The Environmental Considerations of Sustainable Economic Growth (ECOSEG)

A final report to the North West Development Agency and its Partners

Stage 2 – Theme 3 Waste

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SQWconsulting

Contents

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1: Introduction

Scope of report

1.1 This report is one of four outputs produced as part of Stage 2 of the study looking at the environmental considerations of sustainable economic growth in the North West of England (ECOSEG).

1.2 In this report, we examine the key issues around **Waste** generation in the North West region and **the infrastructure to manage Waste**. The structure of the report is as follows:

- in **Chapter 2**, we present a detailed inventory of waste management facilities in the region (primarily landfill sites and incinerators) and estimates of overall capacity. We also set out the policy and regulatory framework around waste, and provide details of ongoing developments to provide new infrastructure in the region
- **Chapter 3** presents a thorough review of the REEIO projections for waste generation and waste management methods in the region in order to understand the implications of economic growth on the waste infrastructure. The projections are tested and reviewed critically, in light of more recent and detailed regional data trends
- in **Chapter 4**, we discuss some of the key issues around infrastructure development and the opportunities in the North West arising from waste management and efficiency
- finally, we summarise the headline findings in the conclusions in **Chapter 5**.

1.3 The analysis of waste generation contained in this report is focused on the three principal waste streams – municipal waste, commercial and industrial (C&I) waste and construction, demolition and excavation waste (CD&E). The report is not meant to be a technical account of waste generation and waste management, but is an overview of the role of the economy in relation to both. Therefore, the report focuses on broad definitions of waste management facilities (rather than technical definitions) i.e. landfill sites, incineration facilities, recycling/composting facilities and energy from waste (EfW) and combined heat and power (CHP) facilities. The report draws on a number of data sources to inform the analysis, some of which are not directly comparable due to technical differences in how data is gathered and/or presented[1].

1.4 Economic growth forecasts influence the level of waste arising in the region (which the Regional Economy Environment Input/Output (REEIO) model tries to capture). In turn, the amount of waste generated, as well as the management methods adopted, will have a significant impact on the environment. This is one of the main factors driving policy decisions, at all levels, around waste generation and waste management. One example of this is the European Union's Landfill Directive which was introduced to prevent or minimise the

[1] For a detailed account of the different methodologies underlying the data sources used, please refer to the original sources of data themselves, all of which are fully referenced within this report

negative effects of landfill disposal on the environment. In particular, it aims to prevent or minimise the pollution of surface water, groundwater, soil, and air, as well as any negative effects on the global environment, such as the greenhouse effect, and any resulting risk to human health[2].

Summary issues, challenges and opportunities

1.5 The following key messages have emerged from the research carried out in preparation of this report:

- There is significant capacity to deal with waste in the North West at present:
  - Landfill capacity in the region has been estimated at 55m m^3 and 63.5m m^3 in two recent reports – these figures relate to the end of 2006 and the end of 2007 respectively
  - The region's incineration capacity has increased significantly over recent years to an estimated 523,000 tonnes in 2005; this is set to increase further now that planning permission has been granted to INEOS Chlor Ltd to develop a £300 million combined heat and power (CHP) plant producing energy from waste (EfW) at their premises in Runcorn
  - There are also a number of a number of facilities for waste recycling and associated treatment methods.
- Broadly, it is estimated that the total amount of waste generated in the North West in 2006 was in the order of 23 million tonnes. Breaking this down:
  - The amount of municipal waste generated in 2005/06 measured some 4.4m tonnes, around a fifth of all waste
  - Commercial and industrial waste arisings, taken together, measured some 8.1m tonnes in 2006, 35% of all waste generated
  - Construction, demolition, and excavation (CD&E) waste is estimated to measure 10.4m tonnes in 2006, approximately 45% of all waste generated.
- The high-level REEIO model projections of future trends in waste generation (2005 to 2020) are significantly higher than what one would reasonably expect, judging by the direction of recent data trends in the North West (this is especially true for C&I waste and to a lesser extent municipal waste). This is mainly due to the model's underlying assumptions, which present one possible scenario – arguably more realistic scenarios can be drawn using the detailed regional data that are available.
- Related to this, REEIO model projections of future trends in waste management contrast significantly with what regional data trends suggest. The model has been run to a setting that places emphasis on landfill as a means of waste management, and other waste management options have been played down. This is unrealistic given

[2] http://www.defra.gov.uk/environment/waste/topics/landfill-dir/

the operation of the Landfill Allowance Trading Scheme (LATS) and the landfill tax escalator. A more reasonable and accurate assessment can be made based on local information.

- Environment Agency data from 2006 suggested that the North West's non-hazardous landfill sites have a shorter lifespan (which could be as low as 5.6 years) than all other regions, with the exceptions of London and the East of England
- However, more recent evidence presented in this report suggests that there is sufficient landfill capacity in the region to satisfy landfill requirements well into the foreseeable future (at least until 2020) and probably until a point in time when technology and infrastructure has been developed to such an advanced stage that very little waste is sent for disposal anyway. In the report, we provide the reasons behind this assertion
- There is demand for, and significant opportunities to, develop more recycling and recovery facilities in the region. If these are taken up, more waste could be diverted from landfill as well as reducing the large export market of recyclables from the region (which can generate further revenue for the North West).
- Some of the wider opportunities arising from waste also include the potential to develop specific revenue-generating economic activities (such as specialist waste processing) and the overall improvements of business competitiveness through higher resource efficiency
- However, in developing the sustainable and competitive waste infrastructure that the region needs, a number of barriers and challenges need to be overcome. These include issues around planning permissions and their timely resolution, and providing the right mix of incentives and regulations to ensure the market responds to the waste agenda
- Throughout, it should be borne in mind that waste collection, waste planning and waste disposal are essentially local issues determined by local authorities. It is they who issue planning permissions and decide on the location of new waste management facilities, hence there is only so much that can be achieved at a regional level at present. Local planning will be important in determining the future structure of waste management in the region, a key issue which needs to be taken on board.

1.6 Future policies and actions around waste should be guided by the well-established waste hierarchy: waste prevention, re-use, recycle/compost, and energy recovery. Only after all these options have been exhausted (in the order outlined) should waste be sent to landfill disposal. It is already in evidence that much is being done, at all levels, to help lower the amounts of waste generated and achieve the right balance in waste management.

1.7 The key report *'Nationally, regionally and sub-regionally significant waste management facilities'* produced for 4NW (2008) provides recommendations on the broad locations for waste management facilities across the region. These will need to be taken forward in future planning decisions for the development of waste management facilities in the North West.

2: Infrastructure inventory

Purpose

2.1 In this Section, we describe the regional position with regard to waste and its component streams. We also review the infrastructure available, and proposed, within the North West to deal with and process waste. To begin with, we summarise the Regional Inventory.

Regional Inventory

2.2 In this first section, we produce a detailed inventory of specific waste facilities in the region, concentrating on methods of waste management. The information and data show that the provision of waste management facilities varies significantly across different parts of the North West. This will impact significantly on how waste is managed within the region.

2.3 Table 2-1 displays the most recent estimates of landfill capacity at non-hazardous and open gate sites in the North West[3]. It should be noted that these are estimates only and may be subject to change. The three largest landfill sites in the region are:

- Whinney Hill at Accrington
- Arpley at Warrington
- Pilsworth South near Bury.

2.4 Together, these three sites are estimated to account for over half of the region's total landfill capacity[4]. At the sub-regional level, most of the void space is situated in Lancashire (a total capacity of just over 20m m^3), Warrington (15.6m m^3) and Greater Manchester (14.2m m^3).

Table 2-1: Estimates of landfill capacity at non-hazardous and open gate sites at end of 2007

Site	District	Estimated capacity (000s tonnes)	Details
CHESHIRE			
Danes Moss	Macclesfield	299	To close in 2009
GOWY	Chester	2,684	Planning for deposits until 2016
Maw Green	Crewe and Nantwich	1,394	Planning for deposits until 2011
Kinderton Lodge, Middlewich	Congleton	2,400	Planning for deposits until 2019
CUMBRIA			
Bennett Bank	Barrow-in-Furness	225	Application in process for an additional 800,000 m^3

[3] Taken from Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[4] 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)

Site	District	Estimated capacity (000s tonnes)	Details
Distington	Copeland	150	
Flusco Pike	Eden	1,600	
Hespin Wood	Carlisle	1,550	
Lillyhall Phase 3	Allerdale	1,450	Site currently takes low levels of annual deposits
Thackwood	Eden	200	
GREATER MANCHESTER			
Clifton Hall	Salford	407	Site mothballed in 2004
Highmoor Quarry	Oldham	2,680	Inputs restricted to 2014
Pilsworth South	Bury	8,630	Planning for deposits until 2017
Whitehead	Wigan	2,500	Planned to close in 2013
LANCASHIRE			
Bent Hall Farm	Blackburn with Darwen	100	
Clayton Hall	Preston/Chorley	900	
Clifton Marsh	Preston/Fylde	2,800	
Deerplay	Burnley	1,200	Planning extended till 2022
Jameson Road Phase 2	Wyre	2,500	Planned to close end of 2018
Rigby	Wigan/Chorley	300	Planning extended till 2010
Westby	Fylde/Blackpool	400	
Whinney Hill (new area)	Hyndburn	12,000	Planned for deposits until 2045
Whitemoss	West Lancashire		Hazardous waste site
Withnell Quarry	Preston/Chorley	100	Planned for deposits until 2010
MERSEYSIDE			
Lyme & Wood Pits	St Helens	1,500	Planning till 2010
WARRINGTON			
Arpley	Warrington	11,000	Planning currently expires 2013
Fir Tree Farm and Moss Hall Farm	Warrington	1,000	Are effectively on one site
Western Moat Lane and Omrod Farm	Warrington	3,000	
Risley	Warrington	594	

Source: Adapted from Nationally, regionally and sub-regionally significant waste management facilities, 4NW (October 2008)

2.5 Table 2-2 lists the region's major incineration facilities, their capacity, and throughput, as of 2006. At present, there is only one municipal solid waste recovery facility in the North West that is able to produce energy from waste (EfW[5]). This facility is located in Bolton and accepts 2% of the region's municipal waste[6]. However, planning permission has recently been granted to INEOS Chlor Ltd to develop a £300 million combined heat and power (CHP) plant producing EfW. This will be based at their premises in Runcorn and will raise the region's incineration capacity by an estimated 800,000 tonnes per annum.

Table 2-2: Major incinerators in the region, their capacity, and throughput, 2006[7]

Operator name	Site location[8]	Type	Permitted capacity (000s tonnes)	Tonnage incinerated in 2006 (000s)	Operating level in 2006[9]
Castle Cement Limited	Ribblesdale *(Lancashire)*	Co-Incineration of hazardous waste	175	47	27%
Greater Manchester Waste Ltd	Bolton *(Gtr Manchester)*	Municipal	127	104	82%
Veolia ES Cleanaway (UK) Ltd	Ellesmere Port, Wirral *(Cheshire)*	Hazardous	100	86	86%
United Utilities Water Plc	Widnes *(Warrington & Halton)*	Sewage Sludge	100	25	25%
Granox Ltd	Widnes *(Cheshire)*	Animal By-Products	40	45	113%
Solvent Resource Management Ltd	Morecambe *(Lancashire)*	Hazardous	15	5.1	34%

Source: Environment Agency

2.6 There are also a significant number of facilities for waste recycling in the region and associated treatment methods. These are documented in the *'Recycling and Waste Supply Chain Directory 2008'* published by Envirolink[10].

2.7 There appears to be some correlation between population density and recycling/reprocessor capacity, with a high density of recyclers and reprocessors located in Greater Manchester and Merseyside (as well as in Lancashire). This ensures that transport costs are kept to a minimum. A survey carried out in January 2007 identified 162 recyclers and reprocessors active in the North West region[11].

2.8 The region contains a high number of metal recyclers/reprocessors (28) and plastic recyclers/reprocessors (26), 18 recyclers/reprocessors handling discarded equipment (including end of life vehicles), 12 companies dealing with construction and demolition waste (not soils) and 10 handling WEEE (IT 7 communications equipment). However, more

[5] Residual waste from standard collections
[6] According to the 2008 Annual Monitoring Report for the North West of England, *NWRA* (February 2008)
[7] There are also three very small installations in Greater Manchester for clinical incineration which have not been included in this table on account of their size (all have an estimated capacity of under 8,000 tonnes)
[8] Planning sub-region in brackets
[9] i.e. tonnage incinerated over permitted capacity in 2006
[10] http://www.envirolinknorthwest.co.uk/Envirolink/library0.nsf/0/2F40A129C64C5E8680257433002D05F2/$file/080103%20-%20R%26W%20directory.pdf
[11] Figure reported in the Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

specialist recyclers/reprocessors, such as those handling tyres, glass and mixed wastes are less well developed[12].

2.9 In terms of number of waste management licenses, the majority (63%) of licenses for landfill are in Greater Manchester (47) and Lancashire (62) as at 31 December 2005.

