Gloucestershire
COUNTY COUNCIL

Waste Core Strategy

Technical Paper WCS-A

Waste Data

Living Draft

September 2007

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Summary of Data

S1. The waste data presented in this document is mostly for 2005. It provides the most up to date data available to the Waste Planning Authority at the time of preparing evidence for the waste core strategy.

S2. It updates the position (as set out in the Issues & Options papers July 2006) for all waste streams and is presented here with consideration relating to its implications for future waste management requirements in Gloucestershire.

S3. The amount of waste managed in Gloucestershire in 2005 was around 1.26 million tonnes. The tonnage split between waste streams is set out in Table S1.

Table S1: Licensed Waste Management in Gloucestershire ('000 tonnes)

Waste Stream	Base Year	Total
MSW	2006/07*	324
C&I (including metals)	2005	462
C&D	2005	403
Hazardous	2004	72
Total		**1,261**

* Environment Agency data combines MSW and C&I biodegradable waste therefore to compare similar years the 2004/05 MSW figure was 309kt

S4. By 2020/21 Gloucestershire will require the following additional capacity to manage its MSW arisings:

- 11kt – 26kt in-vessel composting capacity
- 76kt recycling capacity
- 150kt – 270kt residual treatment capacity

S5. By 2020/21 Gloucestershire will require the following additional capacity to manage its C&I waste arisings:

- Additional diversion of 145kt per annum from landfill (assuming 0% growth in this waste stream)

S6. By 2012 Gloucestershire will require the following additional capacity to manage its C&D waste arisings:

- Diversion of an additional 111kt per annum from licensed landfill
- 'Exempt' capacity to use inert material for land restoration (e.g. of worked out mineral sites)

S7. There are currently no specific targets on hazardous waste and no requirement to make specific capacity provision to manage this waste stream.

S8. The options for making provision for these facilities are set out in Evidence Paper WCS-F 'Making Provision'. The locational issues relating to where the facilities should be is contained in Evidence Paper WCS-C 'Broad Locational Analysis'.

Contents

Section 1 Introduction

1. This report provides an update on waste data for the Gloucestershire Waste Core Strategy (WCS). It is based on information provided from two key sources: the Environment Agency and the Waste Disposal Authority.

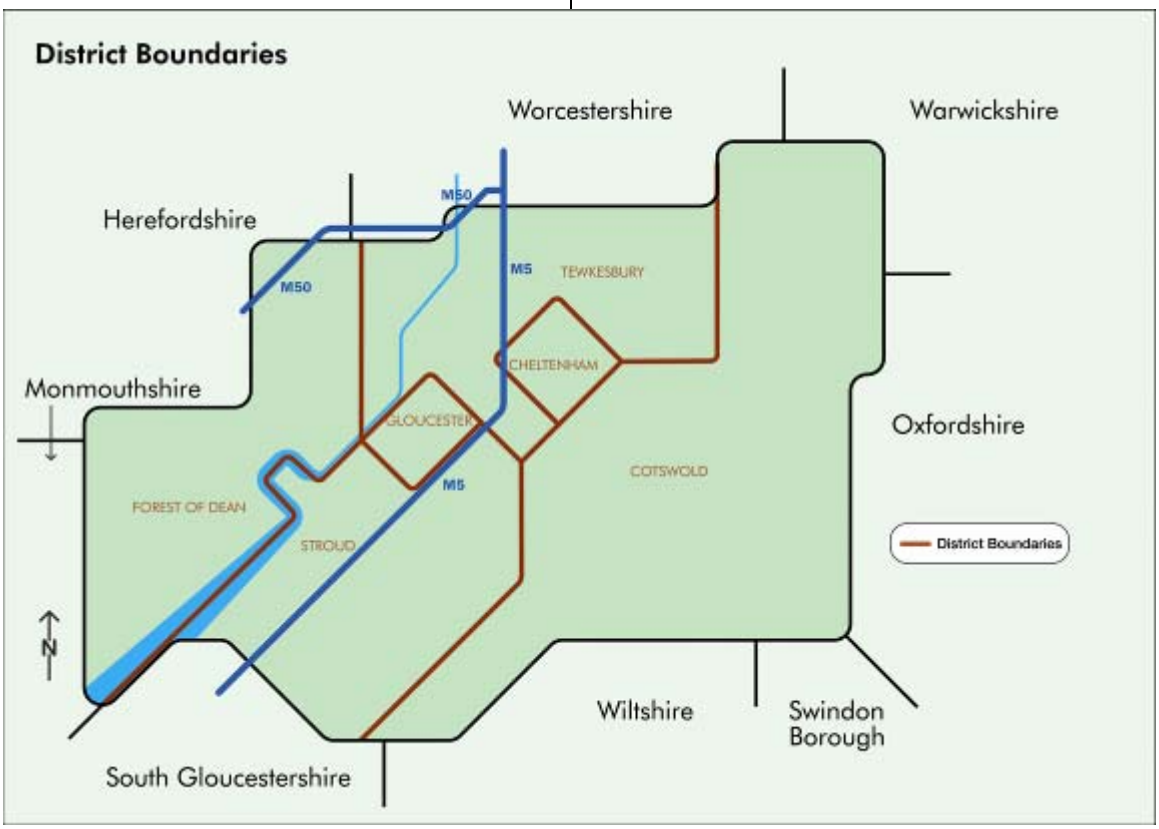
2. Waste data is provided by a number of agencies/authorities. The waste disposal authority provide data on municipal solid waste (MSW) collected by each district – see Figure 1 for the location of Gloucestershire's six districts. Gloucestershire County Council are the waste disposal authority for the whole of the administrative county.

3. The Environment Agency provide data for commercial and industrial wastes (C&I), for construction and demolition waste (C&D), and also for hazardous waste. This evidence paper is split into separate sections dealing with each of these waste streams in turn.

4. National planning policy for waste management is set out in Planning Policy Statement 10 'Planning for Waste Management' (PPS10). It requires regional planning bodies to apportion the tonnages of waste that require management to each waste planning authority.

5. The South West Regional Planning Body has prepared tables setting out this apportionment for Gloucestershire. Information on these is detailed in the relevant sections below.

Figure 1



6. Tonnages of waste are set out as annual rates and provide the basis for preparing the Waste Core Strategy (WCS). Gloucestershire County Council's analysis of data provided from the EA and WDA has been approved by those bodies as being the best available for preparing the WCS.

Evidence Gathering

7. The waste data for 2002/03 set out in the Issues and Options consultation papers (July 2006) is supported by the Environment Agency (EA), who agree with the waste planning authority's general conclusions.

8. The EA response to the Issues & Options papers included a number of summary tables setting out waste tonnages for the years 1999/00 - 2004/05. These figures were provided as 'totals' without the background data to confirm particular amounts. Further background information was therefore sought from the EA, resulting in raw data being provided for the 2005 calendar year. The figures presented in this Evidence Paper represent an analysis of that raw data rather than the pre-collated figures given in the EA Issues & Options response.

9. Additional information has also been received from waste operators, which has further assisted in presenting an accurate picture of waste management in Gloucestershire.

10. This evidence paper updates the waste data presented in the Waste Local Plan, and in the WCS Issues & Options papers (July 2006).

11. Information on facility capacity has been prepared by the Waste Planning Authority. It is derived from an assessment of planning permissions and waste management licence data. Where the planning permission has not placed a limit on the tonnages of material that can be handled (usually those sites with older planning permissions), EA license returns were used to give an indicative capacity. In addition a survey of waste operators was undertaken to provide an industry perspective on the current situation.

12. Waste Strategy 2007 (Annex I) provides a 2006 list of licensed waste management sites in Gloucestershire, although no capacity limits are provided. The information presented in this Technical Evidence Paper takes into account capacity at all facilities as of September 2007.

13. The data that is presented in this evidence paper has been prepared by the WPA following liaison with both WDA and EA. It is considered by these three parties to represent the most up to date and accurate picture of waste management in Gloucestershire that is currently available.

14. The fact that there are more assumptions being made is testament to an increase in information and knowledge about the data being provided. The more that is known about a waste stream the more issues that come to light. Being able to make these assumptions has improved the data, as previously such assumptions were not

known and therefore account was not taken for potential inaccuracies.

15. Consequently the data presented in this evidence paper is considered to provide a robust basis for land-use planning purposes in Gloucestershire.

16. The intention is that following preferred options consultation there will be a further update of these figures as more recent EA data should be available.

Section 2
Municipal Solid Waste

17. Municipal solid waste (MSW) comes from households (96%) together with a small amount of 'trade' waste collected by local authorities from shops and businesses. MSW data is provided by the County Council's Waste Management Team (also referred to as the Waste Disposal Authority (WDA)).

18. The WDA are working with the Waste Collection Authorities (WCA), the county's six district councils, to provide an appropriate strategy for managing MSW. The collective name for this working group is the Gloucestershire Waste Partnership (GWP).

19. Data in this section is from two base years: 2004/05 and 2006/07. This is for two main reasons:

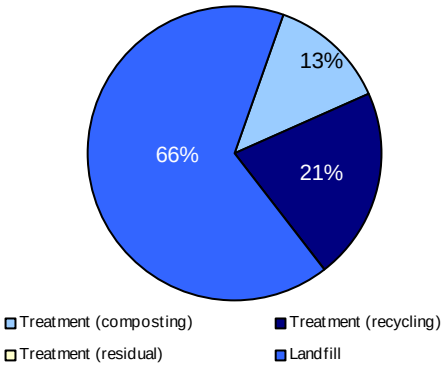
- Firstly the Environment Agency's (EA) biodegradable waste data does not distinguish between MSW and commercial/industrial waste. Their most up to date figures are for 2004/05 therefore to determine the latter it is necessary to subtract our known MSW figures from the EA total for that given year
- Secondly, 2006/07 figures are used in places to provide the most up to date data available at the time of writing

MSW Arisings

20. In the year 2004/05 Gloucestershire's households produced 301kt of waste, and there was around 8kt of trade waste (309kt total MSW). The total rose in 2005/06 to around 312kt and to 324kt in 2006/07.

21. Around 1,220kg of household waste is generated per household each year. The District Councils collected 11kt of commercial waste and the County Council received just over 11kt of DIY waste through its HRCs.

Municipal Solid Waste 2006/07



22. Under the current arrangements, all municipal waste is transported via the road network. Transferred waste is not included in the MSW total because it is all either recycled or landfilled and already included in those totals. There are no facilities in the County for MSW waste 'treatment'.

MSW Recycling and Disposal

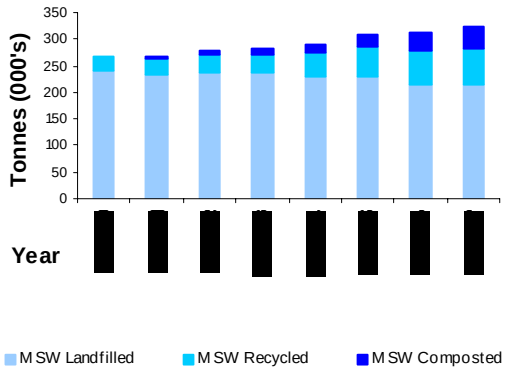
23. The WDA commissioned a study to find out the average composition of household waste. Of the largest fractions, around 33%

is organic material, 23% is paper, and 12% is glass. The full results are shown in Appendix C.

24. Approximately 70% of the materials produced by a household can be re-used, recycled or composted. Biodegradable materials comprised 68% of the waste stream, of which around 33% is organic (kitchen and garden waste).

