

**BIG CHOICES**  
Background Paper 1

# **ASSESSMENT OF NEED FOR WASTE TREATMENT AND DISPOSAL CAPACITY IN DERBYSHIRE, 2009/10 – 2029/30**

**concerning the  
Derby and Derbyshire Waste Core Strategy Development  
Plan Document**

**Prepared jointly by Derbyshire County Council and Derby City Council  
January 2010**



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# 1. INTRODUCTION

- 1.01 Policy 38 of the Regional Plan<sup>1</sup> sets out regional priorities for waste management based on the Regional Waste Strategy<sup>2</sup>. Paragraph 1 sets out the need for waste to be managed higher up the 'waste hierarchy'. Top of the hierarchy is waste reduction, with the aim of achieving zero growth in all forms of controlled<sup>3</sup> waste by 2016. Second in the hierarchy is reuse. If the product is not suitable for reuse it may contain materials of value that can be recovered through composting, recycling or treatment with energy recovery. Only when all other levels of the hierarchy have been maximised, should disposal of material be considered.
- 1.02 At paragraph 3 it states that, 'Waste Planning Authorities, with the exception of the Peak District National Park Authority, should make provision in their Waste Development Frameworks for waste management capacity equal to the amount of waste generated and requiring management in their areas,...subject to further research and analysis ... and recognition of the particular operational and locational requirements of individual waste process technologies.'
- 1.03 At paragraphs 4 to 8 the Regional Plan sets out locational priorities for waste development based on its sub-areas. To take account of these priorities the Derbyshire Districts and Derby City have been assigned to these sub-areas. The northern sub-area contains the districts of Bolsover, Chesterfield and North East Derbyshire.) The 3 Cities part of Derby and Derbyshire contains Amber Valley, Erewash & South Derbyshire and Derby City. The Peak sub-area contains Derbyshire Dales and High Peak districts. For the purposes of this Paper the three areas will be referred to as North Eastern Derbyshire, City and Southern Derbyshire and North Western Derbyshire respectively.

## ***Purpose of this Paper***

- 1.04 In order to ensure that at least enough capacity for the management of the various waste streams arising in Derby City and Derbyshire (referred to in this paper as Derbyshire) have been identified, in line with the requirements of the Regional

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<sup>1</sup> EMRA, East Midlands Regional Plan, March 2009.

<sup>2</sup> EMRA, East Midlands Regional Waste Strategy, January 2006.

<sup>3</sup> Household, Commercial and Industrial Waste as defined in the Controlled Waste Regulations 1992

Plan, there needs to be an understanding of likely amounts of waste arisings and management methods needed to deal with the arisings throughout the plan period to 2029/30.

1.05 The aim of this paper therefore is to set out the best available information on waste arisings for the three main waste streams; municipal solid waste, commercial and industrial waste and construction and demolition waste throughout the plan period. By comparing this information with the estimated current waste management infrastructure capacity and taking into account the current and likely targets for the recovery of value from and the landfilling of waste a picture can be built up of the likely need for additional waste management infrastructure.

### ***Methodology and Structure of Paper***

1.06 This paper considers three main factors that will influence the way in which waste is managed in the period to 2029/30:

- The total amount of waste arisings will change;
- The proportion of waste that must be diverted from landfill will change;
- The amount of waste imported and exported to or from Derbyshire will change.

1.07 The next three sections of this paper will examine each of the three main waste streams; municipal solid waste, commercial and industrial waste and construction and demolition waste. These sections will determine an estimate of future arisings for each waste stream and how much additional waste may need to be managed in the future. Section Five will look at hazardous waste and agricultural waste. Section Six will then use the arisings figures from the previous sections to provide an estimate of possible additional numbers of waste management facilities which may be required over the plan period. Following this, Section Seven will introduce the issues surrounding imports and exports of waste, and make an appropriate adjustment to the numbers of facilities to take account of the impact of imports and exports. Sections Eight and Nine will examine whether additional landfill space is required for non-hazardous waste and inert waste respectively. Finally, Section Ten presents the conclusions.

### **Sources and Limitations of Data**

1.08 The sources of the arisings data used in this report and the potential issues surrounding their use are summarised below in Figure 1B.

#### 1B Sources of Baseline Waste Arisings Data

<b>Waste Stream</b>	<b>Source</b>	<b>Notes</b>
Municipal Solid Waste	Derby and Derbyshire Joint Municipal Waste Strategy DEFRA Waste Data Flow	Considered reliable due to requirement on local authorities to monitor and report on their activities to DEFRA
Commercial and Industrial Waste	Environment Agency Strategic Waste Management Information	Based on a 2002/03 survey undertaken by the Environment Agency. The numbers of companies involved was however limited.
Construction and Demolition Waste	Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005	Based on a 2007 report published by the Government Department of Communities and Local Government

1.09 It should be noted that the quality and reliability of waste data have always been a problem for waste planning authorities. There is no comprehensive system for data collection and it has not always been collected consistently. In 2006, the Government introduced the National Waste Interrogator to supplement information on waste management; however, it does not provide the complete picture. Therefore, whilst the information in this report is based on the most up to date figures available, the conclusions are only estimates because of the limited reliability of the data, it will be reviewed as and when new or more reliable data becomes available.

## **2. MUNICIPAL SOLID WASTE**

### ***Introduction***

2.01 Municipal Solid Waste (MSW) is mostly that collected from households, but also includes waste from some commercial and retail premises and waste from schools and some other public institutions. This section provides an estimate of the additional quantity of municipal solid waste that will require managing in the period 2009/10 to 2029/30. The most recent year that there is published data on estimated MSW arisings and management is 2008/9<sup>4</sup> and therefore this year will be used as the baseline from which future assumptions are made.

### ***Current Arisings***

2.02 Derbyshire County, in 2008/9 produced a total of 393,164 tonnes of municipal solid waste, with Derby City producing some 127,366 tonnes. Combined, Derby and Derbyshire produced a total of 520,530<sup>5</sup> tonnes of municipal solid waste in 2008/9.

### ***Future Arisings***

2.03 The Derbyshire Municipal Waste Management Strategy<sup>6</sup> provides a scenario for the growth of municipal solid waste in the period to 2020. It envisages that there will be a declining growth rate, starting at 1.75% from 2008/9 and reducing to zero growth by 2015/16.

2.04 Figure 2A shows the projected growth in waste arisings in the period from the beginning of 2009/10 to 2029/30. From 2015/16 to the end of the plan period annual municipal waste production has been estimated to remain constant. This annual figure of 558,031 represents an increase of around 28,000 over the predicted 2009/10 arisings.

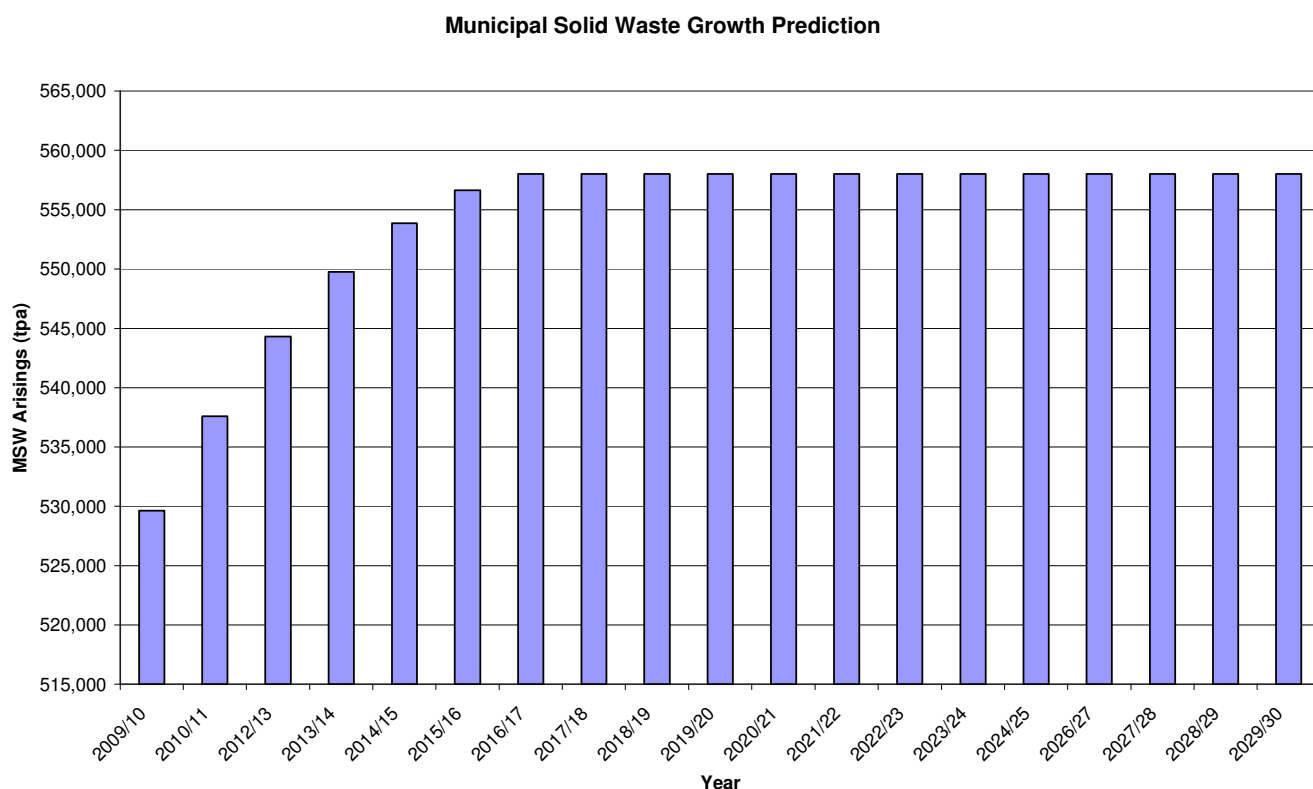
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<sup>4</sup> Figures from DEFRA Waste Data Flow

<sup>5</sup> Figures from DEFRA Waste Data Flow Table 1 Municipal Waste Arisings 2008/9

<sup>6</sup> Derbyshire Joint Municipal Waste Strategy , July 2006, p51

## 2A Municipal Solid Waste Growth Prediction<sup>7</sup>



### ***Changes in Waste Management Methods***

2.05 In line with European and UK national government targets, the future management of municipal solid waste must rely on non-landfill waste management methods to an increasing degree. Such methods may include recycling and composting or treatment with energy recovery.