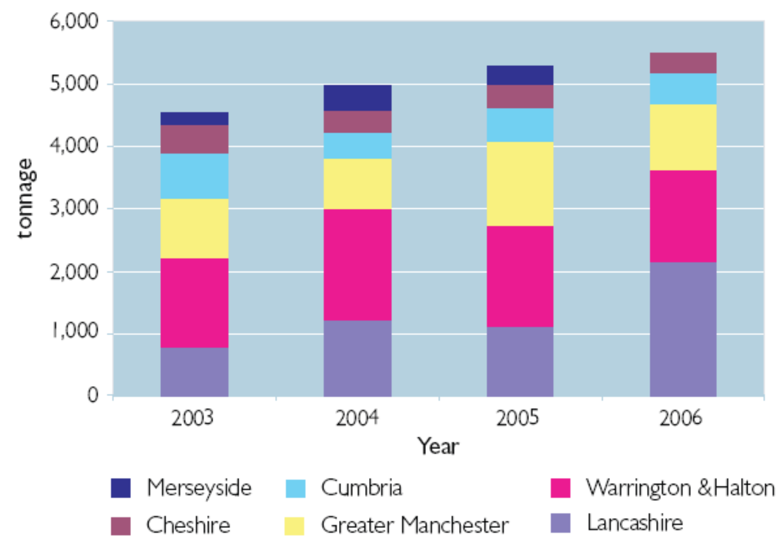
Current capacity

2.10 In the following paragraphs, we discuss current levels of capacity in the region to manage waste. This assessment comes with a significant health warning, as there is a significant amount of uncertainty surrounding estimates of infrastructure capacity.

2.11 Estimates of landfill capacity in the region indicate that approximately 55 million m^3 of void space was available at the end of 2006. This was spread across 23 open gate landfill sites. However, more recent estimates from the study *'Nationally, regionally and sub-regionally significant waste management facilities'* suggest that landfill capacity is closer to 63.5m m^3 (at the end of 2007). These varying estimates reflect the difficulty in estimating the remaining landfill capacity owing to the *'numerous uncertainties relating to operational, commercial and planning and environmental factors'*[13].

2.12 Figure 2-1 shows that, based upon available data, there has been an increase in overall landfill capacity each year since 2003 (in total, over 9m m^3 has been added between 2003 and 2006). The region's *3rd Waste Management Monitoring Report* states that this is due to new planning permissions and an upward reassessment of capacity at several sites. At the sub-regional level, it is estimated that two thirds (36m m^3) of the region's non-hazardous void space is situated in Lancashire and Warrington and Halton. In Merseyside, there is no longer any void space at landfill sites[14].

Figure 2-1: Estimated void space (000 m3) by sub-region, 2003 to 2006



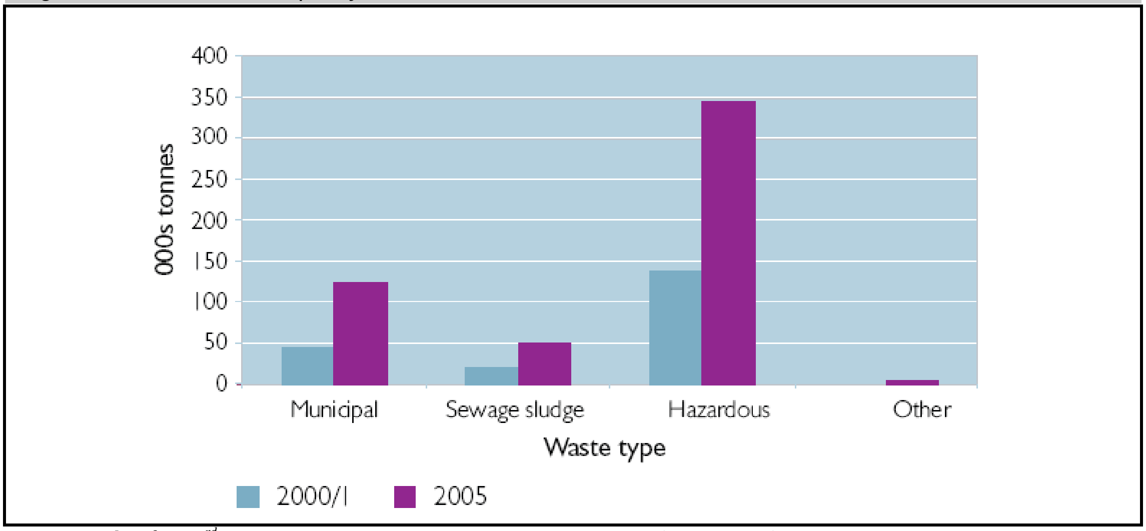
Source: Taken from 3rd Waste Management Monitoring Report, NWRTAB (August 2007)

[12] As reported in Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[13] 2008 Annual Monitoring Report for the North West of England, *NWRA* (February 2008)
[14] Although data in Table 2-1 stated that there was one landfill site in Merseyside with 1.5m m^3 of void space at the end of 2007

2.13 There has been a large expansion in the region's incineration capacity between 2000/01 and 2005, rising from 201,000 tonnes to an estimated 523,000 tonnes[15]. This will rise significantly (by an estimated 800,000 tonnes) once the INEOS Chlor Ltd development at Runcorn is completed.

2.14 As Figure 2-2 shows, the expansion of the region's incineration capacity between 2000/01 and 2005 was driven by a large increase in capacity to deal with hazardous waste. Indeed, **the North West is currently a net importer of hazardous waste**, partly due to its supply of incineration facilities to deal with such waste[16] (although the region also has two hazardous waste landfill facilities, one of which – the Minosus deep mine disposal site at Winsford in Cheshire – is expected to become a nationally significant facility[17]).

Figure 2-2: Incineration capacity in the North West, 2000/01 and 2005



Source: Taken from 3rd Waste Management Monitoring Report, NWRTAB (August 2007)

2.15 However, there is significant variation at the sub-regional level. Data from 2005 show that[18]:

- Lancashire accounted for 37% of regional incineration capacity, nearly all of which was for hazardous waste (due to the major site at Ribblesdale)
- around a fifth of all incineration capacity in the North West was in Cheshire, all of which deals with hazardous waste (accounted for by the facility at Ellesmere Port)
- Greater Manchester also accounted for a fifth of regional capacity, although this is just for municipal waste (due to the site in Bolton)
- Warrington and Halton had 84,000 tonnes of capacity and contain the region's only sewage sludge incinerators and EfW incineration facilities.

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[15] Please note that more recent (2006) data is available on request from the Environment Agency North West. This indicates that in 2006, the region's incineration capacity stood at 578,000 tonnes. However, this data has not been verified by the study team.
[16] Latest figures from the Environment Agency North West indicate that the region produced 730,000 tonnes of hazardous waste in 2006, half of which was managed in the region and the other half exported. Please note that this data has not been verified by the study team.
[17] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[18] Taken from the 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)

- Merseyside had some limited capacity to deal with hazardous waste and Cumbria contributed no capacity at all.

State of the infrastructure

2.16 There is limited information on the actual state of these facilities in terms of their age, performance efficiency, etc. Overall capacity is difficult to establish accurately due to varying methods and assumptions. For instance, in April 2005 the Environment Agency estimated a combined life expectancy of 5.3 years for the North West's landfill sites (based upon site inputs for 2004/05) suggesting that landfill capacity would be filled by July 2010[19]. This estimate has been largely reversed in light of evidence that is more recent and changing trends of waste generation and processing – a revised estimate shows that the 55m m^3 of void space in the region will provide for around eight years of landfill from the end of 2006[20]. Consultations with regional stakeholders even suggest that as a result of wider changes in the policy environment the actual life expectancy of landfill sites in the region will turn out to be significantly longer (for a more detailed explanation of the reasoning behind this, please refer to paragraph 3.33).

Policy and regulatory framework

At the European and national level

2.17 The development of policy and the regulatory framework around waste are largely driven by decisions taken at the European and national level. Listed below are the key pieces of legislation which determine how waste is managed in the North West:

- **European Waste Framework Directive[21]** – codified in April 2006, these measures require EU Member States to give priority to waste prevention, recycling and processing for re-use. They must also prepare waste management plans and ensure that the cost of disposal is borne by the waste holder (in accordance with the 'polluter pays' principle)

- **European Landfill Directive –** introduced in April 1999, the objective of the EU landfill directive is '*to prevent or reduce as far as possible negative effects on the environment from the landfilling of waste*[22]'. It sets the following demanding targets: to reduce biodegradable municipal waste landfilled to 75% of that produced in 1995 by 2010; to 50% of that produced in 1995 by 2015; and to 35% of that produced in 1995 by 2020

- **Landfill Allowance Trading Scheme (LATS)** – to help waste disposal authorities meet their targets under the European Landfill Directive, the Government introduced

[19] However, this would have been based on earlier estimates of capacity which have since been up-scaled. Very difficult to accurately estimate capacity
[20] As reported in the 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)
[21] See http://europa.eu/scadplus/leg/en/lvb/l21197.htm for more detail
[22] See http://ec.europa.eu/environment/waste/landfill_index.htm

the LATS in April 2005, giving authorities greater flexibility in planning the disposal of waste through the introduction of tradable landfill allowances for each year[23]

- **Landfill tax escalator** – in the 2007 Budget, the landfill tax escalator was raised significantly, from £3 per tonne to £8 per tonne each year for active waste (i.e. that which gives off emissions). This came into effect from April 2008 and means that by 2010/11 the current standard rate of landfill tax will have doubled from £24 per tonne to £48 per tonne. This is intended to make investments in alternative non-landfill treatments such as recycling and anaerobic digestion more economically viable[24]

- A further disincentive to landfill is new legislation, which came into force in October 2007, banning waste liquids from landfill and requiring all non-hazardous solid waste to be treated prior to landfill

- **The Waste Private Finance Initiative (PFI)** – this is a national funding pot intended to help more local authorities to invest in sustainable waste management facilities in order to deal with residual waste[25]. In the 2007 Comprehensive Spending Review, Defra was allocated an extra £2 billion to fund relevant PFI projects – £600m in 2008/09 and £700m in 2009/10 and 2010/11.

- Finally, nine work streams are delivered through the **Waste Implementation Programme (WIP),** all aimed at helping the UK to achieve the targets set under the EU Landfill Directive. These work streams include local authority funding, new technologies, waste minimisation and the Waste Infrastructure Delivery Programme (WIDP), part of whose remit is to oversee the allocation of PFI credits[26].

2.18 Alongside this, the Government has supported initiatives to improve resource efficiency within the business community through the **Business Resource Efficiency and Waste (BREW)** programme (using receipts generated from the landfill tax escalator). Although funding for this programme has now ended (it ran from April 2005 until April 2008) a number of delivery bodies are still being supported to achieve the Government's objectives[27]:

- Envirowise – who are providing resource efficiency advice

- The Waste and Resources Action Programme (WRAP) – developing the market for recycled materials

- Carbon Trust – providing energy efficiency advice, research and communication

- National Industrial Symbiosis Programme (NISP) – bringing together companies from all business sectors with the aim of improving cross-industry resource efficiency by exchanging materials, energy and water and saving assets, logistics and expertise

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[23] See Landfill Allowances Trading Scheme (LATS): a practical guide, *DEFRA* (February 2005)
[24] See http://www.defra.gov.uk/environment/waste/strategy/factsheets/landfilltax.htm for an overview
[25] Waste Strategy Annual Progress Report 2007/08, *DEFRA* July 2008
[26] For more on the nine work streams see, http://www.defra.gov.uk/environment/waste/wip/wastemin/index.htm
[27] http://www.defra.gov.uk/Environment/waste/brew/+business+resource+efficiency+waste&hl=en&ct=clnk&cd=1&gl=uk&client=firefox-a See http://www.defra.gov.uk/Environment/waste/brew/

- Environment Agency – tackling fly-tipping and making data available to business on legal waste carriers; providing information and guidance on environmental regulations through NetRegs service
- Defra Waste Data Strategy – working to provide good quality, robust and timely data on waste to give a sound evidence base for policymaking, implementation, monitoring and evaluation at a national and local level.

2.19 The introduction of these pieces of legislation and new programmes and initiatives are all geared towards achieving similar overriding objectives – namely, the need to achieve reductions in the amount of waste generated and in the amount of waste disposed of via landfill (importantly, by increasing the amount re-used, recycled/composted or recovered). If these priorities are to gain traction, they must be reflected in developments at regional and sub-regional levels.

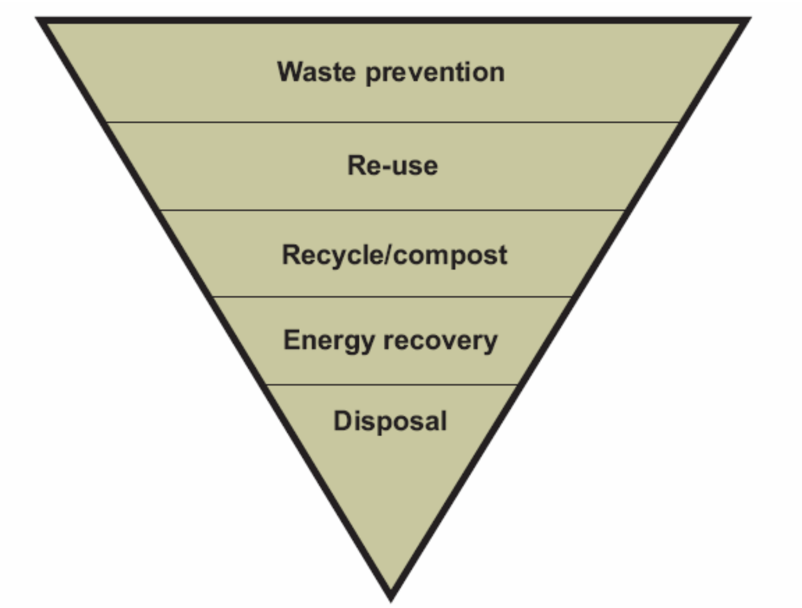
2.20 At the strategic level, the direction of recent legislation and new programmes and initiatives is reflected in the **2007 Waste Strategy for England**[28]. The new strategy is based around the following five elements:

- incentivising efforts to reduce, re-use, recycle waste and recover energy from waste
- reforming regulation to drive the reduction of waste and diversion from landfill while reducing costs to compliant businesses and the regulator
- targeting action on materials, products and sectors with the greatest scope for improving environmental and economic outcomes
- stimulating investment in collection, recycling and recovery infrastructure, and markets for recovered materials that will maximise the value of materials and energy recovered
- improving national, regional and local governance, with a clearer performance and institutional framework to deliver better-coordinated action and services on the ground.