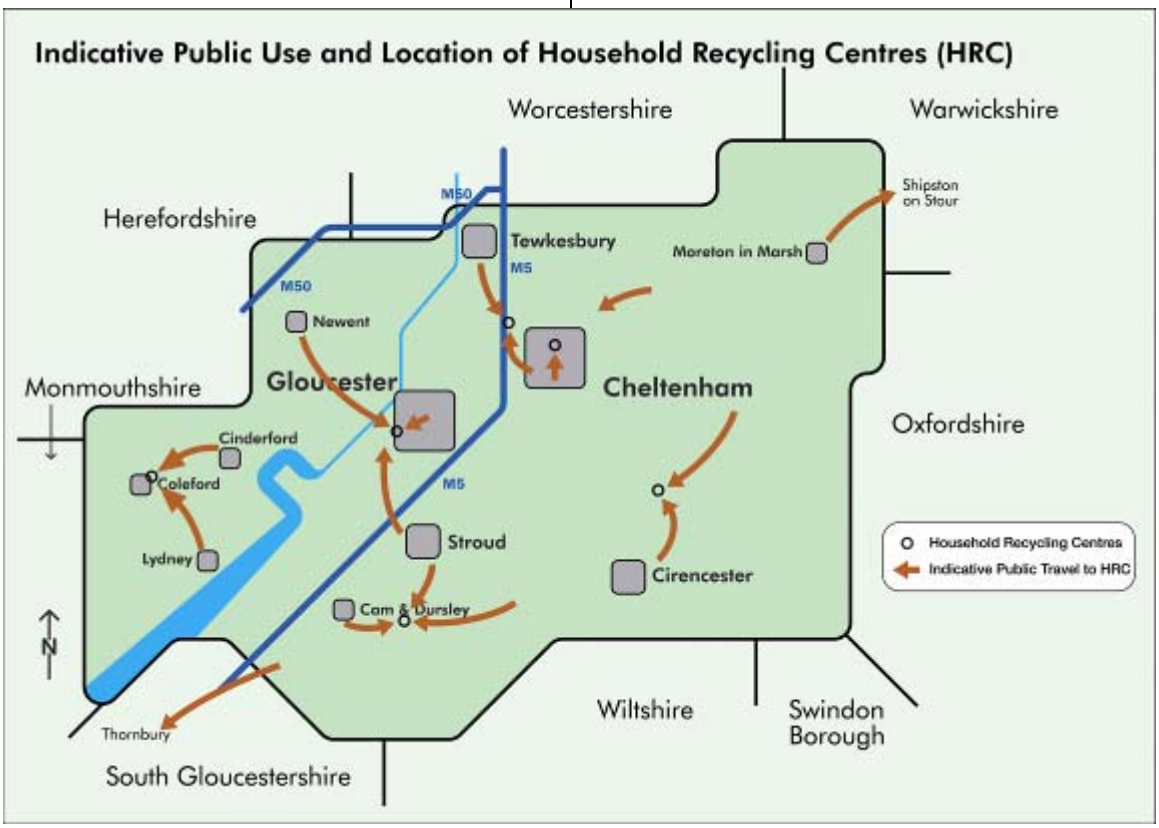
25. In 2004/05 the County had a household recycling and composting rate of 26%. This rose to around 30% in 2005/06 and 32% in 2006/07. The graph (right) shows that although the quantity of MSW is increasing, the amount going to landfill is steadily decreasing. In 2006/07, 215kt was landfilled compared with 228kt in 2004/05.

MSW Management Trend (1999/00 - 2006/07)



26. The indicative public use of Household Recycling Centres (HRC) around the County is shown in Figure 2 (below).

Figure 2



27. Kerbside collected recyclables (cans, cardboard, glass, paper, green waste, plastics and textiles) amounted to 61kt in the County in 2006/07.

28. The destination of some of the main recyclables collected in Gloucestershire is set out in Table 1 (below). Please note that this list is only indicative and not exhaustive. More information on markets for recyclates is set out in Evidence Paper WCS-D 'Implementing the Waste Hierarchy'.

Table 1: Indicative Destination of Recyclables

Material	Destinations include:	Uses include:
Paper	Kent, Cheshire, China	Pulped for paper
Glass	West Midlands, Wales	Melted for new glass products
Cans - aluminium	Warrington, Swindon, West Midlands	Back into aluminium
Cans - steel	Port Talbot, Cinderford, South Wales	Back into steel products
Plastic Bottles	Preston, Birmingham, Hong Kong	Grind and use for pipes etc.
Textiles	West Midlands, Devizes, charity organisations	Re-distributed and re-sold
Card	Gloucestershire	Packaging
Oils	Gloucestershire	Refined and used as lubricant

29. The destination and use of material for composting collected in Gloucestershire is set out in Table 2 below:

Table 2: Composting in Gloucestershire (2006/07)

District	Tonnes	Site	End Use
Cheltenham Tewkesbury	5,819 2,863	Wingmoor Farm West	Land Restoration
Cotswold	9,156	Wingmoor Farm West & Sunhill	Land Restoration
Forest of Dean	7,952	Rose Hill Farm, Dymock	On surrounding farmland
Gloucester City	3,125	Hempsted	Land Restoration
HRCs	12,652	Hempsted and Wingmoor Farm West	Land Restoration

MSW Targets

National

30. The Government, in its National Waste Strategy 2007, has set national household waste recycling and composting rates at:

- 40% in 2010
- 45% in 2015
- 50% in 2020

31. And new national targets have been set for the recovery of municipal waste. These are:

- 53% by 2010
- 67% by 2015
- 75% by 2020

Regional

32. The South West Region, through Policy W1 of the Regional Spatial Strategy (RSS), has allocated Gloucestershire minimum

capacities for source separated (HRC and composting) facilities, maximum secondary 'residual' treatment (e.g. mechanical biological treatment [MBT] and thermal treatment) facilities, and a maximum amount of waste to landfill (all to be achieved by 2020):

- 170kt minimum source separated
- 200kt maximum secondary treatment
- 60kt maximum to landfill

Local

33. Gloucestershire has met its 2005/6 Best Value household recycling and composting target of 30%. The individual performance of each Council can be seen in Table 3 (below).

Table 3: Recycling Targets Council	Actual Recycling Rate (%) 2006/07	BVPI recycling target (%) 2007/8
Cheltenham Borough	28%	24%
Cotswold District	41%	30%
Gloucester City	23%	20%
Forest of Dean District	36%	30%
Stroud District	24%	30%
Tewkesbury Borough	26%	21%
Gloucestershire County	32%	30%

34. The Government has recently announced new recycling and composting targets for 2007/8 (as per Table 3). Most of the District Councils are already exceeding these targets. Beyond this local recycling targets have been set (as in Table 4).

Table 4: Local Recycling Targets

Year	Recycling & Composting Target	Residual waste per capita target
2009/10	40%	314kg
2014/15	50%	273kg
2019/20	60%	228kg

35. The Landfill Allowance Trading Scheme (LATS) sets targets for the amount of biodegradable MSW allowed to landfill in a given year. For Gloucestershire the targets are:

- 107,428 tonnes in 2010
- 71,555 tonnes in 2013
- 50,069 tonnes in 2020

36. Additionally, part of the vision for municipal waste management in Gloucestershire is to provide sufficient waste management facilities to enable all households in Gloucestershire to recycle and compost at least 70% of their rubbish by April 2010, with an 80% participation rate by 2020.

Current MSW Facility Capacity

Windrow Composting

37. Gloucestershire's current capacity with planning permission for green waste composting is around 69ktpa: Hempsted (24kt); Dymock (15kt); and Wingmoor Farm West (20+kt). A time limited permission to compost green waste at Sunhill (10kt) provides additional interim capacity. Kerbside collected green waste is taken to these windrow facilities (see Table 2 and Figures 3 & 4).

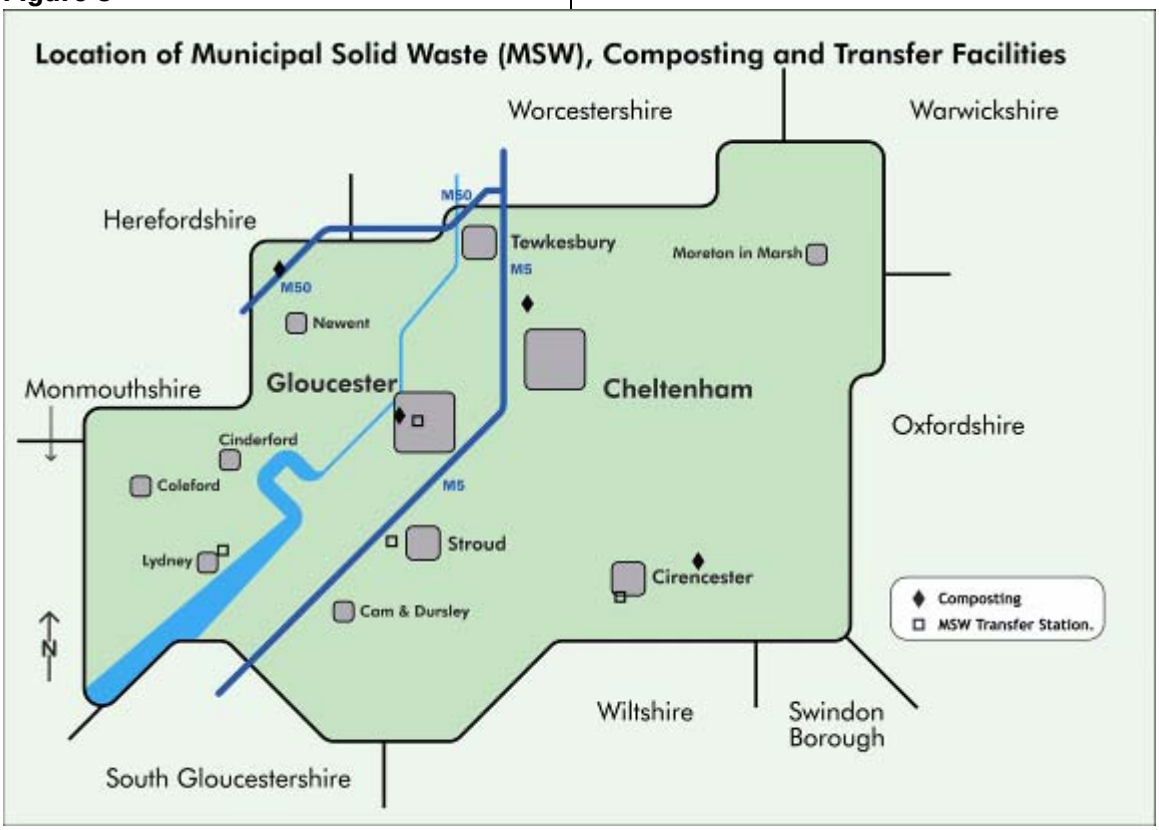
38. The overall figure includes unrestricted composting capacity (in terms of a tonnage limit, although there is a 5m stockpiling height limit) at Wingmoor Farm West. As a consequence this capacity was inadvertently omitted from the Issues & Options paper Part B Table 9.

39. There are also 21 registered 'exempt' sites in the County for composting up to 1kt of biodegradable material at any one time (the 'exempt' limit is 10kt if the compost is for cultivating mushrooms). These facilities are not however used by the WDA for composting MSW. For an explanation of waste licensing exemptions please see the section below relating to construction & demolition waste.

In-Vessel Composting (IVC)

40. There are two recent planning permissions for MSW in-vessel composting (IVC): at Rosehill Farm Dymock (10ktpa, but could increase to 25ktpa if combined with green waste); and Wingmoor Farm West (35kt) [subject to the Secretary of State not wishing to 'call-in' the decision]. Additionally, an IVC facility at Sharpness (48ktpa) is intended to be used for commercial sources of mixed organic waste sourced from both within and outside of the County (see Section 3 'C&I waste').

Figure 3



Household Recycling Centres (HRC)

41. HRCs (shown on Figure 2) are used to accept, bulk-up and temporarily store segregated materials for recycling or transfer to landfill. HRC's in Gloucestershire have a potential handling capacity of around 81ktpa, of which approximately 36% is disposed of to landfill – this comprised bulky material or that which could not be re-used/recycled (see Table 5).

42. The capacity is based on planning permission conditions and EA license returns, though in practice site constrains may restrict actual capacity. Whilst the data indicates that there is sufficient capacity to meet the RSS requirements the Joint Municipal Waste Management Strategy (JMWMS) will advise on the detailed provision required for HRCs in terms of a customer focused approach.

