BIRMINGHAM CITY COUNCIL WASTE CAPACITY STUDY BRIEFING NOTE

1. INTRODUCTION

Birmingham City Council is in the process of producing a Core Strategy which needs to be underpinned by a robust evidence base. A fundamental part of the evidence base for waste management is establishing the need and capacity for waste management facilities, which is a complex process that must be based on the best available information.

There are a number of elements that influence the capacity need within an area including:

– The arisings of different waste streams (including municipal, commercial and industrial, construction, demolition and excavation and hazardous);

– The potential growth in these waste streams which will be affected by planned growth within an area but also the effects of waste prevention and minimisation, reuse and resource efficiency;

– The type, number and capacity of existing facilities, including those facilities which are not required to hold an environmental permit but play an integral role in the waste management infrastructure;

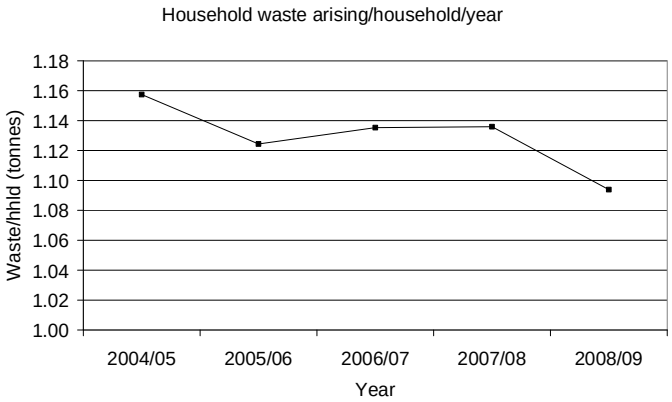
– The demand for recycled materials which can drive the need for new facilities, this is of particular interest in Birmingham in terms of utilising secondary and recycled aggregate in supporting the construction and future growth in the city.

The capacity assessment study seeks to provide the technical evidence base to allow informed discussions on the Core Strategy Preferred Option. In order to inform discussion at the Consultation workshop on the 22nd October 2009, this briefing note has been prepared to provide some background information and details of the assumptions associated with the capacity study work and to provide an indication of some of the questions that will be discussed at the workshop. Further more detailed information is available in the draft Birmingham Waste Capacity report, which will be available at http://www.birmingham.gov.uk/wastestudy on the 19th October. More detailed data will also be provided at the workshop in order to inform group discussions.

2. WASTE ARISINGS

2.1. Municipal Waste Arisings

In 2008/09, approximately 544,000 tonnes of municipal waste was produced in Birmingham. Over the last five years there has been a decrease in the amount of household waste generated per household, which has contributed to a reduction in the overall municipal waste arisings.



In order to predict future municipal waste arisings up to 2025/26, reference was made to the three different options for housing growth in Birmingham being considered in the development of the City Council's Core Strategy and the additional household growth option recommended by the panel for the Regional Spatial Strategy (RSS), as shown in Table 1[1].

1 Birmingham City Council – The Birmingham Plan Core Strategy Issues and Options (September 2008).

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Table 1. Options for housing growth being considered in Birmingham