2.21 Crucially, the strategy outlines a hierarchy for waste in order to determine national (and, by consequence, regional and sub-regional) priorities. Moving down the hierarchy, the stated option for waste becomes less desirable in terms of the amount of waste generated and the associated environmental impact (the hierarchy is aligned with the climate change agenda for reducing greenhouse gas emissions). This should act as a guide for all policy decisions on waste.

[28] Waste Strategy for England 2007, *DEFRA* (May 2007)

Figure 2-3: The Waste Hierarchy



Source: Waste Strategy for England 2007, Defra

2.22 In the new waste strategy, higher national targets than in 2000 (the year of the previous strategy) have been set as follows:

- recycling and composting of household waste – at least 40% by 2010, 45% by 2015 and 50% by 2020
- recovery of municipal waste – 53% by 2010, 67% by 2015 and 75% by 2020[29].

Regional strategies

2.23 The **Regional Waste Strategy**[30], published in September 2004, is well aligned with European and national priorities; it places emphasis on breaking the link between waste growth and economic development through a more efficient use of resources and improved waste management. The objectives are to ensure that waste management systems are in accordance with the principles of sustainable development and integrated waste management by:

- reducing waste produced in the region
- maximising the reuse of waste products
- recycling and composting waste
- recovering value (in the form of energy) from waste that is not recycled
- maintaining sufficient landfill capacity for the disposal of final residues.

2.24 As this report is being written, a review of the regional waste strategy is currently being undertaken alongside the introduction of a sustainable consumption and production

[29] In Table 2-4, these targets are compared to regional targets contained in the Regional Waste Strategy for the North West 2004

[30] Regional Waste Strategy for the North West 2004, *NWRA* (September 2004)

framework. It aims to ensure that the regional waste strategy is well aligned with both the framework as well as the priorities set by the 2007 Waste Strategy for England. The review will contribute to the development of a new waste strategy for the North West region.

2.25 The **Regional Spatial Strategy (RSS)** for North West England re-emphasises the objectives and targets set in the Regional Waste Strategy and the 2007 Waste Strategy for England; crucially, it is guided by the principles of the waste hierarchy (see Figure 2-3).

2.26 The RSS seeks to produce a concise waste strategy for the region that:

- breaks the link between economic growth and the environmental impact of waste
- increases recycling rates in the region
- provides a framework in which communities take responsibility for their own waste
- delivers a pattern of facilities of national, regional and sub-regional importance, including supporting policies[31].

2.27 The latest North West **Regional Economic Strategy (RES)** is focused more on the economic aspects of waste, in particular the benefits to business of improved resource efficiency[32]. This is reflected in RES Transformational Action 23 which aims to improve the support provided to businesses on resource efficiency and waste minimisation, including:

- sustainable procurement
- overcoming barriers to new energy and waste technologies
- reuse and recycling of materials.

Targets

2.28 Table 2-3 below outlines the national and regional targets for waste reduction. It shows that the current focus, at both levels, is on reducing levels of municipal waste. However, it must be borne in mind that this represents just 17% of all waste generated in the region[33]. The remainder is made up of commercial and industrial waste (C&I) and construction, demolition and excavation waste (CD&E). Although there are some targets related to C&I waste, these are largely aspirational and it is not easy to measure whether they have been met.

Table 2-3: Regional and national waste reduction targets

	Regional Waste Strategy for the North West 2004	**Waste Strategy for England 2007**
Municipal waste	Reduce growth in municipal waste by: • 2% by 2006 • 1% by 2010 • 0% by 2014	Household residual waste reduction (from 2000 levels) of: • 29% by 2010 • 35% by 2015 • 45% by 2020

[31] North West of England Plan Regional Spatial Strategy to 2021, *GONW* (September 2008)
[32] Northwest Regional Economic Strategy 2006, *NWDA*
[33] Using 2005 figures contained in the REEIO model

	Regional Waste Strategy for the North West 2004	Waste Strategy for England 2007
Commercial and Industrial wastes	Reduce growth in C&I waste by: • 0% by 2020	-

Source: SQW Consulting

2.29 Furthermore, Table 2-4 outlines the national and regional targets for the overall management of waste[34]. The targets are geared towards significantly increasing the levels of recycling or composting and the recovery of waste (and as a direct consequence, reducing the proportion of waste being sent to landfill). This reflects the direction of political and strategic developments discussed previously. The figures in the table are based on weight; the recent House of Lords' Select Committee on Science and Technology has questioned the validity of a simple weight measure going forward with national recycling policy.

Table 2-4: Regional and national waste management targets

	Municipal waste		Commercial and Industrial waste	
	Household recycling or composting	Recover the value (including recycling)	Recycling	Recover the value (including recycling)
2005	National: 25% Regional: same	National: 38% Regional: 40%	-	-
2010	National: 40% Regional: 35%	National: 53% Regional: 45%	-	-
2015	National: 45% Regional: same	National: 67% Regional: same	Regional: 35%	-
2020	National: 50% Regional: 55%	National: 75%	-	Regional: 70%

Source: Adapted from 3rd Waste Management Monitoring Report, NWRTAB (August 2007)

Management and operation

Key players

2.30 The collection and management of waste takes place at a sub-regional level in England, based around the following structure:

- **Waste planning authorities (WPAs)** – who identify suitable land for waste management facilities and decide on planning applications for proposed waste management activities. The WPAs in the North West are:
  - Cheshire County Council
  - Cumbria County Council
  - In Greater Manchester, the ten local authorities are the WPAs, although the Greater Manchester Geological Unit (GMGU) produces the Waste Development Plan Document on their behalf

[34] As contained in the Waste Strategy for England 2007 and the Regional Waste Strategy for the North West 2004

  - Lancashire County Council
  - In Merseyside, the six local authorities (including Halton) are the WPAs, although the Merseyside Environmental Advisory Service (MEAS) produces the Waste Development Plan Document on their behalf
  - Warrington Borough Council.
- **Waste collection authorities (WCAs)** – who are responsible for collecting waste from homes as well as from some businesses. Local councils are the WCAs, hence there are 43 WCAs in the North West.
- **Waste disposal authorities (WDAs)** – who manage the waste collected by local councils (in some cases, this is the same council as the WCA; otherwise, it is often the county council). WDAs are also responsible for developing and implementing plans to deal with municipal waste through partnership with local authorities. In the North West, the WPAs are:
  - Cheshire County Council
  - Cumbria County Council
  - Greater Manchester Waste Disposal Authority (GMWDA)
  - Lancashire County Council
  - Merseyside Waste Disposal Authority
  - Halton Borough Council[35]
  - Warrington Borough Council
  - Wigan Council[36].

2.31 At the regional level, the **North West Regional Technical Advisory Body on Waste** (NWRTAB) has been set up to collect, collate and interpret data and any other information about waste activity in the region. Members of the NWRTAB have been the first point of call for the data and information provided in this report.

2.32 Also important are the key organisations involved in contributing to waste policy and/or delivering programmes and initiatives around waste reduction and waste management. At the national level, these include the Environment Agency, Envirolink (both of which have regional offices in the North West) Defra, WRAP, WIDP, the Environmental Services Association (ESA) and the Community Recycling Network (CRN). At the regional level, these include 4NW, NWDA, GONW and ENWORKS (who deliver resource efficiency and environmental support to businesses).

[35] Halton remains a separate WDA but is a part of the Merseyside Waste partnership (MWP). See 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)
[36] Wigan is a WDA in its own right and attends GMWDA meetings, but is not part of the partnership. See 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)

2.33 There are a number of different operators of waste management facilities in the region, some entirely private and some linked to public sector bodies. Some of the larger waste companies operating in the region are briefly described below:

- **Greater Manchester Waste Ltd** – the UK's largest local authority waste disposal company[37]. Owned and controlled by Greater Manchester WDA, the company handles over 1.4m tonnes of municipal solid waste each year and operates the only municipal solid waste recovery facility in the region that is able to produce EfW.
- **Viridor** – one of the UK's leading resource and waste management companies, Viridor operate one of the largest landfill sites in the North West (with a capacity of some 8.6m m^3) at Pilsworth South, Bury.
- **Peel Holdings Ince Ltd** – a subsidiary of the region's leading property and transport company, they have plans to develop a Resource Recovery Park (RRP) in at Ince Marshes in Cheshire.
- **Global Renewables** – a recycling technology developer. Headquartered in Australia, they have recently achieved Financial Close on the Lancashire PFI Project, a 25-year contract to recover recyclable material from 600,000 tonnes of household waste each year.

2.34 Other operators include 3C Waste Ltd, Veolia ES Cleanaway (UK) Ltd, Waste Recycling Group Ltd (WRG), TEG Environmental Ltd and Preston Recycling Ltd[38].

Infrastructure development

2.35 In the North West, three PFI projects have been approved (as part of the Spending Review 2004) to develop new and sustainable waste management facilities. As of 28th July 2008, all three were still at the procurement stage[39]:

- In **Greater Manchester**, a £109.5m PFI project was approved in January 2005. This will house five mechanical biological treatment (MBT) plants, two materials recycling facilities (MRFs), four in-vessel composting plants and one energy from waste (EfW) plant
- In **Merseyside**, a £90m PFI project was approved in April 2005, providing one MBT plant and one refuse derived fuel burner
- **Cheshire** County Council had a £40m project bid approved in May 2006. As in Merseyside, this will provide one MBT facility and one refuse derived fuel burner (although both will operate at a smaller scale than in Merseyside).

2.36 Primarily, these facilities will deal only with municipal waste in order to help meet the targets. Although there is the possibility of these facilities taking in C&I waste, in practice it

[37] See http://www.gmwaste.co.uk/home.asp
[38] For more information on some of these, please refer to the Recycling and Waste Supply Chain Directory 2008, *Envirolink* (January 2008)
[39] Please refer to http://www.defra.gov.uk/environment/waste/localauth/funding/pfi/projects.htm for more details on the specific PFI projects, including estimated capacity and operational date

is likely that this will be an insignificant amount, as the WDAs' main concern will be meeting their set targets; moreover, there may be higher costs involved in setting up a facility that can deal with both waste streams. The Government has recognised this as a potential barrier to necessary investment, stating in the 2007 Waste Strategy that it must be ensured that:

> *'… PFI/other funding mechanisms do not prevent local authorities and their waste management contractors from developing facilities to cater for both municipal and non-municipal waste[40]'.*

2.37 Of course, there may be other means of ensuring that large-scale investment in necessary infrastructure is made. The Government has chosen to promote PFI schemes because they encourage partnership working between authorities resulting in efficiency gains, more integrated waste management solutions and the economies of scale that flow from this and a more strategic approach to planning and procurement[41]. They have backed this is up with an additional £2 billion of funding for relevant PFI projects as part of the 2007 Comprehensive Spending Review.

2.38 A 2006 survey found 'clear appetite among lending institutions for providing private finance to waste PFI projects[42]'. This, however, was related to the particular circumstances of the time, with liquid capital markets awash with money and a resultant increase in competition for assets driving down both yields and opportunity in more established PFI markets such as health and education. This situation may have changed considerably in the current economic climate.

2.39 The development of infrastructure and facilities to manage C&I waste (as well as CD&E waste) will be primarily driven by market forces. It is expected that 2010 will be a watershed year, with landfill tax reaching £48 per tonne and the likely gate fee expected to exceed £100 per tonne[43] – a huge incentive for firms to divert more waste away from landfill. This will create a major opening for private sector operators to develop more facilities for recycling and energy recovery[44]. It is too early to predict which of these two alternatives to landfill will prove more popular, even though many operators have already begun to make plans for 2010[45]. However, consultees approached in the course of preparing this report have said they might expect a large increase in the capacity of recycling facilities alongside the development of a number of relatively small-scale energy recovery sites. Concern has also been expressed that as these alternative options become more viable and attractive, it may dissuade companies from taking action to reduce waste that, as the waste hierarchy confirms, should always be the favoured option.

2.40 The Government has recently (16 September 2008) granted INEOS Chlor Ltd planning permission to build a new power station at their premises in Runcorn, to cost around £300 million. This facility will be a combined heat and power (CHP) plant producing energy from

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[40] Waste Strategy for England 2007, *DEFRA* (May 2007)
[41] http://www.defra.gov.uk/environment/waste/localauth/funding/pfi/index.htm
[42] http://www.nortonrose.com/knowledge/publications/2006/pub8494.aspx?page=7759&lang=en-gb
[43] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[44] As highlighted in the Study to fill Evidence Gaps for Commercial & Industrial Waste Streams in the North West Region of England, *NWRTAB* (May 2007). Recycling and energy recovery are in competition as alternative waste management methods to landfill disposal
[45] At present, many operators are trying to identify potential sites on which to develop waste management facilities and gain planning permissions. It will be at least three years before anything is commissioned.

waste (EfW) using municipal waste streams, with an annual uptake of around 800,000 tonnes of waste[46]. Another major proposal to develop a Resource Recovery Park (RRP) at Ince Marshes, Cheshire, is currently facing planning delays.