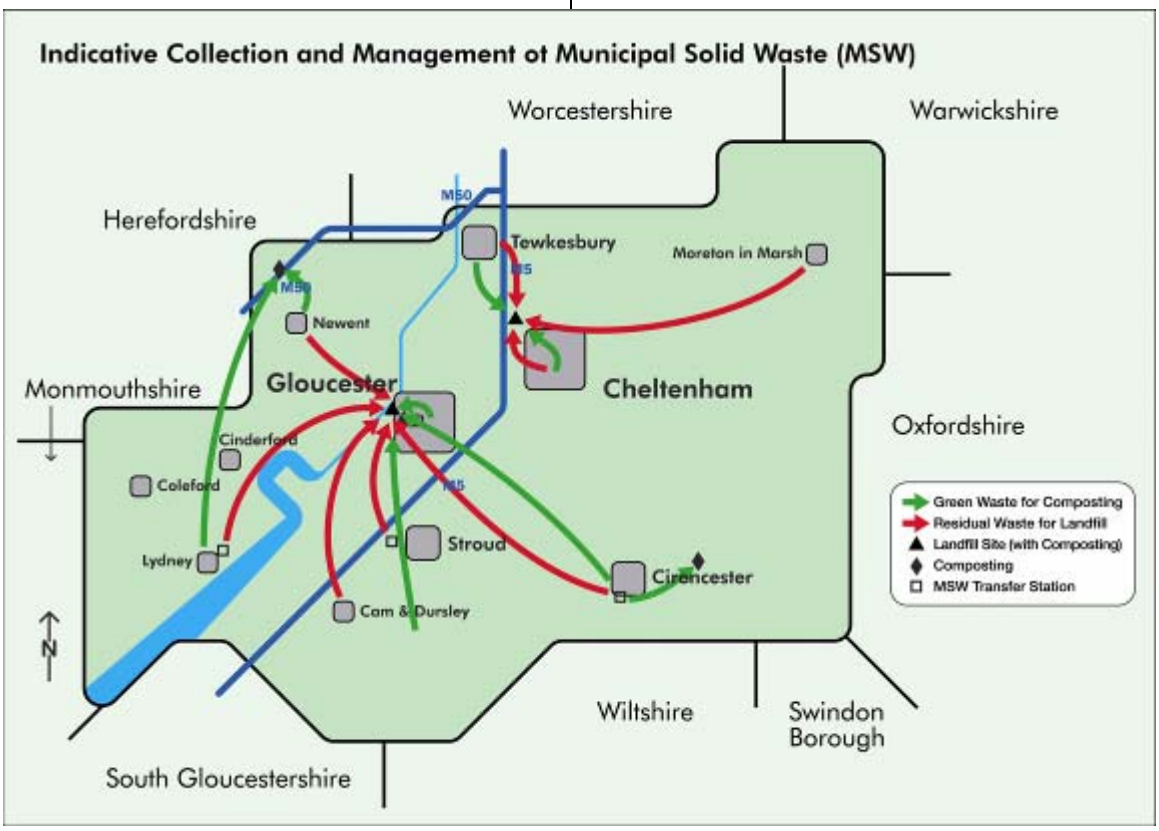
43. In Stroud the HRC at Pyke Quarry transfers green waste to Hempsted for composting, hence the Figure 4 illustration showing a green arrow from the centre of Stroud District.

Table 5: Indicative Capacity of Gloucestershire's Household Recycling Centres ('000 tonnes)

Site Name/Location	Capacity Tonnage
Fosse Cross (Cotswolds)	12
Oak Quarry (Forest of Dean)	13
Hempsted (Gloucester)	15
Pyke Quarry (Stroud)	20
Wingmoor Farm (Tewkesbury)	11
Swindon Road (Cheltenham)	10
Total	**81***

Notes
*approximately 52kt is for recyclables and 29kt goes to landfill

Figure 4



Waste Transfer Stations (WTS)

44. WTS's (shown in Figures 3 & 4) are used to transfer residual waste and to bulk-up kerbside collected dry recyclables. The two activities are not mutually exclusive, however for the purpose of clarity these facilities are separated according to their dominant activity – either 'general residual' or 'recyclable' facilities. The indicative collection of MSW is illustrated in Figure 4.

Table 6: Indicative Capacity of Waste Transfer/Bulking-up Facilities ('000 tonnes)

Site Name/Location	Capacity Tonnage
General WTS (for residual waste)	
Elliot Road, Love Lane, Cirencester	50
Lydney Industrial Estate	36
(Subtotal)	*(86**)*
Recyclables WTS	
Eastern Avenue Depot, Gloucester	13*
Eastington, Stroud	8*
(Sub-total)	*(21)*
Total	**107**

Notes

*Approximation from EA license returns & operator survey.
** All of the 86,000t is for material that is sent on to landfill.

45. Since publication of the Issues & Options papers (July 2006) the transfer facility for recyclables at Phoenix House (Elmstone Hardwicke) has now ceased operating. The County's transfer capacity has therefore reduced by 18ktpa.

46. The capacity of WTSs in the County is around 107ktpa. However, the majority of the throughput at general WTSs is sent on for disposal. Conversely, the majority of the tonnage at the recyclables WTSs is bulked-up and sent on for reprocessing.

47. Although there appears to be spare capacity at current sites, if extra materials (e.g. card) are collected in the future additional facilities may be needed to bulk-up and transfer to facilities where it will be processed (recycled) into other products. Again, as with HRCs, there may be areas of the County that require additional provision. The JMWMS will advise on such requirements.

Treatment

48. 'Treatment' is defined in the Regional Waste Management Strategy as being operations such as mechanical biological treatment (MBT) or thermal processing. There are presently no biodegradable waste 'treatment' facilities in the County. New facilities will therefore be required during the plan period to meet RSS targets.

Landfill

49. The County Council, under its municipal waste contract with Cory Environmental, use two landfill sites - Hempsted and Wingmoor Farm (West). This is illustrated in Figure 5 (below). These have a combined remaining voidspace of around 5million m^3.

50. It is likely that the voidspace currently permitted at Hempsted will be exhausted by 2013. Wingmoor Farm (West) could last considerably longer, but this is dependent on the success of our waste minimisation and recycling strategies.

MSW Growth Rate

51. Over the last 5 years, the amount of municipal waste collected has increased on average by over 3% each year. The continued growth in population and number of households will directly impact on the quantity of waste generated year on year. If waste continues to grow at 3% we would double the amount of waste produced in the next 25 years.

52. Detailed work has been undertaken by consultants Eunomia, working on behalf of the GWP, to determine an appropriate projection of future waste arisings on which to plan for waste treatment and disposal facilities.

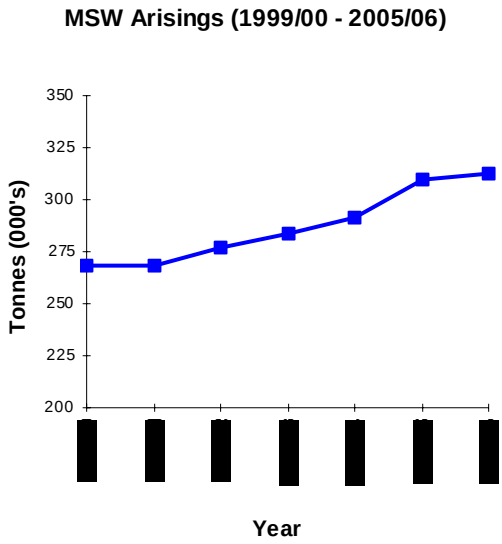
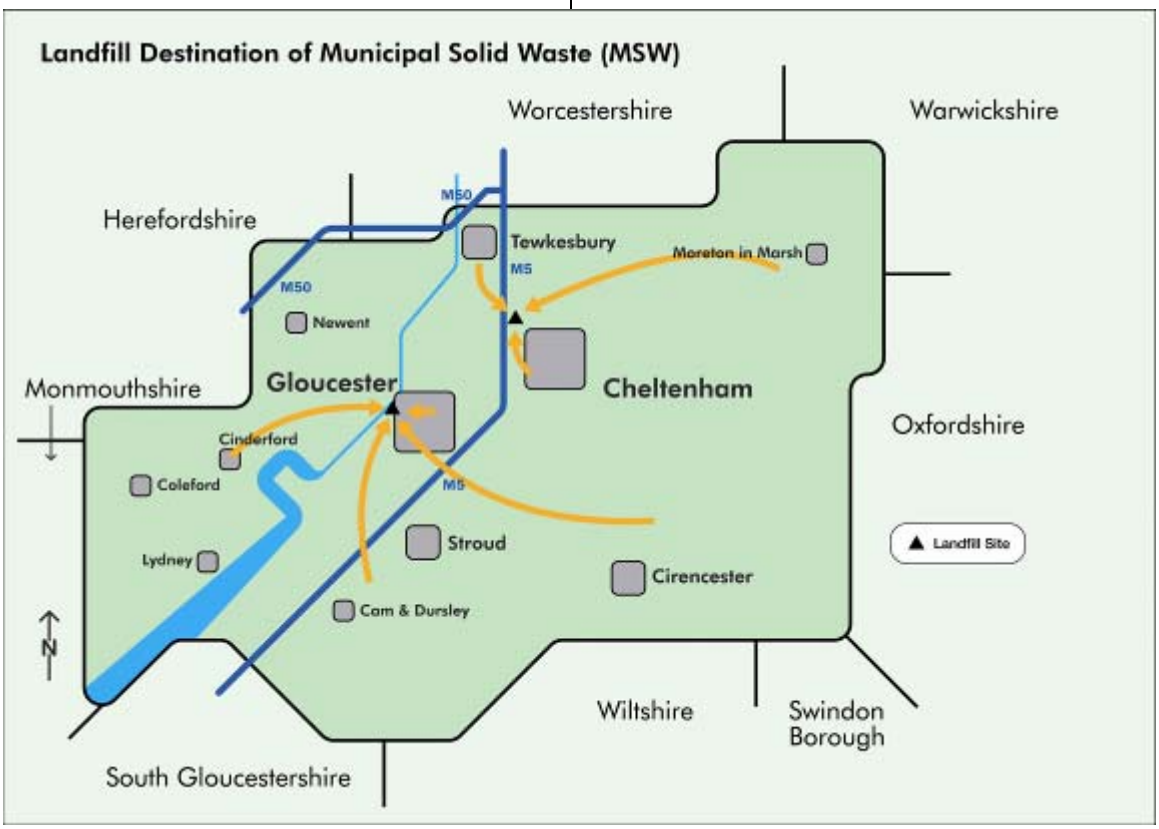


Figure 5



53. Total MSW arisings are predicted to grow from 324,000 tonnes per year in 2006/07 to some 457,000 tonnes by 2030/31. This is equivalent to an annual growth rate of 1.6%. It is based on recent and future waste growth and analysis of whether increases can be attributed to events such as:

- the recent introduction of kerbside collection of green waste
- changes and improvements at HRCs
- the possible future introduction of reduced residual waste collection by all authorities by 2010/11
- new recycling and composting schemes
- household/population growth

54. In a worst-case scenario (if the events were not 'one-offs') waste growth could be as high as 2.8% on average. The Eunomia Report (2006), commissioned as part of preparing the JMWMS, uses a figure of 1.6% up to 2030/31 as the basis for future arisings. More information on this can be obtained from the Eunomia report.

55. The WPA will be advised by WDA on what is an appropriate MSW growth projection to use. The growth rate for MSW that is used in the Waste Core Strategy will be the same as that to be set out in the JMWMS.

MSW Requirements

56. Table 7 sets out the projected indicative tonnages of MSW that are likely to require managing up to 2026. The blue figures represent the final LATS target year 2020. This data has been provided by the WDA on behalf of the GWP. The column headings in Table 7 are explained below:

- The **Years** are financial years (April – March)
- The **Arising** column is based on a baseline tonnage for 2006/07. It then applies the WDA projected yearly increase, as set out in the **Average Annual Growth Rate** column
- The **Windrow** composting column relates to green (garden) waste
- The **IVC** column is based on capturing kitchen and garden waste from the household bin
- The **Recycling** column relates to source separated and diversion through HRCs and District schemes
- The **Residual Treatment** column relates the amount of 'black bag' waste that will require treating through some form of waste treatment facility. The figure range represents the success or failure of recycling/composting take-up.
- The **Transfer** column shows the amount of municipal waste which will require bulking for transfer to another facility for final treatment
- The **Landfill (residual after treatment)** is the amount that results following treatment. This amount is already included within the landfill capacity column as part of the LATS allowance
- The **Landfill (possible capacity needed)** column shows the tonnage of biodegradable municipal waste allowed to landfill under LATS plus an inert element (comprising 32% of the arising)

Table 7: Yearly MSW Facility Requirements (figures provided by Gloucestershire County Council's waste Management team)										
Year	Arising Estimate	Average Annual Growth rate	Composting		Recycling	Residual Treatment	Transfer (see Section 8)	Landfill		
		%	Windrow	IVC		Range (000s tonnes)		Residual after treatment	LATS targets	Possible Capacity needed
2005/06	312,118	-	32,276	-	66,590		48,154	213,252		
2006/07	324,143	3.85	41,602	-	67,572		47,057	214,969	158,634	262,360
2007/08	332,000	2.42	42,000	50	77,142		46,000	212,808	150,100	256,340
2008/09	337,312	1.6	41,260	3,500	79,456		49,040	213,096	138,721	246,661
2009/10	342,709	1.6	13,000	51,260	107,265		64,418	171,184	124,497	234,164
2010/11	348,192	1.6	13,390	52,798	110,483		64,879	171,521	107,428	218,849
2011/12	353,763	1.6	13,792	54,382	113,798		65,355	171,792	95,471	208,675
2012/13	359,424	1.6	14,205	56,013	117,212		65,844	171,993	83,513	198,529
2013/14	365,174	1.6	14,632	57,694	120,728		66,348	172,121	71,555	188,411
2014/15	371,017	1.6	15,071	59,424	124,350	150-270	66,867	12,172	68,486	187,211
2015/16	376,953	1.6	15,523	61,207	128,080	150-270	67,402	12,143	65,416	186,041
2016/17	382,985	1.6	15,988	63,043	131,923	150-270	67,953	12,030	62,347	184,902
2017/18	389,112	1.6	16,468	64,935	135,881	150-270	68,520	11,829	59,277	183,793
2018/19	395,338	1.6	16,962	66,883	139,957	150-270	69,105	11,537	56,208	182,716
2019/20	401,664	1.6	17,471	68,889	144,156	150-270	69,707	11,148	53,139	181,671
2020/21	**408,090**	**1.6**	**17,995**	**70,956**	**148,480**	**150-270**	**70,327**	**10,659**	**50,069**	**180,658**
2021/22	414,620	1.6	18,535	73,085	152,935	150-270	70,965	10,066		132,678
2022/23	421,254	1.6	19,091	75,277	157,523	150-270	71,623	9,363		134,801
2023/24	427,994	1.6	19,664	77,535	162,248	150-270	72,301	8,546		136,958
2024/25	434,842	1.6	20,254	79,861	167,116	150-270	72,998	7,611		139,149
2025/26	441,799	1.6	20,861	82,257	172,129	150-270	73,717	6,551		141,376
2026/27	448,868	1.6	21,487	84,725	177,293	150-270	74,457	5,363		143,638
2027/28	456,050	1.6	22,132	87,267	182,612	150-270	75,220	4,039		145,936

