

NORTH WEST REGION WASTE MANAGEMENT GROUP



Waste Management Plan

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EXECUTIVE SUMMARY

INTRODUCTION

The North West Region Waste Management Group comprises of seven authorities, as shown below:

Figure ES.1 The North West Region Waste Management Group



These local authority areas are situated in the North West Region of Northern Ireland and have a combined area of 3,830 square kilometres, which is 27% of the area of Northern Ireland, and a population of 314,658 (2001 Census) which is 18.7% (2001 Census) of the population of Northern Ireland.

The North West Region Waste Management Group (NWRWVG) is a voluntary grouping, established in response to Article 23 of the Waste and Contaminated Land (Northern Ireland) Order, 1997, which requires individual Councils within Northern Ireland to produce a Waste Management Plan. The Councils considered that there would be mutual benefits in relation to economies of scale and sharing of resources from a regional approach to waste planning.

The purpose of the Plan is to set out a framework for the management of controlled wastes arising in the North West Region over the period 2006 to 2020. This includes identifying capacity needs, potential sites and/or siting criteria, and the services needed for the collection, treatment and disposal of the wastes.

This Plan seeks to build upon the significant progress made by the previous Waste Management Plan, which set out detailed actions for the period 2000 to 2005. The revised Plan has been developed on the basis of a Review and consultation with stakeholders, including the public.

The overall aim of the Plan is to *develop a waste management system that meets the region's needs and contributes to economic and sustainable development.*

The defined objectives of the Plan are as follows:

1. *To develop an integrated network of facilities to meet the needs of the North West Region.*
2. *To minimise the amount of waste produced within the Region.*
3. *To maximise resource efficiency.*
4. *To minimise environmental impacts.*
5. *To ensure that the identified facilities and services are in place in time to enable District Councils to meet their statutory targets and obligations.*
6. *To encourage regional self-sufficiency, as far as practicable and economical, within the North West Region.*
7. *To ensure that the actions and measures identified in the Plan are:*
 - *Deliverable, with respect to timescales for implementation; and*
 - *Practical, building upon existing services and facilities within the Region.*
8. *To identify and manage risks (financial, planning and contractual) in a systematic manner, to ensure that risks lie with those parties best placed to manage them effectively.*
9. *To adopt a regional approach to the sharing of targets to ensure that the North West Region as a whole is able to meet its targets, with individual action and targets agreed for each Council, taking into account demographic factors, including spread of population and associated costs for the provision of services.*

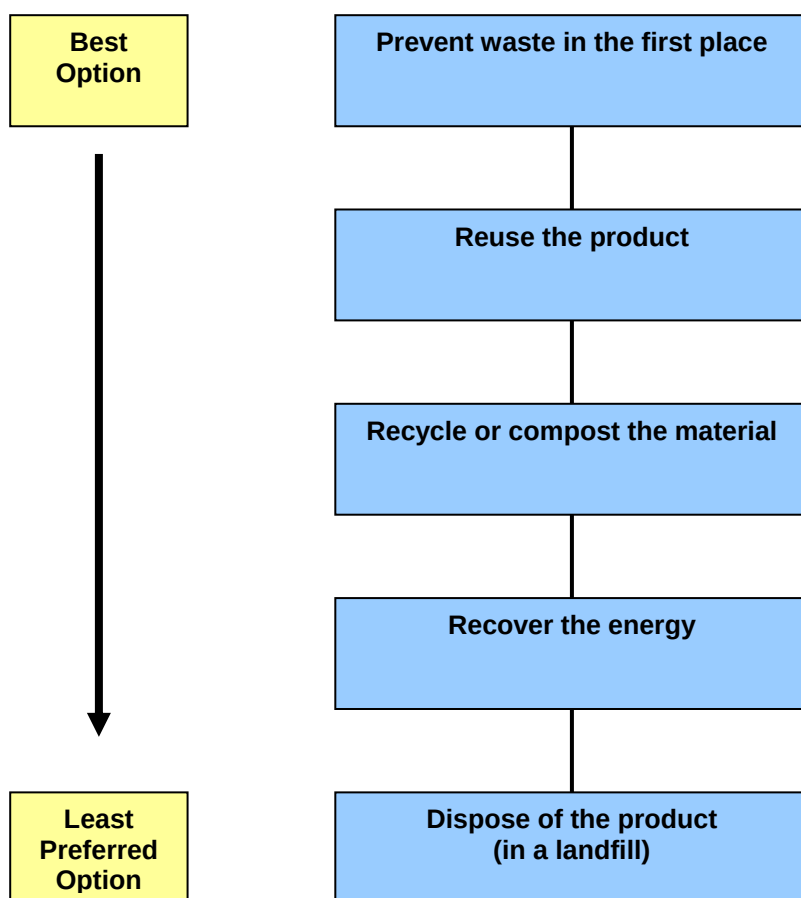
The Plan is divided into three parts as follows:

- Chapters 1-4: Background - comprising the introduction, and chapters on the North West Region, Drivers for Change - The EU Policy Context and the Northern Ireland Legislative and Policy Context.
- Chapters 5-12: Waste Streams - Chapters on the approach to waste management and each of the controlled waste streams.
- Chapters 13-14: Planning and Delivery - Chapters on the development planning issues, including capacity needs, siting criteria and potential sites and implementation, monitoring and review.

BACKGROUND

Drivers for Change

EU waste policy and legislation determines, to a very significant degree, the measures that impact on the management of wastes in Northern Ireland and within the North West Region. These measures are either transposed through legislation, or incorporated into waste management policy, and are based on the Waste Hierarchy as shown in Figure ES.2.

Figure ES.2 The Waste Hierarchy

The Plan reviews the current policy and legislation as well as recent developments in policy which are causing a shift away from the traditional methods of waste management and towards more sustainable resource management, with waste representing a key resource for the future.

The Waste Framework Directive will be amended, with two key provisions likely to include:

- Waste Prevention – the requirement of a Waste Prevention Plan and associated targets
- Efficiency Threshold – the introduction of a 60% threshold for energy recovery by thermal treatment, to distinguish between recovery and disposal.

The Northern Ireland Policy and Legislative Context

The Northern Ireland Waste Management Strategy (NIWMS) provides the framework for compliance with regulatory and statutory obligations such as the EU Landfill Directive, which places a responsibility on the North West Region to divert biodegradable municipal wastes away from landfill over the key dates 2010, 2013 and 2020. In addition to this, the Strategy also provides a framework for establishing an integrated network of waste management facilities for Northern Ireland, as required by the EU Waste Framework Directive.

In order to achieve this, the Strategy is built around the following six key strands:

Strand 1	Waste Prevention
Strand 2	Recycling and Recovery
Strand 3	Waste Planning
Strand 4	Data and Research
Strand 5	Legislation and Enforcement
Strand 6	Learning and Communication

There are a number of targets set out for the recycling and recovery of municipal waste, commercial and industrial waste and construction, demolition and excavation wastes. These are summarised in Box ES.1.

Box ES.1 Summary of NIWMS Recycling and Recovery Targets

Municipal Waste

Recycling and composting of household wastes to be at:

- 35% by 2010
- 40% by 2015
- 45% by 2020

Commercial and Industrial Waste

60% of Commercial and Industrial Waste to be recycled by 2020

Construction, Demolition and Excavation Waste

75% of Construction, Demolition and Excavation Waste to be recycled or reused by 2020

The targets identified above are subservient to the NILAS targets, in that no additional penalties are envisaged. However, targets similar to these in the rest of the UK do have a statutory basis and therefore it is anticipated that the Department of the Environment will consult within 3 years on proposals to exercise the powers to set such targets.

Working alongside the Northern Ireland Waste Management Strategy, the Northern Ireland Best Practicable Environmental Option was developed by the Department of the Environment and covered the three main waste streams of municipal solid waste, commercial and industrial waste and construction, demolition and excavation wastes.

The key outcomes for this BPEO assessment for municipal waste, used to inform the Northern Ireland Waste Management Strategy, are summarised in Box ES.2.

Box ES.2 Summary of BPEO Requirements for Municipal Waste**BPEO for 2010**

- A 3 bin system for separate collection of dry recyclables, organic waste and residual waste for all households- where practicable.
- A combination of Mechanical Biological Treatment (MBT) and Anaerobic Digestion (AD) for treatment of residual wastes.
- Only 55% of waste going directly to landfill.

BPEO for 2013

- A combination of all three technologies (MBT, AD and Thermal) to treat residual wastes.
- Less than 40% of waste going directly to landfill.

BPEO for 2020

- A combination of all three technologies- MBT, AD and Thermal for about 30% of the waste is required in order to meet EU Targets.
- No more than 25% of waste going directly to landfill.

MANAGEMENT OF WASTE STREAMS***Municipal Wastes***

The management of municipal wastes presents significant challenges, being the focus of public interest, and also because there are statutory targets attached. There is the need for more to be done to limit and reduce the quantities generated, and to increase the levels of recycling and recovery.

A Technical Assessment was undertaken to identify the specific requirements for the management of municipal wastes. Based on the results of this assessment, and the feedback from the public consultation undertaken as part of the review of the Plan, the BPEO for the Region includes three main elements:

- **Waste Prevention** - limiting annual waste growth.
- **Materials Recovery** - a three bin system for separate collection of dry recyclables, organic waste (garden and food wastes) and residual waste for all households- where practicable and as appropriate.
- **Energy Recovery and Residual Waste Treatment** - The mix of waste technologies, to include Mechanical Biological Treatment (but not mass burn incineration), with the objectives of:
 - **Additional materials recovery** to meet Strategy targets
 - **Reduction in biodegradability** to meet statutory BMW landfill diversion and NILAS targets.
 - **Energy Recovery** through the production of a fuel for the generation of both electricity and heat to maximise the value of the waste as a resource.

There are a number of additional infrastructural requirements for the future management of municipal wastes. These are outlined in Table ES.1.

Table ES. 1 Indicative Additional Municipal Waste Infrastructural Requirements by 2020

Supporting Infrastructure	Additional Capacity Requirements	Indicative Number of Additional Facilities	Comments
Recycling/ Recovery	15-20,000 tpa	Existing capacity	Existing infrastructure has the capacity to accommodate the increased recycling requirement into the medium term for MDR.
Anaerobic Digestion/In-vessel Composting	30,000 tpa by 2019/20	1-2 facilities for Biowastes	Tender process will determine number of facilities for biowaste.
Mechanical Biological Treatment	110-130,000 tpa	2 with capacity 60-70,000 tpa	Anticipated synergies between Municipal and C&I sectors. This would be best realised by sizing plants to accommodate both C&I and Municipal wastes, to deliver economies of scale.
Landfill	100,000 tpa by 2009/10 50,000 tpa by 2012/13	To be reviewed	District Councils to review landfill capacity within the Region and identify future needs.

Commercial and Industrial Wastes

The cost effective management of commercial and industrial wastes will present a significant challenge for the future. The over reliance on low cost disposal in past years cannot continue and therefore there is a need for the whole sector to make a shift towards more resource efficient and less wasteful practices in order to remain competitive in the increasingly challenging commercial environment.

A Best Practicable Environmental Option, for Commercial and Industrial wastes within the Region is represented by:

- **Waste Prevention** to limit the growth in the quantities of C&I waste produced to less than 1% per annum.
- **Materials Recovery/Recycling** – 60% by 2020 (excluding healthcare, hazardous and similar wastes that require specialised treatment).
- **Biological Treatment** in the form of Anaerobic Digestion (with Combined Heat and Power where appropriate) or In-vessel Composting (as appropriate to the particular waste stream) and with synergies maximised as far as possible with the agricultural industry).

- **Mechanical Biological Treatment** with energy recovery through anaerobic digestion and/or production of a fuel for energy recovery purposes.
- **Landfill Disposal** reduced to 13% by 2020.

Packaging Waste

In Northern Ireland, the legislation governing Packaging Waste is the Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations (Northern Ireland) 2004. The main aspect of these regulations is the imposition of obligations on those businesses (producers) who satisfy certain threshold criteria to recover and recycle specified quantities of packaging waste each year. Under the Regulations, a “producer” is defined as a legal entity who:

- Performs an activity
- Supplies packaging to another stage in the packaging chain, or to the final user of the packaging.

There are a number of targets, set out by the Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations (Northern Ireland) 2004, which relate to the recovery and recycling of used packaging. These targets set a requirement for increased recovery and recycling of packaging materials up to 2008, where 70% of packaging waste is to be recovered (95% of this by recycling).

Over and above the requirements on businesses imposed by the Regulations, the Plan sets out a number of actions for the future management of packaging waste in Northern Ireland as follows:

- The extraction of high quality material, particularly from the household waste stream, as well as additional materials from the commercial and industrial waste stream.
- The development of a network of facilities to facilitate both the recycling and recovery of packaging wastes, by the acceptance of packaging waste from businesses at at least one civic amenity site per District.

Hazardous Wastes

The management of hazardous wastes has changed significantly in recent years as a result of more stringent legislation governing its treatment and disposal. This legislation has extended the definition of hazardous waste as well as banning the co-disposal of hazardous and non-hazardous wastes. The resulting impact of this has been an increase in the potential hazardous waste arisings as well as more stringent controls on disposal.

The Hazardous Waste Forum (HWF), consisting of key stakeholders, was established by Department of the Environment in 2003, to advise on a way forward for hazardous waste reduction, recovery and management. Based on the work of the HWF, the Plan sets out a number of options for the future management of hazardous wastes in Northern Ireland. These include:

- **Waste Prevention** - to limit the growth in hazardous waste arising.
- **Materials recovery** - to reuse and recycle as much of the waste stream as practicable, with the options for this being dependent on the nature of the hazardous waste. Examples of this include:

- Recovery for use as a fuel
- Solvent reclamation/regeneration
- Recycling/reclamation of metals and metal compounds
- Regeneration of acids and bases
- Recovery/re-finishing of used oil
- **Residual treatment and energy recovery** to render the wastes safe for disposal and recover energy as a resource as far as practicable. Examples of this include blending with organic wastes to produce a secondary fuel (SLF) for co-incineration in a cement kiln.

Construction, Demolition and Excavation Wastes

The amount of C, D & E waste generated is expected to increase if measures are not put in place to limit waste growth and promote resource efficiency.

There have been a number of targets set for the C, D & E sector, from a number of different sources including the Northern Ireland Waste Management Strategy and the Aggregates Credit Levy Scheme, which focuses on maximising the reuse and recycling of C, D & E wastes, and limiting the quantities disposed of to landfill.

The Plan therefore identifies key aspects for this waste stream as follows:

- **Waste prevention** to limit quantities of C, D & E waste produced, through the designing out of waste, and the specification of re-useable or recyclable materials, as far as is practicable.
- **Site waste management planning** using the published Guidance and checklists to identify opportunities for the re-use and recycling of waste, on and off-site, and improve site management practices.
- **On-site reuse and recycling** through the use of mobile plant to produce materials that are used on the project (e.g. crushing cement for reuse as fill).
- **Disposal** - the least preferred option, but unavoidable for some waste types, including some hazardous wastes.

Agricultural Wastes

Traditionally agricultural waste has been excluded from the waste management controls which apply to “controlled wastes” as defined under the Waste and Contaminated Land (Northern Ireland) Order, 1997.

However, the Waste Management (Northern Ireland) Regulations, 2006 are due to be implemented during 2006 and this will bring agricultural waste within the controlled waste framework. Key features of these Regulations will include:

- A legal duty on producers of agricultural waste to ensure that they do not treat, keep or dispose of agricultural waste in a manner likely to cause pollution to the environment or harm to human health.

-
- A ban on unregulated burning or burial or deposit of waste.
 - Control on farm dumps, to comply with the Landfill Directive.
 - Introduction of the “Duty of Care” and Waste Transfer Notes.

The Definition of agricultural waste does not, except under certain circumstances, include farmyard manures and slurries, therefore the quantities are relatively limited at approximately 41,000 tpa.

The implications of the Regulations will be that farmers will be able to store their waste on site for up to 12 months; take their waste to an appropriately licensed waste management site; transfer their waste to someone else who is legally authorised to carry waste as a registered carrier, for recovery or disposal off farm; register a license exemption with EHS to undertake some waste management activities on the farm. In practice agricultural wastes will be managed by a combination of these options.

Due to the small quantities of agricultural waste defined as “controlled waste”, in comparison to other waste streams, it is anticipated that the treatment of this waste can be accommodated within the proposed arrangements for other waste streams including: commercial and industrial, municipal, hazardous and packaging wastes.

The Plan also identifies the potential for farmyard manures and slurries, although not controlled waste, to be used for energy recovery. An Expert Group for the Alternative Uses of Manures (EGAUM) have examined alternative uses for animal manures and have identified that there is a role for anaerobic digestion/combined heat and power (AD/CHP) plants for the intensive dairy and pig industries, and a litter fired generator for the poultry sector within Northern Ireland. There are also potential synergies with the agri-food processing sector.

PRIORITY AND OTHER WASTE STREAMS

Priority Waste Streams

Priority waste streams have been identified by the European Union’s Fifth Environmental Action Programme on account of one or more of the following: their volume, hazardous nature, potential for recycling, potential to create an economic benefit or the fact that legislation is changing the way in which these materials have traditionally been managed.

The priority waste streams include:

- Waste Electrical and Electronic Equipment (WEEE)
- End of Life Vehicles (ELVs)
- Tyres
- Batteries

The Producer Responsibility policy underlies the approach to the implementation of these Directives. The aim of the Producer Responsibility approach is to achieve a more sustainable approach to resource use and a reduction in the overall quantity of waste disposed of to landfill, by diverting materials for reuse, recycling and other forms of recovery. Producer responsibility places the responsibility for the costs of collection, sorting and treatment and recycling and recovery on the producers and promotes the concept of supply chain management.

The Plan sets out the management methods for each of these waste streams based on the legislative requirements.

Other Waste Streams

In addition to the priority waste streams, the Plan sets out measures for the management of two further waste streams namely:

- Sewage Sludge, which is the responsibility of DRD Water Service
- Clinical Wastes, which is managed through the Healthcare System

Implementation - Monitoring and Review

Implementation of the measures identified within the Plan is key to delivering the framework for the management of controlled wastes arising within the North West Region. The Plan will be subject to a process of ongoing monitoring and review, particularly with respect to municipal wastes, for which the Councils have a statutory responsibility.

The Plan has identified a number of commitments for monitoring and regular review and it is anticipated that this process will form the basis of two levels of formal review. These commitments are presented in Box ES.3.

Box ES.3 Monitoring and Review of the Plan**Monitoring**

- Monitor a number of Key Performance Indicators (KPIs);
- Complete Waste Data Flow returns online on a quarterly basis;
- Validate the data used;
- Check overall performance against planned levels; and
- Identify issues of concern, and implement corrective actions, where required, should performance fall significantly behind planned levels.

Regular Review

- Assess the performance of the measures and actions set out in the Plan;
- Monitor the delivery of the infrastructure identified in the Plan;
- Review the effectiveness of the arrangements;
- Assess the impact of policy and legislative developments; and
- Review and update the arrangements and actions where necessary.

Formal Review

- Annual Review, with the publication of an Annual Report, to inform stakeholders on performance, both at the Group and individual Council level; and
- Plan Review, at not more than five yearly intervals, involving a full Review of the Plan, culminating in the publication of a modified Plan.

1.0 INTRODUCTION

BACKGROUND

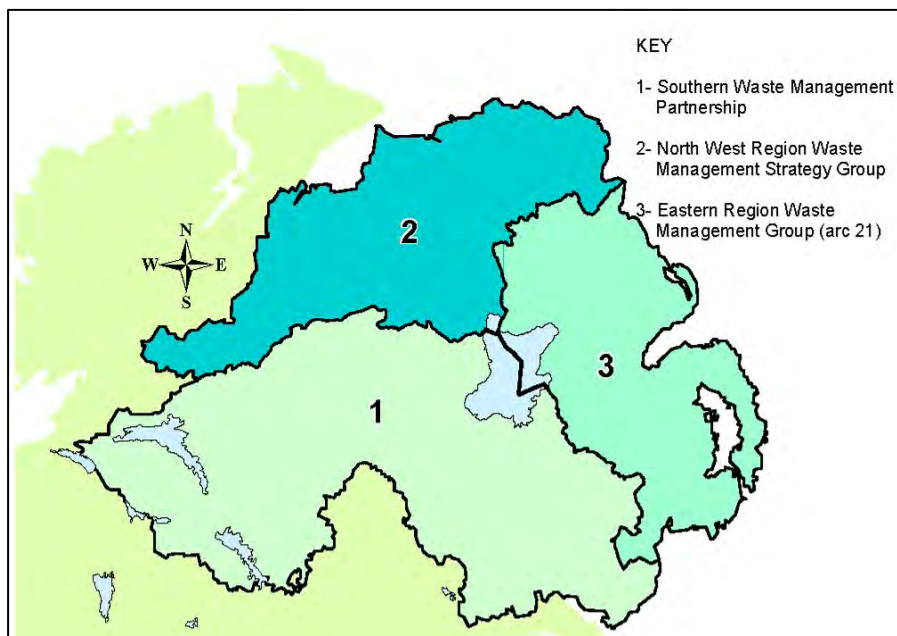
- 1.1 This Waste Management Plan, hereafter referred to as 'the Plan', has been prepared by the North West Region Waste Management Group, in fulfilment of its councils' obligations under Article 23 of the Waste and Contaminated Land (Northern Ireland) Order 1997.
- 1.2 The North West Region Waste Management Group (NWRWMG) represents a voluntary grouping of seven district councils (Figure 1.1), who include, in alphabetical order:
- Ballymoney Borough Council
 - Coleraine Borough Council
 - Derry City Council
 - Limavady Borough Council
 - Magherafelt District Council
 - Moyle District Council
 - Strabane District Council

Figure 1.1 The North West Region



- 1.3 It is the responsibility of individual district councils in Northern Ireland to prepare a Waste Management Plan under the provisions of the Waste and Contaminated Land (Northern Ireland) Order 1997. NWRWMG was originally established in 1999, as one of three sub-regional groups, in recognition by all district councils in Northern Ireland, of the mutual benefits to be gained from a regional approach to waste management planning.
- 1.4 The three waste planning groups (Figure 1.2) are as follows:
- **North West Region Waste Management Group.** The smallest group in population terms, but geographically spread out, from Moyle in the north east, to Strabane in the west.
www.northwestwasteplan.org.uk
 - **Southern Waste Management Partnership (SWaMP).** Geographically the largest group, extending from Newry and Mourne in the east to Fermanagh in the west.
www.swampni.org.uk
 - **arc21.** The eastern region, the largest by population and waste arisings, comprising 11 district councils, centred on Belfast and the surrounding areas.
www.arc21.org.uk

Figure 1.2 Waste Management Planning Groups



- 1.5 The three groups have co-operated both with each other, and with Environment and Heritage Service, on issues of mutual interest in the review of their respective waste management plans. This process will continue to ensure that the waste management plans, and their implementation, provide a coherent and effective approach to managing wastes across Northern Ireland for the benefit of the whole community.

AIMS AND OBJECTIVES

- 1.6 The purpose of the Plan is to set out the arrangements for the management of controlled wastes arising within the North West Region over the period 2006 to 2020. This includes identifying capacity needs, potential sites and/or siting criteria, and the services needed for the collection, treatment and disposal of the wastes.
- 1.7 This Plan seeks to build upon the significant progress made by the previous Waste Management Plan, which set out detailed actions for the period 2000 to 2005. This revised Plan has been developed on the basis of a Review, and consultation with stakeholders, including the public.
- 1.8 The Plan also recognises that waste management policy and practice has continued to evolve at a European, national and regional level. It therefore seeks to take into account recent developments, including:
- The Thematic Strategy on the Prevention and Recycling of Waste.
 - Towards Resource Management. The Northern Ireland Waste Management Strategy (2006).
 - The Northern Ireland Landfill Allowance Scheme (NILAS)
- 1.9 To promote sustainable waste management, and recognising the social dimension as well as the economic and environment, an overall aim has been defined by NWRWMG for the Plan as follows:

Aim: *To develop a waste management system that meets the region's needs and contributes to economic and sustainable development.*

- 1.10 The defined objectives of the Plan are as follows:

Objectives:

- 1 *To develop an integrated network of facilities to meet the needs of the North West Region.*
- 2 *To minimise the amount of waste produced within the region.*
- 3 *To maximise resource efficiency.*

- 4 *To minimise environmental impacts.*
- 5 *To ensure that the identified facilities and services are in place in time to enable district councils to meet their statutory targets and obligations.*
- 6 *To encourage regional self sufficiency, as far as practicable and economical, within the North West Region.*
- 7 *To ensure that the actions and measures identified in the Plan are:*
 - *Deliverable, with respect to timescales for implementation; and*
 - *Practical, building upon existing services and facilities within the region.*
- 8 *To identify and manage risks (financial, planning and contractual) in a systematic manner, to ensure that risks lie with those parties best placed to manage them effectively.*
- 9 *To adopt a regional approach to the sharing of targets to ensure that NWRWMG as a whole is able to meet its targets, with individual action and targets agreed for each Council, taking into account demographic factors, including spread of population and associated costs for the provision of services.*

SCOPE

- 1.11 The district councils have a statutory responsibility to prepare a Waste Management Plan that covers all controlled waste streams, under Article 23 of the Waste and Contaminated Land (Northern Ireland) Order 1997.
- 1.12 This Plan therefore sets out the arrangements for the management of the following waste streams:
 - **Municipal Waste**, that is the waste collected by or on behalf of district councils (See Chapter 6)
 - **Commercial and Industrial Waste** (see Chapter 7)
 - **Packaging Waste** (see Chapter 8)
 - **Hazardous Waste** (see Chapter 9)
 - **Construction, Demolition and Excavation Waste** (see Chapter 10)
 - **Agricultural Waste** (see Chapter 11)
 - **Other Priority Wastes** (see Chapter 12)

PLANNING HORIZON

- 1.13 The Plan covers the period from 2006 to 2020, and sets out the arrangements and measures identified through the Review and consultation process. In addition, the Plan identifies key dates by which specified actions have to be implemented in order to ensure that the infrastructure facilities, contracts and services are in place to ensure councils can meet their statutory targets and obligations.

IMPLEMENTATION AND REVIEW

- 1.14 Implementation of the Plan is delivered through an annual Implementation Action Plan (IAP), that assesses and monitors progress against the planned performance and delivery programme. The IAP will identify, on an annual basis, any additional measures, actions or adjustments necessary, to ensure that the councils meet their statutory targets or take into account any other policy or regulatory developments as appropriate, subject to the approval of NWRWMG.
- 1.15 The Plan will also be subject to a formal Review and consultation every five years (or more frequently if deemed necessary), to ensure that major contextual or policy changes are taken into account. This may include the Review of Public Administration, which will result in significant changes to local government structures and responsibilities.

FORMAT OF THE PLAN

- 1.16 The Plan is divided into three parts as follows:
- **Chapters 1-4: Background** - comprising this Introduction, and chapters on the North West Region, and the Policy and Legislative context.
 - **Chapters 5-12: Waste Streams** - Chapters on each of the controlled waste streams and the approach to waste management.
 - **Chapters 13-14: Planning and Delivery** - Chapters on development planning issues, including capacity needs, siting criteria and potential sites, programme of delivery and implementation, monitoring and review.

2.0 GENERAL DESCRIPTION OF THE AREA

INTRODUCTION

- 2.1 The North West Region Waste Management Group (NWRWMG) consists of the administrative areas of Ballymoney, Coleraine, Derry, Limavady, Magherafelt, Moyle, and Strabane. These areas are all situated in the north western region of Northern Ireland, they have a combined area of 3,830 square kilometres, which is 27% of the area of the country, and a combined population of 314,658 (2001 census) which is 18.7% (2001 census) of the population of Northern Ireland.
- 2.2 Two of the administrative areas (Derry and Strabane) border the Republic of Ireland (County Donegal). This border runs from the northern shores of Lough Mere in the South of the Region to the western shores of Lough Foyle on the Inishowen peninsula in the North of the Region.
- 2.3 Figure 2.1 below shows the Council areas within the North West Region Waste Management Group.

Figure 2.1 North West Region Waste Management Group



- 2.4 There are 10,445 VAT registered businesses in the area, which is around 19% of the total registered businesses in Northern Ireland as a whole. Within the North West Region Waste Management Group the principal towns and cities are Ballymoney, Coleraine, Derry, Limavady, Magherafelt, Ballycastle and Strabane.

GENERAL DESCRIPTION OF EACH COUNCIL AREA

- 2.5 This section provides a general overview of each of the council areas within the North West Region highlighting the present infrastructure and land use within each area.

Ballymoney Borough Council

- 2.6 Ballymoney Borough Council covers an area of 420 km² and around 3% of Northern Ireland's land mass with a population of 26,894 and 9,635 households. The town of Ballymoney is the main centre of population within the Council area and is situated on the A26 road from Belfast to the North of Northern Ireland.
- 2.7 Situated within the Glens Area of Outstanding Natural Beauty the Borough is predominantly rural in character with both arable and livestock farming.
- 2.8 The landscape within the Borough is mainly one of low lying, gently undulating countryside with an average height of 76 metres above sea level. The area is dominated to the east by the Antrim Hills (448 metres) and is bisected in a north south direction by the Long Mountain, which is a centrally located ridge of 152 metres. Three major rivers traverse the area, the Bush to the north and east, the Maine centrally (north/south) and the Bann to the west.
- 2.9 Farming and the Food industry are the mainstays of the local economy, but there are also manufacturing businesses associated with the textile industry, medical suppliers and light engineering. Unemployment is lower at 3.7% than the Northern Ireland average at 4.1% (2001, census). There are 1,190 VAT registered businesses in the borough, representing around 2% of the total number of Northern Ireland as a whole. Of these businesses 48% are related to agriculture. The Borough also has some well-established manufacturing businesses. Its strengths in this sector include textiles, food production and pharmaceuticals.
- 2.10 Further information on Ballymoney can be found at Ballymoney Borough Council's website: <http://www.ballymoney.gov.uk/>

Coleraine Borough Council

- 2.11 Coleraine Borough Council covers an area of 480 km² with a population of 56,315 and 21,583 households. It stretches along the coastline from Downhill and Castlerock in the west to Portballintrae in the east, embracing the coastal resorts of Portrush and Portstewart and inland to the rural towns of Kilrea and Garvagh. The main centre of population within the Borough is Coleraine, which lies 55 miles north west from Belfast. The residential population within the Borough is however increased in peak holiday periods with many holiday properties situated within Portrush and Portstewart.

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- 2.12 The Coleraine farmland landscape extends along the north coast from Castlerock to Portrush and southwards along the River Bann valley towards Kilrea and Garvagh.
- 2.13 The area has a slightly higher than average unemployment rate of around 4.2%, compared to the Northern Ireland average. There are 1,785 VAT registered businesses located in the area, with manufacturing playing a central role in the economy of the area and employing over a quarter of the working population. The wholesale and retail employment sector is also very important for the area.
- 2.14 Further information on Coleraine can be found at Coleraine Borough Council website: <http://www.colerainebc.gov.uk/>

Derry City Council

- 2.15 Derry City Council covers an area of 420 km² with a population of 105,066 and 35,947 households. Derry City is the second largest urban area in Northern Ireland, and area is well served for communications with the A2 and the A6 roads linking the principal centres of population outside the city.
- 2.16 Stretching south and east from the city, the area encompasses parts of the Sperrin Mountains and borders Donegal.
- 2.17 Derry City has excellent infrastructure and is connected to the rail network and Derry port at Lisahally as well as the City of Derry airport, the main air terminus within the North West Region.
- 2.18 Although the council had the highest unemployment rate in Northern Ireland at 6.8% when the last census was taken in 2001, a fast growing technology industry has increased employment within the area. There are 1,975 VAT registered businesses located in the area, a growing proportion of which are within the technology sector.
- 2.19 Further information on Derry can be found at Derry City Council's website: <http://www.derrycity.gov.uk/>

Limavady Borough Council

- 2.20 Limavady Borough Council covers an area of 590 km² with a population of 32,422 and 10,697 households. Limavady is the main centre of population whilst other main settlements within the Borough include Dungiven, Ballykelly and Greysteel.

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- 2.21 The area is bounded by the Atlantic Ocean to the North, Lough Foyle to the west and the Sperrin Mountains to the South and much of the Borough is designated as an Area of Outstanding Natural Beauty. There are also many areas protected as Sites of Scientific Interest.
- 2.22 There are around 1,065 VAT registered businesses within the Borough. Traditionally textiles and agriculture have been important to the local economy although these industries have suffered in recent years due to international pressures. This has been an issue leading in part to a slightly higher than average unemployment rate of around 5.1%.
- 2.23 Further information on Limavady can be found at Limavady Borough Council's website: <http://www.limavady.gov.uk/>

Magherafelt District Council

- 2.24 Magherafelt District Council covers an area of 580 km² with a population of 39,780 and 12,957 households. The main centre of population within the district is Magherafelt town. The district is located in the centre of Northern Ireland, stretching from Lough Neagh and the River Bann in the east, into the Sperrin Mountains in the west and is divided by the meandering Moyola River.
- 2.25 Magherafelt is situated in a relatively elevated area adjacent to the west Lough Neagh Shores, with some deep, narrow river valleys and a rolling landform. Small drumlins, such as Killowen Hill to the south of Magherafelt, and broken ridges are common local landscape features in this area. Magherafelt has a good transport network, and lies on the axis of the A29 North-South route and East-West M2/A6.
- 2.26 There are around 2,080 VAT registered businesses in the district. This is high in comparison with the population of the area. The large number of businesses in the area may in part be due to the entrepreneurial spirit and high rate of self-employment found in the district. Self-employment figures are as much as 50 per cent higher than for Northern Ireland as a whole. There is a strong manufacturing base with local companies being competitive both at home and in export markets. The unemployment rate within the area is lower than the Northern Ireland average at 3.2%.
- 2.27 Further information on Magherafelt can be found at Magherafelt District Council's website: <http://www.magherafelt.gov.uk/>

Moyle District Council

- 2.28 Moyle District is situated on the north-east corner of Northern Ireland, overlooking the Scottish coast and covers an area of 480 km² with a population of 15,933 and 5,888 households. Ballycastle, the main town in Moyle, lies at the junction of the A44 from Ballymena and the A2 Coast road between Larne and Coleraine. In the summer months the population increases, thus reflecting Moyle's status as a tourist destination in Northern Ireland.
- 2.29 There are 720 VAT registered businesses located within the area of Moyle District Council. Services play a vital role in the local economy, accounting for more than 80% of total employment. Whilst public services account for just over a third of all local employment, the district is particularly strong in private services. The unemployment rate stands just above the Northern Ireland average at 4.8%. This strength in services is best illustrated by the Hotel and Catering sector, where more than twice the number of people work in this sector than the Northern Ireland average.
- 2.30 Further information on the Moyle can be found at the Moyle District Council's website: <http://www.moyle-council.org/>

Strabane District Council

- 2.31 Strabane District Council covers an area of 860 km² with a population of 38,248 and 12,974 households, and is situated within a major part of the Sperrins Area of Outstanding Natural Beauty. It also includes the scenic Derg and Mourne river valleys. Strabane is bordered in the west by County Donegal and in the south by County Fermanagh. The main centres of population within Strabane District are Strabane, Castlederg, Newtownstewart and Sion Mills, which lie in the river valleys of the Strule, Mourne and Derg.
- 2.32 Strabane has a tradition in manufacturing with 35% of its workforce employed within this sector. The unemployment rate in the area is higher than the Northern Ireland average at 5.7%. The town of Strabane has 1,630 VAT registered businesses now located within the area.
- 2.33 Further information on Strabane can be found at Strabane District Council's website: <http://www.strabanedc.org.uk/>

GEOLOGY

- 2.34 In general, the North West Region Waste Management Group (NWRWMG) area is extensively underlain by metamorphic rocks and igneous rock formations. Sedimentary rocks also underlie the region on a more local scale. These strata are also dissected by a major group of regional faults trending South West to North East.

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- 2.35 More specifically the west of the region comprises of a complexly folded and faulted sequence of metamorphosed mudstones and sandstones, with localised outcrops of quartzites and limestones. The central area of the Region is underlain in the south, around Magherafelt, by a complex of igneous rocks, known as the "Tyrone Pluton". In the north, the area is mainly underlain by Carboniferous sedimentary sandstone which runs in a broad band extending from Magherafelt northwards to the coastal fringes of Lough Foyle. Finally in the east of the region, towards the escarpment of the Antrim Plateau, the Carboniferous strata are traditionally overstepped by sedimentary sandstone and mudstone formations and beneath the Antrim plateau the sedimentary rocks are extensively overlain by the Tertiary Basalt Formations that reflect a thick sequence of lava flows.

3.0 DRIVERS FOR CHANGE - THE EU POLICY CONTEXT

INTRODUCTION

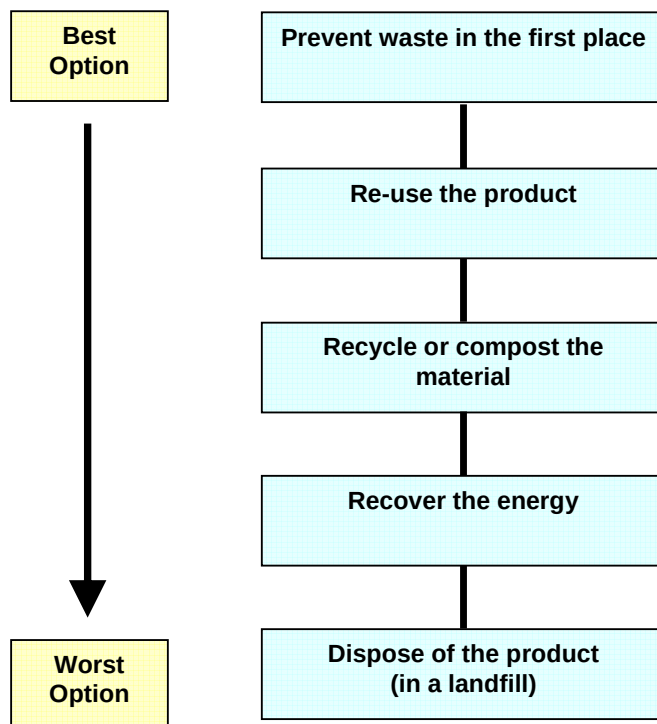
- 3.1 EU waste policy, which forms the basis for waste policy and legislation in Northern Ireland, has evolved significantly over the years. Despite being a relatively mature policy area, it is continuing to evolve, and at the present time, stands at a crossroads.
- 3.2 The Thematic Strategy on the Prevention and Recycling of Waste, which was adopted by the European Commission on 21 December 2005, has confirmed the need to shift direction in order to meet the challenges of the future in delivering a sustainable approach to waste and resource management.
- 3.3 This Chapter therefore provides an overview of current and anticipated waste policy and legislative measures emanating from within the European Union (EU) and the European Commission, in order to identify and understand the key issues that need to be taken into account in developing a waste management plan. A list of the key legislation, relevant to the management of wastes, is presented in Annex A.
- 3.4 It should be stressed that this Chapter provides a simple overview of waste policy and legislation. It is not exhaustive, and does not detail every piece of legislation or every policy measure. It does not constitute legal advice, and hence appropriate guidance therefore should be sought from a professional advisor, or regulator, in relation to any issues to do with legal compliance.

CURRENT EU WASTE POLICY AND LEGISLATION

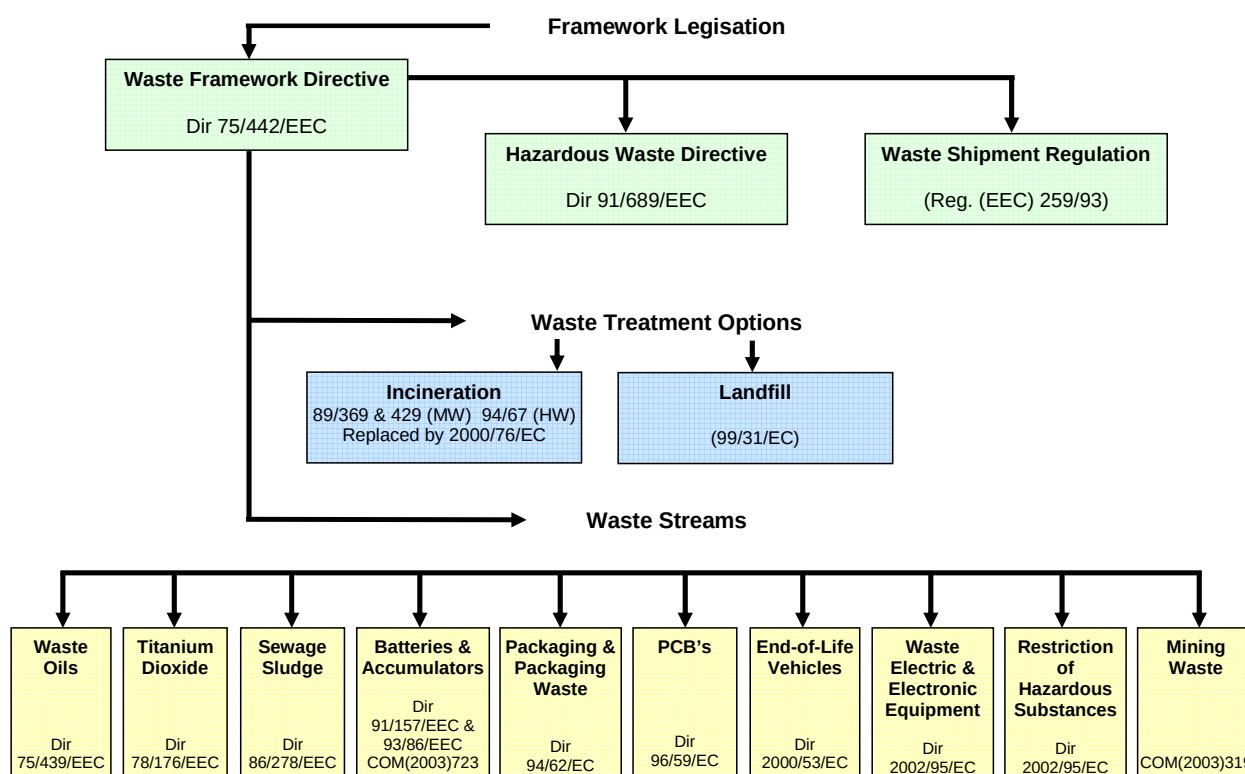
- 3.5 EU waste policy and legislation are inextricably intertwined, due to their history of development. Initially the focus was on putting in place measures to manage and control waste. This led to the adoption of the Waste Framework Directive (75/442/EEC) in 1975. This, together with the Hazardous Waste Directive, which was also originally adopted in 1975, and the Waste Shipment Regulation (Reg (EEC) 259/93) put in place the regulatory structure for waste. These pieces of legislation define waste, and other fundamental concepts including licensing, and put in place controls for the handling and movement of waste, to prevent damage to the environment or human health.
- 3.6 Recycling, re-use and energy recovery, in preference to the disposal of waste came with the 1996 Waste Strategy Communication from the European Commission which:
- Reinforced the Waste Hierarchy (see Figure 3.1)
 - Re-affirmed the 'polluter pays' principle for waste; and

- Developed the concept of Priority Waste Streams.

Figure 3.1 The Waste Hierarchy



- 3.7 The priority waste streams included those wastes that either had a high environmental impact, or where recycling/recovery had not really developed despite clear benefits. These have included End of Life Vehicles, Waste Electrical and Electronic Equipment and Packaging and Packaging Waste.
- 3.8 The legislative framework that developed, as further measures were identified to limit and control the impacts of either specific waste streams, or particular waste disposal facilities i.e. landfill and incineration, has resulted in a structured hierarchy of EU waste legislation.
- 3.9 As illustrated in Figure 3.2, the legislation can be classified as follows:
- Framework Directives
 - Waste Stream Specific Directives
 - Waste Treatment/Technology Specific Directives

Figure 3.2 Current EU Waste Legislative Framework

3.10 In addition to the above, the Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC) adopts an integrated approach to environmental protection for the activities of certain industrial installations. It uses the concept of Best Available Technology (BAT), and requires authorisations for operators. Its scope, which is likely to be extended, covers waste facilities, including landfills, incinerators and other waste disposal installations, subject to certain criteria.

Table 3.1 Summary of Selected Waste Directives and Key Provisions

Waste Framework Directive (75/442/EEC, as amended by 91/156/EEC and others)	
- Definition of waste - any substance or object which the holder discards or intends or is required to discard. - Promotes waste prevention and clean technologies - Promotes the 'polluter pays' principle.	- Requires competent authorities to draw up waste management plans and develop an integrated network of facilities. - Establishes requirements for licensing and registration of carriers. - Prevention of pollution by waste disposal and recovery operations. - Encourages recovery (including materials and energy recovery) and reuse.
Landfill Directive (99/31/EEC)	
- Classification of landfills as: inert, non-hazardous, or hazardous. - Ban on co-disposal of hazardous and non-hazardous wastes.	- Targets for the progressive reduction of Biodegradable Municipal Waste disposed of to landfill (up to 2020). - Introduction of waste acceptance criteria. - Strict technical standards for development, operation and closure of landfills.
Hazardous Waste Directive (91/689/EEC)	
- Definition of hazardous waste. - Requirement for a hazardous waste management plan.	- Controls for the collection, transport, and storage of hazardous wastes. - Identification and registration of sites accepting hazardous wastes.
Packaging and Packaging Waste Directive (94/62/EC)	
Introduces targets for the recycling and recovery of packaging wastes.	- Encourages the reduction and re-use of packaging. - Requirement for chapter on Packaging Waste in Waste Plans.
Incineration Directive (2000/76/EC)	
Aims to minimise negative impacts on the environment and human health as a result of emissions to air, soil or water.	- Includes operational, control and monitoring requirements. - Sets emission limit values for substances released to atmosphere.
End of Life Vehicles Directive (2000/53/EC)	
To increase the rate of re-use and recovery to 95% for ELVs by 2015.	- Encourage design of vehicles for dismantling, re-use and recovery. - Regulation of disassembly of ELVs at Authorised Treatment Facilities.
Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC)	
- Promotes waste prevention and re-use. - Sets targets for recovery of WEEE.	- Introduce systems for separate collection of WEEE. - Encourage product design for dismantling, re-use and recovery.
Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC)	
- Focuses attention on making best use of resources - Scope covers waste facilities, including landfill, subject to certain criteria.	- Adopts the concept of Best Available Technology (BAT). - Requires authorisations for operators of certain industrial installations. - Takes an integrated approach to environmental protection.

3.11 A summary of selected key provisions of these directives is included in Table 3.1. Further information on EU waste legislation is available from the following websites:

- *Environment and Heritage Service:*
<http://www.eh.sni.gov.uk/environment/wasteManage/regulations.shtml>
- *Activities of the European Union – Summaries of Legislation - Waste:*
<http://europa.eu/scadplus/leg/en/s15002.htm>

DEVELOPMENTS IN EU WASTE POLICY

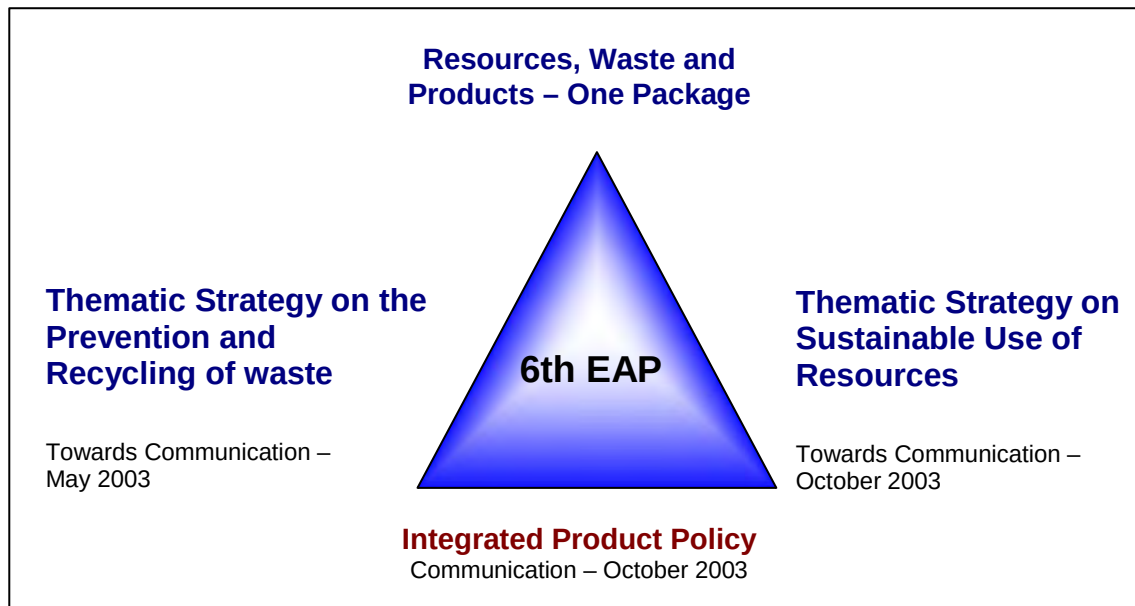
3.12 The drive for sustainability, which lies at the heart of EU policy development, has profound implications for environmental policy-making. Seven thematic strategies have been proposed by the European Commission. These address a range of environmental areas, including, inter alia:

- The Sustainable Use of Natural Resources;
- Waste Prevention and Recycling; and
- Soil Quality.

3.13 These thematic strategies are essential components in delivering the objectives set out in the Sixth Environmental Action Programme (6th EAP), entitled Environment 2010: Our Future Our Choice. The 6th EAP seeks to integrate resource, product and waste policies. Hence, the thematic strategies take a longer term perspective, providing broad analyses of environmental impacts and sectoral policies. They consider a range of options and the policy mix, including the use of market-based instruments.

3.14 The Thematic Strategy on the Prevention and Recycling of Waste, which was adopted by the European Commission on 21 December 2005, has confirmed the need for a shift in direction and focus in order to meet the challenges of delivering a sustainable approach to waste and resource management. It aims to stimulate a 'European recycling society'.

3.15 Conceptually, the thematic strategy considers waste as one side of a resource/product/waste triangle (Figure 3.3). On the one hand, waste is produced by our pattern of resource use in product manufacturing, packaging and distribution. On the other hand, the waste itself is a lost resource, offering significant, if at present largely unexploited potential for displacing the use of virgin materials.

Figure 3.3 The Resource/Product/Waste Triangle

- 3.16 Integrated Product Policy (IPP), a Communication adopted by the European Commission on 18 June 2003, is an integral component of the EU's sustainable development strategy. Still in the process of ongoing development and implementation, IPP seeks to minimise the adverse environmental impacts of a product by looking at all phases of a product's life-cycle, from 'cradle to grave', using a range of approaches including:
- Life cycle thinking
 - Working with the market
 - Continuous improvement
 - Stakeholder involvement
 - Use of a range of policy instruments
- 3.17 The objective of the Thematic Strategy on the Sustainable Use of Natural Uses, which was adopted by the European Commission on 21st December 2005, is to decouple environmental impacts from economic growth. It establishes a policy framework aimed at:
- Creating more value while using less resources (increased resource productivity);
 - Reducing the overall environmental impact of resources used (increased eco-efficiency);
 - Substituting currently used resources with better alternatives, if cleaner use cannot be achieved.
- 3.18 The Strategy, which uses life cycle thinking, proposes a number of measures, which include:
- A Data Centre to bring together all available knowledge on natural resources and to inform decision-makers.
 - The development of national measures and programmes by Member States.
 - Consideration of environmental impacts of resource use in economic sector action plans.
 - The development of indicators to monitor and review progress.

- 3.19 The Resource Strategy provides the scientific and conceptual foundation for the Thematic Strategy on Waste Prevention and Recycling, advocating as it does, life cycle thinking to minimise the environmental impacts of resource use. Waste is the final stage in the life cycle, and in order to minimise the environmental impacts, waste policies need to consider the options which cause the least environmental impact in the whole life cycle of the resource and product.
- 3.20 Together, over time, these measures will influence our approach to resource use in the manufacture, packaging and distribution of products. As a result, it will affect, in an as yet unquantified way, the quantity and nature of materials entering the waste stream in the medium to longer term.

THEMATIC STRATEGY ON THE PREVENTION AND RECYCLING OF WASTE

- 3.21 The Thematic Strategy on the Prevention and Recycling of Waste, which was adopted on 21st December 2005, by the European Commission, has raised several aspects that are relevant to consider in the context of this Waste Management Plan. These include:
- By-products – when they should or should not be considered as waste
 - Waste - and when waste ceases to be a waste
 - The Waste Hierarchy and Life Cycle Thinking
 - Recycling - standards and market barriers
 - Energy recovery – is it recovery or is it disposal.

By-Products

- 3.22 Guidance is scheduled to be published in 2006, based on the jurisprudence of the European Court of Justice, on the issue of by-products, and when they should or should not be considered as waste. This should provide clarification in a number of areas, and assist in developing a more resource efficient approach to the management of such materials.

Definition of Waste

- 3.23 It is not proposed to amend the definition of waste, based on the concept of 'discard' (which has a special meaning in this context) in the Waste Framework Directive. However, it is proposed that amendments to the Directive will clarify, possibly on a waste stream specific basis, when wastes are no longer classified as waste, and can be regarded as fully recovered into new or secondary materials.

The Waste Hierarchy and Life Cycle Thinking

- 3.24 The Thematic Strategy promotes the use of life cycle thinking to support the decision-making processes in identifying the most environmentally efficient approaches to the management of wastes. As a consequence, it recognises the Waste Hierarchy as an excellent rule of thumb for prioritising management options, but decisions can be based on more scientifically based analyses and assessment.
- 3.25 This is illustrated by the Thematic Strategy Impact Assessment, which concludes that if plastic is clean and separated, the best option is likely to be recycling, whereas if the plastic is mixed, it is likely to be more efficient to incinerate and recover the energy.
- 3.26 Life cycle thinking, is a tool to assist decision-making processes, and will need to be developed in the context of waste management planning, and waste policy and strategy development in Northern Ireland

Recycling and Barriers in the Market

- 3.27 Differences in standards are seen to distort the market at present, potentially generating flows of waste materials within (and outwith) the EU to lower standard facilities. The development of common standards for recycling and recovery therefore is seen as central to future EU waste policy, with common standards providing an effective solution, both economically and environmentally.

Energy Recovery

- 3.28 The distinction between recovery and disposal is an important one for waste planning purposes, particularly in the context of energy recovery. This is to be addressed through a proposed revision to the Waste Framework Directive, which provides for an efficiency threshold for energy recovery. At present a threshold of 60% is suggested. Therefore, for facilities with an energy efficiency of greater than 60%, the operation would be classified as recovery. For facilities with an energy efficiency of less than 60%, the operation would be classified as disposal.
- 3.29 This has important implications for waste management planning, where energy recovery forms part of the identified solution. Achievement of 60% efficiency requires the generation of both heat and power. As a result, energy recovery installations will either need to be sited in proximity to users of the heat (or where users of heat can be brought to).