2.41 The key report 'Nationally, regionally and *sub-regionally* significant waste management facilities' produced for 4NW provides recommendations on the broad locations for waste management facilities across the region. These will need to be taken forward in future planning decisions for the development of waste management facilities in the North West.

[46] http://www.whitehallpages.net/modules.php?op=modload&name=News&file=article&sid=135006&mode=thread&order=0&thold=0

3: Supply and demand

Purpose

3.1 This section of the report sets out the data and trends relating to the generation and management of waste within the region. Where possible, past and likely future trend data are presented to provide a sense of dynamic change.

Current situation and trends

Key aspects

3.2 There are two main aspects to waste – generation and management. As stated in the previous chapter, the smart order of priority is to reduce the amount of waste generated followed by applying sustainable waste management solutions. When looking at the waste infrastructure, and in particular in terms of matching up supply and demand, it is the waste management practices that need to be explored, i.e. the necessary capacity to accommodate the amount of waste expected to be generated in the region, bearing in mind the preferred mix of waste management methods.

3.3 Therefore, as a starting point, this report looks at the current situation and recent trends in terms of waste generation and waste management. These are used as an indication of what can be expected in future years and as a benchmark against which to qualify projections generated by forecasting models, such as the Regional Economy Environment Input/Output (REEIO) model.

Waste generation in the North West

3.4 To set the context, Figure 3-1 brings together data on the three main sources of waste in order to provide a broad estimate of the total amount of waste generated in the region[47]. A note of caution must be taken when interpreting the data as each estimate has been taken from a different source of evidence[48] and therefore may not be directly comparable.

3.5 Nevertheless, the evidence brought together here indicates that the amount of waste generated in the North West in 2006[49] measured some 23 million tonnes. Of this, municipal waste comprises around a fifth (19%) of all waste, commercial and industrial waste (C&I) accounts for 35% and construction, demolition and excavation (CD&E) waste accounts for 45%. These figures are broadly in line with those contained in the REEIO model baseline. Each of these individual waste streams is discussed in more detail in the remainder of this section.

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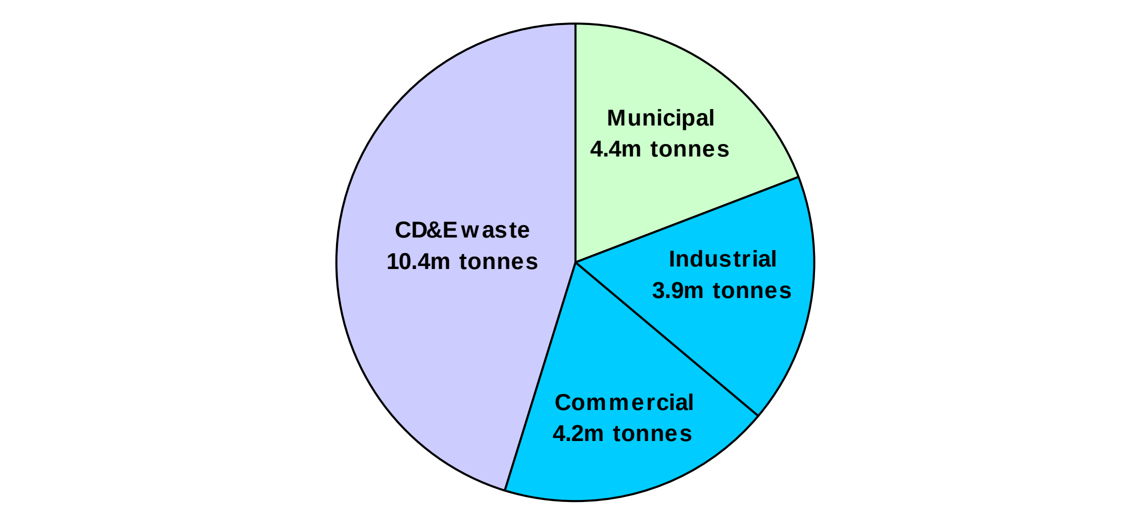
[47] There are other waste streams, such as agricultural waste and sewage sludge, but these are small in comparison
[48] Data on municipal waste has been taken from 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007); estimates of commercial and industrial waste are based upon the 'Study to fill Evidence Gaps for Commercial & Industrial Waste Streams in the North West Region of England', *NWRTAB* (May 2007) and refers to figures presented in the 3rd Waste Management Monitoring Report; finally, data on CD&E waste is taken from the 'Study to fill the evidence gaps for construction, demolition and excavation waste streams in the North West region of England', *NWRTAB* (July 2007)
[49] Please note that data on municipal waste refers to the period 2005/06 rather than 2006

Figure 3-1: Estimates of total waste generated in the North West by source of waste, 2006



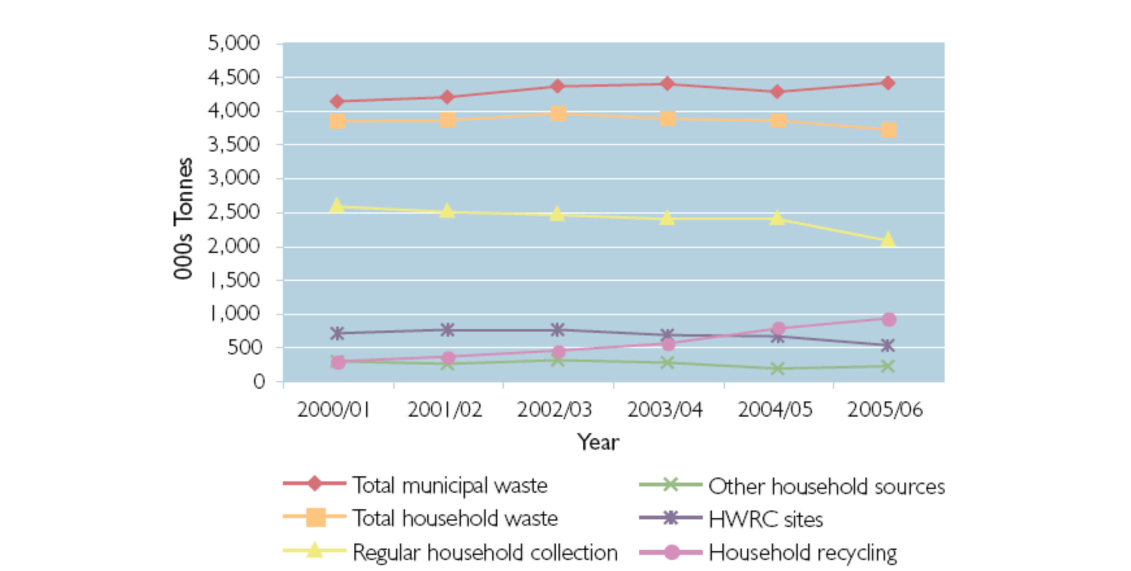
Source: Taken from 3rd Waste Management Monitoring Report, NWRTAB (August 2007) and 'Study to fill the evidence gaps for construction, demolition and excavation waste streams in the North West region of England', NWRTAB (July 2007)

Municipal waste

3.6 Municipal waste streams are the focus of government targets to achieve reductions in waste and higher rates of recycling and recovery. However, as stated above, they only represent around a fifth of all waste generated in the region.

3.7 Figure 3-2 shows that the growth rate in municipal waste arisings in the North West has stabilised over the last six years, helping the region meet its long-term target to reduce growth by 0% by 2014[50]. The amount of waste generated in 2005/06 measured some **4.4m tonnes**. Household waste comprises the majority of municipal waste arisings and therefore should be seen as pivotal to understanding recent and future trends in the generation of municipal waste.

Figure 3-2: Municipal waste arisings, 2000/1 to 2005/6



Source: Taken from 3rd Waste Management Monitoring Report, NWRTAB (August 2007)

[50] Regional Waste Strategy for the North West 2004, *NWRA* (September 2004)

3.8 The 2005 target for recycling and composting of household waste was met one year late – in 2005/06, 25% of the region's household waste was either recycled or composted, with particularly high rates in Lancashire. However, the region fell well below its target to recover the value from 40% of municipal solid waste by 2005 (including recycling/composting) with just 27.6% recovered in 2005/06[51].

3.9 Moreover, regional experts state that, 'the targets for recovered values [45% by 2010 and 67% by 2015] may not be achieved within the existing waste management infrastructure in the North West'[52]. Each of the individual WDAs has plans to develop new treatment capacity for residual municipal waste within their Municipal Waste Management Strategies (MWMSs); however, it is unlikely that the required infrastructure will be in place and operational by 2010.

Commercial and Industrial waste

3.10 Between September 2006 and January 2007, a survey was undertaken on behalf of the North West Regional Technical Advisory Body on Waste (NWRTAB), North West Minerals and WPAs to estimate C&I waste arisings in the North West[53]. It estimated that C&I waste measured some **8.1m tonnes** in 2006, with the following sectors generating the most waste overall: retail, wholesale and other services.

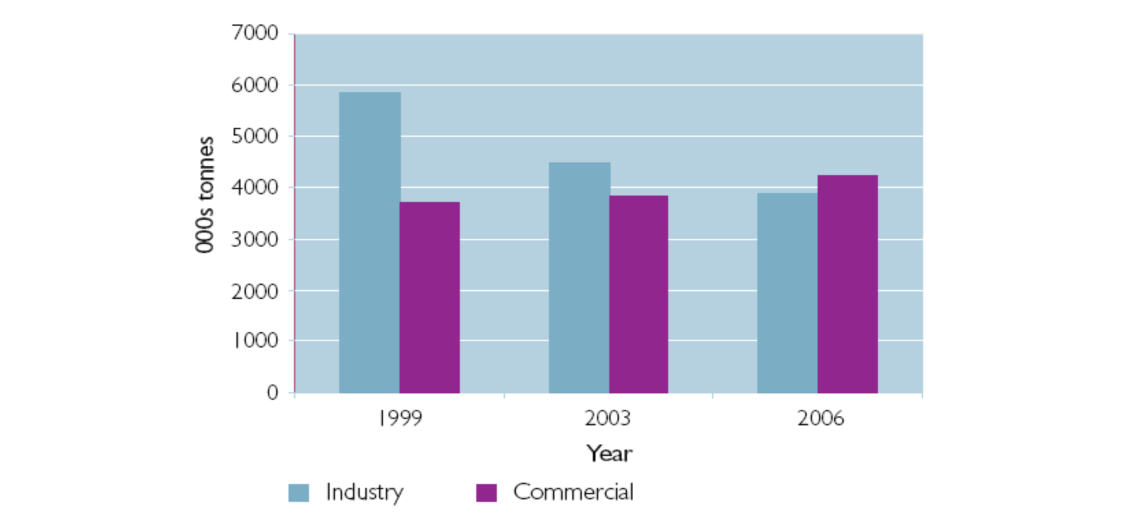
3.11 Figure 2-1 shows how the estimates contained in this survey differ from those produced in two previous surveys conducted by the Environment Agency in 1998/99 and 2002/03[54]. There is a noticeable trend that industrial waste has been declining whilst waste generated from the commercial sector has gradually risen. Indeed between 2003 and 2006:

- industrial waste arisings showed a 14% reduction
- waste generated by the commercial sector increased by 11%.

3.12 These are important trends[55] which may be a reflection of wider changes in the structure of the regional economy – i.e. the decline in manufacturing, especially at the 'dirty' end of the sector, and the trend towards greater off-shoring of cost-sensitive manufacturing activities, alongside growth in some of the region's key commercial sectors and the public sector. Added to this, the increased focus on resource efficiency within the industrial sector, partly led by political initiatives such as the Business Resource Efficiency and Waste (BREW) programme, is likely to have contributed significantly to the decline in industrial waste.

[51] As set in the Regional Waste Strategy for the North West 2004, *NWRA* (September 2004)
[52] 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)
[53] Study to fill Evidence Gaps for Commercial & Industrial Waste Streams in the North West Region of England, *NWRTAB* (May 2007)
[54] The 2006 survey of North West C&I waste streams is currently being used to extrapolate nationwide figures
[55] Although one should always take care when comparing data from two different surveys, key consultees have stated that they are very confident in making direct comparisons between the two surveys as they use the same methodology

Figure 3-3: Commercial & industrial waste generated in the North West, 1999, 2003 and 2006



Source: Taken from 3rd Waste Management Monitoring Report, NWRTAB (August 2007)

3.13 If recent trends are sustained, it has been calculated that in three years' time waste growth will be close to zero (or actually in decline) for both commercial waste and industrial waste[56]. This is consistent with the broad target to reduce growth in C&I waste to 0% by 2020[57]. It will be important to bear these trends in mind when looking at the projections for C&I waste arisings contained in the REEIO model.

3.14 At the sub-regional level, most C&I waste is generated in Greater Manchester (2.8m tonnes in 2006, over a third of the region's total). This is unsurprising given that the sub-region is the main economic centre within the North West, particularly for commercial activities which comprised more than half (57%) of all C&I waste produced in Greater Manchester.

3.15 There has been a steep decline in the amount of C&I waste sent to landfill between the three surveys, as shown in Figure 3-4; indeed, in 2006, the amount was approximately half that measured in 1999. It should be noted, however, that landfill is still a widespread method of waste management – in 2006, at least 2.2m tonnes of C&I waste generated in the region was still disposed of via landfill[58].

