities are obliged to produce SMP's to deal with non-hazardous sludge generated in their functional area. These plans cover the environmental impacts of these wastes, and therefore are not dealt with here to avoid unnecessary duplication.

The National Hazardous Waste Management Plan was prepared by the EPA in 2001. A Revised Plan is required to be published in 2006. Local authorities are obliged to implement certain provision of the Plan in accordance with Section 22 and Section 26 of the Waste Management Act, 1996.

Table 2.1: Management of Specific Waste Streams not included in the Plan

Waste Streams not included	These streams covered by
Mining and Quarry residue	Individual developments – not strategic
Sewage sludges Water treatment sludges	Sludge Management Plans – covers all non-hazardous sludges covered in the admin area.
Agricultural sludges	Sludge Management Plans River Basin Districts – Programme of Measures Measures undertaken by local authorities under the Phosphorus Regulations Byelaws under the Water Pollution Act

3 ENVIRONMENTAL RECEPTORS AND KEY ENVIRONMENTAL ISSUES RELATING TO THE PLAN

The existing environment of the Midlands and the likely Environmental Receptors in relation to the impact of waste management policies were identified in the original Waste Management Plan (1999). Data presented in that Plan is currently being reviewed and updated and will be presented in detail in the Draft Waste Management Review and in the Environmental Report in January 2005. Baseline maps for the Midlands Region to be included in the Environmental Report include: Extent of Plan Area, Corine Landuse data, pNHA, SPA, cSAC Designations, Population Data 2002, Transport Infrastructure, Water Quality (Q Rating), aquifer category and groundwater vulnerability mapping.

Based on preliminary data those receptors most likely to experience a significant impact as a result of the Waste Plan and its implementation are identified as key issues. These are detailed in **Table 3.1**.

Table 3.1: Environmental Receptors and Key Issues Identified

Environmental Receptor	Issues in relation to Waste Management
Biodiversity, Flora and Fauna	<p>Impacts on biodiversity, flora and fauna will be on a site-specific level.</p> <p>Current situation: The protected areas in the region have been mapped and will be included in the Environmental Report. In the Midlands region there is a wide variety of designated protected areas with a total of 171 pNHAs, 55 cSACs and 16 SPAs. The main habitat types include bog, wood, fens, lakes, upland areas, eskers and callows.</p> <p>Note also interactions with water and air aspects.</p> <p>Not identified as key issue at strategic stage as location of facilities can avoid designated or sensitive areas. However, considered a key issue at site selection stage. Adherence to appropriate siting criteria for waste management facilities will be required at site selection stage to minimise potential impact.</p> <p>Note: Site selection guidelines for waste management facilities will be included as part of the SEA/ Waste Management Plan.</p>
Water (Including ground, surface, drinking, aquifer and bathing quality).	<p>Impacts on water quality due to waste management activities, and in particular landfills will be on a site-specific level but could have repercussions in terms of dispersion of pollutants in the water environment.</p> <p>Current situation:-Surface water. Water quality is unsatisfactory in many parts of the region. 54% of river monitoring sites in the region are polluted with 29% slightly polluted and 23% moderately polluted based on 1,011 sampling sites. Agriculture is considered the greatest source of pollutants to surface waters.</p> <p>Current situation- Groundwater: data for the Midlands region shows elevated levels of Ammonia (0.1- >0.6 mg/l N), Nitrate (25-50mg/l NO₃), Phosphate (>0.05mg/lP) and Iron (>1.0 mg/lFe) and</p>