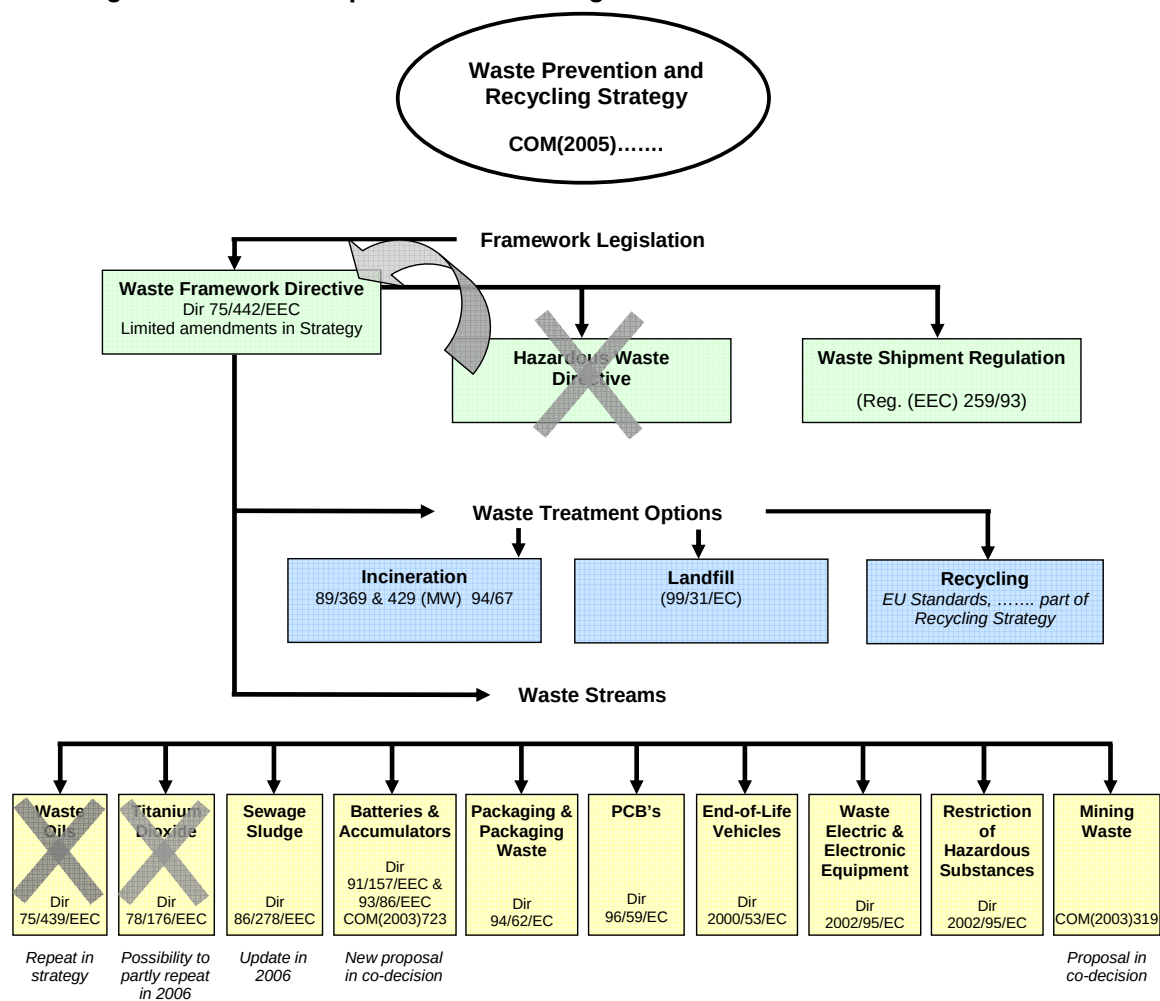
AMENDMENTS TO THE WASTE FRAMEWORK DIRECTIVE

3.30 As the first step in implementing aspects of the Thematic Strategy on Waste Prevention and Recycling, it is proposed to amend the Waste Framework Directive. The Commission published a Proposal (COM(2005) 667 final) on 21st December 2005, outlining these proposals, which include:

- Simplification of waste legislation and in particular the clarification of definitions
- Introduction of an environmental objective, which incorporates life-cycle thinking
- An obligation on Member States to develop waste prevention programmes
- Determination of end-of-waste criteria for selected waste streams
- The introduction of minimum standards or a procedure to establish minimum standards for a number of waste management operations
- Clarification of the notions of recovery and disposal
- Integration of the Hazardous Waste Directive into the Waste Framework Directive (whilst maintaining its substantive provisions).

3.31 As a result of these amendments, the EU legislative structure will change, as illustrated in Figure 3.4.

Figure 3.4 Anticipated EU Waste Legislative Framework



CONCLUDING COMMENTS

- 3.32 EU waste policy and legislation determines, to a very significant degree, the measures that impact on the management of wastes in Northern Ireland and within the region. These measures are either transposed through legislation, or incorporated into waste management policy (see Chapter 4).
- 3.33 This Review has highlighted the dynamic nature of the waste policy and legislative environment at an EU level, and significant changes are anticipated. Over and above the targets that have already been incorporated into our local legislative framework, the most significant aspect is the proposed efficiency threshold for energy recovery installations, as a means of distinguishing between recovery and disposal.

4.0 THE NORTHERN IRELAND POLICY AND LEGISLATIVE CONTEXT

INTRODUCTION

- 4.1 The framework within which waste management plans are developed is provided by specific legislative and policy measures which include:
- Waste Legislation - including UK legislation and Northern Ireland Orders and Regulations.
 - Waste Management Strategy - setting out government's policy for the management of waste. Associated guidance provides clarification and information on aspects of waste management policy, and its implementation.
 - Land Use Planning - Strategies, Area Plans and Planning Policy Statements.
- 4.2 It is this framework that implements the requirements of EU policy and directives (see Chapter 3) at the regional level. This Chapter therefore provides an overview of waste policy and legislation in place in Northern Ireland, to identify and consider those issues relevant to the Plan. A list of the key legislation, relevant to the management of wastes, is presented in Annex A.
- 4.3 This Chapter does not constitute legal advice. It is not exhaustive, nor does it detail all legislation or every aspect of it. Appropriate guidance therefore should be sought from a professional advisor, or regulator, in relation to any issues to do with legal compliance.

WASTE LEGISLATION

- 4.4 Waste legislation is a complicated issue, and this section seeks to provide a simple overview, summarising the key relevant legislative provisions of the main pieces of legislation. Further information, which provides a greater level of detail, (and which is also subject to updating) can be found at:
- Environment and Heritage Service: www.ehsni.gov.uk
 - NetRegs: www.netregs.gov.uk

WASTE MANAGEMENT POLICY

The Northern Ireland Waste Management Strategy: Towards Resource Management

- 4.5 The Northern Ireland Waste Management Strategy: Towards Resource Management was published in March 2006, following a review of the original Strategy published in 2000, and provides the framework for establishing an integrated network of waste management facilities for Northern Ireland, as required by the EU Waste Framework Directive. It also incorporates Northern Ireland's measures for the management of biodegradable wastes in fulfillment of Article 5 (1) of the EU Landfill Directive.

Aim of the Strategy

- 4.6 The key aim of the Strategy is to help stakeholders to manage waste and resources effectively by using material resources in a way that reduces the quantities of waste produced and, where waste is generated, to manage it in a way that minimises its impact on the environment and public health and contributes positively to economic and social development.

Objectives of the Strategy

- 4.7 The key objectives of the Strategy are:

- To move from waste towards resource management
- To demonstrate Government's commitment by setting an example to others of good waste practice and by using its purchasing power to drive change
- To prevent waste where possible
- To use the necessary Government powers (legislative, regulatory and economic) to ensure improved waste management practices.
- To maximise recycling and recovery of those materials which enter the waste stream
- To develop an integrated network of regional waste management facilities that represents value for money for Northern Ireland.
- To attract investment, support economic development and create opportunities for increased employment and wealth creation.
- To improve data to support investment and facilitate monitoring
- To maintain a regulatory framework which supports those businesses that work towards more efficient and sustainable use of resources.
- To promote, encourage and facilitate public action through providing the opportunity to contribute to environmental protection at individual and household levels.

Status of the Strategy

- 4.8 The Strategy is a statutory document under Article 19 of the Waste and Contaminated Land (Northern Ireland) Order 1997. It provides direction for transforming waste management practices in Northern Ireland; acts as a framework for the preparation of Waste Management Plans by District Councils and is a material consideration in determining planning applications and appeals.

Targets set out within the Strategy**Household Waste**

Recycling and composting of household wastes to be at:

35% by 2010

40% by 2015

45% by 2020

Commercial and Industrial Wastes

60% of Commercial and Industrial Waste to be recycled by 2010

Construction, Demolition and Excavation Waste

75% of Construction, Demolition and Excavation Wastes to be recycled and reused by 2020

- 4.9 A complete version of the Northern Ireland Waste Management Strategy can be downloaded from EHS website:

http://www.ehsni.gov.uk/environment/wasteManage/waste_management.shtml

Northern Ireland Best Practicable Environmental Option (BPEO)

- 4.10 The Northern Ireland Best Practicable Environmental Option (BPEO) for waste management was developed by the Department of the Environment and covered the three main waste streams of municipal solid waste (MSW), Commercial and Industrial Waste (C&I) and Construction, Demolition and Excavation Waste (C, D & E). The aim of this document was to provide further guidance on the level of infrastructure and services required in order to allow Northern Ireland to meet its statutory obligations under the EU Waste Framework and Landfill Directives.
- 4.11 For each of the three waste streams, a broad range of options was considered, and these comprised different combinations of technologies to divert waste from landfill including: recycling, composting, anaerobic digestion, mechanical biological treatment, thermal treatment and advanced thermal treatment (pyrolysis and gasification). These options were assessed against key decision criteria including feasibility, environmental impact, cost and social impact.
- 4.12 The BPEO results for MSW, C&I and C, D & E wastes are as follows:

Municipal Solid Waste**BPEO for 2010**

- A recycling and composting rate of at least 35%
- A 3 bin system for separate collection of dry recyclables, organic waste and residual waste for all households- where practicable
- A combination of Mechanical Biological Treatment (MBT) and Anaerobic Digestion (AD) for about 10% of waste in order to meet EU Targets.
- Only 55% of waste going directly to landfill
- No thermal treatment possible by 2020.

BPEO for 2013

- A recycling and composting rate of at least 40%
- A combination of all three technologies (MBT, AD and Thermal) for about 20% of the waste is required in order to meet EU Targets.
- Less than 40% of waste going direct to landfill.

BPEO for 2020

- A recycling and composting rate of at least 45%
- A combination of all three technologies- MBT, AD and Thermal for about 30% of the waste is required in order to meet EU Targets
- No more than 25% of waste going direct to landfill.

Commercial and Industrial Waste

- A recycling and composting rate of around 40% by 2010, 50% by 2013 with a long term target of 60% by 2020, with the remaining waste treated by a balanced mix of alternative technologies (anaerobic digestion, mechanical biological treatment, and thermal treatment).
- Biological treatments to provide an alternative to landfilling by 2010 with thermal treatment being made available by 2013.
- A maximum of 13% of C&I waste to be landfilled by 2020.

Construction and Demolition Waste

- A Target of 75% of reuse and recycling of C, D & E wastes.

Source: Best Practicable Environmental Option for Waste Management in Northern Ireland: Guidance Document, Department of the Environment, June 2005.

4.13 A complete version of the NI BPEO Guidance can be downloaded from the Environment and Heritage Service website:

http://www.ehsni.gov.uk/environment/wasteManage/waste_management.shtml

WASTE MANAGEMENT LEGISLATION**Primary Legislation*****Waste and Contaminated Land (Northern Ireland) Order, 1997***

- 4.14 This Order was enacted into Northern Ireland legislation in March 1998 and largely incorporates European Waste Framework Directive 75/442/EEC and the amended Framework Directive 91/156/EEC. The aim of the Order is to set out provisions relating to waste on land, the collection and disposal of waste, land contamination by pollution, the controlled use, supply or storage of prescribed substances and articles and the obtaining of information on potentially hazardous substances. The Order enacts provisions relating to the effective management of wastes including Duty of Care Regulations, Registration of Carriers and Waste Management Licensing. A key feature of the Order has been the creation of a centralised regulatory body by the establishment of a new inspectorate within Environment and Heritage Service.

The Waste and Emissions Trading Act, 2003

- 4.15 The main aim of this Act is to meet European landfill objectives and develop a system for the disposal of biodegradable waste, including biodegradable municipal waste. Within this Act, Government have been allocated landfill allowances to distribute to waste disposal authorities on a yearly basis. Landfill allowances can be bought, traded or sold to allow targets to be met. DOE determine how much biodegradable municipal waste can be sent to landfill and it is the responsibility of the allocating authority to ensure that these levels are not exceeded.

Environment (Northern Ireland) Order, 2002

- 4.16 The main aim of this Order is to make provision for a variety of environmental issues, with specific regard to pollution prevention and control, air quality and Areas of Special Scientific Interest (ASSI's). With regard to pollution, prevention and control, this Order implements EC Directive 96/61/EC on Integrated Pollution, Prevention and Control allowing polluting activities to be regulated and making amendments to existing waste and contaminated land legislation with regard to expiring waste licences.

Producer Responsibility Obligations (Northern Ireland) Order, 1998

- 4.17 This Order came into force in September 1998 and applies to Northern Ireland only. The Order establishes a legal base for Regulations and allows the Department of the Environment to impose obligations on people with regard to the re-use, recovery and recycling of various products and materials in accordance with the EC Packaging Directive 94/62/EC.

Litter (Northern Ireland) Order, 1994

- 4.18 The aim of this Order is to make provision for land to be kept clean and clear of litter including the control of littering and dog fouling at any place in the open air. The Order also allows for the specification of litter control areas within District Council Regions. As part of this Order, District Councils must keep a register of all street litter control notices served under the Order.

Secondary Legislation***The Landfill Allowances Scheme (Amendment) (Northern Ireland) Regulation, 2005***

- 4.19 The Northern Ireland Landfill Allowances Scheme (NILAS) came into force on 1st April 2005 and applies to Northern Ireland only. They supplement the Waste and Emissions Trading Act, 2003 by making detailed provisions for the allocation, borrowing, transfer and monitoring of landfill allowances allocated to District Councils.

- 4.20 The Landfill Allowances Scheme (Amendment) (Northern Ireland) Regulations, 2005 came into force on 1st March 2006 and provide an amendment to the Landfill Allowances Scheme whereby the level of penalty to which a District Council is liable for failing to meet the landfill diversion targets is reduced from £200 per tonne, as specified in the Waste and Emissions Trading Act, 2003 to £150 per tonne.

The Landfill (Northern Ireland) Regulations, 2003

- 4.21 These Regulations came into force in January 2004 and aim to make provisions for issuing permits to create and operate a landfill and set out a pollution control regime for landfilling. The Regulations provide the necessary powers to implement the objectives of the Landfill Directive 99/31/EC including:
- The categorisation of landfills as inert, non-hazardous and hazardous
 - Banning of certain types of waste to landfill
 - Standard waste acceptance procedures, which include the treatment of waste prior to landfilling
 - Operating permits, including the provisions for closure and aftercare
 - Technical standards for the lining and capping of landfills.

The Controlled Waste (Duty of Care) Regulations (Northern Ireland), 2002

- 4.22 Article 5 of the Waste and Contaminated Land (NI) Order, 1997 imposes a Duty of Care on persons concerned with controlled waste. Controlled waste (as defined by Article 31(1) of the Order describes controlled waste as household, commercial and industrial wastes. Article 31(1) provides for regulations to be made to modify the definition of controlled wastes.

4.23 These Regulations:

- Place the onus on the producer to ensure that any waste they produce is handled safely.
- Applies to anyone who produces, imports, carries, keeps, treats or disposes of controlled waste from business or industry.
- Has no time limit, and extends until the waste has either been finally and properly disposed of or fully recovered.
- Ensures that the movement of waste is recorded and monitored from the point of generation to the point of disposal.

4.24 This Duty of Care however does not extend to householders.

4.25 Breach of the Duty of Care is an offence, which on summary conviction is liable to a fine not exceeding the statutory maximum or, an unlimited fine if convicted on indictment.

Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations (Northern Ireland), 1999

4.26 Under the Waste and Contaminated Land (Northern Ireland) Order, 1997, it is an offence not to be registered with the Department of the Environment as a waste carrier. The requirement to register applies to any person who transports controlled waste, which that person had not produced themselves, to or from any place in Northern Ireland in the course of any business with a view to profit. The exception to this is construction (which includes improvement, repair or alteration) and demolition contractors who are required to register even if they are transporting their own waste. Construction (which includes improvement, repair or alteration) and Demolition contractors would have to be registered as carriers if they wished to transport waste.

Waste Management Licensing Regulations (Northern Ireland), 20034.27 The Waste Management Licensing Regulations (Northern Ireland) 2003, which came into operation on 19th December 2003, implement the waste licensing requirements of the Waste and Contaminated Land Order. Environment and Heritage are directly responsible for the implementation of these Regulations.

4.28 Under the 1997 Order, licenses will be required to authorise:

- The deposit of controlled waste in, or on, land
- The disposal and treatment (including recovery) of controlled waste
- The use of certain mobile plant to control or treat controlled waste.

4.29 All facilities must be covered by a licence unless they hold Pollution Prevention and Control (PPC) permits (as is the case for incinerators and landfills) or they hold a registered exemption from licensing.

The Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland), 1999

- 4.30 The Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland) 1999 came into force on 1 June 1999. These Regulations are concerned with the recovery and recycling obligations imposed on producers whose turnover exceeds £2 million and who handle more than 50 tonnes of packaging and packaging materials a year. Roles have been established for individual companies to register with the Environment and Heritage Service.
- 4.31 Changes to the national recycling and recovery targets were made by the Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations (Northern Ireland) which also excluded wholesale operations from any obligation, as well as increasing the lower turnover threshold to £2million.
- 4.32 The national recycling and recovery targets for 2002 onwards have subsequently been increased by the Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations (Northern Ireland).

Animal By Products Regulations (Northern Ireland), 2003

- 4.33 These Regulations came into force on 3rd December 2003 and apply to Northern Ireland only. They establish systems and standards with regard to animal by products not intended for human consumption.
- 4.34 The Regulations aim to protect animal and human health by strictly regulating the collection, transportation, storage, handling, processing and disposal of animal by- products as well as placing restrictions on Animal By Products and their use.
- 4.35 The Animal By Products Regulations divides products into three categories and specifies the means of disposal for each category. Category 1 relates to materials of a very high risk, Category 2 to materials of high risk and Category 3 to those of low risk.
- 4.36 Category 1 materials must be destroyed and are banned from use as feedstock in biogas and composting plants. Category 2 materials may be used in composting and biogas plants but only after pre-treatment by rendering in approved Category 2 processing plants at 133⁰C, 3 bar pressure for a continuous period of 20 minutes. Kitchen and organic waste will contain category 3 animal by products and hence the processing of these wastes in biogas or composting plants will require the following treatment:

- Treatment is to be enclosed (in-vessel)
- All material must be shredded to maintain a maximum particle size of 12mm.
- Anaerobic digestion plants must have a pasteurisation/hygienisation stage of 70°C for one hour or 57°C for 5 hours.
- Composting plants must have a pasteurisation/hygienisation stage of 70°C for one hour or 60°C for 2 days.
- Composting plants must have a two-stage system with separate digestion vessels for systems without mixers. Systems that involve material mixing may be able to achieve both stages in one vessel.
- Processes must be designed to prevent recontamination (by segregation of clean and unclean areas).
- Salmonella must be absent in the end product biofertiliser.
- The site and all plant must be validated by the SVS (State Veterinary Service).
- A HACCP (Hazard Analysis and Critical Control Points) Plan must be submitted prior to the facility commencing operation.
- Restrictions will be placed on using the biofertiliser on pasture land.

Transfrontier Shipment of Waste Regulations, 1994

- 4.37 These Regulations came into force on 6 May 1994 in Northern Ireland. These Regulations make provision in relation to Council Regulation (EEC) No 259/93 on the supervision and control of the shipment of waste within, into and out of the European Community and for the purpose of implementing Council Directive 75/442/EEC with regards to imports and exports of waste.
- 4.38 These Regulations deal with matter in the United Kingdom and:
- Designate the authorities which are to be the competent authorities
 - Enable a competent authority of dispatch to require notifications of shipments of waste from their area to be sent to them instead of the competent authorities by the notifier
 - Require a certificate relating to financial guarantees and insurance to be obtained before the shipment of waste enters or leaves the UK
 - Confer power on competent authorities to ensure waste is returned to the UK or is recovered or disposed of where the authority is under an obligation to secure the return, recovery or disposal of the waste
 - Confer powers on customs officers to detain shipments of waste
 - Provide for the preparation of a waste management plan by the Secretary of State in accordance with the Waste Framework Directive
 - Set out offences, defences and penalties in relation to non-compliance
 - Confer power on the Secretary of State to require competent authorities to provide information to enable him to fulfill his functions.

The Controlled Waste Regulations (Northern Ireland), 2002

- 4.39 These Regulations came into force on the 27 August 2002 and apply to Northern Ireland only. They allow Regulations to be made for the treatment of waste of any description and are made in accordance with the Waste and Contaminated Land (Northern Ireland) Order. The Regulations provide definitions of the wastes to be classified under household waste, commercial and industrial waste as well as classifying the types of household waste for which a collection charge may be made by District Councils.

Pollution, Prevention and Control Regulations (Northern Ireland), 2003

- 4.40 The Pollution, Prevention and Control Regulations (Northern Ireland), 2003 establishes a regulatory system that employs an integrated approach to controlling the environmental aspects of industrial activities such as energy generation, metals, minerals, waste management of chemicals, textile treatment, food production and intensive farming. This system is designed to protect the environment as a whole through a single permitting process by promoting the use of clean technology using Best Available Techniques (BAT).

Landfill Tax Regulations, 1996 and Amendments

- 4.41 The Landfill Tax Regulations outline various administrative procedures which relate to the operation of the landfill tax system, specifically the registration of those organisations that intend to make disposals covered by the tax and the payment of tax.
- 4.42 These Regulations came into force on 1st May 2004 and apply to England, Wales and Northern Ireland. They amend the Landfill Tax Regulations, 1996 by increasing the maximum credit that landfill site operators may claim against their annual landfill tax liability.

Hazardous Waste Regulations

- 4.43 The Hazardous Waste Regulations set out a revised regime to control and track the movement of hazardous waste. The Regulations came into force on 16 July 2005 and apply to Northern Ireland only. They implement Directive 91/689/EEC, on hazardous waste and revoke the Special Waste Regulations (Northern Ireland) SR 1998/289.
- 4.44 They work in conjunction with the List of Wastes Regulations (Northern Ireland) SR 2005/301, which reproduce the list of wastes from Decision 2000/532/EC, which contains the current version of the European Waste Catalogue.

End of Life Vehicles Regulations

- 4.45 These Regulations came fully into force on 31 December 2003 and apply to England, Scotland, Wales and Northern Ireland. They deal with the vehicle producer's requirements with regard to:

- The prohibition of certain heavy metals in vehicles
 - The provision of information
 - Certificates of destruction
 - Imposing a cost for their disposal
- 4.46 The aim of the Regulations is to ensure the proper treatment, recycling and disposal of vehicles which have reached the end of their life, so they do not release hazardous substances which have the potential to pollute the environment.
- 4.47 Further information on Waste Management Policy and Legislation can be found at Netregs: www.netregs.gov.uk

PLANNING POLICY

Shaping Our Future- Regional Development Strategy for Northern Ireland 2025

- 4.48 Shaping Our Future: The Regional Development Strategy for Northern Ireland 2025 (RDS) provides the framework required for the future development of Northern Ireland up to 2025. The aim of the Strategy is to promote a balanced and equitable pattern of sustainable development across Northern Ireland.
- 4.49 The Strategy sets a number of guidelines concerning the development of Waste Management Policy, the location of waste treatment and for waste disposal facilities, designed to support the Waste Management Plans for Northern Ireland. These include the need for the creation of partnerships to achieve sustainable waste management practices and reduce the amount of waste produced as well as the provision of an extensive network of recycling, recovery and secondary materials manufacturing facilities on a limited number of key sites, close to the centres of major urban waste production.

Planning Policy Statements

- 4.50 The Department of the Environment (DOE) has a statutory duty under Article 3 of the Planning Order (NI) 1991 to “formulate and coordinate policy for securing the orderly and consistent development of land and the planning of that development.” This policy is set out in Planning Policy Statements (PPS) which apply to the whole of Northern Ireland. The contents are taken into account in decisions involving planning applications and appeals, as well as in the formulation of Development Plans.

- 4.51 PPS 11 “Planning and Waste Management” sets out the Departmental Planning Policy with respect to the development of waste management facilities and supercedes Policy PSU 8 (New Infrastructure) and PSU 14 (Waste) of the Planning Strategy for Rural Northern Ireland. It should be considered within the context of current EU and Northern Ireland legislation and Policy including the Waste Framework Directive, Landfill Directive, Regional Development Strategy and the Northern Ireland Waste Management Strategy: Towards Resource Management
- 4.52 The main objectives of PPS 11 are to:
- Promote the development, in appropriate locations, of waste management facilities that offer the BPEO in meeting need as identified by the relevant Waste Management Plan, or as demonstrated to the Department's satisfaction in the case of Waste Water Treatment Works;
 - Ensure that detrimental effects on people, the environment and local amenity associated with waste management facilities are avoided or minimised;
 - Secure appropriate restoration of proposed waste management sites for agreed after-uses.
- 4.53 Further information on PPS 11 can be found at Planning Service website:
http://www.planningni.gov.uk/AreaPlans_Policy/PPS/pps11/PPS11.pdf

Development Plans

- 4.54 The purpose of a Development Plan, which may be in the form of area plans, local plans or subject plans, is to apply the regional policies of the Department and inform the relevant agencies (including the general public, statutory authorities and developers) of the policy framework and landuse proposals used to guide planning decisions within their local area. Particular sites for the development of waste management facilities may be identified within these plans, together with the need for appropriate waste management facilities associated with new development. Consideration will also be afforded to the potential impact of existing or approved waste management facilities when zoning adjoining lands for other forms of development.
- 4.55 The role of a Development Plan is to:
- Provide an essential framework for guiding investment by public, private and community sectors and help harness additional resources through collaboration in tackling problems;
 - Provide confidence for those wishing to develop and those affected by development proposals;
 - Establish a framework for positive co-ordination of public policies in joined-up government at both regional and local levels;

-
- Provide an effective land supply phased and allocated to meet the full range of needs to support the life of the local community and social and economic progress;
 - Establish a process for involvement and ownership by local communities wishing to influence the future development of their area.

4.56 Further information on Development Plans in Northern Ireland can be obtained from the Planning Service website:

http://www.planningni.gov.uk/AreaPlans_Policy/Plans/Plans_name.htm

5.0 APPROACHES FOR THE MANAGEMENT OF WASTE

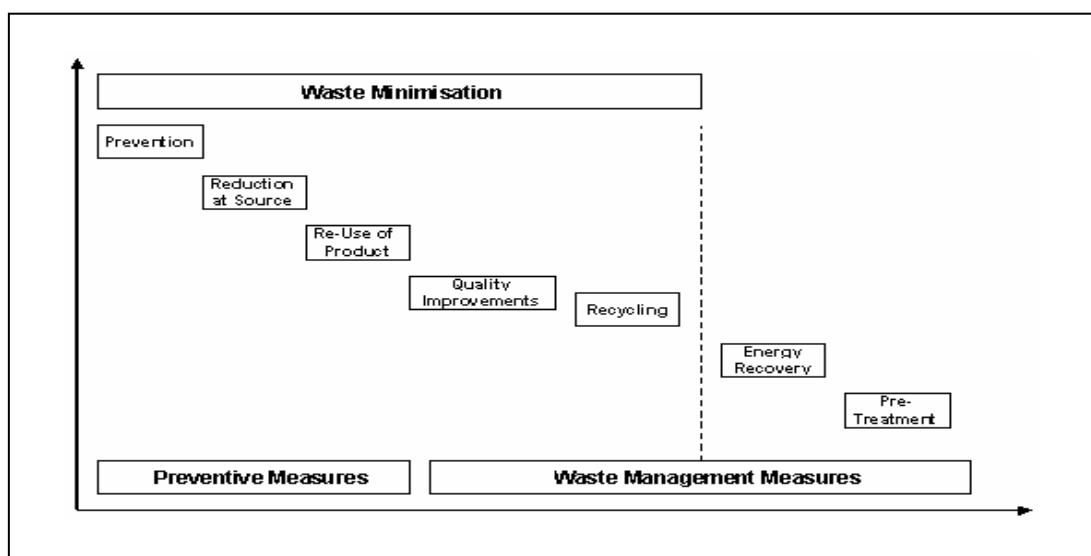
INTRODUCTION

- 5.1 This review provides an insight into the various techniques and technologies available for the current and future management of wastes within Northern Ireland.
- 5.2 It is designed to provide an overview of the technologies considered for the future management of wastes within the North West Region and Northern Ireland in general, as identified within the Northern Ireland and sub-regional BPEO, and is therefore not intended to provide a definitive list of all technologies currently available.
- 5.3 A full description of all the technologies currently available for the management of wastes can be found at Environment Agency Data Centre website <http://www.environment-agency.gov.uk/wtd/> or the Defra New Technologies Website: <http://www.defra.gov.uk/environment/waste/wip/newtech/index.htm>

WASTE PREVENTION

- 5.4 The Waste Management Strategy for Northern Ireland- Towards Resource Management has considered waste prevention as the number one priority for waste management.
- 5.5 The relationship between waste prevention, waste minimisation and other waste management measures is shown in the conceptual framework in Figure 5.1 below:

Figure 5.1 Waste Prevention Conceptual Framework



5.6 Waste prevention encompasses activities that reduce both the quantity and the hazardous character of the wastes. It can in principle be broken down into three types of actions:

- **Prevention:** the avoidance of waste generation
- **Reduction:** reduction at source
- **Re-Use:** involves the multiple use of a product in its original form.

5.7 For clarity, the definition of waste prevention in the context of the Waste Management Plan excludes materials recovery (recycling and composting) and energy recovery. Waste prevention therefore basically occurs before products or materials are identified or recognised as waste. For the purposes of this Plan, waste prevention is described as:

“The reduction of the quantity (weight and volume) and hazardousness of waste generated for collection and treatment for disposal by a third party”.

5.8 The Northern Ireland Waste Management Strategy has predicted that municipal waste is currently increasing at a rate of approximately 2.5% per year. It has been recognised that the high levels of waste growth are neither sustainable nor acceptable for the future. In this context, the implementation of waste prevention measures can play an important role in stabilising (by slowing or at best, halting) the growth in household waste production, although many of the actions necessary to directly influence levels of waste production are beyond the direct powers of Local Authorities.

5.9 However, Local Authorities can play a vital coordinating, facilitating and leadership role for the various waste producing sectors in its area. This is likely to include long term education programmes and publicity campaigns.

5.10 A summary of advantages and disadvantages of Waste Prevention is given below:

Advantages of Waste Prevention	Disadvantages of Waste Prevention
▪ Councils can lead by example, facilitating industry and other sectors ▪ Environmental and other cost savings associated with production (including raw materials, energy, transport and processing) ▪ Reduced disposal needs and costs ▪ Reduced collection needs and costs ▪ Reduced hazardousness of waste	▪ Investment required to bring about waste reduction in some manufacturing processes could have an unacceptably long payback period ▪ Focusing on the minimisation of solid waste alone could result in an increase in other (aqueous or gaseous) wastes

RE-USE

5.11 Re-use involves putting an item to another use after its original function has been fulfilled. A number of factors have contributed to the decline of re-use systems:

- In modern economies, labour is expensive and primary raw materials cheap, disadvantaging the labour-intensive dismantling and refurbishment which forms the basis of re-use
- Increasing centralisation of production results in greater transport distances for reusable products
- Lack of producer responsibility has resulted in increasing 'built in obsolescence' with issues of re-use and dismantling being ignored by designers
- Many of the actions necessary to promote re-use are beyond the powers of those responsible for the development of waste management strategies

5.12 A summary of advantages and disadvantages of Re-use is given below:

Advantages of Re-Use	Disadvantages of Re-Use
▪ Environmental and other cost savings associated with production (including raw materials, energy, transport and processing) as many single trip products are replaced with one reusable one ▪ Costs savings for business and the consumer as reusable products need less frequent replacement than single trip products ▪ Reduced disposal needs and costs ▪ Reduced collection needs and costs ▪ New market opportunities produced e.g. refillable products	▪ The environmental costs associated with the infrastructure and transport needed for return/refilling systems could outweigh the environmental benefits of re-use ▪ The costs and practical difficulties of collection, transport and cleansing ▪ Reduced market opportunities for disposable products ▪ Increased material use as re-useable products may need to be more robust than single trip products ▪ Not possible for local authorities to control

RECYCLING

5.13 Recycling is the collection and sorting of materials to produce a useable raw material or product. This usually involves the following three phases:

- **Collection**
- **Sorting**
- **Resale**

5.14 A summary of advantages and disadvantages of Recycling are given below:

Advantages of Recycling	Disadvantages of Recycling
- Environmental and other cost savings associated with production (including raw materials, energy, transport and processing) as the life of raw materials is extended and the value extracted from them is maximised - Reduced disposal needs and costs - Consumer participation through enhanced public awareness and understanding of environmental issues	- The costs and practical difficulties of collection, transport and reprocessing - The occasional higher cost of recycled materials - The instability of markets for recycled materials, which can rapidly be distorted by changes in the international or domestic supply or demand for these materials - Disamenity associated with recycling facilities such as transport movements and unsightliness

5.15 Systems for the collection of recyclable materials are broken into two categories:

- Civic Amenity Sites and Recycling Centres**
- Kerbside**

Plate 5.1 Recycling Point



Civic Amenity Sites and Recycling Centres

- 5.16 Consisting of either Civic Amenity (CA) sites or dedicated Household Recycling Centres (HRC), these facilities can be located throughout the district to encourage active participation in recycling. Civic amenity sites and household recycling centres can provide substantial quantities of materials for recycling if located and promoted appropriately.

Kerbside Collection

- 5.17 Various alternative methods have been implemented throughout Northern Ireland for the kerbside collection of recyclable materials. These include the following systems:

- **Green/Blue Bin**
- **Blue/Black Box**

Green/Blue Bin

- 5.18 With the green/blue bins system, the householder is provided with a wheeled bin specifically for the collection of mixed dry recyclables. The bins are collected by conventional refuse collection vehicles, usually on an alternate weekly basis. The mixed dry recyclables are then taken to a Materials Recovery Facility (MRF) where the material is sorted and the recyclables densified and/or baled for dispatch to market.

Blue Box

- 5.19 The blue box system involves issuing a rigid plastic box to householders in to which they are asked to place dry recyclables. The crew of the vehicles collecting the recyclables then sort the contents of the box placing them into the appropriate part of a compartmentalised vehicle. Depending on which materials are being collected, the recyclables are either taken to an MRF for further sorting or to a storage/transfer facility for bulking and transport to markets.

Plate 5.2 “Blue-Box” Kerbside Collection System***Materials Recovery Facilities (MRF)***

- 5.20 An MRF is an installation in which different material components of co-mingled recyclables (mainly from households) are separated into individual waste streams of recycled materials, to meet the requirements of secondary markets or other end users.
- 5.21 The marketing of the recycled materials to various users is also an important function of the facility. MRF's tend to combine the use of both mechanical means and labour intensive hand sorting to separate out the various fractions of the recyclables. There are currently 3 Materials Recovery Facilities operational in Northern Ireland.

Plate 5.3 Sorting Conveyors within a Materials Recovery Facility (MRF)

- 5.22 An important issue in MRF design and operation is that of “dirty” versus “clean” MRF’s i.e. can MRF’s process mixed household waste successfully? The overall industry consensus appears to be that a successful MRF must be operated in conjunction with a source-separation kerbside system for clean recyclables, such as the green bin or blue box.

COMPOSTING

- 5.23 Composting plants convert organic (green) wastes into a reusable compost by an aerobic degradation process. Composting can be approached in two ways:

- **Centralised Composting**
- **Home Composting**

Centralised Composting

- 5.24 Centralised composting options include a range of options from open air composting to fully enclosed systems. The materials can be collected via either civic amenity sites or specially designed “compostainer” brown bins for kerbside collection. Due to the introduction of the Animal By-Products Regulations there is now a requirement that all catering and food waste should be treated to required specifications and temperatures within fully enclosed (Invessel) composting systems.

Plate 5.4 Centralised Composting Facility



5.25 A summary of advantages and disadvantages of Centralised Composting are given below:

Advantages of Centralised Composting	Disadvantages of Centralised Composting
▪ Reduced disposal needs and costs ▪ Removes organic waste from landfill, so reducing methane emissions and potential groundwater contamination ▪ Reduces the use of natural resources such as peat and materials used to produce artificial fertilisers ▪ Returns organic matter to the soil	▪ Odours ▪ Spores and fungi ▪ Liquid effluent ▪ Limited markets for compost based products, although these markets are developing ▪ Variability of composting materials and products

Home Composting

5.26 The supply of home composting containers to households, combined with education and awareness programmes, has the potential to divert a significant proportion of the putrescible waste stream away from the bin. Home composting combines the advantages of centralised composting with additional benefits such as reducing environmental impacts from transport and processing. In addition, the composting of the materials by householders avoids the need to establish markets for compost-based products.

ANAEROBIC DIGESTION

5.27 Anaerobic Digestion is the degradation of organic wastes in the absence of oxygen and has been used for many years for the treatment of agricultural and sewage sludges. Although generally more expensive than composting, the process does have the advantage of producing gas for energy recovery in addition to a usable end product. At the present time, anaerobic digestion of mixed MSW has not been used on a commercial scale in either the UK or Ireland, although there has been a recent resurgence of interest in this technology for use as the biological component of MBT.

Plate 5.5 Anaerobic Digestion Plant

5.28 A summary of advantages and disadvantages of Anaerobic Digestion is given below:

Advantages of Anaerobic Digestion	Disadvantages of Anaerobic Digestion
▪ Possibility of using remaining inert material as a soil conditioner ▪ Suitable for many highly flammable, volatile, toxic and infectious waste streams which should not be landfilled ▪ Produces biogas for energy production ▪ Prevents putrescible waste from being landfilled and as a result can help reduce the production of landfill gas and leachate ▪ Reduces demand for landfill, other waste management and capacity	▪ Cost of separation from unsustainable wastes ▪ Requires careful screening to remove contaminants, particularly metals ▪ Requires controlled conditions and careful management to optimise gas production ▪ Produces a residue that may require landfilling ▪ Gas may require clean-up prior to use

MECHANICAL BIOLOGICAL TREATMENT

5.29 Mechanical Biological Treatment (MBT) is not a single treatment but is a generic term embracing a number of processes, using different combinations of mechanical and biological treatment to recover materials. The mechanical treatment is used as a means of preparing the waste for biological treatment. In this stage bulky materials and recyclables are removed and the remainder of the waste is homogenised and if necessary moistened. Biological treatment is then used to stabilise raw materials, and hence reduce the biodegradability, and obtain a mineralised product through the biodegradation of organic constituents. The main output from the MBT process is a refuse derived fuel (RDF) which has the potential to be used as a fuel, thus constituting energy recovery from the waste.

- 5.30 The purpose of using MBT processes is therefore three fold:
1. To reduce the biodegradability of municipal waste and therefore aid Councils in complying with the short term and early Landfill Directive targets.
 2. To increase the recovery of materials from the municipal waste stream and increase recycling rates.
 3. To produce an additional source of energy for the region in the form of a fuel, which could be used to service an energy recovery facility or could be used in appropriate third party applications, such as a cement kiln, if available.
- 5.31 The versatility of this process has resulted in MBT being the preferred technology for the future treatment of the residual waste stream.
- 5.32 A summary of the advantages and disadvantages of the MBT process are given below:

Advantages of MBT	Disadvantages of MBT
▪ Proven technology ▪ Provides additional materials recovery ▪ Provides a reduction in biodegradability ▪ Provides a source of energy through a number of potential means (including Anaerobic Digestion, Gasification and Pyrolysis) which can be used to generate combined heat and power.	▪ A secure market outlet for fuels must be established either in the form of solid materials or energy.

GASIFICATION

- 5.33 Gasification is a process in which both organic and inorganic wastes are thermally treated at high temperature with air/oxygen injection to produce metallic and mineralic solid residues and synthesis gas. The synthesis gas can then be used for energy production. There has been a great deal of interest recently in gasification (and pyrolysis) but to date there has been no “deal closure” in the UK and a stalling of markets within Europe. The process is however currently very active in Japan.
- 5.34 A summary of advantages and disadvantages of Gasification is given below:

Advantages of Gasification	Disadvantages of Gasification
- Produces gas for energy production - Reduces demand for landfill and other waste management capacity - Uses low emission technology	- Not commercially proven for MSW/household waste - May be considered similar to incineration and as a result of negative public perceptions this can lead to planning problems - Gas is often low in heating value - A high level of commitment to gasification may inhibit waste minimisation and recycling - A limited number of technology suppliers

PYROLYSIS

5.35 Pyrolysis is the thermal degradation of organic wastes either in the complete absence of oxygen or with a limited supply of oxygen. Both pyrolysis and gasification systems are used to convert solid waste into gaseous, liquid and solid fuels. Pyrolysis of mixed MSW presents a range of problems and the commercial viability of plants processing mixed MSW has yet to be proven.

5.36 A summary of advantages and disadvantages of Pyrolysis is given below:

Advantages of Pyrolysis	Disadvantages of Pyrolysis
- Produces a gas/liquid for energy production - Reduces demand for landfill and other waste management capacity	- Not commercially proven for MSW/household waste - Can be difficult to transfer heat to feedstock - Unlikely to be suitable for the direct degradation of untreated municipal solid waste - Can be difficult to control product quality - A high level of commitment to pyrolysis may inhibit waste minimisation and recycling

INCINERATION WITH ENERGY RECOVERY

5.37 Incineration has been defined in EU legislation as the thermal treatment of wastes with or without the recovery of the combustion heat generated. The process of Incineration is one of the most tightly regulated industrial sectors in Europe and has been the subject of stringent controls since 1989. This has been aided in recent years by the implementation of Directive 2000/76/EC on the Incineration of Waste (WID).

- 5.38 Wide ranges of waste streams are suitable for incineration. These include municipal/household waste, clinical waste and certain portions of industrial waste. The suitability is dependent on the provision of a high calorific value within the waste. It is considered to be a suitable treatment option for waste if combustion destroys or transforms it and removes any potential environmental hazards. Currently in the UK, incineration is widely recognised as the most suitable and therefore Best Practicable Environmental Option for the treatment and disposal of clinical waste.
- 5.39 In a municipal waste incinerator, waste is fed into a series of furnaces at temperatures of around 850-1200⁰C. A hazardous waste incinerator works on the same processes except for the fact that temperatures need to be maintained at a minimum of 1100⁰C for a minimum time period of two seconds. The waste remains in the furnaces for periods of around 40-70 minutes in order to ensure complete combustion. This process results in an ash residue called bottom ash (which must be landfilled) and waste gases. The waste gases are then cooled and passed through a series of filters and catalysts which remove potential pollutants such as dioxins. The resulting steam produced can be heated to temperatures around 400⁰C and can be used to drive turbines and produce energy in the form of electricity. This can then be used to power the plant, with the potential to sell the excess.
- 5.40 There have been negative impacts associated with the incineration process. These have included the release of toxic gases such as dioxins into the environment and these have, in the past, had a perceived impact on human health. The introduction of stringent controls on air quality and emissions since 1989, and also since the introduction of the Directive in 2000, has resulted in the incineration process becoming much cleaner and more environmentally friendly. Emissions from these facilities are now constantly regulated and monitored to ensure that any gaseous emissions are below permissible levels.

LANDFILL

- 5.41 Whatever combination of integrated waste management options are developed and even when recycling and recovery is maximised, landfilling will continue to be required. Modern landfills accepting municipal solid wastes have been designed to meet the requirements of the Landfill Directive, incorporating systems such as complete basal lining, leachate drainage, gas collection and flaring and restoration and aftercare provisions. However, costs are increasing rapidly due to the escalation of the Landfill Tax, which is at present rising by £3 per year up to a level of £35.

Plate 5.6 An Engineered Landfill Site Under Construction

5.42 A summary of advantages and disadvantages of an Engineered Landfill Site is given below:

Advantages of Landfill	Disadvantages of Landfill
▪ Landfill gas may be collected as a source of fuel for heat and power generation ▪ Large capacity remains in some areas ▪ Restored land provides opportunities for wildlife or leisure activities ▪ Normally the lowest cost waste disposal method in present market conditions	▪ Versatility and convenience of landfill make it less attractive for waste producers to be innovative in the way that they deal with their wastes ▪ However well engineered, there is a finite risk of contamination from operational landfill sites ▪ Landfill gas can pose significant risks including release of methane, an important greenhouse gas, into the atmosphere ▪ After landfilling, the land may retain some contamination and so be unsuitable for some uses ▪ Noise, odour, unsightliness and vehicle movements, may cause nuisance, in common with all waste recovery and disposal activities ▪ Energy recovery from landfill is less efficient than from some other disposal options, such as incineration

6.0 MUNICIPAL WASTE

INTRODUCTION

- 6.1 Significant progress has been made in recent years in managing the municipal wastes that we as a society produce. Recycling rates have risen from the low levels of the 1990s to over 20% in 2005/06 - a major achievement. This step change has been delivered through the commitment and support of the people within the Region, coupled with the provision of the increased range of services, and provision of facilities for recycling, that was the primary objective of our Waste Management Plan. However, major challenges still lie ahead.
- 6.2 Targets for recycling and recovery have been increased in the Waste Management Strategy, *Towards Resource Management*, and statutory targets, with significant penalties, now apply to the diversion of biodegradable municipal waste from landfill. More needs to be done therefore to limit and reduce the quantities of waste that we produce, and to increase the levels of recycling and recovery, building on the facilities and services that are already in place.
- 6.3 As well as waste prevention and recycling, treatment of residual waste is needed to ensure that the statutory targets are met. This waste is a resource, which has the potential to provide energy, reducing the reliance on fossil fuels. A key objective of this Waste Management Plan has to be the delivery of the waste treatment infrastructure needed to treat the residual waste.
- 6.4 This Chapter therefore sets out the measures for the future management of municipal wastes within the North West Region, to ensure that councils fulfil their statutory and policy obligations, and manage the risks of fines for non-compliance with statutory targets in a pro-active and considered manner, for the benefit of all sections of the community.

DEFINITIONS

- 6.5 Municipal waste is defined, for the purposes of this Plan, as *'household waste and any other waste that is under the control of (i.e. collected by) District Councils or agents acting on their behalf.'*
- 6.6 **Municipal waste** therefore comprises waste from two main sources, as follows:
- **Household waste**, which is waste arising from a domestic property or waste of similar composition from other properties such as residential homes or hospitals.
 - **Trade waste**, which is the waste collected from commercial premises by district councils, as part of their service provided under the provisions of the Waste and Contaminated Land (NI) Order 1997.

- 6.7 These wastes can be collected either directly at the household or premises by the council or its agents, or through civic amenity sites and bring banks, where they are brought by the public or businesses.
- 6.8 **Biodegradable municipal waste** (BMW) is defined as '*any municipal waste that is capable of undergoing anaerobic or aerobic decomposition, such as food or garden waste, and paper and cardboard*'.

MANAGEMENT AND CONTROL

- 6.9 Management and control of municipal wastes is provided by the legislative framework primarily under the Waste and Contaminated Land (Northern Ireland) Order 1997, and associated Regulations.
- 6.10 The main roles and responsibilities under the legislative provisions are summarised in Table 6.1.

Table 6.1 Summary of Key Roles and Responsibilities for Municipal Waste

Element	Responsibility
Waste management planning	District Councils
Collection of municipal wastes (as defined under the Waste and Contaminated Land (Northern Ireland) Order 1997).	District Councils
Segregation of wastes into separate receptacles for collection, including for recycling	Waste Producers, including: Householders Businesses, etc.
Treatment and disposal of municipal waste. In many cases, this is affected through contractual arrangements with private companies.	District Councils

- 6.11 Obligations under the Duty of Care and Registration of Carriers, as described in Chapter 3, apply to councils, businesses and any other organisations involved in the management of municipal wastes, for all activities from collection, transportation, and treatment to recovery and disposal. These provisions do not however extend to householders and other members of the public.

TARGETS

- 6.12 The targets that apply to municipal waste come from a number of sources, and include:
- Statutory targets for the diversion of Biodegradable Municipal Waste (BMW) from landfill.

- Non-statutory targets for the recycling, composting and recovery of materials.
- Plan level targets for waste prevention – to limit the ongoing growth in municipal wastes.

6.13 Each of these are summarised below.

Landfill Diversion Targets

6.14 These targets originate from the requirements of the Landfill Directive (99/31/EC), which set targets limiting the quantities of BMW going to landfill, as follows:

- 75% of 1995 levels by 2010
- 50% of 1995 levels by 2013
- 35% of 1995 levels by 2020.

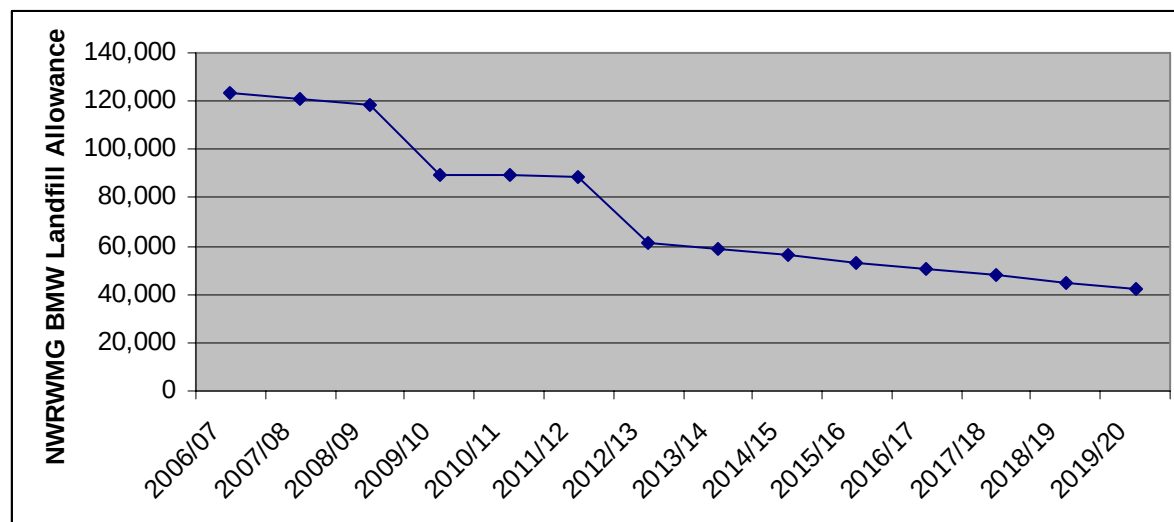
6.15 This requirement is implemented in Northern Ireland through the Landfill Allowances Scheme (Northern Ireland) Regulations, 2005 and is referred to as the Northern Ireland Landfill Allowance Scheme (NILAS). It allocates annual allowances to district councils for the amount of BMW allowed to be landfilled over the period up to 2020.

6.16 The allowances for the district councils within the North West Region are presented in Table 6.2 and Figure 6.1. These are statutory targets with fines of £150 per tonne, for failure to comply. There is provision within the legislation for allowances to be traded between councils in Northern Ireland.

6.17 These targets therefore represent the major driver in the management of municipal waste, with waste prevention, recycling, composting and other forms of waste treatment all contributing towards compliance.

Table 6.2 Summary of Landfill Allowances by District Council in the North West Region to 2020

Council	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20
<i>Ballymoney</i>	10,889	10,721	10,550	7,960	8,010	7,992	5,525	5,311	5,094	4,874	4,652	4,399	4,146	3,894
<i>Coleraine</i>	21,586	21,077	20,569	15,395	15,367	15,209	10,426	9,941	9,458	8,975	8,496	8,034	7,572	7,111
<i>Derry</i>	41,103	40,253	39,397	29,568	29,596	29,375	20,192	19,309	18,423	17,535	16,646	15,742	14,837	13,932
<i>Limavady</i>	13,074	12,860	12,637	9,521	9,568	9,536	6,582	6,317	6,050	5,777	5,503	5,204	4,905	4,606
<i>Magherafelt</i>	15,863	15,597	15,326	11,545	11,603	11,563	7,983	7,668	7,347	7,023	6,694	6,331	5,967	5,603
<i>Moyle</i>	6,334	6,207	6,081	4,569	4,580	4,552	3,134	3,001	2,866	2,733	2,598	2,457	2,316	2,174
<i>Strabane</i>	14,896	14,591	14,287	10,725	10,736	10,659	7,330	7,012	6,692	6,372	6,052	5,723	5,394	5,065
NWRWMG	123,745	121,307	118,847	89,283	89,460	88,886	61,172	58,559	55,931	53,290	50,641	47,889	45,136	42,384

Figure 6.1 Reduction in the Biodegradable Municipal Waste Landfill Allowances over time for North West Region

Recycling and Composting Targets

- 6.18 Non-statutory/policy targets for the recycling and composting of household waste have been set by the Northern Ireland Waste Management Strategy: *Towards Resource Management*, as follows:
- 35% by 2010
 - 40% by 2015
 - 45% by 2020
- 6.19 The Strategy also sets a target for the recycling of Commercial and Industrial Waste as follows:
- 60% by 2020.
- 6.20 This target applies to the wastes from commercial and industrial premises collected by councils under their trade waste collection arrangements.

Waste Prevention Targets

- 6.21 No waste prevention targets are currently in place, but it is anticipated that the Waste Prevention Forum will set Waste Prevention targets for municipal waste by 2010.
- 6.22 In recognition of the priority that needs to be attached to Waste Prevention, and the unsustainability of high waste growth rates, the Group has set limits for the annual growth in municipal waste over the Plan period, up to 2020, as follows:
- 1.5% up to 2010
 - 1.0% from 2010 to 2013
 - 0.5% from 2013 to 2020
- 6.23 It is predicted that the behavioural changes required to allow the North West to meet these waste prevention targets will need to be driven from a high level. There will therefore be the need for significant commitment, not only from District Councils, but also from the Department of the Environment in terms of the provision of support and resources required to ensure that these targets can be met. There should be parity between Northern Ireland and the rest of the UK, in terms of the funding and resources available for the implementation of waste prevention measures.

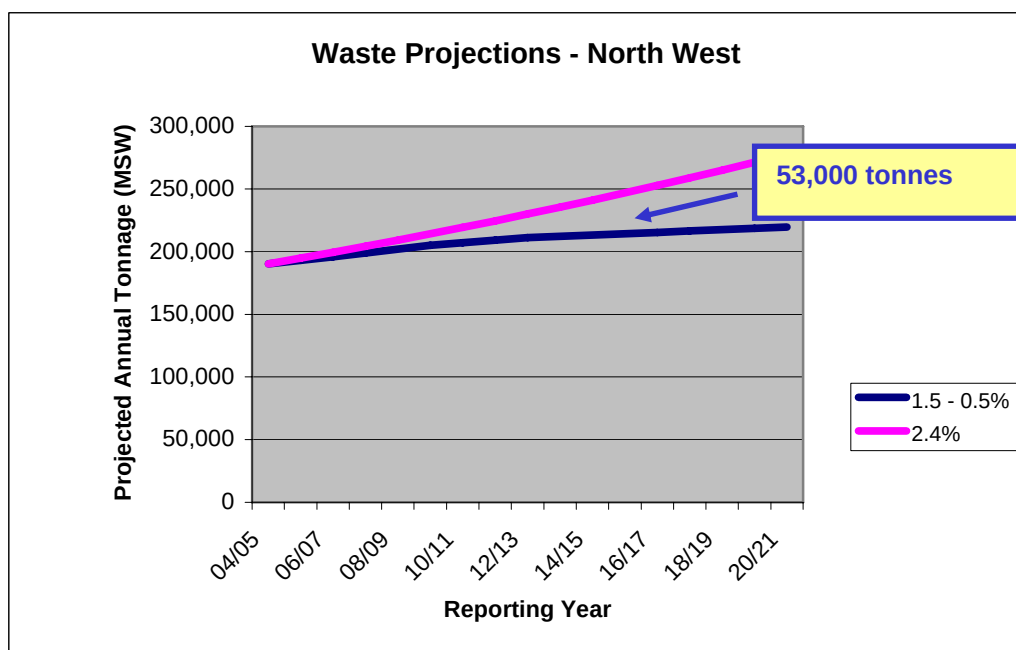
WASTE QUANTITIES AND COMPOSITION**Waste Quantities**

- 6.24 The municipal waste arisings for Northern Ireland and North West Region for the reporting year 2004/05 have been extracted from the Key Performance Indicator and WasteDataFlow returns to Department of the Environment, and are summarised in Table 6.3 below:

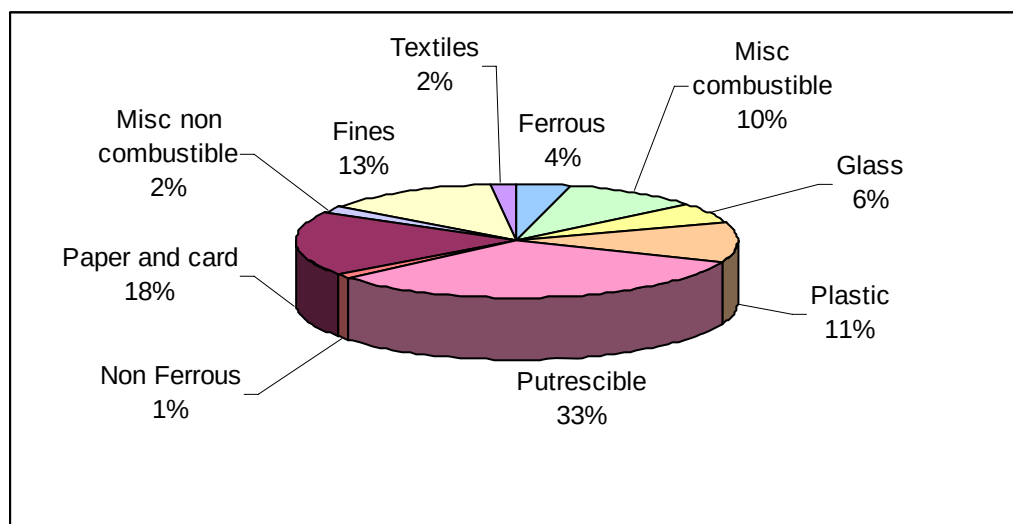
Table 6.3 Summary of Municipal Waste Arisings (2004/05)

Waste/Region	Arisings (tpa)	Recovered (%)	Landfilled (%)
<i>Northern Ireland:</i>			
Municipal Waste	1,055,900	18.1%	81.9%
Household Waste	926,396	18.7%	81.3%
<i>North West Region Waste Management Group:</i>			
Municipal Waste	190,195	17%	83%
Household Waste	166,357	19%	81%
Biodegradable Waste	135,038	16%	84%

- 6.25 The data indicates that the North West Region was responsible for producing just under a fifth (18%) of Northern Ireland's municipal waste in the reporting year 2004/05.
- 6.26 Municipal waste growth within the region has been uncertain with rates ranging from – 7% per year to 2.3%. This is not consistent with experience elsewhere where an annual growth of around 2-3% has typically been experienced. Indeed, in the consultation paper for the Review of the Waste Management Strategy, the Department of the Environment projected that municipal waste would continue to grow at 2.4%, in the absence of waste prevention measures. However, the variation in waste quantities is primarily due to changes in reporting, the improved accuracy of the figures and changes in the pattern of waste movements within the North West. Confidence in the data therefore is improving significantly.
- 6.27 The public consultation (presented in Annex B) also indicated very strong support for waste prevention. As a result, a Waste Prevention Programme will be implemented across the region. Recognising that this will take time, but allowing for the impact of such measures, for the purposes of waste planning, annual waste growth rates have been limited as follows:
- 1.5% up to 2010.
 - 1.0% from 2010 to 2013.
 - 0.5% from 2013 to 2020
- 6.28 The impact of these 'limited' waste growth rates is illustrated in Figure 6.2. The difference between the two projections by 2020 is 53,000 tonnes, which represents a significant reduction in capacity requirements at that time if the waste prevention measures achieve their objectives.