57. The WDA figures presented in Table 7 indicate that by 2020/21 Gloucestershire will require as a minimum the following capacity to manage its MSW arisings:

- 18kt windrow composting capacity
- 71kt in-vessel composting capacity
- 149kt recycling capacity
- 150kt – 270kt residual treatment capacity
- 71kt transfer capacity
- 3.1 million m³ landfill capacity (over the period 2006/07-2020/21)

58. Table 7 provides the GWPs most up to date consideration in terms of the facility capacities needed to deliver the JMWMS. The capacity gap identified in the WCS Issues & Options papers (July 2006) was presented based on work undertaken by the GWP at that time. It indicated that an additional 40kt of IVC was required along with 200kt of residual treatment. Since that time they have undertaken additional evidence gathering and prepared the data, presented in Table 7. Further information on the strategy for managing municipal waste can be found by visiting: www.recycleforgloucestershire.com

59. The IVC figure of 60kt referred to in the JMWMS Vol.2 relates to 2009/10 and is a 'procurement' figure as opposed to a management throughput figure. For planning purposes, based on current WDA calculations, by 2020/21 Gloucestershire will require around 71kt of IVC capacity.

60. The residual treatment capacity has been shown as a range 150kt – 270kt. This is based on best and worst case scenarios, which could be affected by many different and unforeseeable factors, for example: growth rates; public take up of recycling / composting opportunities; District collection of material etc.

61. During summer 2007 the GWP agreed a recycling/ composting rate of 60% by 2020 as reflected in the JMWMS (Vol.2 Sept 2007). This is derived from using a 'best case' scenario with an arising of 378kt in 2020, for which a 60% diversion would result in a 40% residual element requiring treatment. Hence a minimum of 150kt residual requirement. Details of the work undertaken on growth rates is set out in the report referred to in paragraph 52 (above).

62. Setting out a capacity range allows the WDA to accommodate a best case scenario if all waste prevention and recycling projects are successful, but there is still the potential to meet the County's waste management needs if a worst case scenario occurs. The RSS however assumes a maximum secondary treatment facility of 200kt, which lies in the middle of the range.

The Capacity Gap for MSW

63. In respect of the RSS capacity figures for provision by 2020:

- The requirement for provision of facilities to allow a minimum of 170ktpa source separated material is met through the recycling and composting figures from above (i.e.60kt IVC; 69kt windrow; 53kt HRC; 21kt transfer; and 61kt kerbside collected capacity).
- The maximum 200kt secondary treatment facility provision is addressed through an assumed need for 150kt residual treatment capacity. This capacity though could increase if recycling and composting targets are not met.
- The maximum landfill provision of 60ktpa would be met through existing site permissions (see section 8 of this paper)

64. Notwithstanding the assumed figures presented in the RSS, the revised WDA requirement figures in Table 7, compared with the existing facility capacities, indicate that by 2020/21 Gloucestershire will need the following <u>additional</u> capacity to manage its MSW arisings (the figures in brackets show how the calculation is made):

- Between 11kt and 26kt IVC capacity (71kt minus either 60kt or 45kt [see paragraph 37 above] = range 11kt to 26kt)
- Around 76kt recycling capacity (149kt minus 73kt [derived from 52kt+21kt] = 76kt (some of which may be included

within 61kt kerbside collected where sent direct to processing).

- At least 150kt residual treatment capacity, but could be up to 270kt (150kt minus 0kt = 150kt)

65. According to the latest WDA figures it appears that there are currently sufficient windrow composting facilities, transfer stations and landfill capacity to meet the RSS 'source separated requirements' up to 2020/21.

66. The options for making provision for these facilities are set out in Evidence Paper WCS-F 'Making Provision'. The locational issues relating to where the facilities should be is contained in Evidence Paper WCS-C 'Broad Locational Analysis'.

Meeting the Vision

67. In respect of the vision to provide the opportunity for all households in Gloucestershire to recycle and compost at least 70% of their rubbish by April 2010, this would require recycling / composting facilities with a capacity of around 244ktpa (i.e. 70% of 348,192 as per Table 7). Currently there is around 263kt capacity, which is made up of: 60kt of IVC facilities; 69kt windrow composting facilities; 73kt (52kt+21kt) HRC/transfer capacity for recyclables; and at least 61kt kerbside collection.

68. This however should not be taken to mean that Gloucestershire does not need to do more in terms of its recycling/composting facility capacity. Kerbside collected material still requires facilities to sort, bulk and transfer the recyclable materials. This figure should therefore be seen as a minimum rather than a maximum requirement.

Section 3 Commercial and Industrial Waste

69. C&I waste is made up of waste generated by businesses, shops, offices, manufacturers etc. It is predominantly biodegradable material or metal wastes. The information presented in this section is based on WPA analysis of Environment Agency (EA) license returns for the calendar year 2005.

70. EA data does not distinguish between landfilled C&I waste and landfilled MSW. The license returns categorise the material as 'non-hazardous general biodegradable waste'. Under the municipal waste contract the WDA have details of MSW inputs and therefore to determine the C&I landfilled fraction it is necessary to subtract the MSW landfilled figure from the landfill total.

71. Additionally, metal waste can be separated out as a stand-alone waste stream (see later discussion) – making such a distinction is supported by the EA.

72. Undertaking these calculations from the raw EA data results in the following tonnages:

- In 2005 there was around **348kt** of biodegradable non-metal C&I waste managed in Gloucestershire
- **267kt** of this went to landfill
- **81kt** was diverted from landfill
- **114kt** of metal went to metal recycling sites

73. Following the WCS Issues & Options consultation (July 2006) the EA provided additional headline figures for the broad waste streams. However, there was no breakdown as to how these figures were arrived at. As they do not match the figures presented in the Issues & Options paper (July 2006, Part B, Table 13) consequently those latter figures have not been used where alternative EA figures have been provided that give a more detailed breakdown. The results are set out in Table 8 (below) which update those in the WCS Issues & Options paper (July 2006, Part B, Table 13).

Table 8: C&I Waste Management in Gloucestershire
[not including metals] (000's tonnes)

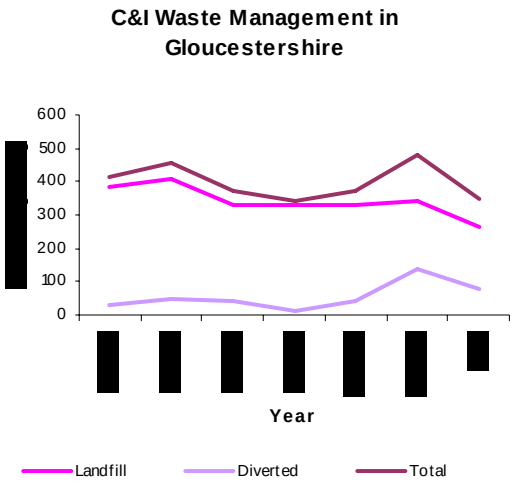
	Landfill	Diverted	Total
1998/99	382	32	414
1999/00	407	50	457
2000/01	330	41	371
2001/02	333	11	344
2002/03	330	40	370
2003/04*	343	136	479
2005	267	81	348

* The data for this year has been provided by the EA in a non-aggregated format (from their response to the WCS I&O papers) and the 'diverted' figure has been calculated by combining the treated biodegradable waste + 25% of the transferred figure [see section 7 of this paper].

74. The 2002/03 figure for landfill has been amended slightly since the WCS Issues & Options paper (July 2006, Part B, Table 13) due to the inadvertent omission of 11kt of general biodegradable landfilled material. This was caused by the site name having

been omitted from the raw data thus making it 'invisible' when the figures were electronically sorted by site.

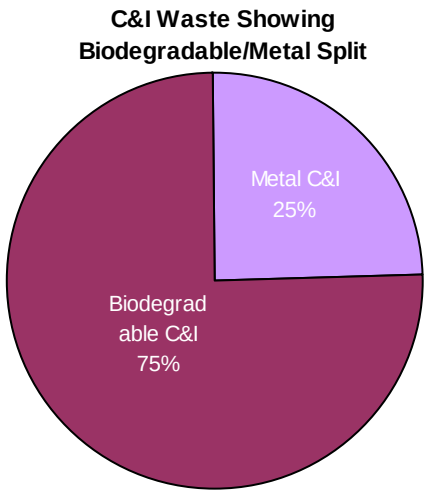
75. It is difficult to distinguish a trend in C&I waste management from the figures in Table 8 (above), as indicated in the graph below.



76. Determining an appropriate growth rate for C&I waste is therefore difficult. The South West Regional Waste Management Strategy has assumed a 0% growth rate, as has the adopted Waste Local Plan. Given the trend illustrated in the graph above it is considered appropriate to roll forward this 0% increase approach in the WCS.

Metal C&I Waste Management

77. Additional to the biodegradable C&I waste element there is also a significant amount of metal wastes managed in Gloucestershire. In 2005 114kt of metal went to metal recycling sites. This was a quarter of the C&I waste stream (see chart below).



78. Metal waste recycling has been separated from general biodegradable material to present a clearer picture of C&I waste. This is because metal waste is a largely self-contained waste stream i.e. being dealt with at metal recycling facilities (otherwise known as scrap yards). The EA have stated that they support the WPAs approach to this issue (which rolls forward the approach from the adopted Waste Local Plan). This issue is discussed in more detail below.

Current C&I Capacity

79. To calculate the 'capacity gap' it is first necessary to ascertain current levels of permitted capacity. The current capacity figure is then subtracted from the regional apportionment allocation to leave, in some instances, a 'gap' in facility provision. It is

this 'capacity gap' that the WCS seeks to provide a strategy to fill.

80. To determine the County's current capacity the WPA undertook an assessment of planning permissions, waste management licences and EA returns. Additionally an operator survey was undertaken in 2005/06 followed by ongoing discussions with operators to further improve the picture as to C&I waste capacity available in the County. Detailed information on C&I operations was set out in the WCS Issues & Options Papers (Section 4, July 2006).

81. Since that time additional operations have gained planning permission, others have revised operating practices and new contracts have been gained etc. which has further changed the picture.

82. The RSS requirements seek to differentiate sites and activities between 'recycling/re-use' and 'recovery':

- **Recycling/re-use** - relates to all materials that are source separated (including metals) and waste which is sent out of the region
- **Recovery** - relates to all materials sent to treatment and transfer facilities, including facilities outside of the region

83. A number of practical difficulties were encountered when trying to use this distinction to differentiate between actual operations on the ground:

- Most operations classified as recycling facilities only bulk-up, or chip/pelletise the material for a further facility to process/ manufacture it into a marketable product. Consequently, 'transfer' facilities could fall under either RSS category
- Descriptions of activities vary between EA waste management license records and the planning application/ permission information. In terms of data it is the EA who is providing the classification of how waste is managed
- Different operators have different interpretations as to what they actually do on site – this then filters into their returns to the EA, which is then catalogued and passed on again to the WPA
- Some C&I passes through facilities classed as being for MSW, and is therefore recorded differently

84. In reality there is therefore likely to be an element of crossover between these recycling/re-use and recovery/transfer categories. This makes it very difficult to provide an accurate picture of the capacity gap and thus realistic future requirements.

85. Notwithstanding these difficulties, Table 9 (below) provides an estimation of activities that make up the County's C&I capacity (not including metal recycling sites [i.e. scrap yards]). This includes only sites with planning permission although in some cases these facilities are not yet operational.

Table 9: Gloucestershire General/Biodegradable C&I Licensed Facility Indicative Capacity (000's tonnes)

Site	Composting (not including exemptions)	Recycling/ re-use	Recovery (incl Transfer)
Cheltenham	0	0	0
Cotswolds	0	0	10
Forest of Dean	2.25	8	51
Gloucester City	0	0	27
Stroud	55.75	103	47
Tewkesbury	0	50	25
County Total	**58**	**161**	**160**

C&I Waste Targets

National

86. The Government believes that the amount of C&I waste being sent to landfill will reduce by 20% between 2004 and 2010 (National Waste Strategy 2007, paragraph xiv, pg.11).