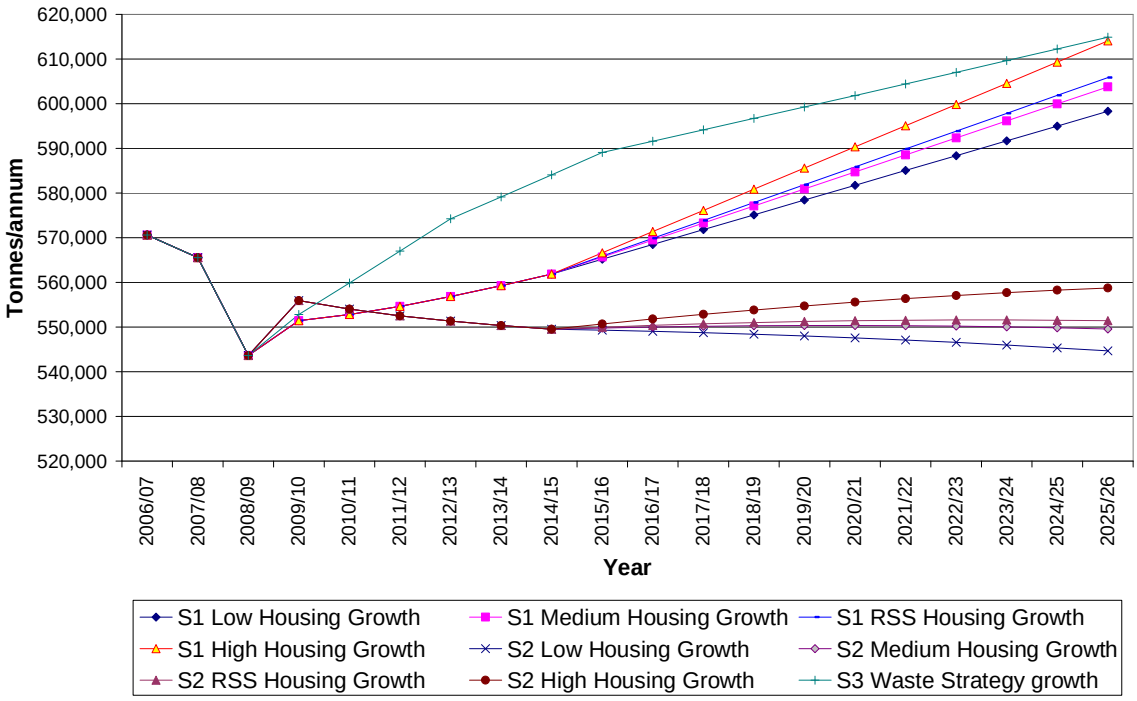
Option	Description	Proposed additional households up to 2026
1 (a)	No change to current policy approach & no change to green belt boundary	50,000
2 (b)	Higher levels of housing growth than minimum RSS figure but without any physical expansion of built up area of the city/ building on the green belt.	55,600
(c)	*Panel recommended figure for RSS*	*57,500*
3 (d)	Higher level of housing growth than Option 2, partly accommodated through extension into the green belt areas.	65,000

Three scenarios of how waste arisings per household may change in the future were generated, including:

- Scenario 1 - No change in waste arising/household/year from 2008/09 levels with non-household waste levels remain constant;
- Scenario 2 - Variation over time in level of waste arising/household/year based on the historical trend with non household waste levels remain constant; and
- Scenario 3 - Levels of household waste growth as per targets in Birmingham City Council's Municipal Waste Management Strategy (which is based on anticipated household growth) and with non household levels remain constant.

Based on these assumptions municipal waste is predicted to increase from 543,600 tonnes in 2008/09 to between **544,700 - 614,900 tonnes/annum (scenario dependent) by 2025/26** which represents an increase in municipal waste arisings of between 0.2 - 14% over the period, Figure 1.

Figure 1. Municipal Waste Growth Projections (2006/07- 2025/26) all scenarios



2.2. Commercial & Industrial Waste Arisings

In 2006/07, it was estimated that 967,700 tonnes of Commercial and Industrial (C&I) waste arose in Birmingham[2]. Table 2 provides a breakdown of waste arising by Standard Industry Classification (SIC) and shows that over half of the C&I waste arose from the 'Retail & wholesale' and the 'Other Services' sectors. The 'Other Services' sector, which includes waste from the hotel and catering industry as well as travel agents, estate agents etc, produced approximately a third of the Birmingham's C&I waste.