Figure 6.2 Waste Projections for the North West Region**Waste Composition**

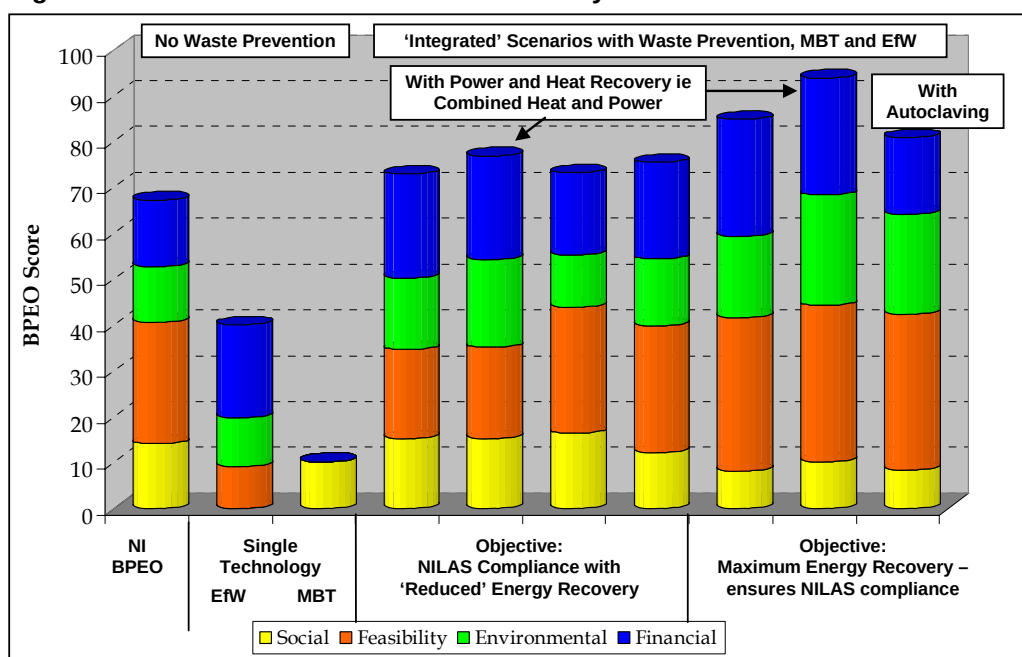
- 6.29 The composition of municipal waste in Northern Ireland, extracted from the Northern Ireland Household Waste Characterisation Study, 2000, carried out by NI2000 and supported by Environment and Heritage Service, is presented in Figure 6.3 below.

Figure 6.3 Northern Ireland Municipal Waste Composition

- 6.30 The data indicate that the municipal waste has a biodegradable content of 71%. It is this figure that has been used for determining the landfill allowances under NILAS. However, this high biodegradable content also presents a particular challenge for the management of municipal wastes, with the need to reduce the absolute tonnages to be landfilled to a very significant degree.

BEST PRACTICABLE ENVIRONMENTAL OPTION

- 6.31 Guidance on the Best Practicable Environmental Option for Waste Management in Northern Ireland was published in June 2005 by Environment and Heritage Service (EHS), and can be found on their website at:
http://www.ehsni.gov.uk/pubs/publications/NI_BPEO_Guidance_652kb.pdf
- 6.32 In summary, for municipal waste, at a Northern Ireland level, the guidance indicates that BPEO is represented by:
- A 3 bin system for separate collection of dry recyclables, organic waste and residual waste for all households- where practicable.
 - Minimum recycling and composting rates of:
 - 35% by 2010
 - 40% by 2013
 - 45% by 2020
 - The use of a mix of waste technologies, to include:
 - Mechanical Biological Treatment and Anaerobic Digestion - to be in place by 2010
 - Thermal Treatment (Mass burn incineration) - to be on stream by 2013.
- 6.33 In accordance with the BPEO Guidance, an assessment was undertaken by the North West Region to identify the specific requirements for the Region. This assessment, which is summarised in Annex C, compared a number of scenarios taking into account feasibility, social, economic and environmental criteria, against the published BPEO guidance for Northern Ireland, as illustrated in Figure 6.4.

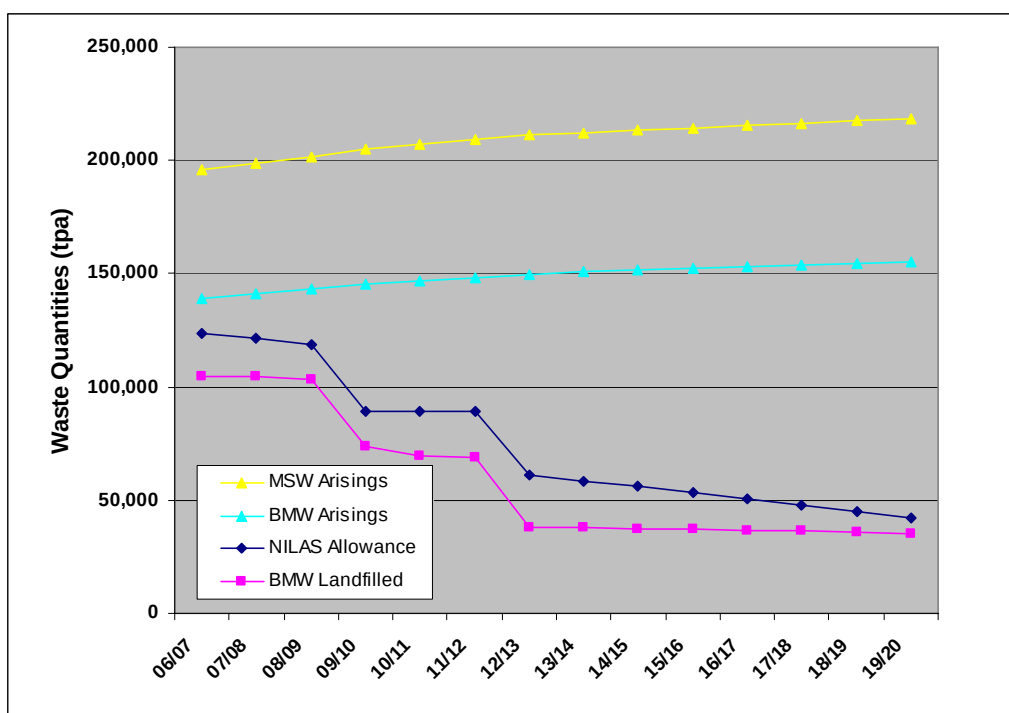
Figure 6.4 Scenario Assessment Summary

- 6.34 The assessment took into account a number of factors including the modelling of waste prevention, to limit waste growth, and energy recovery in the form of both heat and power, both of which were key factors in the highest scoring scenarios. (The identification of waste prevention, and combined heat and power generation as elements in the preferred scenarios, pre-empt, but are consistent with, the proposed amendments to the Waste Framework Directive, including the introduction of efficiency thresholds, as described in Chapter 3.
- 6.35 For the purposes of modelling the alternative scenarios in the assessment, energy recovery was assumed to be represented by a waste-to-energy facility, the approach adopted in the NI BPEO Guidance. Recognising local factors, needs and priorities, the Consultation Paper proposed that energy recovery be achieved by the production of fuel as an output from the Mechanical Biological Treatment for use in third party applications. This approach has been reinforced by the results of the consultation process, with broad support for the principle of energy recovery, but a number of concerns being raised with respect to mass burn incineration.
- 6.36 Based on the results of the assessment, and the feedback from the consultation process, BPEO for the region is defined as follows:
- **Waste prevention** – limiting annual waste growth rates to:
 - 1.5% up to 2010
 - 1.0% from 2010 to 2013
 - 0.5% from 2013 to 2020
 - **Materials Recovery** - a 3 bin system for separate collection of dry recyclables, organic waste (garden and food wastes) and residual waste for all households- where practicable and as appropriate, with minimum recycling and composting rates (through source-separate collection) of:
 - 30% by 2010
 - 35% by 2013
 - 40% by 2020
 - **Energy Recovery and Residual Waste Treatment** – The mix of waste technologies, to include Mechanical Biological Treatment (MBT), with the objectives of:
 - **Additional materials recovery**, which coupled with the amounts to be collected through source separated collections, combine to meet the Strategy targets of 35%, 40% and 45% by 2010, 2013 and 2020 respectively.
 - **Reduction in biodegradability** – to meet statutory BMW landfill diversion and NILAS targets.
 - **Energy Recovery** through the production of a Fuel for the generation of both electricity and heat – to maximise the value of the waste as a resource in accordance with the Waste Hierarchy, to reduce reliance on fossil fuels and to comply with the objectives set for the Plan.

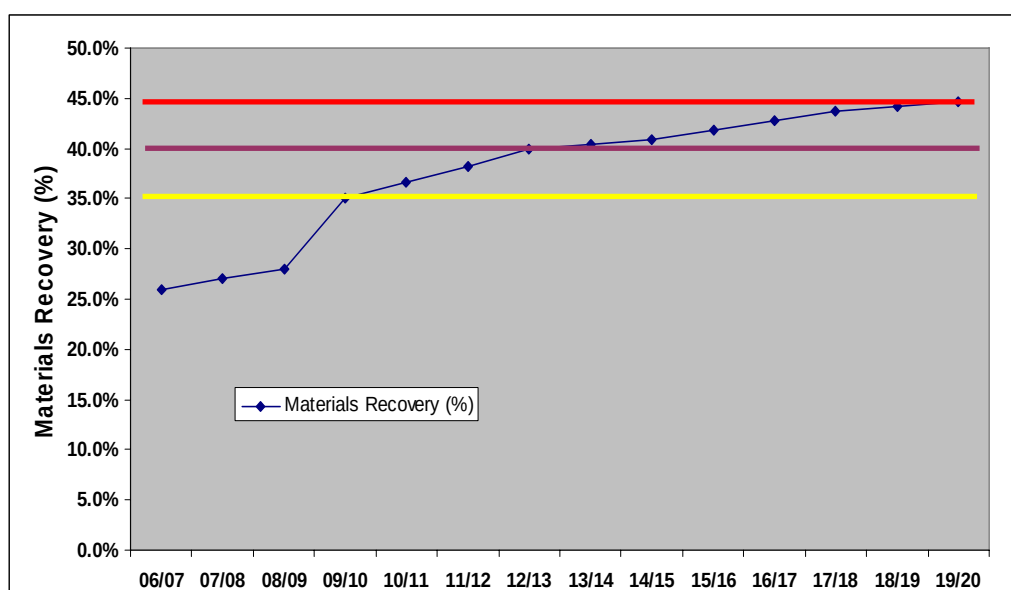
6.37 Under these proposals, the projected total quantities of Municipal Solid Waste (MSW) and Biodegradable Municipal Waste (BMW) arising and BMW landfilled are illustrated in Figure 6.5, together with the BMW landfill allowances for North West under the NI Landfill Allowance Scheme (NILAS). This indicates that the approach complies with the statutory NILAS targets. It does include several important assumptions that have implications for the delivery programme and minimum performance specifications for MBT, as follows:

- Mechanical Biological Treatment (MBT) capacity needs to be available by 2009/10
- 10% of the residual waste assigned to MBT is recovered as recycle
- The MBT process delivers a minimum of 50% reduction in biodegradability of the waste treated
- Outputs for the fuel produced should be available as soon as possible after the MBT plants are operational, but no later than 2012/13.

Figure 6.5 Biodegradable Municipal Waste Landfilled



6.38 The projected materials recovery percentages, based on the source-separated collection of recyclables, additional materials recovery from the MBT process and composting is illustrated in Figure 6.6. This shows that the Strategy targets of 35%, 40% and 45% by 2010, 2013 and 2020 are projected to be achieved.

Figure 6.6 Projected Materials Recovery Rates

6.39 The costs for this scenario have been estimated and are summarised in Table 6.4 and presented in Annex E for the Landfill Directive Target years. The Group will deliver new infrastructure through service contracts, and therefore these costs have been derived on the basis of estimated gate fees for each technology type, to provide an overall indication of the costs for waste management within the North West Region. It is assumed that these gate fees take into account revenue generated by the sale of materials and energy, and no revenue generated by such activities has not been taken into account separately. Detailed costs, broken down by Council for a minimum five year horizon, will be set out in the Annual Report and Implementation Action Plan, and will be updated on the basis of the contracts awarded.

Table 6.4 Summary of Annual Waste Management Costs

Management Option	Costs (£millions)			
Year	2006/07	2009/10	2012/13	2019/20
Waste Prevention	£0.3	£0.8	£0.8	£0.8
Waste Collection	£5.8	£6.6	£7.3	£8.1
Waste Treatment	£2.4	£7.8	£11.2	£11.8
Waste Disposal	£7.4	£9.3	£4.9	£4.5
Total	£15.9	£24.5	£24.2	£25.2

Note: Costs subject to confirmation

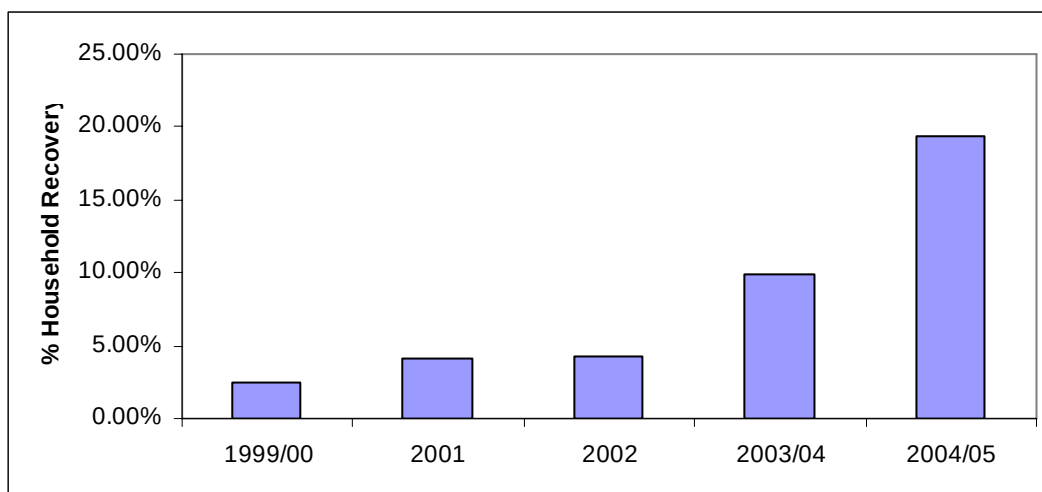
6.40 The estimated costs show a significant increase by 2009/10, of the order of 54%, with the Mechanical Biological Treatment Capacity coming on stream. However, these costs will be exceeded, if adequate treatment capacity is not available, as a consequence of which the waste is landfilled, and attracts fines under the Northern Ireland Landfill Allowance Scheme (NILAS).

- 6.41 The average cost, on a per tonne basis for waste management within the North West Region, is set to rise from about an average of £80 per tonne at present, to approximately £125 per tonne. Collection costs, with the increase in source separated collection, will increase from an average in the Group of about £45 per tonne, to the order of £50-60 per tonne. The average cost for treatment and disposal is estimated to also increase from about £50 per tonne to £80 per tonne. This figure can be compared against a fine under NILAS of £150 per tonne, demonstrating that it will be more cost effective to treat waste rather than run the risk of paying such fines.
- 6.42 It has to be demonstrated that these costs are indicative only, with the actual costs determined by rates tendered through the various procurement processes. In addition, the costs are dependent to a very large degree on assumptions about the quantities of residual waste to be treated. For the purposes of modelling, it has been assumed that the increase in materials recovery is gradual over time, just attaining the Waste Strategy target at the designated time. If these targets were achieved earlier, or exceeded, or if the waste growth did not reach the levels assumed, the capacity for residual waste treatment would be reduced accordingly. Similarly, if waste prevention measures are unsuccessful, and waste growth exceeds projections, additional treatment and disposal capacity will be required. Equally, the nature of the waste that has to be managed is changing, and changes in the biodegradability content, which is currently assumed to be 71%, will also have consequences for the projected residual waste treatment capacity. Flexibility and responsiveness therefore are key aspects of the approach within the North West Region.
- 6.43 Further aspects on the implementation and delivery of the infrastructure requirements is set out in the section on the Proposed Arrangements for the Management of Municipal Wastes.

CURRENT ARRANGEMENTS FOR THE MANAGEMENT OF MUNICIPAL WASTE

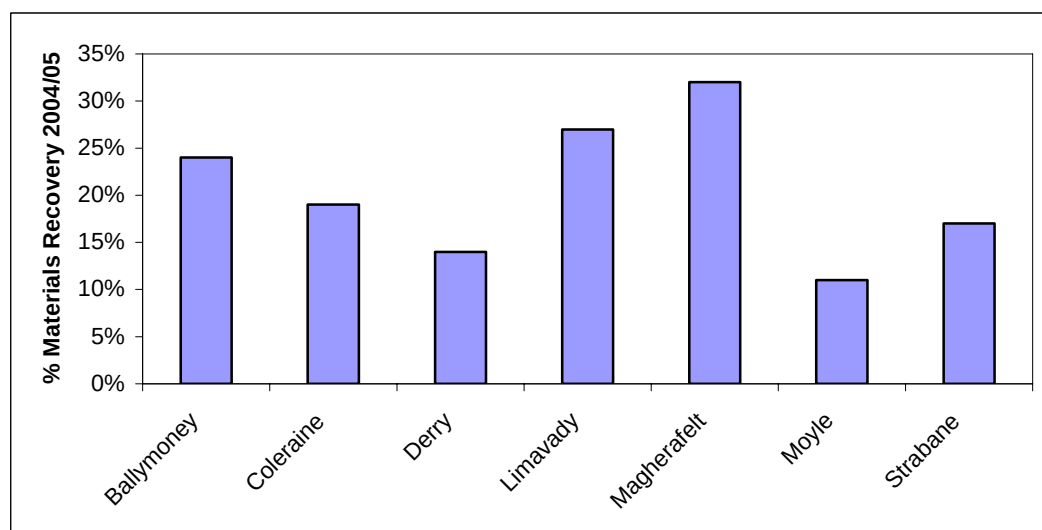
- 6.44 The current arrangements in place within the Region for the management of municipal wastes are based on the BPEO defined for the region when the Waste Plan was prepared in 2002. These arrangements, which have contributed to significant progress in terms of a more sustainable approach to waste management, and are summarised in Table 6.5, are made up of three main components, as follows:
- Education and Awareness Programme
 - Materials Recovery – Recycling and Composting
 - Landfill of Residual Wastes.
- 6.45 These arrangements, which are described further below, have been successful in delivering a significant increase, year on year, in the recycling/composting rate since 1999, as shown in Figure 6.7.

Figure 6.7 Household Recycling Rates within the North West Region from 1999/2000



6.46 Another characteristic of the performance within the region is the variation between individual councils, as illustrated in Figure 6.8.

Figure 6.8 Household Materials Recovery Rates in 2004/05 by Individual Councils



6.47 The facilities currently in use for treating municipal wastes within the region are shown in Figure 6.9, and include:

- Civic Amenity/Household Waste Recycling Centres (37)
- Materials Recovery Facilities (2)
- Waste Transfer Stations (5)
- Composting Plants (2)
- Landfill Sites (3)

- 6.48 Mixed dry recyclables, which are managed through a Group wide contract, the first of its kind in Northern Ireland, are transferred to a Materials Recovery Facility, within the North West Region, located near Magherafelt.
- 6.49 Magherafelt District Council are the only council presently collecting compostable waste from the kerbside and this material is treated at its Invesel Composting. All Councils collect garden waste separately for windrow composting at civic amenity sites.

Figure 6.9 Map of Municipal Waste Facilities within the Region

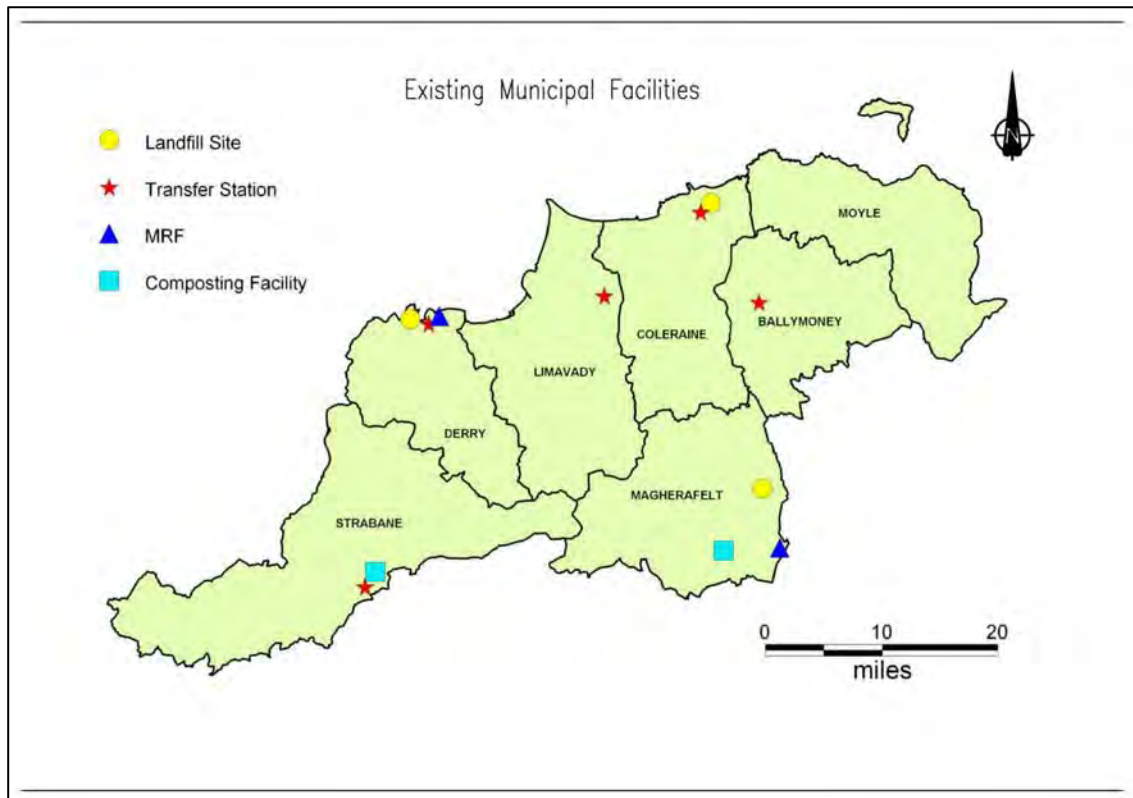


Table 6.5 Summary of Municipal Waste Management Arrangements (2005/06)

	ACTION	YEAR			
		2002	2003/04	2004/05	2005/06
Ballymoney	Civic Amenity Sites/Household Waste Recycling Centres	2	2	2	2
	Recycling Points	2	11	11	12
	Mixed Dry Recyclables bins/boxes	0	9,986	10,877	11,095
	Central Composting bins/boxes	0	0	0	0
Coleraine	Civic Amenity Sites/Household Waste Recycling Centres	6	6	6	6
	Recycling Points	10	12	12	12
	Mixed Dry Recyclables bins/boxes	2,500	10,250	24,915	25,413
	Central Composting bins/boxes	0	0	0	0
Derry	Civic Amenity Sites/Household Waste Recycling Centres	5	5	5	7
	Recycling Points	0	5	10	15
	Mixed Dry Recyclables bins/boxes	0	15,000	37,500	38,614
	Central Composting bins/boxes	0	0	0	0
Limavady	Civic Amenity Sites/Household Waste Recycling Centres	4	4	4	4
	Recycling Points	5	5	7	7
	Mixed Dry Recyclables bins/boxes	0	10,618	11,714	11,948
	Central Composting bins/boxes	0	0	0	0
Magherafelt	Civic Amenity Sites/Household Waste Recycling Centres	7	7	8	8
	Recycling Points	3	9	9	19
	Mixed Dry Recyclables bins/boxes	10,000	13,243	14,076	14,358
	Central Composting bins/boxes	0	4,750	7,000	7,000
Moyle	Civic Amenity Sites/Household Waste Recycling Centres	1	1	1	1
	Recycling Points	1	6	9	10
	Mixed Dry Recyclables bins/boxes	0	0	0	0
	Central Composting bins/boxes	0	0	0	0
Strabane	Civic Amenity Sites/Household Waste Recycling Centres	6	6	7	9
	Recycling Points	3	4	5	6
	Mixed Dry Recyclables bins/boxes	0	12,000	14,065	14,346
	Central Composting bins/boxes	0	0	0	0

Education and Awareness

- 6.50 Education and Awareness has been a key component of the Waste Management Plan, with a strong focus in communicating with stakeholders in all areas, including schools, to change attitudes and behaviour.

-
- 6.51 This has been delivered through two main strands, namely:
- Officers, appointed within councils, with responsibility for education and awareness in recycling and waste prevention.
 - Wake-up-to-Waste, a media campaign across Northern Ireland, co-ordinated by Environment and Heritage Service, and working with district councils to raise awareness of the '3Rs' (Reduce, Re-use, Recycle).
- 6.52 The North West Region formed a Recycling Officers Sub-Group in May 2005 to meet regularly and co-ordinate Group promotional activities. The Group are currently in the process of finalising a Communications Plan (the current draft of which is included in Annex D). The purpose of this Communications Plan, which is considered further in the following section on the Proposed Arrangements for the Management of Municipal Wastes is to set out the joint communications activities which could be delivered on a collaborative basis within the Group with the aim of:
- Encouraging waste prevention and encouraging participation in waste prevention initiatives.
 - Increasing participation for District Council recycling collections and bring facilities.
 - Reducing contamination.
 - Increasing awareness of sustainable waste management in the North West Region Waste Management Group area.
- 6.53 The key target audiences for this communication are as follows:
- Householders
 - Council employees
 - Community Groups
 - Schools
 - Commercial and Industrial Sector.
- 6.54 The Groups are to be targeted through a range of communications including:
- Direct mail in the form of printed literature
 - Staff training/awareness to ensure staff are fully informed and able to answer any queries.
 - Public relations in the form of press releases and radio communications
 - Advertising in the form of bus panels, adshells and billboards
 - Exhibitions and Roadshows at areas of high footfall throughout the Region
 - Promotion of the North West website to provide additional information on existing and proposed services and activities.
- 6.55 The key elements of the proposed Education and Awareness Campaign are detailed within the Communications Plan (included in its current draft format in Annex D) but are summarised below:
-

Developing Baseline Data

- 6.56 The NWRWMG will determine a range of baseline data for the individual Councils and for the Group as a whole. The aim of this is to develop a set of baseline data to be used in measuring the effectiveness of each communication activity. The objectives are to establish a monitoring routine across the Region to an agreed monitoring methodology by April 2007 and to develop baseline participation data for each kerbside collection scheme within the NWRWMG by June 2007.

Branding and Design

- 6.57 A distinct identity will be developed for the Partnership so that all communications material will have a clear look that will become recognised by all householders. The Group will engage a graphic designer to develop leaflets, posters and signage to be used in the kerbside, Christmas, New Year and Household Waste Recycling Centres (HWRC) promotions. The design will also link through to the group website.

Website

- 6.58 Each Council has its own website which will be maintained with details of local services, events and contacts. In addition to this, the existing NWRWMG website will be updated to include information on all new promotional activities as well as general information on services. The main page will also include links to information on some of the Groups generic promotions e.g. home composting, Eco-schools, Christmas recycling activity, a calendar of regional events and a list of council contacts. The website will also have a hyperlink through to individual Council recycling pages and will also include an area with downloadable resources for students and teachers.

Blue Bin Recycling Promotion

- 6.59 Each District Council provides an alternate weekly collection of mixed dry recyclables via a wheeled 240 litre blue bin. The Group has agreed to deliver a joint campaign to increase participation levels by at least 5% whilst at the same time minimising levels of contamination in kerbside recycling.

Christmas Recycling Campaign

- 6.60 The campaign will employ several complementary communications tools; website, direct mail and roadshows/events. The campaign will serve to remind householders of the need to recycle using the schemes already available to them and remind them of the range of materials that can be recovered through these schemes.

Real Nappy Campaign

- 6.61 The North West Region is promoting the Real Nappy Week (usually held in March) across the Region. At present, only some authorities within the Group promote the use of real nappies with promotional activities ranging from local press articles to promoting the use of real nappies at community meetings.

Environmental Youth Speak

- 6.62 This is a public oration competition run on two levels: a Junior section for Key Stage 2 and a Senior Section for Key Stage 3. The competition is open to all schools in Northern Ireland and finals are staged within each local authority area, sub-regional grouping and for Northern Ireland. The aim of the competition is to encourage environmental awareness among young people by giving them the opportunity to research waste management issues. The objective is to raise the number of schools participating by 10% across the NWRWMG Region in 2007.

Compost Awareness Week

- 6.63 Compost Awareness Week is a national campaign to raise the public awareness of the environmental benefits of composting. The Group plan to develop a generic leaflet to explain the benefits of composting at home. This leaflet will be used at events and displays and available on request from each Council. It will also include the contact information and details on how to purchase a home composter. This will be achieved through the delivery of 7 compost awareness roadshows across the North West Region during Compost Awareness Week.

Staff and Crew Training

- 6.64 Operational staff and crew are key to ensuring that all recycling services are delivered effectively. This includes kerbside collections and council bring facilities. It is important that crews are fully briefed about the purpose of their job and the benefits to the community and environment. It is equally important that all relevant staff are fully briefed on the current services and any planned changes to these. The objectives of the programme are to provide training to at least 90% of relevant staff by the end of October 2007.

Recycling Officer Training

- 6.65 North West Region believe that it is crucial that officers have the skills to facilitate group discussions, conduct public consultations and workshops, prepare and issue press releases and have basic website development and updating skills. The objectives of this study are to carry out an assessment of training needs for Recycling Officers by March 2007 and a review of the training needs of Recycling Officers every six months from March 2007.

Household Waste Recycling Centres/Bring Site Promotions

- 6.66 The North West Region will develop an A5 page Bring Facility Good Use Guide containing generic information on the use of HWRC's, end markets and sorting waste before arriving at the centre as well as specific information including site locations, opening hours and local contract details. The Guide will be available at Council buildings and for distribution at events and roadshows.

Waste Education and Awareness Programmes

- 6.67 The Waste Education and Awareness Programme has evolved out of Councils responsibility to deliver waste and recycling collection services often requested by schools, community groups or business organisations. The aim of these programmes is to improve public understanding of waste and environmental issues generally and to improve participation and reduce contamination levels in local recycling schemes. The group will develop a DVD showing materials collection, recycling and reprocessing. This can be shown in presentations and in public meetings to reinforce the "Closing the Loop" message.

Public Relations

- 6.68 The NWRWMG Communication Officer will develop a PR schedule for the Region. The Officer will be responsible for issuing regular press releases on campaigns to local media. The aim of this is to maintain a high profile co-ordinated campaign to keep all media groups informed of progress with kerbside collection schemes and bring facilities.
- 6.69 A representative sample of key activities that have previously undertaken by Education and Awareness Officers within the North West Region are shown in Tables 6.6 to 6.9.

Table 6.6 Education and Awareness Activities within Schools

Key Activities
Promotion of Ecoschools (through WELB) and potentially Greenschools Project (through An Taisce) Europe-wide projects designed to encourage whole-school action for the environment. These are recognised award schemes, rewarding and accrediting schools that have made a commitment to continuously improving their environmental performance. They are also a learning resource, raising awareness of environmental issues through activities that link to curriculum subjects.
Development of Education Resource Pack for Teachers which highlight Resources provided by councils; Worksheets for teachers/pupils including factsheets, household waste audits, recycling tests, sorting exercises to encourage the segregation of waste activities etc.
Promotion of Yellow Woods Challenge The Yellow Woods Challenge is a Schools Environmental campaign run by Yellow Pages, the Directory Recycling Scheme and the Woodland Trust. The project involves working with local authorities and recycling organisations to encourage the recycling of Yellow Pages directories, save landfill, educate children about the environment and help keep UK woodland alive.
Education and Day Trips to Civic Amenity Sites and Transfer Stations
Development of Education Programmes including Presentations and Games One Council created a range of mobile carnival games based around the theme of recycling. These included Pitch and Putt, a hoopla and a game based on the Waste Management Hierarchy.
Participation in Environmental Youth Speak Competition Environmental Youthspeak is an environmental competition aimed at school children across Northern Ireland. Its aim is to encourage children to think about the issues of waste and recycling and to give young people the opportunity to research and discuss relevant issues. Participants are drawn from Junior Section for P6 & P7 pupils and Senior Section for Year 8 & Year 9 pupils.
Environmental Awareness Talks Environmental Awareness Talks to key stage 1, 2, 3 and 4 if requested.
Organisation of Litter Picks In one Council area, schools organize a litter pick in school grounds or local community. The Council provides all the necessary equipment and protective clothing.
“Art From Waste” Projects One Council promotes the ‘Art from Waste’ project, the purpose of which is to encourage the concept of REDUCE, REUSE and RECYCLE whilst changing attitudes about ‘rubbish’ and what the public throw away. The goal of this programme is to use art to inspire people to recycle more and conserve natural resources. The competition requires student artists to create a poster with a waste recycling theme.

Table 6.6 Education and Awareness Activities within Schools (continued)

Key Activities
Presentation of Konflux Theatre Projects A number of Councils have invited Konflux Theatre in Education (York-based theatre company touring throughout the United Kingdom) to deliver workshop programmes and performances for young people. The programmes involve working interactively with school groups on themes such as bio-diversity, rural and urban concerns, sustainable waste management and development issues. The performance covers a number of areas within the National Curriculum and teaches the children about the need for recycling and the problems of littering through a blend of puppetry, digital projection, music and audience participation.
Wormeries Some primary schools in one of the Council areas have received a free wormery, used to dispose of organic waste such as fruit, vegetable peeling, teabags, coffee beans, bread etc. The end product is a rich compost and worm juice which can be used on flower beds etc within school grounds.

Table 6.7 Education and Awareness Initiatives within Business

Key Activities
Green Dragon Project (part funded by Building Sustainable Prosperity, in partnership with ARENA) Two Councils are involved in the Green Dragon Project. This is a stepped approach to implementing environmental management within any company (through workshops). It ensures companies put in place environmental management systems relevant to their specific needs. Potentially, companies can work through five levels of certification – from demonstrating commitment at Level 1 to compiling a detailed environmental statement at Level 5. Key outputs are: ▪ Established environmental management standard, recognised through certification ▪ Sharing of ideas and networking through the workshops ▪ Ongoing guidance and practical support ▪ Action planning to reduce impacts and save on costs ▪ Improved efficiency and compliance with legislation
Environmental Businesses Clubs to raise Awareness and Recycling among Businesses

Table 6.8 Education and Awareness Initiatives within Community Groups

Key Activities
Can Collection One Council is involved with the Compass Advocacy Network (CAN), an organization managed by and for adults with learning disabilities, to support a recycling/environmental project. The initial focus was on aluminum collection but the group is now pursuing opportunities for textiles recycling.
Group Presentations to Community Organisations Raising awareness of recycling and waste minimisation issues
Spring Clean Weeks Some Councils have organised <i>spring cleans</i> to increase awareness of recycling and waste throughout the whole community
Community Composting to Increase Participation in Waste Minimisation
Development of Community Recycling Points

Table 6.9 Education and Awareness Activities within the General Public

Key Activities
Promotion of Eco-Congregation – the Churches' Environmental Programme (Developed from a partnership between Going for Green – the environmental awareness charity and the Environmental Issues Network of Churches Together in Britain and Ireland).
Textiles Challenge Cash for Clobber Schemes promoted through Schools and promotion of Charitable Textile Recycling Partnerships through Educational Talks
Promotion of Real Nappy Week Some Councils actively promote the Real Nappy Campaign focusing on helping parents to make an informed choice about nappies and divert disposable nappy waste from landfill.
Promotion of Smart Shopping At the height of the Christmas preparations, some Councils launched the Smart Shopping campaign as part of the national campaign, to raise local awareness of the need to think smartly about recycling in an effort to reduce the volume of waste accumulated. The launch visually highlighted the amount of waste a shopper produces and offered simple alternatives to reduce this waste including a free reusable cotton bag.

Materials Recovery – Recycling and Composting

- 6.70 The arrangements for the recovery of materials for recycling and composting are based on prioritising segregation at source and have, as summarised in Table 6.5, included:
- Provision of receptacles for segregated collection at households.
 - Expansion in the number of bring sites, within the region.
 - Enhancement of capacity at civic amenity sites, for the segregation of wastes for recovery.
- 6.71 For recycling, every household in the region, with the exception of Moyle, is provided, or has been scheduled to be provided during the 2005/06 year, with a receptacle (eg blue bin) for the collection of mixed dry recyclables. The North West Region Councils have a jointly procured contract for the collection and processing of mixed dry recyclables.
- 6.72 Given the high biodegradable content (71%) of municipal waste, and the high proportion of putrescible waste, the treatment of biodegradable wastes (biowastes) is a vital component of the Plan. To date, brown bins have been distributed in Magherafelt District Council only, as indicated in Table 6.5, with the primary focus being on providing households in urban areas with a receptacle (brown bin) for collection of organic wastes.
- 6.73 However, roll out has not been as rapid as envisaged in the original waste management Plan, primarily because of the impact of the Animal By-Products Regulation, which imposes a requirement to treat kitchen and catering wastes to certain standards. The Group is currently in a tendering process for the provision of a service to treat biowastes to meet the relevant standards.

Landfilling of Residual Wastes

- 6.74 The region has a number of landfills that currently accept municipal wastes for disposal. These are Council-owned and operated and include:
- Craigahulliar – Coleraine Borough Council.
 - Culmore– Derry City Council.
 - Ballymacombs – Magherafelt District Council.
- 6.75 The landfill at Culmore is scheduled to close in early 2007. The North West Region Councils have undertaken a process to identify and secure suitable landfill capacity for their future needs. Cam Quarry located on the Cam Road on the western boundary of the Coleraine Borough Council area is the preferred location for a landfill for the Group. The site will be operated by the current owner, B Mullan and Sons Ltd, on a gate fee arrangement.
- 6.76 Two of the three landfills are scheduled to submit PPC Applications under the Landfill Regulations. The current predicted capacity at these two landfills is approximately 750,000 tonnes.

PROPOSED ARRANGEMENTS FOR THE MANAGEMENT OF MUNICIPAL WASTE

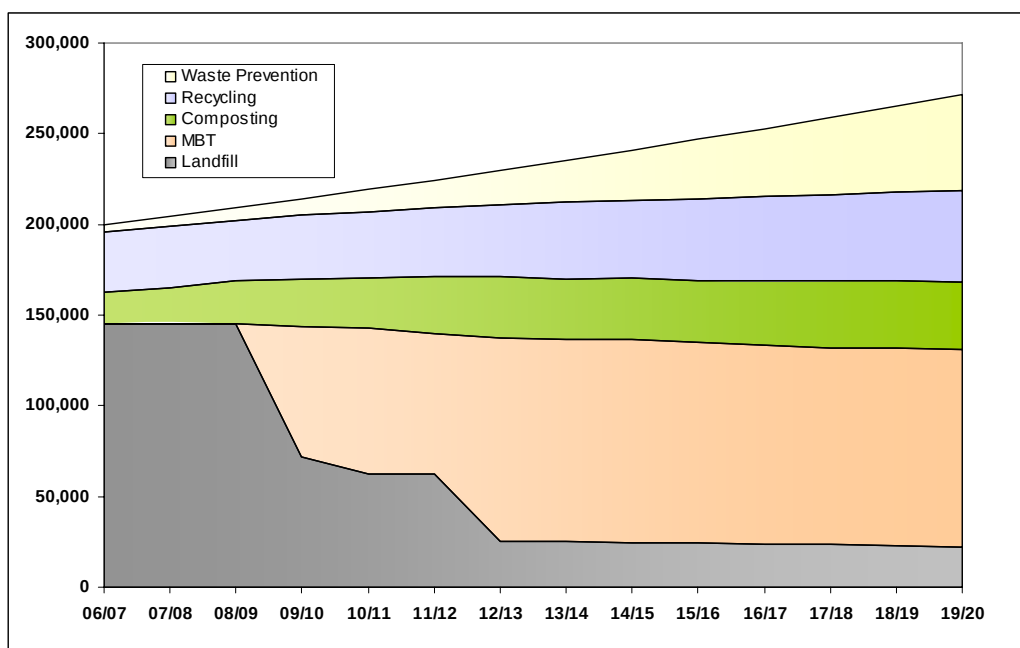
6.77 The assessment of the requirements for the future management of municipal waste within the region identified three main elements, as described previously and outlined below. The elements are focused on maximising, as far as is practicable, waste prevention first and foremost followed by recycling and composting, with the aim being to minimise the amount of material requiring residual treatment and hence ensure that waste within the Region is managed in the most sustainable way possible.

- **Waste Prevention** – to limit the growth in waste arisings.
- **Materials Recovery** – segregated collection of dry recyclables, organic waste (garden and food wastes) and residual waste - where practicable and appropriate.
- **Residual Waste Treatment and Energy Recovery** – To include Mechanical Biological Treatment (MBT) and landfill, with the objectives of providing:
 - *Additional materials recovery.*
 - *Reduction in biodegradability.*
 - *Energy Recovery* through the production of a Fuel for the use in generation of both electricity and heat.
 - *Secure disposal capacity.*

6.78 This approach to managing municipal wastes within the Region is illustrated in Figure 6.10. summary, this shows:

- **Waste prevention** having an increasingly key role in limiting the growth of waste arisings, by capping the waste growth rates.
- **Recycling** by source separated collection increasing, but with only a limited increase, given the current provision of separate collection receptacles (separate bins at households, bring banks and enhanced recovery at civic amenity sites).
- **Composting** (In vessel or anaerobic digestion) increasing as the coverage of brown bins is increased over time. (A tender is already underway for this service). It is assumed that the collection of garden wastes will remain as at present.
- **Mechanical Biological Treatment** is the primary tool in diverting biodegradable municipal waste from landfill.
- **Landfill** is set to become the option of last resort, with only limited quantities landfilled directly without prior treatment.

Each of these aspects are described further below.

Figure 6.10 Summary of Waste Quantities by Management Destination

Education and Awareness

- 6.79 Ongoing Education and Awareness campaigns are integral to the implementation of the measures for the future management of municipal waste within the North West Region. These campaigns will have to cover all aspects, ranging from waste prevention and recycling to separation of wastes and purchasing decisions at the individual or household level. They will focus on behavioural and attitudinal changes, seeking to influence each and every person within the North West Region. These campaigns will be co-ordinated through the North West Communications Plan, which will be subject to regular review and update. The aims and objectives of the current Communications Plan, which is included in Annex D, are as follows:

Aims

- Encouraging waste prevention and encouraging participation in waste prevention initiatives.
- Increasing participation for District Council recycling collections and bring facilities.
- Reducing contamination.
- Increasing awareness of sustainable waste management in the North West Region Waste Management Group area.

Objectives

- To increase the Group recycling rate by at least 4% by March 2008
- To establish a mechanism for measuring participation rates for all kerbside collections of dry recyclables and organics by June 2007.
- To reduce recorded contamination levels of recyclables collected at kerbside by December 2007.

- To reach all households within the NWRWMG region at least once with a recycling communication during the period of this Communications Plan.

Waste Prevention

- 6.80 Although waste prevention requires action by all stakeholders, the leading action is the commitment of resources by councils, including the appointment of officers to advise stakeholders on waste prevention initiatives, and to support awareness campaigns. This may vary from year to year, and within councils, but the costs are estimated to be of the order of £0.75m per annum for North West. (The actual expenditure will be determined on a year to year basis through the Annual Implementation Action Plan, to ensure that activities are co-ordinated between councils and with the Department as appropriate, and in response to identified priorities.)
- 6.81 North West Region Waste Management Group is a member of the Northern Ireland Waste Prevention Forum, and is committed to waste prevention, through implementation of the measures set out in the Northern Ireland Waste Prevention Action Plan. The Action Plan presents a programme of activities and initiatives for Northern Ireland, to raise awareness of and encourage waste prevention. This Action Plan provides the basis for the waste prevention initiatives that will be undertaken by the North West , as presented in Table 6.10 below:

Table 6.10 North West Region Waste Management Group - Waste Prevention Action Plan

The Model for Waste Prevention Area	Action/Initiative	Key Delivery Dates	Performance Measures
Encourage	Achieve Waste Prevention Targets for North West Region Waste Management Group - 1.5% annual growth for MSW arisings for 2010 - 1.0% annual growth for MSW arisings from 2010-2013 - 0.5% annual growth for MSW arisings from 2013-2020	2010 2013 2020	Monitored by the data collated by Waste Data Flow and demonstration of meeting the target.
Enable/Exemplify/Engage	The North West Region Waste Management Group will develop a waste prevention programme in order to achieve the above targets, the programme will identify and prioritise various waste prevention initiatives and will include the following measures: - Awareness programmes (closely linked to the delivery of the Communications Plan). - Promotion and supply of home composters. - Support national waste prevention campaigns. - Identify, prioritise and implement waste prevention initiatives. - Implement Green Procurement Policies - Monitor and assess performance	06/07 Ongoing delivery of actions	Specific evaluation tools will be identified for each action/campaign.
Enable and Engage	Waste prevention will be an implicit element of the Communication Plan for the North West Region Waste Management Group. Ongoing awareness raising via recycling officers will incorporate waste prevention messages for all target sectors.	Ongoing Delivery	Specific Evaluation and Monitoring tools have been developed for each action/campaign.

Source: Waste Prevention Action Plan, Waste Prevention Forum, 2006

6.82 Waste prevention however is not an issue that can be addressed in isolation by the North West Group within their Region. It requires initiatives, including awareness raising and stakeholder engagement, particularly with large players in the retail sector, at a Northern Ireland and national level. North West will work with EHS to co-ordinate activities at the wider levels as and when appropriate to ensure that the delivery of measures are consistent and effective.

6.83 The success of waste prevention measures can only be measured by the absence of municipal waste arising within the Region. The primary tool therefore is monitoring waste data to assess performance, and to identify areas of weakness. Waste generation, as measured through WasteDataFlow, will be monitored against targets and trigger points included within the Implementation Action Plan. The aim of this is to monitor performance against pre-defined criteria, to allow remedial action to be undertaken, as and where appropriate, including the initiation of contingency measures, should waste growth prove to be higher than anticipated. The Councils will commit adequate resources to ensure that the data is collated and managed effectively, and in a timely manner, to allow performance to be assessed and reported upon and to ensure that contingency measures are implemented if necessary.

Materials Recovery

6.84 The councils fell slightly short of meeting the 25% materials recovery target for 2005/06 as set by the Northern Ireland Waste Management Strategy therefore further significant uplift in recycling and composting is now needed in order to meet the targets for materials recovery by source-separated collection, which are as follows:

- 30% by 2010
- 35% by 2013
- 40% by 2020

6.85 As previously indicated, additional materials recovery from the residual waste stream, coupled with the amounts to be collected through source segregated collection, will also be required in order to ensure that the North West meets the Strategy targets of 35%, 40% and 45% by 2010, 2013 and 2020 respectively.

6.86 During 2005, approximately 45,000 tonnes of material were recovered, of which about two thirds was achieved by recycling, and one third by composting. By 2020, a total materials recovery capacity of approximately 90,000 tonnes is required to meet the targets. An additional capacity of 45,000 tonnes therefore is required by 2020.

6.87 The additional materials will be recovered through:

- Capture of additional mixed dry recyclables, by increased provision of bring facilities and household waste recycling centres, and collection of additional materials.
- Expanding the coverage for segregated collection of biowastes through increased kerbside collection, with treatment to produce compost for use in agricultural/ horticultural applications.

- 6.88 Given the extent of source segregated collection services and facilities for recyclables already in place in the North West Region, it is estimated that only limited quantities will be recovered through recycling. Although detailed decisions will be taken to address local needs and priorities at the individual Council level, and set out in the Implementation Action Plan, collection of additional types of materials, for example Tetrapaks, will be a priority. Additional bring facilities will also be provided, particularly in the context of new housing and retail developments, as well as shifting the focus at civic amenity sites from disposal to recycling. It is also anticipated that through the Integrated Product Policy, a greater proportion of materials in the waste stream will be recyclable. Therefore an additional capacity for the treatment and transfer of the mixed dry recyclables, in the order of 25,000 tonnes is required over time. It is assumed that this can probably be accommodated by the existing infrastructure capacity, although market conditions may create further opportunities for new re-processing and/or transfer facilities.
- 6.89 Councils have also identified the option/need for a transfer station, to service the district, which would be developed, depending on cost considerations and haulage requirements associated with service contracts, to ensure rate payers have a cost effective service available at a local level.
- 6.90 Such facilities may also include provision for the bulking and temporary storage of source-separated materials and other wastes, such as Waste Electrical and Electronic Equipment (WEEE) appropriate to the needs of the area.
- 6.91 It is in the collection and treatment of biowastes where the most significant step changes need to be made. This has already been recognised by the Group, and a tender process is currently underway for a service to treat biowastes.
- 6.92 However, it is also recognised that experience elsewhere indicates that the widespread provision of bins for collection of organic wastes will result in an increase in the total quantities collected. This is contrary to the waste prevention initiatives, and the drive to limit the increase in waste arisings.
- 6.93 The treatment of biowastes therefore will be provided for, where practical and appropriate, by the roll out of receptacles (brown bins) in stages across the region. The primary focus will be on urban areas, for the collection of food wastes, as well as garden wastes. The extent of service provision will be determined on an individual council basis, and will be set out, monitored and reviewed in the Annual Implementation Action Plan for Municipal Wastes (IAP).

- 6.94 The additional capacity required for the treatment of biowastes by 2019/20 is estimated to be of the order of 20,000 tonnes. This capacity will be provided through service contracts, the first of which is currently the subject of a tender process, for the treatment of a minimum 8-10,000 tonnes per annum. This covers the period up to 2014, and has the flexibility to accommodate higher tonnages, as the amount of biowaste collected increases.
- 6.95 This additional capacity is to be provided through a treatment process to meet the requirements of Animal By-Products Regulations and is likely to be in the form of In-vessel composting or anaerobic digestion so that it can treat kitchen food and catering wastes, as well as garden wastes.
- 6.96 The location of the biowaste treatment plants will be determined by the contracts into which the councils enter, but one or two treatment plants servicing the region is considered appropriate.

Residual Waste Treatment and Energy Recovery

- 6.97 Treatment of the residual waste is required to ensure that the targets for the diversion of Biodegradable Municipal Waste (BMW) are met. Failure to comply could result in significant fines for councils.
- 6.98 Mechanical Biological Treatment is the preferred treatment method, with the process being designed, in principle, to:
- Recover additional materials, such as metals, glass, and other marketable resources.
 - Reduce the biodegradability of the wastes.
 - Produce a fuel from those materials that cannot be recovered, but which possess a suitable calorific value.
- 6.99 Non-useable residues will be landfilled. The landfill capacity requirements, which are currently in the region of 150,000 tonnes per annum, are anticipated to be 100,000 tonnes per annum at 2009/10. This assumes that MBT facilities are operational, but that no facility is yet available to use the fuel. All outputs, except for recycle therefore, are assumed to be landfilled. After that, the landfill requirement falls to 50,000 tonnes per annum by 2012/13 once an outlet for the fuel is available.
- 6.100 The capacity required for MBT is 110 – 120,000 tonnes per annum. It is anticipated that two MBT facilities within the region is considered appropriate, two with a capacity of about 60-70,000 tonnes per annum. It is recognised however, that the number and location of MBT plants will be determined by the contracts and commitments into which the councils enter, and flexibility is a key consideration. Therefore, an alternative to a number of MBT plants is a centralised facility supported by a number of transfer stations to service the region.

- 6.101 Potential locations for the development of an MBT study, under the ownership/control of Councils, have been identified within the Region. These include:
- Lisahally
 - Letterloan
 - Crosstagherty
- 6.102 The MBT facilities will be provided through appropriate procurement and contractual arrangements. MBT is however not a single technology. As a concept it covers a family of processes, with a number of proprietary services having been developed within the broad concept of MBT. For example, the biological treatment process may include anaerobic digestion, which allows energy to be recovered as part of the MBT process. The Group therefore will not be specific about the precise nature of the MBT process, where a service contract is sought.
- 6.103 Rather, the focus will be on performance based specifications, setting out the objectives for the treatment process (such as minimum targets for reduction in biodegradability) and allowing contractors/service providers to respond accordingly. Specific contractual requirements are likely to include targets for example for:
- Biodegradability reduction
 - Materials recovery
 - Fuel specification and outlets- in support of energy recovery.

Securing Markets for MBT Outputs

- 6.104 MBT is a key component in the treatment of residual wastes, but critical to its success is securing markets for its outputs. The preferred scenario provides for the principle outputs of the MBT process to be recycle, and a fuel, together with a reduced biodegradability residue. The market for the recycle is the same as for the mixed dry recyclables, where price and quality are key determinands. The main issue relates to the securing of a market for the fuel output.
- 6.105 A review of current practice in Europe has confirmed that the production of a fuel is a viable practice for the 'fuel' residue produced from an MBT process. Such fuel is either burned at a local facility, or transported, sometimes into Member States, for use at more distant facilities. The North West Region therefore are satisfied that this is in principle an acceptable approach, but also recognise the risks associated with the limited facilities currently available in Northern Ireland to use such a fuel, as well as the potential impact on the market if significant quantities are produced elsewhere, possibly limiting the availability of other options.
- 6.106 The North West recognise the requirement to secure end markets for the fuel produced from the MBT process. In principle, there are two broad approaches, namely:

- Provide the end market for the fuel, either directly or through a third party.
- Require the service provider to provide the end-market for the fuel.

6.107 These issues will be addressed in the preparation of the Strategic Outline and Outline Business Cases, as part of the procurement process, to ensure that the risks are identified and managed accordingly.

6.108 While the procurement process is being progressed, North West will work with EHS and other key stakeholder to explore opportunities within the Region for the use of the fuel, in the belief that it can contribute to Northern Ireland's Energy Strategy, diversifying supply and displacing fossil fuels.

Infrastructure and Service Delivery

6.109 The delivery of the infrastructure and associated services is the key to ensuring that the North West, on behalf of the Councils, meets its targets and obligations with respect to:

- Materials Recovery- through recycling of materials such as paper, glass, metals, cardboard and plastics; and composting or anaerobic digestion of biowastes, including garden and kitchen or catering wastes, with the latter having to be treated to standards to meet the requirements of the Animal By-Products Regulation.
- Diversion of Biodegradable Municipal Waste from landfill, a particular challenge in Northern Ireland, given the high biodegradable content of municipal waste, estimated to be 71%.
- Maximising, as far as practicable, the resource value of the residual waste through energy recovery, an objective set for this Plan by the Councils.

6.110 In accordance with the BPEO defined for the North West Region, the three key strands in relation to infrastructure and service delivery, therefore relate to:

- Recycling
- Biowaste Treatment; and
- Mechanical Biological Treatment

These are considered further below, to identify key issues associated with each aspect.

Recycling

6.111 The key action for recycling lies not in the procurement, nor in the provision of new re-processing infrastructure. Rather, the focus needs to be on expanding the range of materials collected, with some increase in the micro-structure, albeit limited, given the bins, bring banks and civic amenity sites put in place over the last five years by Councils. The decisions regarding such aspects are a local matter, down to the individual Councils taking into account local needs and priorities.

- 6.112 The collection of additional materials may have commercial implications, which is a matter for each Council, and the contract which they have in place for handling mixed dry recyclables. As services are developed, there may be a need for additional recycling facilities to be procured. In this regard therefore, further actions regarding bins, bring banks and civic amenity sites will be set out in the Implementation Action Plan, which is updated annually, to ensure that the necessary flexibility and responsiveness is an integral component of the Plan going forward.