87. The National Waste Strategy 2007 states that Government intends to set a C&I waste target for diversion from landfill. Initial indications are that this could be a requirement to reduce C&I landfilling to around 35% of the total by 2020.

Regional

88. The South West Region, through Policy W1 of the RSS, has allocated Gloucestershire capacity ranges for recycling/re-use (source separated recycling and composting) facilities and for recovery (treatment and transfer) facilities:

- 300-320kt recycling/re-use
- 260-290kt recovery

89. Both of these targets are to be achieved by 2020[3].

Calculating the Capacity Gap

90. Prior to determining what is the appropriate capacity gap for C&I waste facilities in Gloucestershire it is necessary to consider whether it is appropriate to retain the separation between 'recycling/re-use' and 'recovery'. Therefore there are two options:

- The first is to retain the separation between 'recycling/re-use' and 'recovery' as per the RSS
- The second is to combine the two categories of 'recycling/re-use' and 'recovery' into a single target range

91. The first option seems, on the basis of the uncertain categorisation, difficult to implement in its literal form. However, it could be developed whereby smaller sites are categorised due to their dominant activity (larger sites may have numerous substantive operations which can to an extent be distinguished by planning history). This is the approach in the Issues & Options papers (July 2006).

92. The second option, to combine 'recycling/re-use' and 'recovery' into a single target, potentially places thermal treatment recovery technologies on the same waste hierarchy level as re-use and

[3] Interim targets are set for 2010 and 2013.

recycling. This would appear to be contrary to national policy.

93. Consequently, at present, the first option appears to be the most appropriate. However, this situation may change following the Panel Report of the Examination of the South West RSS during Summer 2007 (due in 2008). This is timetabled for publication after our WCS Preferred Options are issued.

94. On this basis Table 10 summarises the RSS requirements and current capacities in Gloucestershire:

Table 10: Summary of C&I Waste Facility Capacity 2007 (000's tonnes)

	Composting	General Recycling /re-use	Metal Recycling	Metal Transfer	General Transfer & Recovery
Current Capacity	58	161	261	125	160
2020 RSS Req'ment	Range 300-320			Range 260-290	

95. The current capacity summarised in Table 10 illustrates that there is a significant current capacity for metal recycling and transfer. If the two C&I fractions (metal and biodegradable) are retained as a single entity, for the purposes of implementing the RSS targets, the metal waste facility capacity lessens the level of provision 'needed' for the biodegradable element.

96. Effectively it presents a picture that there is an over provision of recycling facilities for C&I waste in the County. However, due to 267kt of biodegradable C&I waste being landfilled each year, as noted at the start of this section, this assumed overprovision is clearly not accurate.

97. The approach used in the adopted Waste Local Plan was to split metal and biodegradable C&I based on a percentage of the total C&I arising. The current approach, required by the RSS, uses pre-stated tonnages (which assumes a given arising in 2020).

Metal Waste Separation

98. The County is currently well served by metal recycling & transfer sites, which have an overall capacity of 386ktpa. This network has been developed over many years due to the readily available market for scrap metal.

99. For the purposes of determining a realistic C&I facility 'capacity gap' there are effectively four different ways of considering the metal waste issue. All four assume that the 'recycling/re-use' and 'recovery' categories from the RSS are to be retained as separate groups of operations.

Approach One

100. This approach directly follows the RSS approach by combining metal waste and general biodegradable C&I waste.

- The current capacity for recycling/re-use is derived by adding together the current capacities from Table 10 of 58kt+161kt+261kt = 480kt. The capacity gap for recycling/re-use would therefore be 480kt minus the range

300-320kt = **+180kt to +160kt overprovision**[4]

- The recovery shortfall would be derived by subtracting the existing capacity of 285kt (160kt+125kt) from the 260-290kt range = **+25kt overprovision to -5kt shortfall** capacity gap

Approach Two

101. This approach effectively ignores the metal waste element by separating it from general biodegradable C&I (the rationale for this being that metals are a self contained element). This is the approach used in the WLP, i.e. remove metal waste as an actual tonnage from the C&I waste stream and carry out the capacity gap calculation without it.

- The C&I recycling/re-use capacity gap in this approach would be: 219kt minus 300-320kt = **-81kt to -101kt shortfall**
- The C&I recovery capacity gap in this approach would be 160kt minus 260-290kt = -**100kt to -130kt shortfall**.

Approach Three

102. This approach looks at metal waste as a proportion (%) of the whole C&I waste stream. In removing metal waste from the total C&I the RSS target tonnages would be similarly reduced.

- Metal waste comprises around 25% of C&I waste in Gloucestershire. Taking a proportional approach would result in a corresponding reduction of 25% in the capacity requirement ranges. From 300-320 to 225-240kt for 'recycling/re-use' and from 260-290 to 195-218kt for 'recovery'

103. On the basis that metal waste is already adequately provided for, the general biodegradable C&I facility 'capacity gap' ranges would be:

- recycling/re-use: 219kt minus 225-240kt = -**6kt to -21kt shortfall**
- recovery: 160kt minus 195-218kt = -**35kt to -58kt shortfall**

Approach Four

104. This approach uses a completely different way of looking at the issue. It is presented on the basis that there is likely to be a national target[5] for C&I waste, which initial indications are that it will seek to reduce landfilling to 35% of the total by 2020.

- The current total biodegradable C&I is 348kt of which 35% is 122kt. As there is currently 267kt of biodegradable C&I being landfilled each year in the County, the 35% target is equivalent to an **additional 145ktpa** (i.e. 267kt – 122kt) needing to be diverted from landfill. This would be on top of the

[4] Note: metal waste facilities are assumed to fall completely under the 'recycling/re-use' category. However, many metal waste activities involve a 'transfer' style operation and therefore by default a proportion would come under the RSS category of 'recovery'.

[5] Indicated in the Executive Summary of Waste Strategy 2007. The 35% is based on initial thinking by DEFRA in a Feb 2006 consultation paper on Waste Strategy http://www.defra.gov.uk/environment/waste/strategy/review/pdf/review-consult.pdf

81kt (general biodegradable C&I) and 114kt (metal waste) already being diverted, as referred to at the start of this C&I Section

Consideration of Approaches

105. Dependent upon which approach is used the capacity gap for C&I facilities is non-existent, minimal or large.

106. Approach One indicates that there is a massive overprovision of C&I waste recycling/re-use facilities in Gloucestershire. This is considered to present an inaccurate picture of waste management activities and requirements in the County. It would do nothing to increase re-use/recycling of the general biodegradable C&I waste stream and therefore would not assist in diverting waste from landfill. Consequently this is not a preferred approach.

107. Approach Two could be discounted on the basis that it removes a significant proportion of the waste stream from the calculations without proportionally reducing the Regional Capacity figures. This approach is therefore not comparing like with like and is therefore not a preferred approach.

108. Approach Three follows national and regional policy strategies for moving waste management up the hierarchy. It provides a basis for future provision of C&I facility capacity that is proportional (on the basis of RSS targets) to the issue relative to the situation in Gloucestershire.

109. Approach Four follows emerging national strategy as opposed to emerging regional policy direction. Therefore in this approach the RSS target requirements are effectively redundant as these calculations are based on national requirements translated straight down to the local level.

110. The benefit of Approach Four is that it uses locally derived actual tonnages as opposed to regionally derived estimated figures. The disadvantages are that it is based on throughput rather than capacity and therefore it is potentially beyond the control of the WPA. There are also potentially conformity issues with the RSS.

111. Both Approaches Three and Four should not be seen as providing tonnage 'ceilings'. These are not maximum diversion figures as the overarching aim of the WCS is to reduce waste to landfill. Following this objective therefore, whilst Approach Three offers potentially the most logical approach, Approach Four is considered to have more merit in meeting the Spatial Vision and strategic objectives of the WCS (see Evidence Paper WCS B 'Spatial Portrait and Vision') as it provides additional incentive to move waste management up the waste hierarchy and also takes into account emerging national targets.

112. The preferred way to consider the need for C&I waste facilities (including metal waste) in the WCS is consequently Approach Four.

Section 4 Construction and Demolition Waste

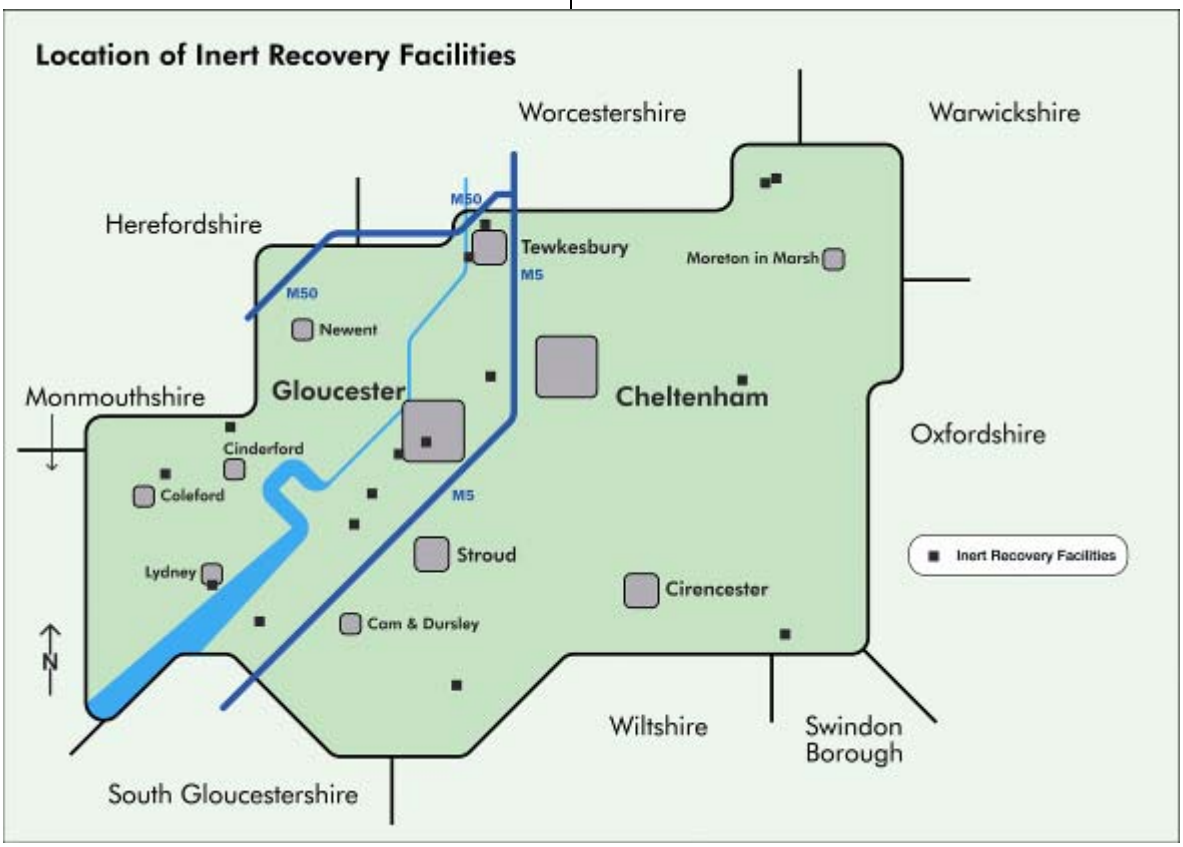
113. Construction and demolition (C&D) waste comprises mainly inert materials (brick, concrete, sub-soils etc.). Whilst biodegradable elements (timber, metal and plastic) will also be present these are in comparatively small quantities. This counter-balances the approach taken with C&I waste, which is largely biodegradable but with small amounts of inert material.

114. Data on construction & demolition (C&D) waste management has been provided by the Environment Agency (EA). The EA figures split the data into four broad categories: landfill; treated; transferred; and inert material from metal recycling sites. The location of licensed inert recovery facilities is set out in Figure 6 below.

115. During 2005 there was around **403kt** of C&D waste managed by licensed facilities in the County of which:

- **222kt** was landfilled
- **62kt** was recycled (but see paragraph 119 below)
- **238kt** went through transfer facilities of which a proportion will have been double counted (i.e. it will have been sent on for further management or disposal)

Figure 6



116. EA advice on the transferred element is that some will have been sent on to landfill sites (and thus double-counted as part of the 'landfill' returns) and the remainder will have been recycled (and thus not included in other figures as the EA do not have a C&D 'recycled' category).

117. Whilst it is not possible to put a definitive figure on this split, the previous two years data from the EA (which did provide facility type details) showed that it is roughly 50:50. Transfer of waste is considered in Section 7.