Table 2. Breakdown of C&I arisings in 2006/07 by SIC[2]

SIC Sector	Tonnes	% of total
Food, drink & tobacco	32,482	3.4%
Textiles/ wood/ paper/ publishing	33,687	3.5%
Power & Utilities	3,407	0.4%
Chemical/ non-metallic minerals	76,446	7.9%
Metal manufacturing	109,134	11.3%
Machinery & equipment (other manufacturing)	82,986	8.6%
Retail & wholesale	227,899	23.6%
Other services	316,378	32.7%
Public sector	85,263	8.8%
Total	**967,681**	**100%**

Two scenarios were considered when forecasting future C&I arisings:

– Scenario 1: The data on waste per employee in 2006/07 was combined with annual employment data by sector in the Local Economic Forecasting Model (LEFM).

– Scenario 2: Due to the current forecasts in the LEFM being linked the current recession, a second scenario taking the more optimistic employment forecasts used in the Regional Spatial Strategy (RSS) was also considered.

Based on information on employee data taken from the LEFM (Scenario 1), C&I arisings are predicted to decrease from 2006/07 levels by nearly 12% to 853,000 tonnes per annum by 2025/26, with the greatest decreases in waste arising being seen in the manufacturing sectors. The only sectors seeing an increase in employment and therefore the levels of waste generated is office services and the public sector.

By contrast, taking employment forecasts used in the RSS which were predicted before the recession, C&I arisings are estimated to increase from 2006/07 levels by nearly 15% to 1.1 million tonnes per annum by 2025/26.

2 ADAS (April 2009), Study into Commercial and Industrial Waste Arisings. Report for the East of England Regional Assembly

2.3. Construction, Demolition & Excavation Waste Arisings

In 2006/07, it was estimated that over 1.65 million tonnes of construction, demolition and excavation (CD&E) waste arose in Birmingham[3].

In order to predict future waste arisings for CD&E waste, two scenarios were considered:

– Scenario 1: was taken from a previous West Midlands study in 2004[3] which predicted future arisings based on information in the 2003 Office of the Deputy Prime Minister (now Communities and Local Government – CLG) report[4] and used a disaggregation index based on RPG policy on existing and future housing development rates.

– Scenario 2: due to the current economic downturn, a second growth scenario was considered for CD&E arisings based on current market news and information, as shown in Table 3.

Table 3. Growth Rate Assumptions used for CD&E arising projections (Scenario 2)

Year	Growth Rate assumptions
2003-08	8% increase
2008/09	9% decrease
2009/10	4% decrease
2010/11	Level
2012/13	equal 2003 levels which are 8% lower than 2008
2013-20	0.5% growth

The construction industry is experiencing a sharp decline in activity at the current time and recovery is expected to be slow. By 2026, CD&E waste generated in Birmingham is projected to be in the range of 1.5 – 1.7 million tonnes per annum, as shown in Table 4. Based on Scenario 1 this is a estimated 3% increase in CD&E arisings on 2006/7 levels by 2025/26. However, Scenario 2 represents a 7% reduction by 2026 compared to levels of construction activity and associated levels of waste in 2006/07.

Table 4. CD&E waste arising projection (based on Scenarios)

Waste Generation (tonnes)	2006/07	2009/10	2014/15	2019/20	2025/26
Scenario 1	1,655,700	1,727,500	1,712,200	1,712,200	1,712,200
Scenario 2		1,516,800	1,451,500	1,488,100	1,495,500

2.4. Hazardous Waste Arisings

Hazardous waste is waste that contains hazardous properties that may be harmful to human health or the environment. Hazardous waste is generated by a range of industry sectors and includes substances such as acids, alkalis, oils, solvents and batteries. In 2006/07, approximately 64,000 tonnes of hazardous waste arose in Birmingham. A breakdown of waste by European Waste Catalogue (EWC) chapter heading is provided in Table 5.

3 Shropshire County Council (2004), West Midlands Waste Facilities Phase 2: Future Capacity Requirements. Report for West Midlands Regional Assembly
4 ODPM (October 2004), Survey of Arisings and Use of Construction, Demolition and Excavation Waste in England 2003.