Biowaste Treatment

- 6.113 The majority of Councils within the North West Region have collected garden wastes at civic amenity sites for composting, and currently have a number of contracts or agreements in place with companies for the treatment of these wastes.
- 6.114 There is a need however for an increase in the quantities of biowastes collected and treated within the North West Region, if the Strategy targets for materials recovery and the NILAS landfill diversion targets are to be met. This has already been recognised by North West Region, and the Group is engaged in a procurement exercise to secure treatment capacity for these biowastes.
- 6.115 This tender will, in the first instance, provide for the treatment of an additional 8-10,000 tonnes of biowaste, a tonnage estimated from the commitment by Councils, as set out in the current Annual Implementation Action Plan, with respect to the number of brown bins that will be rolled out in the North West Region. The tender, which is scheduled to commence in 2007, will, subject to performance, cover the period up to 2014, when it will be re-tendered. It also has the flexibility to accommodate increases in the tonnages handled, due to a banded pricing structure.

Mechanical Biological Treatment

- 6.116 The delivery of MBT treatment capacity is the primary objective of this Plan, driven by the need to divert significant quantities of Biodegradable Municipal Waste (BMW) from landfill, as required by the NI Landfill Allowances Scheme (NILAS), which implements the targets from the Landfill Directive.
- 6.117 The North West Region has already recognised the requirement for MBT, through a service contract for the provision of MBT capacity, to meet the needs of the Group.
- 6.118 A potential approach to the procurement of a suitable service contract, and in particular to investigate planning risks, can be summarised as follows:
1. Identification of potentially suitable Council owned or controlled sites.
 2. Pre-planning enquiries with Planning Service regarding such sites

3. Submission of early planning applications, if appropriate, to minimise planning risks.
 4. Making such sites available to tenderers to ensure that competition is not constrained due to site availability.
 5. The use of a Performance Specification, to set out critical requirements for the Councils, to allow service providers the opportunity for flexibility and innovation, to maximise benefits for the Councils.
- 6.119 As a result, a two stage approach to the delivery of MBT capacity is proposed to ensure that sufficient quantities of biodegradable waste can be diverted from landfill to ensure compliance with NILAS targets both in the short term as well as in the medium to longer term. This is in recognition of the potential risks in the delivery of major infrastructure, associated with the securing of funding, the timescales required for the procurement of facilities and land-use planning process.
- 6.120 The Implementation Action Plan therefore identifies an Interim Contract to divert biodegradable waste from landfill until 2011/12. The primary focus is on reducing the biodegradability of the residual waste stream, and can be delivered through existing facilities and service providers, mitigating the risk of planning delays and other factors. This would be based on a performance type specification, with the risks of compliance passed to the contractor, on the basis of agreed target biodegradability reductions. The outputs would be landfilled, unless alternative applications can be found.
- 6.121 The main MBT contract would be developed during the period of the interim contract, with the primary objective of producing a fuel. The approach to this contract will be developed using OGC Guidance on procurement to ensure value for money, that the integrity of the process is maintained, that it is managed systematically and that risks are identified and addressed.
- 6.122 Sites identified as being potentially suitable and under Council ownership or control, are as follows:

Site	Area
Lisahally	Derry
Letterloan	Coleraine
Crosstagherty	Ballymoney

- 6.123 Land use planning is one of the key issues, and there will need to be liaison between all key stakeholders on this, and other matters, to ensure that appropriate sites are identified at as early a stage as possible, and that the procurement process is taken forward in an effective and timely manner. The Programme Delivery Support Unit (PDSU) would be of significant benefit in this regard.

Funding and Affordability

- 6.124 The issue of funding and affordability is an important issue in the delivery of the additional infrastructure and services required. The North West Region believe that Councils and the Department have a responsibility to work together effectively to ensure that adequate funding and support is available, without allowing an unreasonable or unsustainable burden to fall on any one party, a circumstance that could result in delivery being adversely affected.

Cross Border

- 6.125 With the development of future infrastructure capacity, there is significant potential for facilities to be used by parties from both sides of the Border. The North West Region believes that this is to be welcomed, where the movements of waste are legal, and contribute to a more resource efficient approach on the island of Ireland, bringing economic and environmental benefits.

Partnership Working

- 6.126 The North West Region has, and is currently liaising and working with, the other two sub-regional waste management groups within Northern Ireland to identify opportunities, where possible, for joint working to deliver a cost effective waste management solution for Northern Ireland. This has included a range of initiatives, such as the Waste Prevention and the Hazardous Waste Forums.
- 6.127 In particular the North West and SWaMP have identified the potential for joint working and procurement of a number of services in the implementation of the Waste Management Plan.
- 6.128 The North West will continue to liaise with arc21 and SWaMP to identify future opportunities for co-operation that will bring mutual benefit.

Fly-Tipping

- 6.129 Under the Waste and Contaminated Land (Northern Ireland) Order, 1997, District Councils have a statutory responsibility for taking action or arranging for appropriate action to be taken in respect of fly-tipping incidents. District Councils may serve notice on the occupiers of land to remove controlled waste illegally deposited and are responsible for removing fly-tipped waste where it poses a danger to public health or where no land occupiers can be traced,

- 6.130 District Councils are committed to working towards the control and elimination of fly-tipping within the Region. The various means by which this can be achieved include through informed education and awareness campaigns, and working in close partnership with EHS enforcement teams to deter and detect those responsible for illegal activity.

MEASURES AND ACTIONS

- 6.131 Commitment, and the acceptance of their roles and responsibilities by all players, is critical to delivery of the Plan's objectives. This is needed to make the shift to a more sustainable approach to the management of municipal wastes, and to ensure that statutory targets are met, minimising risks of significant fines for non-compliance. The identified measures and actions are set out below by stakeholder grouping, under the broad headings of:

- Waste Prevention
- Recycling and Composting
- Residual Waste Management and Energy Recovery

- 6.132 In all areas, the key players include:

- Householders and the public
- District councils
- Government Departments, agencies, boards and associated organisations

District Councils

Implementation Action Plans

- 6.133 The Waste Plan is implemented through an Implementation Action Plan for municipal wastes, which sets out the details of the actions and measures required (such as number of receptacles to be distributed, or contracts to be prepared) on an annual basis, with a minimum forecasting period of 5 years ahead.
- 6.134 The IAP also reviews performance, and identifies any areas where greater emphasis or corrective action is required.
- 6.135 The Annual Implementation Action Plans, covers all aspects including:
- Waste Prevention
 - Materials Recovery (Recycling and Composting)
 - Residual Waste Treatment and Energy Recovery

Administrative Arrangements

- 6.136 The councils recognise that the delivery of future services and facilities for the management of municipal wastes present significant challenges. The councils will undertake an assessment of the options available to them, in terms of the administrative arrangements, and other formal agreements, between the councils to ensure that risks are identified and managed in an effective manner, and that the services are delivered in as cost effective a manner as possible.
- 6.137 The assessment will be completed by the end of 2006, and the ensuing recommendations implemented within the appropriate timescales.

Funding and Affordability

- 6.138 The infrastructure and services needed will increase the costs of waste management significantly within the North West Region, compared to current levels of expenditure. Councils will work with Government, on an ongoing basis, both directly and through NILGA, to ensure that adequate funding is available, and to avoid an unreasonable or unsustainable burden being placed on any one player.

Waste Characterisation Study

- 6.139 Councils will support a new survey to monitor the composition of municipal waste to, inter alia ascertain the biodegradable fraction of municipal waste and assess other changes in the waste stream, to allow targets to be met and priorities for the collection of materials or diversion from landfill to be identified.

Independent Auditing

- 6.140 Councils to instigate and facilitate an independent audit of recycling and recovery performance to ensure that both the targets and commitments identified within this Plan are being achieved.

Fly-Tipping

- 6.141 **District Councils to facilitate education and awareness campaigns** to highlight the dangers of illegal dumping and the consequences of those involved in illegal waste activities.
- 6.142 **District Councils to work in partnership with EHS enforcement teams** to deter, detect and prosecute those individuals involved in illegal dumping of waste

Waste Prevention

- 6.143 **Identify, prioritise and implement waste prevention initiatives** as set out in the Waste Prevention Framework, published in September 2005 by Environment and Heritage Service, through the IAP.

-
- 6.144 **Implement sustained education and awareness campaigns** - undertaken by Waste Education Officers to encourage a sense of community involvement and ownership of waste management at a District Council level, through highlighting the importance of effective and sustainable waste management and the ways in which waste can be prevented amongst all stakeholder groups. It is important that these are carried out at both a local level, but also at a level that complements national campaigns such as Wake Up to Waste.
- 6.145 **Promote and supply home composting units**, especially in areas with restricted access to brown bins, in order to decrease the amount of biodegradable waste entering the residual waste stream.
- 6.146 **Implement 'Green Procurement' policies**, based on the principles of supply chain management, to exert influence on suppliers to take back packaging, and performance specifications, to source and provide more environmentally sustainable products.
- 6.147 **Monitor and assess** the performance of waste prevention, measurable through the absence of waste being processed by the District Council. This will identify areas where performance is potentially lower than anticipated and will allow corrective actions to be put into place, or reprioritisation of resources, as appropriate.

Materials Recovery – Recycling and Composting

- 6.148 **Commit resources** to data collection and management to monitor and assess performance. This includes the development of a systematic reporting mechanism that can be used by all Councils in contracts.
- 6.149 **Enhance and develop civic amenity centres** for the collection of source separated waste to enable a shift away from waste disposal and towards recycling and reuse. Details of the provision of these facilities for each of the District Councils within the North West Region will be set out in the IAP on an annual basis.
- 6.150 **Provide a facility to accept commercial and industrial waste from businesses** at a minimum of one civic amenity site per District Council Region, in accordance with the measures set out in the Waste Strategy. This waste, which will be charged for, will be recorded and reported separately in order that it does not cause any additional burden or risk to Councils.
- 6.151 **Expand bring facilities.** Details of the provision of these facilities for each of the District Councils within North West Region will be set out in the IAP on an annual basis.

-
- 6.152 **Provide receptacles for the segregated kerbside collection of mixed dry recyclables for each household within the region, in compliance with Section 2.2 of the Northern Ireland Waste Management Strategy and encourage the provision of such bring facilities at new retail and commercial developments.** Details of the roll out of these receptacles for each of the Councils within North West Region will be set out in the IAP on an annual basis, and will take into account increases in the numbers of households.
- 6.153 **Maintain or procure suitable contracts for the bulking, sorting, transfer and re-processing of the mixed dry recyclables collected at bring sites, civic amenity sites/recycling centres, and from households.** Any necessary actions in relation to contracts and procurement, including programmes and processes, will be set out in the IAP annually.
- 6.154 **Provide receptacles for the segregated kerbside collection of compostable materials in areas where this is considered practicable and appropriate, and maintain a collection service.** As a minimum, this is likely to include all major urban areas, but the decisions will be taken at the individual council level. Details of the roll out of these receptacles, for each of the Councils within the North West Region, will be set out in the IAP on an annual basis, and will take into account increases in the numbers of households.
- 6.155 **Maintain or procure suitable contracts for the treatment of biowastes.** Any necessary actions in relation to contracts and procurement, including programmes and processes will be set out in the IAP annually.
- 6.156 **Help to stimulate markets through sustainable procurement** at a District Council level, exercised through the buying power of each Council.
- 6.157 **Work with groups such as WRAP and ROTATE and the Northern Ireland Recycled Market Development Forum,** in accordance with Section 2.9 of the Northern Ireland Waste Management Strategy and the Northern Ireland Market Development Forum, Market Development Plan to encourage research and development of potential markets for recycled products. A copy of the Northern Ireland Market Development Forum, Recycled Materials Market Development Plan is included in Annex F.
- 6.158 **Monitor and assess** the performance of recycling and composting initiatives and continue to improve data and information on municipal waste arisings and through the continued development of WasteDataFlow and compositional surveys.
-

Residual Waste Management and Energy Recovery

- 6.159 **Prepare and implement a contract for the procurement, delivery and operation of mechanical biological capacity** for North West Region. It is anticipated that this will be a two part performance-based contract, covering reduction in biodegradability and energy recovery. The councils will work with the Programme Delivery Support Unit to deliver these services/facilities, as identified in the Waste Management Strategy.
- 6.160 **Undertake a study** to identify suitable and sustainable outlets in Northern Ireland for the use of the fuel produced by the MBT process. This may include for example, cement kilns, industry, major estates, such as hospitals or universities. This study will inform the procurement process for MBT and will include active liaison with InvestNI, relevant Government Departments, Agencies and Boards. It will also consider the economic benefits at the local level, the impact of displacing fossil fuels, and appropriate pricing mechanisms.
- 6.161 **Assess the suitability and confirm potential locations** for the siting of MBT facilities, in consultation with Planning Service, and submit planning applications for the preferred locations.
- 6.162 **Review landfill capacity within the region, and identify future needs**, taking into account the potential impact of the Landfill Directive requirements, as implemented through the Site Conditioning Plans. This should also consider the proposed location for the siting of new landfill facilities at Cam Quarry.

Householders and the Public***Waste Prevention***

- 6.163 **Exercise careful purchasing decisions** by preferentially purchasing more resource efficient products (for example choosing products with less packaging). Full stakeholder buy in to this will promote influence along the supply chain from the design stage of products to the final disposal.
- 6.164 **Engage in home composting** of biodegradable wastes from the household wherever possible, in order to decrease the amount of biodegradable waste entering the residual waste stream for further treatment and disposal.
- 6.165 **Make use of take back schemes where available**, for example plastic bag take back schemes within supermarkets and home shopping delivery.

- 6.166 **Respond to education and awareness campaigns** and initiatives being run by District Councils, Central Government, businesses and Community Groups to increase knowledge of the importance and benefits of effective waste prevention, as well as the consequences of not preventing waste growth and hence encourage a change in attitude at the individual household level.

Recycling and Composting

- 6.167 **Participate in recycling and composting initiatives** including the careful segregation of waste at the household level and hence participation in kerbside collection schemes.
- 6.168 **Continue the use of bring sites and civic amenity sites** for the recycling of those wastes not able to be collected at the kerbside.
- 6.169 **Exercise preferential purchasing of recovered materials** to help in the stimulation of markets for recycled materials and waste derived compost.

Government Departments

- 6.170 **Funding and affordability** is a critical aspect in the implementation of this Plan. Experience elsewhere in the United Kingdom illustrates the key role that Central Government has in supporting local authorities through the provision of suitable funding. To date, Government has provided funding for the provision of the 'micro-infrastructure' that has been provided in all Districts, based on the Councils Implementation Action Plans. Government needs to continue to provide support to Councils in the implementation of this Plan, to ensure that the additional funding required is provided in an equitable and sustained manner, without placing an unreasonable or undeliverable burden on any particular player.
- 6.171 **Provide leadership by example** in the implementation of Departmental Waste Management Plans, to include waste prevention and recycling initiatives.
- 6.172 **Education and Awareness campaigns Wake up to waste, co-ordinated with the waste Planning Groups**

7.0 COMMERCIAL AND INDUSTRIAL WASTE

INTRODUCTION

- 7.1 The commercial and industrial sectors produce a significant quantity of wastes, the cost effective management of which will present significant challenges in the future. The over-reliance on low cost disposal in past years cannot continue, and many businesses have already made a shift towards more resource efficient and less wasteful practices in order to remain competitive in today's increasingly challenging commercial environment. This trend needs to continue, and the significant drivers already in place to effect this change need to be recognised and responded to by businesses.
- 7.2 The commercial and industrial sector produces a range of wastes, of which several streams (or subsets) are subject to their own specific legislation, targets and/or planning requirements. These are considered in separate chapters in this Plan, and include:
- Packaging Waste
 - Construction, Demolition and Excavation Wastes
 - End of Life Vehicles
 - Batteries
 - Hazardous Waste
 - Waste Electronic and Electrical Equipment
 - Tyres
 - Sewage Sludge
- 7.3 Non-statutory targets, through the Northern Ireland Waste Strategy, *Towards Resource Management*, apply to the general Commercial and Industrial (C&I) waste stream. This seeks to place greater emphasis on limiting and reducing the quantity of C&I waste generated, and to increasing the levels of recycling and recovery.
- 7.4 This Chapter therefore sets out the measures for the future management of Commercial and Industrial wastes within the Region, to facilitate the change to greater resource efficiency and to work towards complying with the relevant policy targets.

DEFINITIONS

- 7.5 Commercial and Industrial waste is defined under the Waste and Contaminated Land (Northern Ireland) Order 1997. In summary, commercial and industrial wastes are defined as follows:
- **Commercial waste:** 'waste from premises used wholly or mainly for the purposes of a trade or business or for the purposes of sport, recreation or entertainment.....'
 - **Industrial waste:** 'waste from any factory and any premises used for the purposes of: transport services; gas, water, electricity and sewerage services; and postal or telecommunication services.'

MANAGEMENT AND CONTROL

- 7.6 Management and control of Commercial and Industrial wastes is provided by the legislative framework primarily under the Waste and Contaminated Land (Northern Ireland) Order 1997, and associated Regulations.
- 7.7 The main roles and responsibilities under the legislative provisions are summarised in Table 7.1.

Table 7.1 Summary of Key Roles and Responsibilities for C&I Wastes

Element	Responsibility
Waste Production: Compliance obligations include, inter alia: Duty of Care, Transfer to Authorized Persons; Use of licensed facilities for treatment and disposal	Businesses Public Sector
Waste Collection	Waste Management Contractors (District councils for Trade Waste)
Treatment and Disposal of Wastes	Waste Management Contractors Businesses (with on-site facilities) Councils (council operated facilities)

- 7.8 The Controlled Waste (Duty of Care) Regulations 2002 impose a Duty of Care on those commercial and industrial organisations who produce, import, carry, keep, treat or dispose of controlled waste from their business or industry. The Regulations ensure that they are responsible for the safe handling of any waste they produce.

TARGETS

- 7.9 There are no statutory targets that apply to C&I waste, other than those set through legislation for specific waste streams such as packaging waste, which are considered elsewhere in this Plan.
- 7.10 The Northern Ireland Waste Management Strategy, *Towards Resource Management*, has set a target for the recycling of C&I waste as follows:
- 60% of Commercial and Industrial waste to be recycled by 2020.

- 7.11 This target in the Strategy follows on from the Best Practicable Environmental Option (BPEO) Guidance that was published by EHS in 2005. This guidance set out BPEO for the management of C&I wastes, with a suggested mix of targets and technologies over the period up to 2020. The supporting Technical Report based the assessment around the three key Landfill Directive target years, but the Guidance itself sets out the predicted infrastructure requirements for 2020, based on the total quantity of predicted C&I waste arising by 2020. This is summarised in Table 7.2 below.

Table 7.2 Northern Ireland Target Capacity Requirements for C&I Wastes by 2020

Technology	Capacity (Tonnes)	%
Recycling and Composting	480,000	60
Anaerobic Digestion	40,000	5
Mechanical Biological Treatment	50,000	6
Thermal Treatment	130,000	16
Landfill	100,000	13

Note: The projected capacities are based on the best available data at the time of the BPEO Assessment and do not incorporate the 2004/05 C&I Survey data – see below.

WASTE QUANTITIES AND COMPOSITION

Waste Quantities

- 7.12 The Commercial and Industrial waste arisings for Northern Ireland and the North West Region for the reporting year 2004/05 have been extracted from the recently completed EHS Commercial and Industrial Waste Arisings Survey 2004/05. This survey concluded that approximately 1,560,000 tonnes of Commercial and Industrial waste was produced in Northern Ireland in 2004/05. A summary of these waste arisings in Northern Ireland and the waste planning regions is shown in Table 7.3 below.

Table 7.3 Commercial and Industrial Waste Arisings in 2004/05

Waste/Region	Arisings (tpa)	Proportion (%)
North West	208,000	13.0%
SWaMP	385,000	25.0%
arc21	967,000	62.0%
Total for Northern Ireland	1,560,000	100%

- 7.13 The data indicate that businesses within the North West Region were responsible for producing approximately 13% of Northern Ireland's Commercial and Industrial waste in the reporting year 2004/05. A breakdown by District Council within the North West Region is shown in Table 7.4 below.

Table 7.4 C & I Waste produced by District Council in the North West Region

District Council	C&I Waste Produced (tonnes)	Percentage of N West Total (%)	Percentage of NI Total (%)
Ballymoney Borough Council	11,962	5.7	0.8
Coleraine Borough Council	48,666	23.4	3.1
Derry City Council	86,178	41.4	5.5
Limavady Borough Council	16,409	7.9	1.0
Magherafelt District Council	24,627	11.8	1.6
Moyle District Council	5,211	2.5	0.3
Strabane District Council	15,082	7.2	1.0
	208,135	100%	13.0%

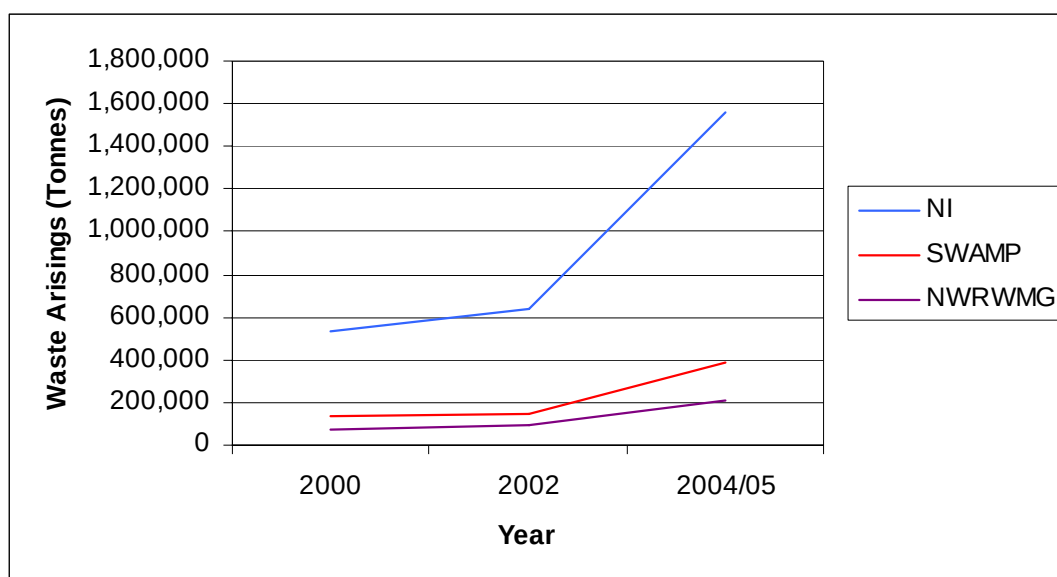
Notes:

1. Source: EHS Commercial and Industrial Waste Arisings Survey 2004/05
2. The breakdown by district has been calculated assuming that the number of small businesses (less than 10 staff) is in the same relative proportion as large businesses.

- 7.14 The results for the C&I Survey carried out in 2004/05 appears to indicate a significant increase in the quantity of C&I waste, in comparison to previous surveys carried out in 2000 and 2002. This is shown in Table 7.5 which summarises shows the Commercial and Industrial waste arisings for both Northern Ireland and the waste planning regions, with the data also illustrated graphically in Figure 7.1.

Table 7.5 Summary of Commercial and Industrial Waste Arisings by Waste Group

Waste/Region	Waste Arisings (tpa)		
	2000	2002	2004/05
N West	75,000	99,200	208,000
% of NI Total	14%	16%	13%
SWaMP	137,100	144,400	385,000
% of NI Total	25%	22%	25%
arc 21	322,400	391,300	967,000
% of NI Total	61%	62%	62%
Northern Ireland	532,000	635,000	1,560,000

Figure 7.1 Trend in Commercial and Industrial Waste Arisings

7.15 These increases have been assessed, and it is considered that there has not been a sudden increase in the quantities of C&I waste generated in Northern Ireland. Rather, it is attributable to two principle factors, as outlined below:

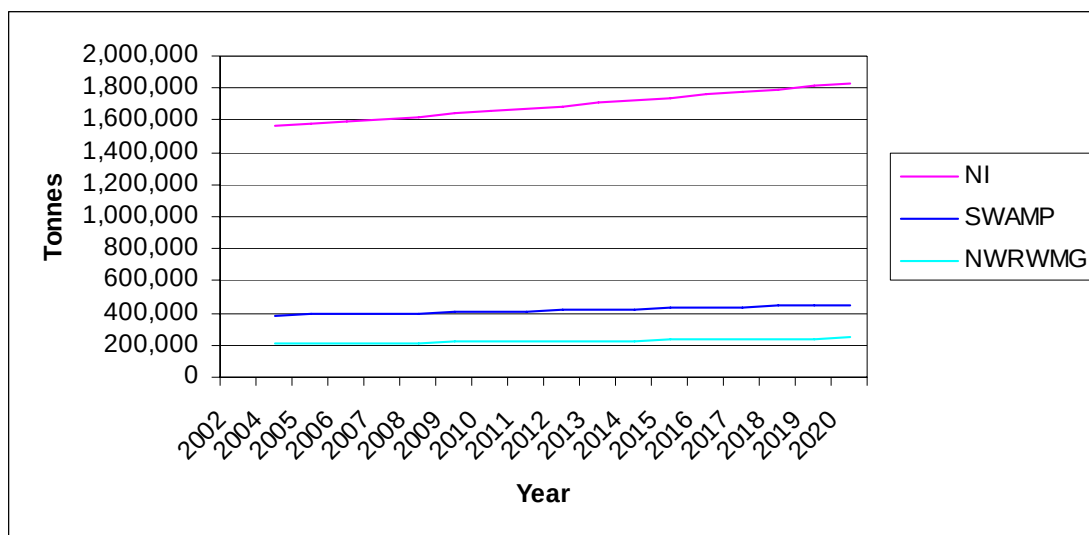
- **Additional Waste Streams:** The inclusion of additional waste streams in this survey that have not been included in the overall totals of previous surveys, including but not limited Thermal Processing Waste (approximately 200,000 tonnes) and End of Life Vehicles (ELVs) (approximately 60,000 tonnes).
- **Survey Methodology:** The survey methodology has been developed from the 2000 and 2002 surveys, for the 2004/05 survey, to allow for consistency of reporting and comparison with other surveys in the UK. The 2004/05 survey has adopted a different statistical approach, that included data sets previously considered as outliers, resulting in higher quantities in the final grossing up of data. (It is notable that if these outliers had been excluded from the gross up of the 2004/05 survey, the resulting figures would be comparable to the two previous surveys with respect to the estimated total waste and confidence intervals).

7.16 The breakdown of the additional waste streams included in the results of the C&I Survey 2004/05, as set out below. These wastes account for approximately 660,000 tonnes of waste not previously recorded in the C&I waste stream with the additional differences attributed to differences in the survey methodology as described above.

- Waste from Thermal Processing – 200,000 tonnes
- ELVs – 60,000 tonnes (The estimated tonnage of ELVs in NI by EHS ELV Survey 2000)
- Metals – 400,000 tonnes (Metal wastes processed and exported outside NI by contractors).

- 7.17 For the purposes of this Plan therefore, a growth rate of 1% has been assumed up to 2020, for consistency with the NI BPEO Guidance, as illustrated in Figure 7.2 below. This growth rate is intended to recognise the impact of waste prevention measures. The projection quantifies the amounts of waste that will require to be collected, treated and disposed of at waste management facilities. To be conservative, given the uncertainty associated with the data, the starting point is assumed to be the higher value of the 2002 or 2004/05 data sets.

Figure 7.2 Projected C&I Waste Arisings to 2020



BEST PRACTICABLE ENVIRONMENTAL OPTION

- 7.18 Guidance on the Best Practicable Environmental Option for Waste Management in Northern Ireland was published in June 2005 by EHS. This can be found on the EHS website at: http://www.ehsni.gov.uk/pubs/publications/NI_BPEO_Guidance_652kb.pdf
- 7.19 The Guidance identified BPEO for C&I wastes in Northern Ireland by 2020. It identified the mix of technologies considered appropriate over the period up to 2020 for Northern Ireland. The supporting Technical Report provided a further breakdown of technology and capacity requirements at the three key Landfill Directive target years of 2010, 2013 and 2020, but the Guidance itself sets out the predicted infrastructure requirements for 2020, based on the total quantity of predicted C&I waste arising by 2020. This is summarised in Table 7.6 below, using the percentages identified in the BPEO for the mix of technologies with the total for the C&I Survey 2004/05 to identify the infrastructure capacity requirements for C&I wastes in 2010, 2013 and 2020.

Table 7.6 BPEO Infrastructure Capacity Requirements for C&I Wastes

Technology	2010		2013		2020	
Recycling & Composting	623,000	38%	850,000	50%	1,080,000	60%
Mechanical Biological Treatment	49,000	3%	119,000	7%	108,000	6%
Energy Recovery (including Thermal Treatment & AD)	98,000	6%	374,000	17%	378,000	16%
Landfill/Disposal ¹	869,000	53%	357,000	21%	234,000	13%

Note: 1. This includes the quantities that are included in the BPEO Guidance under the title 'Combustion', which it is assumed included hazardous wastes thermally treated, as well as those reportedly treated by 'backyard burning'.

- 7.20 The BPEO Guidance also provides indicative locations for C&I waste treatment facilities across Northern Ireland, as summarised in Table 7.7 below.

Table 7.7 Indicative Locations for C&I Waste Treatment Facilities

Facility Type	North West	SWaMP	arc21
In-vessel Composting	Londonderry	Craigavon	Ballymena Belfast
Anaerobic Digestion	None identified	None identified	Belfast
Recycling	Coleraine Londonderry Magherafelt	Craigavon Omagh	Antrim Newcastle Belfast Newtownards
Mechanical Biological Treatment	Londonderry	None identified	Belfast
Thermal Treatment	None identified	None identified	Belfast

- 7.21 The anaerobic digestion and in-vessel composting facilities, together with the Mechanical Biological Treatment plants are to be in place by 2010, with the Thermal Treatment plant on stream by 2012/13.
- 7.22 Under this BPEO assessment, the quantities of waste that arise within the Region, which would be assumed to go to thermal treatment, are relatively small, as indicated by the breakdown in Table 7.8. On that basis, a thermal treatment plant is not considered appropriate for the Region, although it is recognised that businesses would be able to use any such facility if it was delivered in the arc21 region, as suggested by the BPEO Guidance.

Table 7.8 North West Region 'NI BPEO' Management Options (by Destination) for C&I Wastes

Technology	North West Tonnage (Tpa)		
	2010	2013	2020
Recycling and Composting	84,000	115,000	147,000
Mechanical Biological Treatment	7,000	16,000	15,000
Energy Recovery (including Thermal Treatment & AD)	13,000	39,000	39,000
Landfill/Disposal ²	117,000	48,000	32,000

Notes:

1. Figures rounded.

2. Landfill disposal includes the quantities that cannot otherwise be recycled.

7.23 For the purposes of this Plan, whilst recognising that some wastes, such as healthcare and some hazardous wastes will require specialised treatment, BPEO for C&I wastes generally within the Region therefore is considered to be represented by:

- **Waste prevention**, to limit the growth in the quantities of C&I waste produced to less than 1% per annum.
- **Materials Recovery/Recycling** - 60% by 2020 (excluding healthcare, hazardous and similar wastes that require specialised treatment).
- **Biological Treatment** in the form of Anaerobic Digestion (with Combined Heat and Power where appropriate) or In-Vessel Composting (as appropriate to the particular waste stream), and with synergies maximised as far as possible with the agricultural industry).
- **Mechanical Biological Treatment**, with energy recovery through anaerobic digestion and/or production of a fuel for energy recovery purposes.
- **Landfill Disposal**, reduced to 13% by 2020.

7.24 This is consistent with the needs of the Region, and the published BPEO Guidance, and offers strong synergies between the management of Commercial and Industrial and municipal wastes within the Region that should be mutually beneficial to the two sectors.

CURRENT ARRANGEMENTS

7.25 Wastes arising within the commercial and industrial sector, are primarily managed within the private waste management sector, or disposed of at Council operated landfill facilities. From WasteDataFlow, some 24,000 tonnes of C&I waste are collected by councils under their Trade Waste collection service within the Region. The latter is also accounted for within the municipal waste figures (as the non-household component of municipal waste) and therefore falls within the scope of the statutory landfill diversion targets for municipal waste.

- 7.26 Table 7.9. confirms landfill to be the dominant management route for C&I wastes, with recycling the next largest. A proportion of wastes are also reported as being 'incinerated'. This includes healthcare wastes treated at licensed clinical waste incinerators, as well as some hazardous wastes that are exported to Great Britain for thermal treatment. The figure is however also thought to include some quantities that have been disposed of by backyard burning, a practice that is not permitted, unless covered by an exemption issued by EHS.

Table 7.9 Summary of C&I Waste Management Practices in the North West Region in 2004/05

Management Options	2004/05 Data (tonnes)	
	Tonnes	% ¹
Reuse, recycling & composting		
Landfill		
Other (combustion, landspreading)		
North West Region Arisings:		

Notes: 1. Figures adapted from the waste contractors and reprocessors results of the EHS C&I Survey 2004/05

- 7.27 These figures show that there has been a significant increase in recycling and reuse from the 33% reported in the C&I Survey for 2002 in comparison to the 57% reported in the C&I Survey for 2004/05. These figures show that Northern Ireland is already exceeding the NI BPEO target figure for recycling by 2013 of 50%. This capacity therefore is already in place.

PROPOSED ARRANGEMENTS

- 7.28 In planning for the future capacity requirements for C&I wastes, it is recognised that there are no statutory targets that apply to general C&I wastes, or individual organisations, over and above the legal requirements/targets imposed by specific Producer Responsibility such as applies to Packaging Wastes. Businesses operate in a market environment, where the key driver for change in the commercial and industrial sector is the increasing costs for disposal. Government is using the Landfill Tax as an economic instrument to make disposal the least attractive option financially, with the Landfill Tax set to rise to about £35 per tonne in the medium term.
- 7.29 Assuming that this proves to be effective in changing the way in which organisations manage their waste, the predicted infrastructure/capacity requirements within the North West Region for managing C&I wastes up to 2020 are summarised in Table 7.10. The landfill/disposal capacity requirement includes the healthcare, hazardous and other types of waste that require specialised treatment and disposal.

Table 7.10 Summary of Infrastructure Capacity Requirements for C&I Waste in the North West Region

Infrastructure	Capacity Requirement
Recycling	85,000 by 2010 115,000 by 2013 150,000 by 2020
Anaerobic Digestion/IVC	7,000 by 2020
Mechanical Biological Treatment ¹	50,000 by 2020
Landfill/Disposal ²	125,000 by 2010 55,000 by 2013 40,000 by 2020

Notes:

1. Includes material previously destined for Thermal Treatment
2. Includes allowances for landfilling MBT outputs

- 7.30 At present, as noted previously, it is estimated that somewhere of the order of 110,000 – 120,000 tonnes of C&I waste are already recycled or recovered within the North West Region. This quantity of C&I waste exceeds the predicted capacity requirements as suggested by the BPEO Guidance for 2013. Overall therefore, it is considered that the existing infrastructure has the capacity to accommodate the increased recycling requirement into the medium term.
- 7.31 The anaerobic digestion capacity is relatively small, and is best considered not as a stand alone facility, but in the context of the requirements for managing the agricultural and agri-food wastes, as set out in Chapter 11. This identifies the need for about 2 or 3 anaerobic digestion plants (with Combined Heat and Power, where appropriate) within the Region.
- 7.32 Mechanical Biological Treatment (MBT) is a key part of the technology mix. One of the attractions for treating municipal waste is the reduction in biodegradability, which assists councils meet their statutory landfill diversion targets. This is not a prime consideration for C&I wastes, and it is only likely to be used if the gate fees are lower than landfill disposal costs, in which cases, economies of scales will be an important factor. Notwithstanding this, MBT is a treatment process that has a number of clear benefits which include:
- Recovery of additional materials for recycling, through the mechanical treatment component;
 - Generation of heat and/or power through anaerobic digestion, if this is used as the biological treatment component;
 - Production of a fuel for use in a third party application;
 - Reduction in the weight of the outputs, by reducing the moisture content of the material.

- 7.33 MBT is also a key element of the infrastructure requirements for the future management of municipal wastes within the Region, with a capacity requirement of the order of 110 – 130,000 tonnes per annum. It is anticipated that this would be delivered by 2 plants. In this context, it is anticipated that the synergies between the C&I and municipal waste sectors would be best realised by sizing plants to accommodate both C&I and municipal wastes, to deliver some economies of scale.
- 7.34 It is also recognised that there is no guarantee of supply of C&I wastes to any particular plant within the Region, given the very real commercial pressures that come to bear on businesses. Therefore, if a major facility, such as an energy-from-waste plant or other form of treatment, was developed within another region such as arc21, this may, depending on gate fees, pull a significant proportion of C&I wastes out of the region, in response to the market conditions.

MEASURES AND ACTIONS

- 7.35 The cost effective management of commercial and industrial wastes is an important element in maintaining a competitive economy in which businesses can operate, knowing that the necessary range of services and facilities are available to them. This does not happen by chance, and requires all sectors to work together effectively in the planning and delivery of the supporting infrastructure. Northern Ireland also has a very high proportion of SMEs in the economy, and many look to their local council as well as InvestNI for support and guidance. This section therefore sets out the responsibilities and key actions for stakeholders to deliver the infrastructure that is needed.

Central Government

- 7.36 A range of initiatives, current and proposed, have been identified in the Northern Ireland Waste Management Strategy, *Towards Resource Management*, for Government to take forward to assist the more sustainable management of wastes within the commercial and industrial sectors. These are fully endorsed by North West Region and are summarised in Box 7.1 below.

Box 7.1 Summary of Initiatives for the Business Sector**Current Initiatives**

- **Encouraging eco-design practice within each manufacturing sector:** This is a process which minimises environmental impact across the product life cycle, whilst producing a high quality, cost effective product.
- **Retail sector:** In conjunction with top retailers, WRAP has recently announced new targets to design out packaging waste growth by 2008, deliver absolute reductions in packaging waste by 2010 and identify ways to tackle issues relating to food waste.
- **Encouraging the use of Environmental Product Labelling:** Environmental labelling on products enables consumers to make informed choices about the products they buy.
- **Green Technology Initiative:** The Green Technology Initiative, sponsored by Invest NI, offers three years interest free loans of up to £50,000 towards the cost of capital equipment.
- **The implementation of the IPPC regime** is a vehicle for promoting change in industry performance in waste management, encouraging businesses to take action to prevent waste.
- **Fiscal drivers** through escalation of the landfill tax.

Proposed Initiatives

- **Setting waste prevention targets through voluntary agreements:** Government will assist industry in the development of sector specific targets where this will contribute to waste prevention.
- **The Department to develop partnerships with the professional institutions and associations:** The Department will support the professional bodies in the encouragement of their members to prevent waste, implement supply chain management and practice green procurement through the provision of guidance and training.
- **Targeted awareness campaigns, encouraging business to prevent waste:** The Department will deliver awareness campaigns specifically targeted at businesses, encouraging action in waste prevention, resource efficiency and legal compliance.
- **Encourage the implementation of Environmental Management Systems (EMS):** The Department, in conjunction with other organisations, will promote the implementation of EMS through the provision of guidance, advice and leading by example.

7.37 In addition to the above, Government has a key role to play through leadership, and the provision of support and guidance to the C&I sector. Associated actions therefore include:

- Implementation of Departmental Waste Management Action Plans, to demonstrate leadership and effect change through the principle of supply chain management.
- Purchasing policy to include 'quality' criteria that reflect environmental and waste management considerations, as appropriate.

District Councils

- 7.38 District Councils have a key role to play in delivering the infrastructure, given the synergies identified between the C&I and the municipal waste sectors. Indeed, experience in many areas indicates that it is the facilities developed to service municipal waste contracts that provide the foundation to the waste management system, giving service providers the confidence and security to invest for the medium and longer term.
- 7.39 Councils are to factor the potential C&I waste arisings into the planning and delivery of the Mechanical Biological Treatment plants proposed within the North West Region for the treatment of municipal wastes.
- 7.40 Councils are to allow, where appropriate, a service for the collection or acceptance of C&I wastes at their facilities from SMEs, charged for accordingly, and provided always that the C&I waste that is accepted is recorded and reported appropriately, so that it does not add any additional burden or risk to councils. This includes the acceptance of C&I waste for recycling at a minimum of one civic amenity site per Council area.
- 7.41 Councils will, through their Waste Prevention and Recycling Officers, provide advice and guidance to businesses on the more sustainable management of their wastes.

Waste Producers

- 7.42 Producers of waste in the commercial sector include not only businesses, such as retail and the service sector, which are largely office-based, but also under the Controlled Waste Regulations 2002 include government and council offices and ancillary activities. Commercial and industrial wastes therefore originate not only within the private sector, but also includes wastes from the public sector, which at present are largely dealt with and accounted for within the municipal waste sector. However, the same actions and priorities apply in principle to any producer of C&I waste, as outlined below.

Waste Prevention

- 7.43 Limiting the growth in C&I waste arisings is the primary objective of the Waste Management Strategy, *Towards Resource Management*, and this Plan. Waste Producers therefore should consider their processes and activities to identify areas where resource use can be reduced (eg double-sided printing and copying), and less wastes generated (eg through re-use). Waste producers therefore should consider:
- **Education and Awareness:** Provide training to staff to raise awareness of the issues and nominate a director or manager to have responsibility for waste management within the organisation to demonstrate commitment and leadership.

- **Waste Audits:** to quantify the nature and amount of waste arisings and identify opportunities for their prevention, or potential for re-use, recycling or as a fuel for energy recovery (eg waste wood). Further information of waste audits can be found on the Envirowise website at: <http://www.envirowise.gov.uk/page.aspx?o=119479>
- **Environmental Management Systems:** designed to create a cycle of continuous improvement, by identifying the significant environmental impacts of an organisation's activities, and working to reduce those impacts over time. Waste management and resource use are key aspects of any environmental management system. InvestNI has a target of increasing the number of companies with Environmental Management Systems in place, and further guidance can be found at their website at: <http://www.investni.com/index/develop/onlineinfocentre/niwasteworks.htm>
- **Guidance:** Advice and support is available from a number of sources, and organisations should draw on this to identify areas for potential improvements in waste prevention and management. These sources include for example:
 - Envirowise: <http://www.envirowise.gov.uk/page.aspx?o=119653>
 - WRAP: http://www.wrap.org.uk/waste_minimisation/retailer_initiative_innovation_fund/news_events/news/wrap_innovation.html

Recycling and Materials Recovery

7.44 Recycling of waste materials is a further key element in the management of C&I wastes. In the past there has been an expectation that recycling should generate an income to the organisation producing the waste material. Only in particular circumstances would this be the case, with a high value waste commodity, and this is generally not the case. Recycling costs, but with the increasing cost of waste disposal, the financial savings to an organisation come from the diverted savings. The key to successful recycling is the provision of high quality materials to the market. This generally means separating wastes at source into specific streams, such as:

- | | |
|-------------|---------------------------------------|
| ▪ Paper | ▪ Plastics |
| ▪ Cardboard | ▪ Metals (eg Aluminium beverage cans) |

7.45 The waste materials that can be segregated will be dependent of the organisations activities, but in principle, recycling requires the provision of separate receptacles for. In addition to the actions identified under Waste Prevention, organisations should provide:

- Receptacles for the source-separated collection of recyclable waste materials.

Waste Data and Statistics

- 7.46 There has been a consistent theme in consultation responses from the business sector that the quality of the data needs to be improved. This can only be achieved if businesses themselves and other organisations are prepared to provide the data and respond to survey questionnaires. This is important as well because the United Kingdom and hence Northern Ireland has a duty to report waste arisings to the European Commission under the EC Waste Statistics Regulation (No. 2150/2002) Organisations therefore need to:
- Provide accurate data on waste arisings when surveyed by EHS, who are carrying out the survey in fulfilment of the UK's statutory obligations to the EU.

Waste Management Industry

- 7.47 The Waste Management Industry has a critical role to play in improving the management of wastes in the commercial and industrial sectors, assisting in the shift from the traditional reliance on landfill disposal to a more resource efficient approach, to realise the value of the waste through materials and energy recovery. Key actions for this sector therefore include:
- Developing the supporting infrastructure for the recovery of materials and energy, including recycling, anaerobic digestion and Mechanical Biological Treatment capacity. In all cases, potential synergies with other sectors (such as the agricultural and municipal sectors) should be identified and realised as far as is practicable.
 - Expand the range of collection services available to organisations, to facilitate the source-separated collection of recyclable or recoverable materials.

8.0 PACKAGING WASTE

INTRODUCTION

- 8.1 Packaging is an integral component of today's consumer driven society, playing a well established and vital role in the protection, containment, preservation, and promotion or selling of goods. However, packaging is a highly visible waste, when it is discarded. As a result, packaging waste has attracted much attention, featuring highly in all consultations on waste policy and planning in Northern Ireland, in recent years, with a widespread perception that many products are 'over-packaged' when sold to the consumer.
- 8.2 Recognising the potential environmental impacts, the management of packaging and packaging waste has been a priority within the European Union, covered by the Council Directive on Packaging and Packaging Waste (94/62/EC). This seeks to harmonise national measures concerning the management of packaging and packaging waste to provide a high level of environmental protection, and ensure the functioning of the internal market.
- 8.3 The Directive covers all packaging placed on the market and all packaging waste, whether it is used at industrial, commercial, office, shop, service, household, or any other level, regardless of the material used.
- 8.4 The Directive, which sets out a number of measures and targets, requires Member States to take measures to prevent the formation of packaging waste, and to introduce systems for the return and/or collection of used packaging.
- 8.5 This Chapter has been prepared in fulfillment of Article 14 of the Directive on Packaging and Packaging Waste (94/62/EC), which requires a specific chapter on the management of packaging and packaging waste to be included in waste management plans.

DEFINITIONS

- 8.6 Packaging is defined in The Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland) 1999, as amended, as:

' ...all products made of any materials of any nature to be used for the containment, protection, handling, delivery and preservation of goods...from the producer to the user or consumer...'

- 8.7 Packaging can be further grouped under three main heading, as follows:

- "Primary" or "Sales" packaging – the packaging which forms a sales unit for the user or final consumer, for example, a box containing soap powder.
- "Secondary" or "Grouped" packaging – packaging which contains a number of sales units.
- "Tertiary" or "Transport" packaging - the packaging that is used to group secondary packaging together to aid handling and transportation and prevent damage to the products. For example, the pallet and shrink wrap used to transport a number of large boxes containing boxes of soap powder. (For the purposes of the Regulations, this does not include road, ship, rail or air containers.)

PACKAGING MATERIALS

8.8 A range of materials, principally paper and cardboard, plastic, glass, metal and wood, are used in packaging applications. This diversity reflects their characteristics and qualities, with respect to different producer, product, transit and consumer requirements. These materials and their typical packaging applications are described briefly in Table 8.1 below.

Table 8.1 Summary of Packaging Materials and their Applications

Material	Application
Aluminium	Aluminium is used primarily for two main packaging products – drinks cans and foil packaging
Steel	Steel packaging falls into two broad categories; ▪ Household packaging. For example, paint tins, food and drink cans, and aerosol products. These are generally made from tinplated steel. ▪ Commercial and industrial packaging. For example, drums, steel strapping and baling wire. These are generally made from uncoated steel.
Paper and Cardboard	Paper and cardboard are widely used as packaging materials, principally cardboard because it is economic, lightweight, easy to use and store and can be easily compressed; ▪ Corrugated – primarily transit packaging, but reaches households as packaging around e.g. electrical goods and flat packed furniture. ▪ Solid carton board – primarily consumer packaging (frozen food, cereals, shoe boxes etc.)
Glass	Glass has a long history of use as packaging, as containers and bottles. It appears to enjoy an image of quality, which companies use to brand their products.
Plastic	'Plastic' is a generic term, encompassing a wide range of plastics, including, for example: low-density polyethylene (LDPE), high-density polyethylene (HDPE), polypropylene (PP), polyvinylchloride (PVC), polystyrene (PS) and polyethylene terephthalate (PET). Each has specific packaging applications, reflecting their particular qualities, with around 60% of plastic packaging used in food applications. For example, PET is widely used for soft/fizzy drink bottles. For frozen foods, PET, LDPE and HDPE are widely used, whereas refrigerated foods PP, PS or PVC are used. Extensive use is also made of plastics in medical applications.
Wood	Wood is used mainly for transporting packaged products. There are two distinct components: ▪ Pallets – representing two-thirds of the wood packaging sector ▪ Cases and crates – representing one-third

MANAGEMENT AND CONTROL***Producer Responsibility***

- 8.9 The United Kingdom has opted for a market-based approach in implementing a system for the return and/or collection of used packaging, to meet the requirements of the Packaging and Packaging Waste Directive. Under this system, the cost of recycling each material fluctuates in response to market conditions, and the recycling and recovery obligations are shared between all parts of the packaging chain.
- 8.10 The approach within the United Kingdom therefore applies only to businesses which produce or use packaging. As a result, local authorities and consumers have no formal obligations under this system.
- 8.11 The system is designed to operate seamlessly across the United Kingdom as a whole, with separate Regulations enacted in Great Britain and Northern Ireland. In Northern Ireland, the governing legislation is the Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland) 1999, as amended, hereafter referred to as the Packaging Regulations. The Packaging Regulations, on which further information and guidance can be found at: www.ehsni.gov.uk/environment/wasteManage/regulations_packaging.shtml, are intended to encourage the minimisation, incentivise the re-use, and increase the recovery and recycling of packaging waste.
- 8.12 The main aspects of the Packaging Regulations are outlined briefly below. This description is not definitive, and is provided for information purposes only in the context of the Waste Management Plan. It does not constitute legal guidance or advice, and appropriate advice should be sought with respect to any statutory obligations or queries.
- 8.13 In principle, the Packaging Regulations impose obligations on those businesses (producers) who satisfy certain threshold criteria to recover and recycle specified quantities of packaging waste each year. Under the Regulations, a 'producer' is defined as a legal entity who:
- Performs an 'activity'.
 - Supplies packaging to another stage in the packaging chain, or to the final user of the packaging.
- 8.14 The principal activities referred to are:
- Manufacturing packaging raw materials.
 - Converting materials into packaging.
 - Packing and filling packaging.
 - Selling packaging to the final consumer or user.

- 8.15 The Regulations provide that each item of packaging placed on the market should carry a 100% obligation, which is shared between the four main stages of the 'packaging chain', with a specific percentage obligation applied to each of the stages as summarised in Table 8.2.

Table 8.2 Obligation Activities by Class of Producer

Class of Producer	Activity Obligation
Manufacturers of raw materials for packaging ('raw material manufacturers')	6%
Businesses that convert raw materials into packaging ('converters')	9%
Fillers, who put goods into packaging, or use packaging to wrap goods ('packer/fillers')	37%
Sellers who sell packaging to the final user or consumer of the packaging ('sellers')	48%

- 8.16 In addition, businesses at any stage in the packaging chain can import packaging or packaging materials. Those that do are also included in the packaging chain, and therefore fall within the scope of the Regulations, and may have obligations. Importers of packaging are liable for the 'rolled-up' obligations performed on packaging before it was imported.
- 8.17 The Packaging Regulations currently impose obligations on a producer if the organisation:
- Has a turnover in excess of £2 million per annum; AND
 - Handles more than 50 tonnes of packaging a year; AND
 - Operates in Northern Ireland
- 8.18 Businesses have a choice in how they comply with their obligations. They can do everything themselves, but have to demonstrate compliance to show that they have met their obligations. Alternatively, they can join an industry-led collective scheme, known as a 'compliance scheme', a number of which have been established in Great Britain and Northern Ireland, which takes on the obligations on behalf of the business.
- 8.19 For producers discharging their responsibilities individually, there are three main obligations, with a further obligation on producers whose main activity is selling, as follows:
- **Registration Obligation.** Producers must register with the Environment and Heritage Service (EHS) by 7 April each year, pay a fee and provide data on the amount of packaging handled by the producer in the previous year. Producers with turnover in excess of £5 million must also provide a compliance plan outlining the steps they intend to take to meet their recovery and recycling obligations;

- **Recovery and Recycling Obligations.** Take reasonable steps for the specified quantities of packaging to be recovered or recycled and provide acceptable evidence to show this has been done;
- **Certifying Obligation.** At the end of the year in question, provide the EHS with a certificate of compliance stating whether those recovery and recycling obligations have been met; and
- **Consumer Information Obligations.** Businesses whose main activity is “selling” must also carry out consumer information obligations.

8.20 All producers registering through a compliance scheme have two main obligations:

- Join a packaging compliance scheme which is registered with the Department of the Environment.
- Provide accurate and robust packaging data to the scheme.

8.21 Businesses reprocessing or exporting packaging wastes must register with the competent authority, which is Environment and Heritage Service in Northern Ireland, and submit the necessary packaging data. They should also increase recycling capacity by developing collection and reprocessing infrastructure. Packaging Waste Recovery Notes (PRNs) and Packaging Waste Export Recovery Notes (PERNs) must be purchased from such accredited reprocessors and accredited exporters respectively by obligated businesses and compliance schemes as evidence of the quantity of packaging waste recovered or recycled in fulfilment of their obligations. These Notes are the only legal forms of demonstrating compliance.

Calculating Recovery and Recycling Obligations

8.22 The Regulations are designed to ensure that packaging ‘producers’ or ‘obligated businesses’ take full responsibility for packaging wastes generated as a result of their commercial activities. Obligated businesses are required to recover and recycle specific tonnages of packaging waste based on calculations incorporating national targets.

8.23 If an organisation is an ‘obligated business’, it must calculate the amount of packaging it handles. The recovery and recycling obligations are calculated using three factors:

- The tonnage of ‘packaging handled’ by the business;
- The percentage activity obligation that is applied to the relevant activity performed by the producer on packaging; and
- The business recovery or recycling target for the UK that year.

- 8.24 The recovery and recycling obligations are established by the formulae:

$$\begin{array}{ccccccc} \text{Recovery obligation} & = & \text{obligated packaging handled} & \times & \text{activity obligation} & \times & \text{NI recovery target} \\ (\text{tonnes}) & & (\text{tonnes}) & & (\%) & & (\%) \end{array}$$

$$\begin{array}{ccccccc} \text{Recycling obligation} & = & \text{obligated packaging handled} & \times & \text{activity obligation} & \times & \text{NI recycling target} \\ (\text{tonnes}) & & (\text{tonnes}) & & (\%) & & (\%) \end{array}$$

- 8.25 It is the sum of the individual obligations of those companies registered with Environment and Heritage Service, either individually or through a compliance scheme, that defines Northern Ireland's component of the United Kingdom's national obligations.

Packaging Waste Forum

- 8.26 A Packaging Waste Forum has been established since 2001 under the auspices of Environment and Heritage Service, as provided for in the recommendations for the management of packaging waste in the Waste Management Plans of the three groups. This is a working group to identify issues that would support the increased recovery and recycling of packaging waste, and encourage joint working between the public and private sectors, to enable greater quantities of packaging waste to be recovered from the municipal waste stream. Its membership is cross-sectoral, with representatives drawn from local authorities, commerce and industry, packaging waste producers and the waste management sector.

Summary of Key Roles and Responsibilities

- 8.27 Management and control of packaging waste falls to a number of key players under the Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland) 1999, as amended, and in the management of municipal wastes. The main roles and responsibilities are summarised in Table 8.3.

Table 8.3 Summary of Key Roles and Responsibilities for Packaging Waste

Element	Responsibility
Compilation and reporting of data relating to packaging handled. Recovery of packaging waste to meet recovery and recycling obligations.	Obligated Businesses Compliance Schemes
Reporting of packaging data to EHS. Development of recycling and recovery capacity.	Accredited Reprocessors and Exporters
Regulation of the Regulations. Compilation of Reported Data. Registration of obligated businesses, compliance schemes, re-processors and exporters.	Department of Environment, Environment and Heritage Service
Identification of issues to support the increased recovery and recycling of packaging waste, including from the municipal waste stream.	Packaging Waste Forum
Segregation of wastes into separate receptacles for collection, including for recycling.	Waste Producers, including: Householders Non-obligated businesses, and Other organisations
Collection and treatment of packaging waste in the municipal waste stream. (In many cases, this is affected through contractual arrangements with private companies.)	District Councils
Provision of facilities for the segregated collection of Commercial and Industrial Waste (including packaging waste) from SMEs at a minimum of one civic amenity site per district.	District Councils

Packaging Waste in the Municipal Waste Stream

- 8.28 The formal system for the recovery of packaging wastes which has been developed in the United Kingdom to meet the requirements of the Packaging and Packaging Waste Directive imposes 'producer responsibility' obligations on those businesses involved in the packaging chain, which exceed thresholds with respect to turnover and quantity of packaging handled. This system does not include local authorities, who have responsibility for managing municipal wastes, and consumers.
- 8.29 Although Councils are not obligated under the Producer Responsibility Obligations (Packaging Waste) Regulations, as described above, they do play a key role in the collection and recovery of packaging waste from the municipal waste stream. This role is crucial with the recognised need to recover greater quantities of packaging from the household wastes, if the United Kingdom is to meet its targets.