Exempt Site Data

118. In addition to waste that passes through licensed facilities there is also material that is managed on sites that have an EA waste management license exemption. In Gloucestershire there are 2,139 such 'exemptions' of which there are two types: *simple* and *complex* (exemption category paragraph references are given below).

119. A 'simple exemption' is one that the EA considers is a relatively low risk waste handling activity. Examples include: burning waste oil as a fuel in an engine (*para 6*); treatment of waste at place of production (*para 27*); and deposit of mineral exploration waste (*para 35*).

120. 'Complex exemptions', whilst being exempt from licensing, still need to be checked to ensure that they will not harm the environment. The information required as part of this assessment must demonstrate that the proposals will meet the objectives of the exemption and will not cause pollution. The type and quality of information may well require advice from a technical specialist.

121. Although small tonnages of waste from other waste streams (biodegradable waste) may be managed at locations with an exemption the largest tonnage of exempt activities is likely to involve C&D material (hence its inclusion in this section of the evidence paper). The two most important exemptions in this respect are 9A and 19A.

- **Paragraph 9A 'Reclamation or Improvement of Land'** allows wastes to be used to reclaim or improve land and is typically used by farmers or construction companies returning land to reuse. The exemption limits the land type to which this can be applied, to that requiring improvement, restoration or reclamation as a result of previous development or industrial use, with the intention of achieving agricultural or ecological improvement. The volume of waste is restricted to 20,000 cubic metres per hectare and the depth of spread must be no more than 2 metres.
- **Paragraph 19A 'Storage and Use of Building Waste'** allows waste to be used for construction purposes and is typically used by farmers for laying tracks or by construction companies installing vehicle parking areas. This allows 50kt to be stored in a 6 month period.

122. The sites within the County with Paragraph 9A and 19A exemptions for 'disposal activities' is constantly changing, however, at the time of preparing this paper those sites that the EA have registered as holding such exemptions are listed in Appendix A. However, factors such as site size, longevity and operational restrictions mean that from the information supplied by the EA it is not possible to put a precise figure on the capacity in the County for 'disposing' of C&D waste through exempt sites.

123. Notwithstanding this the WPA has made an attempt to provide an estimate as to the inert exempt voidspace available in the County by contacting each of the exempt sites in a list provided by the EA. Those that are still operational, or who did not respond, are listed in Table 11.

Table 11: Exempt Inert Waste Activities in Gloucestershire
(under EA license exemptions Paragraph 9A & 19A)

Baird Road Waterwells Business Park, Gloucester
Bradley Green, Wootton Under Edge
Canal Works, Harbour Road, Lydney, Glos
Claydon Pike Gravel Pit, Lechlade, Gloucestershire
Clingre Farm, Clingre Lane, Stinchcombe, Dursley
Coopers Edge, Brockworth Airfield, Glos,
Forest Vale Road, Cinderford, Glos
Former Transport Depot, St Johns Avenue, Churchdown
Hartpury House, Gloucester, Glos
Jackson Civil Engineering
Kineton Thorns Restoration, Buckle Street, Naunton
Lake 10, 11 & 16 Cotswold Water Park, South Cerney
Manor Farm Quarry, Washpool Lane, Kempsford
Manor Farm, Longney, Gloucester, GL2 3SL,
Murrells End House Farm, Hartpury, Glos, GL19 3DF,
Off Bourton On The Hill Road, Blockley, Moreton In Marsh
Phase 1, Area E, Benhall, Cheltenham, Glos,
Phase 1, Priors Road, Oakley, Cheltenham, Glos,
Sandpool Farm Golf Course, Somerford Keynes,
Sharpness Shipyard, Dock Road, Sharpness
Shorncote Quarry (Cotswold Community Land), Shorncote
Southfields, Abbots Court Farm, Church End, Twyning
Spratsgate Lane, Somerford Keynes
Station Street, Cinderford, Gloucestershire
The Grandage, Hatherop, Glos

124. A letter, with pre-paid envelope was sent to all of the site owners/operators on the EA exemptions list. Around half responded providing data in respect of site capacity for disposal. Where a response was not received for a particular site an estimate was used (see Appendix A).

125. On this basis it appears that there is currently around 1.25 million m^3 exempt disposal capacity in Gloucestershire. Much of this though, by its nature, is short term and related to either mineral restoration or construction activity. As such it cannot therefore be reliably planned for as a stand-alone activity. Consequently the issue of inert disposal is considered in more detail in the Technical Evidence Paper MCS-F 'After Minerals – Restoration, Aftercare and After-use in Gloucestershire'.

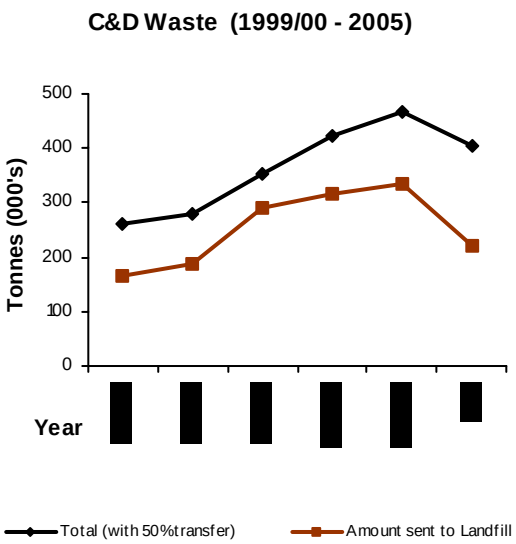
126. In respect of mobile crushing operations, work undertaken for the Government by Capita Symonds (February 2007) indicates that in Gloucestershire there is estimated to be around 500kt processed by mobile crushing equipment each year. In 2005 this capacity was related to 11 operational permits, granted by local authorities through their environmental health function.

127. It is likely that most of this mobile crushing activity will have taken place on construction sites and in mineral quarries with the material being re-used / recycled on-site. More information on this is set out in Technical Evidence Paper MCS-D 'Secondary and Recycled Aggregates Report'.

128. As this material does not get managed at a licensed waste site it therefore technically does not enter the waste stream. Consequently it does not need to be 'planned' for as part of the WCS. The adopted Waste Minimisation SPD provides support for this type of operation.

C&D Waste Growth

129. The graph below illustrates a six year period of C&D waste management in Gloucestershire. The amount being managed over the latest three years indicates considerable instability in levels.



130. Data for the South West indicates that regionally C&D waste arisings have fluctuated. For the purposes of planning, the Regional Waste Management Strategy (RWMS) and the adopted Gloucestershire Waste Local Plan (WLP) both assume future C&D waste growth to be zero. However, the figures in the graph indicate that for Gloucestershire this is not necessarily the case.

131. The last few years data show a marked increase followed by a reduction in the tonnages that were managed. This fluctuation may partly be attributed to the raw data being presented differently each year. For example in the first two years less detailed data was available, in 2001/02 and 2002/03 there was more detailed information but this served to highlight cross border / site transfer issues. In 2003/04 the headline figures are derived from the EA response to the Issues & Options papers. And the 2005 data is for the calendar year rather than financial year.

132. In terms of growth/reduction rates it is consequently difficult to determine an appropriate way forward based on the available data as the years are not comparing like with like. The WCS Issues & Options report (July 2006, Part B, paragraph 4.52) proposed planning on the basis of the 2002/03 tonnages continuing. However, it now appears that it would be more prudent to plan on the basis of a continuation of the current levels.

National & Regional Policy

133. The national policy direction for C&D waste, as set out in the National Waste Strategy 2007, is moving towards a target of halving the amount of such material sent to landfill (paragraph 74, pg.69). This would be achieved by encouraging waste reduction initiatives, re-use of materials and recycling.

134. The reduction of C&D waste would be driven through Site Waste Management Plans and similar initiatives. More information on this issue is set out in Technical Evidence paper WCS-D 'Implementing the Waste Hierarchy'.

135. The South West policy for managing C&D waste is contained in the Regional Waste Management Strategy (October 2004) as subsumed within the RWMS (RSS Policy W1), although the C&D capacities do not formally appear in the RSS. The RWMS sets indicative C&D facility capacities that the WCS is required to demonstrate can be provided in Gloucestershire up to 2020 (see Table 12).

Table 12: RSS Indicative C&D Waste Management Capacities for Target Years (000's tonnes)

	Treatment	Transfer	Landfill
2010	70	110	210
1013	70	110	210
2020	70	110	210

136. The definitions of 'treatment' and 'transfer' used in the RWMS both include crushing and screening operations. There is consequently a significant cross-over between categories. Additionally, some fractions of C&D waste can be used to substitute for primary aggregates. This is issue is considered in detail in Technical Evidence Paper MCS-D 'Secondary and Recycled Aggregates Report'.

Current C&D Facility Capacity

137. To determine the County's current capacity the WPA undertook an assessment of planning permissions, waste management licences and EA returns. Additionally an operator survey was undertaken in 2005/06 followed by ongoing discussions with operators to further improve the capacity picture.

138. Table 13 (below) indicates the current (2007) licensed capacity in the County for diverting and disposing of C&D waste. It updates the Issues & Options paper (Part B, Table 16) as since that time additional operations have gained planning permission, others have revised operating practices and new contracts have been gained etc. which has further changed the picture.

Table 13: Indicative Licensed C&D Waste Management Capacity in Gloucestershire 2007 (000's tonnes)

	Management*	Disposal
Cheltenham	6	0
Cotswolds	112	125
Forest of Dean	130	0
Gloucester City	134	117
Stroud	83	12
Tewkesbury	55	138
Total	**520**	**392**

[*Management includes transfer, treatment, screening, crushing and storage]

139. Although information provided to the WPA by the EA splits C&D waste management into treated and transferred categories an examination of their data returns, combined with an operational knowledge of the sites clearly shows that the two categories are used interchangeably.

140. Following discussion with the waste industry, in practice it has not been possible to provide a realistic split between 'transfer' and 'treatment', and consequently, for the

purposes of the WCS the two categories have been combined under a single 'management' category.

141. There is theoretical licensed landfill capacity in the County for inputting around a million tonnes of biodegradable and inert material each year. However, this capacity is dominated by a small number of operators who have recently been reducing inputs of inert material to husband the voidspace for biodegradable material (due to its higher gate price). This has resulted in less inert material being accepted at these sites but has also served as an important mechanism to increase diversion of inert material away from disposal.

142. A meeting of C&D waste operators was convened to provide additional 'on the ground' advice to the WPA concerning the perceived accuracy of waste data and the link to the regional targets. The key issues that they raised were:

- There is an increasing difficulty in disposing of inert materials in the County - the majority of their material sent for disposal goes to 'exempt' sites (see previous section)
- Lack of sites for disposing of inert material. And 'exempt' sites are often short term operations to restore mineral workings
- C&D activities are being moved off urban land as the sites are required for regeneration in Gloucester
- Land owner ambivalence is a big problem for operators in identifying future sites for inclusion in plans
- Difficulty gaining planning permission due to opposition from a variety of sources to waste activities
- Site allocations in plans are unhelpful due to land owner opposition

143. A key outcome of the discussions with industry was that a criteria based approach for preparing a framework for C&D waste management provision would provide greater flexibility and opportunity for operators to recycle more C&D waste.

144. Discussions have also been held with District Councils (and in particular Gloucester City Council) concerning the relocation of existing C&D waste activities. Some of the key issues raised include:

- Sites currently occupied by waste management uses are required for urban regeneration in Gloucester
- Issues and difficulties in safeguarding allocated sites in the Waste Local Plan
- Possible locations for new or re-located waste management facilities towards the south of Bristol Road
- Potential for sustainable transportation of waste (wharfage and sidings)

Provision Requirements

145. Comparing the RSS required provision in Table 12 (above) with the current capacity in Table 13 (above) illustrates that there is a theoretical over-capacity of C&D waste facilities in Gloucestershire. However, the WPA does not believe that in reality there is

such an over-provision. There are four main reasons for this:

146. Firstly, over the past few years there have been significant changes in C&D management in the County. For example, operators in Gloucester City need to re-locate their operations due to urban regeneration proposals. If alternative premises cannot be found this reduces the current operational capacity and may result in materials travelling further to remote locations. Similarly, there is very little capacity in Cheltenham. The urban areas are the main source of these arisings, and the locations of potential expansion. It follows that management facilities should be located within or near to these urban areas. But, as can be seen from Figure 8, there are only a limited number of operations well placed to deal with these arisings.

147. Secondly, the RSS figures are based on work undertaken in the RWMS, whose policy approach is to maximise the re-use and recycling of C&D waste. As some 222kt of C&D waste was landfilled in 2005 it appears that more could be done to divert C&D waste from landfill, for example as restoration material at quarry sites. However, around 10% of landfill voidspace will need to be inert material to engineer and cover/cap the site.