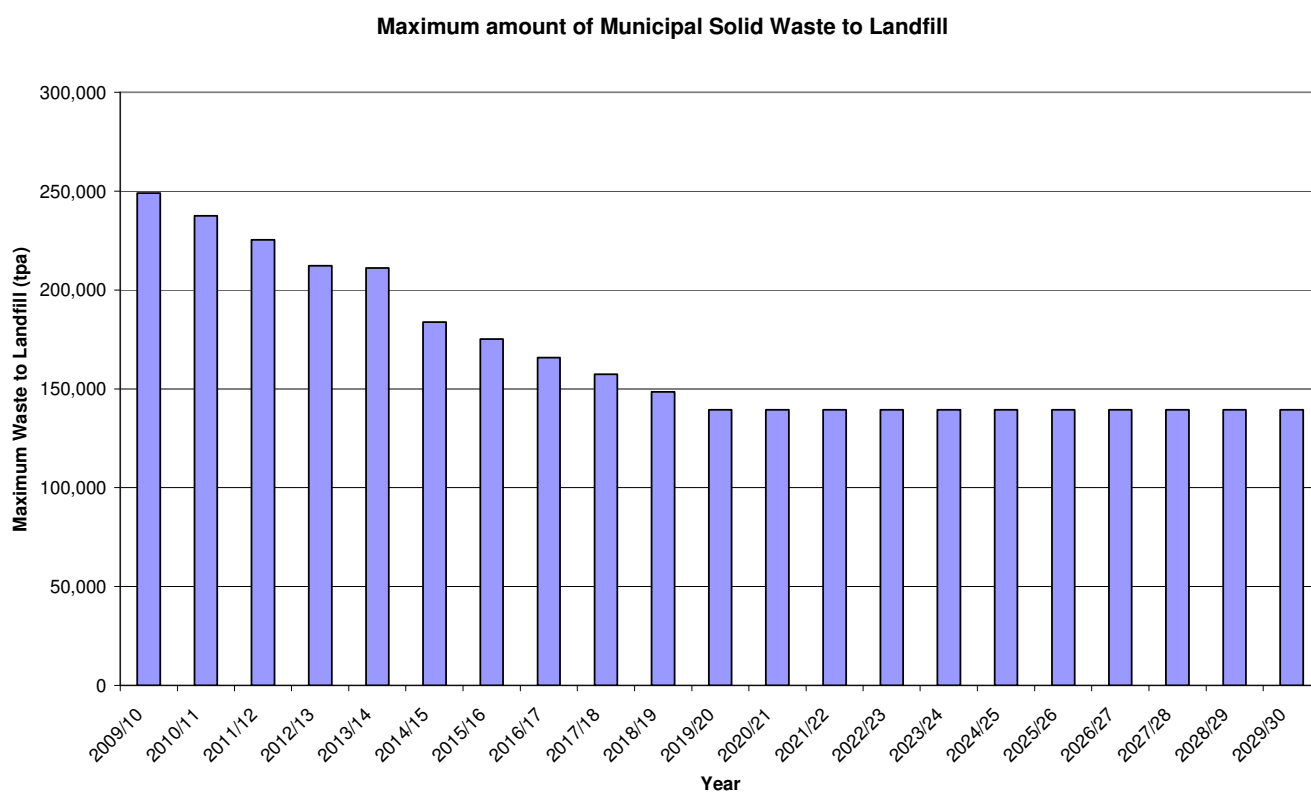
2.06 In order to make landfill a less attractive means of waste management the Government, in 1996, introduced the Landfill Tax, currently (November 2009) set at £40 per tonne for active waste, but set to rise by £8 per tonne each year until 2013. An additional driver for reductions in municipal solid waste being sent to landfill in the future is likely to be the Government's Landfill Allowance Trading Scheme (LATS) which restricts the amount of municipal solid waste that Waste Disposal Authorities can landfill. However, it is only applicable to the biodegradable element of the overall municipal waste stream and, therefore, this paper has based future estimates of the quantity of waste to be landfilled not on the LATS but on the Government's suggested targets for municipal waste

<sup>7</sup> Based on growth rates taken from Derbyshire Joint Municipal Waste Management Strategy, July 2006, p53, Figure 6.1 Scenario 5

recovery, set out in The Waste Strategy for England 2007<sup>8</sup> which has for the years 2010, 2015 and 2020 set targets for the recovery of value (i.e composting, recycling or treatment with energy recovery) from municipal waste of 53%, 67% and 75% respectively. This provides a usable maximum level for the landfilling of municipal solid waste of 47% in 2010, 33% in 2015 and 25% in 2020. No targets are available for the years 2020 to 2030 and therefore the 2020 recovery level is assumed to remain constant over this period.

2.07 In 2008/9 Derbyshire recycled, composted, recovered or incinerated 206,662<sup>9</sup> tonnes of municipal solid waste or nearly 40% of waste collected. This rate will need to increase to 53% to meet the first target year of 2010. Assuming a steady increase in recovery rates to meet subsequent target years produces Figure 2B, which shows the maximum amount of municipal solid waste which it would be possible to landfill under the municipal waste recovery targets described above.

## 2B Maximum Amount of Municipal Solid Waste to Landfill



<sup>8</sup> Department for Environment, Food and Rural Affairs (DEFRA), May 2007, p11

<sup>9</sup> DEFRA Waste Data Flow Table 2 Management of Municipal Waste

## Summary

2.09 The final column of Figure 2C<sup>10</sup> and the top layer of Figure 2D show the total extra amount of municipal solid waste in tonnes, which will need various forms of management over the period 2009/10– 2029/30. As can be seen, by 2029/30 an additional 137,814 tonnes of annual capacity will be needed at new or expanded waste management facilities in order to manage increased municipal solid waste arisings and to ensure Derbyshire meets the targets in the Waste Strategy for England 2007, noted above.

## 2C Estimated Future Municipal Solid Waste Arisings and Management Method (2009/10 – 2029/30)

Year	Waste Arisings <sup>11</sup> (t)	Landfill <sup>12</sup> (t)	Current Recovery <sup>13</sup> (t)	Additional Recovery <sup>14</sup> (t)
2009/10	529,639	248,930 (201,871)	280,709*	0
2014/15	556,639	183,691 (122,926)		92,239
2019/20	558,031	139,508 (94,086)		137,814
2029/30	558,031	139,508 (94,086)		137,814

\* Current recovery capacity is the estimated capacity if diversion targets for 2009/10 are met. Actual capacity is the subject of further work.

<sup>10</sup> The derivation of these figures is shown in Appendix B

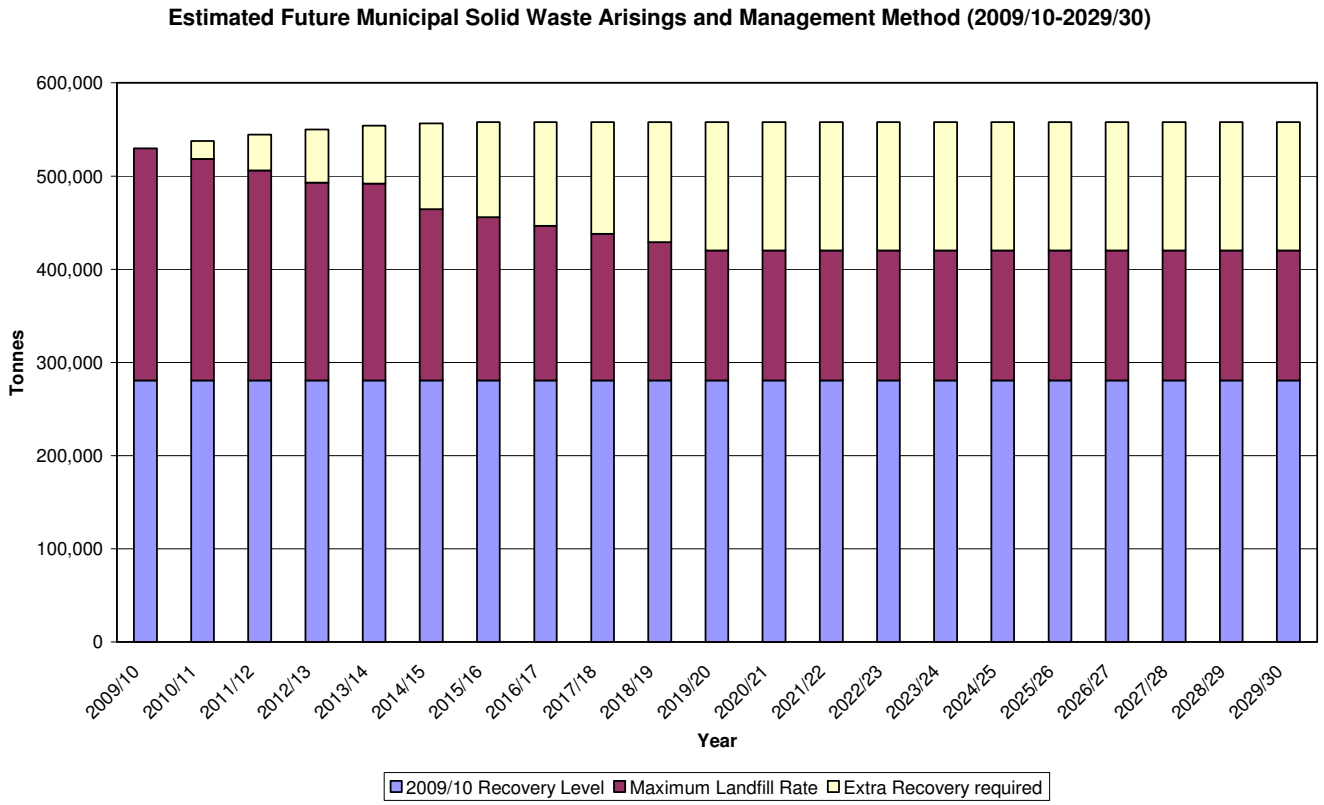
<sup>11</sup> From Figure 2A. For interest the LATS Allocations (Source: Derbyshire Joint Municipal Waste Management Strategy, July 2006, page 49) are provided in brackets. As they relate to only about 62% of the overall municipal waste stream it can be seen that they relate reasonably well to the figures to be used further in this report.

<sup>12</sup> From Figure 2B

<sup>13</sup> This figure has been calculated by taking the current MSW arisings (para. 2.02, also column two in Figure 2C above) and subtracting the maximum amount of MSW landfilled (Figure 2B) the figure left is considered to be the amount of MSW which is recovered.

<sup>14</sup> Waste Arisings – Landfill – Current Recovery = Additional Recovery.

## 2D Estimated Future Municipal Solid Waste Arisings and Management Method (2009/10 – 2029/30)



### **3. COMMERCIAL AND INDUSTRIAL WASTE**

#### ***Introduction***

- 3.01 Commercial and Industrial (C&I) waste is that produced by commercial premises including shops, warehouses, offices, entertainment and catering businesses (Commercial Waste), plus factories and industrial plants (Industrial Wastes). Commercial and industrial waste generally includes a proportion of special or hazardous wastes and some inert or semi-inert material<sup>15</sup>.
- 3.02 This section provides an estimate for the additional quantity of commercial and industrial waste that will require non-landfill management in the period 2009/10 to 2029/30.