3.16 Data from the 2007 survey suggest that the region is making 'excellent progress' against its waste management targets[59] – i.e. to recycle 35% of all C&I waste by 2020 and recover the value from at least 70% of C&I waste by 2020 (including recycling/composting). In 2006, around 47% of waste was recycled, composted or used in land recovery (3.6m tonnes) far exceeding the 2020 target. A further 23% of all C&I waste had energy recovered. These rates may be impressive but there is plenty of scope to increase them yet further[60].

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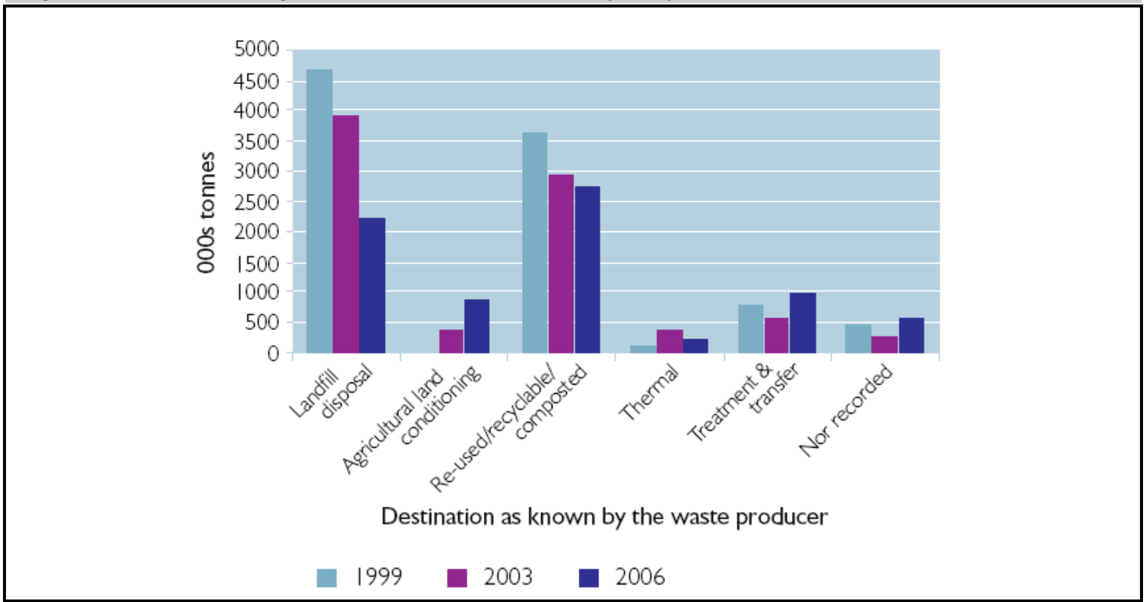
[56] See Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[57] Regional Waste Strategy for the North West 2004, , *NWRA* (September 2004)
[58] Also, it does not include the landfill portion from transfer stations and other similar facilities
[59] 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)
[60] As discussed in the Study to fill Evidence Gaps for Commercial & Industrial Waste Streams in the North West Region of England, *NWRTAB* (May 2007). See paragraph 4.13 for more.

Figure 3-4: Waste management destination as known by the producer, 1999 to 2006



Source: Taken from 3rd Waste Management Monitoring Report, NWRTAB (August 2007)

3.17 A continuation of these trends would lead to increasingly less demand on landfill void space in the future. Indeed, given the policy climate around waste, one might expect these trends to gather pace as new facilities develop and new legislation is implemented.

Construction, Demolition and Excavation waste

3.18 Construction, Demolition and Excavation (CD&E) waste is notoriously difficult to measure given that a lot of waste generated is re-used 'on-site'. In July 2006, the NWRTAB (alongside North West Minerals and the WPAs) commissioned a survey to measure CD&E waste arisings in the region and address the evidence gap in sub-regional data. Table 3-1 presents the headline estimates of CD&E waste arisings, processing and disposal in 2006.

Table 3-1: Regional estimates[61] of CD&E waste generated, processed or handled and disposed of in 2006

Operators that generate arisings	000s tonnes	Operators that process/handle/ transport arisings	000s tonnes	Operators that dispose of arisings	000s tonnes
Demolition contractors	No data	Crushers and screens	5,168	Landfill sites	4,114
House builders	183	Composters	44.5	Registered Exempt Sites	3,439
Highways works	27.5	MRFs and WTSs	3,357	Quarries	1,499
Land regeneration firms	No data	Registered Exempt Sites[62]	3,439		
Land remediation firms	No data	Rail ballast recyclers	436		
Ports and harbours	< 25	Skip hire operators	No data		
Power stations[63]	> 5,000	Quarries	1,499		

[61] Regional estimate is the mean regional estimate of CD&E waste arisings or waste handled for all types of waste
[62] Data presented for all types of RES surveyed. There was 1.5m tonnes of waste received at Paragraph 9 and 19 RESs
[63] Only one power station reported producing and handling relevant waste, so data is not presented

Operators that generate arisings	000s tonnes	Operators that process/handle/ transport arisings	000s tonnes	Operators that dispose of arisings	000s tonnes
Pre-cast concrete manufacturers	3,957				
Quarries	1,499				

Source: Adapted from 'Study to fill the evidence gaps for construction, demolition and excavation waste streams in the North West region of England', NWRTAB (July 2007)

Future projections to 2020

3.19 The study team has been provided with projections showing trends in future waste generation and waste management methods from the REEIO model. The model generates a business-as-usual (BAU) scenario, where for waste **policy interventions have not been included as a factor.** Thus, the BAU assumptions include per capita waste arisings are held constant until 2020 and C&I waste arisings remain proportionate to output (GVA) by sector. As a result, the changes over time presented in the scenario (see figures below) are mainly due to sectoral shifts (the relative share of each sector) and not as a consequence of policy measures or process efficiency.

3.20 Baseline data in the REEIO model have been taken from the following sources[64]:

- For C&I waste, data are from the 2002/03 survey undertaken by the Environment Agency
- Municipal waste baseline data for 2005 are taken from the Municipal Waste Management Statistics published by Defra
- Data on the total level of construction and demolition waste and how it is managed are published by Defra.

3.21 It is, at this point, worth noting that more up-to-date data has since been made available which, if incorporated into the REEIO model, would be able to provide more accurate projections.

3.22 In the paragraphs that follow, we look at projections of the amount of waste generated as an initial starting point, and discuss the variation of forecasts between the different sources of information. This is important as it affects the projections for, and decisions on, how waste will be managed by each management method in the North West (e.g. the amount of waste that is expected to be sent to landfill, etc.).

Municipal waste arisings

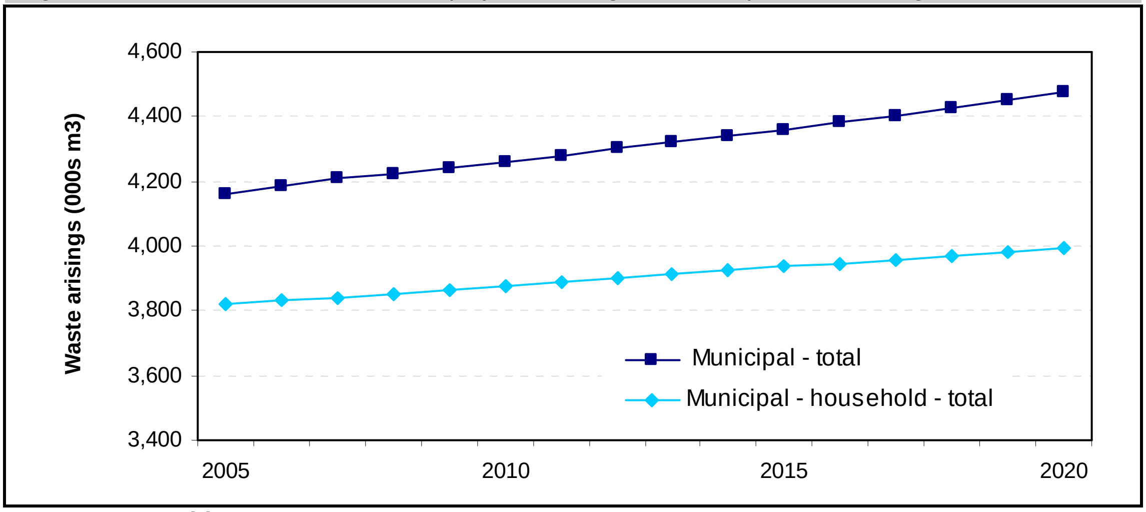
3.23 Recently recorded regional trends indicate a stabilisation in the growth rate of municipal waste arisings[65] and these are likely to continue into the future in line with the long-term target to reduce growth by 0% by 2014. The REEIO business-as-usual scenario shows a different picture where the projection of a steady rise in the amount of municipal waste

[64] For the detailed methodology, please refer to 'REEIO model update: an overview' by *Cambridge Econometrics* (April 2008)
[65] See 3rd Waste Management Monitoring Report, *NWRTAB* (August 2007)

produced in the region until 2020 is around 0.5% per annum (see Figure 3-5). The key message is that policy, technical, and behavioural change interventions are required in order to continue the positive trend of waste reduction, and that municipal waste could start to increase in the absence of interventions.

3.24 Figure 3-5 also shows that household waste could be the main factor in total municipal waste growth in a ‘do-nothing’ scenario (although the growth rate for household waste is taken to be slightly lower at around 0.3% per annum).

Figure 3-5: REEIO model BAU scenario projected changes in municipal waste arisings, 2005 to 2020



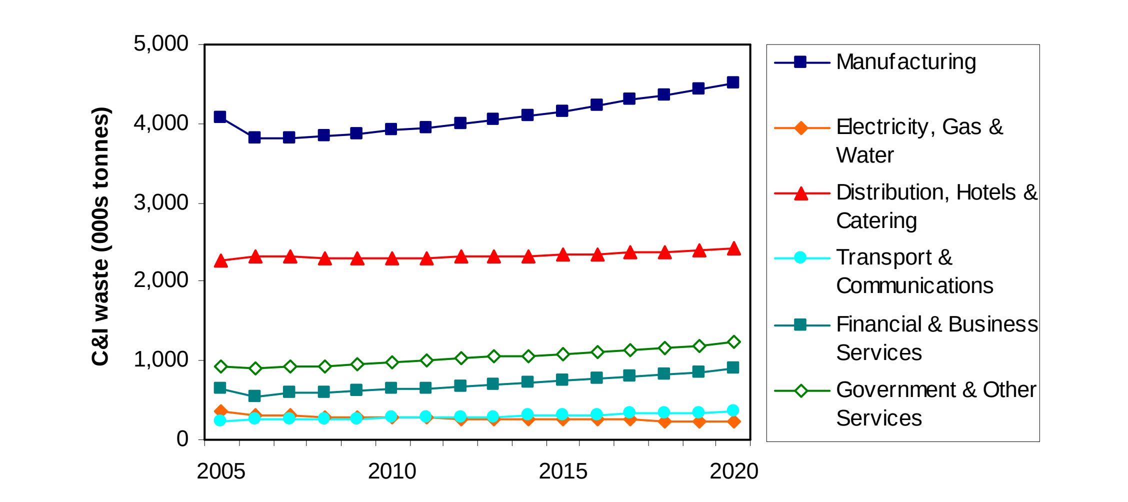
Source: REEIO model 2008

Commercial and Industrial waste arisings

3.25 Similarly, Figure 3-6 shows the REEIO projections for C&I waste generated each year between 2005 and 2020, split by sector. The data are based upon economic forecasts for future output (GVA) by sector. In total, the amount of C&I waste generated in the region is shown to increase at a rate of approximately 0.85% per annum over the 15-year period, again, in the absence of any policy and technological interventions. In this scenario, annual C&I waste could reach 9.6m tonnes by 2020.

3.26 The manufacturing sector, which contributes most to C&I waste in the region, could witness the largest increase in waste generation (in absolute terms). This forecast is in contrast to recent trends which have shown a sustained decline in the generation of industrial waste in the region (refer back to Figure 3-3) and therefore should not be taken as a definitive forecast, but as one possible outcome if policy is not sustained.

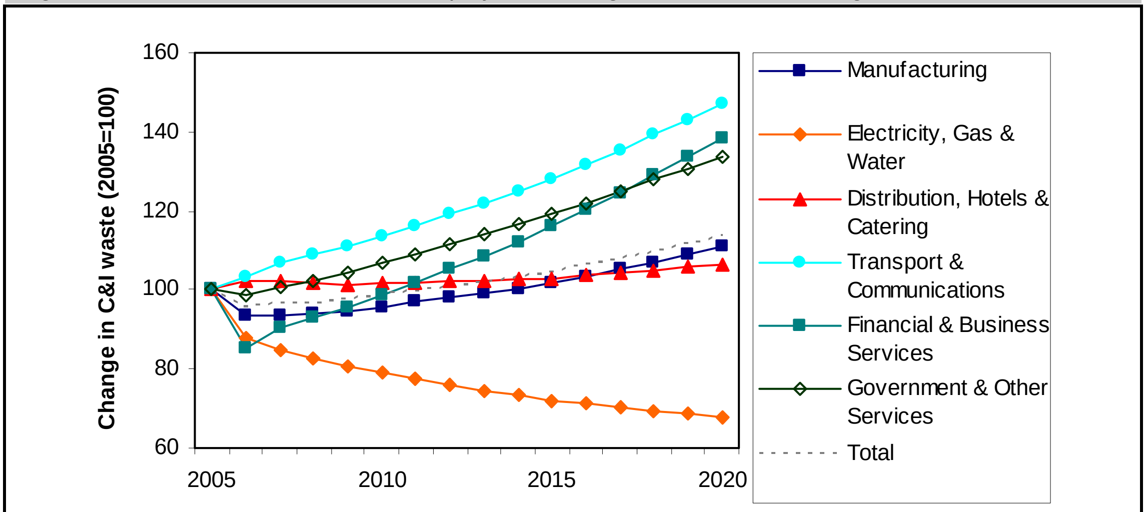
Figure 3-6: REEIO model BAU scenario projections for C&I waste arisings, 2005 to 2020



Source: REEIO model 2008

3.27 In proportional terms, however, Figure 3-7 shows that the largest rises could be in the region's key service sectors – i.e. transport & communications, financial & business services and government & other services. This is a plausible scenario given that these are the sectors forecast to experience the strongest growth in the next few years (indeed, C&I waste arisings in the REEIO model are based on output by sector). The electricity, gas and water sector is the only one where waste generation could decline relative to 2005.