- 8.30 Packaging waste makes up a significant proportion of the municipal/household waste stream in Northern Ireland. Some 22% according to the waste composition survey carried out by NI2000 in 2000. Significant quantities of packaging waste, for example cardboard, glass and aluminium, are collected by councils, as they work to meet their own recycling and recovery targets.
- 8.31 The actions taken and the services provided by the Councils in relation to the collection of municipal packaging wastes are described in Section 6 of the Waste Management Plan, and can be summarised as follows:
- Source separated collection of mixed dry recyclables, including packaging wastes at the household level.
 - Provision of bring banks across Districts.
 - Enhances capacity for segregated collection of wastes, including packaging wastes at civic amenity sites.
 - Dedicated trade waste collection services for selected packaging wastes within some Districts.
- 8.32 The range of packaging waste materials recovered by District Councils includes:
- Cardboard
 - Wood
 - Plastics
 - Glass
 - Metals.
- 8.33 In addition to the recovery of packaging wastes, there is a strong focus within the Education and Awareness Strand of the Waste Management Plan, including measures set out in the Communications Plan (which is currently being finalised by the Group and is presented in Annex D as a draft), with reference to:
- Raising awareness to encourage consumers to either preferentially purchase products to avoid excessive packaging, or to refuse to accept bags and excess packaging in shops.
 - Councils to introduce packaging take-back requirements within contracts with suppliers to reduce municipal packaging waste, and to create pressures up the supply chain to encourage reusable packaging.
 - Raising awareness to encourage the public and businesses to participate in the segregation and collection of packaging wastes for recycling and recovery.

TARGETS FOR THE RECOVERY OF PACKAGING WASTE

- 8.34 The Packaging and Packaging Waste Directive (94/62/EC 1994), as amended, has set targets for the recovery and recycling of used packaging. (In this context, recovery includes incineration with energy recovery.) The original targets were set for 'no later than 30 June 2001', with subsequent targets set for 'no later than 31 December 2008'. These targets are summarised in Table 8.4.

Table 8.4 Packaging Waste Recovery and Recycling Targets

	2001	2008
Overall Recovery	50 – 65%	60% Min
Overall Recycling	25 – 45%	55% - 80%
Material Specific Recycling		
Glass	15%	60%
Paper/board	15%	60%
Metals	15%	50%
Plastic	15%	22.5%
Wood	15%	15%

- 8.35 In Northern Ireland, the Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations (Northern Ireland) 2004 sets out recovery and packaging targets, as summarised in Table 8.5.

Table 8.5 Percentage Recovery Targets under the Northern Ireland Regulations

Packaging Material	2004	2005	2006	2007	2008 onwards
Paper/Board	65	66	68	69	70
Glass	49	55	61	66	71
Aluminium	26	28	30.5	33	35.5
Steel	52.5	55	58	60	61.5
Plastic	21.5	22	22.5	23	23.5
Wood	18	19	20	20.5	21
Overall Recovery	63	65	67	69	70
Min % by Recycling¹	94	94	94	95	95

Note: 1. Minimum amount of recovery to be achieved through recycling

- 8.36 These targets for recovery and recycling are likely to be reviewed and potentially increased again in the future. The scope of the Packaging Regulations is also likely to be expanded to include 'leased packaging'. The management of packaging wastes therefore presents a real challenge for those responsible for the management of the household, and the commercial and industrial waste streams.

WASTE QUANTITIES AND COMPOSITION

Waste Quantities

- 8.37 Packaging waste in Northern Ireland arises from two principal sources; the household waste stream and from the commercial and industrial waste stream. The total packaging waste generated from these two sources can be estimated from available data, assuming that the proportion of packaging waste is 22% in the household waste stream (as indicated by the NI2000 Waste Characterisation Study, 2001), and that the quantity and proportion of commercial and industrial waste is as reported in the Commercial and Industrial Waste Survey in 2000. (Note: This is to be updated once the most recent C&I survey results are available).
- 8.38 The data, summarised in Table 8.6 show that the total packaging waste arising in Northern Ireland is approximately 430,000 tonnes in 2004/05, with approximately half arising from the commercial and industrial sector, and half from households.

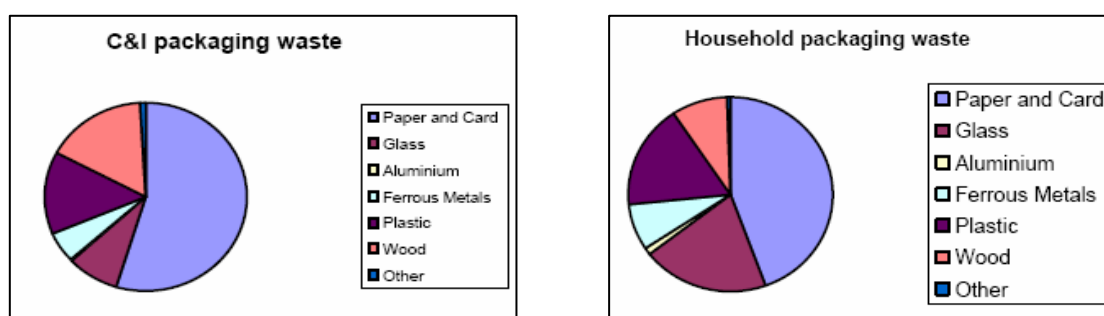
Table 8.6 Summary of Packaging Waste Generated in Northern Ireland in 2004/05

Region	Total Packaging Waste		
	Commercial and Industrial	Household	Total
North West	32,000	37,000	69,000
SWaMP	58,000	54,000	112,000
arc21	139,000	112,000	251,000
Total	229,000	202,000	430,000

Note: Columns and rows may not total due to rounding errors

Waste Composition

- 8.39 The relative percentage of packaging materials in the packaging waste from the household, and the commercial and industrial sectors, is indicated in Figure 8.1.

Figure 8.1 C&I and Household Packaging Waste Composition

8.40 Using this data, packaging waste arisings can be further broken down by material (Table 8.7). This table shows that paper and cardboard represents the largest fraction at approximately 187,000 tonnes (43%), followed by glass at 92,000 tonnes (21%), plastics at 75,000 tonnes (17%) and ferrous metals at 33,000 tonnes (8%). Aluminium is estimated at about 5,000 tonnes, which is about 1% of the total packaging waste stream.

Table 8.7 Breakdown of Packaging Waste by Material for 2004/05

Material	Commercial and Industrial (Tonnes)	Household (Tonnes)	Total Tonnage Estimated
Paper and cardboard	124,000	63,000	187,000
Glass	19,000	73,00	92,000
Aluminium	1,000	4,000	5,000
Ferrous metals	12,000	21,000	33,000
Plastic	34,000	41,000	75,000
Wood	37,000	0	37,000
Other	2,000	0	2,000
Total	229,000	202,000	430,000

Note: Columns and rows may not total due to rounding errors.

FUTURE TRENDS IN PACKAGING WASTE ARISING

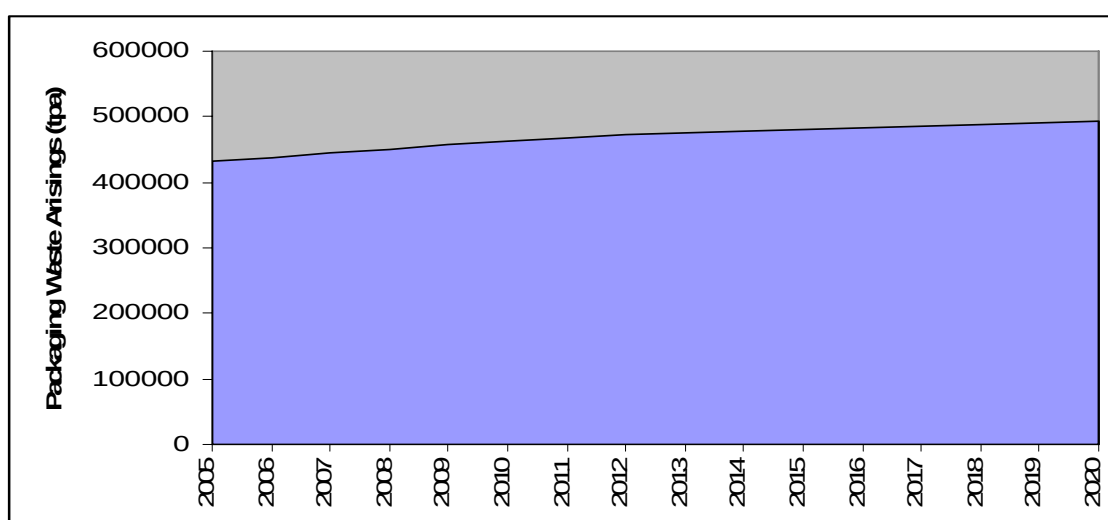
8.41 It is important to assess future trends in packaging waste arisings, but estimates of growth rates vary. The Report of the Task Force of the Advisory Committee on Packaging (in Appendix 3 to Chapter One) entitled Estimated Packaging Flows 2002 – 2006, suggested that total packaging quantities would increase over that period at a rate of 0.26% per annum. Predicted material specific growth rates varied from -2.8% for wood, to +3.0% for plastics. According to PackFlow, it is predicted that the United Kingdom will see a slow but steady increase from 10 million tonnes of packaging waste generated in 2003 to 11 million tonnes by 2010, which is equivalent to nearly 1.5% per annum.

8.42 For the purposes of this Plan, it is therefore assumed that total packaging waste will grow at similar rates to municipal waste, as follows:

- 1.5% per annum to 2010;
- 1.0% per annum between 2010 and 2013; and
- 0.5% per annum between 2013 and 2020.

8.43 The data is not robust enough to allow for separate assessment of the municipal and the commercial and industrial waste streams, nor does it allow for differentiation between packaging materials. The growth in packaging waste over the Plan period up to 2020 therefore is illustrated in Figure 8.2.

Figure 8.2 Projected Packaging Waste Arisings in Northern Ireland to 2020



RECYCLING AND RECOVERY OBLIGATIONS IN NORTHERN IRELAND

8.44 Data on the obligated quantities of packaging wastes for Northern Ireland as a whole is determined by Environment and Heritage Service (EHS), on the basis of statutory returns from those companies obligated under the Packaging Regulations as described above. Accredited reprocessors and exporters also report their packaging data to EHS. Information on registered and accredited businesses is held on Registers, which are maintained and updated by EHS, and are available on their website: www.ehsni.gov.uk www.ehsni.gov.uk/environment/wasteManage/regulations_packaging.shtml.

8.45 A total of 380 companies were registered with the EHS in the 2005 registration year, of which 78 companies were Directly Registered, and 302 were registered through compliance schemes.

- 8.46 There were 11 compliance schemes operating in Northern Ireland in 2005, as summarised in Table 8.8. See the EHS website for information on those schemes registered with the EHS at: <http://www.ehsni.gov.uk/pubs/publications/ComplianceSchemes.pdf>.

Table 8.8 Compliance Schemes Registered in Northern Ireland & Member Numbers

Compliance Scheme	No. of Registered Companies
Biffpack	19
Cleanapack	6
Compliance Link	8
Complypak Ltd	4
Materials Recovery Ltd	30
Nipak Ltd	55
Paperpak Ltd	5
Recycle Pak	17
Valpak Ltd	105
Veolia Environmental Services	14
Wastepack Ltd	39
Total:	302

Note: Data from EHS website as on May 06

- 8.47 The obligations under the Packaging Regulations for Northern Ireland are summarized in Table 8.9, which shows that in 2004, some 373 businesses were obligated, with a total obligated recovery of more than 100,000 tonnes. This is less than 25% of the total packaging waste estimated to arise in Northern Ireland. Given that the target for the United Kingdom, as an EU Member State, is to recover more than 60% of packaging wastes generated, it illustrates the proportionately low number of obligated business located in Northern Ireland, as compared to the rest of the UK.

Table 8.9 Northern Ireland Packaging Recovery Data for 2004

Obligation	Tonnes
Number of obligated businesses	373
Recovery obligation	103,641
Recycling obligation	97,423
Paper & Card obligation	41,431
Glass obligation	20,489
Aluminium obligation	787
Steel obligation	3,456
Plastic obligation	7,224
Wood obligation	2,772

Source: Towards Resource Management A Consultation on Proposals for a New Waste Management Strategy (October 2005)

- 8.48 It is further anticipated that, as the economy grows, more businesses will be obligated under the Packaging Regulations, as the specified thresholds are exceeded. This in turn should ensure that greater quantities of packaging waste are recovered and recycled.

REPROCESSING AND EXPORTING OF PACKAGING WASTE

- 8.49 In July 2005, there were nine accredited reprocessors and seven accredited exporters registered with Environment and Heritage Service. These are summarised in Table 8.10 below. Of particular note is the absence of any accredited reprocessor for paper or cardboard packaging waste. Further details on accredited reprocessors and exporters can be found at: <http://www.eh.sni.gov.uk/pubs/publications/Rep&ExpWebPage.xls>.

Table 8.10 Accredited Reprocessors and Exporters registered with EHS – July 2005

Packaging Waste Stream	Reprocessors	Exporters
Paper and Cardboard	-	-
Plastic	Cirrus Ltd James W Corry & Sons (Campsie) Ltd	Irish Polymers James W Corry & Sons (Campsie) Ltd Allclear Environmental
Glass	Quinn Glass Ltd Kosmos Glass Recycling Ltd	-
Aluminium	-	Clearway Ltd
Steel	-	T - Met Ltd Clearway Ltd
Wood	Allclear Environmental Spanboard Products Ltd Eglinton (Timber Products) Ltd	Allclear Environmental

8.50 The quantities of packaging wastes reported by the accredited reprocessors and exporters for the year 2000 are summarised in Table 8.11 below. This demonstrates that in 2000, approximately 51,000 tonnes were accounted within Northern Ireland. This equates to nearly two thirds of the total packaging obligation for that year generated by obligated companies under the Packaging Regulations.

Table 8.11 Packaging Wastes Reprocessed/Recovered by Registered Reprocessors and Exporters in 2000

Packaging Waste Stream	Quantity Reported Reprocessed (Tonnes)	Quantity Reported Exported (Tonnes)	Total Accounted for (Tonnes)
Paper/Card	676	1,843	2,519
Plastic	4,790	0	4,790
Glass	30,843	0	30,843
Wood	4,256	0	4,256
Aluminium	0	5	5
Steel	0	7,216	7,216
Energy Recovery	1,378	0	1,378
Total	41,943	9,064	51,007

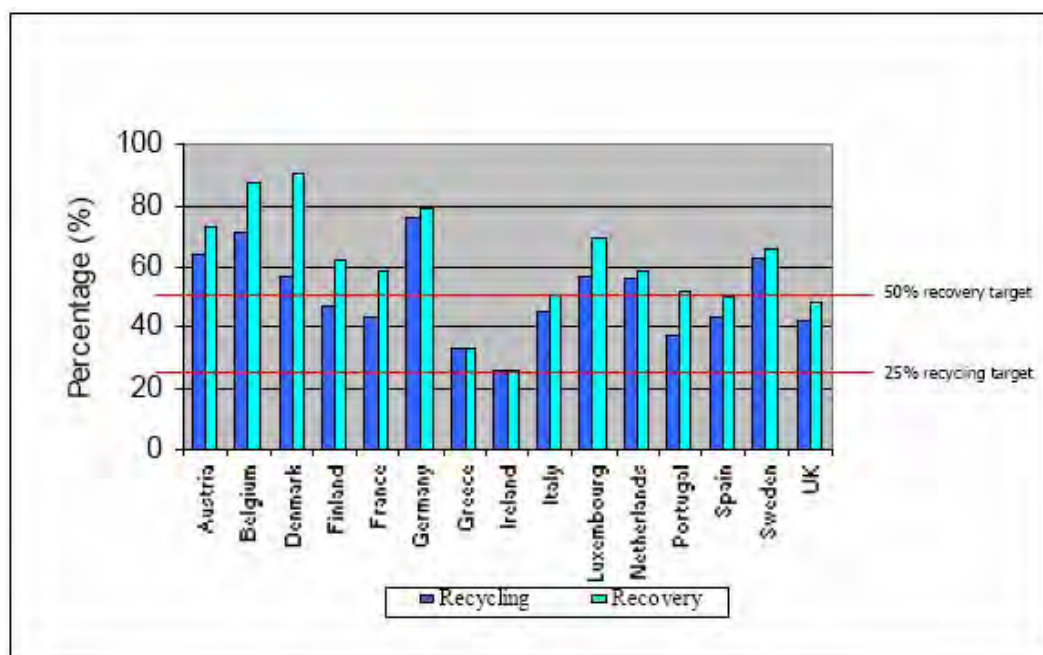
Source: Environment and Heritage Service

- 8.51 However, on a material specific basis it is clear that in terms of the proportion of packaging waste arising (See Table 8.12 below), that the actual proportion recovered varies widely between materials. For example, in 2000, more than one third and one fifth of glass and steel packaging are accounted for, but about only 1% and 0.1% of paper /cardboard and aluminium are accounted for. This highlights the importance of material specific initiative to increase the levels of recycling and recovery of packaging wastes in Northern Ireland.

Table 8.12 Summary of Packaging Waste Accounted for by Material in 2000

	Total Available	Accounted For	
		Tonnes	Percentage
Paper & Board	181000	2519	1.4%
Plastic	71000	4790	6.7%
Glass	85000	30843	36.3%
Wood	37000	4256	11.5%
Aluminium	5000	5	0.1%
Steel	31000	7216	23.3%

- 8.52 The data on the quantities of packaging waste reprocessed and exported, and the accredited reprocessors and exporters, suggest that significant quantities of packaging waste appear to go unrecorded. For example, there were no accredited reprocessors or exporters of paper/fibreboard registered with EHS in July 2005. It is believed that in many cases, the materials are delivered to reprocessors in GB, as a result of which are not recorded in the Northern Ireland data sets. Similarly packaging waste collected by councils, and processed through their arrangements are unreported in the figures. The quantities recycled and recovered therefore contribute to the overall recovery and recycling figures for packaging waste in the UK, but the Northern Ireland contribution cannot be isolated.
- 8.53 The performance of the system is illustrated by the figures for the recycling and recovery of packaging waste in the United Kingdom in 2001, the first Directive target year. This is illustrated in Figure 8.3, compared against the performance of other EU Member States. This shows that the UK just missed the minimum 50% recovery target, but exceeded the recycling target.

Figure 8.3 Recycling and Recovery Rates within the EU in 2001

Source: Study on the Implementation of Directive 94/62/EC on packaging and packaging waste and options to strengthen prevention and reuse of packaging.

- 8.54 The data on the quantities recovered and recycled, together with the future targets, highlights the need for greater quantities of packaging waste to be recovered from the household waste stream. This has important implications for those stakeholders involved in the management of household wastes, as well as commercial and industrial wastes, and highlights the need for an integrated approach to the recovery and recycling of packaging wastes, cross-cutting the roles and responsibilities defined by producer responsibility under the Packaging Regulations.

KEY ISSUES TO INCREASE LEVELS OF RECOVERY AND RECYCLING

- 8.55 Key issues associated with the future management of packaging waste in Northern Ireland include five fundamental priorities which are as follows;
- The prevention of packaging waste, and encouragement for the wider use of re-usable packaging.
 - The extraction of high quality material, particularly from the household waste stream, as well as additional materials from the commercial and industrial waste stream;
 - The development of a network of facilities to facilitate both the recycling and recovery of packaging wastes;
 - The establishment of a presence in the market to secure suitable contracts for the supply of captured packaging waste materials to reprocessors;
 - The development of a partnership approach between consumers, industry (including businesses and packaging waste producers), compliance schemes, reprocessors and waste management sector, and local authorities to the management of packaging waste.

- 8.56 The following provides a brief overview of issues affecting each of these priority areas, identifying progress to date, and other issues, factors and opportunities. The specific actions that follow are set out in the section entitled *Measures and Actions*, at the end of this Chapter.

Waste Prevention

- 8.57 Waste prevention is a priority in the Northern Ireland Waste Management Strategy, *Towards Resource Management*, published in 2006, and a Waste Prevention Framework has also been published by EHS. It is also a priority in the Waste Management Plan, and needs to be an area of greater focus for businesses and councils to minimise the quantities of packaging waste generated.
- 8.58 A key driver for change will also be the changes in the economics of waste management, as landfill tax increases from its current rate by £3 per year, to about £35 per tonne, by 2010/11, making disposal an unattractive option and incentivising waste minimisation.
- 8.59 There is a need to apply research and technology that would result in avoidance or reduction in packaging waste. One such example is WRAP's Retailer Initiative & Innovation Fund which has been created to provide assistance to companies working to reduce the amount of packaging in their products. This is in partnership with major retailers and supermarket chains, and should bring benefits to Northern Ireland.

Recycling and Recovery

- 8.60 The councils within the Region have rolled out kerbside collection services, e.g. coloured bin schemes, which enables householders to recycle greater amounts of packaging waste at the doorstep. Increased facilities for the segregated collection of recyclables has also been provided for at civic amenity sites, and the increased availability of bring sites.
- 8.61 The implementation of segregated collection of mixed dry recyclables and the increased availability of bring banks by Councils in NI is likely to have a positive impact on the public's perception of recycling. There is now visible evidence of progress, with a greater sense of buy-in into the process, which should in turn encourage residents to separate out more of their wastes.
- 8.62 Northern Ireland has an existing network of Material Recycling Facilities (MRFs) and Transfer Stations to handle packaging materials from both municipal and commercial and industrial waste streams which provides adequate capacity. The increased targets mean that further capacity will be required, which can be provided by either expansion of current facilities, or a limited number of new facilities.

- 8.63 At present there is very limited capacity for the recovery of energy from packaging wastes in Northern Ireland. There will need to be greater energy recovery capacity developed, for those packaging wastes that cannot economically be recycled or otherwise recovered. Within the region, a mass burn incinerator will not be developed, although it is recognised that one may be developed in a neighbouring Region. The councils therefore will seek to encourage businesses to ensure that all wastes are subject to appropriate mechanical treatment to maximise as far as practicable the recovery of materials, before energy recovery is considered and applied in the context of life cycle thinking, and at plants designated as recovery operations, rather than disposal.

Market Presence

- 8.64 The recovery and recycling of packaging wastes takes place in the context of a commodity market, and materials are moved in response to the law of supply and demand. The councils therefore will consider appropriate arrangements to maximise the presence of the waste planning group in this market, to provide economic benefits through the economies of scale, and to limit market risks.

Partnership Approach

- 8.65 A partnership approach is continuing to develop, with the private sector working closely with councils in the provision of services and facilities, particularly for the recovery and recycling of wastes. This need to continue to develop, and as a further strand, councils will seek to increase the availability of recycling services to SMEs within their district by the provision of at least one civic amenity site that accepts waste from businesses for recycling.

MATERIAL SPECIFIC ISSUES

- 8.66 Packaging waste is made up of a number of specific materials. This section outlines some of the issues relating to waste packaging materials in the Northern Ireland context.

Glass

- 8.67 The Commercial and Industrial Sector generates relatively little glass packaging, with the exception of the hospitality sector (hotels, pubs and restaurants). PackFlow estimates that 75% of glass packaging is found in the household waste stream in the UK. Therefore, a substantial proportion of the increase of glass recovery needed to achieve the future targets in NI needs to be achieved through initiatives in the household sector, as well as greater recovery from the hospitality sector.

- 8.68 Traditionally, household glass in NI has been collected through the bottle bank system. Councils have sought to increase the amount of glass they collect through increased availability of glass bottle banks at existing Civic Amenity and Bring Sites and the opening of new bring sites.
- 8.69 Limited quantities of glass are collected at the doorstep by source separated collection. The use of a black box collection system, which allows for separation of the glass at the collection vehicle, accommodates this, but the collection of glass in a bin of mixed dry recyclables is not undertaken, primarily because of Health and Safety considerations at the sorting stage.
- 8.70 Northern Ireland has adequate capacity for the reprocessing of glass to handle the amount of glass packaging waste produced and so, recycling capacity is not currently considered to be an issue for this material. This is reflected in the relatively high proportion of glass accounted for in the Northern Ireland figures for reprocessing.

Summary

Source Separation	Reprocessing Capacity	Markets
Health and safety issues associated with handling and collection of glass in commingled dry recyclables collections. “Bring” schemes are generally more appropriate, and the availability of these facilities has been increased to accommodate collection.	Local reprocessing capacity is available in NI.	There is currently concern about an over-supply of green glass in the market. Alternative uses for glass are developing, e.g. use in the aggregates and construction industries.

Steel

- 8.71 The majority of steel packaging waste arises from the commercial and industrial sector, but the majority of this is already recycled or reused.
- 8.72 There is no indigenous steel reprocessing capacity in Northern Ireland. Steel waste is collected for handling at steel scrap yards in the Province and exported to the UK, Europe or further afield for reprocessing. The end markets for steel packaging are not constrained.

- 8.73 Compared with cardboard, glass or plastics the proportion of steel packaging waste is relatively low, and quantities of steel packaging is predicted to decrease by 0.75% per annum. Steel recovery levels from the household sector need to be improved to assist in meeting the recovery targets. This can be achieved through the source separated household waste collection system (doorstep collection of recyclables and civic amenity sites) and the use of magnetic extraction at Materials Recovery Facilities or Transfer Stations. In addition, the introduction of take back schemes and/or the separate collection of Waste Electronic and Electrical Equipment (WEEE) will reduce the amount of steel in the household waste stream that is collected by councils.

Summary

Source Separation	Reprocessing Capacity	Markets
The widespread introduction of segregated collection of mixed dry recyclables and bring banks has increased the recovery of steel from the household waste stream. Magnetic extraction at transfer stations would increase the quantity further.	There is no local reprocessing capacity, but steel is exported to the UK market where there is available reprocessing capacity.	Markets for extracted steel are available in the UK. Recycling leads to no loss of quality.

Aluminium

- 8.74 The majority of aluminium packaging waste arisings relate to beverage cans, with foil and aerosols accounting for additional tonnages. This waste is prevalent in both the municipal and commercial and industrial sectors. Aluminium has a positive financial value, which should support its collection and recovery in both sectors. Although it forms a small part of the waste stream by weight, high recovery levels should, in principle, be achievable.
- 8.75 Over 99% of aluminium packaging is primary consumer packaging, which includes drinks cans. Increased quantities of aluminium need to be recovered from the municipal waste stream, either in the form of cans or aluminium foil. Councils in NI have responded to this by including aluminium cans and foil in the dry recyclables collections and increasing the provision of can banks at bring sites and CA sites.
- 8.76 There is no indigenous aluminium reprocessing capacity in Northern Ireland. As with steel, the market for aluminium is not constrained, and it is collected and exported to the UK, Europe or further afield for reprocessing.

Summary

Source Separation	Reprocessing Capacity	Markets
High potential to increase rate of recovery; particularly from the household waste stream, and from public places (e.g. streets and shopping centres). Collected by councils through kerbside collections for mixed dry recyclables and Bring schemes.	There is no local reprocessing capacity, but aluminium is exported to the UK where there is a high reprocessing capacity.	Aluminium is a high value commodity. Recycling does not lead to a loss of product quality. Markets for recycled products are not constrained.

Plastics

- 8.77 The flows of plastic packaging waste suggest that, at a national level, the commercial and industrial sector has sufficient capacity to recover the tonnages required to meet the requirements of the proposed targets. Current and future targets should in principle be attainable within the existing infrastructure of collection, processing and reprocessing both within the UK and overseas.
- 8.78 There are several barriers to the effective recovery and recycling of plastics, which include:
- **Collection Costs.** These tend to be relatively high due to the low density of waste streams made up by waste plastics, such as bottles. In relative terms, volumes are large, but tonnages are low, which drives up the costs of collection and transportation on a per tonne basis.
 - **Variety of Plastics.** Plastic is a generic term, encompassing a wide range of plastics, including, for example: low-density polyethylene (LDPE), high-density polyethylene (HDPE), polypropylene (PP), polyvinylchloride (PVC), polystyrene (PS) and polyethylene terephthalate (PET). Each is used in specific packaging applications, reflecting their particular qualities. For recycling/materials recovery, these plastics need to be separated out.
 - **Contamination.** Because plastics are widely used as food packaging, they are often contaminated with food wastes. As a result, plastics need to be cleaned, as part of the recovery and recycling process.
- 8.79 WRAP has, in addition, identified the key barriers to plastic bottle recycling as: (i) lack of collection/sorting infrastructure, (ii) adverse collection scheme economics, (iii) low efficiency of existing collection infrastructure and (iv) lack of market stability for collected material.

- 8.80 Councils across NI have increased the provision of plastic banks at both bring and CA sites to encourage a greater level of plastic recycling. Councils generally also include plastic bottles in their kerbside collection of dry recyclables. However, the recovery of plastic packaging from the household sector is not straightforward. This is due to the broad range of plastic types that need to be individually classified. It also tends to be costly on a per tonne basis (often in excess of £200), due to the high volume and low density of the materials.

Summary

Source Separation	Reprocessing Capacity	Markets
Wide diversity of different material types. High costs per tonne for collection. Councils have implemented kerbside collections of mixed dry recyclables that include plastic bottles and expanded the collection of plastics at Bring and CA sites for recovery from the household waste stream.	There is some but limited local reprocessing capacity.	There is a loss of quality in reprocessing, therefore consumer acceptability is a constraint. Large amount of work is needed to develop sustainable markets for recycled products made from plastic waste. Quantity of plastic beverage containers likely to increase as suppliers move from multi-trip glass bottles to single trip plastic containers in response to customer demand.

Paper/Cardboard

- 8.81 The majority of paper packaging recycling comes from the commercial and industrial waste sector because of the quality and volume available from businesses. In the UK, there is a well established infrastructure of paper merchants with effective packaging collection systems which currently recover the majority of cost effective material from the commercial and industrial waste sector.
- 8.82 It is notable however, that as of July 2005, there were no accredited reproprocessors or exporters of paper or cardboard packaging registered with EHS. This suggests a gap, if not in the current infrastructure provision, at least in the provision of such services to the commercial and industrial sectors.
- 8.83 It is also recognized that to achieve further recovery of this material from the C&I sector, paper and cardboard packaging wastes will need to be captured from SMEs, who typically generate smaller quantities than the businesses currently obligated under the Packaging Regulations. Such businesses tend to be a good source of high quality paper and cardboard materials.

- 8.84 As a contribution in this area, councils are seeking to provide suitable segregated collection facilities for such materials at a minimum of one Civic Amenity site within their district. There is also the potential for the private sector to provide services for the source-separated collection of waste materials from SMEs, an option that is likely to become increasingly attractive as the cost of disposal continues to increase.
- 8.85 There has already been significant development in the source-separated collection of paper and card from the household waste stream through the introduction of district wide dry recyclable collection services by councils. Household paper packaging tends however to be of low quality, and arises in relatively small volumes from widespread locations, which has implications for the overall market for these materials.
- 8.86 Reprocessing capacity for paper and cardboard packaging material now operates in a global context, with a generally mixed market view. This is an area where there is a need for market development to open up alternative markets to those already in place.

Summary

Source Separation	Reprocessing Capacity	Markets
Good existing recovery rates from commercial sector. Improved capacity to collect good quality paper/card materials from the household waste stream, with the widespread kerbside collection systems. Extraction of large quantities of paper/card from SMEs has strong potential, partially addressed by the provision of suitable facilities at CA sites.	Local reprocessing capacity is limited, but improving. Extracted paper and card needs to be sorted into clean, consistent quality fractions. High quality paper and card has strong potential for establishment of long term contracts with materials traders and reprocessors.	There is some loss of quality in reprocessing, therefore consumer acceptability is a constraint. Work is needed to develop sustainable markets and alternative uses.

Wood

- 8.87 The data on wood waste and wood packaging has improved, and it is now estimated that each year in the UK there are significant quantities generated by the household and construction sectors, as well as by wood packaging from commerce and industry. Wood packaging is generally used in transit applications (pallets and crates) producing approximately 670,000 tonnes per year.

- 8.88 Currently, the main issue for wood is one of collection and processing. Councils generally now are providing for the collection of wood at their civic amenity sites. Waste wood is also being used increasingly as a fuel, as life cycle thinking is increasingly applied.

Summary

Source Separation	Reprocessing Capacity	Markets
Majority of potential for extraction of wood is in the commercial and industrial sector. Councils are collecting wood from the household waste stream at some civic amenity sites.	Reprocessing capacity has developed and includes energy recovery of wood waste.	Potential for wood to be used as a fuel. Other specialized applications include mulch and animal bedding.

MEASURES AND ACTIONS

- 8.89 Although the Packaging Regulations imposes specific obligations on certain businesses, reprocessors and exporters, as part of the system that has been implemented across the UK to meet the requirements of the Packaging and Packaging Waste Directive, it is clear that all sectors have a role to play, if the quantities of packaging waste recycled and recovered is to increase significantly. The identified actions are set out below on a sectoral basis.

The Business Sector

Waste Prevention

- 8.90 **All Businesses:** All businesses, large and small should seek to reduce the quantities of packaging waste produced through waste prevention initiatives, and the increased re-use of packaging where possible. Guidance can be obtained from the Waste Prevention Framework published by EHS, and from InvestNI, but examples to consider might include, as appropriate to the organisation:
- The elimination of unnecessary packaging.
 - The use of supply chain management principles to encourage 'producer responsibility' in suppliers.
 - The application of packaging waste take-back terms in contractual agreements.
 - Specification or use of refillable or reusable multi-trip packaging.
 - Awareness raising of and training in waste prevention for staff.

Recycling and Recovery

- 8.91 **Obligated Businesses:** All businesses that exceed the specified threshold values for turnover and quantity of packaging handled specified in the Packaging Regulations to:
- Register with EHS, either directly or through membership of a compliance scheme;
 - Submit data on packaging waste as required.
 - Recover specified tonnages of packaging waste, either directly or through compliance schemes.
 - Demonstrate that obligations have been met through PRNs or PERNs.
 - Plan for the higher targets that are in place to 2008, and the further targets that are likely to emerge in the longer term.
- 8.92 Obligated businesses should also seek to maximise the recycling and recovery of all wastes, including packaging wastes, as outlined below for non-obligated businesses.
- 8.93 **Non-Obligated Businesses:** Smaller businesses have a role to play in increasing the recycling and recovery of packaging wastes, though there is not a statutory requirement. However, the changing economics of waste management mean that disposal will become the least cost effective waste management option, and SMEs will place greater emphasis on recycling and recovery. SMEs therefore should seek to maximise their recycling and recovery of packaging and other waste through segregation of the wastes at source, and the use of all available facilities and services, including those provided by councils, such as the use of nominated civic amenity sites, and those provided by the waste management sector.
- 8.94 **All Businesses:** There is a responsibility on all businesses to identify and implement, where economically feasible, opportunities to encourage the use of recycled materials in their activities and products, to assist with the development of sustainable local markets and end-uses for recycled materials.

Accredited Reprocessors and Exporters

- 8.95 Accredited reprocessors and exporters should:
- Register with EHS;
 - Submit data on packaging waste as required.
 - Reprocess/export packaging waste, and issue PRNs/PERNs as confirmation to obligated businesses and compliance schemes.
 - Continue to develop the necessary infrastructure and services to provide adequate capacity for the management of packaging wastes, to ensure that obligated businesses can meet their statutory responsibilities.

Central Government***Environment and Heritage Service***

- 8.96 Responsibility for the implementation, monitoring and enforcement of the Packaging Regulations lies with Environment and Heritage Service. Key responsibilities include:
- Publishing Guidance for Businesses, in this legally complex and challenging area with increasing targets. (See Box 8.1).
 - Monitoring performance, including the auditing of businesses and compliance schemes, and inspection of accredited reprocessors and exporters.
 - Maintaining registers of obligated businesses, registered compliance schemes, and accredited reprocessors and exporters.
 - Taking enforcement action where required under the Packaging Regulations, as amended
 - Facilitating and supporting the Packaging Waste Forum, on an ongoing basis.

Box 8.1 Summary of Guidance available on EHS Website on Packaging Regulations

Full guidance on the Producer Responsibility Regulations is available on the EHS website <http://www.ehsni.gov.uk/>

This website provides links to the following topics:

- Definition of packaging
- Which businesses are obligated?
- Current obligations
- PRNs & PERNs
- Compliance schemes
- Compliance Monitoring Strategy 2005-2006
- Registered companies
- Accredited reprocessors and exporters
- Guidance & Forms (link to packaging section of guidance & forms)
- Waste Exchanges

Leadership by Example

- 8.97 There is a responsibility, recognized in the Waste Management Strategy, *Towards Resource Management*, on all government departments to provide leadership in the more sustainable management of wastes, including packaging wastes. Specific initiatives, potentially implemented through Departmental Waste Management Plans, might include for example:
- Provision of receptacles for the segregation of wastes at source, including packaging wastes.

- With their significant buying power, government departments should implement 'green' procurement policies, including the use of the supply chain to encourage 'producer responsibility' in their suppliers.
- The application of packaging waste take-back terms in contractual agreements.
- Specification or use of refillable or reusable multi-trip packaging.
- Awareness raising of and training in waste prevention, and recycling for staff.

Education and Awareness Campaigns

- 8.98 In Northern Ireland, EHS has established the “**Wake up to Waste**” programme, which aims to raise the profile of waste management and engage the public and businesses in managing wastes more sustainably. Schools and businesses are targeted specifically under this campaign, and it has a future role in supporting the recovery and recycling of packaging wastes in both the household and business sectors.

Data Collation and Publication

- 8.99 There is a lack of reliable data on packaging wastes, and all packaging waste that is recycled or recovered, is not recorded in the Northern Ireland data sets. This is an area that needs to be improved, with all parties led by EHS, but including the Packaging Waste Forum, businesses, compliance schemes, councils, and others as appropriate, working together to ensure that all packaging wastes recycled and recovered are recorded. Further, the information should be collated in a non-commercially sensitive format and published, to allow Northern Ireland performance to be identified and reported on an ongoing basis. This information would allow performance to be benchmarked against other areas.

District Councils

Education and Awareness

- 8.100 **Avoidance of excess packaging.** Councils will encourage consumers and businesses to preferentially purchase products to avoid excessive packaging through their Education and Awareness Campaign, as implemented through the North West Communications Plan (Annex D).
- 8.101 **Packaging waste take-back.** Councils will encourage businesses, as part of their Education and Awareness Campaign, to adopt the principles of supply chain management, to work with their suppliers to take back packaging waste, and encourage the use of reusable packaging.
- 8.102 **Participation in Segregated Collection Schemes.** Councils will encourage the public and businesses to participate in the segregation and collection of packaging wastes for recycling and recovery, through their Education and Awareness Campaign.

8.103 Increased collection of packaging materials from bring sites and Civic Amenity sites.

The availability of bring banks and CA sites has increased significantly through the actions of councils in recent years. These provide separate bins for the collection of bottles and cans, and in some CA sites, cardboard is also collected. The range of materials collected and the availability of these facilities will continue to be expanded by councils.

8.104 Provide access for businesses to civic amenity sites for recycling of packaging wastes.

In accordance with the recommendation in the Waste Strategy, councils will make a facility available to businesses for the segregated collection of selected waste materials for recycling at a minimum of one civic amenity site within their district. Councils will levy an appropriate charge for this service, and ensure that the quantities are recorded separately so that they do not contribute to municipal waste targets and obligations.

8.105 Provide a separate collection service for packaging waste from local business and industry,

This measure was recommended in the consultation paper on the Waste Strategy, and has previously been implemented, or is under consideration by some councils, particularly for the collection of cardboard from businesses, and glass from pubs and clubs. Decisions will be taken at the district council level as to whether to implement such a service or not and its extent, in response to local needs.

Guidance and Advice

- 8.106 District councils will work with local businesses, through their Recycling and Waste Prevention Officers, to provide advice and guidance to encourage the prevention, and the recycling and recovery of packaging wastes. The advice will draw on local experience and knowledge, as well as published guidance, such as that provided by WRAP and Envirowise. Box 8.2 illustrates the range of advice available from Envirowise on managing packaging waste.

Box 8.2 Summary of Guidance on Packaging Waste by Envirowise

Envirowise produces a wide range of guidance on reducing packaging waste, which is available through their website <http://www.envirowise.gov.uk/>

- Cutting Costs and Waste by Reducing Packaging Use;
- Reducing the Cost of Packaging in the Food and Drink Industry;
- Packing Line Savings in the Food and Drink Industry;
- 120 Tips on Reducing Packaging Use and Costs;
- Packaging Rethink Boosts Profits – Harman Pro Audio Ltd;
- Packaging in the furniture sector; and
- Plastics and rubber sector: Packaging Regulations.

Data Collection and Reporting

- 8.107 Councils will introduce a system to ensure that the quantities of packaging waste recycled and recovered from the municipal waste stream are quantified and reported in their Annual Reports. The system will also record the packaging waste collected from the commercial and industrial sectors as C&I waste data, separate from municipal waste data. This may require the introduction of reporting clauses in contracts with reprocessors/exporters.

Procurement

- 8.108 Councils will use introduce 'green' procurement policies, including the use of the supply chain to encourage 'producer responsibility' in their suppliers. Other measures may include for example:
- The application of packaging waste take-back terms in contractual agreements.
 - Specification or use of refillable or reusable multi-trip packaging, where appropriate.

The Public***Waste Prevention***

- 8.109 **Consumer Influence:** Experience shows that commercial interests are sensitive to the perception that the public has of their products and activities. There is no doubt that the actions of consumers, in exercising careful and responsible purchasing decisions, such as buying 'loose' food rather than pre-packaged products, and leaving packaging at the point of sale e.g. shoe boxes, can influence the quantities and recyclables of product packaging. Consumer choice in buying unpackaged or lightly packaged goods therefore is essential to promoting more sustainable practices in the medium to long term, and consumers should exercise their purchasing decisions accordingly.

Recycling

- 8.110 Householders should continue to support the services provided by the councils, (separate receptacles for recyclables at the house, and bring banks) for the segregation of waste, including packaging waste, at source.

9.0 HAZARDOUS WASTE MANAGEMENT

INTRODUCTION

- 9.1 This chapter, due to the unique nature of hazardous waste, summarises the management of hazardous waste in Northern Ireland.
- 9.2 The management of hazardous wastes has changed significantly in recent years as a result of more stringent legislation governing its treatment and disposal. This legislation, discussed in further detail within this Chapter, has extended the definition of hazardous waste as well as banning the co-disposal of hazardous and non-hazardous waste. The resulting effect of this has been an increase in the potential hazardous waste arisings as well as more stringent controls on disposal.
- 9.3 This Chapter addresses the current arrangements for managing hazardous waste as well as the anticipated future management and facilities required to ensure that Northern Ireland is compliant with the requirements of recent legislative changes concerning the classification, treatment and disposal of hazardous wastes.
- 9.4 The chapter is written in fulfilment of the District Councils statutory responsibilities under the Hazardous Waste Directive (91/689/EC).

DEFINITIONS

- 9.5 Article 1(4) of the Hazardous Waste Directive (91/689/EC) defines hazardous waste as wastes featuring on a list drawn up by the European Commission, because they possess one or more of the hazardous properties set out in the Hazardous Waste Directive. There are 14 hazardous properties set out in Annex II of the Directive and they are detailed in Table 9.1.

Table 9.1 Hazardous Properties (Hazardous Waste Directive Annex II)

H1	"Explosive" : substances and preparations which may explode under the effect of flame or which are more sensitive to shocks or friction than dinitrobenzene.
H2	"Oxidising" : substances and preparations which exhibit highly exothermic reactions when in contact with other substances, particularly flammable substances.
H3A	"Highly flammable" : - liquid substances having a flashpoint of below 21⁰C or - substances and preparations which may readily catch fire in contact with air at ambient temperatures without any application of energy or - solid substances and preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or be consumed after removal of that source or - gaseous substances and preparations which are flammable in air at normal pressure, or - substances and preparations which, in contact with water or damp air, evolve highly flammable gases in dangerous quantities.
H3B	"Flammable" : liquid substances and preparations having a flashpoint equal to or greater than 21 ⁰ C and less than or equal to 55 ⁰ C.
H4	"Irritant" : non-corrosive substances and preparations which, through immediate prolonged or repeated contact with the skin or mucous membrane, can cause inflammation.
H5	"Harmful" : substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may involve limited health risks.
H6	" Toxic" : substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may involve serious, acute or chronic health risks or even death.
H7	"Carcinogenic" : substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce cancer or increase its incidence.
H8	"Corrosive" : substances and preparations which may destroy living tissue on contact.
H9	"Infectious" : substances containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms.
H10	"Toxic for reproduction" : substances or preparations which, if they are inhaled or ingested, or if they penetrate the skin, may produce or increase the incidence of non-heritable adverse effects in the progeny and/or of male or female reproductive functions or capacity.
H11	"Mutagenic" : substances or preparations which, if they are inhaled or ingested, or if they penetrate the skin, may induce hereditary genetic defects or increase their incidence.
H12	Substances and preparations which release toxic or very toxic gases in contact with water, air or an acid.
H13	Substances and preparations capable by any means, after disposal, of yielding another substance, e.g. a leachate, which possesses any of the characteristics listed above.
H14	"Ecotoxic" : substances and preparations which present or may present immediate or delayed risks for one or more sectors of the environment.

MANAGEMENT AND CONTROL

- 9.6 The Hazardous Waste Regulations (Northern Ireland) came into operation in 2005 and replace the Special Waste Regulations (Northern Ireland) 1998. The Hazardous Waste Regulations introduced the revised European Waste Catalogue Hazardous Waste List (2000/532/EC) (EWC HWL) and a change in the definition of special waste to bring it into line with the European definition of hazardous waste. The implication of this is that a number of additional wastes, that were previously non hazardous, have been classified as hazardous and this will therefore have the effect of an increase in hazardous waste arisings within Northern Ireland.
- 9.7 These aim of these Regulations is to:
- Implement a definition of Hazardous Waste into domestic legislation and consequently remove the use of the term special waste.
 - Keep the requirement to pre-notify waste movements to EHS
 - Ensure safe management of hazardous waste
 - Provide cradle to grave documentation for the movements of hazardous waste
 - Require consignees to keep thorough records of hazardous waste and provide returns to the producers.
- 9.8 The new regulations introduce the new EWC, which has extended the definition of hazardous wastes. There are 3 main groups of wastes which will significantly increase the quantities from those shown above:
- An extension of the application of 'ecotoxic' as a hazardous property will significantly increase the amount of metal containing wastes classified as hazardous, particularly those arising from the redevelopment of contaminated sites. The amount of contaminated soil in 2002 was abnormally low, and an annual generation of around 10,000 tonnes is estimated with the revised definitions.
 - Much waste electrical and electronic equipment (WEEE) will now be classified as hazardous waste. A recent pilot collection scheme has estimated likely arisings in Northern Ireland as in the range 6,500- 20,000 tonnes per annum (see the separate waste summary sheet for WEEE).
 - Similarly, end of life vehicles (ELVs) will now be classified as hazardous wastes until they have been de-polluted (see the separate waste summary sheet for ELVs).
- 9.9 In terms of management of hazardous wastes, the Hazardous Waste Forum, consisting of key stakeholders, was established to advise on a way forward for hazardous waste reduction, recovery and management. The Forum has published its first Action Plan in June 2004, with objectives and Actions focussing on four areas namely:
- Regulatory System

- Communications and awareness raising
- Reduction, Reuse and Recycling
- Provision of facilities.

9.10 Further information on these objectives can be found at:

www.ehsni.gov.uk/environment/wasteManage/regulations_NI_HWF.shtml

9.11 The main roles and responsibilities for the management and control of Hazardous Waste, under the provisions of the legislation and the Hazardous Waste Forum, are summarised in Table 9.2.

Table 9.2 Summary of Roles and Responsibilities for Hazardous Waste

Element	Responsibility
Overall planning for management of Hazardous Wastes	Hazardous Waste Forum, facilitated by Environment and Heritage Service Hazardous Waste Producers
Review process to eliminate or reduce the hazardous nature of wastes	Waste Producers
Segregation of hazardous wastes for collection	Members of the Public (to separate out household hazardous waste) Hazardous Waste Producers within the commercial, industrial and commercial sectors
Collection of Hazardous Wastes	Registered Hazardous Waste Contractors at licensed facilities. District Councils (to provide collection points for household hazardous wastes)
Treatment and Disposal of hazardous wastes. Ensure waste is treated and disposed in accordance with legislation at appropriately licensed facilities	Registered Waste Management Contractors at licensed facilities. District Councils (for household hazardous wastes)

TARGETS

9.12 There are no targets specified within the Northern Ireland Waste Management Strategy for hazardous wastes.

- 9.13 The NI Hazardous Waste Forum has, under Action 3.3 specifically stated that: "Consideration of the use of targets for hazardous waste reduction is an important means of driving and monitoring progress. However, the information required to set realistic and achievable targets is not currently available. Once the information is available, the Forum will recommend where and how specific targets might be introduced".
- 9.14 Specific targets for the hazardous components of other waste streams such as Waste Electrical and Electronic Equipment, End of Life Vehicles and Batteries are incorporated into the individual chapter concerning these waste streams (Chapter 12).

WASTE QUANTITIES AND COMPOSITION

Waste Quantities

- 9.15 Due to the fact that the Hazardous Waste Regulations (Northern Ireland) did not come into effect until 2005, the current data relates to "Special Wastes" under the 1998 Regulations. Data on special waste arisings for this chapter has therefore been collated from datasets provided by EHS for 1999/00 and The Hazardous Waste Forum Action Plan (June 2004) for 2002. The total special waste arising for NI in 1999/00 was approximately 44,350 tonnes while the quantity arising in 2002 was 47,432 tonnes. In addition to this, a further 775 tonnes in 1999/00 and 10,797 tonnes in 2002 was consigned from transfer stations within the region.
- 9.16 A breakdown of the arisings and their generic type (EWC Chapter Headings), excluding the waste consigned from transfer stations, is summarised in Table 9.3.

Table 9.3 Breakdown of 1999/00 and 2002 Special Waste Arisings on a Northern Ireland Scale (excluding waste consigned from transfer stations)

Waste Description	1999/00 ¹	2002 ²
Mining and minerals (01)	0	6
Agriculture, food production (02)	19	156
Wood and paper production (03)	35	69
Leather and textile production (04)	0	0
Petrol, gas and coal refining/treatment (05)	0	0
Inorganic chemical processes (06)	8,326	9,099
Organic chemical processes (07)	4,845	3,594
Paints, varnish, adhesive & inks (08)	1,586	1,939
Photographic industry (09)	146	495
Thermal processes waste (inorganic) (10)	974	129
Metal treatment & coating processes (11)	3,432	2,438
Shaping/treatment of metals & plastics (12)	416	5,368
Oil and oil/water mixtures (13)	15,621	15,139
Solvents (organic) (14)	443	388
Packaging, cloths, filter materials (15)	5	303
Not otherwise specified (16)	2,508	1,914
C&D waste & asbestos (17)	1,485	2,566
Healthcare (18)	363	1,059
Waste/water treatment & water industry (19)	2,959	2,645
Municipal & similar commercial (20)	587	17
Unspecified (99)	604	107
Totals	44,354	47,431

Source:

1. EHS Hazardous Waste Arisings 1999/00
2. Hazardous Waste Forum Action Plan, 2004

9.17 These special waste arisings were consigned to a range of waste management facilities for treatment, recovery, disposal and onward transfer. The quantities of waste exported to Great Britain by generic type (EWC Chapter Headings) are summarised in Table 9.4.

Table 9.4 Summary of Special Waste Exported by Generic Type

Waste Description	Special Waste Arisings 1999/00 (tonnes) ¹		Special Waste Arisings 2002 (tonnes) ²	
	Total	Exported to GB	Total	Exported to GB
Mining and Minerals (01)	-	-	6	6
Agriculture, Food Production (02)	19	1	156	1
Wood and paper production (03)	35	12	69	5
Leather and Textile Production (04)	-	-	-	-
Petrol, gas and coal refining/treatment (05)	-	-	-	-
Inorganic chemical processes (06)	8,326	2,410	9,099	6,553
Organic Chemical processes (07)	4,845	2,885	3,594	3,229
Paints, varnish, adhesives and inks (08)	1,586	317	1,939	1,463
Photographic industry (09)	146	-	495	485
Thermal processes wastes (inorganic) (10)	974	930	129	77
Metal treatment and coating processes (11)	3,432	1,903	2,438	994
Shaping/treatment of metals and plastics (12)	416	66	5,368	4,148
Oil and oil/water mixtures (13)	15,621	239	15,139	321
Solvents (organics) (14)	443	328	388	383
Packaging, cloths, filter materials (15)	5	-	303	108
Not otherwise specified (16)	2,508	1,425	1,914	1,169
C&D waste and asbestos (17)	1,485	7	2,566	102
Healthcare (18)	363	84	1,059	299
Waste/water treatment and water industry (19)	2,959	-	2,645	2,619
Municipal and similar commercial (20)	587	367	17	4
Unspecified (99)	604	8	107	12
Totals	44,353	10,982	47,432	22,049

Source:

1. EHS Hazardous Waste Arisings 1999/00
2. Hazardous Waste Forum Action Plan, 2004

9.18 The special wastes were consigned to a range of waste management facilities for treatment, recovery, disposal and onward transfer. Table 9.5 summarises the total amounts of waste being treated by each type of facility.

Table 9.5 Summary of Special Waste Arisings by Treatment/Disposal Route in 2002

Route	Quantity in 1999/00 ¹ (tonnes)	Quantity in 2002 ² (tonnes)
Export to GB	10,982	22,049
Incineration	7	1
Landfill	7,949	5,283
Sewage Treatment	5,250	2,072
Physico-Chemical Treatment	19,410	18,027
Total	43,598	47,432

Note:

1. EHS Hazardous Waste Arisings 1999/00

2. Hazardous Waste Forum Action Plan 2004

Source: Hazardous Waste Forum Action Plan, 2004

9.19 As can be seen from Table 9.5, approximately 46% of the waste is exported to GB for treatment and disposal whilst within Northern Ireland physico-chemical treatment and landfilling remained the most popular treatment and disposal routes. It should be noted that this table does not include 755 tonnes of waste consigned to transfer stations in 1999 and 10,797 tonnes consigned to transfer stations in 2002.

9.20 Table 9.6 shows the amount of waste recovered, treated and disposed in Northern Ireland, compared to that managed in Great Britain in 2002. The 1999/00 data has not been included for comparison within this table as, at this time, there were no formal mechanisms for identifying the destination of waste exported to GB.

Table 9.6 Estimated Waste Management Routes for All Northern Ireland Special Waste Arisings

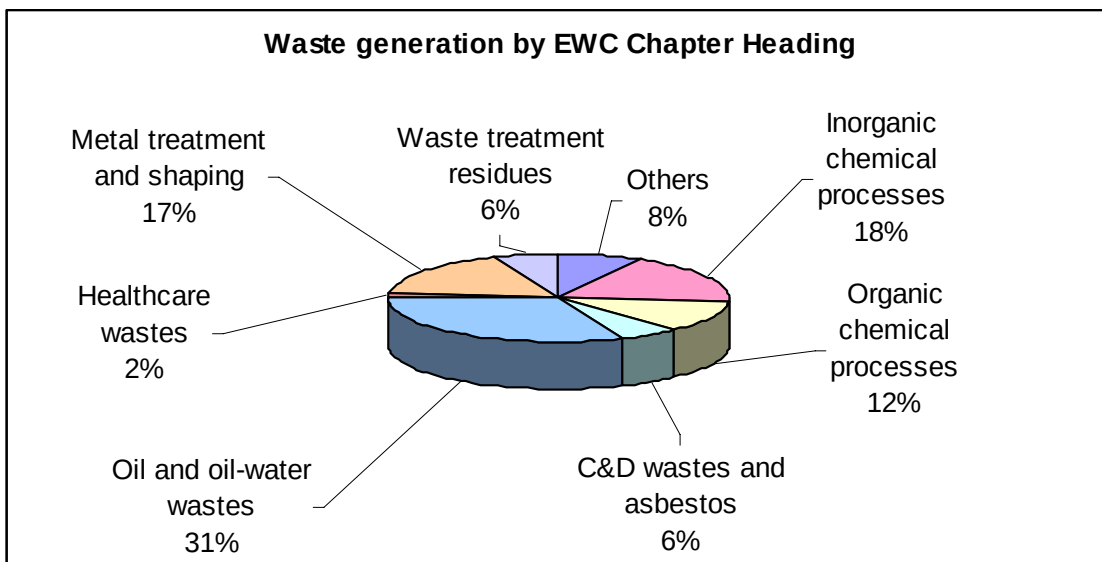
Route	Managed in NI	Managed in GB	Total
	Quantity in 2002 (Tonnes) ¹		
Incineration	1	1,190	1,190
Landfill	5,280	8,380	13,660
Sewage Treatment	2,070	-	2,070
Recovery	-	4,290	4,290
Physico-chemical treatment	18,030	7,890	25,920
Transfer/Long Term Storage in GB	N/a	300	300
Total	25,380	22,050	47,430

Note: 1. Figures noted to nearest 10 tonnes.