#### ***Current Arisings***

- 3.03 The Environment Agency's Strategic Waste Management Information states that in 2002/03, Derbyshire's commercial waste arisings were 464,400 tonnes with industrial waste arisings at 1,058,000 totalling some 1,522,400 tonnes.

#### ***Future Arisings***

- 3.04 The Regional Waste Strategy<sup>16</sup> estimated that in the period 2002-06 commercial waste arisings would have increased at a rate of 2% per annum, and will increase at 1% per annum between 2007-15, with 0% growth from 2016 onwards. Industrial waste arisings over the period were expected to decline at the steady rate of 1% per annum. Consequently, the East Midlands Regional Plan March 2009<sup>17</sup> estimates that in 2009/10 Derbyshire's commercial and industrial waste will total some 1,496,000 tonnes.
- 3.05 Figure 3A shows the Regional Waste Strategy's predicted combined commercial and industrial waste arisings trend over the period 2009/10 to 2029/30. In 2019/20 Derbyshire is predicted to produce a total of around 1.43 million tonnes of

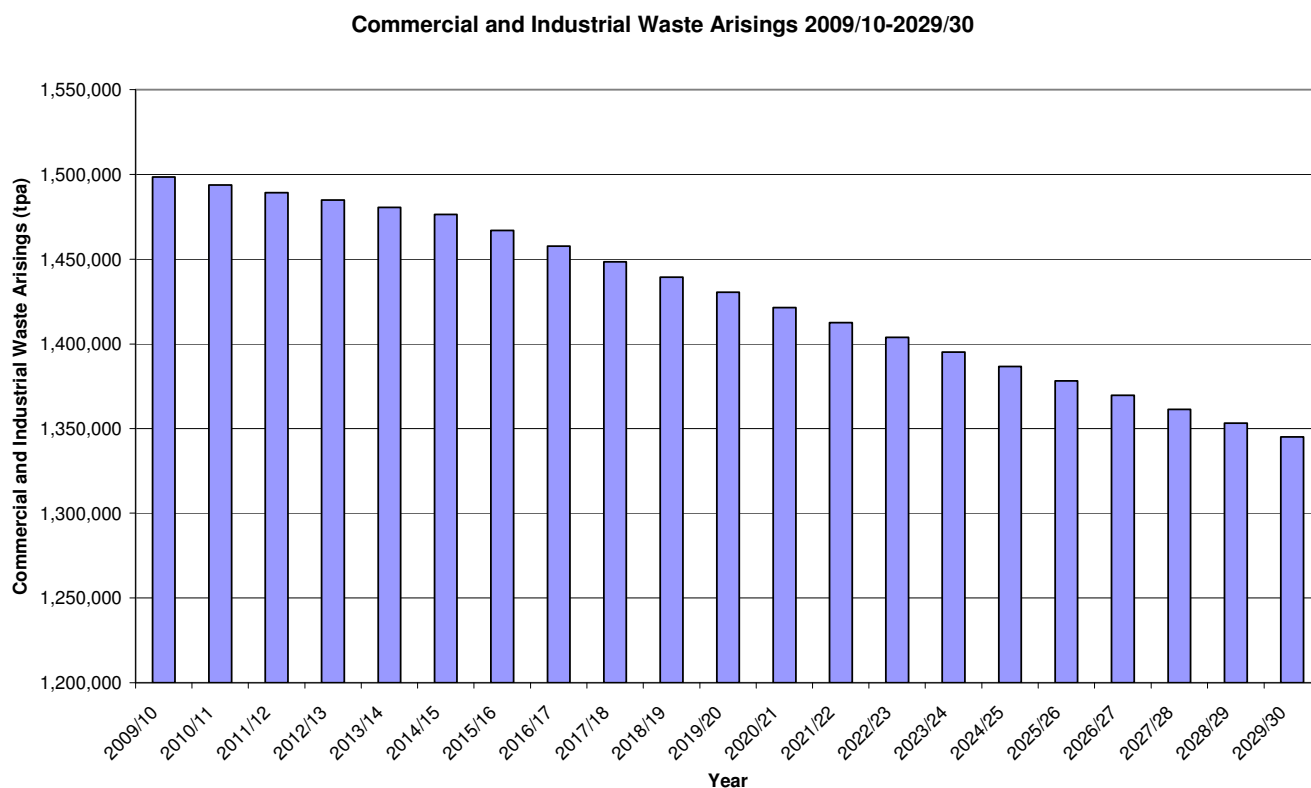
<sup>15</sup> EMRA, Regional Waste Strategy, January 2006, p23

<sup>16</sup> EMRA, Regional Waste Strategy, January 2006, p89

<sup>17</sup> East Midlands Regional Plan, March 2009, Appendix 4, p 172

commercial and industrial waste. These trends are assumed to continue forward to 2029/30 when annual C&I waste arisings are predicted to be 1.3 million tonnes.

### 3A Commercial and Industrial Waste Arisings 2009/10 – 2029/30



#### ***Changes in Waste Management Methods***

3.06 The Waste Strategy for England 2007<sup>18</sup> states that reductions in the amount of commercial and industrial waste sent to landfill will continue to be driven by the landfill tax and tighter requirements on landfill. On the basis of this, the Government expects that levels of commercial and industrial waste landfilled will fall by 20% by 2010 compared with 2004. Specific targets for the landfilling of commercial and industrial waste are expected soon. They are likely to be similar to those suggested in the preceding document to the Waste Strategy for England 2007; the Review of England’s Waste Management Strategy: A Consultation Document<sup>19</sup> (Figure 3B). Until updated targets are provided the commercial and industrial waste landfill figures referred to above as shown in 3B provide a usable longer term indicator of the direction which the Government intends commercial

<sup>18</sup> DEFRA, May 2007, p11

<sup>19</sup> DEFRA, February 2006

and industrial landfill levels to take. This report assumes that the 2020 percentage is carried forward to 2029/30.

### 3B National Landfill Targets for Commercial and Industrial Waste<sup>20</sup>.

Year	Landfilling as % of Total
2002	53
2010	37
2015	36
2020	35

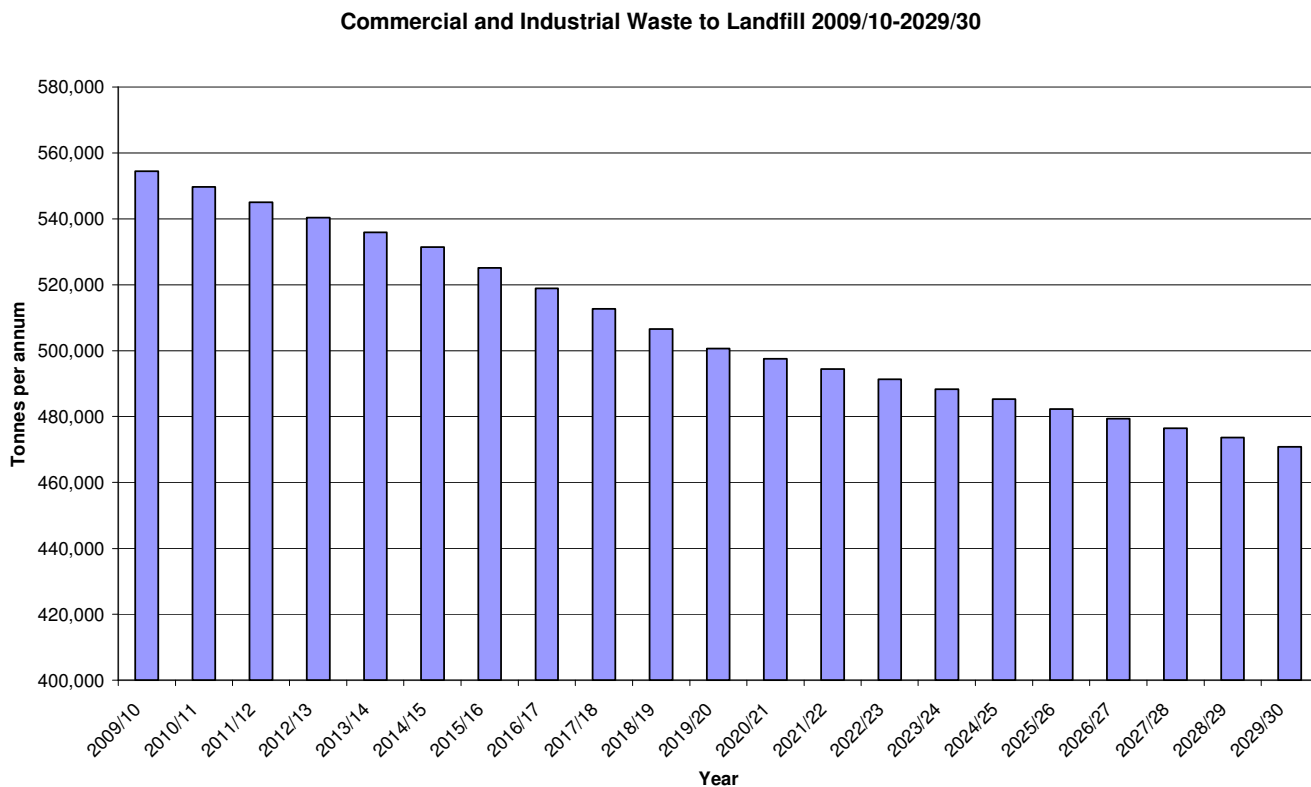
3.08 Figure 3C below shows the maximum amount of commercial and industrial waste which could be landfilled following these targets (assumes a straight line decrease from one target year to the next). In the year 2019/20 Derbyshire businesses will, assuming targets are met send to landfill approximately 54,000 tonnes less than at 2009/10. This figure will increase to 84,000<sup>21</sup> tonnes by 2029/30 if trends continue.

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<sup>20</sup> These targets may be harder to meet than the municipal waste targets as there are fewer levers to ensure that they are met. They do however signal the Government's intentions and represent the best available information on the future management of commercial and industrial waste.

<sup>21</sup> Post 2019/20 industrial waste arisings assumed to be -1% with landfill target of 35% remaining constant.

### 3C Commercial and Industrial Waste to Landfill 2009/10 – 2029/30



#### **Summary**

3.09 Figure 3D shows the total extra amount of commercial and industrial waste which will need managing over the period to 2029/30. As can be seen, by 2019/20 (due to decreasing arisings and assuming the provisional targets are met) there will be a surplus of about 14,330 tonnes of capacity for commercial and industrial waste increasing to 70,000 tpa by 2029/30.