Table 5. Breakdown of Hazardous Waste Arisings 2007

EWC Chapter Headings	2007 ('000s tonnes)
01: Mining and Minerals	<0.1
02: Agricultural and Food Production	<0.1
03: Wood and Paper Production	-
04: Leather and Textile Production	-
05: Petrol, Gas and Coal Refining/Treatment	0.2
06: Inorganic Chemical Processes	0.6
07: Organic Chemical Processes	0.3
08: MFSU Paints, Varnish, Adhesive and Inks	1.1
09: Photographic Industry	0.2
10: Thermal Process Waste (inorganic)	1.5
11: Metal Treatment and Coating Processes	4.9
12: Shaping/Treatment of Metals and Plastics	3.8
13: Oil and Oil/Water Mixtures	10.4
14: Solvents	0.2
15: Packaging, Cloths, Filter Materials	0.8
16: Not Otherwise Specified	4.5
17: CD&E Waste and Asbestos	17.0
18: Healthcare	5.0
19: Waste/Water Treatment and Water Industry	10.8
20: Municipal and Similar Commercial Wastes	2.7
99: Unclassified	-
Total	**64.0**

In 2005, the definition changed from special to hazardous waste and there were certain wastes streams which significantly increased as a result of this change (e.g. Chapter 18: Healthcare and Chapter 20: Municipal and Similar Commercial Wastes). Many of the other waste streams have remained relatively static since the change in definition. However the current economic climate is likely to have an impact on the production of hazardous waste in the short term, as the down turn in production and the reduced construction activity will affect arisings. The implications for the estimated future arisings are discussed in the Waste Capacity Report. Based on this analysis, it is estimated that the annual hazardous waste arising in the future will be in the range 49,000 to 72,000 tonnes.

2.5. Workshop Questions on Waste Arising

– Do you agree with the range of growth scenarios considered for each of the waste streams?

– Do you have any suggestions for additional growth scenarios for the individual waste streams that should be considered?

3. ASSESSMENT OF EXISTING WASTE MANAGEMENT FACILITIES

3.1. Assessment of existing permitted waste facilities

In order to assess the number and capacity of existing waste facilities within Birmingham, data was obtained from the Environment Agency on permitted facilities operating within the Birmingham City Council boundary. The following information was requested:

– location of existing waste management facilities, including post code;

– type of facility e.g. transfer station; and

– permitted capacity (which is provided in bands, e.g. 25,000 to 74,999 tonnes) and actual capacity throughput.

The data received from the Environment Agency was assessed and any non-operational sites removed from the list. 106 permitted waste facilities are recorded as being operational in Birmingham. The majority of facilities are either:

– A11: Household, Commercial and Industrial Waste Transfer Stations – 36 facilities; or;

– A19a: End of Life Vehicle Facilities – 31 facilities.

The tonnage of waste received at operational sites was analysed based on waste returns made to the Environment Agency for 2007[5].

An assessment was also undertaken of the tonnage facilities were permitted to take on an annual basis in order that a comparison could be made of actual throughput against permitted capacity.

Based on 2007 waste returns to the Environment Agency, it is estimated that 2.3 million tonnes of waste was managed (the waste may or may nor arise in Birmingham) at permitted waste facilities in Birmingham. When comparing this to the permitted capacity of 3.4 million tonnes, this would infer theoretically only 67% of available permitted capacity is being utilised. However, realistically some facilities may not have the infrastructure to operate at the maximum tonnage of their permitted tonnage band.

3.2. Assessment of exempt waste uses

In addition to obtaining data on permitted waste facilities within Birmingham, data was also requested from the Environment Agency on facilities operating under an exemption from environmental permitting.