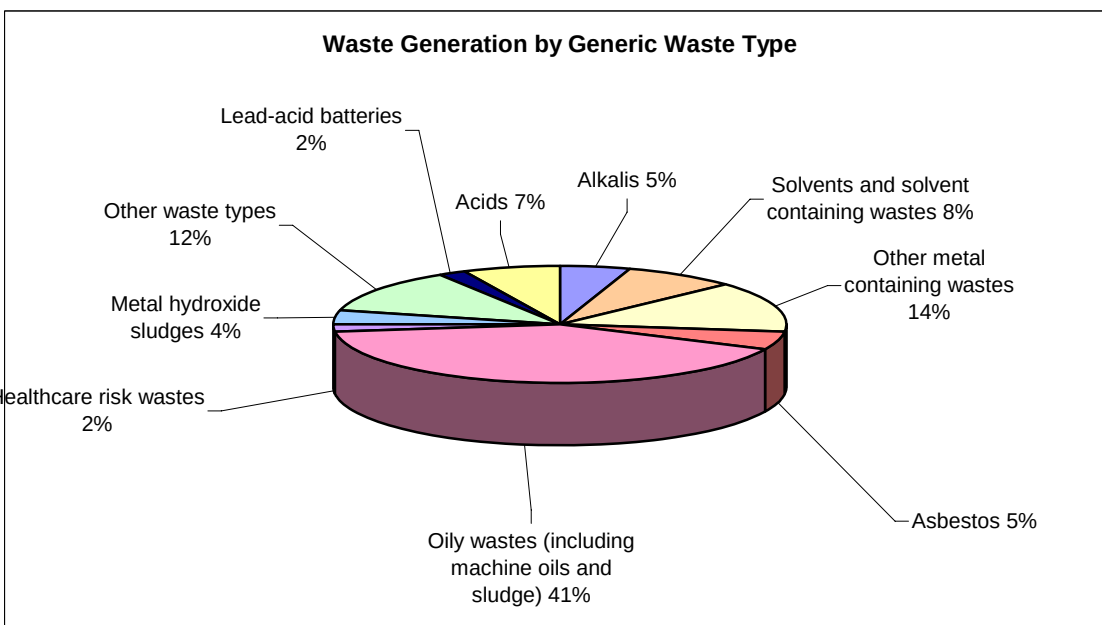
Source: Hazardous Waste Forum Action Plan, 2004

Waste Composition

- 9.21 The composition of the 47,430 tonnes of special waste, as reported in 2002, is presented in Figures 9.1 and 9.2. Figure 9.1 identifies the waste according to the European Waste Catalogue (EWC) chapter headings while Figure 9.2 identifies the generic types of waste which relate to its composition.

Figure 9.1 Waste Generation by EWC Chapter Heading

Source: Northern Ireland Waste Management Strategy: Towards Resource Management, 2006

Figure 9.2 Waste Streams by Generic Waste Type

Source: Northern Ireland Waste Management Strategy: Towards Resource Management, 2006

CURRENT ARRANGEMENTS FOR THE MANAGEMENT OF HAZARDOUS WASTE

- 9.22 Following the introduction of the Hazardous Waste Regulations (Northern Ireland) 2005, and the subsequent change in definition from special to hazardous waste, there has been a significant change in both the quantities of waste being classified as hazardous and also the way in which hazardous waste is managed in Northern Ireland. There are a number of new hazardous waste entries on the EWC not previously categorised as special waste. These include:
- **End-of-life vehicles (16 01 04)**
 - **Waste containing Cathode Ray Tubes (CRTs) and activated glass (16 02 13)** This covers televisions and computer monitors
- 9.23 There are also a number of wastes that are now covered as “absolute entries” which are hazardous regardless of the concentration of “dangerous substances” within the waste, when previously they would have been assessed against the threshold concentrations. These include:
- All oils (excluding edible oils)
 - The majority of wood preservatives (03 02)
 - Many acids and alkalis and
 - All photographic chemicals
- 9.24 In addition to the changes implemented through the Hazardous Waste (Northern Ireland) Regulations, 2005, there have also been changes required as a result of the implementation of the Landfill Directive (1999/31/EC). The overall aim of the Landfill Directive is to minimise the effects of landfill on the environment and human health. The most significant change in terms of hazardous waste is the separation of landfills into hazardous, non-hazardous and inert, thus ending the practice of co-disposal. In addition to this, there have also been a number of requirements which impact further on the management of hazardous wastes. These have included the banning of liquid disposal to landfill and also the requirement for hazardous wastes to be pre-treated prior to being landfilled.
- 9.25 There are also a number of other articles of legislation and policy which impact on the management of hazardous wastes. These are discussed in further detail within Chapter 3 and 4 but include:
- Pollution, Prevention and Control Regulations (Northern Ireland), 2003
 - Waste Electrical and Electronic Equipment Directive (2002/96/EC)
 - Restriction of Hazardous Substances Directive (RoHS) (2002/95/EC)
 - End of Life Vehicles Directive (2000/53/EC)
 - Batteries Directive
 - Waste Incineration Directive (2000/76/EC)

- Waste Oil Directive (75/439/EC)
- Solvent Emissions Directive (1999/13/EC)

9.26 The resulting impact of the introduction of this legislation and policy within Northern Ireland is a reduction in the options available for the treatment and disposal of hazardous wastes, coupled with a potential increase in hazardous waste arisings. With regard to landfilling, the resulting impact of the introduction of the Landfill Directive banning co-disposal of hazardous and non-hazardous wastes is that there are currently no hazardous waste landfill sites in Northern Ireland. Lisbane Landfill Site has however recently (2005) been granted a license and is now operating a single cell for the disposal of asbestos waste. A recent BPEO Assessment Undertaken for the management of Asbestos Waste (BPEO Assessment for the Management of Hazardous Wastes, EHS, 2004) has indicated that double bagging the waste and then landfilling it into a dedicated cell is the preferred option.

9.27 The facilities licensed for the treatment and/or disposal of hazardous waste in May 2005 are shown in Table 9.7.

Table 9.7 Facilities Licensed for Hazardous Waste in Northern Ireland

Type of Facility	Number
Treatment and Transfer	
▪ Range of hazardous wastes, for acid-alkali neutralisation, oil water separation and transfer	1
▪ Metal bearing wastes	1
▪ Car batteries (licensed for separation, but now mainly operating as transfer stations)	7
Treatment	
▪ Oil recycling/treatment	3
▪ Steam sterilisation of clinical wastes (including prescription only medicines and sharps)	1
▪ Encapsulation of leaded petroleum sludge (now little waste)	1
Transfer Stations	
▪ Covering a range of hazardous wastes	4
▪ Prescription only medicines and sharps	11
▪ Paints and thinners (take back of used materials from customers)	4
▪ Batteries	1
▪ In-house waste only	1
Landfill	
▪ Single cell for asbestos waste only	1
Total	36

Source: Statement of Facility Needs for Hazardous Wastes in Northern Ireland- Supporting Report, 2005

Movements of Hazardous Wastes

- 9.28 Hazardous wastes may be dispatched directly to their point of disposal/recovery or may pass through one or more transfer stations en route. A consignment note accompanies each movement and the information from these is entered into the EHS Hazardous Waste Arisings Database. The commencement of each movement is classified as an arising and the arrival at a consignee's premises is recorded as a deposit. For this reason the recorded tonnage of arisings and deposits within the database will be greater than the actual amount of hazardous waste produced due to movements via transfer stations.
- 9.29 The purpose of the Hazardous Waste Regulations (Northern Ireland) 2005 (see also Chapter 4 of this Plan) was to introduce one consignment note for hazardous waste exported to GB, covering the waste movement up to the final destination in GB. There is also a requirement within the consignment note to enter the Standard Industrial Classification (SIC) code for the waste types. Further to this, there is also a requirement for those transferring the waste to notify producers on the receipt of waste.

PROPOSED ARRANGEMENTS FOR THE MANAGEMENT OF HAZARDOUS WASTE

- 9.30 As has been said previously, recent legislative changes are driving the future management of hazardous wastes in Northern Ireland. It is therefore necessary to consider the options available in light of the changes to the treatment options available and the anticipated future waste arisings.
- 9.31 There are a number of options for the future management of hazardous wastes within Northern Ireland as outlined below. As with the management of municipal wastes, these have fallen into the three broad categories of:
- Waste Prevention - to limit the growth in hazardous waste arisings
 - Materials recovery - to reuse recover and recycle as much of the waste stream as practicable
 - Residual treatment and energy recovery - to render the wastes safe for disposal and recover energy as a resource, as far as possible.
- 9.32 Each of these options is discussed in more detail below:

Prevention/Reduction

- 9.33 Hazardous waste prevention and reduction is a priority and supported by all the sub-regional groups. The ability to prevent or reduce hazardous waste is dependant on the individual hazardous waste. Therefore the sub-regional groups will aim, where possible, to raise awareness of reductions options, such as cleaner technologies, with hazardous waste producers.

Re-Use, Recovery and Recycling

- 9.34 Certain hazardous waste can be re-used, recovered or recycled, with options being dependent on the nature of the hazardous component of the waste. Table 9.8 provides examples of potential re-use, recovery and recycling options along with some of the suitable hazardous waste streams.

Table 9.8 Examples of Hazardous Waste Re-use, Recovery and Recycling Options

Option	Suitable Waste Streams
Recovery for use as fuel	Organic solvents (blended to produce secondary liquid fuel) Fine chemicals and biocides
Solvent reclamation/ regeneration	Organic solvents including halogenated solvents, phenols, ethers, organohalons can be regenerated
Recycling/reclamation of metals and metal compounds	Photographic chemicals and materials - recovery of silver Spent catalysts - recovery of precious metals Car batteries - recovery of lead NiCd batteries - recovery of nickel and cadmium Fluorescent light tubes - recovery of mercury Oil filters - recovery of steel
Regeneration of acids and bases	Acids and bases
Recovery/re-refining of used oil	Mineral oils, oil/water and hydrocarbon mixtures

Treatment

- 9.35 Most physical and chemical treatment methods aim to produce a less hazardous form of the waste involved. This often involves a chemical reaction to change the hazardous components into non-hazardous compounds. Residues of hazardous components may also be immobilised chemically or physically.
- 9.36 Chemical processes primarily change inorganic compounds into a less harmful or hazardous form. They are usually applied to waste with one main chemical constituent and take place in a liquid state. Oxidation, reduction and neutralisation are the main types of treatment. The most common types of physical and chemical treatment technologies are summarised in Table 9.9.

Table 9.9 Summary of Common Treatment Technologies

Typical Treatment Methods	Summary
Oxidation/ reduction	The processes of oxidation and reduction are considered together, one cannot occur without the other. Commonly used to oxidise waste such as chromic acid or reduce wastes such as those containing cyanide. Oxidising agents include hypochlorite, peroxides and persulphates. Chromic acid wastes must be reduced before neutralisation.
Neutralisation	Neutralisation is the adjustment of the pH of a liquid or sludge waste. It involves the mixing of acid or alkaline wastes with a buffering agent to produce a solution (pH=7.0). Acid wastes often contain metals so during neutralisation metals are converted to metal hydroxides. So neutralisation and precipitation often go together. Examples include the treatment of spent acid catalysts, tanning wastes and acid pickle liquor from metal cleaning.
Precipitation	Precipitation involves the removal of dissolved components in solution by changing pH, chemical reaction, or changing temperature to solidify dissolved components. Precipitation can be combined with processes that remove solids, such as sedimentation, filtration and centrifugation. This method is often used to remove metals from waste water which can use a variety of reagents to cause the metals to precipitate and leave an effluent to be discharged and a concentrate that can be recycled or disposed to landfill. Reagents can include calcium hydroxide, sodium carbonate or sodium sulphide.
Ion exchange	This involves the removal of dissolved inorganic materials from an aqueous liquid with the use of resin column to which inorganic material will become attached.
Solidification	In this process wastes are combined with additives to convert them into a solid product which bonds toxic ions and elements, e.g. mixing fly ash or slurry with cement.
Adsorption	Activated carbon or synthetic resins are used to trap contaminants (by adhesion) from hazardous wastes. Adsorption is suitable for gaseous and aqueous waste streams, e.g. the removal of PCB's and organics from waste industrial water.

Landfill

- 9.37 The implementation of the Landfill Directive has had an impact on the type and quantity of hazardous waste landfilled. The co-disposal of hazardous with non-hazardous wastes is now banned, thus reducing the potential landfill capacity available. However, for certain hazardous waste landfill is currently, and will remain, the most appropriate disposal route. These wastes included asbestos, certain treated timber, some contaminated soils and inorganic wastes containing metal compounds. As previously mentioned however, Lisbane Landfill Site has recently (2005) been granted a license to operate a single cell for the disposal of asbestos waste. A recent BPEO Assessment Undertaken for the management of Asbestos Waste (BPEO Assessment for the Management of Hazardous Wastes, EHS, 2004) has indicated that double bagging the waste and then landfilling it into a dedicated cell is the preferred option.

Transfer Stations

- 9.38 The number of transfer stations licensed to accept hazardous wastes have risen from 9 in 1999/00 to 21 in 2005 with most of these being fairly small or specialised. A large number of these (11) have been developed to service the collection of healthcare waste destined for the steam sterilisation unit in Antrim Area Hospital.

Thermal Treatment and Energy Recovery

- 9.39 For certain hazardous wastes, high temperature incineration is considered the most appropriate disposal route for environmental and safety reasons. Such wastes include agrochemical residues, wastes containing PCBs, solvents and halogenated waste, laboratory chemicals and acid tars.
- 9.40 There were three types of thermal treatment for hazardous waste identified in the Statement of Facility Needs for Hazardous Waste in Northern Ireland- Supporting Report, 2005. These were:
- Export of hazardous wastes to specialised high temperature incineration facilities.
 - Blending with organic wastes to produce a secondary liquid fuel (SLF) for co-incineration in a cement kiln
 - Steam sterilisation of health care wastes (currently undertaken for all of Northern Ireland at Antrim Area Hospital).

Future Hazardous Waste Arisings

- 9.41 As previously mentioned, the resulting impact of the change in the definition of hazardous wastes has resulted in an increase in hazardous waste arisings. These increases have been identified within the Hazardous Waste Forum Action Plan, 2004 and are further detailed in Table 9.10.

Table 9.10 Changes in Hazardous Waste Arisings due to Change in Waste Definition

EWC Code	Description	Comments	Potential Change	Estimated Additional Arisings ¹
02	Wastes from agriculture etc.	Agricultural wastes are due to be included in the definition of controlled waste. This will result in an increase in hazardous waste, mainly in relation to agrichemical, asbestos and oils	Not considered	
0604	Metal containing waste	Some metal containing wastes could be included because of the lower thresholds for H10/H14	Assume a 5% increase in metal containing wastes	300 tpa
07	Organic Chemical processes waste	Some wastes could be included because of the introduction of absolute entries or lower thresholds for ecotoxic.	Assume 10% increase in the hazardous waste currently landfilled. There may also be a need for additional physico-chemical treatment capacity	30 tpa
1101	Liquid waste and sludges from metal treatment and coating of metals	Some metal containing wastes could be included because of the lower thresholds from H10/H14	Assume a 5% increase	100 tpa
1104	Other inorganic wastes with metals not otherwise specified			
1201	Wastes from shaping	Some metal containing wastes could be included because of the lower thresholds from H10/H14	Assume a 5% increase	300 tpa
1202	Wastes from mechanical surface treatment processes			
1601	End of Life Vehicles	All un-depolluted ELVs will be hazardous, although new and existing facilities will be developed as a result of a requirement of the ELV Directive	Will be dependent on when an ELV is deemed as waste. However they are likely to be managed through existing routes, although there may be greater permit controls	N/A
1602	Discarded equipment and shredder residues	Capacity for refrigeration equipment being developed as a result of ODS Regulations. Extent of other hazardous WEEE unclear, although potential for 50K to 100K tpa of CRT containing equipment across the UK. Capacity likely to develop as a result of the requirements of the WEEE Directive.	Assume 5,000 tpa for hazardous WEEE	5,000 tpa
17	C&D waste and asbestos	The requirement to assess certain wastes against exotoxic could significantly increase the quantities classified as hazardous.	Expect increase in the quantity of contaminated soils. Very little consigned in 2002 therefore difficult to apply % increase.	10,000 tpa

Note: 1. Arisings estimated to the nearest 100 tonnes

Future Capacity Needs

- 9.42 As previously said, the waste arisings data has indicated that, in 2002, there was 13,660 tonnes of Special Waste landfilled (5,280 tonnes within Northern Ireland and 8,380 within Great Britain). Due to the limited amount of hazardous waste capacity available within Great Britain, and the anticipated increase in costs of using these facilities, alternative means of disposal for this waste stream are likely to be sought.
- 9.43 A qualitative estimate of the future capacity needs, taking into account both the end of co-disposal and the additional hazardous waste arisings, has been made in the Facility Needs for Northern Ireland- Supporting Report, 2005. This has been summarised in Table 9.11.

Table 9.11 Summary of Generic Treatment/Disposal Route Capacity Needs (tonnes per annum)¹

Generic Treatment Route	Estimated Treatment Capacity Need for			Resultant Hazardous Waste Landfill Capacity Required for Residues/Outputs from Treatment Processes		
	Special Waste Currently Landfilled	Additional Wastes	Total	Special Waste Currently Landfilled	Additional Wastes	Total
Stabilisation/Solidification	9,310	9,230	18,540	18,620	18,450	37,070
Physico-Chemical	1,760	1,620	3,380	1,320	1,220	2,540
Waste Water Treatment	340	40	380	N/a	N/a	N/a
HTI/Co-incineration	1,650	1,480	3,130	N/a	N/a	N/a
Total	13,060	12,370	25,430	19,940	19,670	36,510

Note: 1. This table should be read in conjunction with the Assumptions set out within the Statement of Facility Needs
Source: Statement of Facility Needs for Hazardous Wastes in Northern Ireland, October 2005

- 9.44 A summary of the facility needs for hazardous waste management in Northern Ireland is shown in Table 9.12.

Table 9.12 Summary of Facility Needs for Hazardous Waste Management in Northern Ireland

Facility	Existing Provision	Need		Synergy with Republic of Ireland ¹
		Priority	Potential	
Treatment / Recovery				
Physico-chemical	1 acid neutralisation plant, considerable export to GB		Expansion of existing facilities	1 acid neutralisation plant
Oil separation and treatment	4 facilities, adequate capacity but market in flux.	Ensure adequate market outlets for recovered fuel	May require modification to existing facilities, or new facilities to adapt to new market outlets.	Demand for recovered fuel oil in RoI. Potential to serve all island market for recovered fuel oil.
Thermal treatment	None for high temperature incineration	-	Unlikely due to low quantities	Facility in Co.Cork awaiting decision on licensing.
	None for organic waste pre-processing to form a secondary liquid fuel for co-incineration	-	Small quantities. Opportunity if NI cement kilns adapt to use secondary liquid fuel.	3 organic waste pre-processing facilities exist/under development in RoI
	2 cement kilns could potentially use secondary liquid fuel or other waste derived fuels (e.g. recovered fuel oil) to replace fossil fuels	Storage facilities at cement plant to accept secondary liquid fuel and/or recovered fuel oil would become a priority need.		Potential for an all island market for secondary liquid fuel
	One steam sterilisation plant for healthcare risk wastes	-	Adequate capacity	2 plants- 1 NI and 1 RoI
Recovery	None in NI	-	Some potential for specialised facilities	Small facilities for solvent recovery, photochemical wastes and fluorescent lamps, but all exported.
WEEE	One specialised plant for refrigeration equipment containing chlorinated fluorocarbons.	Priority need for one or more WEEE dismantling and recovery plants.	May be opportunities for more specialised facilities e.g. for fluorescent lamps- economics could favour serving a wider area than NI	Priority needed both North and South - obvious potential for collaboration.
End of Life Vehicles	Well established network of vehicle dismantlers	Priority need to establish a network of authorised treatment facilities.		Likely to be adequate demand to support facilities North and South. Co-operation in border areas could be explored.
Contaminated Soils	None	Facilities to treat wastes from specific redevelopment sites, or “mobile” plants to serve several sites in turn	A central facility to serve a number of sites.	One pre-treatment plant for oil-contaminated soils: Otherwise exported.

Table 9.12 Summary of Facility Needs for Hazardous Waste Management in Northern Ireland (continued)

Facility	Existing Provision	Need		Synergy with Republic of Ireland
		Priority	Potential	
Disposal				
Hazardous waste landfill	None	-	Unlikely to be justified simply to serve NI	See below
Cell for stabilised non-reactive hazardous wastes at a non-hazardous waste landfill site (general)	None	Priority need for a cell for non-reactive waste, accepting a range of waste types. Would require a solidification/stabilisation plant, most likely on the same site.		National priority in RoI to establish 2 cells for stabilised non-reactive hazardous waste. Government has stated funding may be available.
Cell for asbestos only	One cell operational			One cell operational, for bonded asbestos only. Potential for co-operation.
Collection and Transfer stations	22 transfer stations, 6 accepting a range of hazardous wastes	Additional general transfer stations, and better geographical spread. Urgent need for further asbestos transfer stations. Network of sites for household hazardous wastes, WEEE, batteries etc.	Will be a continuing need for further, more specialised, transfer stations	Co-operation in border areas could be explored.
Integrated hazardous waste management facility	None	-	Development of an integrated facility, offering some combination of: physico-chemical treatment, oil separation, organic waste pre-processing for secondary liquid fuel, solidification/ stabilisation, landfill and transfer (for export) could help to improve economics	Several partially integrated facilities already exist (but without solidification or landfill). Potential for co-operation.

Note: 1. There are current restrictions on the movement of hazardous wastes between Northern Ireland and Republic of Ireland as a result of the United Kingdom Management Plan for Exports and Imports of Waste (1996).

MEASURES AND ACTIONS

- 9.45 The introduction of legislation and policy governing the management of hazardous wastes over recent years has driven a significant change in the way in which the waste stream is managed. Under these legislative changes the definition of hazardous waste has changed, leading to an increase in the amounts of waste now classified as hazardous. In addition to this, there have been significant changes to the treatment and disposal requirements for hazardous waste, in particular the banning of co-disposal of hazardous and non-hazardous wastes by landfill.
- 9.46 In light of these changes therefore, it is imperative that all stakeholders involved in the management of hazardous wastes realise the roles and responsibility that they play in ensuring that this waste stream is managed in a safe, sustainable and compliant manner in the future.
- 9.47 The NWRWMG has been involved as a stakeholder in the Hazardous Waste Forum in developing the Northern Ireland Hazardous Waste Action Plan¹. This Action Plan sets out the key issues and supporting background information, identifying the responsibilities and actions required of all stakeholders. It is supported by an Implementation Plan², which the Hazardous Waste Forum prepares to monitor progress in the implementation of the Action Plan's recommendations, and a Statement of Facility Needs³.
- 9.48 The Implementation Plan identifies the lead organisations/stakeholders for each of the recommended actions, together with projected timescales and measures to monitor progress. It is subject to review and updating, most recently in June 2006.
- 9.49 This section sets out the key actions required, by stakeholder group, as follows:
- The Hazardous Waste Forum (representing key stakeholders)
 - Industrial and commercial producers of hazardous waste
 - Waste Management Sector
 - District Councils
 - Members of the Public

¹ Hazardous Waste in Northern Ireland. An Action Plan for its Environmentally Sound Management. Northern Ireland Hazardous Waste Forum, June 2004.

² NI Hazardous Waste Forum- Implementation Plan 2006. Hazardous Waste Forum, June 2006.

³ Statement of Facility Needs for Hazardous Waste in Northern Ireland. Department of the Environment, Environment and Heritage Service, October 2005.

Hazardous Waste Forum

- 9.50 The Hazardous Waste Forum, facilitated by Environment and Heritage Service, to advise on the means by which Northern Ireland can achieve hazardous waste reduction and environmentally sound management of this waste stream, in the short to medium term. The aim of the advice, which should include information on the key decisions to be made and the timing of these decisions, is to identify the actions required to be undertaken by stakeholders to ensure that hazardous waste legislation is incorporated into management practices and hence the waste stream is managed in a sustainable manner.
- 9.51 The Hazardous Waste Forum to consider the impacts of existing and forthcoming legislation governing hazardous wastes and provide advice to stakeholders on the content and dissemination of Government advice and guidance.
- 9.52 The Hazardous Waste Forum, in association with hazardous waste producers, to identify potential opportunities for reducing the generation of hazardous waste and promote potential recovery of this waste stream. This could be achieved using the recommendations of the DEFRA forum and adapting this to meet the needs of Northern Ireland.
- 9.53 The Hazardous Waste Forum, Hazardous Waste Industry and the District Councils to identify the facilities to be used in the short term, and to recommend and support the development of an adequate network of future facilities, for the short to medium term management of hazardous wastes. These recommendations to distinguish between those facilities that can practically be provided within Northern Ireland, those which need to be planned/provided on an all island basis, and those which need to be provided on a Great Britain/Ireland basis.
- 9.54 The Hazardous Waste Forum to provide a better basis for forward planning through the provision of up to date and reliable data on hazardous waste generation and management.

Industrial and Commercial Producers

- 9.55 Given the recent changes to the definition from special to hazardous waste, industrial and commercial generators of hazardous waste need to become familiar with the requirements of the Hazardous Waste Regulations (Northern Ireland) 2005. This will require identification of those waste streams which now fall within the category of hazardous waste and will thus require a potential change in management practices.
- 9.56 Industrial and commercial waste producers, using the guidance produced by the Hazardous Waste Forum, to identify and prioritise ways in which the quantity of hazardous waste arisings can be reduced and the hazardous nature of the waste minimised.

- 9.57 The hazardous waste industry, in association with the waste management sector/technology providers, to bring forward proposals for the expansion of facilities for the recovery and treatment of hazardous wastes. These include the expansion of facilities for the physico-chemical treatment, one or more WEEE dismantling plants on a Northern Ireland basis, the establishment of a network of authorised treatment facilities for ELVs and a facility (either a centralised site or a series of licensed mobile plant) to treat contaminated soils from redevelopment sites. In terms of disposal, there is a need for the development of a landfill cell for stabilised non-reactive hazardous wastes. In addition, there is also a need for additional general transfer stations, covering the geographical spread of Northern Ireland, as well as transfer stations specifically for the collection of asbestos, household hazardous waste and WEEE.

Waste Management Sector

- 9.58 The Waste Management Sector, in association with the Hazardous Waste Forum, to develop and expand the range of services and facilities available to the hazardous waste sector for the collection, storage and treatment of hazardous wastes.
- 9.59 The waste management sector/technology providers, in association with hazardous waste producers, to bring forward proposals for the expansion of facilities for the recovery and treatment of hazardous wastes. These include the expansion of facilities for the physico-chemical treatment, one or more WEEE dismantling plants on a Northern Ireland basis, the establishment of a network of authorised treatment facilities for ELVs and a facility (either a centralised site or a series of licensed mobile plant) to treat contaminated soils from redevelopment sites. In terms of disposal, there is a need for the development of a landfill cell for stabilised non-reactive hazardous wastes. In addition, there is also a need for additional general transfer stations, covering the geographical spread of Northern Ireland, as well as transfer stations specifically for the collection of asbestos, household hazardous waste and WEEE.
- 9.60 The waste management industry to provide clear guidance to their clients on what is and is not acceptable in terms of segregation, management and treatment for hazardous waste.

District Councils

- 9.61 As noted previously, the NWRWMG has been involved as a stakeholder in developing the Northern Ireland Hazardous Waste Action Plan⁴, and the supporting Implementation Plan⁵. The Councils within the North West are committed to fulfilling their responsibilities set out in these Plans. The actions that they are responsible for are summarised below.
- 9.62 The NWRWMG, as a key stakeholder, to continue to support the work of the Hazardous Waste Forum, including the review and update of the Implementation Plan.
- 9.63 Councils to continue to develop constructive working relationships with Environment and Heritage Service to monitor, and where appropriate detect, deter and disrupt illegal and unlicensed activities.
- 9.64 Councils in providing trade waste services, to provide clear guidance to their clients on what is and is not acceptable in terms of segregation, management and treatment for hazardous waste.
- 9.65 Councils to encourage separate collection of household hazardous waste, through the wider dissemination of good practice and the provision of support, as appropriate. Specific aspects include:
- Councils to work with DOE and HSE to ensure that more accessible provision is made for acceptance of asbestos waste from households.
 - Councils and Department to agree a joint initiative on the production of guidance on the safe disposal of household asbestos waste.
 - Councils, DOE and responsible producers to work together to ensure that appropriate provision is made for acceptance of WEEE from the general public.
 - Councils, industry, government and the NGO sector to work together to develop reuse opportunities for unused paint.
- 9.66 District Councils to provide facilities for the collection of household hazardous waste such as WEEE, paints, batteries at appropriate civic amenity sites within their District, as part of the wider infrastructure provision for these waste streams, in anticipation that appropriate funding and support will be made available through Producer Responsibility arrangements.
- 9.67 Councils to encourage wider public participation in schemes for the separate collection of hazardous household waste. This is to be linked to the wider public awareness campaigns.

⁴ Hazardous Waste in Northern Ireland. An Action Plan for its Environmentally Sound Management. Northern Ireland Hazardous Waste Forum, June 2004.

⁵ NI Hazardous Waste Forum. Implementation Plan 2006. Hazardous Waste Forum, June 2006.

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- 9.68 Councils to work alongside the Department and Planning Service to agree how best to establish that hazardous waste facilities represent BPEO for the targets waste streams, as required by PPS11.
- 9.69 Councils, government and industry to work together to facilitate the development of separate cells for stable non-reactive hazardous wastes on one or more non-hazardous waste landfill sites within the North West Region.
- 9.70 District Councils to work with other stakeholders to improve the quality, reliability and consistency of the available data for improved planning and the management of hazardous waste.

Members of the Public

- 9.71 Members of the public to separate out household hazardous waste (for wastes including batteries, paints, WEEE) and take to a local civic amenity site for safe disposal.
- 9.72 Any clinical waste within the household (in particular hypodermic needles and syringes) should be disposed of in the receptacles (sharps bins) provided by the healthcare profession and disposed of in accordance with their requirements.
- 9.73 Any unused medicines should be taken back to the pharmacy from which they came, for safe disposal.

10.0 CONSTRUCTION, DEMOLITION AND EXCAVATION WASTE

INTRODUCTION

- 10.1 This chapter outlines the measures for the future management and control of Construction, Demolition & Excavation (C, D & E) wastes within the North West Region to facilitate greater resource efficiency and to comply with the relevant policy targets.
- 10.2 C, D & E waste arises from the construction, repair, maintenance and demolition of infrastructure, buildings and structures. The waste stream mainly consists of:
- **Construction wastes:** wastes arising from site management practices e.g. excess materials and packaging, over-ordering materials, off-cuts and damaged materials. Typically, it is "cleaner" than demolition waste. Packaging waste makes up a significant part of this waste stream.
 - **Demolition wastes:** wastes generated by the demolition of existing structures/buildings rather than opting to refurbish them. This is made up of several sub-waste streams, which are often mixed, depending on the amount of selective demolition and separate collection that has taken place. Demolition waste can also contain hazardous substances such as asbestos, that was present in buildings when demolished or renovated.
 - **Excavation wastes:** typically consisting of materials e.g. soil, made ground and existing foundations removed as a function of design or from excavations for new construction. Depending upon the previous use of the site, this may, or may not be contaminated.
- 10.3 The construction industry makes a substantial contribution to our quality of life, through the provision and maintenance of essential infrastructure, such as the sewage systems, roads and telecommunications, and the provision of buildings for home, leisure, education and work. Construction, building materials and associated professional services together account for about 10% of our Gross Domestic Product and is an important source of employment in Northern Ireland.
- 10.4 The significant contribution of the construction and building sectors is set to continue with the major anticipated infrastructure spend in the coming years coupled with a healthy housing and commercial development sector. As a result, the amount of C, D & E waste generated is expected to increase if measures are not put in place to limit waste growth and promote resource efficiency.
- 10.5 In effecting change, it is worth recognising that the construction and building industry can be considered, in broad terms, as two main categories:

- **Medium to large scale development projects:** Typically such projects involve a level of control and planning through the involvement of informed clients, construction professionals, the larger contractors and builders. Often the sites are large enough to allow materials and wastes, which are generated in larger quantities on such projects, to be segregated and stored, facilitating the more efficient use of materials and resources.
- **Small build projects:** Typically concerned with the building, repair, maintenance and renovation of individual houses and other small buildings. Often these types of projects involve small builders and contractors, with the sites constrained for space, and the relatively small quantities of waste generated making it uneconomic to sort materials, hence the use of single skips to accept all the types of waste produced on the project.

10.6 Whilst recognising that the distinction between these two categories is to a large degree arbitrary, and that there is a wide variety in the nature and scale of projects undertaken by the construction and building industries, it does emphasise the need for targeted strategies in order to reach the different players, if real change is to be effected.

10.7 Historically, C, D & E wastes have traditionally been managed at low cost, with a very heavy reliance on landfill disposal, often at unlicensed and unregulated sites. Often, different waste materials, such as plasterboard, cardboard, soils and brick, tiles and ceramics, copper wiring and scrap metal for example, as well as unused materials, are discarded together in mixed waste skips. However, the true costs of this practice is being increasingly recognised, and have been placed as high as £1000 - £1500 per skip, when the cost of the materials, plant and time are properly factored in.

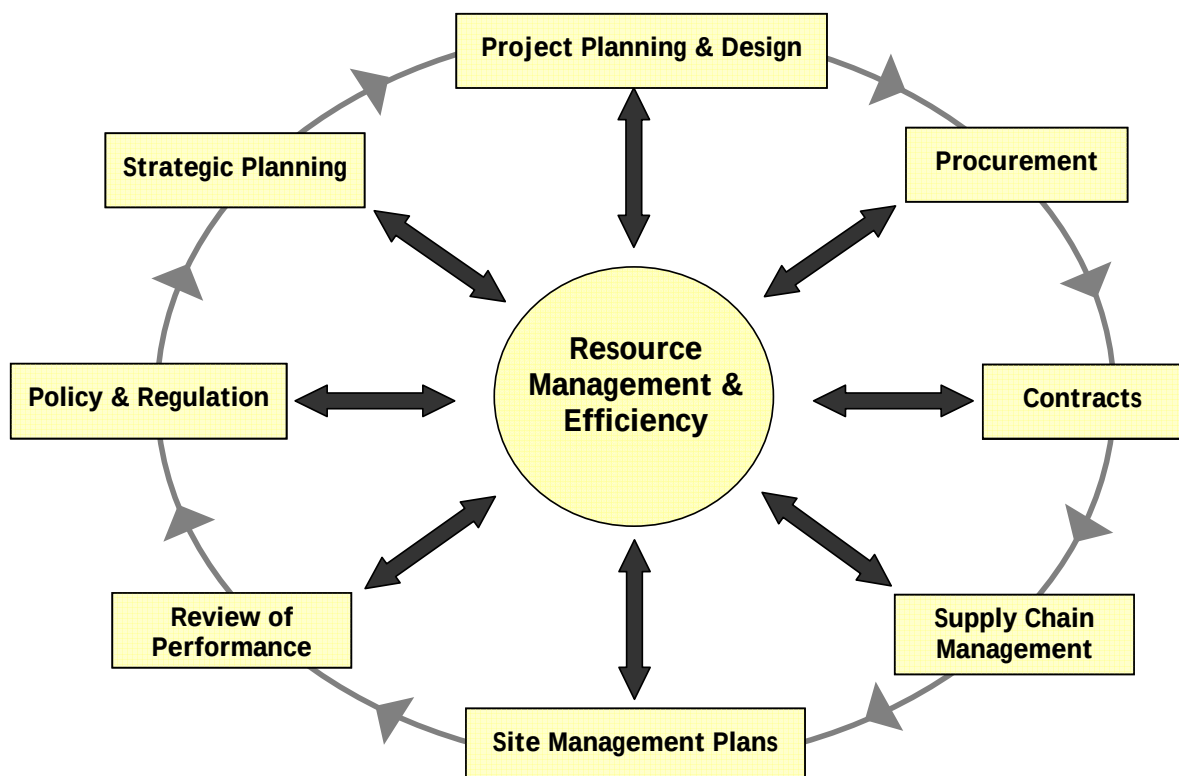
10.8 Costs therefore will be a key driver for change in the future. This is reinforced by the implementation of the Landfill Directive, with its classification of landfill sites as:

- Inert
- Non-hazardous
- Hazardous

10.9 Strict Waste Acceptance Criteria will apply, which will see the traditional type of CD&E landfill phased out. In addition, Landfill Tax of £2 per tonne applies to inert wastes, but a higher rate of £18 per tonne (set to rise to more than £35 per tonne) applies to the non-hazardous and hazardous fractions. The costs of landfill disposal therefore are set to increase significantly, which will create a strong incentive to separate wastes, particularly inert wastes, such as soils and rock, out at source, and manage each material accordingly.

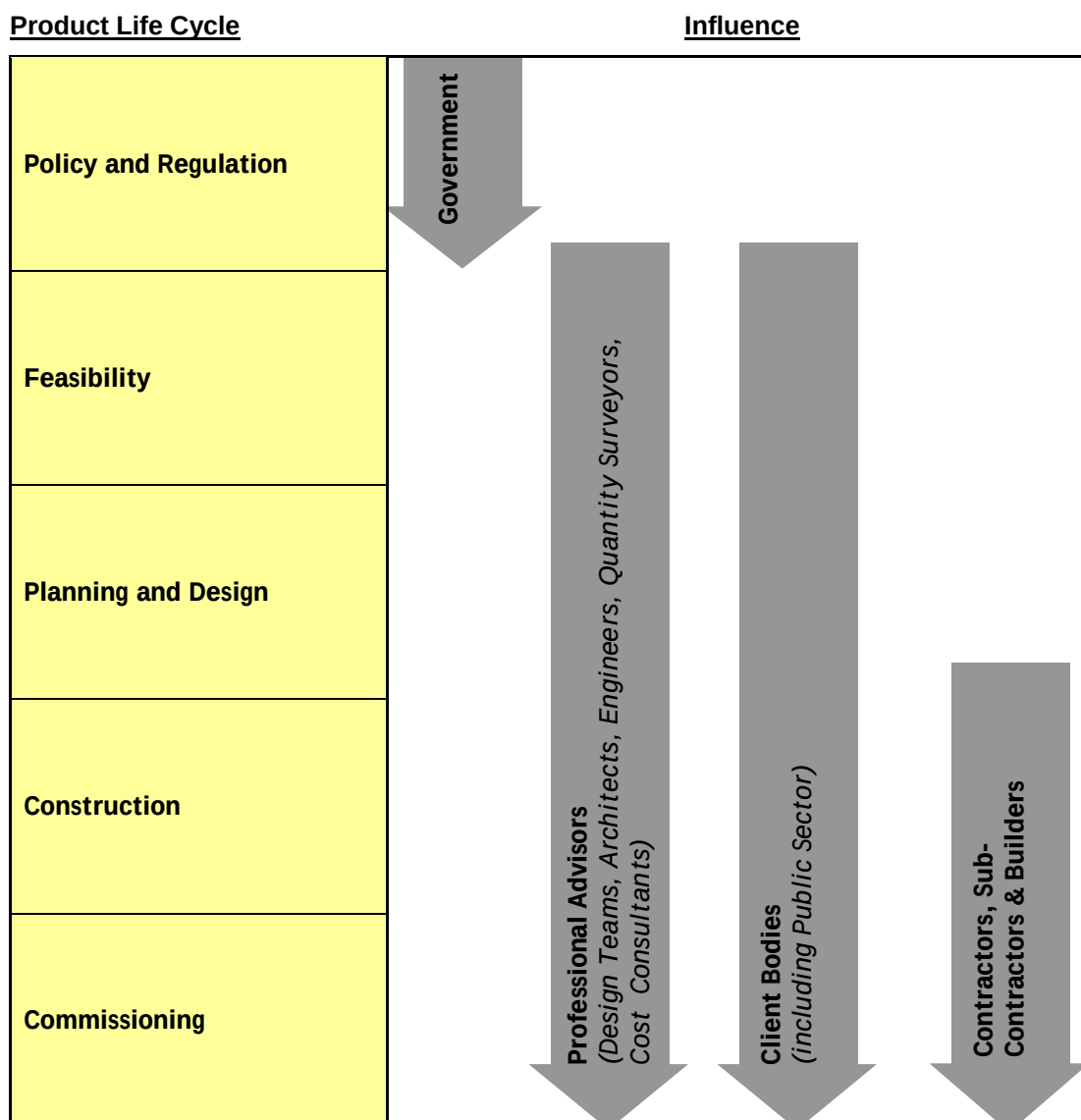
- 10.10 There is therefore a key challenge in effecting a more sustainable approach to the management of C, D & E waste during the construction process. This requires a change in attitudes and practices on site, so that C, D & E waste becomes viewed as a valuable resource, used efficiently and with the quantities disposed of minimised. Cost considerations will be a primary factor in driving this change, but all players, from clients, designers and specifiers to contractors, builders and sub-contractors have their role to play.
- 10.11 The construction and building sectors however have to be considered within a broader context. Their activities take place within a policy and regulatory framework, so that, as illustrated in principle in Figure 10.1, there are a range of opportunities to influence resource planning, management and efficiency within the wider construction cycle.

Figure 10.1 Potential Intervention Points to influence Resource Management in the Construction Cycle



- 10.12 How waste is managed, and ultimately the quantities of waste generated, is influenced throughout the construction cycle, as illustrated in Figure 10.2. In principle, the greatest influence can be exerted at the early stages of the project life cycle with influence decreasing and limited if it is left only to the construction stages on site.

Figure 10.2 Influence on C, D & E Waste Generation in a Project Life Cycle



10.13 All players, from government to clients, designers, specifiers and procurement managers, to contractors, builders, contractors, materials suppliers, waste contractors and re-processors have a role to play. However, the primary responsibility rests with clients, designers and specifiers, to reduce the quantities of waste produced, and improve the management of resources on construction projects generally. Contractors and builders can really only influence the quantities of waste produced by improving site practices.

DEFINITIONS

10.14 C, D & E wastes are defined as: *'Those waste materials which arise from the construction or demolition of buildings and/or civil engineering infrastructure, including hard Construction and Demolition (C & D) waste and excavation waste, whether segregated or mixed.'*

- 10.15 The wastes produced by C, D & E activities are 'controlled wastes', as defined by the Waste and Contaminated Land Order (NI) 1997. C, D & E waste can vary significantly from natural sub-soils to hazardous asbestos containing materials and therefore is classified as inert waste, non-hazardous waste or hazardous waste depending on the nature of the particular waste.
- 10.16 Common C, D & E wastes classified under the European Waste Catalogue include:
- Concrete, bricks, tiles and ceramics e.g. demolition of existing structures, removal of concrete surrounds
 - Wood, glass and plastic e.g. door frames, roof trusses, abandoned pipework, fascia boards, window frames
 - Bituminous mixtures, coal tar and tarred products e.g. road wearing and base courses
 - Metals (including their alloys) e.g. redundant plant and panels, structural framework, bar and mesh reinforcement, scrapper bridges, storage tanks
 - Soil, stone and dredging spoil e.g. road sub-base, laneway and land excavations
 - Insulation materials and asbestos containing construction materials
 - Gypsum based construction materials
 - Other construction and demolition wastes e.g. rock from roads and lands excavations

MANAGEMENT AND CONTROL

- 10.17 The management and control of C, D & E waste is provided by the legislative framework under the following main pieces of legislation:
- The Waste and Contaminated Land (Northern Ireland) Order 1997
 - The Controlled Waste (Duty of Care) Regulations (Northern Ireland) 2002
 - The Hazardous Waste Regulations (Northern Ireland) 2005
 - The Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations (Northern Ireland) 1999
 - The Landfill Regulations (Northern Ireland) 2003
 - Waste Management Licensing Regulations (Northern Ireland), 2003
 - The Pollution, Prevention and Control Regulations (Northern Ireland), 2003
- 10.18 C, D & E waste is subject to a Duty of Care on how it is transported, managed, licensed and disposed as other waste streams. The disposal of wastes by landfilling is governed by the Landfill Directive, a technology specific measure. It sets standards for landfill design, operation and closure, and requires operators to make appropriate financial provisions. It also sets strict criteria for the acceptance of wastes and the licensing of sites, requiring landfills to be classified, depending on the nature of the wastes they receive, as either; inert, non-hazardous or hazardous.

- 10.19 Given that C, D & E wastes are largely comprised of soils and rock they are likely to be managed at sites classified as 'inert' under the provisions of the Directive. However, the standards set by the Directive mean that, over the next few years, there will be a step change in development, operational and management practices at landfill sites, which are expected to drive up the costs of disposal significantly.
- 10.20 The Waste Management Strategy, *Towards Resource Management*, also sets out a commitment for the introduction of Site Waste Management Plans, to be prepared on a project specific basis. The Department of Finance and Personnel, Central procurement Directorate, Sustainable Construction Group, have published a Code of Practice/Guidance, which is available on their website at:
<http://www.cpdni.gov.uk/index/guidance-for-purchasers/sustainable-construction.htm>
- 10.21 The main roles and responsibilities for the management of C D & E waste are summarised in Table 10.1.

Table 10.1 Summary of Key Roles and Responsibilities for C, D & E Waste

Element	Responsibility
Project planning and design to minimise the amount of waste generated and maximise as far as possible the amount of materials recycled and recovered through design and specification.	Clients (public and private sector), Designers and Specifiers
Source segregation of wastes for collection for downstream reuse and recycling.	Specifiers (in contractual requirements) Contractors, Builders and Sub-Contractors
Treatment and disposal of C, D & E wastes.	Contractors and Sub Contractors and the Waste Management Industry
Site Waste Management Plans	Contractors

TARGETS

- 10.22 The recycling and waste prevention targets that apply to C, D & E waste come from a number of sources and include the Northern Ireland Waste Management Strategy and the Aggregates Credit Levy Scheme.
- 10.23 The Northern Ireland Waste Management Strategy sets the following targets for C, D & E waste:
- 75% of C, D & E wastes to be recycled or reused by 2020.
 - A minimum of 10% of the materials value of public sector construction projects should derive from recycled or reused content.

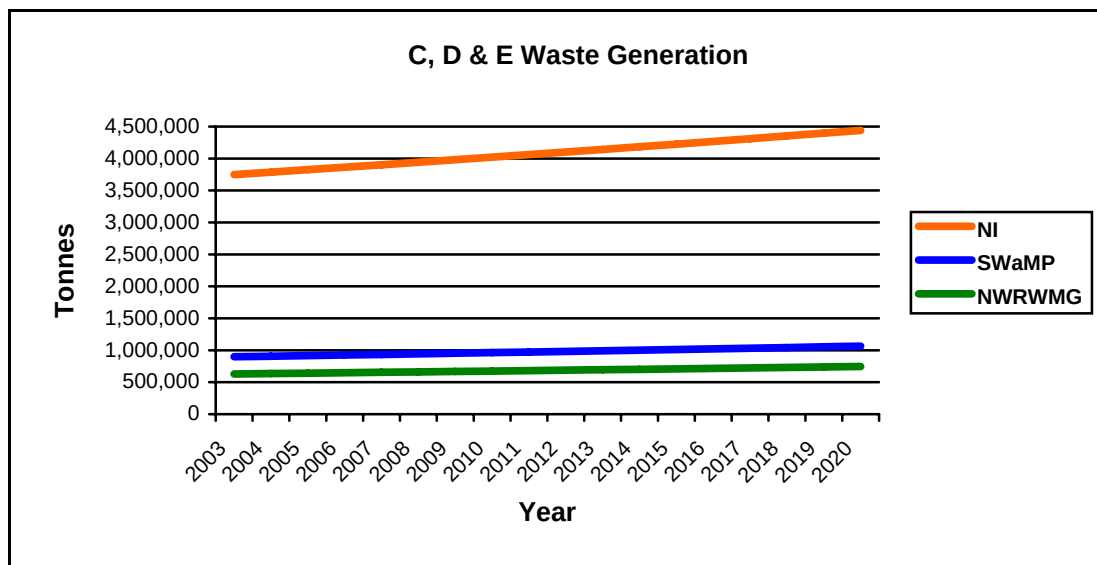
10.24 The Aggregates Credit Levy Scheme sets the following target:

- 5% of aggregates produced from recycled C, D & E waste rather than using virgin materials by 2011 (Total aggregates market – 20 million per year, therefore equivalent to about 1 million tonnes).

WASTE QUANTITIES AND COMPOSITION

Waste Quantities

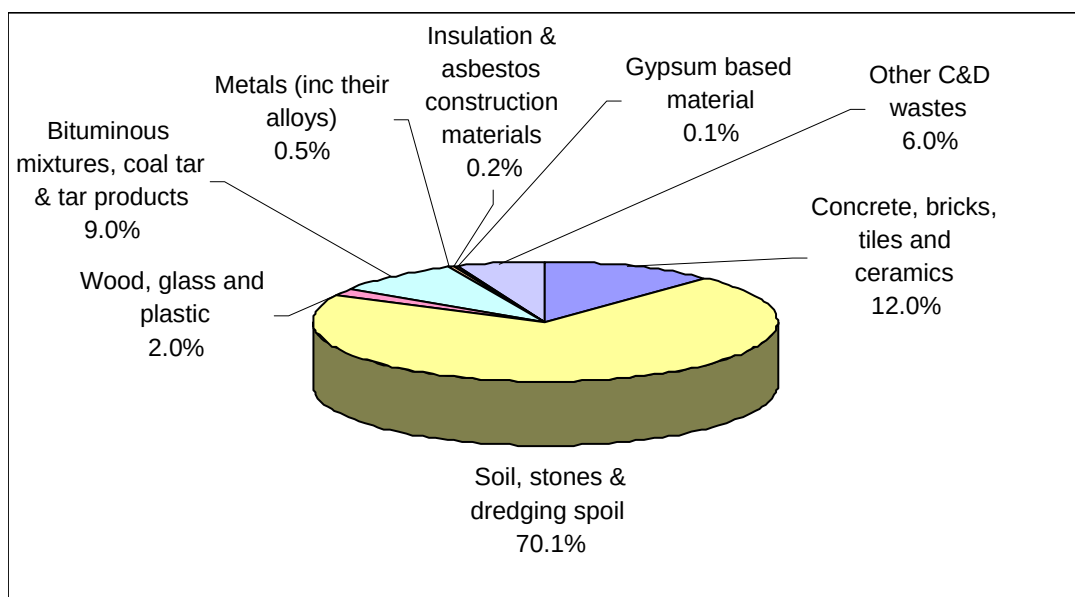
- 10.25 Up to date C, D & E waste arisings data is limited. However, based on a study carried out by the Symonds Group in October 2003 it is estimated that C, D & E waste arisings was in the range of 2.5 to 3.75 million tonnes per year in Northern Ireland. Given the uncertainties with the data the upper value has been taken as a conservative best estimate for C, D & E waste arisings in 2003. Whilst recognising that there is no direct relationship between population and CD&E waste arisings, this yields a C, D & E waste generation figure of approximately 2 tonnes per person per annum, which is similar to data reported for elsewhere.
- 10.26 It is estimated that the North West Region generated approximately 630,000 tonnes of C, D & E waste in 2003. Much of this C, D & E waste is recyclable, with the potential to replace virgin raw materials or part-supply material to the construction industry.
- 10.27 As stated previously, C,D & E waste generation is directly linked with the economic growth and the activity of the construction and building sectors which, coupled with the programme of infrastructure development anticipated in the North West area, suggests that the quantities of C, D & E waste generated will continue to increase.
- 10.28 For consistency with the BPEO Guidance a waste growth figure of 1% per year has been used to estimate that the projected waste arisings will be approximately 4.5 million tonnes per year in 2020 in Northern Ireland. Figure 10.3 illustrates projected C, D & E waste arisings in Northern Ireland, in the North West Region, the SWaMP Region and over the period of this plan.

Figure 10.3 Predicted C, D & E Waste Generation

- 10.29 In addition to general C, D & E wastes, Northern Ireland landfills currently approximately 2,500 tonnes of asbestos containing materials per year. This quantity is anticipated to peak at or around this level for a period and then decrease as the remaining asbestos is removed from buildings.

Waste Composition

- 10.30 Based on an EHS Construction and Demolition Waste Arisings Study carried out in 2001 it is estimated that approximately 34% of the C, D & E wastes are reused or recycled in some form, whilst the remaining 66% is primarily sent to landfill.
- 10.31 The compositional analysis of the C, D & E waste from this Study is illustrated in Figure 10.4. The data indicates that over 80% of the C, D & E waste comprises excavated soil, stones, concrete, and bricks with only 2.4% of the waste reported to be wood, metal, glass and plastic. It was estimated that 1.28 million tonnes of this C, D & E waste was “hard” construction waste suitable for crushing and recycling as aggregate.

Figure 10.4 C, D & E Waste Composition, 2001

10.32 With respect to the composition of construction C, D & E wastes in future, it is anticipated that there will be an increase in contaminated soil due to the introduction of contaminated land legislation and the increased development on Brownfield sites.

BEST PRACTICABLE ENVIRONMENTAL OPTION

10.33 Guidance on the Best Practicable Environmental Option (BPEO) for Waste Management in Northern Ireland was published in June 2005 by the Environment and Heritage Service (EHS) and can be found on their website at:

http://www.ehsni.gov.uk/pubs/publications/NI_BPEO_Guidance_652kb.pdf

10.34 This Guidance identified BPEO for C, D & E wastes as

- Reuse and recycling – to increase to 75% by 2020
- Landfilling – to decrease to 25% by 2020

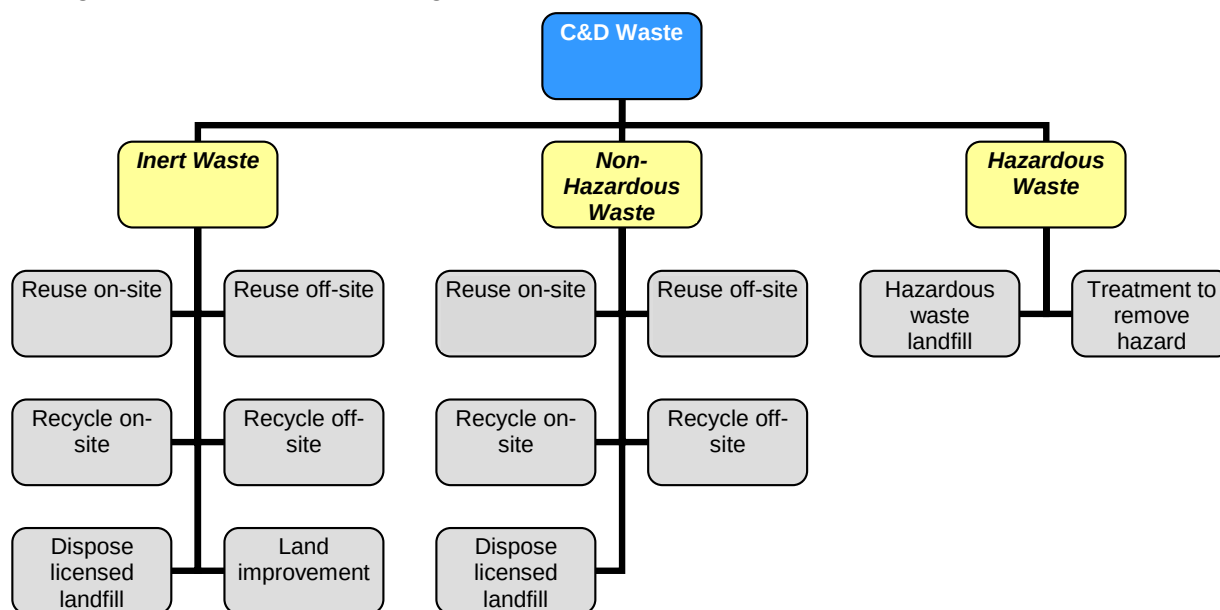
10.35 By using this data, the future capacity requirements for re-use/recycling/reprocessing and landfill can be estimated for Northern Ireland and the North West Region for the years 2010, 2013 and 2020, the three Landfill Directive target years, based on a progressive increase over time in re-use and recycling from the reported level of 34%. This is summarised in Table 10.2.

Table 10.2 Summary of Capacity Requirements for C, D & E Waste

		2010	2013	2020
Projected Waste Arisings				
<i>Northern Ireland</i>		4,020,000	4,150,000	4,500,000
<i>North West</i>		657,000	695,000	745,000
Reuse and Recycling	Targets:	53%	62%	75%
Capacity Requirements		(tpa)	(tpa)	(tpa)
<i>Northern Ireland</i>		2,130,000	2,573,000	3,375,000
<i>North West</i>		348,000	431,000	559,000
Landfill Disposal				
Capacity Requirements		(tpa)	(tpa)	(tpa)
<i>Northern Ireland</i>		1,890,000	1,577,000	1,125,000
<i>North West</i>		309,000	264,000	186,000

10.36 Building upon the BPEO Guidance, recent work by Full Circle, set out the possible management routes for C, D & E waste as illustrated in Figure 10.5. In particular the re-use and recycling 'on-site' is a key management tool to assist in achieving the reuse/recycling targets, depending on the classification (inert, non-hazardous or hazardous) and hence suitability of any waste material for any particular application.