	<p>Manganese ((0.05-1.0 mg/IMn) at selected sites.</p> <p>Identified as key issue particularly in relation to groundwater environment. However, adherence to appropriate siting criteria for waste management facilities and the operation of existing and proposed facility within licences parameters will minimise potential impact.</p>
Environmental Receptor	Issues in relation to Waste Management
Air/Climatic Factors	<p>Impacts on air quality will be due to emissions from landfill and thermal treatment but also due to transport associated with waste collection and transfer etc.</p> <p>Current situation: SO₂, NO₂, PM₁₀, and Ozone levels in the region are generally within current EU limits, when measured as an annual mean. Continuous monitoring of PM₁₀ was recommended at Mullingar & Athlone due to levels exceeding threshold limits (EPA National Air Monitoring Programme, (www.epa.ie/air/monitoring)). Other related landfill emissions include methane and hydrogen sulphide. There is no existing information on a Regional scale.</p> <p>Identified as a key issue particularly in relation to Thermal Treatment facilities. Noise and odour emissions have potential to be associated with landfill and other waste treatment facilities but this is not always the case if a facility is properly managed. Transportation of waste is also a key issue.</p>
Soils/Landuse	<p>Current situation: The Corine landcover dataset indicates the majority of land in the area is agricultural (79%), wetlands (9%) forest and semi-natural (9%) water bodies (2%) and artificial (1%).</p> <p>Not identified as key issue with respect to land take. The impacts on will mainly be due to siting of large facilities, primarily landfill.</p>
Cultural Heritage	<p>Current situation: According to a DoEHLG monuments database the total number of monuments in the region is 10,731, distributed across all counties. The majority of the monument types are classed as earthworks (4,909 No.), enclosures (1,896 No.) and buildings (1,232 No.).</p> <p>Not identified as key issue as location of facilities can avoid designated or sensitive areas – adherence to appropriate siting criteria for waste management facilities will minimise potential impact</p>
Landscape	<p>Current situation: There are areas designated in each county in the region for protection of landscape and visual amenity. Potential impacts could occur due to siting of large facilities visible in the landscape. These landscapes range from lake catchments, agricultural and forestry areas, rivers and canals, bog and upland areas. In general, development is restricted in these areas in order</p>

	<p>to protect visual amenity.</p> <p>Might be considered a key issue – depending on the scale of the facility planned. Planning legislation and adherence to appropriate siting criteria for waste management facilities will minimise potential impact</p>
Environmental Receptor	Issues in relation to Waste Management
Material assets	<p>Not identified as key issue with respect to land take. However, perceived impacts on material assets in relation to siting of waste facilities can be an emotive issue.</p> <p>Use of transport networks, particularly roads, by waste transportation vehicles has a perceived impact on other road users and pedestrians.</p>
Population	<p>Current situation: <i>Census 2002 population data to be analysed.</i> In the National Spatial Strategy the Gateway locations in the Midlands Region are Mullingar, Athlone, and Tullamore.</p> <p>Identified as a key issue, people generate waste, proximity principle as against the impact of locating waste management facilities in urban areas etc.</p>
Health	<p>Current situation: Awaiting data requested from Midlands Health Board.</p> <p>Identified as a key issue, perceived impact of waste management facilities on human health. Managing the potential impacts on air, water and soil should limit the potential for adverse impacts on human health.</p>
Energy	<p>Energy use and generation in relation to waste management includes energy used to transport and treat waste. However, waste provides an alternative energy therefore potential environmental impacts can be positive or negative.</p> <p>Identified as a key issue.</p>
Transport	<p>A transport network map has been produced for the Region. The road infrastructure in the Midlands is an extensive network of both minor roads and major corridors. Due to its location many of Ireland's major north/south and east/west routes pass through the region leading to congestion problems. Traffic levels will be assessed using NRA traffic flows.</p> <p>Identified as a key issue.</p>

4 SEA METHODOLOGY

4.1 INTRODUCTION

As stated earlier the scope of the SEA is largely determined by the scope of the Waste Plan Review, which is currently in progress. A preliminary assessment methodology is given here based on the review to date. The methodology will be refined during the assessment process and will be detailed in the Environmental Report.

4.2 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND ALTERNATIVES

In principle there are four dimensions to be taken into account when defining the waste policy options.