To identify the actual capacity available at exempt facilities the Environment Agency Exemption data needed significant analysis to identify the capacity which is available for the management of waste produced in Birmingham. The raw data has 570 individual exempt activities listed which reduced to 51 sites through the analysis.[6]

The estimated treatment/recovery capacity available at the exempt facilities was assessed based on the activity undertaken under the exemptions. Based on the assumptions made for the different activities, it is estimated that there is approximately 1.7 million tonnes of capacity at exempt facilities within Birmingham. It is likely that the actual capacity at these facilities may be lower than this estimate due to the nature of exemptions. In particular, Paragraph 11 with 17 which relates to the baling, sorting and storage of waste for recovery, an assumption of 3,000 tonnes per week has been made for a number of these facilities, however due to the physical size of the facility or due to stockpiling the actual throughput may be lower.

5 Environment Agency (2007), Waste Data Interrogator
6 Further information on how the exemption data was cleansed is available in the Birmingham Waste Capacity draft report

3.3. Percentage of Birmingham's waste handled in Birmingham

In order to understand the percentage of waste arising in Birmingham which is handled in Birmingham, analysis was carried out on information included in the Environment Agency 2007 returns on the origin of waste.

It should be noted that this exercise was carried out to provide a broad indication of the origin and destination of Birmingham's waste and by no means will account for all waste arising in or destined for Birmingham's waste facilities for the following reasons:

– Data analysed only includes returns made from permitted facilities and does not include waste handled at exempt facilities;
– Some waste facilities return information as 'not codeable' therefore the origin of the waste is not known;
– Data is not always broken down to the Local Authority level and is coded at the 'West Midlands' level.

3.3.1. Waste originating from Birmingham

The analysis carried out indicates that 58% of waste originating from Birmingham is handled at waste facilities within Birmingham and 87% of waste from Birmingham remains within the West Midlands region. The remaining 13% of waste is received by other regions in England and Wales.

3.3.2. Waste Handled at facilities in Birmingham

Information from the Environment Agency waste interrogator was also analysed to establish where waste handled at facilities in Birmingham arises from. It is estimated that 28% of capacity at waste facilities in Birmingham is utilised with waste arising from Birmingham. However, this figure may be much higher based on the fact that the origin of 35% of waste entering facilities in Birmingham was 'not codeable'.

3.4. Workshop Questions on Existing waste treatment

Detailed information of the assumptions associated with facility capacity and throughput will be provided at the workshop (or can be viewed prior to the day in the draft study report) with the aim of exploring the following questions:

– Do you have any views on assumptions regarding exemption capacity throughput for different exempt activities/paragraphs?
– Do you have any opinion on potential capacity at permitted facilities?

4. FUTURE WASTE TREATMENT REQUIREMENTS

In order to assess the need for waste facilities in the future, an assessment for each of the key waste streams was made in terms of recycling and recovery targets, in line with national and regional waste policy and the associated waste capacity needs.

4.1. Municipal Waste

The key targets for MSW relate to diversion of biodegradable waste from landfill to meet Landfill Allowance Trading Scheme (LATS). Waste Strategy 2007 (WS2007) has also set recycling & recovery targets for household and municipal waste.

As the majority of Birmingham's residual municipal waste goes to Energy from Waste (EfW) facility, recovery targets in WS2007 for municipal waste up to 2020 have already been met[7]. Therefore the focus for future waste capacity need is on increasing levels of

7 WS 2007 recovery targets up to 2020 have already been met in Birmingham. Assumes current levels of recycling are maintained as a minimum, EfW is still available to treat residual waste and waste grows as expected.

recycling and composting achieved, reducing levels of waste sent to landfill and ensuring there is capacity to treat the waste.

The estimated future waste treatment capacity requirement to handle Birmingham's municipal waste is summarised in Table 6.