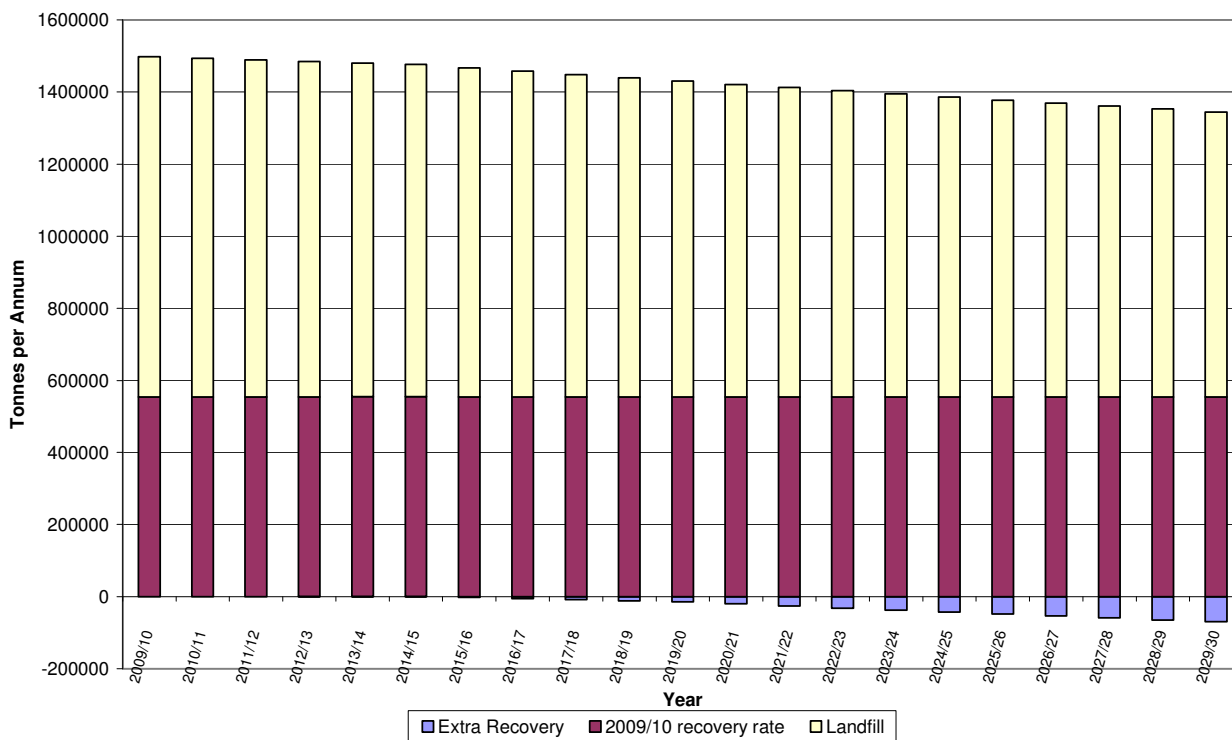
3D Commercial and Industrial Waste Arisings and Management 2009/10 – 2029/30  
(calculated as for MSW)

Year	Waste Arisings (t)	Landfill (t)	Current Recovery Capacity (t)	Additional Recovery (t)
2009/10	1,498,519	554,452	944,068*	0
2014/15	1,476,326	531,477		782
2019/20	1,430,365	500,628		-14,330
2029/30	1,345,092	470,782		-69,757

\* Current recovery capacity is the estimated capacity if diversion targets for 2009/10 are met. Actual capacity is the subject of further work.

3E Commercial and Industrial Waste Arisings and Management 2009/10 – 2029/30

Commercial and Industrial Waste Arisings and Management 2009/10-2029/30



## 4. CONSTRUCTION AND DEMOLITION WASTE

### *Introduction*

- 4.01 Construction and Demolition waste (CDEW) is that generated from construction and demolition activities, including the reclamation of contaminated land. It normally includes inert materials such as stone, concrete, brick and soil.
- 4.02 This section will provide an estimate of the additional quantity of construction and demolition waste that will require management in the period 2009/10 to 2029/30.

### *Current Arisings*

- 4.03 A recent survey<sup>22</sup> for the Department for Communities and Local Government estimates that, in 2004/5, construction and demolition waste arisings in Derbyshire ran to some 2,761,694<sup>23</sup> tonnes. The report does however warn, at paragraph 1.7, that whilst the national estimates, “appear reasonably robust, this is less true of the regional estimates, and progressively less true the more local the focus becomes, because the response rates were not high enough.” Therefore, “as far as the 2005 sub-regional estimates are concerned the report warns that they should not be relied on as anything other than a reasonable indication of arisings and recycling of CDEW, and should only be used with caution...”

### *Future Arisings*

- 4.04 The East Midlands Regional Waste Strategy<sup>24</sup> estimates that construction and demolition waste arisings will have grown at a rate of 2% between 2002-06, and will grow at 1% in the period 2007-15 and at 0% from 2016 onwards.
- 4.04 Figure 4A shows the predicted growth in construction and demolition waste arisings over the period 2009/10 to 2029/30. In 2029/30, Derbyshire is predicted to produce around 3.1million tonnes of construction and demolition waste. This

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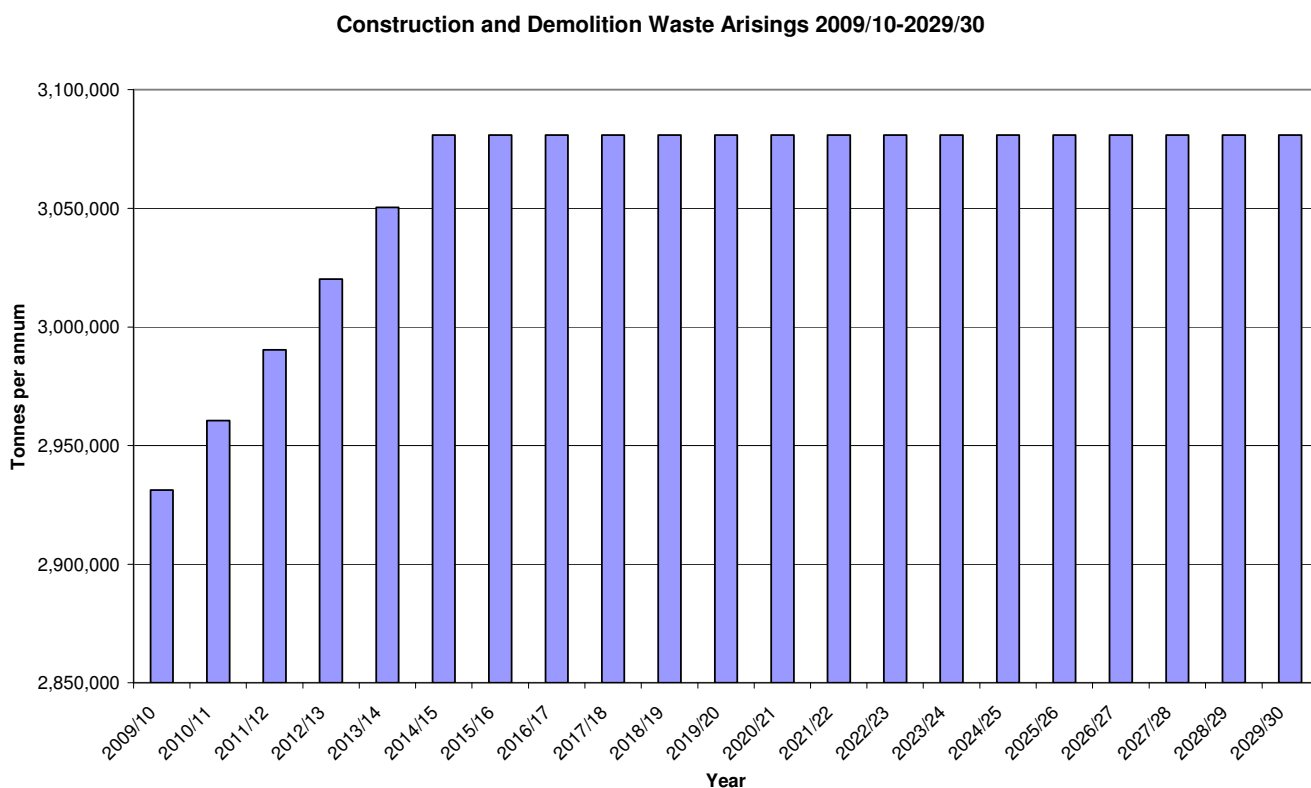
<sup>22</sup> Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005 Construction, Demolition and Excavation Waste

<sup>23</sup> Page 112 Table A11.14

<sup>24</sup> EMRA, January 2006, p89

represents an increase of about 200,000 tonnes per annum over the 2009/10 figures.

#### 4A Construction and Demolition Waste Arisings 2009/10 – 2029/30



#### ***Changes in Waste Management Methods***

4.06 At a national level, the Government have set a target<sup>25</sup> that by 2012 there should be a 50% reduction of construction, demolition and excavation (CD&E) waste sent to landfill compared to 2008. This 2012 target, agreed by the Strategic Forum for Construction, does not include aggregates used for, backfilling quarries, site restoration or legitimately spread on exempt sites. The proportion of waste managed by these methods are assumed to remain the same throughout the plan period.

#### ***Summary***

4.07 Figure 4B indicates that by 2029/30, an extra 225,000 tonnes per annum of construction and demolition waste will need recycling, either on temporary or permanent facilities whilst the tonnage disposed of by landfill will have reduced by

<sup>25</sup> Strategy for Sustainable Construction 2008, page 48

88,500 tonnes per annum. The figures assume that all of Derbyshire’s waste is managed within Derbyshire (see Chapter 7).

4B Construction and Demolition Waste Arisings and Management 2009/10–2029/30 (tonnes)

Year	Arisings	Recycled Aggregates and Soil	Reused on Landfills for Engineering/ Restoration	Recovered/ Spread on “Paragraph 9 <sup>26</sup> and 19” <sup>27</sup> Exempt Sites	Disposed of as Waste to Landfill
2009/10	2,931,306	2,359,701*	216,371*	48,7418*	307,787
2014/15	3,080,833	2,587,900	227,408	51,228	215,658
2019/20	3,080,833	2,587,900	227,408	51,228	215,658
2029/30	3,080,833	2,587,900	227,408	51,228	215,658

\* Current capacity is the estimated capacity if landfill diversion targets for 2009/10 are met. Actual capacity is the subject of further work.

<sup>26</sup> Paragraph 9 sites are registered exempt sites (exempt from EA permit requirements but not from planning permission) where exemption holders are permitted to spread up to 20,000m<sup>3</sup>/ha of soil, rock, ash, sludge, dredgings or C&D waste for land reclamation purposes or agricultural improvement.