Figure 10.5 Possible Management Routes for C, D & E Waste



Source: C, D & E Wastes Time For Change by the Construction Industry Group for Northern Ireland and Full Circle

- 10.37 The BPEO Guidance recommends the development of a network of C, D & E reprocessing and recycling facilities around the main urban centres. Existing or disused quarry sites were suggested as suitable locations for such facilities, considered to be cost-effective and yielding environmental benefits as vehicles could deliver waste for recycling and leave with aggregates, reducing overall transport impacts. It further stated that developing infrastructure at such sites is in line with the Regional Development Strategy and Planning Policy PPS 11. Such an approach would also clearly assist the quarrying sector meet the Aggregates Levy Credit Scheme Target.
- 10.38 Taking into account the above factors, for the purpose of this Plan, the BPEO for C, D & E waste is defined, in summary as:
- **Waste prevention** to limit quantities of C, D & E waste produced, through the designing out of waste, and the specification of re-usable or recyclable materials, as far as is practicable.
 - **Site waste management planning** – using the published Guidance and checklists to identify opportunities for the re-use and recycling of waste, on and off-site, and improve site management practices.
 - **On-site reuse and recycling** through the use of mobile plant to produce materials that are used on the project (e.g. crushing cement for reuse as fill).
 - Reuse and recycling at **centralised C, D & E reprocessing facilities**.
 - **Disposal** – the least preferred option, but unavoidable for some waste types, including some hazardous wastes.
- 10.39 A BPEO assessment has also been published for asbestos waste management (BPEO for the Management of Waste Asbestos, EHS, 2004) which can be found at <http://www.ehsni.gov.uk/pubs/publications/BPEOAsbestos.pdf>). This assessment identified that double bagging waste asbestos and then landfilling was the preferred option. Furthermore, the assessment identified that the need two or more landfill cells, spatially well separated within Northern Ireland and supported by a network of transfer/storage stations, to be developed to provide the necessary capacity.

CURRENT ARRANGEMENTS FOR C, D & E WASTE

- 10.40 The management of C, D & E wastes is currently going through a period of change, driven by increased regulation and cost considerations. Historically, there has been a heavy reliance on low cost disposal by landfilling, often at unlicensed and unregulated sites under the guise of land improvement. At present the relative proportion of the management approaches to C, D & E waste, as identified by the Construction and Demolition Waste Arisings Study carried out by EHS in 2001 is as follows:

- Re-use and Recycling: 34%
- Landfilling: 66%

- 10.41 The re-use and recycling has generally been carried out as or when the opportunity arose on projects, as there are no licensed 'centralised' C, D & E waste recycling/reprocessing centres in the Region. Small quantities, usually of architectural interest, are salvaged for re-use.
- 10.42 Landfilling has taken place at a large number of sites spread out across the Region, many of which traditionally have been unlicensed and unregulated, receiving limited quantities. Exemptions, under the licensing regime, have been used for the deposit of inert wastes for agricultural land improvement purposes.

PROPOSED ARRANGEMENTS FOR THE MANAGEMENT OF C, D & E WASTE

- 10.43 As identified in the BPEO for C, D & E wastes within the North West Region, the priority is waste prevention, followed by materials re-use and recovery. However, there will remain a need for landfill capacity for those wastes that are not recovered or recycled, as summarised in Table 10.3.

Table 10.3 Summary of Capacity Requirements for C, D & E Waste within the North West Region

	2010	2013	2020
Reuse and Recycling Targets:	53%	62%	75%
Capacity Requirements	348,000 (tpa)	431,000 (tpa)	559,000 (tpa)
Landfill Disposal			
Capacity Requirements	309,000 (tpa)	264,000 (tpa)	186,000 (tpa)

- 10.44 The primary responsibility rests with Clients, and their professional advisers, including designers, specifiers and cost consultants, to eliminate waste through design, and to maximise the re-use and recycling of materials on site. Examples include designing to balance cut and fill, and the crushing of concrete for re-use as a fill material. Such an approach limits the total recycling and reprocessing capacity required, either on site or at a centralised facility.

- 10.45 Another key focus for the future is the creation of markets, particularly for inert soils (including subsoil and topsoil) and rock, where suitable uses may be found in the restoration of mineral workings, landfills and brownfield sites. This requires a strategic and co-ordinated planning approach by stakeholders within the industry.
- 10.46 At the project level, Site Waste Management Plans are a crucial tool in planning for the management of wastes. The Government's Central Procurement Directorate has recommended that Site Waste Management Plans (SWMP) should be required for all contracts over £200K. SWMPs will be introduced in accordance with the principles established in the Code of Practice entitled '*Site Waste Management Plans; Guidance for Construction Contractors and Clients*', February 2006, (or any subsequent revision).
- 10.47 Through these approaches it is anticipated that the majority of reuse and recycling capacity of C, D & E waste will take place at the point of origin, with increased segregation and sorting, making use of appropriate mobile plant. Therefore, although the projected re-use and recycling capacity is approximately 350,000 tonnes per annum by 2010 increasing to some 560,000 tonnes per annum by 2020, only a proportion of this capacity will need to be provided at 'centralised' C, D & E waste recycling plants.
- 10.48 These centralised facilities will need to be licensed for the storage, sorting, crushing and reprocessing of C, D & E waste materials. The scale of the facilities will vary, being determined by the requirements of the market, but it is estimated that three to four such facilities, spread across the Region, but located to service the main urban centres would be appropriate.
- 10.49 The requirements for landfill capacity are projected to decrease, from 310,000 tonnes per annum in 2010, to 185,000 tonnes per annum by 2020. It is anticipated that with the increased segregation of materials on site, a proportion of these wastes will be inert materials, including topsoil and subsoils, which are potentially suitable for alternative uses rather than disposing of to landfill. Notwithstanding the above, the need for both inert and non-hazardous landfill remains, with sites located appropriately to service the main urban centres, in and around which the majority of C, D & E wastes arise.
- 10.50 Additional landfill capacity for particular hazardous waste streams, where disposal represents the preferred solution, should be considered on a Northern Ireland wide basis. For further information on this see Chapter 9 on Hazardous Wastes.

MEASURES AND ACTIONS

- 10.51 The management of C, D & E wastes is set for major change as the construction and building industries respond to the changes brought about by:
- the increasingly stringent regulatory environment;
 - the higher costs of landfill disposal, with restriction on waste acceptance, and higher standards of operation; and
 - greater client awareness and expectation, demonstrated through 'Green Procurement' policies, particularly in the public sector.
- 10.52 It is important therefore that all players, from government and clients, through designers, specifiers and procurement managers, to contractors, builders, materials suppliers, waste contractors and re-processors recognise their roles and responsibilities and respond accordingly. This section sets out below, the actions by main stakeholder grouping, who are as follows:
- Government (including planning authorities responsible for development control)
 - Client Bodies (including both public and private sector clients)
 - Industry Professionals (including the full range of professionals who advise clients on all-related matters including inter alia, site selection and layout, project design and specification, contractual arrangements and responsibilities)
 - Contractors, Sub-Contractors and Builders (including the waste management sector).

Government

- 10.53 Government's key role is in setting the framework to encourage and facilitate a more resource efficient management of C, D & E wastes. This can be achieved by working with stakeholders in the industry, including professional institutions, trade organisations and sectoral bodies, on areas of interest/concern to the industry, which at present include:
- **Disposal of wastes at unregulated and unlicensed sites:** A practice which has been widespread under the guise of 'an improvement'.
 - **Waste -v- Resource:** Clarification on when a material is a waste, and when it is a resource, for which a market exists and where it is used beneficially, displacing other materials.
 - **Development of Markets:** Explore the potential for a voluntary agreement with the sector to cover specific areas or activities that provide for a resource efficient approach, and which can operate without an undue administrative burden on the industry or Government.
 - **Raising Awareness and providing Guidance:** Work with the industry, particularly reaching out to small builders and tradesmen, to ensure that all are aware of the legislation, and their duties and responsibilities under it.

- 10.54 Effective regulation and enforcement is a key area, and there is much concern within the industry at the 'cutting of corners' by unscrupulous operators that undermine and undercut those organisations that adhere to the law. Concern has also been voiced at the apparent uncontrolled dumping of C, D & E wastes in some areas, including border areas (and in the Belfast Hills within the arc21 region). EHS have the responsibility to take appropriate enforcement action, as and when required, to ensure that there is a clear disincentive, with proper sanction.
- 10.55 Determination of planning applications provides a unique opportunity to influence projects at an early planning and design stage, to ensure that resource efficiency and waste management considerations are taken into account from the outset. Planning Service have already implemented a voluntary questionnaire in this respect, but working with District Councils, in their role of scrutinising planning applications, there is a role in encouraging the wider take up of this approach on more projects.
- 10.56 There is a need for better data in this sector. EHS should continue with its programme of waste surveys, publishing and 'promoting' the data to facilitate better planning within the sector.

Clients and Project Sponsors

- 10.57 The client, as the controller of the purse strings, is in the most influential position in promoting the re-use and recycling of C, D & E wastes in preference to disposal. The client also generally will have a Duty of Care under the legislation, with a responsibility to ensure that C, D & E wastes from his project are managed in accordance with all relevant statutory obligations, including for example, description of the wastes, transfer to authorised persons, registered carriers, and treatment and disposal at licensed facilities, unless an exemption has been issued by EHS for the specific application.
- 10.58 Specific initiatives that clients can consider, appropriate to the scale and nature of the project, include:
- Promotion of sustainable design initiatives, including low carbon design, and the use of recyclable materials and recycled products, through design and specification.
 - Introduction of control procedures to ensure the traceability of wastes removed from the site, including for example, contractual clauses requiring proof of evidence for treatment/disposal at licensed waste facilities before payment.
 - Consider 'quality/environmental' criteria in the appointment of contractors, taking into account performance and practice.
 - Ensure that the costs of waste management are properly reflected in project budgets and tender submissions, so that there is no hidden 'incentive' for perverse behaviour in the disposal or treatment of wastes.

Industry Professionals

- 10.59 A wide range of professional disciplines are involved in the construction industry. These include, for example, architects, engineers, landscape architects, quantity surveyors, cost consultants, project managers, procurement specialists, site supervisors and clerks of work. All bring their perspective, experience and expertise, and many, through their membership of professional institutions have a responsibility to promote Sustainable Development. The advice given may not only influence the quantity, nature and management of C, D & E wastes, but through the design may also extend to the management of wastes post construction during the life of the building. One such example is the role of architects, kitchen designers and interior designers in providing the facilities for the segregation of wastes in the household or kitchen.
- 10.60 Industry professionals have a responsibility to advise clients on all aspects of the project within their area of competence, including on the management of wastes, through the incorporation of appropriate provisions in the design, specification and contractual arrangements. The priority from the design perspective is to minimise the creation of wastes in the first place, and then to maximise its re-use and recycling on-site and off-site.
- 10.61 Specific initiatives to be encouraged include, but are not limited to:
- The prevention of wastes through appropriate design and site layout, including balancing cut and fill as far as possible, and the use of standard sizes and components to minimise on-site wastage and offcuts.
 - Specification of recyclable and recycled materials. Further information can be found at: <http://www.investmentbelfast.com/downloads/Good%20Practice%20Guide.pdf> and GreenSpec® <http://www.buildinggreen.com/menus/>
 - Working with clients and contractors in developing Site Waste Management Plans.
 - Promotion of 'Green Procurement' including the inclusion of appropriate quality and environmental criteria in assessing tenders.

Contractors /Sub-Contractors and Builders

- 10.62 Contractors have a limited opportunity to influence the quantities of waste that arise on a building or construction project. They can improve site practices, but many of the key decisions regarding site levels, demolition and choice of materials and layout have been taken at an earlier stage, often before a contractor is appointed. However, contractors have the critical influence on how those wastes are managed and their consequential environmental impact. The construction and building industries for example are perceived as having a poor track record in this regard, with the historical dumping of C, D & E wastes in many low lying bogland and wetland sites impacting on biodiversity.

- 10.63 This period of change that the industry is experiencing however also provides opportunities for those builders and contractors prepared to be innovative, and consider alternative materials, techniques and practices.
- 10.64 The introduction of Site Waste Management Plans (SWMPs) represents both a challenge and an opportunity in improving site waste management practices. Further guidance and datasheets can be found on this aspect from a number of sources, including:
- Department of Finance and Personnel SWMP
<http://www.cpdni.gov.uk/index/guidance-for-purchasers/sustainable-construction.htm>
 - The Small Environmental Guide for Construction Workers
http://www.sepa.org.uk/pdf/publications/leaflets/wastemin/env_guide_cons_workers.pdf
 - Carillion – Waste Management Tool Box Talk
<http://www.carillionplc.com/sustain-2001/>
- 10.65 Specific actions or initiatives to be considered, as appropriate, include:
- Adopt a proactive approach to Site Waste Management Plans (SWMPs), working with clients and professional advisors, to quantify the waste to be produced, and identify measures for its reduction and proposals for its management, storage, treatment and recycling during construction and after the development is operational.
 - Introduce 'chain of custody' documentation to ensure traceability of wastes, from site through to treatment or disposal at licensed sites, and make reasonable checks on its accuracy.
 - Introduction of an Environmental Management System (EMS), based on a cycle of continuous improvement, to ensure that all significant environmental aspects of the organisation's activities, including waste management, are identified, documented, improved upon over time.
 - Consideration of alternative materials and/or techniques to those specified where environmental benefits or resource efficiencies can be identified, and which may provide a competitive advantage, in terms of either quality or cost.
 - Work with other players in the sector, to develop sustainable markets for the re-use or the application of recycled C, D & E wastes.
 - Initiate a management programme to monitor waste generation characteristics on an ongoing basis and across projects. To include data on the number of skips used, and timing, over the project's duration, for comparison against pre-tender estimates, to identify areas of weakness and opportunities for tighter control and improvement, contributing to profitability.

- 10.66 Data on C, D & E wastes is sparse, and needs to be improved. Organisations have a responsibility to take part in surveys, returning questionnaires and providing accurate and reliable data, as the information is of benefit to the industry, allowing its performance to be benchmarked against other areas, identifying areas or issues to be addressed, and informing future policy development.

11.0 AGRICULTURAL WASTE

INTRODUCTION

- 11.1 Traditionally agricultural waste has been excluded from the waste management controls which apply to "controlled wastes", as defined under the Waste and Contaminated Land (Northern Ireland) Order 1997. Recognising that this approach is inconsistent with the requirements of the Waste Framework Directive, Regulations will be introduced by the Department of the Environment, the effect of which will be to extend to the farming industry the waste management controls which currently apply to other sectors of industry.
- 11.2 Historically, most agricultural waste has been disposed of on-farm by open burning, by burial or by disposal in "farm dumps", practices which have the potential to cause pollution and harm. Such practices are set to change under the forthcoming regulatory regime, requiring the agricultural industry to change many traditional approaches to its management of wastes.
- 11.3 The purpose of this Chapter is to outline the anticipated regulatory framework, quantify the volumes of waste that will fall within the scope of the Regulations, and to identify measures for the management of these wastes within the Region.
- 11.4 The information provided in this Chapter does not constitute legal advice, and has been prepared solely for the purposes of the Waste Management Plan. It is also subject to change as Regulations are introduced and Guidance published. Appropriate legal advice should be sought therefore in relation to any statutory duties or responsibilities.

DEFINITIONS

- 11.5 For the purposes of this Waste Management Plan, the assumed definition of agricultural waste is:
- "waste from premises used for agriculture within the meaning of the Agriculture Act (NI) 1949."*
- 11.6 The Agriculture Act (NI) 1947 defines "agriculture" as including:
- "...horticulture, fruit growing, seed growing, dairy farming and livestock breeding and keeping, the use of land as grazing land, meadow land, osier land, market gardens and nursery grounds, and the use of land for woodlands where that use is ancillary to the farming of land for other agricultural purposes..."*

- 11.7 Under the Waste and Contaminated Land (NI) Order 1997, waste is '*any substance or object...which the holder discards or intends or is required to discard*'. There is not a definitive list of what is a waste in the agricultural context, but it will include a range of wastes such as, for example, silage wrap, packaging (fertilizer bags and pesticide containers) net wrap, veterinary waste, tyres, waste oils and redundant machinery, which are discarded after use.
- 11.8 In this context, farmyard manure, slurry and effluent is not classified as a controlled waste under certain circumstances when:
- it is used as a soil fertiliser and:
 - (i) that use is part of a lawful practice of spreading; and
 - (ii) the spreading takes place on clearly identified parcels of land; and
 - Its storage is limited to the needs of those spreading operations;
- 11.9 For the purposes of this Waste Management Plan therefore, it is assumed that farmyard manures and slurries fall outside the controlled waste framework. However, the management practices associated with these materials will be subject to other controls under the Water Framework Directive, Groundwater Directive, Nitrates Directive, and the associated regulations and programmes in Northern Ireland, including the joint DARD/DOE Nitrates and Phosphate Action.
- 11.10 It should be noted that the application to land of these organic materials must follow good agricultural practice, otherwise the material will be classified as waste where:
- The amount application to land is excessive (ie Beyond good agricultural practice and the requirements of the Nitrates Action Programme);
 - The material is mixed with other controlled waste before spreading.

MANAGEMENT AND CONTROL

- 11.11 Currently, the management of agricultural waste in Northern Ireland is not covered by legislation. However, the Waste Management (NI) Regulations 2006 are due to be implemented during 2006, which will bring agricultural waste within the controlled waste framework, and it into line with the legal controls on other sectors.
- 11.12 Key features of these Regulations will include:
- A legal duty on producers of agricultural waste to ensure that they do not treat, keep, or dispose of agricultural waste in a manner likely to cause pollution to the environment or harm to human health.
 - A ban on the unregulated burning or burial or deposit of waste.
 - Controls on farm dumps, to comply with the Landfill Directive.

- Introduction of the “Duty of Care” and Waste Transfer Notes

11.13 The main roles and responsibilities for the management of agricultural waste are summarised in Table 11.1 below.

Table 11.1 Summary of Main Roles and Responsibilities

Element	Responsibility
Implementation and enforcement of the Regulations	Environment and Heritage Service
Publication of Guidance on the Regulations, including exemptions	Department of Agriculture and Rural Development Environment and Heritage Service
Development of Waste Collection Systems for Agricultural Wastes as appropriate	Waste Management Sector
Plan for the management of agricultural wastes within the controlled waste framework – changing historical practices, as appropriate	Agricultural Industry

WASTE QUANTITIES AND COMPOSITION

- 11.14 Data on agricultural wastes in Northern Ireland is sparse, but based on a UK wide survey conducted by Environment Agency in 2003, non-organic agricultural wastes in Northern Ireland were estimated to be in the region of 41,000 tonnes in 1998. (In conjunction with the Department of Agriculture & Rural Development, EHS are currently carrying out a survey to provide improved information on agricultural waste arisings and management in order to provide better data for future management of these wastes).
- 11.15 The quantities of waste broken down into categories are summarised in Table 11.2. These quantities exclude the farmyard manures and slurries that are not within the scope of the controlled waste framework. The quantities of these manures and slurries have been estimated to be of the order of 15 million tonnes per annum from housed livestock. This figure does not include any allowance for un-housed animals, whose excreta are deposited directly onto land while at pasture. This is estimated to be of the order of a further 7 -10 million tonnes per annum applied directly to land.

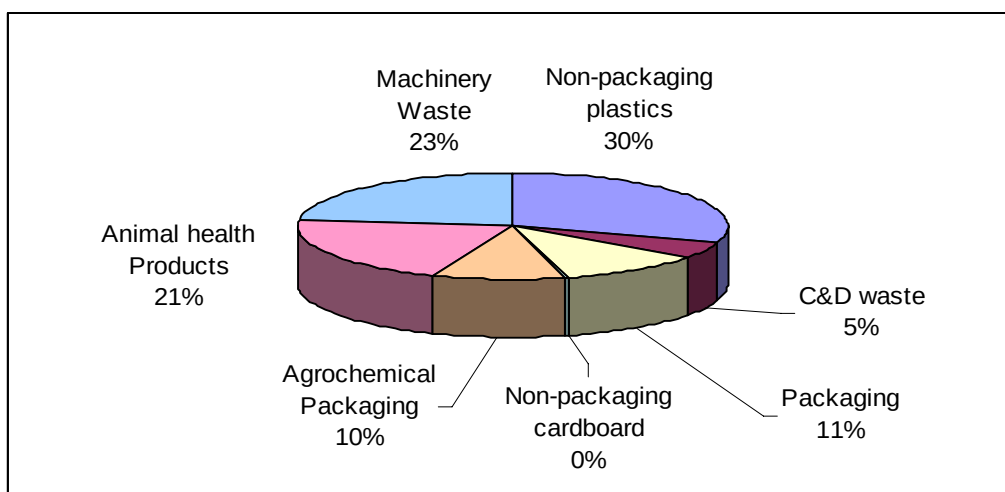
Table 11.2 Agricultural Waste Quantities by Category

Waste	Quantity (tonnes)
Packaging	4,592
Non-Packaging plastics	11,199
Non-packaging cardboard	118
Agrochemical packaging	4,189
Animal health products	8,365
Machinery waste	9,427
C&D waste	2,122
Total:	41,000

Note: Data refers to the year 1998

Waste Composition

- 11.16 The composition of agricultural waste by category in Northern Ireland is shown in Figure 11.1 below.

Figure 11.1 Agricultural Waste Composition by Category

- 11.17 This graph excludes farmyard manures and slurries, but highlights the wide variety of waste materials produced by this sector, from veterinary products to redundant machinery, and from construction and demolition type waste to packaging waste.

CURRENT ARRANGEMENTS FOR THE MANAGEMENT OF AGRICULTURAL WASTE

- 11.18 Historically, research shows that most agricultural wastes have been disposed of on-farm by open burning, by burial, or by disposal in 'farm dumps'. DEFRA describes a farm dump as:

‘.....any location on a farm that has been used to dispose or get rid of wastes or unwanted materials. It can be a hole in the ground - old quarries, sink holes, borrow pits, embankments, depressions in fields or ponds – or, on the surface – in woodlands, along river banks or in the corner of a field. A single deposit of waste can constitute a dump or tip.’

- 11.19 These traditional practices are set to change with the introduction of the pending Waste Management Regulations (NI) 2006, which will make agricultural waste a controlled waste. These are described further below.

PROPOSED ARRANGEMENTS FOR THE MANAGEMENT OF AGRICULTURAL WASTE

- 11.20 As noted above, the Waste Management (NI) Regulations 2006 are due to be implemented during 2006 which will bring waste arising from the agricultural sector in line with the legal controls on the management of households, commercial & industrial and construction waste (collectively classified as Controlled waste).
- 11.21 From the point in time that the Regulations apply it appears that the following controls will come into force with immediate effect:
- Controls necessary to comply with the Landfill Directive, which will apply to farm dumps.
 - Duty of care and waste transfer notes.
 - Disposal of waste in a manner likely to cause pollution of the environment or harm to human health – i.e. unregulated burning or burial or deposit of waste will not be permitted.
- 11.22 The result of these Regulations will be that the operation of farm dumps without a licence will be illegal. Consequently, as obtaining a waste licence is likely to be very expensive and impractical for most farmers, alternative disposal routes will be required.
- 11.23 The Duty of Care requires farmers to take reasonable steps to ensure that their waste is not illegally managed. This means transferring the waste only to an authorized person/registered carrier, and that the waste is adequately described to enable its proper handling and treatment.
- 11.24 In summary, farmers will be able to store their waste on site for up to 12 months; take their waste to an appropriately licensed waste management site; transfer their waste to someone else who is legally authorized to carry waste as a registered carrier, for recovery or disposal off farm; register a licence exemption with EHS to undertake some waste management activities on the farm. In practice, agricultural waste will be managed using a combination of these options.

- 11.25 The quantities of agricultural waste in Northern Ireland are relatively small, estimated to be of the order of 41,000 tonnes per annum. This has to be seen in the context of municipal waste arisings of approximately 1 million tonnes per annum, and commercial and industrial waste arisings of nearly 0.75 million tonnes per annum. The waste are also varied, with some being categorized for example, as Construction and Demolition wastes, some as veterinary wastes, which will have a hazardous component, and some as packaging wastes. A quantity will also be managed on-farm under a registered exemption.
- 11.26 Given this diversity in character, and the relatively small quantities involved, it is not anticipated that there will be any additional infrastructure requirements, that cannot be accommodated within the proposed arrangements for other waste streams, including commercial and industrial, municipal, hazardous and packaging wastes.
- 11.27 A key issue however, will be the need to ensure that all areas, particularly remote rural areas are sufficiently catered for, in terms of adequate waste collection and transfer services.
- 11.28 Storage areas may also be required on farms, with protection for the surrounding environment from contamination by the wastes, including pollution from run off.
- 11.29 Although farmyard manures and slurries are not controlled wastes, there is the potential for these materials, given the significant quantities and increasingly stringent restrictions on landspreading and storage, to be used for energy recovery.
- 11.30 Recommendations in this regard have been made by the Expert Group for Alternative Uses of Manures (EGAUM), chaired by the Department for Agriculture and Rural Development. EGAUM have examined alternative uses for animal manures, in parallel with the discussions between Environment and Agriculture officials and the European Commission in relation to the Nitrates Directive Action Programme.
- 11.31 EGAUM examined proven technologies currently being used in other countries and has concluded that there is an important role for anaerobic digestion/combined heat and power (AD/CHP) plants for the intensive dairy and pig industries, and a litter fired generator for the poultry sector. There are also potential synergies with the agri-food processing sector.

- 11.32 The size of AD/CHP plants vary from larger scale centralised facilities to on-farm plants, with the scales and location determined by commercial considerations. Typical scales for centralised AD Plants are of the order of 60,000 to 150,000 tonnes per annum, but large plants process up to 500,000 tonnes per annum. It is estimated that 4 or 5 AD/CHP plants situated throughout Northern Ireland, would address the needs of the dairy and pig industries. On that basis, 2 plants within the NW Region is considered appropriate, with potential indicative locations including the areas around the Derry/Strabane/Limavady area, and the Coleraine/Ballymoney area, with actual locations to be determined by market demand and resource availability.
- 11.33 Centralised AD/CHP plants would be used in conjunction with on-farm separators which would de-water animal slurry and, therefore reduce transport costs to an AD/CHP plant. There is also the potential to develop AD plants to service individual farms or groups of farms, generating power and heat at a local level, and reducing transportation requirements.
- 11.34 In respect of the poultry industry, a single poultry-litter fired generator, located within Northern Ireland and capable of handling 300,000 tonnes of input per annum and producing up to 25MW of power, has been identified as appropriate to meet the needs of the industry.

MEASURES AND ACTIONS

- 11.35 The agricultural sector is set for a significant change in its traditional approach to the management of agricultural wastes, with the introduction of the Waste Management (NI) Regulations 2006. Under these Regulations, agricultural waste will become a controlled waste, subject to the same control as other in the commercial and industrial sectors. In this period of transition and change, it is important that key stakeholders recognise their roles and responsibilities. This section sets out the key actions required, by stakeholder group, as follows:
- Government - Department of Agriculture and Rural Development (DARD), and Department of the Environment (DoE)
 - The Agricultural Industry
 - Waste Management Sector

Government – DARD and DoE

- 11.36 DARD and DoE have particular responsibilities in working with the agricultural sector in implementing the Regulations, and providing support and guidance through the transition period, as the sector copes with the impact on its traditional practices. It is in this context that the specific actions outlined below have been identified in the Waste Management Plan.

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- 11.37 DoE and Environment and Heritage Service to implement and enforce the Regulations in a timely and appropriate manner, giving advance information and publicising their introduction.
- 11.38 EHS, in association with DARD, to develop and publish Guidance Notes on the Regulations during a 12 month transitional period, highlighting requirements for agricultural waste streams. These Guidance notes can be downloaded from the following area within the EHS website:
http://www.ehsni.gov.uk/news/news/news_agri_waste_regs06.shtml
- 11.39 DARD to work with DoE and the agricultural sector in the introduction of the Regulations, providing support and advice to the agricultural sector, as appropriate.
- 11.40 DARD to work, on a Northern Ireland basis, with the agricultural sector, and other stakeholders, in:
- developing capacity for energy recovery through anaerobic digestion plants, with combined heat and power (CHP) of manures and slurries, and a poultry-litter fired generator; and
 - identifying synergies with the agri-food sector to maximise the resource value of the waste materials.
- 11.41 DARD and DoE to investigate, with other stakeholders, the introduction of a farm plastics recovery scheme, appropriate to the requirements of the agricultural industry in Northern Ireland.

Agricultural Industry

- 11.42 Given the implications of agricultural wastes becoming a controlled waste, become familiar with the requirements of and comply with the Waste Management (NI) Regulations, 2006 following their implementation.
- 11.43 Implement best practice measures, as outlined in the published Guidance. This should include an emphasis on waste reduction, and increased recycling and recovery of agricultural wastes, in line with measures for other waste streams, including commercial and industrial, and packaging wastes.
- 11.44 Consider the potential development of capacity within the sector to store and transport waste, as registered carriers, perhaps on a 'catchment' or hub type basis, given the unique characteristics of the sector, with the wide geographic distribution, the diversity of agricultural waste materials, and the relatively small quantities involved.

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- 11.45 The agricultural sector, in association with the waste management sector/technology providers, to bring forward proposals for anaerobic digestion plants, with combined heat and power (CHP) for the treatment of manures and slurries, and agri-food processing wastes as appropriate; within the Region.

Waste Management Sector

- 11.46 Develop and expand the range of services and facilities available to the agricultural sector for the collection, storage and treatment of agricultural wastes.
- 11.47 The waste management sector/technology providers to work with the agriculture sector to bring forward proposals for anaerobic digestion plants, with combined heat and power (CHP) for the treatment of manures and slurries, and agri-food processing wastes as appropriate within the Region.

District Councils

- 11.48 Councils, through their Recycling Officers and their Education and Awareness campaigns, to provide advice to farmers on options available for the management of their wastes, either through council-operated facilities or private sector services, as appropriate to the district.
- 11.49 Councils to support the agricultural sector, DARD, EHS and the waste management industry, through advice and guidance, in implementing any sector specific initiatives, for example, farm plastic recycling.

12.0 PRIORITY AND OTHER WASTE STREAMS

INTRODUCTION

- 12.1 Several EC Directives were identified as 'Priority Waste Streams' in the European Union's Fifth Environment Action Programme because of growing concerns about their impact on the environment.
- 12.2 Priority Waste Streams have been identified on account of one more of the following: their volume, hazardous nature, potential for recycling, potential to create an economic benefit or the fact that legislation is changing the way in which these materials have traditionally been managed. The Priority Waste Streams include:
- Waste Electronic and Electrical Equipment (WEEE)
 - End of Life Vehicles (ELVs)
 - Tyres
 - Batteries
- 12.3 The Producer Responsibility policy underlies the approach to the implementation of these Directives. The aim of the Producer Responsibility approach is to achieve a more sustainable approach to resource use and a reduction in the overall quantity of waste disposed of to landfill, by diverting materials for reuse, recycling and other forms of recovery. Producer responsibility places the responsibility for the costs of collection, sorting and treatment and recycling and recovery on the producers and promotes the concept of supply chain management.
- 12.4 This Chapter therefore sets out the measures for the management of each of these waste streams within the Region in order to ensure compliance with legislation and policy and ensure that each of these waste streams are managed in a compliant and sustainable manner.
- 12.5 In addition to the priority waste streams, the chapter considers the measures for the management of a number of other waste streams namely:
- Sewage Sludge
 - Healthcare Wastes

WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

- 12.6 Waste Electrical and Electronic Equipment (WEEE) is cited in EC Directive 75/442/EEC as including 'all components, sub-assemblies and consumables which are part of the product at the time of discarding'. The WEEE Directive segregates WEEE into ten categories namely large household appliances, small household appliances, IT and telecommunications equipment, consumer equipment, lighting equipment, electrical and electronic tools, toys, leisure and sports equipment, medical devices, monitoring and control instruments and automatic dispensers.
- 12.7 The waste stream is managed through the Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC which aims to implement the producer responsibility for WEEE through the reduction of waste from Electrical and Electronic Equipment (EEE), increasing the recycling and recovery of EEE through segregated collections and improving the environmental performance of all operators involved in the lifecycle of EEE. In addition to the WEEE Directive, the Restriction of Hazardous Substances (RoHS) Directive (2002/95/EC) aims to regulate the environmental impact of EEE when it reaches its end life through the minimisation of the use of hazardous substances in these appliances.
- 12.8 The WEEE Directive has introduced a number of targets for this waste stream:
- Producers to introduce separate collection systems for household WEEE to meet a minimum collection target of 4Kg of WEEE per person per year by 31 December 2006.
 - The recovery targets for 2006 for separately collected WEEE are set between 50% and 80%, although this is dependant on the product category.
 - Future targets for the recovery of WEEE are expected to be set by 31 December 2006.
- 12.9 In terms of arisings, the total WEEE arisings for 2001 in Northern Ireland were estimated to be in the range of 25,000 to 30,000 tonnes per annum, equivalent to 14.4 to 17.7 kg per person (Waste Electrical and Electronic Equipment (WEEE) Survey, EHS, 2001. Of these arisings, it is estimated that approximately 9,500 tonnes of WEEE was in the municipal waste stream collected by District Councils.
- 12.10 A recent EHS Pilot Study (Waste Electrical and Electronic Equipment Pilot Scheme Report, EHS, May 2005) was initiated in June 2004 to determine and analyse household WEEE arisings at both an urban and a rural recycling centre. WEEE was separated into four categories white goods, fridges and freezers, WEEE containing cathode ray tubes and small WEEE.

- 12.11 Based on this study, the annual collection rate has been estimated to be in the range of 3.8Kg to 11.9Kg per person. On that basis, the estimated annual household WEEE arisings in Northern Ireland is estimated to be in the range of 6,500 tonnes to 20,000 tonnes. The WEEE hazardous waste component of this (in the form of fridge/freezers and cathode ray tubes) are estimated to represent around 40% of the WEEE arisings (excluding Commercial and Industrial WEEE arisings).
- 12.12 Within the North West Region, based on population statistics, these arisings would equate to between 1,195 tonnes and 5,570 tonnes using a combination of the two available data sets.
- 12.13 It has been estimated that the volumes of WEEE are increasing at a rate of between 3% and 5% per year (Industry Council for Electronic Equipment Recycling Interim Report, 2005). On this basis, the estimated quantities of this waste stream for 2020 are between 44,000-75,000 tonnes. Based on current available data, the infrastructure capacity requirements to deal with household and commercial WEEE is currently estimated to be in the region of 30,000 tonnes per annum.
- 12.14 There are currently a number of management routes for components of WEEE that are separately collected by District Councils at civic amenity sites and also, in the case of business and industry, by registered waste contractors. These include:
- The collection of white goods for recycling and shredding locally.
 - Fluorescent tubes are collected for recycled locally
 - Small WEEE is collected, bulked up and shipped to GB for recycling
 - Cathode Ray Tubes (television and computer monitors) are collected, bulked up and shipped to GB for recycling
 - Domestic fridges and freezers are collected by District Councils and shipped to GB for treatment through a central contract operated by DOE. Commercial units are also exported to GB.
- 12.15 The roles and responsibilities for the management of WEEE are presented in Table 12.1.

Table 12.1 Roles and Responsibilities for the Management of WEEE

Sector	Roles and Responsibilities
Producers and Importers	- Register as a producer/importer with EHS. - Provide data on WEEE as required. - Provide collection points and treatment/recycling facilities. - Ensure the costs of collection, treatment, recovery and disposal are met. - Provide evidence that WEEE is treated at an authorised site and target recovery rates have been met.
Retailers/Distributors	- Provide free in-store collection of WEEE on sale of new like for like equipment or provide alternative arrangements via compliance schemes or local waste service providers. - Ensure customers are informed of the WEEE take back facilities available to them. Encourage consumer participation in the separate collection of WEEE.
Compliance Schemes	- Register with EHS. - Provide data returns as required.
Central Government	- Register all obligated producers, importers and compliance schemes. - Carry out regulation and enforcement activities. - Provide NI data returns as input to UK figures as required. - Stakeholder education and awareness initiatives.
District Councils	The British Retail Consortium is consulting with District Councils on the registration of household recycling centres as Designated Collection Facilities for WEEE. These would form part of the adequate collection network that retailers must provide.
Waste Management Sector	Develop and operate WEEE collection and recycling schemes.
EEE Users	- Do not deposit WEEE items in household bins for disposal. - Participate in WEEE collection schemes. - Exercise purchasing decisions by choosing resource efficient products. - Commercial users should endeavour, where possible, to include take back as part of their contracts with electrical and electronic equipment suppliers.

Source: Northern Ireland Waste Management Strategy: Towards Resource Management, 2006

END OF LIFE VEHICLES (ELVs)

- 12.16 An End of Life Vehicle (ELV) is one which has been discarded for depollution and dismantling, rather than for repair and re-sale. There are two broad categories of ELV's: relatively new cars which result from accident write-offs, known as premature ELVs and cars which have reached the end of their life naturally or natural ELVs.
- 12.17 The End of Life Vehicles Directive (2000/53/EC) aims to reduce the amount of waste arising and to increase the recovery and recycling of materials from ELV's. The Directive also introduces measures to further protect the environment by restricting the use of hazardous substances in vehicles and setting minimum standards for facilities that store, treat or dismantle ELV's.
- 12.18 The Directive is implemented through the End of Life (Producer Responsibility) Regulations, 2005 which transposes a number of its provisions into law, including:
- By 2006, vehicle producers must plan and establish an accessible network of Authorised Treatment Facilities (ATFs) and collection points to take back their own brand of vehicles.
 - From 1st January 2007, vehicle producers must provide free take back of their own brand ELVs when the last owner presents a vehicle at one of their designated collection points.
 - From 2006 up to 2014, each producer must achieve 85% reuse and recovery of ELVs (80% to be achieved by reuse and recycling).
 - From 2015 onwards, each producer must achieve 95% reuse and recovery of ELVs (85% to be achieved by reuse and recycling).
 - For vehicles that were marked before 1 January 1980, the targets are 75% reuse and recovery (70% to be achieved by reuse and recycling).
- 12.19 The Directive does not define 'accessibility' for the network of Authorised Treatment Facilities or collection points, but Government has provided guidance through DTI, which has been embedded within the Northern Ireland Waste Management Strategy as follows:

'A Producers Plan must indicate the number and geographical location of ATFs and other collection points in their network, and the plan must meet the criterion that 75% of last owners or holders of the ELVs for which that producer has responsibility are within 10 miles, on average, of the point of delivery of ELVs into the producers network. The 75% requirement applies separately to England, Scotland, Wales and Northern Ireland'.

Source: Northern Ireland Waste Management Strategy: Towards Resource Management, 2006.

12.20 The main management routes for ELVs are as follows:

- Dismantling- dismantling companies remove valuable parts and components and depollute vehicles (e.g. remove oils and fluids). Some dismantlers may also crush ELVs prior to transfer to shredding facilities.
- Shredding - shredding facilities tend to be large, capital intensive operations and produce 70% shredded steel for onward recycling in the steel industry. Some non-metallic materials (e.g. rubber, plastics) may also be segregated for recycling. About 25% is lightweight shredder fluff which is usually landfilled.
- Disposal - ELVs may be stockpiled or illegally burned or deposited on land.

12.21 The estimated total number of ELVs arisings in Northern Ireland for 2000 was 69,800 vehicles, equating to 56,900 tonnes of ELV material (EHS End of Life Vehicles Survey, 2000). Of these, 69,800 vehicles, 11.3% were premature, 4.1% were abandoned natural old ELVs and 84% were non-abandoned natural ELVs. Within the North West Region therefore, assuming the number of ELVs are proportional to the population, there are approximately 12,850 vehicles equating to approximately 10,470 tonnes of ELV material.

12.22 The EHS ELV survey for Northern Ireland, 2000, reported the following data on the fate of the ELV materials in Northern Ireland:

- 31,200 tonnes of metal was recovered at the main ELV shredder facility in Belfast
- 8,800 tonnes of non-metallic shredder waste was landfilled and
- 2,664 tonnes of material was recovered at dismantlers and scrap yards.

12.23 To predict future capacity requirements, future projections on the quantities of ELVs have been estimated on the basis of assumed growth rates of 1% and 2% over the period up to 2020, as illustrated in Table 12.2. These rates have been selected as being similar to projected population growth rates over the period up to 2020, which are projected to fall from 1.5% to less than 1% per annum by 2020. The projections indicate that an annual treatment capacity of the order of between 85,000 to 100,000 ELVs will be required in Northern Ireland by 2020.

Table 12.2 Projected Quantities of ELV arisings by 2019/20

Year	Growth Rate	Northern Ireland		North West	
		ELVs	Tonnes	No ELVs	Tonnes
2000	N/A	69,800	56,900	12,850	10,470
2020	2% per annum	101,700	82,900	18,700	15,200
2020	1% per annum	84,300	68,700	15,500	12,600

12.24 Sites currently holding licenses to operate as Authorised Treatment Facilities (ATFs) in Northern Ireland are summarised in Table 12.3. These ATFs have a combined capacity of approximately 100,000 tonnes per annum. EHS are therefore satisfied that there is sufficient capacity at present for ELVs in Northern Ireland through the current licensed ATFs, with an average capacity of approximately 10,000 tonnes per site. (EHS Pers. Comm., November 2006).

Table 12.3 Sites Holding Waste Management Licenses to Operate as Authorised Treatment Facilities (ATFs) in Northern Ireland

Name	License Ref	Address
Nixon Car Spares	LN/04/02/A	Coolarn, Lisnaskea, County Fermanagh, BT74 3TT
Clearway Disposals Ltd	LN/05/02/A	East Twin Road, Belfast Harbour Estate, Belfast, BT3 9EN
Portglenone Peugeot Parts	LN/05/05/A	79 Gortgole Road, Portglenone, County Antrim, BT44 8AN
Bridge Van Dismantlers	LN/05/06/B	24a Macknagh Lane, Maghera, County Londonderry, BT46 5PS
Haughey Metals	LN/06/17/M	151 Darkley Road, Keady, County Armagh, BT60 3BX
N McMullan	LN/06/21	81 Orchard Road, Strabane, County Tyrone, BT82 9QT
T-Met (Mallusk)	LN/06/19	2a Trench Road, Hydepark Industrial Estate, Mallusk, County Antrim, BT36 8TY
Traynors Motor Store	LN/06/16	86 Armagh Road, Moy County Tyrone, BT71 7JA
Glendoor Motor Salvage	LN/06/23	49 Ballymena Road, Ballymoney, County Antrim BT53 7EZ
McAuley Car Dismantlers	LN/06/25	169 Glenshesk Road, Armoy, Ballymoney, BT53 8RL

Source: EHS Website- 16th November 2006.

12.25 The roles and responsibilities for the management of ELVs are presented in Table 12.4.

Table 12.4 Roles and Responsibilities for the Management of ELVs

Sector	Roles and Responsibilities
Vehicle Producers – Manufacturers and Importers	- Comply with ELV Regulations and provide data returns as required. - Provide an adequate network of ATFs and collection points. - Design new vehicles to take account of the dismantling, reuse, recovery and recycling of end of use vehicles, their components and materials. - Use more recycled materials in vehicle manufacture to develop and stimulate markets for recycled material. - Promote education and awareness among stakeholders.
Dismantlers / Treatment Facilities	- Comply with ELV and other relevant environmental regulations. - Issue certificate of destruction to last owner/holder of the vehicle. - Treat ELVs to reduce adverse environmental impacts, remove hazardous materials and treating polluting substances.
Central Government	- Carry out regulation and enforcement activities. - Collect data on ELV arisings and management routes. - Stakeholder education and awareness activities.
District Councils	- Waste management arrangements for abandoned vehicles. - Take account of producer networks for ELV collection and treatment in Waste Management Plans which cover all controlled waste streams.
General Public	Ensure ELVs are sent to authorised collection and/or treatment facilities.

TYRES

12.26 Waste tyres can be divided into two different categories:

- Those which can be used for their original purpose as part worns or re-treaded tyres
- Tyres which fail the technical examination to determine their suitability for re-use or retreading. Such tyres may have been rejected due to age or damage to the tyre carcass. While this tyre type is not suitable for re-use or re-treading there is potential for them to be recovered and used for alternative purposes.

- 12.27 Management of tyre wastes is primarily regulated by the Landfill Directive (99/31/EC), which prohibits the landfilling of whole and shredded tyres. In addition to the Landfill Directive, the following legislation also affects the management of the used tyre waste stream:
- EC Waste Incineration Directive 2000/76/EC, which implements emission controls
 - End of Life Vehicles Directive 2000/76/EC, which has proven to be a significant driver in the recovery and recycling of vehicle tyres
 - The Controlled Waste (Duty of Care) Regulations (Northern Ireland), 2002
 - Consumer Protection Act by The Motor Vehicle Tyres (Safety) Regulations, 1994
- 12.28 There are a number of targets and key management dates applicable to tyres. The Landfill Directive (99/31/EC) prohibited the landfilling of whole tyres from 2003 and shredded tyres from 2006 (excluding the use of used tyres for landfill engineering purposes).
- 12.29 The End of Life Vehicles Directive requires 85% recovery of an average vehicles weight of which 80% was to have been recycled by January 2006. As around 5% of the weight of an ELV is rubber, of which 3.5% comes from tyres, their recovery can play an important role in achieving the ELV targets. These targets are to increase to 95% recovery and 85% recycling in 2015.
- 12.30 The Northern Ireland Used Tyre Survey, 2000, carried out by EHS, estimated the total quantity of waste tyres produced annually in Northern Ireland to be 16,100 tonnes or 1,738,100 tyres. This survey estimated that used tyres arisings were predicted to increase at a rate of 1% to year. The resulting effect of this is that Northern Ireland is anticipated to have a tyres arising of approximately 19,600 tonnes.
- 12.31 Within the North West Region, the Used Tyres Working Group in their Fifth Annual Report in 2001, stated that the amount of tyres being produced can be estimated based on arisings per capita for the North West Region at 2,246 tonnes per year in 2001, although there are concerns that the methods of disposal outlined in this report may not be suitable for Northern Ireland. Using this figure as a basis therefore, the current tyre arisings in the North West Region are estimated to be approximately 2,360 tonnes.
- 12.32 In terms of management, there are several different management routes available for used tyres:

Re-Use

- 12.33 The term re-use covers all tyres which are ultimately returned to their originally intended use on the road and applies to both part-worn tyres, where tyres with useful life can be refitted to vehicles, and retreaded tyres. The retreading market in Northern Ireland has been steady for some years but is not used to its full potential, partially due to a lack of consumer confidence in the quality of the product.

Recycling

- 12.34 Used tyres can be processed into rubber shred and crumb. There are a variety of uses for this secondary material, including carpet under lay and surfacing for children's play areas. Tyres can also be used whole for other purposes than that for which they were originally intended, for example whole tyres are used on farms and as sea defences.

Disposal

- 12.35 Landfill disposal has been the traditional practice for tyre disposal but has been banned for tyres under the Landfill Directive (99/31/EC). Some tyres are stockpiled, illegally dumped and burned.
- 12.36 In terms of future management, the Waste Management Industry are encouraged to further develop local collection and reprocessing infrastructure within Northern Ireland, utilising relevant business support and funding available (e.g. Invest NI, WRAP, EU Structural Funds).
- 12.37 The roles and responsibilities for the management of tyres are presented in Table 12.5.

Table 12.5 Roles and Responsibilities for Management of Tyres

Sector	Roles and Responsibilities
Motor Industry	- Comply with legislation. - Implement initiatives for waste prevention. - Implement initiatives for reuse and recycling of materials. - Develop more resource efficient and competitive products and processes. - Provide accurate data on waste management. - Promote education and awareness among stakeholders.
Central Government	- Carry out regulation and enforcement activities. - Collect data on waste arisings and management routes. - Stakeholder education and awareness activities.
Waste Management Sector	- Develop and operate used tyre collection and recycling services. - Respond to recycling and recovery market opportunities. - Provide data on used tyre arisings and management routes as required. - Support stakeholder education and awareness activities.

Source: Northern Ireland Waste Management Strategy: Towards Resource Management

BATTERIES

12.38 Batteries are varied and complex, come in different shapes and types and are consequently very difficult to sort and recycle. They can be classified under three different types:

- Industrial batteries are those used for standby power (e.g. emergency lighting, computer backup) or traction (e.g. electrical vehicles) and many are lead acid or NiCad.
- Automotive industrial batteries are almost exclusively lead acid type batteries
- Consumer batteries are mainly small alkaline batteries of the type commonly used in mobile phones and personal stereos. These may be rechargeable, non-rechargeable or button cell.

12.39 Management and control of spent batteries is covered by various legislation but is primarily controlled by the EU Directive on Batteries and Accumulators (91/157/EEC). The initial Directive was amended in 1998 in order to adapt the original to technical progress (98/101/EC). A further EU Directive (93/86/EEC) requires the marking of button cells or batteries made of button cells. Other Regulations which effect the management and control of this waste stream are:

- The Hazardous Waste Regulations (Northern Ireland), 2005.

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- The Landfill Directive Waste Acceptance Criteria (WAC), banning co-disposal of hazardous waste. All hazardous waste now requires treatment before disposal to landfill.
 - The EC Directive of End of Life Vehicles.
 - The Waste Electrical and Electronic Equipment (WEEE) Directive, 2002.
- 12.40 The targets that apply to spent batteries come from the EU Batteries Directive, due to be implemented in mid 2006. EU member states will have two years to implement the Directive following adoption. The proposed targets are:
- Collection targets for spent portable batteries of 25% of average annual sales 4 years after the Directive is implemented, increasing to 45% after 8 years.
 - 50-75% of collected batteries to be recycled depending on battery types.
 - Ban on the disposal of untreated automotive or industrial batteries in landfill or incineration.
 - A partial ban on portable NiCd batteries with some limited exceptions e.g. medical equipment.
- 12.41 In terms of arisings, there have not been any surveys directly estimating waste battery arisings within Northern Ireland. However, in the UK in 2001, it is known that approximately 680 million batteries were bought, most of which (89%) were general purpose batteries (Battery Waste Arisings and Recycling Rates, Department of Trade and Industry Factsheet, 2001). UK data estimates that the annual rate of consumer battery arisings is 0.3Kg per person, which would translate into a Northern Ireland figure of 550 tonnes per year.
- 12.42 For the North West therefore, based on an approximate population of 314,658 this would equate to approximately 95 tonnes of batteries per year.
- 12.43 In terms of management, there are a number of potential collection and recycling routes for batteries. The collection and recovery depends on the type of battery:
- **Consumer/Household Batteries:** These batteries can also be collected through civic amenity sites, bring banks and some retailers and manufacturers, where they are brought by the public or businesses. Collections are also carried out from schools and businesses. Kerbside collection of certain spent battery types is presently being trialed in two District Councils (Armagh and Banbridge) in Northern Ireland through the Waste and Resource Action Programme (WRAP). The toxic materials have now been removed from most ordinary (non-rechargeable) consumer/household batteries and they are safe to dispose of with normal household waste. Rechargeable batteries, or nickel cadmium batteries, do still contain hazardous metals and should be returned to the manufacturer or participating bring and civic amenity sites where possible.

- **Automotive Batteries:** Spent automotive lead acid batteries and most industrial battery types are deemed as hazardous waste, as are a small proportion of portable batteries. This can lead to problems in terms of collection and disposal as these batteries are not allowed to be disposed of within the main waste stream and must be treated, transported, recovered or disposed of inline with the hazardous waste regulations. These batteries are collected at garages, scrap metal facilities and many civic amenity and recycling centres.
- **Industrial Batteries:** Due to their hazardous nature industrial batteries are collected by specialist hazardous waste contractors.

12.44 In terms of future management, there is a need for all sectors to work together to assess the implications of the forthcoming Batteries Directive. As a result of this, the key infrastructural requirements include systems for the source segregated collection of batteries from households, schools and commercial premises as well as facilities for the bulking, sorting, storage, treatment and reprocessing of battery waste arisings. The required management systems are further discussed in Chapter 9: Hazardous Waste.

12.45 The roles and responsibilities for the management of waste batteries are presented in Table 12.6.

Table 12.6 Roles and Responsibilities for the Management of Batteries

Sector	Roles and Responsibilities
Business and Industry	▪ Comply with legislation. ▪ Implement initiatives for waste prevention and reuse e.g. use rechargeable batteries. ▪ Implement initiatives for recycling of materials e.g. source segregated batteries for separate collection. ▪ Develop more resource efficient and competitive products and processes.
General Public	▪ Minimise waste, e.g. use rechargeable batteries, purchase more resource efficient products. ▪ Use facilities provided by District Councils and other service providers for separate collection of batteries.
Waste Management Sector	▪ Develop and operate used battery collection and recycling services. ▪ Respond to recycling and recovery market opportunities. ▪ Provide data on used battery arisings and management routes as required. ▪ Promote education and awareness among stakeholders.

Source: Northern Ireland Waste Management Strategy: Towards Resource Management

SEWAGE SLUDGE

- 12.46 Sewage sludge is the residual sludge from wastewater treatment plants, produced from the treatment of domestic or urban wastewaters and from other sewage plants treating wastewaters of a composition similar to domestic and urban wastewaters. This waste stream also encompasses the residual sludge from septic tanks and other similar installations for the treatment of sewage.
- 12.47 Responsibility for the management and control of sewage sludge falls with the Department for Regional Development (DRD) Water Service. Water Service has overall responsibility for the operation and maintenance of Northern Ireland's sewage systems and wastewater treatment works, including the management of the sewage sludge produced.
- 12.48 Management and control of sewage sludge is provided by the legislative framework, primarily under the EU Urban Waste Water Treatment Directive, implemented in Northern Ireland under the Urban Waste Water Treatment Regulations (Northern Ireland), 1995 and subsequent amendment. The aim of this legislation is to impose requirements for collection systems for treated urban wastewater and to make provisions with regard to discharges of industrial wastewater and the dumping of sludge from ships. Other legislation relating to the management of sewage sludge are the Sludge (Use in Agriculture) Regulations (Northern Ireland), 1990. These Regulations are responsible for regulating the spread of sewage sludge on land with the aim being to protect human and animal health and the environment.
- 12.49 Quantities of sewage sludge produced have been increasing incrementally between 1997 and 2005. This is largely due to the additional wastewater treatment capacity coming on stream to comply with the Urban Waste Water Directive. It is estimated that Northern Ireland currently produces around 35,000 tonnes of sewage sludge per year.
- 12.50 Of this tonnage, approximately 20,000 tonnes is treated by the existing incinerator in Belfast. The balance is dewatered to make a sludge cake, at typically 20% dry solids and disposed of to landfill. Inorganic ash from the incinerator is also disposed to landfill. This practice will continue until Water Service make new options available.
- 12.51 A new sludge treatment plant has been proposed with the capacity to process 32,000 tds/a of sewage sludge. The second facility, for which an environmental statement has been released in January 2003, is currently planned to be on stream by 2008, subject to completion of statutory procedures and the availability of funding. When built, Water Service will have the capacity to process all sewage sludge produced within Northern Ireland.

12.52 The roles and responsibilities for the management of sewage sludge are detailed in Table 12.7.

Table 12.7 Roles and Responsibilities for the Management of Sewage Sludge

Sector	Roles and Responsibilities
DRD Water Service	▪ Operation and maintenance of sewage systems and wastewater treatment plants. ▪ Collection, treatment and disposal of sewage sludge produced in a safe, sustainable and compliant manner.
Department of the Environment	▪ Ensure collection systems are provided for every agglomeration with a population equivalent of more than 15,000. ▪ Monitor the discharges from urban wastewater treatment plants. ▪ Monitor the amount and composition of the sludge disposed of in surface waters. ▪ Monitor waters subject to discharges from treatment plants, where the receiving environment could be affected. ▪ Monitor any other discharges. ▪ Monitor disposal of sludge to surface waters. ▪ Review sensitive areas or high natural dispersion areas and keep this information up to date via their website.

CLINICAL WASTES

12.53 Clinical waste is any controlled waste that arises from the treatment of humans and animals and is capable of causing infection or other harm. It includes all human and animal tissue, blood, surgical dressings, syringes, surgery implements, microbiological cultures, bodily waste as well as some pharmaceutical waste and chemical waste.

12.54 The two main sources of these wastes are hospitals and community healthcare, including nursing homes, health centres, veterinary surgeries, dental surgeries, GP surgeries, blood transfusion centres, health laboratories and teaching and research establishments.

12.55 Hospital waste in 2004/05 is based on the hospital bed capacity in the North West Region of 1,298 beds. This is broken down to District Council level in the Table 12.8.