Table 6. Future waste treatment requirements municipal waste

	2007/08 (actual)	2014/15	2019/20	2025/26
Tonnage MSW				
Minimum	577,602	549,500	548,000	544,700
Maximum		584,100	599,300	614,900
Minimum - Recycling	144,736	155,800	182,700	214,200
Maximum - Recycling		253,700	290,500	298,400
Minimum - landfill	107,699	82,400	54,800	54,500
Maximum - landfill		116,800	119,900	123,000
Minimum - EfW	325,167	178,900	137,600	123,300
Maximum - EfW		345,900	361,700	346,200

4.2. Commercial & Industrial Waste

In order to look at future waste treatment requirements for C&I waste in Birmingham, C&I arisings were analysed against the breakdown of Substance Oriented Classification (SOC) codes. The split of SOC codes in Birmingham were similar to those C&I waste types identified in future waste treatment scenarios for C&I waste in WS2007. Therefore, reference was made to a future treatment 'Scenario 5 in WS2007[8] , and the percentage split of different treatment routes for key years applied for C&I waste in Birmingham. An indication of the range of C&I tonnages and method of treatment is provided in Table 7.

Table 7. Future waste treatment requirements C&I waste[8]

Method of management	2014/15	2019/20	2025/26
Minimum Total Arising	880,300	867,500	853,000
Maximum Total Arising	1,028,500	1,066,500	1,112,000
Minimum reuse	79,200	69,400	68,200
Maximum reuse	92,600	85,300	89,000
Minimum recycling	308,100	321,000	315,600
Maximum recycling	462,800	501,200	522,600
Minimum thermal	52,800	52,000	51,200
Maximum thermal	61,700	64,000	66,700
Minimum treatment	61,600	60,700	59,700
Maximum treatment	72,000	74,700	77,800
Minimum landfill	360,900	355,700	349,700
Maximum landfill	524,500	543,900	567,100
* totals add up to more than 100% due to residues from some processes going to landfill			

8 Defra (May 2007) – Waste Strategy for England 2007 Table A.16: Scenario 5

4.3. Construction, Demolition & Excavation Waste

The capacity requirements for the two different CD&E waste scenarios projected in Section 2.3 were broken down according to the method of management for CD&E waste in the West Midlands used in the CLG survey. Data for the first scenario and methods of management was taken from a previous West Midlands study in 2004[9], i.e. based on the methods of management used in the 2003 CLG survey[10]. Whereas, Scenario 2, which projected lower CD&E arisings due to the economic downturn, was split according to the methods of management in the 2005 CLG survey[11].

Table 8 provides an indication of the breakdown of the tonnages by management method to handle the range of CD&E arisings in Birmingham.

Table 8. Future waste treatment requirements for CD&E waste

Methods of management	2006/07	2014/15	2019/20	2025/26
Tonnage CD&E				
Minimum tonnes	1,655,700	1,451,500	1,488,100	1,533,300
Maximum tonnes		1,712,200	1,712,200	1,712,200
Recycling - Annual Capacity Required				
Minimum	1,300,800	1,349,600	1,398,500	1,441,000
Maximum	1,300,800	1,406,600	1,406,600	1,406,600
Use on exempt sites and for engineering & land restoration - Annual Capacity Required				
Minimum	466,000	432,800	432,800	432,800
Maximum	466,000	551,300	565,200	582,400
Landfill Disposal				
Minimum	149,000	154,100	154,100	154,100
Maximum	149,000	101,600	89,300	92,000
Note: Minimum and Maximum capacity requirements are based on the split of CD&E arisings according to the methods of management in the CLG survey				

4.4. Workshop Questions on Future waste treatment

– How self sufficient should Birmingham aspire to be in the future? i.e.

  - How much waste should be exported out of Birmingham for treatment?
  - How much waste should be exported out of the region for treatment?

– How much capacity should Birmingham allow for waste from other areas?

– Are there specific waste streams Birmingham should be looking to handle within Birmingham that are not currently?

– Are there treatment facilities Birmingham should be looking to accommodate in line with national/regional policy that aren't currently available e.g. Anaerobic Digestion?

9 Shropshire County Council (2004), West Midlands Waste Facilities Phase 2: Future Capacity Requirements. Report for West Midlands Regional Assembly
10 ODPM (October 2004), Survey of Arisings and Use of Construction, Demolition and Excavation Waste in England 2003, ODPM
11 CLG (February 2007), Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005 Construction, Demolition and Excavation Waste