<sup>27</sup> Paragraph 19 sites are registered exempt sites where exemption holders are permitted to store or use C&D waste, excavation waste, ash, clinker, wood or gypsum in connection with recreational, drainage or infrastructure projects, excluding land reclamation.

## 5. HAZARDOUS WASTE AND AGRICULTURAL WASTE

### *Introduction*

5.01 This chapter considers hazardous and agricultural waste.

### *Hazardous Waste*

5.02 Hazardous waste is material that poses the greatest risk to human health or the environment, including materials such as asbestos, oils, solvents and chemical wastes.

5.03 The East Midlands Regional Waste Strategy<sup>28</sup> states that hazardous waste arisings in 2002/03 in Derbyshire were 117,878, 44% of the regional total. Based on growth scenarios within the Strategy this figure would increase slightly in 2005/06 to 126,280<sup>29</sup> tonnes per annum and thereafter remain stable. More recent figures from the Environment Agency<sup>30</sup> indicate that this scenario is broadly correct; hazardous waste arisings amounting to 122,230 tonnes in Derbyshire for 2008. As hazardous waste arisings levels are expected to remain stable it is possible that the current levels of management provision to deal with it will continue unchanged.

5.04 It should be noted that total levels of deposits of hazardous waste in Derbyshire at all forms of waste management facility, including landfill were 221,839 tonnes in 2002/03<sup>31</sup> which suggests that Derbyshire is currently already managing an amount of waste greater than its equivalent level of production. Updated hazardous waste information for 2008<sup>32</sup> indicates a rise in this figure to 262,179 tonnes, an over provision of capacity by 139,949 tonnes.

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<sup>28</sup> EMRS, January 2006, p17

<sup>29</sup> EMRS, January 2006 p89 Environment Agency Update to the Strategic Waste Management Assessment, 2005

<sup>30</sup> EA Waste Statistics East Midlands Hazardous Waste 2008

<sup>31</sup> EMRS, January 2006, p89

<sup>32</sup> EA Waste Statistics East Midlands Hazardous Waste 2008

### ***Agricultural Waste***

- 5.05 This is waste material generated from agricultural premises; the vast majority of agricultural wastes are natural wastes such as animal slurry and manure. Only approximately 0.6% of agricultural waste arisings are 'commercial' type wastes (e.g. pesticide washings, plastics, paper, oils, glass etc).
- 5.06 This waste stream has only recently been classified as 'controlled' and so data is not complete. However, according to the Regional Waste Strategy<sup>33</sup>, agricultural waste arisings in 2002/03 in Derbyshire were 1,307,994 tonnes. The Regional Waste Strategy expected that agricultural waste arisings would increase at a rate of 2% per annum between 2002-06, at 1% in the period 2007-15 and at 0% thereafter<sup>34</sup>.
- 5.07 It is likely that less than 10,000 tonnes of agricultural waste will require off-farm management per annum. With very little growth in arisings over the plan period or changes in management methods expected, the quantity of agricultural waste arisings is not material to this needs assessment.

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<sup>33</sup> EMRA, January 2006, p17

<sup>34</sup> EMRA, January 2006, 89

## 6. NEED FOR ADDITIONAL NON-LANDFILL WASTE MANAGEMENT FACILITIES

### *Introduction*

6.01 This section will draw together the previous sections and give an indication of the likely amount of waste that, assuming the targets are met but not exceeded, will need managing at new or expanded non-landfill waste management facilities. Figure 6A below shows, the amount of additional waste that is estimated to need additional non-landfill management.

### 6A Waste Needing Additional Non-Landfill Management

	<b>Municipal Solid Waste (t)</b>	<b>Commercial and Industrial Waste (t)</b>	<b>Construction and Demolition Waste (t)</b>
2009/10	0*	0*	0*
2014/15	92,239	782	215,658
2019/20	137,814	-14,330	215,658
2029/30	137,814	-70,000	215,658

\* Figures assume that landfill diversion targets for 2009/10 are met.

### *Numbers of Facilities for MSW and C&I Waste*

6.02 This section will produce possible estimates of additional numbers of new non-landfill facilities required, depending on whether the facility provided to undertake the waste management is one that is small, medium or large (As defined in table 6B). In reality the likely actual pattern will be a mix of facility size. Figure 6B shows the throughput that each size of recovery facility could be expected to manage for the purpose of this exercise and Figure 6C displays the potential consequential numerical range of additional facilities that may be required in that year. The number of facilities will then depend on the size of the facilities, so for instance, in 2014/15 for MSW it is estimated that in terms of numbers of sites, the additional waste stream would need an additional 1 “large” facility or 5 “small” facilities to manage it.

6B Waste Management Facility Size and Throughput

	Small	Medium	Large	Very Large
Throughput (tpa)	20,000	50,000	100,000	200,000

6C Estimated Numbers of New Waste Management Facilities Required throughout the Plan Period

	Municipal Solid Waste	Commercial and Industrial Waste
Total by 2014/15	1 - 5	0
Total by 2019/20	1 - 7	0
Total by 2029/30	1 - 7	0

6.03 As Figure 6C shows, sites may need to be identified in the Plan for the treatment of municipal waste whilst in pure numerical terms existing capacity should be sufficient for commercial and industrial waste management.

6.04 However, the above calculation does not take into account other facilities (e.g. transfer stations/bulking up facilities/household waste recycling centres etc) that simply handle the waste and do not necessarily treat it that may be necessary. The Derbyshire Joint Municipal Waste Strategy 2006 states that 11 transfer stations and HWRCs will be required by 2020. More recently a new municipal waste contract is in the process of negotiation, to manage waste to 2026, which will result in the operation of 10 HWRCs and 4 transfer stations. However facilities may also still be needed for the handling of commercial and industrial waste. At present, it is not possible to put a figure on the scale of this need, which will often be locationally dependent, e.g. to integrate with one or more firm's operations.

***Numbers of Facilities for C&D Waste***

6.05 A specific number of facilities for the management of construction and demolition waste is difficult to ascertain as there are two main ways in which the additional construction and demolition waste identified in section four can be managed,

either in temporary or permanent facilities. Temporary facilities are outside the scope of this paper as they tend to be located on-site at demolition or construction sites. The split between temporary and permanent facilities is not known.

6.06 For the purpose of this exercise it is assumed that all the extra waste is managed at permanent facilities, on this basis an estimate for additional number of facilities is provided by Figure 6D below, depending on the scale of the facility.

6D Additional Waste Management Facilities Required for

	<b>Total by 2014/15</b>	<b>Total by 2019/20</b>	<b>Total by 2030/31</b>
Construction and Demolition Waste	1 - 7	1 - 7	1 - 7

## 7. WASTE IMPORTS AND EXPORTS

### *Introduction*

7.01 The previous sections do not take account of the balance of imports and exports of waste. For reasons of simplicity, no mention has yet been made of where the current waste management infrastructure is located. There has been an implicit assumption in this Paper that all the current waste management facilities that manage Derbyshire's waste are within Derbyshire. However we know that there are movements of waste across the County's borders. The Regional Plan<sup>35</sup> requires waste management capacity to be provided equal to the amount of waste generated and requiring management within the County. This section considers whether there is currently an imbalance and whether extra provision will need to be made to reduce Derbyshire's dependence on waste management facilities in other areas and meet the Regional Plan's policy requirement.

### *Waste Deposits at Licensed Facilities*

7.02 Information supplied by the Environment Agency gives an indication of the level of municipal solid waste and commercial and industrial waste deposited at licensed waste management facilities in Derbyshire.

7.03 In 2008, around 520,000<sup>36</sup> tonnes of municipal solid waste and commercial and industrial waste was recovered (i.e. non-landfill) within Derbyshire. Sections Two and Three above suggest that the quantity of municipal solid waste and commercial and industrial waste which will be generated in Derbyshire in 2009/10 and will need to go to recovery facilities will be around 1,220,000 tonnes. The implication of this is that in 2009/10 (and assuming recovery capacity is the same as in 2008) there will be a net export out of Derbyshire of around 700,000 tonnes (1,220,000 – 520,000) of municipal solid waste and commercial and industrial waste.

7.04 Since 2006/7 however a number of substantial new waste treatment facilities have received planning permission and been implemented in Derbyshire, which will

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<sup>35</sup> East Midlands Regional Plan, March 2009, Policy 38, page 86

<sup>36</sup> <http://www.environment-agency.gov.uk/static/documents/Research/EMInpCap08 - Revised.xls>

reduce the above figure quite substantially. Figure 7A provides an estimate of the new facilities and their capacity. The capacity for reduction in the net export of waste from Derbyshire amounts to some 318,300 tonnes per annum.

### ***Conclusion***

- 7.05 In order to rectify the apparent existing imbalance in municipal solid waste and commercial and industrial waste imports and exports to and from Derbyshire it would be necessary to provide an additional 381,700 (700,000 – 318,300) tonnes of treatment capacity for these waste streams in Derbyshire in addition to that described in Section Six. This amounts to an additional 2 - 19 waste management facilities due to the apparent export/import imbalance, dependent on the facility size (as in figure 6B).
- 7.06 Construction and demolition waste is more complicated as a high proportion of it is managed at exempt facilities and does not show up in Environment Agency Waste Data. Therefore, an export/import balance is assumed, which leads to no additional need for construction and demolition waste management facilities.

7A New Municipal and/or Commercial and Industrial Waste Treatment Facilities receiving permission since January 2006<sup>37</sup>

Treatment Facility Location	Type	Decision Date	Additional Capacity (tpa)
Furnace Hill, Clay Cross	Recycling	03/03/2006	20,000
Awsorth Pallets, Loscoe Road, Heanor	Recycling	07/06/2006	40,000
Ambergate, Ripley	Recycling	29/10/2006	25,000
Etwall Common, Etwall	Composting	21/11/2006	72,000
Griffon Road, Quarry Hill Industrial Estate, Ilkeston	Recycling	27/02/2007	7,500
The Annexe, Roberts Yard, Crompton Road, Ilkeston	Composting	14/06/2007	15,000
Quarry Hill Industrial Estate, Ilkeston	Recycling	27/07/2007	25,000
Pye Bridge Industrial Estate, Pye Bridge, Nr. Alfreton	Recycling	06/08/2007	75,000
Dunston Farm, Dunston Road, Chesterfield	Composting	25/09/2007	3,500
Chesterfield Recycling Centre, Broombank Park, Sheepbridge	Composting	11/02/2008	1,400
Erin Landfill Site Markham Lane Duckmanton (CW2/1107/158)	Recovery	12/05/2008	8,600
Meadow Brook Business Park, Long Eaton CW8/0408/13)	Recycling	14/07/2008	300
Unit 4, Trafalgar Park, Victory Road, Derby (06/08/008940	Recycling	06/08/2008	25,000
<b>Additional Recovery Capacity</b>			<b>318,300</b>

<sup>37</sup> From Derbyshire County Council and Derby City Council's website based lists of recent planning decisions and case officer input regarding implementation.