Figure 3-7: REEIO model BAU scenario projected changes in C&I waste arisings, 2005 to 2020



Source: REEIO model

3.28 A more likely scenario is that growth in both commercial waste and industrial waste will display some 'flattening out' over the next few years[66] consistent with the broad target to reduce growth in C&I waste to 0% by 2020 as supported by both recent data trends and the opinions of experts in the region. Therefore, REEIO outputs should be considered with caution as they are based on a set of specific, yet high-level, assumptions, most notably that waste generation will move in line with forecast changes in output by sector. Given the trend towards greater resource efficiency among private companies in the region, the opposite trend should be expected.

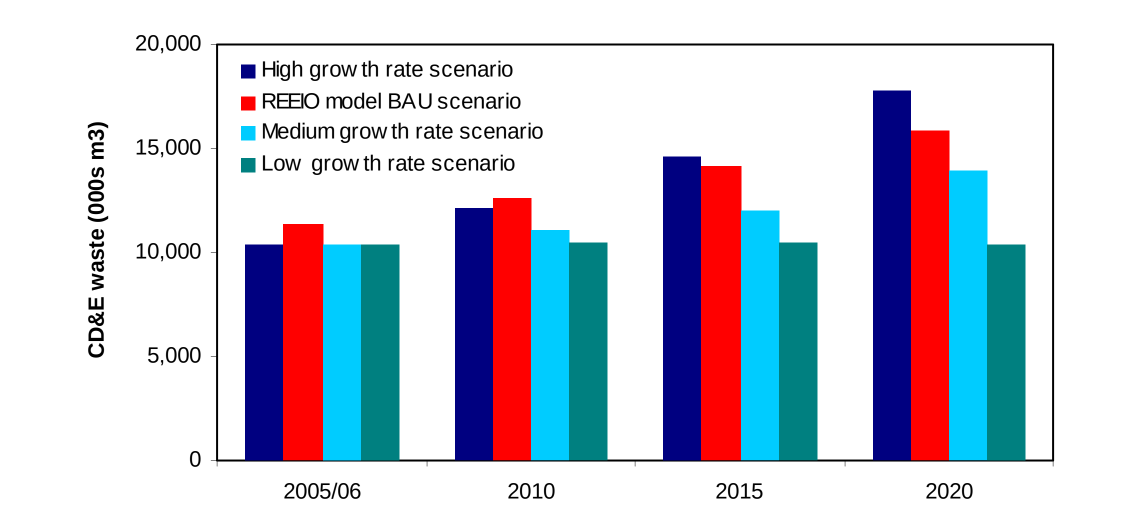
[66] See Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

Construction, Demolition and Excavation waste arisings

3.29 Finally, Figure 3-8 presents the combined forecasts for CD&E waste generation in years 2005, 2010, 2015 and 2020 from the REEIO model, and separately the NWRATB 2007 survey. The two forecasts are broadly aligned as both indicate a significant increase in CD&E waste generation. The Regional Economy Environment Input/Output model (REEIO) estimates an increase of around 2.2% per annum between 2005 and 2020 compared to 2.1% per annum in the medium growth rate projections from the 2007 survey[67]. By 2020, the REEIO projections suggest that CD&E waste generation will be in the magnitude of 15.9m tonnes, slightly higher than the 14m tonnes projected by the 2007 survey.

3.30 However, there is a notable degree of uncertainty over projections of CD&E waste in the region, as demonstrated by the difference in the low growth rate and high growth rate projections in the 2007 survey.

Figure 3-8: Projections for CD&E waste arisings taken from the NWRTAB 2007 survey of CD&E waste, including REEIO model BAU scenario, 2005/06 to 2020



Source: REEIO model2008 and Study to fill the evidence gaps for construction, demolition and excavation waste streams in the North West region of England, NWRTAB (2007)

Landfill deposits

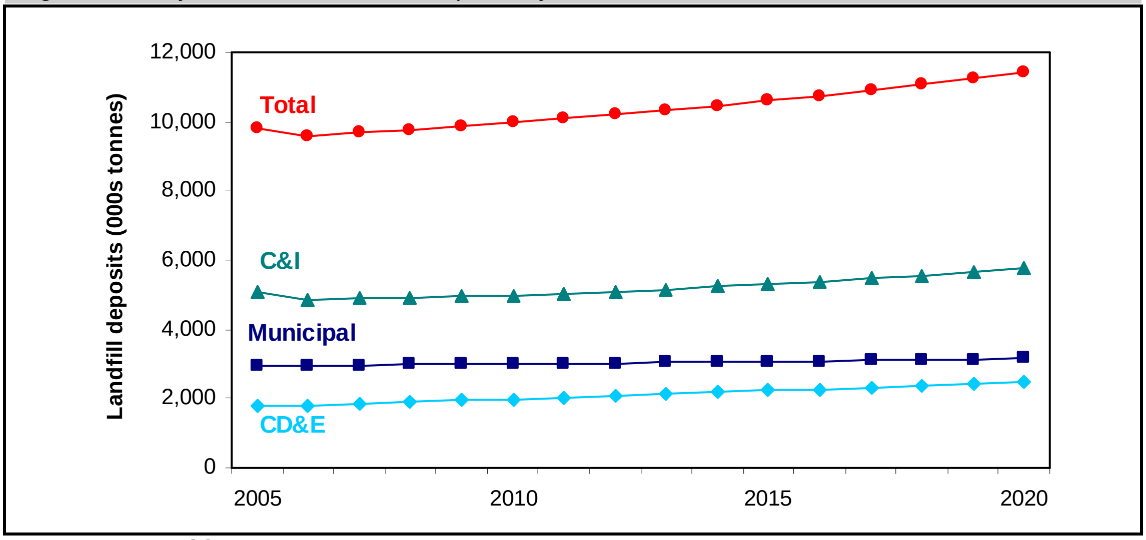
3.31 A central consideration in this study is whether the supply of waste infrastructure in the region can meet projected future demand as a result of growth. It is worth bearing in mind that not all waste is, and will be, managed within the Northwest region itself – this is particularly the case for C&I waste movements as these are not governed by political boundaries (broad estimates of the amount of C&I waste exported from the region are 10% to 13.5%[68]). The paragraphs above already discussed limitations of the REEIO projections for waste generation and the same applies to landfill. Therefore, the analysis presented should be taken with a degree of caution.

3.32 The macro-level business-as-usual scenario generated by the REEIO model indicates (Figure 3-9) a potential significant rise in the total amount of waste sent to landfill should the current

[67] Please note that this is over the period 2006 to 2020 rather than 2005 to 2020 as in the REEIO model
[68] Study to fill Evidence Gaps for Commercial & Industrial Waste Streams in the North West Region of England, *NWRTAB* (2007)

proportions of waste management streams be maintained. By 2020, the amount of waste landfilled could reach 11.4m tonnes (50% from C&I waste, 28% from municipal waste and 22% from CD&E waste). The rise in landfill disposal is expected to occur across all three major waste streams (although less so in municipal waste).

Figure 3-9: Projections for total landfill deposits by source of waste, 2005 to 2020



Source: REEIO model 2008

3.33 Under this scenario, if all waste is disposed of within the North West regional boundaries, and with no further increase in landfill capacity in the future, landfill void space in the region would reach its limit during 2013 (based upon an estimated landfill capacity[69] of 63.5m m^3). This outcome is rather unlikely in reality, not least because a significant amount of waste (especially C&I) will be managed by facilities outside the region[70]. However, in 2006, Environment Agency data[71] suggested that the lifespan of non-hazardous landfill sites in the North West could be as low as 5.6 years – lower than all other regions with the exceptions of London and the East of England.

3.34 Nevertheless, evidence from consultations with regional experts, as well as recent data trends, strongly suggest that the REEIO business-as-usual scenario assumptions for landfill should be modified to reflect recent data trends (e.g. only 29% of C&I waste is landfilled[72]) and the stringent targets put in place for local authorities to recycle household waste and recover the value from municipal solid waste (see Table 2-4). Moreover, reductions in landfill requirements are a nationwide trend[73], which is expected to continue.

3.35 This will be further supported by the landfill tax escalator that will act as a major disincentive to commercial and industrial operators choosing landfill as a preferred means of waste management[74]. As Table 3-2 shows, based upon an assessment of comparative gate fees in

[69] Taken from Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[70] Also, the estimate of 55m m^3 total landfill capacity can be contested, see Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008) for another estimate
[71] See http://www.environment-agency.gov.uk/commondata/acrobat/wastefacts06f_1975601.pdf
[72] Study to fill Evidence Gaps for Commercial & Industrial Waste Streams in the North West Region of England, *NWRTAB* (May 2007)
[73] See http://www.environment-agency.gov.uk/subjects/waste/1031954/315439/1933625/
[74] Although it should be noted that inert waste is not subject to landfill tax if used for engineering purposes

2007[75], landfill is currently a cheaper option than mechanical biological treatment (MBT) and incineration[76]. However, the application of the landfill tax escalator will change this situation dramatically. By 2010/11, landfill tax will have doubled from its 2007 level (of £24 per tonne) to £48 per tonne. With the increasing cost pressures on landfill operators brought about by the transition to the PPC (pollution, prevention and control) regime, industry estimates of the likely gate fee cost in 2010 exceed £100 per tonnes[77]. In this climate, landfill will rise to the top of the most expensive waste management methods in Table 3-2 (although some other types of operator may seek to raise their fees in line with the increase in landfill tax).

Table 3-2: Comparative gate fees in 2007 (England, Scotland and Wales)

Management method	Median gate fee (per tonne)	Range
Incineration (post-2000 facilities)	£80	£65 - £136
MBT	£53	n/a
Landfill (including tax)	£45	£35 - £64
Anaerobic digestion	n/a	£30 - £60
In vessel composting	£40	£20 - £69
MRF (cans/plastic/paper/card)	£28	n/a

Source: WRAP Gate Fees Report 2008

3.36 The amount of municipal waste sent to landfill will be constrained by the LATS that set limits on the amount of waste each WDA can dispose of at landfill sites. Given the severe financial penalties for exceeding these limits, it is very likely that the actual landfill requirement in the region will be equal to or below the sum of each WDA's landfill allowance. Indeed, it has been estimated that municipal landfill requirements in the year 2020 will measure some 903,000 tonnes, with 650,000 tonnes to be deposited within the North West and 250,000 tonnes to be deposited outside the region[78].

3.37 There are a large number of other factors which are expected to continue to drive reductions in the amount of C&I waste being sent to landfill[79]. These factors include:

- an increase in the value of recyclate materials, making it a more competitive management option
- an increase in fossil fuel costs, raising the value of energy recovery
- the introduction of further legislation requiring producers to take more responsibility for the waste impact of their products (e.g. more stringent packaging regulations)
- revisions to the EU Waste Framework Directive, expected to accelerate the process of moving to more sustainable forms of waste management

[75] WRAP Gate Fees Report 2008: Comparing the cost of alternative waste treatment options, *WRAP* (2008)
[76] There will be some degree of variation across different facilities, as reflected in the ranges in Table 3-2
[77] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[78] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[79] Detailed explanation of these are provided in the report, Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

- increased political pressures, driven by the climate change agenda, to reuse and recycle more and more waste (as well as to minimise and possible eliminate some waste generation in the first instance)
- the introduction of new technologies to deal more efficiently and cost effectively with waste
- the possibility that the Landfill Directive requirements for treatment prior to landfill may be more strictly enforced.

3.38 Importantly, these factors must be set within the context of an economic downturn that may deepen over the next few years. By reducing the overall amount of economic activity in the region, there could be the effect of reducing the amount of waste generated. However, it may also lead to a contraction in the market for specific recyclables which, in turn, could hinder the efforts to encourage more waste being sent to landfill. It has been suggested that this could hit the market for the lowest quality recyclate materials first – given the reliance on mixed waste recycling in the UK, this could disproportionately affect operators in this country.

3.39 In the report, *'Nationally, regionally and sub-regionally significant waste management facilities'*, three scenarios are produced to estimate potential landfill requirements in future years based upon a range of possible variables (related to available infrastructure and changes in waste management methods). Overall, the analysis shows that the full utilisation of landfill void space within existing planning permissions could provide sufficient capacity to meet the region's needs until 2025 and beyond[80] (although it is noted that site closures may result in shortages of capacity at a local level). This should be taken as a more realistic estimate of the likely lifespan of the region's landfill capacity than what can be broadly estimated from the REEIO model outputs. The report goes on to state that, in light of potential time and planning restrictions on currently identified capacity, realistic opportunities to extend capacity at existing sites should not be dismissed until such a time as long term sustainable alternative waste management options can be implemented.