These relate to:

1. Need or demand

Reducing the need for waste management facilities comes through waste prevention and minimisation. Waste management policies can influence waste prevention/minimisation through public awareness campaigns and/or through taxes and charges.

Prevention/minimisation is the best environmental option. The target of achieving zero waste is considered impractical within the existing long-term (15-20 year) national integrated waste management strategy. However, a major emphasis of the policies emanating from the Plan Review will be on waste minimisation/prevention.

2. Mode or process

The alternatives for the mix of waste management options and technologies will be assessed through Best Practicable Environmental Option (BPEO). This looks at broad options for using different technologies to handle waste. The existing plan is based on the Best Practicable Environmental Option (BPEO) of achieving maximum landfill diversion through implementation of maximum recycling and the introduction of thermal treatment of combustible waste. It is not intended to change this overall policy in the current review although it is unlikely that thermal treatment will be in place within the time frame of this plan review.

The SEA will consider the alternative modes/processes within this overall BPEO. The different stages in waste processing from collection through to recovery/disposal will be included in the assessment.

3. Location

The major likely significant impacts of implementing the identified policies are expected to be experienced at the location of larger waste management facilities, such as landfill and thermal treatment facilities. It is not proposed in the current review to identify specific locations for waste management facilities and therefore the likely impact at specific locations cannot be assessed.

However site selection guidelines for waste management facilities will be included as part of the SEA.

4. Timing and implementation

The proposed plan review is unlikely to include the timing and detailed implementation of proposed actions and thus will not be considered in the SEA. This will be revised should targets be set for implementation of policies within the time frame of the review period.

4.3 ASSESSMENT METHODOLOGY

The proposed methodology for assessing the likely significant impacts of the Waste Management Plan on the environment is detailed below. The environmental assessment of the waste plan is the main focus of the SEA.

A series of environmental objectives has been identified for biodiversity, water, air/ climatic factors, soils/landuse, landscape, cultural heritage, material assets, population, human health, energy and transport (see **Table 5.1**). These objectives reflect the objectives of relevant EU and national environmental policy. Indicators and targets have also been identified against which the performance of the Plan can be measured on an ongoing basis.

Table 5.2 is a matrix assessing the compatibility of the environmental objectives against each other. This is to test each objective to ensure there is no conflict between them, with the aim of having most of the objectives compatible.

There are in principal two cycles involved in the assessment:

- Cycle 1: The first cycle involves an assessment of individual waste policies against each environmental objective. It is proposed to use impact matrixes to identify areas of significant impact for each waste policy and for identified reasonable alternatives to these policies. The relative impact of each policy for each stage of waste process will be identified where relevant. **Table A**, Appendix 1 is the matrix to be used for e.g. air quality. This matrix will be completed for each environmental receptor, i.e. water, health etc.
- Cycle 2: Having performed the assessment policy by policy, the waste management plan is assessed from an overall perspective, where the mix of preferred options identified in the Plan are assessed. In order to rectify and/or offset any possible unwanted synergies in the overall waste management policies causing significant impacts on the environment.

Criteria for assessing the impacts of policies identified in the Plan have been identified using the environmental objectives listed in **Table 5.1**. These assessment criteria are listed in **Table 5.3**. Positive and negative impacts will be considered, for example; will the preferred policy or alternative contribute to a reduction in air/ water pollution? It is expected that the symbols below will be used will be used to show the nature of impact:

+ positive impact, - negative impact, 0 no impact, ? uncertain impact, nr not relevant

A commentary is given in the matrix explanation is given in the table Where relevant, two classes of impact will be given

4.3.1 Level of Detail in SEA

The level of detail contained in the SEA is determined by:

- The location of the Plan in the planning and decision-making hierarchy (See Figure below) and the level of detail of the policies within the plan. The extent of the Plan Review is to a certain degree predetermined by other objectives, plans and strategies (see **Figure 4.1** below).
- The degree to which the Plan determines an environmental impact
- The availability of existing data when the SEA is being prepared.