## 8. NEED FOR NON-HAZARDOUS WASTE LANDFILL VOIDSPACE

### *Introduction*

8.01 There are two main types of landfill site, non-hazardous (which can receive municipal waste and commercial and industrial waste) and inert (which can accept construction and demolition waste). This section will examine the possible need for additional, non-hazardous landfill capacity; the next section will look at inert landfill.

### *Non-Hazardous Landfill Sites in Derbyshire<sup>38</sup>*

8.02 Currently, there are two significant<sup>39</sup> licensed landfill sites in Derbyshire that can accept non-hazardous waste; they are listed below in figure 8A along with their estimated remaining capacity in March 2009.

#### 8A Non-Hazardous Waste Landfill Sites

Landfill Site	Estimated permitted capacity for the disposal of non-hazardous waste on 31 <sup>st</sup> March 2009
Arden Quarry, Birch Vale	≈ 2,400,000 tonnes <sup>40</sup>
Erin Void, Duckmanton	≈ 5,150,000 tonnes

8.03 The estimated capacities for Erin Void and Arden Quarry have been provided by the operators of the two sites after an allowance made in order to take account of the voidspace required for engineering works (e.g. cap and daily cover).

8.04 Figure 8B below shows the amount of municipal waste and commercial and industrial waste which, if the targets described in this Paper are met, will be landfilled in the period 2009/10 – 2029/30, Figures 8C and 8D below compare the total amount of non-hazardous landfill capacity with the total waste that would need to be landfilled 2009/10 – 2029/30, shown in 8B. As can be seen, if all the

<sup>38</sup> A conversion rate of 1 tonne to 1 m<sup>3</sup> has been assumed for all calculations within this section.

<sup>39</sup> i.e. with remaining capacity greater than 50,000 tonnes

<sup>40</sup> There is potential further capacity at Arden Quarry, which might come forward before 2020. However, no account has been taken of this potential capacity as further permissions would be required before it could be used.

waste was deposited in these voids in Derbyshire<sup>41</sup>, there would be a non-hazardous landfill capacity shortfall of around 6,611,164 tonnes by the end of 2029/30.

**8B Total Cumulative Non-Hazardous Waste Generation which could need to be Landfilled 2009/10 – 2029/30**

Municipal Solid Waste (t)	3,500,304
Commercial and Industrial Waste (t)	10,660,860 <sup>42</sup>
Total Non-Hazardous Waste to Landfill (t)	≈ 14,161,164

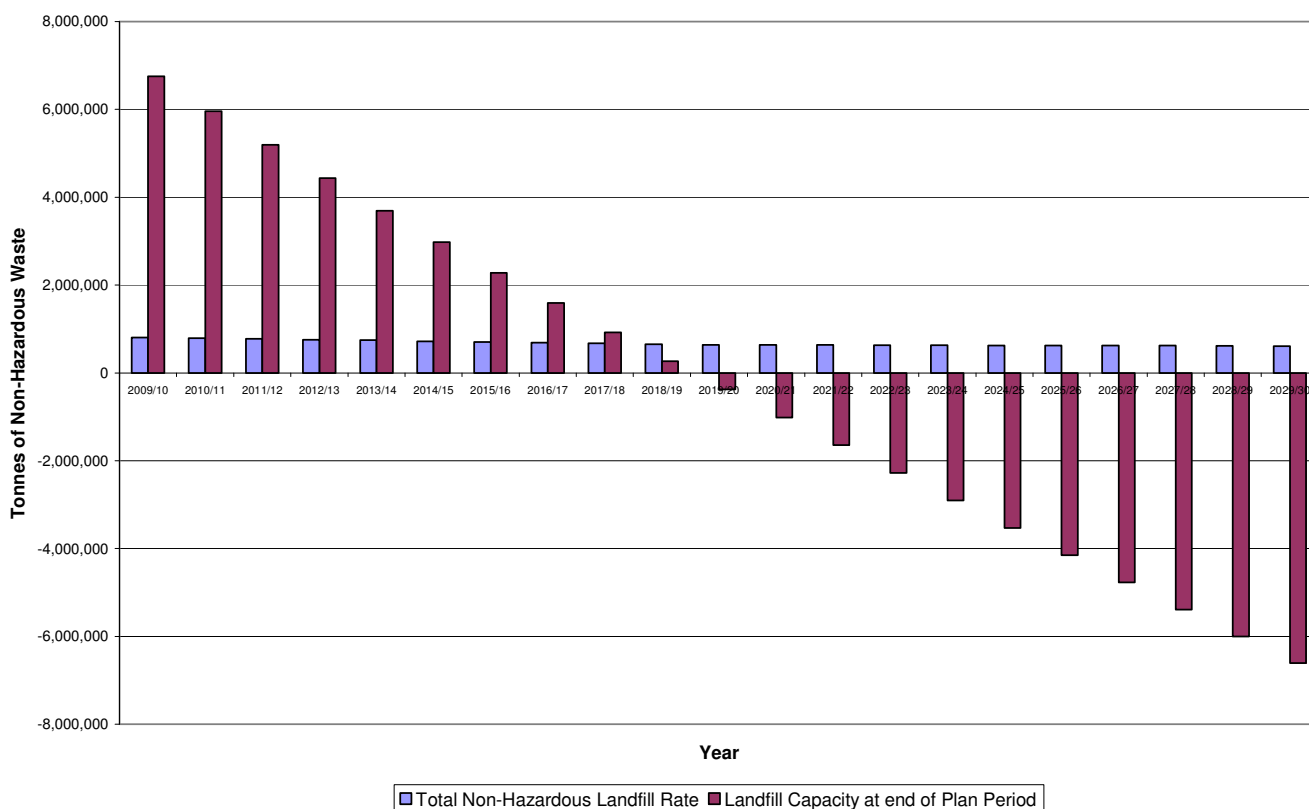
**8C Total Landfill Capacity and Cumulative Landfill Rate**

Landfill Capacity March 2009 (t)	≈ 7,550,000
Cumulative Amount of Waste to Landfill 2009/10 – 2029/30 (t)	≈ 14,161,164
Landfill Shortfall March 2029/30 (t)	≈ 6,611,164

<sup>41</sup> The calculations, based on information from the operators, assume that approximately 600,000 tonnes of waste per annum is deposited in these two sites. Arden Quarry's operators have indicated a maximum annual input of approximately 150,000 cubic metres per annum, and the operators of Erin Void have indicated a likely long term input of approximately 430,000 cubic metres per annum.

<sup>42</sup> Includes a small amount of waste that will be landfilled at restricted sites (approx 15,000 tpa equivalent to 300,000 over the plan period)

## 8D Remaining Non-Hazardous Landfill Capacity compared with Estimated Annual Landfill Deposits (tpa)



### ***Geographical Location of Non-Hazardous Landfill Sites***

8.05 Apart from information for municipal waste, the data on non-hazardous waste arisings and predicted growth in Derby and Derbyshire are not available for geographical sub-divisions of the plan area. Therefore, this chapter has not estimated landfill need geographically. However, it is apparent that the area of greatest population and employment, the City and southern Derbyshire, is not locally served by a major site within the county (Erin Landfill Site is about 40km (25 miles) distant by road from the city centre; Arden Quarry lies approximately 75km (47 miles) from the city centre). The New Albion site in Leicestershire, close to the southern county boundary, may be full by 2017.

### ***Summary***

8.06 Based on current planning permissions and on current government and regional targets for landfill and recovery, there is likely to be a cumulative shortfall in landfill capacity in Derbyshire, by 2029/30 of approximately 6,611,164 tonnes of non-

hazardous waste. In particular, there is no capacity in the City and Southern Derbyshire.

## 9. NEED FOR INERT WASTE LANDFILL VOIDSPACE

9.01 Using figures from Chapter 4 and Appendix B gives an estimate that between 2009/10 and 2029/30 Derbyshire will produce a total of around 4,651,622 tonnes of construction and demolition waste for landfill. There is currently only one major inert landfill site Slinter Top, in the north of the county, which has a licence to accept 75,000 tpa. (an application has recently been submitted to extend the period of disposal to 2020 which would provide disposal for approximately 825,000 tonnes of material). If this was the only available quarry for disposal there would be an annual shortage of approximately 125,000 tonnes of inert void space up to 2020 and approximately 200,000 up to 2030.

9.03 However within the county (especially in the southern areas owing to the presence of large sand and gravel quarries in the Trent Valley) there are quantities of voidspace which are considerably larger than the amount of inert material available, locally, to fill them. Shardlow Quarry alone, for instance, has been infilled at a rate of approximately 300,000 tpa in recent years and with restoration not due to be completed until 2022/23 this provides substantial additional inert void space. Forecast production of sand and gravel is estimated at 1.2 million tonnes<sup>43</sup> per annum in Derbyshire providing some potential inert void space of 1.8 cubic metres. In addition some inert waste would be required for engineering purposes at current non-hazardous landfill sites and at many construction sites. There have been a number of applications recently for golf courses using inert waste for landscaping purposes; a continuation of this type of development would also reduce the amount of inert void space required. Thus the amount of new landfill space required for C&D waste will be considerably lower than suggested above.

### **Summary**

9.04 In view of the uncertainty about the need for new, dedicated inert waste landfill sites, this paper cannot conclude that new sites are needed.

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<sup>43</sup> Based on average production rates 2003 - 2008

## 10. CONCLUSIONS

### *Introduction*

10.01 In order that a sufficient number and range of sites suitable for different waste management developments are identified in the Derby and Derbyshire areas there needs to be a reasonably good knowledge of existing and future waste arisings and management methods. Whilst the available data is deficient in some important respects it is the best that is available to us and it is adequate for the purpose of drawing some indicative conclusions to inform the preparation of the Plan.

### *Future Non-Landfill Waste Management Requirements*

10.02 On the basis of assuming that government and regional targets will be met, this assessment estimates that, in 2029/30, approximately 449,757 tonnes of municipal waste and commercial and industrial waste per annum will need to be managed by additional or expanded non-landfill facilities in the Derby and Derbyshire areas. This would be made up of around 68,057<sup>44</sup> tonnes per annum to account for increased arisings and changing management methods and a further 381,700<sup>45</sup> tonnes per annum to account for current import/export imbalance. In crude terms this could equate to between about two and twenty two facilities depending on facility throughput (e.g. if all the new waste arisings were treated in very large facilities of around 200,000 tonnes throughput, only two facilities would be required). In addition, between one and ten facilities may be required to recycle the increase in construction and demolition waste arisings expected. This provides a total of between three and thirty new non-landfill waste management facilities in the period to the end of March 2030. However, in practice, facilities do not always operate to capacity; and there is also a need for a geographical distribution across the Plan area.