148. Thirdly, there is a limit to the amount of soils that can be re-used on construction sites rather than taken to other sites for land restoration or landfill. Consequently there is a need for voidspace to dispose of inert materials (for example soils). 'Exempt' sites that are used to dispose of inert material through restoration, land improvement schemes etc. are often short-term and the closure of particular key sites can have a significant impact on capacity. But equally these sites are by their nature windfall opportunities – the minerals are not dug to create holes in the ground into which C&D waste can be tipped. This issue is consequently linked to mineral activities, a matter discussed in detail in the Technical Evidence Paper MCS-F 'After Minerals – Restoration, Aftercare and After-use in Gloucestershire'.

149. Fourthly there is an issue as to the amount of on-site demolition that occurs in a given year, and subsequently the quality of that material for re-use.

Calculating the Capacity Gap

150. Calculating an appropriate level of provision for future C&D waste management facilities in Gloucestershire can be carried out by following one of two approaches:

151. The **first approach** is to assume that the RSS apportionment is the best way forward and that the County already has enough provision for treating and transferring C&D waste. Consequently there would be no identified capacity gap for C&D waste facilities.

- Under this approach no additional capacity would need to be identified and any future development proposals would be considered on the basis of driving waste management up the hierarchy. This is considered to be a reactive approach.

152. The **second approach** is to proactively seek to move C&D waste management up the waste hierarchy in accordance with the indicative direction proposed in Waste Strategy 2007 - this being to halve the amount of C&D waste going to landfill by 2012.

- For Gloucestershire this would mean reducing the 222kt sent to landfill in 2005 to 111kt by 2012

153. It is anticipated that proactive work undertaken by the County Council in preparing and implementing its Waste Minimisation Supplementary Planning Document (SPD), will assist in meeting some of the 111kt shortfall by reducing the amount of C&D waste taken off-site.

154. Additional recycling/re-use facilities however are still likely to be required to encourage industry competition to drive C&D waste management up the waste hierarchy.

155. It is also possible that C&D waste can be diverted from licensed landfills to 'exempt' sites for use as restoration materials e.g. at quarry sites. This would be classed as a beneficial re-use of the material and as such would be exempt from waste management licensing. The restoration of mineral sites needs to be balanced between landscape / biodiversity aspirations, amongst others. This issue is considered in detail in the Technical Evidence Paper MCS-F 'After Minerals – Restoration, Aftercare and After-use in Gloucestershire'.

156. Restoration material would not be recorded by the EA in their returns for disposal, but as the material would need to be 'clean' this would necessitate it passing through some screening equipment and as such it would be recorded through those operations.

157. This second approach potentially requires additional waste management facilities for recycling/re-use of C&D waste to help divert it from landfill. It is an approach that conforms with national policy in that it proactively seeks to drive waste up the hierarchy.

158. The overarching aim of the WCS is to reduce waste to landfill. The second approach therefore has more merit in meeting the Spatial Vision and strategic objectives of the WCS (see Evidence Paper WCS-B 'Spatial Portrait and Vision') as it provides additional incentive to move waste management up the waste hierarchy and also takes into account emerging national targets.

Preferred Approach

159. The WPAs preferred way forward is the second approach, which seeks to proactively divert C&D waste from landfill.

- This accords with National Waste Strategy 2007, in terms of pushing C&D waste management up the waste hierarch by diverting it from landfill
- It meets the Spatial Vision and strategic objectives of the WCS (see Evidence Paper WCS-B 'Spatial Portrait and Vision') as it provides additional incentive to move waste management up the waste hierarchy
- It addresses the practical issue, raised by the waste industry, of insufficient opportunities for C&D waste facilities to operate in the County

- It assists in the appropriate restoration of mineral extraction sites
- It is proactive rather than reactive
- It takes into account emerging national targets

160. The approach could be monitored through analysis of the ration of inert material being sent to landfill compared with that being diverted through licensed management facilities. The issue of exemptions would be harder to monitor as the EA do not collect on-site data and therefore it has a potentially significant resource implication for the WPA.

Discounted Approach

161. The first approach has been discounted on the basis of discussions with waste operators, who believe there to be insufficient facilities to manage actual arisings (as opposed to the amounts recorded under EA licensing, which do not include that which is managed on building sites).

Making Provision

162. The different ways to make provision, whichever approach is finally chosen, are set out in Technical Evidence Paper WCS-F 'Making Provision'.

Section 5
Hazardous Waste

163. Waste described as 'hazardous' is comprised of some 20 different categories of material. Each has potentially different handling and management requirements.

164. Hazardous waste includes, for example: fridges and televisions from MSW; asbestos and contaminated soils from C&D waste; and processing residues such as sludges and oils from C&I wastes.

165. Hazardous wastes therefore not only include substances that are usually recognised as being dangerous or harmful, but can also include wastes from everyday activities, such as engine oils, paints and batteries, but if not managed correctly might cause a health hazard.

National Policy

166. The National Waste Strategy for England 2007 (Annex C9) provides additional background information on the issue of hazardous waste. The following paragraphs are taken from this document and provide some national context.

167. Nationally, arisings of special waste generally declined between 2000 and 2003, but increased in 2004. This was partly a result of the rush to beat the ban on the co-disposal of hazardous waste in the same landfill as non-hazardous waste, which applied from 16 July 2004. In the lead-up to the ban, deliveries to landfill sites rose markedly, especially of contaminated soil, as operators sought to use up spare hazardous waste landfill capacity before the ban applied. The latest hazardous waste data for 2005 would appear to show a return to a continuing overall decline in hazardous waste arisings.

168. Landfill has traditionally been the principle management route for many hazardous wastes but reliance on its role is declining. Landfill Directive requirements have driven this reduction.

169. A high proportion of hazardous waste can be re-used, recycled or otherwise recovered. This trend is likely to continue with increased treatment and recycling of hazardous waste electrical and electronic equipment (WEEE) such as televisions and fluorescent tubes, and wastes from the construction sector such as contaminated soil.

170. Treatment of hazardous waste remains one of the most important management routes, whether through incineration (with or without energy recovery), physio-chemical treatment or solidification/stabilisation.

171. There are currently no specific national or regional targets on hazardous waste. However, targets for reducing hazardous waste could be set nationally once a baseline for arisings is established following the change in the definition of hazardous waste in July 2005. This suggests that targets should not be set before 2008, when full year data for 2006 and 2007 should be available. The Government has stated that they will look to relevant stakeholders to provide input to this.

Gloucestershire Situation

172. Hazardous waste data for Gloucestershire, provided by the EA, is set out in Table 14 (below).

Table 14: Hazardous Waste Managed in Gloucestershire (000's tonnes)

	2000	2001	2002	2003	2004
Arose in Gl'shire	53	37	25	28	39
Exported from Gl'shire	36	23	22	27	38
Imported into Gl'shire	69	49	39	44	71
Total Managed in Gl'shire	**86**	**63**	**42**	**46**	**72**

* These figures have been rounded, hence 2003 not adding up to 46.

173. The data for 2004 (the most recent available) indicates that there are variations year to year in the amount being managed. The method of management (indicated in Table 15) similarly varies, with the amount being landfilled decreasing but that the treated figure rising markedly.

Table 15: Comparative Hazardous Waste Management Methods in Gloucestershire (000's tonnes) – EA figures

	2002	2003	2004
Landfilled	38.94	40.44	31.09
Treated	0.02	2.58	38.18
Transferred	3.16	2.75	2.85
Recycled	0.13	0.09	0.06
Total	**42.25**	**45.86**	**72.18**

174. The increase in treated hazardous waste is illustrated in the graph below.

175. The hazardous waste managed in Gloucestershire is primarily at one site: Wingmoor Farm East, Bishop's Cleeve, Cheltenham. The county's landfill voidspace for disposing of hazardous is contained at this one site, the current planning permission for which expires in 2009.

176. The operator of this site has provided information from more recent years showing that the tonnage dropped to 62kt in 2005 before rising up to 83kt in 2006 (See Appendix B). EA data for these latter years is currently unavailable.

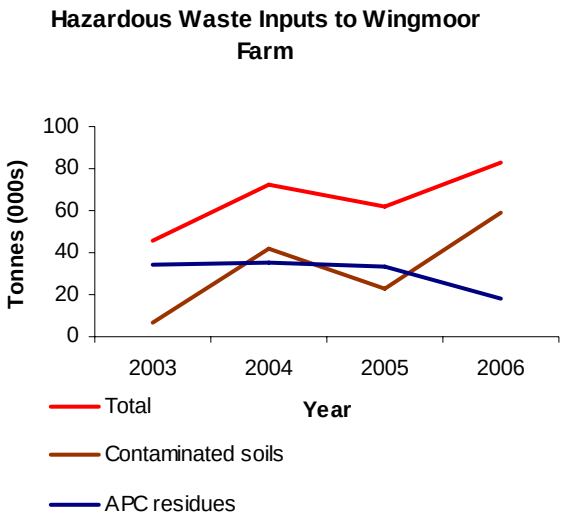
Operator Discussions

177. Information provided by the operator of this site (see Appendix B) indicates that around 10kt extra hazardous waste was managed at this site in 2004 than is shown in the EA figures:

- 41kt was processed through the treatment plant
- 82.6kt was landfilled (including the 41kt that first underwent treatment)

178. In breaking down the operator's data it can be seen that 41.6kt was sent directly to landfill in addition to the 41kt transferred internally within the site from the treatment plant to landfill. From discussions with the operator the reason for this discrepancy appears to be due to EA reporting mechanisms in respects of transfer/treatment/landfill categorisation – i.e. avoiding double counting material by only recording the material based on the first management process it encounters, rather than recording it a second time when it subsequently goes for landfill at the same location.

179. The difference in the levels of hazardous waste being disposed of is primarily due to changes in legislation, reflecting the national position set out earlier. Since 16th July 2004 the Wingmoor Farm East site has operated a separate hazardous waste landfill and a non-hazardous waste landfill. The acceptance level of contaminations for waste since then has become more stringent. The hazardous waste being accepted is now primarily contaminated soils or similar which are heavier and have therefore increased tonnage levels.



180. According to a statement by the operator, the Air Pollution Control Residue (APCs) inputs into the Wingmoor Farm treatment plant are mixed with leachate that can be generated from within the site or imported liquid waste. The subsequent material is then landfilled. As previously stated, the EA figures do not show that this transferred waste is landfilled, therefore the treatment / transfer and landfill figures need to be added to give a total.

181. The operator has stated that inputs into the plant were relatively consistent after 2004, although in 2006 there was some reduction with a number of waste streams being diverted to an alternative treatment facility.

Cross Border Movements

182. Hazardous waste is managed within a national market with material travelling many miles to suitable facilities. The situation in Gloucestershire is that

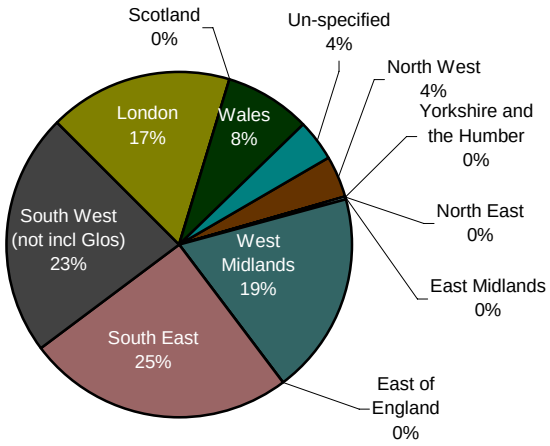
hazardous waste material is both imported into and exported out of the County. This is illustrated in Figures 7 and 8 respectively (set out later in Section 7 of this paper).

183. The largest amount of hazardous material **exported** from the County in 2004 was C&D waste/asbestos (European Hazardous Waste Catalogue, category 17). Over 21kt of this material was exported, primarily to Warwickshire, Wiltshire and Dudley. The next largest export was around 8kt of oils (category 13) to Bristol, Sefton and Worcestershire. There was around 4kt of hazardous metals/plastics (categories 11 & 12) set to a variety of locations. The other exports are all under 1kt.

184. Hazardous materials are also **imported** into Gloucestershire for management (Figure 7). The largest tonnages come from the South East (17.8kt), the South West (16.2kt), the West Midlands (13.3kt) and London (12.2kt). The largest tonnages comprise 33.7kt from the 'Waste/Water Treatment and Water Industry' (category 19) and 25kt of hazardous C&D/asbestos waste (category 17).

185. Therefore it appears that certain categories of hazardous waste are being 'swapped' between WPA areas and regions – the main example being category 17 asbestos and other hazardous C&D wastes. This comes into the County from other authorities in the South West and also the West Midlands.

Hazardous Waste Imported into Gloucestershire by Region (2004)



186. This is a market driven activity and even the presence of suitable sites within an area does not ensure that material derived from a given location will necessarily be managed in that area. This is a matter of choice for the waste producer and who they employ to manage their waste.