The constraining factors in terms of this SEA will be the available level of detail of the policies proposed, the overall time frame in which the SEA is being carried out and time frame relative to the programme for the development of policies within the Plan Review. Every attempt will be made to include detail on proposed policy where available, however it is unlikely that site specific policies will be recommended thus limiting the level of assessment that can be undertaken.

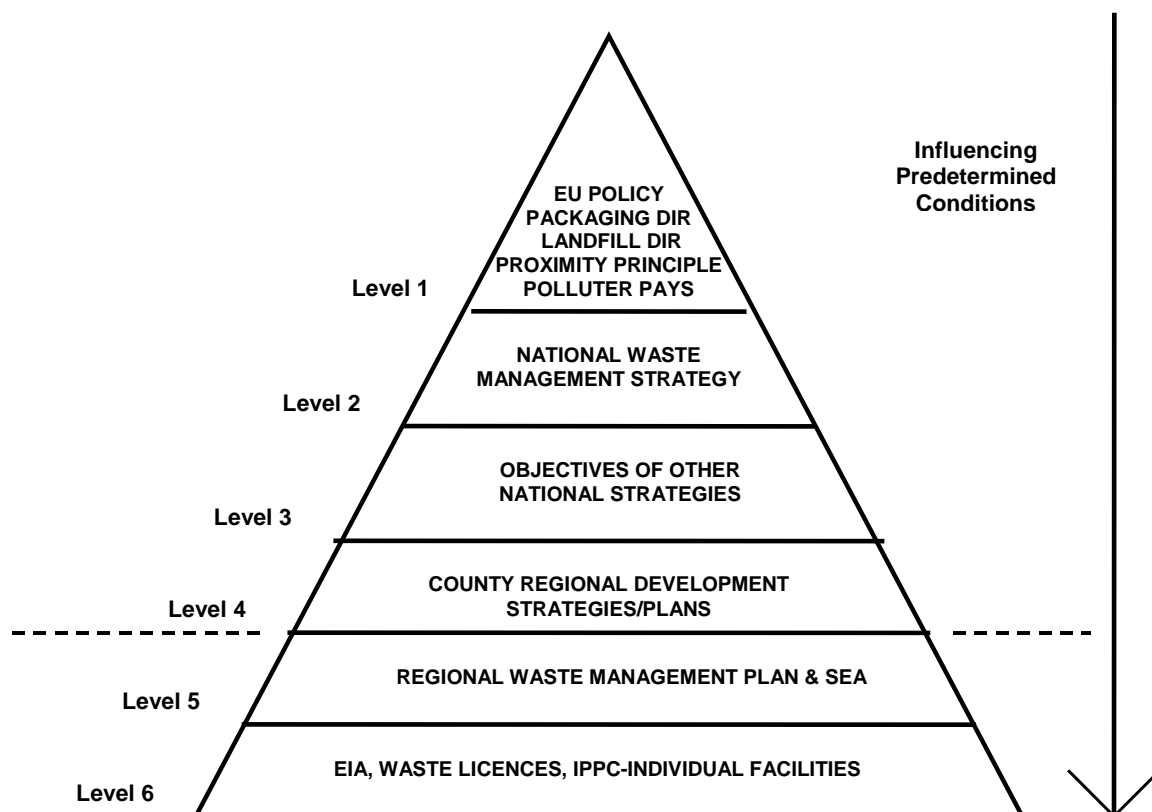


Figure 4.1: Levels at which Decisions are taken

4.3.2 Assessment methods and tools

The assessments of individual policies in the proposed Waste Management Plan will to a large extent be based on:

- Expert judgements
- Previous experiences

- Consultations
- Risk assessments

4.4 SUMMARY

The Draft Policy options that are proposed to be considered in the SEA are listed in Section 2.4.2. These policy options may be revised as the Draft Waste Plan is being developed. The key issues and environmental receptors to be considered in the SEA are identified in **Table 3.1**.