10.03 There are two other factors which are unquantifiable which also need to be acknowledged. Firstly, some of the additional waste will be treated at existing sites

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<sup>44</sup> Figures from Appendix B (137,814 - 69,757)

<sup>45</sup> See paragraph 7.05 of this report

(either through utilising existing, unused capacity or through expansion) and secondly, there will be a need to provide for facilities which do not treat waste but rather bulk it up for onward travel to be treated elsewhere.

### ***Future Landfill Disposal Capacity Requirements***

10.04 The assessment suggests that, on the basis of meeting the targets for both recovery and landfill, Derbyshire as a whole will have a significant shortfall in non-hazardous (non-inert) landfill capacity by 2029/30, mainly affecting the Derby area. This capacity shortfall will need to be met through new sites or through a significant increase in the numbers of non-landfill waste management facilities over and above those needed to meet the recovery targets.

10.05 In terms of inert landfill capacity, the assessment suggests that there may also be a shortfall. However, there is no need to make new provision for inert landfill in the south of the county, where there is a long-term need to replace extracted sand and gravel. In the plan area as a whole, there are demands for inert waste in engineering and construction. Furthermore, there are uncertainties about the reliability of data on inert waste production and about future inert recycling rates. Therefore, it is not possible for this report to conclude that new sites for inert waste disposal need to be identified in the Plan.

### **Summary of need for new waste treatment and disposal capacity to meet recovery/landfill targets**

#### **Targets**

10.06 The table below sets out a summary of the national targets used in this Paper to provide the maximum amount of arisings that can be landfilled or conversely that need to be recycled, composted, or recovered.

Year	Landfilling as % of Total Arisings (Recovery figures in brackets)	
	Municipal Solid Waste	Commercial & Industrial Waste
2010	47 (53)	37 (63)
2015	33 (67)	36 (64)
2020	25 (75)	35 (65)
2030	25 (75)	35 (65)

For construction and demolition waste a target is used which requires, by 2012, a 50% reduction in the amount that can be landfilled compared to the 2008 level.

#### **Need for new non landfill facilities/capacity**

10.07 By 2029/30 we will need new facilities or capacity at existing facilities (not landfill) to treat an additional 449,757 tonnes of municipal solid waste and commercial and industrial waste arisings per year. That is 2-3 very large facilities (treating 200,000 tpa) or 22 small facilities (treating 20,000 tpa).

By 2029/30 we will need new facilities/capacity (not landfill) to treat an additional 200,000 tonnes of construction and demolition waste. That is 1 very large facility (treating 200,000 tpa or 10 small facilities (treating 20,000 tpa).

In total, therefore, over the plan period, we will need between 3-4 very large facilities or 32 small additional facilities.

#### **Need for new Landfill Sites/Capacity**

10.08 Over the plan period to 2029/30 we will need new sites /capacity additional to what is permitted in 2009/10 to landfill 6,611,164 tonnes of municipal solid waste and commercial and industrial waste (which is the equivalent to around 300,000 tonnes of annual treatment capacity).

Over the plan period to 2029/30 the limited data makes it difficult to estimate the number of additional facilities/capacity required to landfill inert waste. This paper therefore does not make any estimates on the amount of landfill required to dispose of inert waste.

## APPENDICES

## A. COMPARISON WITH EAST MIDLANDS REGIONAL PLAN MARCH 2009: APPENDIX 4 SUB-REGIONAL WASTE APPORTIONMENTS

### *Introduction*

- 1 The East Midlands Regional Plan<sup>46</sup> requires the provision of waste management capacity to be based on the apportionment data set out at Appendix 4 of that plan, subject to further research and analysis. The intention of this Appendix is to account for the differences between the Appendix 4 requirements to 2020 and the figures in this Needs Paper to 2020. This date was chosen because whilst the plan will need to make provision to 2030 many of the assumptions made at 2020 are assumed to be carried forward to 2030.

#### A1 Indicative capacity requirements for 2020 from EM Regional Plan<sup>47</sup>

Waste Type	Recycling/Composting	Landfill Diversion	Re-Use	Disposal	Total
MSW	326,000 (50%)	187,000 (29%)	-	138,000 (21%)	651,000
C&I	608,000 (41%)	-	-	840,000 (59%)	1,448,000
C&D	1,290,000 (49%)	-	999,000 (38%)	323,000 (12%)	2,611,000

#### A2 Indicative capacity requirements for Year 2019/2020 from this Needs Paper

Waste Type	Recycling/Composting	Landfill Diversion	Re-Use	Disposal	Total
MSW	418,523 (75%)		-	139,508 (25%)	558,031
C&I	891,834 (64%)		-	500,628 (36%)	1,392,462
C&D		2,866,536 (93%)		215,658 (7%)	3,080,833

<sup>46</sup> East Midlands Regional Plan March 2009, Policy 38, p86

<sup>47</sup> East Midlands Regional Plan, March 2009, Appendix 4, p172

### ***MSW Capacity Requirements***

- 4 In the Needs Paper, the figures for total arisings and growth scenario were provided by the respective Waste Management Sections of Derby City Council and Derbyshire County Council. The total arisings were 520,530 in 2008/9 and the growth scenario was a declining growth rate, starting at 1.75% reducing to 0% in 2015/16. This leads to total arisings of approximately 558,031 tonnes in 2019/20; the 0% growth rate is expected to be carried forward to 2029/30.
  
- 5 Figures used by the Regional Plan for total arisings and their growth scenario are presented in the Regional Waste Strategy<sup>48</sup>. Total waste arisings were taken from local authority figures for 2003/04 and the growth rate was taken from the Study to Determine the Current and Future Treatment Capacity of the East Midlands Region: Phase 2 Report<sup>49</sup>. The total arisings were 521,392<sup>50</sup> in 2002/03 and the growth scenario<sup>51</sup> was the medium growth scenario in the technical report of 3.6% growth until 2006, 1.7% until 2015 and zero waste growth from 2015 leading to a compound growth of 1.56%. This suggests waste arisings of approximately 651,000 tonnes in 2019/20.
  
6. In this instance, the figures presented in this paper for municipal solid waste current and future arisings are more reliable as firstly; the initial figures are based on more recent data (2008/9 compared to 2003/04) and secondly; the growth scenario used by this paper is the same as the one used by the Joint Municipal Waste Strategy which is what the Waste Management Section of Derby City Council and Derbyshire County Council will base their decisions on in securing municipal waste management contracts.
  
7. Regarding the eventual capacity apportionments for 2019/20, the figures in this paper are based solely on the maximum amount of waste that may be landfilled in that year, using the municipal waste recovery targets from Waste Strategy for

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<sup>48</sup> EMRA, January 2006

<sup>49</sup> Enviro, 2005

<sup>50</sup> EMRA, January 2006, p17

<sup>51</sup> EMRA, January 2006, p89

England 2007; in 2020 the target is 75% ( $0.75 \times 558,031 \approx 418,523$ ). Regional Waste Strategy figures are based on a recycling/composting target for municipal waste of 50% in 2020, taken from Waste Strategy 2000<sup>52</sup>. They also included some consideration of landfill allowance trading scheme diversion targets for biodegradable municipal waste which was felt to be an unnecessary distinction for the purposes of this paper.

### ***Commercial and Industrial Waste Capacity Requirements***

8. Whilst the initial arisings for both the preceding paper and the East Midlands Regional Plan come from a 2002/03 Environment Agency report and the same growth scenario has been applied in both, there appears to be some degree of discrepancy between the respective figures for commercial and industrial waste capacity requirements.
9. At first glance total arisings for commercial and industrial waste appear to be around 17,000 higher in the Regional Plan's projections than in the preceding paper (shown in Figures A1 and A2). However, the Regional Plan's figures also include hazardous waste arisings, whilst the preceding paper does not. The difference, taking account of hazardous waste is estimated to be around 130,000 tonnes.
10. These differences may be due to the fact that commercial and industrial waste arisings for the East Midlands as a whole include a large amount of waste arising from power station operations in Nottinghamshire. Applying the commercial and industrial waste growth scenarios directly to Derbyshire's commercial and industrial waste production, rather than amalgamating the total's for all waste planning authorities in the East Midlands and then splitting the arisings back down removes this problem. This is the approach taken in this Paper.
12. There is also a difference in apportionment between waste management methods in 2020 which needs to be explained. The recycling/composting rate for commercial and industrial waste in the Regional Plan is stated as being 41%

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<sup>52</sup> Department of the Environment, Transport and the Regions, 2000

whilst the preceding paper's rate is 65%. The Regional Plan's figure is taken from the 2005 Enviro Report which itself is based on the assumption that the region will meet the Waste Strategy 2000 targets for the diversion of commercial and industrial waste from landfill. This paper's figure is based on the Review of England's Waste Strategy target that landfill should represent at most 35% of the commercial and industrial waste stream's management by 2020, implying 65% should be managed through other methods. This paper's assumption is more appropriate as it is based on more recent government targets.

### ***Construction and Demolition Waste Capacity Requirements***

13. The figures in this paper are taken from the recent, 'Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005', released by the Department for Communities and Local Government in February 2007. This paper suggests a higher level of construction and demolition waste arisings than the earlier report, 'Survey of Arisings and Use of Construction, Demolition and Excavation Waste as Aggregate in England in 2003', released by the Office of the Deputy Prime Minister in 2003, on which the Regional plan,s figures are based.
14. It is appropriate to use the figures provided in the more recent DCLG report.

### ***Conclusion***

15. This paper's method for estimating the waste capacity requirements for Derbyshire in 2020 is more appropriate than the East Midland's Regional Plan as uses clearer information and is based on more recent government targets.

## B. WASTE ARISING AND MANAGEMENT FIGURES

### Municipal Waste Arisings and Management

	Municipal Waste Arisings [1]	Rate of Growth [2]	Recovery of Value Estimate [3]	Minimum Quantity of Waste Recovered [4]	Additional Recovery Capacity Required [5]	Maximum Quantity of Waste Landfilled [6]
	(tpa)	(%)	(%)	(tpa)	(tpa)	(tpa)
2007/08	531,773		37.82	201,141	n/a	330,633
2008/09	520,530	-2.1	39.70	206,662	n/a	313,868
2009/10	529,639	1.75	<b>53.00</b>	280,709	0	248,930
2010/11	537,584	1.50	55.80	299,972	19,263	237,612
2011/12	544,304	1.25	58.60	318,962	38,253	225,342
2012/13	549,747	1.00	61.40	337,545	56,836	212,202
2013/14	553,870	0.75	64.20	342,745	62,036	211,125
2014/15	556,639	0.50	<b>67.00</b>	372,948	92,239	183,691
2015/16	558,031	0.25	68.60	382,809	102,100	175,222
2016/17	558,031	0.00	70.20	392,240	111,531	165,791
2017/18	558,031	0.00	71.80	400,666	119,957	157,365
2018/19	558,031	0.00	73.40	409,595	128,886	148,436
2019/20	558,031	0.00	<b>75.00</b>	418,523	137,814	139,508
2020/21	558,031	0.00	75.00	418,523	137,814	139,508

[1] 2007/8 and 2008/9 figures from Table 1 Municipal waste arisings DEFRA Waste Data Flow as submitted by Derbyshire County Council and Derby City Council Waste Management Sections. Other arisings calculated by applying the growth rate (see [2] to the previous year's arisings

[2] Rate of growth taken from Derbyshire's Joint Municipal Waste Strategy, p51, Scenario 5

[3] 2007/08 and 2008/9 figures based on recovery of value figure from DEFRA Waste Data Flow Table 2: Municipal Waste Management. 2009/10, 2014/15 and 2019/20 figures are Government Targets for those years. Other year's figures calculated to ensure steady progress from one target year to next.