Table 12.8 Average Beds available by Healthcare Trust (2004/05)

North West Region	
Healthcare Trust	Number of Beds
Altnagelvin Group HSS Trust (Derry)	525
Foyle Community HSS Trust	282
Mid Ulster	175
Causeway HSS Trust	316
North West Total	1,298

Taken from: <http://www.publications.parliament.uk/pa/cm200506/cmhansrd/cm051020/text/51020w29.htm>

- 12.56 It is estimated by the Audit Commission (1997) that each bed produces approximately 500Kg of clinical waste per annum. However, not all of the beds are occupied all of the time. The hospitals in Northern Ireland had an average occupancy rate of 84% for 2004/05. In the North West Region therefore, this equates to approximately 650 tonnes per annum.
- 12.57 It is estimated that the volume of community clinical waste produced in relation to hospital waste is 50% to 100% (IWM, 2000). This would result in a clinical waste production of between 325 and 650 tonnes per annum.
- 12.58 Therefore, clinical waste arisings in the Region from hospital and community healthcare facilities are estimated to be in the region of 975 to 1,300 tonnes per annum.
- 12.59 The management of clinical wastes is primarily controlled by the Hazardous Waste (Northern Ireland) Regulations, 2005.
- 12.60 Currently all clinical waste for the healthcare trusts within Northern Ireland is collected through Sterile Technologies International (STI).
- 12.61 There is presently only one treatment and incineration facility in Northern Ireland at Antrim Area Hospital. This facility processes around 78-80 tonnes of clinical waste (including sharps) per week. The facility also acts as a waste transfer facility for other pharmaceutical, anatomical and pathological wastes which are transferred to an incinerator in England.
- 12.62 The roles and responsibilities for the management of clinical waste is detailed in Table 12.9.

Table 12.9 Roles and Responsibilities for the Management of Clinical Wastes

Sector	Roles and Responsibilities
Health Professionals	▪ Ensure clinical waste is kept separate from other waste streams. ▪ Store waste in appropriate containers in a safe place. ▪ Transfer waste to licensed hazardous waste contractors.
Waste Management Sector	▪ Ensure waste is treated and disposed in appropriately licensed facilities in accordance with legislative requirements.

13.0 WASTE INFRASTRUCTURE AND THE PLANNING PROCESS

INTRODUCTION

- 13.1 The objective of the Plan is to provide for a network of waste management facilities across the Region. A number of facilities have been developed since 2002, and these are summarised in the Site Digest in Annex G.
- 13.2 However, the securing of Planning Permission for the range of additional waste management infrastructure that is required across the region is critical to the implementation of the Plan. Such facilities, which in principle range from In-vessel composting facilities to Mechanical Biological Treatment facilities, are required to treat municipal waste, as well as waste generated by the commercial and industrial, construction, demolition and excavation and agricultural sectors. Such facilities may be developed and/or operated by either the public sector, by the private sector, in response to identified commercial opportunities, or procurement exercises undertaken by the Councils, either individually or in the Group context.
- 13.3 It is also recognised that all waste facilities have the potential to have adverse environmental impacts, and the siting of any waste facility needs to take into account a range of criteria, consistent with land-use planning policy and other relevant guidance. This includes:
- Best Practicable Environmental Option
 - Planning Policy Statement 11
 - Shaping Our Future- Regional Development Strategy for Northern Ireland, 2025
 - Development Plans.

Best Practicable Environmental Option (BPEO)

- 13.4 Best Practicable Environmental Option (BPEO) entails a systematic and balanced assessment of a range of different development options, in order to maximise environmental, economic and social benefits. A proposal for a waste management facility should represent BPEO, or contribute to BPEO for the selected waste stream, and should not cause demonstrable harm to human health or result in an unacceptable adverse impact on the environment.
- 13.5 A full introduction to the process of determining BPEO can be found in the Department of the Environment's Decision Makers Guide. This guide outlines the BPEO process in ten steps. In summary, the BPEO process involves identifying a number of viable scenarios for waste management in Northern Ireland, followed by assessing their performance against a number of decision criteria (such as environment, feasibility and cost), in order to determine which scenario is the BPEO.

- 13.6 BPEO is a core principle of the Northern Ireland Waste Management Strategy. To this effect, a BPEO for Northern Ireland was developed by the Department of the Environment and published in 2004. The aim of this BPEO is to underpin the Northern Ireland Waste Management Strategy in providing a “generic waste management plan” that the three waste management groups could adapt in drawing up their individual Waste Management Plans. This is to ensure that an integrated network of appropriate facilities is developed to meet landfill diversion targets for the key dates of 2010, 2013 and 2020.
- 13.7 The outcomes of the Northern Ireland BPEO process for municipal waste, commercial and industrial wastes and the construction, demolition and excavation wastes is presented in Sections 6, 7 and 10 of this Plan respectively.
- 13.8 The Northern Ireland BPEO has established indicative locations for the siting of waste facilities for municipal wastes, commercial and industrial wastes and construction, demolition and excavation wastes. The indicative locations for municipal and commercial and industrial wastes are outlined further in Table 13.1.

Table 13.1 Indicative Locations for Waste Treatment Facilities

Facility Type	North West	SWaMP	arc21
In-vessel Composting	Londonderry Coleraine	Cookstown Craigavon Enniskillen Banbridge	Ballymena Belfast Newcastle
Windrow Composting	Londonderry Coleraine	Cookstown Enniskillen Banbridge	Ballymena Belfast Newcastle
Anaerobic Digestion	Coleraine	Armagh Omagh	Belfast
Recycling	Londonderry Coleraine Magherafelt	Banbridge Craigavon Dungannon Omagh	Antrim Ballymena Belfast Newcastle Newtownards
Mechanical Biological Treatment	Londonderry Coleraine	Craigavon Omagh	Ballymena Belfast
Thermal Treatment	None Identified	None Identified	Belfast

Source: Best Practicable Environmental Option for Waste Management in Northern Ireland- Guidance Document

- 13.9 With regard to the locations of Construction, Demolition and Excavation Wastes, the BPEO recommended the development of a network of C, D & E reprocessing and recycling facilities around the main urban centres.

- 13.10 Existing or disused quarries have been identified as being suitable locations for such facilities. This would be cost effective and yield environmental benefits as vehicles could deliver waste for recycling and leave with aggregate reducing overall transport impacts. Such developments would assist the quarrying sector in meeting the Aggregates Levy Credit Scheme target of 5% aggregate production by recycling C, D & E waste by 2011 (equivalent to about 1 million tonnes).
- 13.11 Increased provision of mobile facilities for on-site recycling of aggregates on suitable large scale projects is also supported.
- 13.12 It should be noted that there is the potential for synergy between the municipal, commercial and industrial and construction, demolition and excavation waste sectors and also the agricultural sector to deliver economies of scale. This is discussed further within the municipal, commercial and industrial and construction, demolition and excavation waste stream sections within the Plan.
- 13.13 Further information on Best Practicable Environmental Option can be found on EHS website: http://www.ehsni.gov.uk/pubs/publications/NI_BPEO_Guidance_652kb.pdf.

Planning Policy Statement 11

- 13.14 The Department of the Environment (DOE) has a statutory duty under Article 3 of the Planning Order (NI) 1991 to “formulate and coordinate policy for securing the orderly and consistent development of land and the planning of that development.” The policy is set out in Planning Policy Statements (PPS) which apply to the whole of Northern Ireland. The contents are taken into account in decisions involving planning applications and appeals, as well as in the formulation of Development Plans.
- 13.15 Planning Policy Statement (PPS) 11: Planning and Waste Management was published in December 2002 and sets out the Department’s Planning Policies for the development of waste management facilities. The main objectives of PPS 11 are to:
- Promote the development, in appropriate locations, of waste management facilities that offer the BPEO in meeting need as identified by the relevant waste management plan;
 - Ensure that detrimental effects on people, the environment, and local amenity associated with waste management facilities are avoided or minimised; and
 - Secure appropriate restoration of proposed waste management sites for agreed after-uses.
- 13.16 The statement contains a number of policies in order to meet these objectives, which include:
- WM1: Environmental Impact of a Waste Management Facility;
 - WM2: Waste Collection and Treatment Facilities;

- WM3: Waste Disposal;
- WM4: Land Improvement;
- WM5: Development in the vicinity of Waste Management Facilities.

13.17 PPS 11 provides an indication of siting criteria for waste management facilities, as summarised in Box 13.1.

Box 13.1 Summary of PPS 11 Siting Criteria for Waste Management Facilities

WM2 WASTE COLLECTION AND TREATMENT FACILITIES

Proposals for the development of a waste collection or treatment facility will be permitted where:

- There is a need for the facility as established through the WMS and the relevant WMP;
- The proposed facility represents the BPEO;
- The proposed facility complies with at least one of the following locational criteria:
 - *Located within an industrial or port area;*
 - *Located with an active or worked out hard rock quarry or on the site of an existing or former waste management facility;*
 - *It brings previously developed, derelict or contaminated land back into productive use or makes use of existing or redundant buildings;*
 - *A civic amenity and similar neighbourhood facility is conveniently located in terms of access to service a neighbourhood or settlement; and*
 - *It is suitably located in the countryside and involves the reuse of existing buildings or is on land within or adjacent to existing building groups.*
- The following criteria are also met:
 - *The location of a regional scale waste management facility benefits from access to key transport corridors and where practicable alternative modes of transport;*
 - *Sorting and processing of waste to be carried out within a purpose built or appropriately modified building;*
 - *The built development associated with the proposed methods of handling, storage, treatment and processing of waste is appropriate to the nature and hazards of the waste concerned;*
 - *Proposals for the incineration or thermal treatment of waste shall incorporate measures to maximize energy recovery in terms of heat and electricity; and*
 - *The proposal will not result in unacceptable adverse environmental impact that cannot be prevented or appropriately controlled by mitigating measures.*

WM3 WASTE DISPOSAL

Proposals for the development of landfill or land raising facilities for the disposal of waste will only be permitted where:

- There is a need for the facility as established through the WMS and the relevant WMP;
- The proposed facility represents the BPEO;
- The proposed facility complies with all of the following criteria:
 - *The proposal will not result in unacceptable adverse environmental impact that cannot be prevented or appropriately controlled by mitigating measures;*
 - *Significant mineral reserves are not sterilised;*
 - *It is suitably located with an active or worked out hard rock quarry or brings land that is despoiled, derelict or contaminated back into productive use;*
 - *The location of a regional scale landfill benefits from access to key transport corridors and where practicable alternative modes of transport; and*
 - *Detailed measures are included for the appropriate restoration and aftercare of sites that will help to enhance biodiversity.*

Source: Planning Policy Statement 11 (PPS 11) Planning and Waste Management

- 13.18 Further information on PPS 11 can be found at the Planning Service Website:

http://www.planningni.gov.uk/AreaPlans_Policy/PPS/PPS.htm

Shaping Our Future - Regional Development Strategy for Northern Ireland, 2025

- 13.19 The Regional Development Strategy for Northern Ireland, entitled *Shaping Our Future*, provides an overarching strategic framework for tackling the '*deficiencies in our infrastructure and helping the overall development of our economy and society*' as acknowledged in the Programme for Government 2001.
- 13.20 The Group supports the objectives set out in the Regional Development Strategy, including the recognition that it provides the spatial planning context for strengthening the competitiveness of the regional economy, and for tackling social and economic disadvantage. Competitiveness and Best Value are key issues for the economy, and it is important to ensure that there are adequate facilities available to provide competition in a market context within the sub-region. The Group therefore welcomes the recognition of the need for '*an **extensive network** of recycling, recovery and secondary materials manufacturing facilities*' as set out in Strategic Planning Guidance SPG-ENV 5 from the section on Caring for the Environment.

Development Plans

- 13.21 The purpose of a Development Plan, which may be in the form of Area Plans, Local Plans or Subject Plans, is to apply the regional policies of the Department and inform the relevant agencies (including the general public, statutory authorities and developers) of the policy framework and landuse proposals used to guide planning decisions within their local area. Particular sites for the development of waste management facilities may be identified within these Plans, together with the need for appropriate waste management facilities associated with new development. Consideration will also be afforded to the potential impact of existing or approved waste management facilities when zoning adjoining lands for other forms of development.
- 13.22 The following Development Plans apply to the North West Region:

Table 13.2 Development Plans Applicable to the North West Region

District Council	Name of Development Plan	Stage in Planning Process
Ballymoney Borough Council	Northern Area Plan 2016	Draft Plan Published May 2005
	Northern Area Plan 2016 Issues Paper	Issues Paper Published August 2002
	North East Area Plan 1987-2002	Adopted October 1990
	Ballymoney Town Centre Local Plan 1991-2002	Adopted October 1993
Coleraine Borough Council	Coleraine Borough Houses in Multiple Occupation Subject Plan 2016	Pre Issues Paper Stage February 2006
	Northern Area Plan 2016	Draft Plan Published May 2005
	Northern Area Plan 2016 Issues Paper	Issues Paper Published August 2002
	North East Area Plan 1987-2002	Adopted October 1990
	North East Area Plan 1987-2002 Alteration No. 1: Portrush	Adopted September 1996
Derry City Council	Derry Area Plan 2010	Adopted May 2000
Limavady District Council	Northern Area Plan 2016	Draft Plan Published May 2005
	Northern Area Plan 2016 Issues Paper	Issues Paper Published August 2002
	Limavady Area Plan 1984-1999	Adopted December 1988
	South East Lands, Limavady Local Plan 1989-1999	Adopted February 1990
	Limavady District Hamlet Subject Plan 1989-1999	Adopted September 1990
	Limavady Area Plan 1984-1999 Alteration No. 1	Adopted March 1992
Magherafelt District Council	Magherafelt Area Plan 2015	Draft Plan Published April 2004
	Magherafelt Area Plan 2015 Issues Paper	Issues Paper Published December 2000
	Magherafelt Area Plan 1976-1996	Adopted January 1981
Moyle District Council	Northern Area Plan 2016	Draft Plan Published May 2005
	Northern Area Plan 2016 Issues Paper	Issues Paper Published August 2002
	North East Area Plan 1987-2002	Adopted October 1990
Strabane District Council	West Tyrone Area Plan 2019	Issues Paper Published
	Strabane Area Plan 1986-2001	Adopted April 1991

Source: http://www.planningni.gov.uk/AreaPlans_Policy/Plans/Plans_lgd.htm

- 13.23 In order to comply with the planning policy and guidance discussed within this section, all planning applications for waste facilities should be accompanied by pre-determined detailed supporting environmental information to enable the associated environmental impacts to be assessed. The compliance with land-use planning policy and other relevant guidance should be demonstrated, and where significant tensions between competing policies exist, these should be assessed.
- 13.24 The identification of suitable locations for waste management facilities is an important factor, and indicative locations that are considered suitable for certain types of waste management facilities are set out in Table 13.3 to aid in this process.

Table 13.3 Potential Settings for Waste Management Facilities

Type of Facility	Indicative Location
Transfer Stations	A network of transfer stations is required across the North West Region to support Materials Recovery and Composting Facilities. They should be located close to the main sources of waste arisings, on land suitable for industrial use, or on derelict land, including former landfill sites or quarries.
Materials Recovery Facilities	MRF's should be located on land suitable for industrial use, or on derelict land, having regard, amongst other factors, to transportation and access issues.
Civic Amenity Sites	Civic amenity sites should be located within, or in close proximity to the main settlements that they serve, with good accessibility. Commercial / industrial type settings are considered appropriate so as not to impact on residential amenities. In areas with a dispersed settlement pattern, a transport node, a point where major roads meet, is considered an appropriate location.
Windrow Composting	Windrow composting is carried out in the open. Due to the potential for impacts on the local amenity, such as noise, dust, odour and bio-aerosols, such facilities therefore should be located on suitable industrial land, within or adjacent to a waste management facility, or in a rural area.
In-Vessel Composting and Anaerobic Digestion	In-vessel/enclosed composting facilities should be located on land suitable for industrial use, or on derelict land, including former landfill sites, or quarries, having regard to transportation and access issues.
Mechanical Biological Treatment	Mechanical Biological Treatment facilities should be located on land suitable for industrial use, or on derelict land, including former landfill sites, or quarries, having regard to transportation and access issues.
Landfill	Quarries – for the restoration of mineral workings.

INDICATIVE INFRASTRUCTURE AND CAPACITY REQUIREMENTS

- 13.25 This Section of the Plan seeks to draw together the previous analyses that have considered the types of infrastructure required, the anticipated capacity requirements associated with it, and to identify potential locations for facilities, taking into account the siting criteria identified, as well as local needs. It should be noted that these are indicative only, illustrating the potential range and geographical spread of facilities across the North West Region.
- 13.26 The actual number of facilities developed to service municipal wastes will be determined by the Councils, as they embark on a series of procurement exercises over the coming years. Resulting from these activities, some of the facilities may be developed and operated directly by the Councils, some may be developed and operated by the private sector, in response to securing tenders issued by the Councils, and some may be developed and operated in partnership with community groups, businesses and NGO's for particular initiatives or schemes.
- 13.27 Where the private sector is involved two potential approaches are envisaged, namely the facilities are developed and operated by the private sector, on privately owned land, or alternatively, a facility may be developed and/or operated by the private sector, on Council owned land.
- 13.28 The integrity of any tendering exercise undertaken by the Councils is fundamental to ensuring fair competition at all stages, consistent with the Councils' policy and guidelines on procurement. For that reason, the capacities and potential locations set out in Tables 13.4 to 13.6 are indicative only, and are not intended to indicate a preference for any specific sites or facilities.
- 13.29 Similarly, it is recognised that for particular services, a facility may be located outside the geographical area of the North West, but may still represent the most economically advantageous service to the region.
- 13.30 Table 13.4 provides a summary of the indicative capacity required for municipal wastes in order to ensure that the North West meets the targets set for materials recovery and especially the NILAS targets for the diversion of biodegradable municipal wastes from landfill. The capacities indicated are additional to present capacity, and reflect the new initiatives set out in the Plan. They are not intended to limit the capacity at any particular facility, as there is the potential for consented facilities to service areas outside the geographical area represented by the North West.

Table 13.4 Indicative Additional Municipal Waste Infrastructure Requirements by 2009/10, 2013 to 2020

Supporting Infrastructure	Additional Capacity Requirements	Indicative Number of Additional Facilities	Comments
Recycling/ Recovery	20-25,000 tpa by 2009/10 30-35,000 tpa by 2013 45-50,000 tpa by 2020	Existing capacity	Existing infrastructure has the capacity to accommodate the increased recycling requirement into the medium term for MDR.
Anaerobic Digestion/In-vessel Composting	10,000 tpa by 2009/10 15,000 tpa by 2012/13 20,000 tpa by 2020	1-2 facilities for Biowastes	Tender process will determine number of facilities for biowaste.
Mechanical Biological Treatment	110-120,000 tpa by 2020	2 with capacity 60-70,000 tpa	Anticipated synergies between Municipal and C&I sectors. This would be best realised by sizing plants to accommodate both C&I and Municipal wastes, to deliver economies of scale.
Landfill	100,000 tpa by 2009/10 50,000 tpa by 2012/13 50,000 tpa by 2020	1 Facility with minimum capacity of 1 Million m ³	District Councils to review landfill capacity within the Region and identify future needs.

13.31 It is recognised that the scale of waste management facilities can vary widely, ranging from small community schemes to large multi-stream facilities. The 'Typical Scale of Facilities' presented in Table 13.4 therefore is an indication of the scale of economic unit that appears to be appropriate to the needs of the North West Region. The indicative locations of the new facilities are shown in Figure 13.1.

Figure 13.1 Indicative locations of new municipal waste management facilities

Note: Locations of biowaste facilities to be decided through a tendering process
Locations of MBT facilities to be decided through a procurement process

- 13.32 Table 13.5 shows the indicative capacity for the treatment of commercial and industrial waste required to ensure that the North West Region meets the recycling and recovery targets specified within the Northern Ireland Waste Management Strategy.

Table 13.5 North West – Infrastructure Capacity Requirements for C&I Wastes

Supporting Infrastructure	Additional Capacity Requirements	Indicative Number of Facilities	Comments
Recycling/ Recovery	85,000 tpa by 2010 115,000 tpa by 2013 150,000 tpa by 2020	Existing capacity	Existing infrastructure has the capacity to accommodate the increased recycling requirement into the medium term.
Anaerobic Digestion/ In-vessel Composting	7,000 tpa by 2010	2-3 AD plants with CHP	
Mechanical Biological Treatment	50,000 tpa by 2010	2-3 plants	Anticipated synergies between C&I and Municipal waste sectors. This would be best realised by sizing plants to accommodate both C&I and Municipal wastes, to deliver economies of scale.
Landfill	125,000 tpa by 2010 55,000 tpa by 2013 40,000 tpa by 2020	Existing capacity	

- 13.33 Table 13.6 shows the indicative capacity for the treatment of construction, demolition and excavation waste required to ensure that the North West meets the recycling and recovery targets specified within the Northern Ireland Waste Management Strategy.

Table 13.6 Indicative Capacities for C, D & E Wastes

Supporting Infrastructure	Future Capacity Requirements	Indicative Number of Facilities	Comments
Recycling/ Recovery	348,000 tpa by 2010 431,000 tpa by 2013 559,000 tpa by 2020	Mobile plant or 1-2 centralised facilities	The scale of centralized facilities will vary, depending on the requirements of the market.
Landfill	309,000 tpa by 2010 264,000 tpa by 2013 186,000 tpa by 2020	TBC	The need for both inert and non-hazardous landfill remains, with sites located appropriately to serve the main urban centres. Landfill capacity for particular hazardous wastes should be considered on a Northern Ireland wide basis.

- 13.34 Due to the fact that agricultural waste will become a controlled waste stream within 2006, it is considered necessary that the infrastructural requirements for agricultural wastes are considered. Given the small quantities of this waste stream (approximately 41,000 tpa) it is not anticipated that there will be the need for any additional infrastructural requirements, that cannot be accommodated within the proposed arrangements for other waste streams, including commercial and industrial, municipal, hazardous and packaging wastes.
- 13.35 In addition to this, although not controlled wastes, there is the potential for farmyard manures and slurries to be used for energy recovery. The Expert Group for Alternative Uses of Manures (EGAUM) have examined alternative uses for animal manures and have concluded that there is an important role for anaerobic digestion with combined heat and power (AD/CHP) plants for the intensive dairy and pig industries, and a litter fired generator for the poultry sector. It is estimated that 2 AD/CHP plants, with a capacity in the order of 60,000 to 150,000 tpa is considered appropriate for the North West Region.
- 13.36 With respect the poultry industry, a single poultry-fired generator within Northern Ireland, capable of handling 300,000 tpa of input per annum has been identified as being appropriate to meet the needs of the industry.
- 13.37 For all of these waste streams is evident that larger facilities could be developed, serving larger catchments both within the region, and in neighbouring regions. It is proposed therefore that there will be ongoing discussions with the other regional groups, namely SWaMP, arc21 and neighbouring Councils in the Republic of Ireland, over the period of implementation of the Plan, to ensure that the facilities developed are compatible and consistent with the needs of the North West Region.

Potential Locations for Waste Management Facilities

- 13.38 Table 13.7 provides a summary of potential locations for the waste management facilities identified for municipal wastes. These facilities range from recycling points to mechanical biological treatment facilities. The potential locations indicated for facilities is designed to ensure an equitable distribution across the Region and to ensure that the proposed facilities are accessible to the communities they serve.
- 13.39 Potential locations are identified to ensure that the desired distribution of facilities is achieved. The purpose of this is to ensure that the implementation of the Plan and any associated procurement exercises are not compromised, be they tenders for the provision of facilities or the acquisition of sites. This is important to ensure that best value can be achieved and demonstrated by Councils, consistent with their policies and obligations.

Table 13.7 Potential Locations for Municipal Waste Management Facilities

Facility	Activity	Potential Locations for Facilities
Materials Recovery Facilities	Materials Sorting for Recycling	▪ MRF's should be located on land suitable for industrial use, or on derelict land, having regard, amongst other factors, to transportation and access issues. ▪ Any further requirement for materials recovery facilities required to meet local needs will be identified within the annual Implementation Action Plan (IAP).
Civic Amenity Sites	Materials Collection for Recycling and Green Waste Composting	▪ Civic amenity sites should be located within, or in close proximity to, the main settlements that they serve, with good accessibility. Commercial/Industrial type settings are considered appropriate so as not to impact on residential amenity. In areas with a dispersed settlement pattern, a transport node, a point where major roads meet, is considered an appropriate location. ▪ The number of civic amenity sites within the North West Group has increased from 33 in 2002 to 37 in 2005/06. ▪ Any further requirement for civic amenity sites required to meet local needs will be identified within the annual Implementation Action Plan (IAP).
Recycling Points	Source Separated Materials	▪ Recycling points include bottle and can banks, and should be readily accessible to the local communities they serve. They will therefore be located in town and village centres, retail outlets and other similarly accessible areas for use by the public. ▪ The number of recycling points within the North West Group has increased from 24 in 2002 to 81 in 2005/06. ▪ Any further requirement for recycling points required to meet local needs will be identified within the annual Implementation Action Plan (IAP).
Open Windrow Facilities	Green Waste Composting	▪ Windrow composting is carried out in the open. Due to the potential for impacts on local amenity, such as noise, dust, odour and bio-aerosols, such facilities therefore should be located on suitable industrial land, within or adjacent to a waste management facility, or in a rural area. ▪ Any further requirement for open windrow facilities required to meet local needs will be identified within the annual Implementation Action Plan (IAP).
In vessel/enclosed facilities¹	Composting of Household Organic Wastes	▪ In-vessel/enclosed composting facilities should be located on land suitable for industrial use, or on derelict land, including former landfill sites, or quarries, having regard to transportation and access issues.
Waste Transfer Stations	Bulking and Transfer of Wastes	▪ Transfer stations should be located close to the main sources of waste arisings, on land suitable for industrial use, or on derelict land, including former landfill sites or quarries. ▪ Strabane District Council have identified a preferred location for their new Waste Transfer Station at Strahans Road, Strabane located in close proximity to the A5 Strabane By Pass and Orchard Road Industrial Estate. ▪ Any further requirement for waste transfer stations required to meet local needs will be identified within the annual Implementation Action Plan (IAP).

Table 13.7 Potential Locations for Municipal Waste Management Facilities (continued)

Facility	Activity	Potential Locations for Facilities
Mechanical Biological Treatment Facilities	Removal of additional recyclates and biological treatment	▪ Mechanical Biological Treatment (MBT) facilities should be located close to the main sources of waste arisings, on land suitable for industrial use, or on derelict land, including former landfill sites, or quarries, having regard to transportation and access issues. ▪ There is a need for two MBT facilities within the Region. A number of potential sites have been identified in a Cross Border MBT Technologies Study, these are Letterloan Landfill Site, Lisahally Livestock Market and Crosstagherty Landfill Site.
Landfill	Disposal	▪ New facility to be located at Cam Quarry, Cam Road, Mascosquin, Coleraine.

Note: 1. Locations for biowaste treatment facilities have been omitted due to the current tender process

13.40 It should be noted that the potential locations identified in Table 13.7 for municipal waste facilities within the North West Region, are, in a number of cases, at variance with the locations identified within the Northern Ireland BPEO. The locations considered in Table 13.7 are however considered to be most appropriate to meeting the needs of the North West Region.

13.41 Notwithstanding the potential locations for particular types of facilities identified above, it is also recognised that some of the facilities may be integrated and developed jointly on a single site, for example an MBT facility adjacent to a landfill site. This is considered appropriate where the siting criteria and potential environmental impacts are similar.

13.42 In conclusion therefore, this section provides a summary of infrastructural requirements and potential locations that should allow the Councils to implement the Plan with respect to municipal wastes, commercial and industrial, construction, demolition and excavation wastes and agricultural wastes by developing sites at appropriate locations, after securing the necessary consents and permissions, consistent with their policies and obligations to achieve best value on behalf of the communities they serve.

14.0 IMPLEMENTATION – MONITORING AND REVIEW

INTRODUCTION

- 14.1 This Plan provides the framework for the management of controlled wastes arising within the North West Region, setting out the arrangements required, and defining the actions needed to encourage the shift from an 'end of pipeline' waste management approach to a focus on resource efficiency and management. Implementation therefore is key, and the Plan will be subject to a process of ongoing monitoring and review, particularly with respect to Municipal Wastes, for which the councils have statutory responsibility.
- 14.2 The individual District Councils within the Group, in undertaking this monitoring and review, are committed to:
- Monitoring a number of Key Performance Indicators (KPI's);
 - Completing the WasteDataFlow returns online on a quarterly basis;
 - Validating the data used;
 - Checking overall performance against planned levels; and
 - Identifying issues of concern, and implementing corrective actions, where required, should performance fall significantly behind planned levels.
- 14.3 The purpose of the Review process is to ensure that statutory and policy targets and obligations are met by:
- Assessing the performance of the measures and actions set out in the Plan;
 - Monitoring the delivery of the infrastructure identified in the Plan;
 - Reviewing the effectiveness of the arrangements;
 - Assessing the impact of policy and legislative developments; and
 - Reviewing and updating the arrangements and actions where necessary.
- 14.4 This process provides the basis for two levels of formal review, as follows:
- Annual Review, with the publication of an Annual Report, to inform stakeholders on performance, both at the Group and individual Council level.
 - Plan Review, at not more than five yearly intervals, involving a full Review of the Plan, culminating in the publication of a modified Plan.
- 14.5 In addition to this, the NWRWMG will consider management information, collated from the individual Councils, on a quarterly basis, to ensure that progress and performance against projections is monitored regularly, and to pick up as early as possible, any areas of under-performance.

- 14.6 The Plan is supported by an Implementation Action Plan (IAP) for municipal wastes, which details the actions at the individual council level, to ensure that the measures and arrangements set out for the management of municipal waste, are implemented in a manner appropriate to local needs and priorities.
- 14.7 The approach of the councils to monitoring and reviewing the implementation of the Plan is described further below.

KEY PERFORMANCE INDICATORS

- 14.8 Reliable data, and the use of Key Performance Indicators (KPIs) are essential elements in the ongoing process of monitoring and review. For municipal waste, WasteDataFlow, a structured online reporting facility, has been developed for use by councils for data reporting purposes across the United Kingdom, and is used by all councils within the Group, with data returns completed quarterly. One of its functions is to ensure that data collection and management conform to EU reporting requirements.
- 14.9 WasteDataFlow, which went live in April 2004, allows direct entry of municipal waste data. It also generates performance reports, based on a number of Key Performance Indicators on a regular and ongoing basis. Examples of the KPIs reported are summarised in Table 14.1.

Table 14.1 Key Performance Indicators for Municipal Waste

Examples of KPIs Include	
Household Waste	
- Recycling - Composting - Treating by other means Household waste per household Cost of waste collection per household	- Energy Recovery - Landfill Cost of waste treatment and disposal per tonne
Municipal Waste	
- Recycling - Composting - Treating by other means	- Energy Recovery - Landfill
Biodegradable Municipal Waste (BMW) landfilled Commercial & Industrial waste (collected by district councils)	
- Recycling - Composting - Treating by other means	- Energy Recovery - Landfill

- 14.10 From a council perspective, WasteDataFlow is designed to:
- Allow regular and efficient data collection of municipal waste statistics;
 - Enhance local data management for reporting and waste planning purposes;
 - Provide consistent reporting standards;
 - Offer access to performance benchmarking with other authorities.
- 14.11 From Government's perspective, WasteDataFlow allows:
- Monitoring of progress towards national and local targets;
 - Councils to meet the requirement to report data quarterly under the Northern Ireland Landfill Allowance Scheme (NILAS);
 - The UK to meet reporting obligations to the EU;
 - Monitoring of trends and performance to inform government policy.
- 14.12 In summary, the WasteDataFlow system is comprehensive, reporting municipal and household data for each council, broken down into arisings, recovery (recycling, composting and energy recovery), and disposal. The system also covers the destination of materials sent for recovery or disposal, and the tonnages accepted at each sites. It is the data and reporting generated by WasteDataFlow for municipal waste therefore that provides the basis for the evidential approach to performance review and monitoring by the councils.
- 14.13 Data on a range of waste streams will be collated and reviewed for the purposes of reviewing the Waste Plan, when and as appropriate. These will be obtained from available sources, including for example, Waste Surveys by EHS, and sectoral or industry reports. These waste streams will include:
- | | |
|---|----------------------|
| ▪ Commercial and Industrial Waste | ▪ Agricultural Waste |
| ▪ Packaging Waste | ▪ Hazardous Waste |
| ▪ Waste Electrical and Electronic Equipment | ▪ Clinical Waste |
| ▪ End of Life Vehicles | ▪ Tyres |
| ▪ Batteries | ▪ Waste Oils |

ANNUAL REVIEW

- 14.14 An Annual Review will be undertaken by the Group with the specific objectives of:
- Reviewing data on the quantities and nature of waste arisings;
 - Monitoring the implementation of the measures set out in the Plan and the IAP;
 - Reviewing performance and progress against targets;
 - Benchmarking performance;
 - Reviewing progress on procurement processes, including the delivery of the Recycling, Biowaste and Mechanical Biological Treatment contracts;
 - Assessing the impacts of changes to legislation and policy;

- Identifying any corrective actions and/or plan modifications, if required; and
- Producing an Annual Report.

14.15 Two key aspects of the Annual Review are:

- To monitor progress and therefore the effectiveness of the measures in the Plan; and
- To communicate with and inform stakeholders on the performance of the councils and the Region, by publishing an Annual Report.

14.16 The Annual Review will be completed by the end of June with respect to the preceding data reporting year, and will be presented in the Annual Report. The Report will be published on the Group's website at: www.northwestwasteplan.org.uk.

IMPLEMENTATION ACTION PLAN

14.17 The Waste Management Plan is supported by a Group wide Implementation Action Plan (IAP) for municipal waste infrastructure, which is updated annually. The IAP will form the key reference documents for actions, and their respective timescales, that will have to be completed to meet the Waste Plan targets. The IAP will be sufficiently detailed to allow milestone and critical path monitoring throughout the Plan period and ongoing assessment will enable alternative and contingency arrangements to be implemented if necessary.

14.18 The Group IAP will address the main infrastructure and service requirements for the Plan and will include specific actions for a number of deliverables, as outlined below:

- Kerbside and Recycling Centres
- Materials Recovery- post mixed dry recyclable collection
- Composting/ Biowaste Treatment- post brown bin collection
- Mechanical Biological Treatment (including market outlets)
- Landfill Facilities.

14.19 The Group wide IAP will be transferred into district level IAP as appropriate for local infrastructure and services, including recycling centres and the extension of kerbside collection systems. The local IAP's will be reviewed and updated annually to ensure successful implementation of the tasks and to enable modifications to be incorporated as appropriate.

PLAN REVIEW

- 14.20 The Plan sets the context for managing within the North West Region up to 2020. As such the plan has assessed the targets set out in the NI Waste Management Strategy, *Towards Resource Management*, and the Landfill Directive to determine the arrangements and actions necessary to meet these requirements. Key measures provide for:
- **Waste Prevention** - prioritised to limit the growth in waste arisings within the region.
 - **Materials Recovery** - increased provision for the recycling and composting of materials.
 - **Residual Waste Treatment** - the provision of Mechanical Biological Treatment capacity, to ensure that the Landfill Directive targets are met, and value is recovered from the residual waste materials. This is the key action for the Group up 2009/10, and the next review of the Plan.
- 14.21 The NWRWMG also recognises that resource and waste management policy and legislation is continuing to evolve, with major developments anticipated through amendments to the Waste Framework Directive. These are expected to include:
- Waste Prevention – a strengthening of Waste Prevention, with requirements for a plan and supporting targets.
 - Efficiency Threshold – the introduction of an efficiency threshold to distinguish between disposal and recovery by thermal treatment methods.
- 14.22 There is a need therefore to review the Plan on a regular basis to take such developments into account, and make modifications as appropriate to ensure that the Plan continues to identify and support the arrangements and provisions necessary to meet future challenges, whilst remaining effective and responsive to local needs and priorities.
- 14.23 Formal reviews therefore will take place at not more than five yearly intervals. The NWRWMG recognises that the next Review will be undertaken in the context of the re-structuring of local government under the Review of Public Administration. This may change roles and responsibilities, and perhaps council boundaries, but recognising that irrespective of local government arrangements, municipal waste arising within the region needs to be managed effectively, the NWRWMG is committed to ensuring that the planning and the provision of waste management services is effective and continues to meet the needs of the region, into the future.

GLOSSARY

GLOSSARY OF TERMS

Agricultural Waste	Waste from premises used for agriculture within the meaning of the Agriculture Act (Northern Ireland) 1949. Under this definition agriculture includes 'horticulture, fruit growing, seed growing, dairy farming and livestock breeding and keeping, the use of land as grazing land, meadow land, market gardens and nursery grounds, and the use of land for woodlands where that use is ancillary to the farming of land for other agricultural purposes, and 'agriculture' shall be construed accordingly'.
Anaerobic Digestion	Anaerobic digestion is the biological decomposition and stabilisation of organic material in the absence of oxygen and under controlled conditions which produces biogas and a digestate. It results, either directly or after subsequent aerobic treatment, in a final product that has been sanitised and stabilised, is high in humic substances and can be used as a soil improver, as an ingredient in growing media, or blended to produce a top soil that will meet British Standard BS 3882, incorporating amendment No 1.
Best Practical Environmental Option (BPEO)	The option that provides the most benefits or the least damage for the environment, as a whole, at acceptable cost, in the long term as well as the short term.
Biodegradable Content	The percentage content of waste which is biodegradable. For municipal waste this usually fluctuates between 65%-75%.
Biodegradable Waste	Any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food, garden waste, paper and cardboard.
Biowaste	Source segregated household or commercial waste of an organic or putrescible character, such as food or garden waste.
Biodegradable Municipal Waste	Municipal waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and paperboard.
Biological Treatment	Involves composting, anaerobic digestion, mechanical-biological treatment or any other process for stabilising and sanitising biodegradable waste.
Bring Banks/Recycling Schemes	These are conveniently situated facilities in which members of the public deposit dry recyclable waste materials (for example paper, glass, cans, textiles, shoes etc) in material specific receptacles for subsequent collection and delivery to material recovery facilities. These facilities can be at supermarkets, offices and parks, for example.

Capture Rate	The percentage of the available material in the waste that people participating in a recycling scheme separate for kerbside collection. For example, if there is 10kg of paper in the waste stream and 5kg is separated for recycling, this represented a 50% capture rate.
Central Composting Facility	A facility at which the biowaste is delivered to be processed by composting into a compost product – can be for garden waste, selected food waste or a combination of both materials.
Civic Amenity Sites (CA Sites) (also called Recycling Centres)	A reception facility that enables householders to deposit a wide range of household waste categories including recyclable and non-recyclable materials, bulky household waste and certain categories of household hazardous waste. Sites are provided by local authorities for the disposal of excess household and garden waste free of charge, as required by Section 51(1)(b) of the Environmental Protection Act 1990/ Refuse Disposal (Amenity) Act 1978 / Pollution Control and Local Government (Northern Ireland) Order 1978.
Clinical Waste	(a) Any waste which consists wholly or partly of human or animal tissue, blood or other body fluids, excretions, drugs or other pharmaceutical products, swabs or dressings, or syringes, needles or other sharp instruments, being waste which unless rendered safe, may prove hazardous to any person coming into contact with it; and (b) Any other waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice, investigation, treatment, care, teaching or research, or the collection of blood for transfusion, being waste which may cause infection to any person coming into contact with it.
Co-Incineration	Is the term used for incineration plants, where waste is used as a regular or additional fuel, or is disposed of at a plant along with other substances, where energy generation or production of material products may take place.
Co-mingled materials	Wastes collected in a mixed form (for example a kerbside recycling box in which householders put glass, cans, plastics, paper and batteries) that are destined for recycling after further sorting.
Collection System	A system of gathering, sorting or mixing of waste for the purpose of it being transported to a waste recovery or disposal facility.
Combined heat and Power (CHP)	Facilities in which waste is combusted to produce heat for domestic or industrial purposes in addition to the generation of electricity.
Commercial Waste	Waste from premises used wholly or mainly for the purposes of trade or business, recreation or entertainment, excluding household waste, mines, quarries and agricultural waste.

Community Composting Facilities	Facilities set up for the composting of biowaste by a group of people in a locality with the aim of composting their own and other people's biowaste in order to manage the supplied biowaste as close as possible to the point at which it was produced.
Compost	The stable, sanitised and humus-like material, rich in organic matter and free from malodours, resulting from the composting process of separately collected biowaste.
Composting	The controlled biological decomposition and stabilisation of organic materials (such as garden and kitchen wastes), under conditions that are predominantly aerobic (oxygen present) and that allow the development of thermophilic temperatures as a result of biologically produced heat. It results in a final product that has been sanitised and stabilised, is high in humic substances and can be used as a soil improver, as an ingredient in growing media, or blended to produce topsoil that will meet British Standard BS 3882, incorporating amendment No 1.
Compost Quality Standards	A set of industry technical standards, which may be statutory in nature, and which are designed to safeguard against potentially harmful aspects of compost production and use, thereby resulting in high quality compost and protecting the environment and human health.
Construction, Demolition & Excavation Waste	All waste from the construction, repair, maintenance, demolition and excavation of buildings or preparatory works thereto. Those waste materials which arise from the construction or demolition of buildings and/or civil engineering infrastructure, including hard construction and demolition waste and excavation waste, whether segregated or mixed.
Digestate	The material resulting from the anaerobic digestion of separately collected biowaste.
Domestic Waste	Waste which comes from homes – also known as household waste .
Eco-labelling	The provision of environmental and/or financial information on products, detailing for example whole life costs and emissions/wastes created during manufacture.
End of Life Vehicles (ELVs)	Vehicles which have reached the end of their useful lives, either because of old age or due to accident. This waste is a priority EC waste stream and principally regulated by The End-of-life Vehicles Directive (2000/53/EC) came into force in the UK in November 2003.
Energy from Waste (EfW)	The controlled combustion of waste in which heat, power and other energy are recovered, while reducing the amount of waste. Examples are incineration used to provide heat to nearby buildings and methane gas from landfill sites used to generate electricity – also known as energy recovery .

Fly-tipping	The illegal dumping of rubbish in unauthorised places.
Gasification Plant	Facility for the production of combustible gas from waste.
Greenhouse Gas	This is a gas that absorbs heat and therefore contributes to the warming of the Earth's atmosphere (the ' greenhouse effect '). Examples of greenhouse gases include water vapour, carbon dioxide and methane.
Green/Organic Waste	Biodegradable material such as garden and kitchen waste. This may also include other compostables such as cardboard if collected as part of a composting collection scheme.
Green Purchasing	Exercising environmental awareness in the choice of products and the buying of environmentally sustainable products.
Government Contracts Committee	This committee assists the Department of Finance in formulating overall policy on public procurement. It is made up of senior officials in the higher spending Departments and is chaired by a Department of Finance representative. The committee also adjudicates on contracts being awarded by Central Government Departments in certain cases.
Hazardous Waste	Hazardous waste refers to the categories of waste to be controlled according to the Basel Convention on the control of transboundary movements of hazardous waste and their disposal (Article 1 and Annex 1).
Healthcare Waste	The term "healthcare waste" is used to describe all waste resulting from healthcare activity. It includes waste which falls within the statutory definition of clinical waste and other non-clinical waste.
Home Composting	A process whereby biowaste is composted and used in gardens belonging to private households. The aerobic degradation of biodegradable components of the household waste stream (usually garden waste such as grass cuttings, prunings etc and some kitchen wastes) at the site where it is produced using a purpose designed container (either a composter, digester, combination of both, or a wormery) or a traditional compost heap.
Household Clinical Waste	Waste arising within the household waste stream that falls within the definition of clinical waste under The Controlled Waste Regulations 1992/The Controlled Waste Regulations (Northern Ireland) 2002 para.2.
Household Hazardous Waste	Waste arising within the household waste stream that is classified as Hazardous under EC Directive 91/689/EEC (7). Examples of Household Hazardous Wastes include: asbestos waste, batteries, fluorescent light tubes, garden and household chemicals, medicines, oils, paints, glues and varnishes, paint thinners and removers, refrigeration equipment and smoke detectors.

Household Waste	Waste arising from a domestic property or waste of similar composition from other properties such as residential homes or hospitals.
Humic	Substances which are highly-abundant organic compounds formed in soils and sediments by the decay of dead plants, microbes and animals.
Incineration	The process of burning solid waste under controlled conditions to reduce its weight and volume, and often to produce energy. Thermal treatment of waste in an incineration plant as defined in Article 3 (4) of Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste.
Industrial Waste	Waste from a factory, produced or arising from manufacturing of industrial activities or processes.
Inert Landfill	Use definitions set out in Schedule 1 (Waste Acceptance Criteria) of the Landfill (England and Wales) Regulations 2002 and Amendment Regulations 2004 and the Landfill Regulations (Northern Ireland) 2003 and the Landfill (Amendment) Regulations (Northern Ireland) 2004.
In-Vessel Composting	The composting of biowaste in a closed reactor where the composting process is accelerated by controlled and optimised air exchange, water content and temperature control.
IPPC Licence	Legal process, by which large industrial processes are licensed and regulated, refers specifically to the requirements of the European Commission's IPPC (integrated pollution prevention and control) Directive (96/61/EC) to provide protection of the environment and the protection of human, animal and plant life from harm or nuisance from certain industrial activities.
Joint Venture	A partnership, involving a local authority (or authorities) and a private or community sector organisation.
Kerbside Collections	The collection of biodegradable waste or mixed dry recyclables separately from other kinds of waste from outside private households in such a way as to avoid the different waste fractions or waste components from being mixed, combined or contaminated with other potentially polluting wastes, products or materials, usually employing separate bins for dry recyclables and organic waste.
Kerbside Scheme	Any regular collections of reusables/recyclables/compostables/residuals from premises, including collections from commercial or industrial premises as well as from households. Excludes services delivered on demand.

Landfill/Landfilled	A waste disposal site for the deposit of waste onto or into land in accordance with the definitions contained within the relevant national legislation and guidance implementing the Landfill of Waste Directive (1999/31/EC).
Landfill Directive	A Directive which aims to, by means of stringent operational and technical requirements on the landfilling of waste, implement measures, procedures and guidance to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, ground water, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, during the whole life cycle of the landfill.
Landfill Levy	This is an additional environmental levy that is paid on top of normal gate fees by any private contractor or local authority that wishes to dispose of waste through a landfill site. The landfill levy is collected through landfill operators and remitted to the Environment Fund for disbursement on approved environmental activities, thereby forming part of a policy aimed at providing more incentives for re-use and recycling of waste.
Landfill Tax	A tax on every tonne of waste sent to landfill sites. The tax is designed to reduce the amount of rubbish sent to landfill by increasing the amount of waste being reduced, reused and recycled.
Leachate	Liquid consisting of a mixture of rainwater and rotten organic materials which drains from a landfill site.
Life Cycle Analysis	A tool that can be used to assess the true costs over the whole life of a product, including the initial capital outlay, operational costs, maintenance and ultimately disposal costs.
Materials Recycling Facility (MRF)	A facility used to sort municipal waste and separate out recyclable fractions for subsequent reprocessing. Recyclables are segregated by means of manual sorting on conveyor belts and mechanical processes.
Mechanical-Biological Treatment (MBT)	The treatment of residual municipal waste, in order to stabilise and reduce the volume of waste which requires disposal. A combination of mechanical processing and biological stabilisation are employed.

Municipal Solid Waste (MSW)	Municipal waste is defined, for the purposes of this Plan, as 'household waste and any other waste that is under the control of (i.e. collected by) District Councils or agents acting on their behalf.' In general, it includes waste arising from: waste collection rounds (including separate rounds for collection for recyclables); street cleansing and litter collection; beach cleansing; bulky waste collections; hazardous household waste collections; household clinical waste collections; garden waste collections; drop-off/bring systems; weekend skip services; any other household waste collected by the authority; rubble; clearance of fly-tipped waste; and commercial waste from shops and trading estates where local authority waste collection agreements are in place. In Northern Ireland, private waste (e.g. commercial waste) brought to a landfill site under the control of the local authority is not classified as MSW. Municipal waste includes wastes collected by third parties for which recycling payments are made, or wastes collected by third parties for which there are other formal arrangements with the local authority. It also includes wastes collected by local authorities, where they are acting as subcontractors. Items collected from households or commercial premises by local authorities or their agents (where there is a formal agreement between them) for re-use, may be reported as being municipal waste.
Natural Resources	Substances of use to humans that are derived either from the Earth e.g. coal, oil or metal ores or from living things.
Non Clinical Waste	Non clinical waste is deemed to be all non toxic and non-hazardous waste.
Non Hazardous Landfill	Use definitions set out in Schedule 1 (Waste Acceptance Criteria) of the Landfill (England and Wales) Regulations 2002 and Amendment Regulations 2004 and the Landfill Regulations (Northern Ireland) 2003 and the Landfill (Amendment) Regulations (Northern Ireland) 2004.
Non Household Waste	Includes wastes collected by a local authority from non-household sources (i.e. not covered by Schedules 1 and 2 of the Controlled Waste Regulations 1992/ Controlled Waste Regulations Northern Ireland 2002).
NILAS	Northern Ireland Landfill Allowance Scheme.
Organic Waste	Also known as putrescible waste or biowaste, organic waste means "any waste that is capable of undergoing anaerobic or aerobic Biodegradable Waste decomposition through a biological treatment process, such as food and garden waste".

Participation Rate	The participation rate measures which households are making material available for collection. However, not all households that are participating are likely to do so every week, it is therefore necessary to measure which households are using the service over at least four weeks or at least two collection cycles.
Percentage Weighed	$\frac{\text{Measured Tonnage}}{\text{Estimated Total Tonnage}} \times 100$
Pay-By-Use (PBU) Schemes	Schemes whereby residents pay in direct proportion to the amount of waste collected from individual households. This scheme is devised to offer financial incentives for residents to reduce the amount of waste which is presented for collection and subsequent management by public or private waste collectors.
Polluter Pays Principle	The principle set out in Council Recommendation 75/436/Euratom, ECSC, EEC of 3rd March 1975 1(20) regarding cost allocation and action by public authorities on environmental matters.
Producer Responsibility Initiatives	A series of initiatives undertaken by industry with the agreement of the Government and generally having a requirement to take steps for the purpose of the prevention, minimisation, limitation or recovery of waste as respects the class or classes of product to which the requirement relates and may include a requirement to achieve specified targets in relation to those matters, in line with the 'Polluter Pays Principle'.
Proximity Principle	The principle that waste should be treated or disposed of as close as practicable to its place of origin.
Putrescibles	Solid wastes which are biodegradable.
Pyrolysis	Decomposition of organic waste by heating in an enclosed vessel either in the absence of air to produce gas for combustion or with a limited supply of oxygen.
Quality Assurance Schemes	Are usually non-statutory in nature, and designed to ensure that producers maintain a large degree of control over process management and produce a compost product of high quality, which will be easily marketed and profitable in nature.
Mixed Dry Recyclables	Recyclates (glass bottles and containers, plastic bottles and containers and metal tins and cans) not including putrescible wastes.
Recovery	Any activity carried out for the purpose of reclaiming, recycling or re-using waste in whole or in part.
Recyclables	Waste materials that may be subjected to any process or treatment to make it re-useable in whole or in part.

Recycling/Recycled	"Recycled" means materials which have been collected and separated with subsequent reprocessing to produce marketable products. Recycling differs from product re-use because of the need to reprocess the material and it is often subsequently manufactured into a different product, for example Polyethylene plastic bottles can be reprocessed into fleeces.
Refuse Derived Fuel (RDF) Combustion	The combustible fraction of municipal waste can be mechanically and or thermally separated into a product called Refuse Derived Fuel (RDF). This may be pelletised or utilised as a loose flock product in a controlled combustion process (either a dedicated incineration / gasification process or co-combusted in an industrial type application, for example a cement kiln or power station).
Residual Municipal Waste	The fraction of municipal waste remaining after the source separation of municipal waste fractions, such as food and garden waste, packaging, paper and paperboard, metals, glass and is usually unsuitable for high quality recovery or recycling.
Reduction of Waste	A reduction of waste at source involving minimisation of the use of environmentally harmful substances and/or minimising material or energy consumption.
Reuse/Reused	Re-use means the use of household waste for its original or a different purpose without processing or treatment in a waste recovery operation other than one which has the purpose of repairing or refurbishing the household waste.
Reduction of Hazardous Substance (RoHS)	These European Union regulations set maximum concentration limits on hazardous materials used in electrical and electronic equipment (See WEEE). The substances are lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).
Separate Collection	The separate collection of certain categories of biodegradable municipal waste, such as paper/ cardboard and organic waste, in such a way as to avoid the different waste fractions or waste components from being mixed, combined or contaminated with other potentially polluting wastes, products or materials.
Sewage Sludge	Sewage sludge is the residual sludge from wastewater treatment plants, produced from the treatments of domestic or urban waste waters and from other sewage plants treating waste waters of a composition similar to domestic and urban waste waters.
Stabilised Biowaste	Waste resulting from the mechanical biological treatment of biowaste, unsorted waste or residual municipal waste which does not comply with specified minimum standards of environmental quality.

Street Cleaning Waste	Includes waste collected by litter pickers, street sweeper & mechanical sweepers, but excludes gully emptying waste and poop-scoop wastes.
Street Recycling Bins	Litter bins for recycling located on streets; but not at CA Sites or Bring Sites.
Supply Chain Management	The management of the entire sequence of processes and activities within manufacturing and retailing operations. With respect to waste management, the purpose is to encourage the introduction of measures further up the supply chain in order to reduce the quantities of waste produced at all stages in the production and distribution process.
Sustainable Development	Finding ways to meet the needs of the present generation without damaging the environment or preventing future generations from being able to meet their own needs.
Thermal Treatment	A process by which heat is applied to waste under strictly controlled conditions in order to recover energy through the generation of heat or electricity or to produce a synthesis gas which is suitable for combustion and to reduce the bulk of the waste, prior to final disposal. Thermal treatment can involve a number of processes such as incineration, pyrolysis and gasification.
Trade Waste	Waste collected from commercial premises by district councils, as part of their service provided under the provisions of the Waste and Contaminated Land (NI) Order 1997.
Tradable Landfill Permits	Are a flexible economic instrument and have been applied in the UK, devised to minimise the cost of meeting the Landfill Directive targets whilst giving local authorities the greatest amount of flexibility. An allowance to landfill a certain amount of waste is issued to the landfill operator – exceeding this amount requires the purchase of ‘surplus’ allowances from other operators who have not used their full allowance.
Treatment Facilities	Facilities where waste undergoes thermal, physical, chemical or biological processes that change the characteristics of waste in order to reduce its volume or hazardous nature or facilitate its handling, disposal or recovery.
Variable Charging (or Differentiated Charging)	A method where a local authority or private sector operators determine waste charges for various waste management services undertaken within a particular administrative Biodegradable Waste area, designed to promote best practice in prevention, recycling and biological treatment among producers. Pay-by-Use is a form of variable charging.
Vermicomposting	Composting system using worms.

Waste	Any substance or object which the holder discards, or intends, or is required to discard, and anything which is discarded as if it were a waste, as per the Waste Management Act 1996.
Waste Collection Permit System	A system whereby persons with a view to profit or otherwise in the course of business, collect waste are issued a permit which allows operation within a local authority functional area for the collection of waste.
Waste Electrical and Electronic Equipment (WEEE)	A waste stream defined by the European Community directive on waste electrical and electronic equipment (WEEE Directive) which, together with the RoHS Directive, became European Law in February 2003, setting collection, recycling and recovery targets for all types of electrical goods.
Waste Hierarchy	Describes the way in which some ways of dealing with waste are better for the environment than others. Reduction is the best option followed by reuse then if neither is possible recycle . Disposal through landfill or incineration should only be a last resort.
Waste Management Facility	A site or premises used for the recovery or disposal of waste.
Waste Management Plans	Statutory waste management plans adopted by local authorities which have generally been implemented on a regional basis in Ireland since 2001.
Waste Minimisation	Any technique, process or activity that either avoids, reduces or eliminates waste at its source, or results in re-use or recycling.
Waste Prevention	The reduction of the quantity (weight and volume) and hazardousness of waste generated for collection and treatment for disposal by a third party.
Waste Producer	A person whose activities produce waste or who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of waste.
Waste Transfer Station	A site to which waste is delivered for sorting or compacting/bulking prior to transfer to another place for recycling, treatment or disposal.
Waste to Energy Plant	A plant where waste undergoes thermal treatment with a recovery of energy due to the fact that the waste itself contains large amounts of thermal energy ready to be liberated either by combustion or by synthesis gas production followed by combustion. The energy that is recovered is often used to supply electricity or combined heat and power through integration with district heating systems.

White Goods	Household appliances including fridges, freezers, washing machines, tumble driers and dishwashers.
Windrow/Other Composting	The composting of biowaste placed in elongated rows which are periodically turned by mechanical means in order to increase the porosity of the heap and increase the homogeneity of the waste. Means the composting of biodegradable wastes placed in long heaps, often triangular in cross section and turned or aerated in order to increase decomposition of the heap and increase the uniformity of the waste.