5 ENVIRONMENTAL OBJECTIVES, TARGETS, INDICATORS AND ASSESSMENT CRITERIA

Table 5.1: Environmental Objectives, Targets and Indicators:

An **objective** is a statement of what is intended.

A **target** is a more detailed plan specific intended achievement.

An **indicator** is a measure of variables over time, used to measure achievements of targets and objectives.

Relevant Area (Annex I)	Objective		Target	Indicator
Biodiversity, flora and fauna	A	Limit adverse impacts on biodiversity, flora and fauna	Site new facilities on non-sensitive sites Provide compensating measures for any habitat damage	Change to designated habitats (area and /or quality) (see site EIS/Annual Environmental reports) due to waste management policies/ facilities
Water (including surface, groundwater, drinking, aquifers and bathing)	B	Limit pollution to levels that do not adversely impact on water quality	Compliance of licensed waste activities with licensed water emission parameters (see site AERs) Meet requirements of the Water Framework Directive Site new facilities on non-sensitive sites Water abstraction to remain within the carrying capacity of the water body	Ecological Quality Rating Volume of waste facility emissions exceeding licensed emission thresholds Volume of water abstracted from water body from waste facility

Relevant Area (Annex I)	Objective		Target	Indicator
Air / Climatic Factors	C	Limit air pollution to levels that do not damage the natural environment	Compliance of licensed waste activities with licensed air emission parameters (see site AERs)	Volumes of gases (CH ₄ , CO ₂ , N ₂ O NO _x , dioxins, SO ₂) emitted (see site AERs)
	D	Reduce greenhouse gas emissions	Increased collection coverage for municipal waste Site new facilities on non-sensitive sites Reduce uncontrolled burning/disposal of waste Reduce CH ₄ , CO ₂ emissions Reduce the extent of travel associated with waste and waste related activities Energy capture per tonne of waste in line with international best practice	Number of licence exceedances due to noise disturbance or odours (see site AERs, EPA reports) Total waste related vehicle km's
Soil/ Landuse	F	Limit the use of good quality agricultural land	Net area and quality of land used for waste management activities per tonne of waste in line with international best practice	Area and quality of land used for ceased, existing and proposed waste activities
	G	Limit the adverse impact on soil quality and quantity	Site new facilities on non-sensitive sites	Area of land contaminated by waste
	H	Return land released from ceased waste management activities to beneficial use	Reduce contaminated land area	Volume of waste disposed of in landfill

Relevant Area (Annex I)	Objective		Target	Indicator
Cultural heritage including architectural and archaeological heritage	I	Minimise adverse impact on sites of cultural heritage including architectural and archaeological heritage	<p>Site new facilities on non-sensitive sites</p> <p>Preserve historical buildings etc. safeguard Conservation Areas and sites of architectural interest</p>	Number of sites / settings of cultural importance at risk (see site EIS/AERs) due to waste facilities
Landscape	J	Protect the landscape	<p>Net area of land used for waste management activities per tonne of waste in line with international best practice</p> <p>Include criteria /guidelines on landscape and amenity protection in site selection guidelines for new waste management facilities</p> <p>Maximise the restoration of closed facilities and where possible the phased restoration of existing and new in keeping with the surrounding landscape</p> <p>Minimise unauthorised waste activities, fly-tipping, litter</p>	<p>Number of waste management facilities impairing landscape or areas of visual amenity (see EIS, AERs)</p> <p>Percentage of land designated for amenity value</p> <p>Number of unauthorised waste activities, extent of fly-tipping, nuisance due to litter</p>
Material Assets	K	Maximise use of existing material assets	<p>Net area of land used for waste management activities per tonne of waste in line with international best practice</p> <p>Maximise use of existing infrastructure</p>	<p>Area of land used by waste management facilities</p> <p>Reported new infrastructure waste facilities</p> <p>Conversion of existing buildings for waste related purposes.</p>