[4] 2007/8 and 2008/9 figures from DEFRA Waste Data Flow Table 2: Municipal Waste Management Other figures calculated by [1] \* [3]%

[5] Difference between each year's waste recovery figure and assumed 2009/10 recovery figure

[6] 2007/8 and 2008/9 figures from DEFRA Waste Data Flow Table 2: Municipal Waste Management. Other figures calculated by [1] – [4]

2021/22	558,031	0.00	75.00	418,523	137,814	139,508
2022/23	558,031	0.00	75.00	418,523	137,814	139,508
2023/24	558,031	0.00	75.00	418,523	137,814	139,508
2024/25	558,031	0.00	75.00	418,523	137,814	139,508
2025/26	558,031	0.00	75.00	418,523	137,814	139,508
2026/27	558,031	0.00	75.00	418,523	137,814	139,508
2027/28	558,031	0.00	75.00	418,523	137,814	139,508
2028/29	558,031	0.00	75.00	418,523	137,814	139,508
2029/30	558,031	0.00	75.00	418,523	137,814	139,508

## Commercial and Industrial Waste Arisings and Management

	Commercial Waste Arisings [1]	Industrial Waste Arisings [2]	Commercial Waste Arisings Rate of Growth [3]	Industrial Waste Arisings Rate of Growth [4]	Quantity of Waste to Landfill Target [5]	Total Commercial & Industrial Waste Arisings[6]	Maximum Quantity of Waste Landfilled [7]	Minimum Quantity of Waste Recovered [8]	Additional Recovery Capacity Required [9]
	(tpa)	(tpa)	(%)	(%)	(%)	(tpa)	(tpa)	(tpa)	(tpa)
2001/02					53.00				
2002/03	464,000	1,058,000			51.00	1,522,000			
2003/04	473,280	1,047,420	2.00	-1.00	49.00	1,520,700			
2004/05	482,746	1,036,946	2.00	-1.00	47.00	1,519,692			
2005/06	492,401	1,026,576	2.00	-1.00	45.00	1,518,977			
2006/07	497,325	1,016,311	1.00	-1.00	43.00	1,513,636			
2007/08	502,298	1,006,147	1.00	-1.00	41.00	1,508,745			
2008/09	507,321	996,086	1.00	-1.00	39.00	1,503,407			
2009/10	512,394	986,125	1.00	-1.00	<b>37.00</b>	1,498,519	554,452	944,067	0
2010/11	517,518	976,264	1.00	-1.00	36.80	1,493,782	549,712	944,070	3
2011/12	522,693	966,501	1.00	-1.00	36.60	1,489,194	545,045	944,149	82
2012/13	527,920	956,836	1.00	-1.00	36.40	1,484,756	540,451	944,305	238
2013/14	533,199	947,268	1.00	-1.00	36.20	1,480,467	535,929	944,538	471
2014/15	538,531	937,795	1.00	-1.00	<b>36.00</b>	1,476,326	531,477	944,849	782
2015/16	538,531	928,417	0.00	-1.00	35.80	1,466,948	525,168	941,780	-2,286
2016/17	538,531	919,133	0.00	-1.00	35.60	1,457,664	518,928	938,736	-5,331
2017/18	538,531	909,942	0.00	-1.00	35.40	1,448,473	512,759	935,714	-8,354
2018/19	538,531	900,842	0.00	-1.00	35.20	1,439,373	506,659	932,714	-11,353
2019/20	538,531	891,834	0.00	-1.00	<b>35.00</b>	1,430,365	500,628	929,737	-14,330

[1/2] 2002/03 figures from Environment Agency, Strategic Waste Management Information, 2003/04 to 2029/30 calculated by applying the growth rates set out below.

[3/4] Taken from EMRA, 2005, East Midlands Regional Waste Strategy, 2006, p89.

[5] 2002, 2010, 2015 and 2020 figures from DEFRA, 2006, Review of England's Waste Strategy: A Consultation Document, p24. Other figures assume a steady decrease between one target year and the next.

[6] Calculated by [1] + [2]

[7] Calculated by [1] + [2] \* [5]%

[8] Calculated by [1] + [2] - [6]

[9] Calculated as difference between each year's anticipated minimum quantity of waste to be recovered and the assumed 2009/10 recovery figure.

	Commercial Waste Arisings [1]	Industrial Waste Arisings [2]	Commercial Waste Arisings Rate of Growth [3]	Industrial Waste Arisings Rate of Growth [4]	Quantity of Waste to Landfill Target [5]	Total Commercial & Industrial Waste Arisings[6]	Maximum Quantity of Waste Landfilled [6]	Minimum Quantity of Waste Recovered [7]	Additional Recovery Capacity Required [8]
2020/21	538,531	882,916	0.00	-1.00	35.00	1,421,447	497,506	923,941	-20,126
2021/22	538,531	874,087	0.00	-1.00	35.00	1,412,618	494,416	918,202	-25,865
2022/23	538,531	865,346	0.00	-1.00	35.00	1,403,877	491,357	912,520	-31,547
2023/24	538,531	856,693	0.00	-1.00	35.00	1,395,224	488,328	906,896	-37,171
2024/25	538,531	848,126	0.00	-1.00	35.00	1,386,657	485,330	901,327	-42,740
2025/26	538,531	839,645	0.00	-1.00	35.00	1,378,176	482,362	895,814	-48,253
2026/27	538,531	831,249	0.00	-1.00	35.00	1,369,780	479,423	890,357	-53,710
2027/28	538,531	822,937	0.00	-1.00	35.00	1,361,468	476,514	884,954	-59,113
2028/29	538,531	814,708	0.00	-1.00	35.00	1,353,239	473,634	879,605	-64,462
2029/30	538,531	806,561	0.00	-1.00	35.00	1,345,092	470,782	874,310	-69,757

## Construction and Demolition Waste Arisings and Management

	Construction and Demolition Waste Arisings [1]	Rate of Growth [2]	Recycled Aggregates and Soil [3]	Reused on Landfills for Engineering/Restoration [4]	Recovered/Spread on "Paragraph 9 and 19" Exempt Sites [5]	Disposed of as Waste to Landfill [6]
	(tpa)	(%)	(tpa)	(tpa)	(tpa)	(tpa)
2001/02						
2002/03						
2003/04						
2004/05	2,761,694		2,128,494	203,851	45,921	383,429
2005/06	2,816,928	2.00	2,171,064	207,928	46,839	391,098
2006/07	2,845,097	1.00	2,192,775	210,007	47,308	395,009
2007/08	2,873,548	1.00	2,212,632	212,107	47,781	398,959
2008/09	2,902,284	1.00	2,285,548	214,228	48,259	355,530
2009/10	2,931,306	1.00	2,359,701	216,371	48,741	307,787
2010/11	2,960,620	1.00	2,435,110	218,534	49,229	259,054
2011/12	2,990,226	1.00	2,511,790	220,720	49,721	209,316
2012/13	3,020,128	1.00	2,536,908	222,927	50,218	211,409
2013/14	3,050,329	1.00	2,562,276	225,156	50,720	213,523
2014/15	3,080,833	1.00	2,587,900	227,408	51,228	215,658
2015/16	3,080,833	0.00	2,587,900	227,408	51,228	215,658
2016/17	3,080,833	0.00	2,587,900	227,408	51,228	215,658
2017/18	3,080,833	0.00	2,587,900	227,408	51,228	215,658
2018/19	3,080,833	0.00	2,587,900	227,408	51,228	215,658
2019/20	3,080,833	0.00	2,587,900	227,408	51,228	215,658

[1] 2004/05 figure from CLG, 2007, *Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005: Construction, Demolition and Excavation Waste*, p112. 2005/06 to 2030/31 figures calculated by applying the growth rates set out below.

[2] Taken from EMRA, 2005, *East Midlands Regional Waste Strategy*, p89

[3/4/5/6] 2004/05 figure from CLG document as quoted above, 2007, p112.

[4]&[5] 2005/06 to 2030/31 figures assume same proportion of total arisings managed in each category.

[3] & [6] From 2008 figs revised to achieve target set in Sustainable Construction Strategy June 2008 which by 2012, seeks a 50% reduction of construction, demolition and excavation waste to landfill compared to 2008

2020/21	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2021/22	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2022/23	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2023/24	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2024/25	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2025/26	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2026/27	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2027/28	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2028/29	3,080,833	0.00	2,587,900	227, 408	51,228	215,658
2029/30	3,080,833	0.00	2,587,900	227, 408	51,228	215,658

### c. Derbyshire Landfill Sites: inputs and annual capacity based on EA RATS data 2007

Operator	Site Location	Input te 2007	Annual Capacity te 2007	Landfill Type
Viridor Ltd	Erin Landfill, Markham Lane, Chesterfield	337,000	430,000	Non Hazardous (SNRHW) LF
P Casey Enviro Ltd	Arden Quarry, Birch Vale, Hayfield	51,000	75,000	Non Hazardous LF
William Lee Ltd	William Lee Landfill Site, Callywhite Lane, Dronfield	8,000	10,300	Restricted LF
Acetate Products Ltd	Acordis Acetate Chemicals Landfill, Megaloughton Lane, Derby	0	25,000	Restricted LF
St Gobain Pipelines plc	Staveley Works, Hollingwood, Chesterfield	0	25,000	Restricted LF
Aggregate Industries UK	Aggregate Industries, Hulland Ward	0	25,000	Restricted LF
St Gobain Pipelines plc	Grove Farm Tip, Stanton by dale, Ilkeston	8,000	88,000	Restricted LF
Hanson	Shardlow Quarry	354,000	400,000	Inert LF
Lafarge	Swarkestone Quarry	0	150,000	Inert LF
Slinter Mining Co	Slinter Top Quarry	55,000	75,000	Inert LF

## **D. SOURCES OF INFORMATION**

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