3.40 The report also considers the potential for each North West sub-region to be self-sufficient in terms of landfill provision. It finds that, in the absence of a flexible approach taken by the sub-regions, gaps in provision will be likely to appear in Merseyside, Warrington and the west and south of Greater Manchester following 2013. These areas will therefore need to arrange to send their waste to landfill sites in other local authorities (assuming that sufficient alternatives to landfill are not developed within these areas by this time). This is important because all four geographies are anticipated to be significant growth nodes going forward.

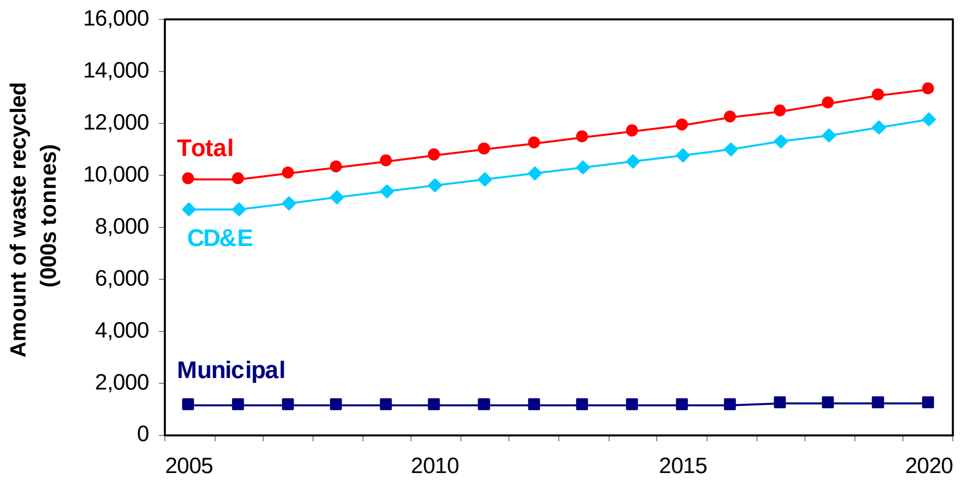
Recycling

3.41 The REEIO BAU scenario indicates a large increase in the amount of waste to be recycled in the region between 2005 and 2020. Figure 3-10 shows that this increase will be driven by a sustained expansion in the amount of CD&E waste recycled, which itself is driven solely by a

[80] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

projected increase in CD&E waste arisings (the proportion of CD&E waste which is recycled remains constant in the model at 76%).

Figure 3-10: Projections for total amount of waste recycled by source of waste, 2005 to 2020



Source: REEIO model 2008

3.42 The key question for decision makers in the North West region will be whether the region has the facilities to deal with the increased demand for recycling facilities, now and in future. By 2020, over 13m tonnes of waste will be recycled in the region (91% from CD&E waste and 9% from municipal waste) according to the REEIO scenario. Regional experts have confirmed that they expect to see a significant rise in demand for recycling capacity, some of which will be met by facilities within the region. However, the increase in recycling in the REEIO model is driven by increases in the *amount* of waste generated, whereas stakeholder expectations are that the actual increase will be caused by an increase in the *rates* of recycling. Moreover, the REEIO projections show very little recycling of C&I waste (less than 1%), while the latest data indicate that 47% of all C&I waste in the region is recycled[81].

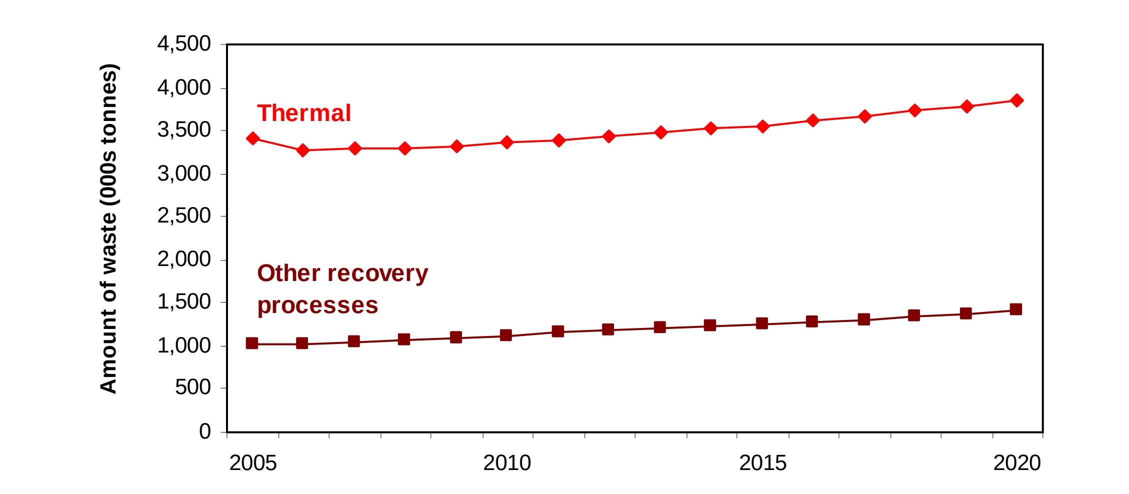
3.43 It is believed that new infrastructure will be required if regional targets to increase the rate of household waste recycling (to 45% by 2015 and 55% by 2020) are to be met by facilities within the region. It is estimated that the targets necessitate an increase in recycling/ composting capacity of 500,000 tonnes by 2015 and 830,000 tonnes by 2020. It is thought that materials recycling facilities (MRFs) will be needed at the sub-regional level as part of the supply chain between collection and reprocessor[82].

Other waste management methods

3.44 The REEIO scenario projections do not contain estimates of the amount of waste to be managed by recovery processes, e.g. by EfW or CHP facilities. The remaining management methods in the REEIO model are thermal and other recovery processes, as shown in Figure 3-11. Both are expected to see significant increases in usage until 2020 (of 0.8% per annum and 2.1% per annum respectively).

[81] This is an extremely large difference which could perhaps be explained by differences in definitions
[82] See Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

Figure 3-11: Projections of for total waste managed by thermal processes and other recovery processes, 2005 to 2020



Source: REEIO model 2008

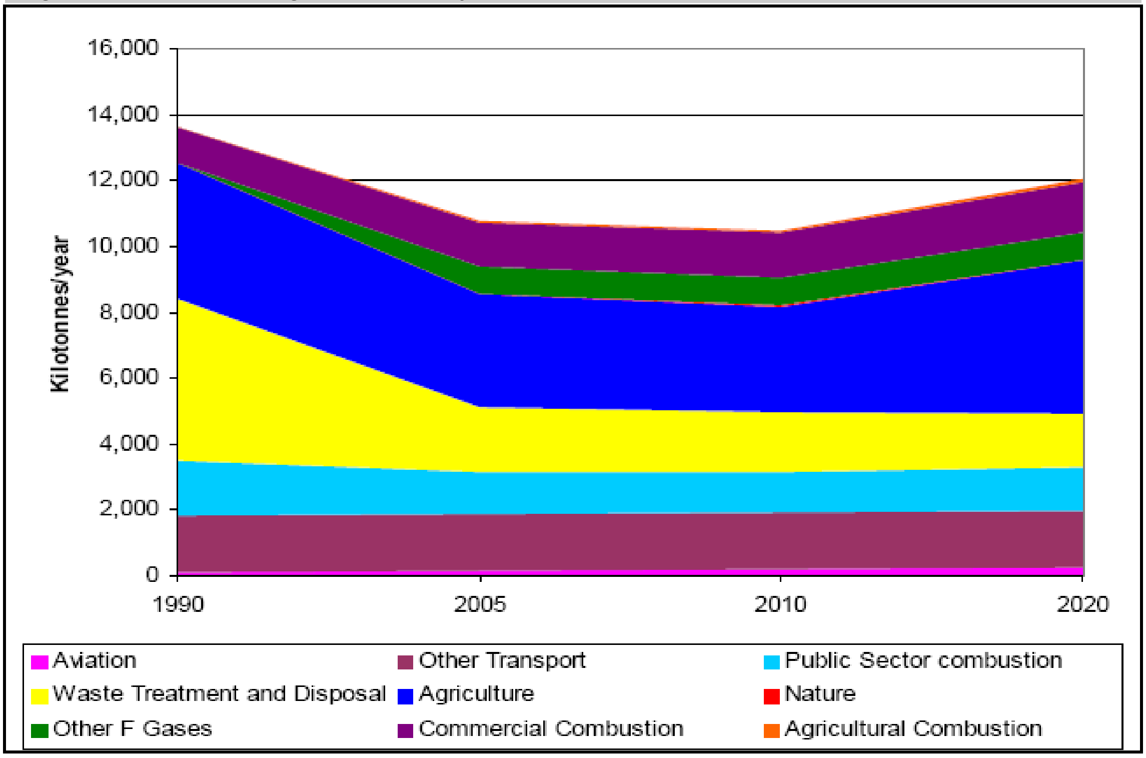
Environmental impacts of waste

3.45 A range of impacts can be identified and explored. Below, we briefly summarise the climate change impacts of waste arising from greenhouse gas (GHG) emissions produced by waste treatment and disposal.

3.46 The North West Regional Greenhouse Gas Inventory (AEA 2008) reports that just under 2 million tonnes of carbon dioxide equivalent ($MtCO_2e$/year) were emitted in 2005 from waste. The majority of GHG emissions were from methane (CH_4) – 79 thousand tonnes of CH_4 in 2005. As this gas is 21 times more potent than CO_2 in terms of global warming potential (GWP), when expressed in CO_2 equivalent, its contribution (from waste) was 1.65 $MtCO_2e$. Carbon dioxide only accounted for 0.24 $MtCO_2$, or just over 10% of the total. The remaining emissions were from nitrous oxide (N_2O).

3.47 GHG emissions from waste were 2.5 times higher in 1990, at nearly 5 $MtCO_2e$ which shows a considerable progress in reducing these emissions. The AEA report and forecasts suggest that in 2010 GHG emissions from waste will decrease to about 1.8 $MtCO_2e$ and further to 1.6 $MtCO_2e$ in 2020. This is clearly illustrated in Figure 3-12 below (yellow area).

Figure 3-12 Greenhouse gas emissions by source in the North West 1990-2020



Source: AEA E&E 2008

3.48 The scope of emissions from waste, as used by AEA, includes a variety of sources such as landfill sites, accidental vehicle fires, incineration of animal carcasses, chemical and clinical waste and crematoria. These emissions are collected at national level and distributed across the UK at 1km resolution using appropriate parameters as outlines in the NAEI report. It also includes the incineration of landfill gas used for heating and/or electricity generation that have been mapped at point of emission (AEA 2008).

4: Infrastructure issues, challenges and opportunities

Purpose

4.1 This section of the report does three things. First, it characterises the prime constraints and bottlenecks in the waste infrastructure, then it comments on the emerging challenges relating to the waste domain, and finally it concludes by highlighting some of the opportunities.

Capacity constraints and bottlenecks

Management and planning constraints

4.2 Taking account of new policy frameworks, and changing behaviours, this report's overall assessment is that, in physical terms, there is enough landfill capacity in the region (latest data suggest 63.5m m^3 at the end of 2007[83]) to satisfy landfill requirements for the foreseeable future (at least until 2020). This probably until a point in time when technology and infrastructure have been developed to such an advanced stage that very little waste is sent for disposal anyway. However, current planning agreements only run until 2020 for many landfill sites, even though they have the capacity to be open for longer. Indeed, research indicates that up to 30% of identified non-inert landfill capacity in the region could potentially remain unfilled at the end of planning permission time limits. Extending the lifetime of these sites by being more flexible with respect to planning timescales will ensure that void space in the region is used more efficiently.

4.3 In more general terms, the speed and promptness of getting planning permissions granted will be a critical factor in ensuring the region develops the facilities needed to meet its medium to long-term waste management requirements. This applies to all methods of waste management, but particularly recycling facilities and energy recovery plants (due to the need to move further away from using landfill disposal).

Investment constraints

4.4 There is some concern that operators of waste management facilities are generally less willing to invest in facilities to deal with C&I waste than municipal waste. This is because they can guarantee large contracts from the WDAs to manage municipal waste; in contrast, there is no guarantee of a long-term supply of waste from C&I sources. Therefore, bankability is lower and the level of risk higher if operators choose to concentrate on the C&I sector as their main source of waste. This is a potential barrier to investment in waste management facilities in the region[84]. It has been suggested, however, that local authorities could play a role in helping to overcome this barrier, by creating and managing some system of aggregating C&I waste streams, thereby guaranteeing a level of product for potential operators.

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[83] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[84] This issue is linked to the problem of targets focused on municipal waste – see paragraph 4.7 below

Challenges

Public opinion

4.5 One long-standing challenge in developing the waste infrastructure necessary to meet regional needs has been the need to placate public opinion. There is an important psychological barrier among the general public who tend to view all waste management facilities in essentially negative terms, even in cases where the proposed new facility is based upon new, safer technologies. Although decision makers must be careful not to ignore legitimate concerns, it is important that people are fully informed and educated on the development of new waste management facilities.

4.6 Related to this, the importance of developing new and sustainable waste management facilities needs to be tempered with the region's economic growth objectives. Already a net importer of hazardous waste, future developments could see the North West become a net importer of 'all waste'. Whilst this would no doubt bring significant economic benefits to the region (see paragraph), it may also impact upon traffic levels and transport emissions, be unpopular with the resident population and potentially harm the region's image, particularly among high-value workers for whom quality of life issues are paramount (and whom the region is trying to attract to support economic growth).