Relevant Area (Annex I)	Objective		Target	Indicator
Population and Human Health	L	Protect human health	<p>Minimise the risk and impact of accidental emissions from waste management activities</p> <p>Include criteria /guidelines on amenity protection in site selection/development procedures for new waste management facilities</p>	<p>See relevant sections for Water, Air, Landuse</p> <p>Number of waste related transport accidents</p> <p>Reports of accidental releases from waste management activities</p>
Energy	M	Maximise use of renewable energy sources	<p>Create balance or net energy generation from waste management activities</p> <p>Energy capture per tonne of waste in line with international best practice</p> <p>Maximise renewable energy generated from waste activities</p>	<p>Net energy consumption in waste management activities</p> <p>Energy/gas recovered from waste (see AERs)</p>
Transport	N O	<p>Minimise impact of transport associated with waste</p> <p>Consider use of alternatives to road transport including rail</p>	<p>Traffic kilometres per tonne of waste in line with international best practice-</p> <p>Employ 'Proximity Principle' to the widest extent possible to waste management activities</p>	<p>Number of traffic kilometres generated/contribution to congestion/commuter time by waste transport</p> <p>Number of road accidents reported due to waste transport activities</p> <p>Km's travelled by mode of waste related transport</p>

		Key																							
A	Limit adverse impacts on biodiversity, flora and fauna	A																							
B	Limit water pollution to levels that do not adversely damage the environment	✓	B																						
C	Limit air pollution (incl. noise, odour) to levels that do not adversely damage the environment	✓	0	C																					
D	Reduce greenhouse gas emissions	0	0	✓	D																				
E	Reduce vulnerability to climate change, e.g. flooding	X?	X?	0	✓	E																			
F	Limit the use of good quality agricultural land	✓	0	0	0	✓X	F																		
G	Limit the impact on soil quality and quantity	✓	0	✓?	0	✓X	✓X	G																	
H	Return land released from ceased waste management activities to beneficial use	✓	✓	0	0	✓	0	✓	H																
I	Minimise impact on sites of cultural heritage including architectural and archaeological heritage	0	0	✓?	0	✓	0	0	✓0	I															
J	Protect and enhance the landscape	✓	✓	0?	0/?	✓X	✓X	✓	✓	✓	J														
K	Maximise use of existing material assets	0	0	✓?	0	✓	✓X	0	✓0	0	✓	K													
L	Protect and enhance human health	0	✓	✓	0?	✓	?X	✓	✓	0	✓	0	L												
M	Maximise the use of renewable energy sources	0	0	0	✓	0	0	0	0	0	✓	0	0	M											
N	Minimise impact of transport associated with waste	✓	0	✓	✓	✓	✓X	✓	0	✓	✓	✓X	✓	0	N										
O	Consider use of alternatives to road transport including rail	X?	✓X	✓?	✓	0	?	?	0	?	?	✓X	✓X	0	?	O									

Notes on Table 5.2

A. Limiting adverse impacts on biodiversity, flora and fauna

A/B would be compatible with limiting air pollution, as both would be beneficial to each other.

A/C would be compatible with limiting water pollution, as both would be beneficial to each other.

A/E may conflict with reducing vulnerability to climate change if areas were set aside for flood control, etc. but the effect is uncertain at present.

A/F may conflict with limiting the use of good quality agricultural land, as could lead to site selection towards non-agricultural land which may be more diverse.

A/G would be compatible with limiting the impact on soil as the biodiversity of the soil would be maintained.

A/H would be compatible with returning used land to beneficial use, which would provide opportunities for increased biodiversity.

A/J would also be compatible with maintaining the landscape.

A/N would be compatible with minimising transport associated with waste, which would reduce the threat to biodiversity.

B. Limiting water pollution

B/E may conflict with reducing vulnerability to climate change if water flow is being controlled or water is being impounded could reduce flow and cause problems of pollution. The interactive effect of these objectives may also be uncertain, for example, abstraction of water could reduce or increase vulnerability to climate change.

B/H would be compatible with returning land to beneficial use after ceased waste management activity as the risk of leachate is less.

B/J would be compatible with landscape protection due to less risk of algal blooms, for instance.

B/L would be compatible with protecting human health as there would be less risk from contaminated water.

B/O could be compatible with the use of alternatives to road transport depending on the mode chosen or could promote water pollution if waterways were used.

C. Limiting air pollution

C/D such as O₃ would be compatible with reducing GHG.

C/G such as acidifying compounds soil quality would be maintained but the effect is uncertain at present.

C/I such as acidifying compounds would mean less damage to stone structures but the effect is uncertain.

C/J such as O₃, SO₂, etc. would promote less damage to vegetation and the landscape, but the exact effect is uncertain at present.

C/K by maximising the use of material assets could provide a reduction in air pollution, but the effect is uncertain.

C/L would be compatible with protecting human health, especially for asthma sufferers, etc.

C/N would be compatible with minimising transport which would lead to less air pollution in return.

C/O would be compatible with the use of alternatives to road transport but the effect is uncertain.

D. Reducing GHG emissions

D/E would be compatible with reducing vulnerability to climate change.

D/J could be compatible with protecting the landscape due to less damage by ozone, but the effect is uncertain.

D/L such as O₃ could result in enhanced human health but the effect is uncertain.

D/M would be compatible with the increased use of renewable energy sources.

D/N would result from a reduction in transport associated with waste.

D/O would result from the use of alternatives to road transport, such as rail.

E. Reducing vulnerability to climate change

E/F could be compatible with maintaining good quality land by providing protection or may conflict if land is required for buffering zones.

E/G would be compatible with reducing the impact on soil quality and quantity due to a reduction in the risk of flooding etc.

E/I would be compatible with preserving cultural heritage by reducing the risk of damage due to flooding and extreme weather events.

E/J could be compatible with protecting the landscape by providing protection against extreme weather events but construction of flood barriers may obscure the landscape.

E/K would mean material assets would be less at risk from extreme weather events or flooding.

E/L would mean human health would be less vulnerable to damage caused by extreme weather conditions.

E/N would mean that transport will be less at risk from disruption due to extreme weather.

F. Limiting the use of good quality agricultural land

F/G would mean the impact on soil could be reduced in some areas and increased in others on less valuable land.

F/J parts of the landscape would be protected (and opportunities for enhancement provided) and whereas other areas would be impacted.

F/K would mean some material assets would be protected whereas others, on less valuable land may be at risk.

F/L would mean human health may not be affected but if pressure was placed on less valuable land close to residential sites there may be some impact, but it is uncertain at present.

F/N could impact positively or negatively on transport associated with waste, depending on the location of the facility in relation to the land in question.

F/O could impact positively or negatively on transport mode associated with waste, depending on the location of the facility in relation to the land in question.

G. Limiting the impact on soil

G/H would be compatible with returning land from previous waste sites to beneficial use.

G/J would mean the landscape would be protected due to less contamination.

G/L would mean that human health would be less at risk from contamination.

G/N would be compatible with minimising transport associated with waste (less pressure on the soil resource).

G/O using alternatives to road transport will be uncertain and dependent on the mode of transport chosen.

H. Returning land to beneficial use after waste management activity

H/I would mean less pressure would be placed on sites of cultural heritage as more land becomes available.

H/J would mean that the landscape would be enhanced as the derelict sites would be transformed to a useful site.

H/K would be compatible with maximising the use of material assets if a site could be transformed and put to another use.

H/L would be compatible with protecting and enhancing human health due to less risk of contamination and/or creation of green space.

I. Minimising the impact on sites of cultural heritage

I/J would mean that the landscape would be protected and there may also be opportunities for landscape enhancement.

I/N would be compatible with minimising transport associated with waste due to less pollution and physical impact from vehicles.

I/O it is uncertain what effect this might have on alternatives to road transportation.