Targets and data

4.7 National and regional targets for waste reduction and waste management are focused almost exclusively on municipal waste. However, this represents just under a fifth of all waste generated in the region[85]. Although C&I and CD&E wastes are arguably more complex areas, the lack of measurable targets for these waste streams can lead to the political momentum being dominated by municipal waste instead. Evidence of this is provided in the large-scale PFI projects being developed to deal mainly with local authorities' municipal waste.

4.8 Related to this, across the English regions, there is a lack of data on C&I and CD&E waste arisings and waste management relative to the amount of data available on municipal waste. Indeed, municipal waste statistics are in abundance and are disproportionate to its contribution to total waste generation. In any field, the availability of reliable and comprehensive data is vital in creating a strong evidence base for policy and action.

4.9 Importantly, the NWRTAB has really led the way in addressing some of the gaps in data for C&I and CD&E waste streams through its research and survey work. Indeed, data from the 2007 survey of C&I waste streams[86] is currently being used to extrapolate nationwide figures. Ongoing use and development of these research methods in the region will ensure that there is a comprehensive and robust evidence base to help drive policy and action.

[85] Using 2005 figures contained in the REEIO model
[86] Study to fill Evidence Gaps for C &I Waste Streams in the North West Region of England, *NWRTAB* (May 2007)

Transport and catchment areas

4.10 To minimise the negative environmental impact of waste, the development of new waste infrastructure will need to bear in mind the principle that waste should be treated as locally as possible. As stated in policy EM 12 (Location Principles) in the 'North West of England Plan Regional Spatial Strategy to 2021':

> *'The final residue, following treatment, of municipal, commercial and industrial waste should be disposed of in one of the nearest appropriate installations. Local authorities should ensure that waste management facilities are sited in such a way as to avoid the unnecessary carriage of waste over long distances*[87]*'.*

4.11 In addition, new waste management facilities should take account of the availability of transport infrastructure to support the sustainable movement of waste, giving priority to rail or water transport where practical. In essence, the development of new facilities in the North West should reflect the location of waste arisings, collection and transportation routes[88]. This means that they should be within close enough reach of the region's urban core around Merseyside, Cheshire, Warrington and Greater Manchester and its associated transport network, particularly the motorway networks. Indeed, having a situation where more waste is treated locally is likely to lead to a greater reliance on road haulage.

4.12 Unlike municipal waste, movements of C&I waste are not governed by political boundaries. These means that companies are free to export waste to other regions or even countries (see paragraph 4.17 for examples of this in terms of recycling). The cost of transport can be a major disincentive to companies exporting large amounts of waste from the region; however, there are a number of other factors also in play which will determine where waste is treated.

Opportunities

Opportunities to extend recycling and recovery

4.13 The NWRTAB-commissioned survey into C&I waste streams assessed the potential to recycle and recover waste which is currently sent to landfill. Taking advantage of these opportunities will significantly reduce the amount of C&I waste disposed of via landfill.

4.14 Analysis of the results shows that the greatest opportunities to increase recycling rates lie in chemical wastes, non-metallic wastes and mixed ordinary wastes, as highlighted in Table 4-1. Overall, there is the potential to recycle another 609k tonnes of C&I waste in the region each year, with another 2.7m tonnes that can possibly be recycled (only 674k tonnes of waste cannot be recycled).

Table 4-1: Recycling opportunities, by SOC classification (in 000s tonnes)

	Currently Recycled	Recyclable	Possibly recyclable	Not recyclable	Total
Chemical wastes	592	16	566	245	1,419
Health care	-	-	10	75	85

[87] North West of England Plan Regional Spatial Strategy to 2021, *GONW* (September 2008)
[88] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

	Currently Recycled	**Recyclable**	**Possibly recyclable**	**Not recyclable**	**Total**
Metallic wastes	715	3	3	1	721
Non-metallic wastes	1,494	244	280	23	2,042
Discarded equipment	40	4	6	2	52
Animal & vegetable wastes	238	3	196	40	477
Mixed (ordinary) wastes	45	334	1,182	276	1,836
Common sludges	80	-	263	4	348
Mineral wastes	387	4	153	8	552
Total	**3,590**	**609**	**2,659**	**674**	**7,532**

Source: Study to fill Evidence Gaps for C &I Waste Streams in the North West Region of England, NWRTAB (May 2007)

4.15 In addition, each waste type was assessed in terms of the potential to recover energy through energy from waste (EfW) and/or combined heat and power (CHP) facilities. The results are shown in Table 4-2. Overall, there is the potential to recover an additional 2.4m tonnes of C&I waste in the region each year, with another 1.4m tonnes that can possibly be recovered. It should be noted that these values overlap with the recycling opportunities presented in Table 4-1, i.e. maximising the region's potential to recover value from waste will significantly lower the ability to take up recycling opportunities.

Table 4-2: Recoverable wastes, by SOC classification (000s tonnes)

	Currently Recoverable	**Recoverable**	**Possibly recoverable**	**Not recoverable**	**Total**
Chemical wastes	26	878	314	142	1,419
Health care	12	0	45	20	85
Metallic wastes		89	566	64	71
Non-metallic wastes	0	298	233	426	2,042
Discarded equipment	0	9	26	9	52
Animal & vegetable wastes	9	269	16	154	477
Mixed (ordinary) wastes	2	165	125	946	1,836
Common sludges		313	30	5	348
Mineral wastes		418	68	6	552
Total	**49**	**2,438**	**1,422**	**1,773**	**7,532**

Source: Study to fill Evidence Gaps for C &I Waste Streams in the North West Region of England, NWRTAB (May 2007)

4.16 Significant investment in infrastructure will be needed to achieve the recycling and recovery potential highlighted in the tables above. Producers will have to segregate their waste at source and the industry will have to provide appropriate collection services and waste management facilities. Technical developments mean that smaller scale energy facilities, which would largely operate at a sub-regional level, may now be viable[89].

[89] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

4.17 Gains could also be made from recycling more municipal waste within the region because, at present, a large amount of waste is exported for recycling purposes. The report, *'Nationally, regionally and sub-regionally significant waste management facilities'*, draws out the following examples of materials which are seen to be exported from the region:

- Paper – recycled in Deeside (Wales)
- Textiles – recycled in Southampton
- Glass – recycled in Barnsley
- Tyres – recycled in Stoke-on-Trent/Derby
- Plastics – recycled in Nottingham
- Cathode Ray Tubes (CRTs) – recycled in Warwickshire.

4.18 Furthermore, there is a significant export market of recyclables to overseas operators, especially to China and the Far East (where plastics are particularly popular). This implies that there are significant opportunities to introduce or extend recycling capacity within the region to deal with such materials and potential to impact positively on marine-related carbon emissions. This would also have a beneficial environmental impact by reducing the need to transport large volumes of waste over long distances. It would also offer some protection against the potentially volatile nature of the export markets for recyclables[90]. As a note of caution, however, it may be the case that operators in China and the Far East face lower standards than their UK counterparts when treating waste. This lowers their costs, making it difficult for potential operators in the North West to compete.

Waste as an economic sector

4.19 The waste industry can also be viewed as an important economic sector in its own right, though too often it is not. It can be a major employer in a local area – for example, it is estimated that developing an industry of small-scale embedded EfW plants to supply the rest of the UK could generate up to 1,700 jobs[91]. It is also a highly innovative sector driven by the development and adoption of new technologies. There are significant opportunities to instigate clusters around large-scale waste management facilities or Resource Recovery Parks (RRPs), through the supply chain.

Resource Recovery Parks

4.20 There are proposals to develop Resource Recovery Parks (RRPs) in the region, such as the proposed site at Ince Marshes, Cheshire (to be developed by Peel Holdings Ince Ltd). RRPs carry the potential to make considerable efficiency savings from having a number of different waste management options all within close proximity on one site, located near the market for value-added products (i.e. recyclate materials, steam and energy[92]). They offer significant

[90] See Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[91] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)
[92] Nationally, regionally and sub-regionally significant waste management facilities, *4NW* (October 2008)

economic opportunities for businesses involved in the supply chain of the waste management sector to develop markets and synergies.

4.21 It will be necessary for the developers of these schemes to put forward a coherent case in order to secure planning permission, and, wherever possible, secure the support of local and regional partners.

Promoting the benefits to business of resource efficiency

4.22 Resource efficiency is a broad concept that includes minimising waste generation and encouraging the more efficient usage of waste. There is a lot being done to support and promote resource efficiency in the region and nationwide but the practical business benefits are not always made clear.

4.23 Evidence of the potential benefits has been provided by a major study commissioned by Defra[93]. This found that, after the South East, the North West was the region with the greatest potential to make cost savings from increased use of resource efficiency opportunities. In terms of waste, the report estimates that there is the potential to save £299m from improved waste efficiency in the region.

4.24 As the cost of landfill disposal continues to rise (due to the implementation of the augmented landfill tax escalator) the imperative that businesses take a more efficient approach to waste generation and waste management will increase yet further.

4.25 Consultees noted that many larger companies in the region already have their own resource efficiency policies in place. More problematic are small and medium enterprises (SMEs), many of which lack the knowledge and resources to implement policies around waste efficiency. To this end, initiatives such as the resource efficiency support managed by ENWORKS across the North West region will be vital.

Waste as a resource

4.26 Finally, there is a need to move away from viewing waste in essentially negative terms. Whilst the approach should always be to minimise waste production first, the remaining waste could in itself be a useful resource, as demonstrated by the development of EfW/CHP plants. Linked to this, there is a need to espouse more positive language around the opportunities around waste. This *may*, to some extent, help alleviate the concerns of the general public highlighted above.

[93] Quantification of the business benefits of resource efficiency, *research study for DEFRA by Oakdene Hollins and Grant Thornton* (October 2007)

5: Conclusions

Purpose

5.1 Drawing together the material from the previous three chapters, this Section summarises the key themes and messages from the assessment of the waste domain.

Conclusions

5.2 In terms of the implications of future economic growth on expected trends in waste generation in the region:

- Despite the projections in the REEIO model's BAU scenario, **it is likely that growth rates in municipal waste will stabilise,** in line with the long-term target to reduce waste growth in the region by 0% by 2014 and recent data trends
- Moreover, **C&I waste arisings will display some 'flattening out'** over the next few years, again consistent with the target to reduce growth in C&I waste to 0% by 2020 and recent data trends. It also reflects the trend towards greater resource efficiency among the region's private companies.

5.3 In terms of expected changes in the demand for different waste management methods in the region:

- **Regarding landfill, capacity requirements are expected to decrease** substantially over the next few years (this is in contrast to the provided REEIO BAU scenario projections). This is supported by recent observed trends, the implementation of the landfill tax escalator as a major disincentive to businesses, and the political climate which is expected to become increasingly unfavourable towards landfill disposal
- Evidence suggests that **there will be a significant rise in the demand for recycling capacity in the region,** some of which will be met by facilities within the region
- There is also expected to be a rise in the demand for thermal waste management and 'other recovery processes'.

5.4 Matching up the expected trends in demand with the supply of waste management facilities in the region indicates that:

- **There is sufficient landfill capacity in the region** to satisfy landfill requirements for the foreseeable future (at least until 2020) and probably until a point in time when technology and infrastructure has been developed to such an advanced stage that very little waste is sent for disposal anyway
- **There is demand for more recycling and recovery facilities in the region –** this presents a significant opportunity to divert more waste away from landfill, and reduce the large export market of recyclables.

5.5 However, there are a number of barriers and challenges to delivering the sustainable and competitive waste infrastructure the region needs:

- **Extending the lifetime of current landfill sites** will ensure they are used efficiently
- **Identifying suitable sites on which to develop new waste facilities** is the first hurdle to overcome, with transport issues a key concern
- **Gaining planning permission** to develop them is the second hurdle, especially in the face of public opposition
- Operators of waste management facilities may be **less willing to invest in facilities to deal with C&I waste** as there is no guarantee of a long-term supply of waste; **they are more likely to develop municipal facilities** as they can gain large contracts from the WDAs
- Although **data on C&I and CD&E waste is limited in comparison to municipal waste statistics,** of all the English regions, the North West has made the most positive strides towards addressing these data deficits through its research and survey work.

5.6 In terms of wider opportunities, this assessment has found that:

- **Waste could become a more important economic sector** in the region, particularly if proposals for Resource Recovery Parks (RRPs) are taken forward
- **Encouraging businesses to become more efficient in how they treat waste** can lead to practical business benefits and cost savings. Support is already being provided to help businesses, especially SMEs, realise this.

5.7 **All future policies and actions around waste should be guided by the waste hierarchy:** waste prevention, re-use, recycle/compost, and energy recovery. Only after all these options have been exhausted (in the order outlined) should waste be sent to landfill disposal.

Annex A: Bibliography

A.1 In this annex, we present all sources of data and information used in this report – this includes key documents as well as the major web resources and datasets used and people/organisations consulted.

Documents

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Study for Defra by Oakdene Hollins and Grant Thornton 2007 (October)

Quantification of the business benefits of resource efficiency

Web Resources

Environment Agency: http://www.environment-agency.gov.uk/subjects/waste

Defra: http://www.defra.gov.uk/environment/waste

European Union: http://ec.europa.eu/environment/waste

Annex B: Consultees

- Peter Greifenberg, consultant to 4NW
- Dr Ian Hanley, 4NW
- Vicki O'Kelly, NWDA
- Richard Watson, GONW
- Krista Patrick, GMGU (chair of NWRTAB)
- Dave Forster, Environment Agency North West