J. Protecting the landscape

J/K would be compatible with maximising the use of material assets by reusing existing buildings and infrastructure.

J/L would mean human health could be enhanced if more green areas were created.

J/M would be compatible with maximising the use of renewable energy which creates less pressure from pollution/GHG emissions.

J/N would be compatible with minimising transport associated with waste as less pollution/GHG emissions would result.

J/O may have uncertain effects on alternatives to road transport.

K. Maximising the use of material assets

K/N would be compatible with minimising the transport associated with waste if existing assets could be reused or may conflict if the infrastructure network needed to be extended.

K/N may be compatible or may conflict with selecting alternatives to road transport depending on the mode chosen.

L. Protecting human health

L/N would be compatible with minimising transport associated with waste due to less risk of accidents, pollution etc.

L/O may be compatible or may conflict with selecting alternatives to road transport depending on the mode chosen.

N. Minimising the impact of transport associated with waste.

N/O would have uncertain effects on selecting alternatives to road transport.

Table 5.3: Assessment Criteria Identified

Environmental Receptors	Assessment Criteria
Biodiversity, Flora and Fauna	Size of footprint (landtake) for facility and number of facilities For indirect impacts see Water, Air, soil and Geology.
Water	Potential damage to surface and groundwater as a result of emissions or abstractions due to a waste facility
Air/Climatic Factors	Potential volume of greenhouse gases, dioxins, acidic gases, noise or odour.
Soils/ Landuse	Size of footprint for facility and number of facilities and setting.
Landscape	Visibility of facility including visual impact of traffic generated Size of footprint for facility and number of facilities
Cultural Heritage including architectural and archaeological heritage	Location/proximity of facility to sites or structures of significance and impact thereon Size of footprint (landtake) for facility and number of facilities Level of visual intrusion and resulting impact on setting of cultural heritage
Material Assets	Size of footprint (landtake) for facility and number of facilities Use of resources Impact on existing infrastructure
Population	Proximity of facility to populations Nuisance potential Annual waste charges
Human Health	Drinking water quality (see Water) Air Quality, see Air Traffic (see Transport) Nuisance potential (.e.g noise, odour emissions) Potential for Disease
Energy Efficiency	Amount of renewable energy generated Amount of non renewable energy consumed
Transport	Emissions generated by waste transport (km) Energy used by transport Accident potential Potential mode of transport

Note: Site specific criteria are included for future assessment of specific installations

6 REFERENCES

Thérivel *et al.*, 1992. Strategic Environmental Assessment, London, Earthscan Publications.

Appendix 1

Table A: Assessment Matrix for Waste Plan Policies

Air Quality Individual Waste Policies	Assessment Criteria				Overall assessment	Alternatives and mitigation
	Impact on air quality for key pollutants (NOx, SOx, PM ₁₀ , Dioxins)	Reduction of greenhouse gas emissions (CO ₂ , CH ₄)	Noise	Odour		
1. The promotion of waste minimisation						
2. The promotion of reuse, recycling and recovery of resources						
3. The use of incentives charges and taxes (e.g. plastic bag levy)						
4. Continue previously adopted Three Bin System (Separate bins for dry recyclables, organics and residual materials) - followed by:						
4a. Composting						
4b. Anaerobic Digestion with biogas recovery						
5. A Two Bin System (dry recyclables and residual waste bin)- followed by:						
5a. Centralised sorting mechanism through Mechanical Biological Treatment.						
6. Civic amenity sites/Recycling centres and bring banks.						
7. Waste Transfer Stations/Material Recovery Facilities (MRF).						
8. Impact of landfill with gas recovery						
8A. Impact of landfill without gas recovery						
9. Other technologies that may be identified in Waste Plan						
10. Impact of Thermal Treatment with energy recovery and non combustible waste to going to landfill						
10A. Impact of No Thermal Treatment and all residual waste to landfill						
11. The impacts of improving the collection of previously uncollected waste and therefore reducing illegal burning						