187. More information on planning policies and policy options for managing hazardous waste is set out in Technical Evidence Paper WCS-E 'Hazardous Waste'.

Section 6
Agricultural Waste

188. Agricultural waste is derived from premises used for the following purposes:

- Horticulture
- Fruit and seed growing
- Dairy farming and livestock breeding/keeping
- Land used for grazing, meadow land and nursery grounds
- Land used for woodlands, where it is ancillary to agricultural purposes

189. Agricultural wastes include, for example, waste silage wrap, waste pesticide containers, waste pesticides, scrap machinery, waste oils and waste veterinary medicines from farms.

190. The tonnages of agricultural waste arising in Gloucestershire are set out in Table 16 (below). The EA state that it is the most up to date data available.

Table 16: Agricultural Waste in Gloucestershire
Source: Strategic Waste Management Assessment 2000 South West

Nature of Material	Tonnes in 1998	Tonnage up to 2018
Compostible and Digestible	1,059,843	10,598,430
Combustible	41,709	417,090
Difficult and Chemical	13,484	134,842
Other (scrap machinery/milk)	766	7,660
Total	**1,115,802**	**11,158,022**

191. New regulations since May 2006 have classified all waste materials arising on agricultural premises as waste within the terms of Environmental Protection Act 1990.

192. Advice from the EA is that, following a recent judgement from the European Court of Justice, manures and slurries arising from agricultural activities and spread to land for agricultural benefit do not fall within the terms of the Waste Framework Directive and are therefore not to be considered waste.

193. The amounts of actual wastes, essentially those non-natural materials arising through farming activities, will be waste and require appropriate management and disposal.

194. The EA do not believe the amounts of such arising at both a regional and sub regional level to be significant, representing less than 1% of existing waste management tonnages, and would be managed through existing waste facilities. Consequently, it is not proposed to make specific provision for this waste stream.

Section 7
Waste Transfer

195. This section provides data on the movement of waste within and outside of the County.

Transferred Waste

196. The EA have warned against totalling figures to obtain 'arisings totals', because it is unclear the extent to which 'transferred' waste is double-counted i.e. waste is first sent to a waste transfer station from where it is sent on to a landfill site, recycling facility or even out of the County.

197. The EA do not record which specific sites waste outputs from transfer stations are sent to. Therefore, to provide the most accurate total only a percentage of transferred waste has been added to the total.

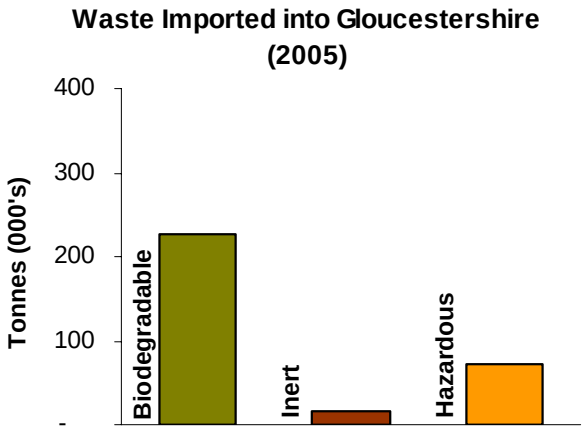
198. For simplicity, this has been calculated based on an examination of waste management in previous years and is different for each waste stream.

- **MSW** - 100% of transferred waste is double counted therefore it is not added to the total arising.
- **C&I** - 75% of transferred waste is double counted therefore 25% is added to the total managed.
- **C&D** - 50% of transferred waste is double counted. Half of the transferred element is therefore added to the C&D managed total.
- **Hazardous -** See specific section on hazardous waste.

Import and Export of Waste

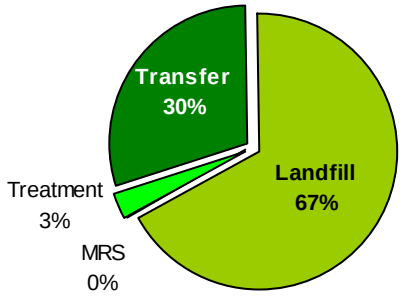
199. Import and export data is provided for three main waste types:

- inert (construction and demolition)
- biodegradable (household, commercial and industrial)
- hazardous



200. In 2005 the main waste type being imported into Gloucestershire was non-hazardous biodegradable waste. This amounted to around 210k tonnes, of which around 150k tonnes went to landfill.

Summary of Importation to Gloucestershire 2005



201. Two issues that have arisen with the EA data are: firstly, double-counting of 'transferred' waste; and secondly, the categorisation of 10% of imported material as coming from destination 'not codeable'.

202. In total 70k tonnes of non-hazardous waste derived from outside of the County passed through Gloucestershire's transfer stations. Whilst the EA do not record which specific sites waste outputs are sent to, their advice is that it is likely that the majority goes to landfill.

Waste Imported To Gloucestershire from the South West (2005)

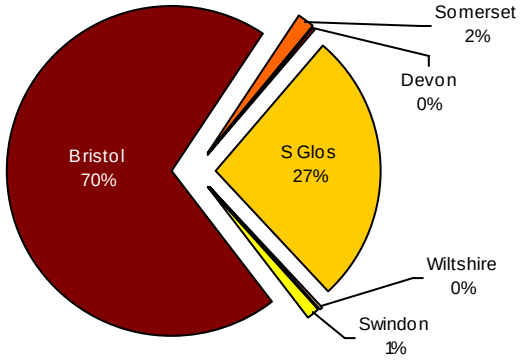
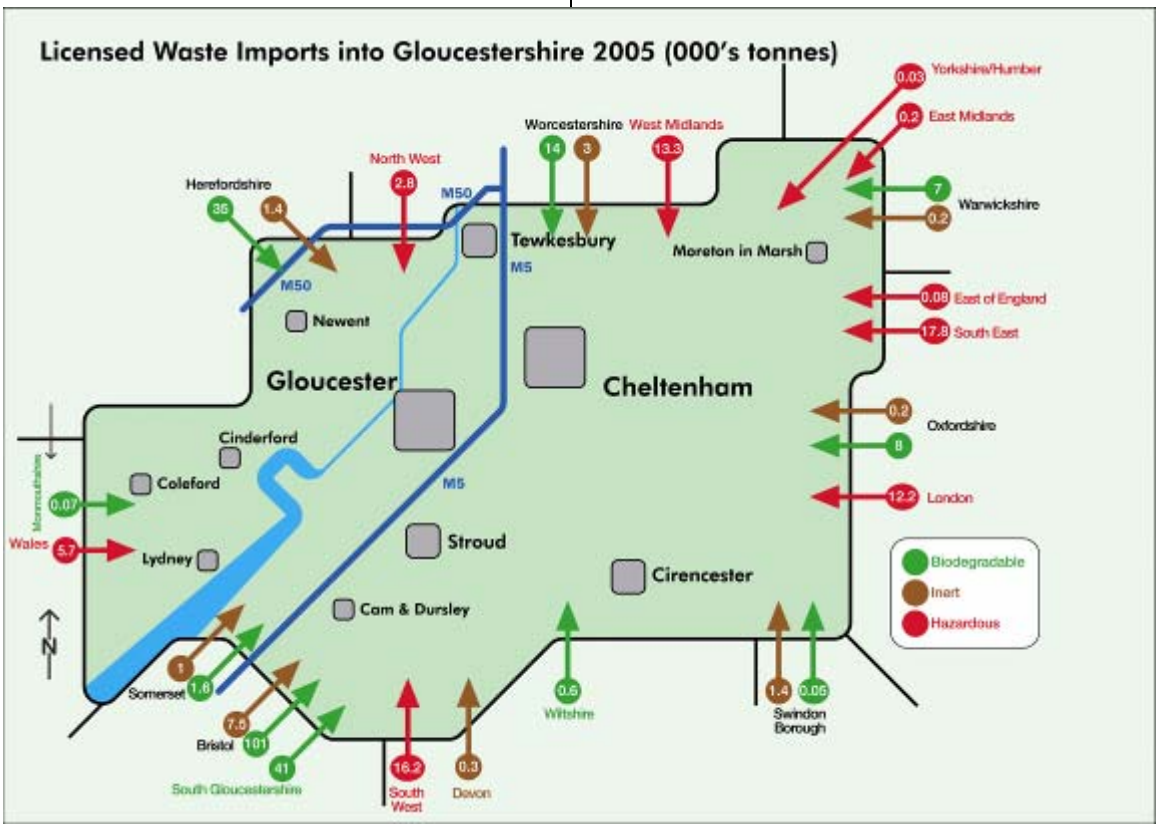


Figure 7



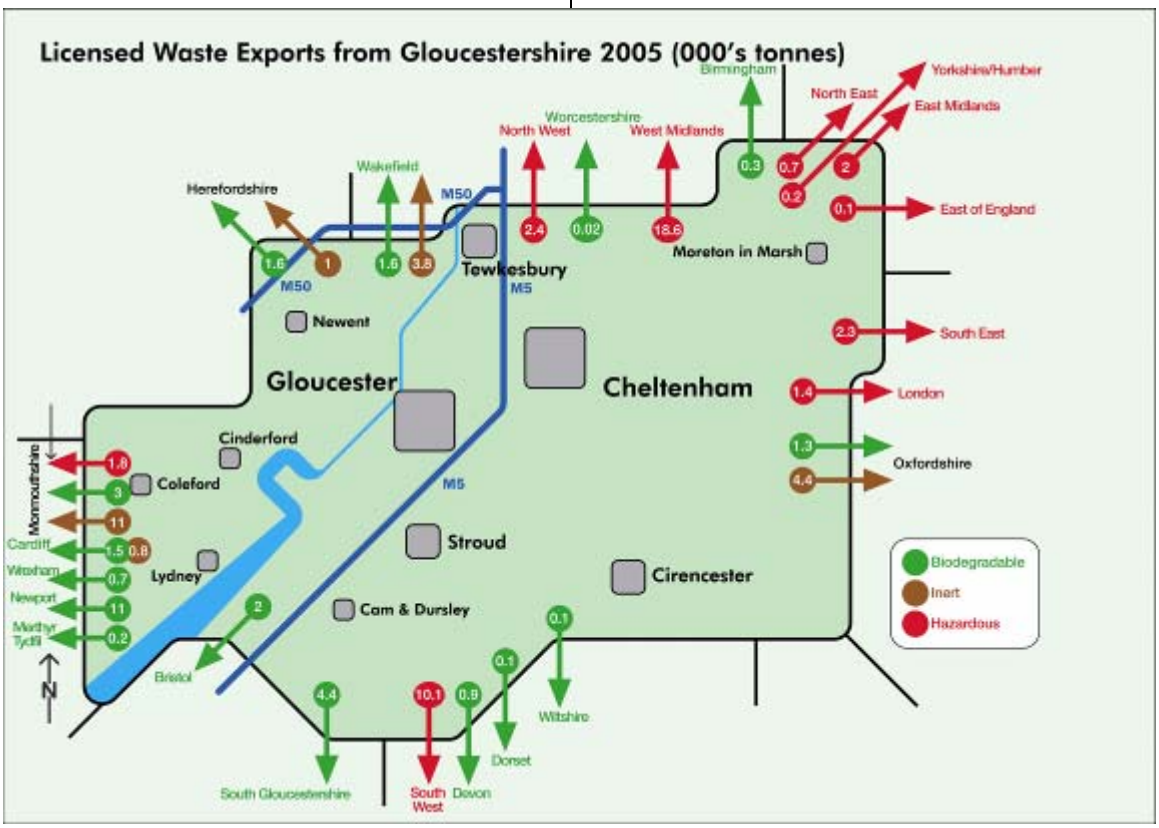
203. The majority (68%) of waste imported into Gloucestershire comes from the South West Region, and in particular Bristol and South Gloucestershire (see Figure 7). It is mostly sent to transfer facilities and landfill sites. Of the remainder of non-hazardous waste imports, 26.6% came from the West Midlands and 5.7% from the South East. Around three quarters of this was landfilled.

204. Waste is also exported from Gloucestershire. Figure 8 (below) illustrates that the tonnages involved are relatively small.

205. Discussions have taken place with planners from the West of England (the former County of Avon unitary authorities) on the issue of cross-border waste transfer. They are aware of the export issue to Gloucestershire and are looking to address the lack of facilities in the West of England through preparing a Joint Waste Development Plan Document between the former Avon unitary authorities.

206. Key outcomes from the meeting are set out in the separate Evidence Paper WCS-MCS-2 'Links with Districts and Neighbouring Authorities' relating to partnership working with other authorities.

Figure 8



Section 8
Landfill Capacity

207. This section sets out current inputs and possible future landfill disposal requirements.

208. Annually in Gloucestershire around 500kt of non-hazardous biodegradable waste and 220kt of inert material are landfilled at licensed sites. See later section on 'Exemptions', which provides information on inert material that is sent for restoration of mineral sites and other uses.

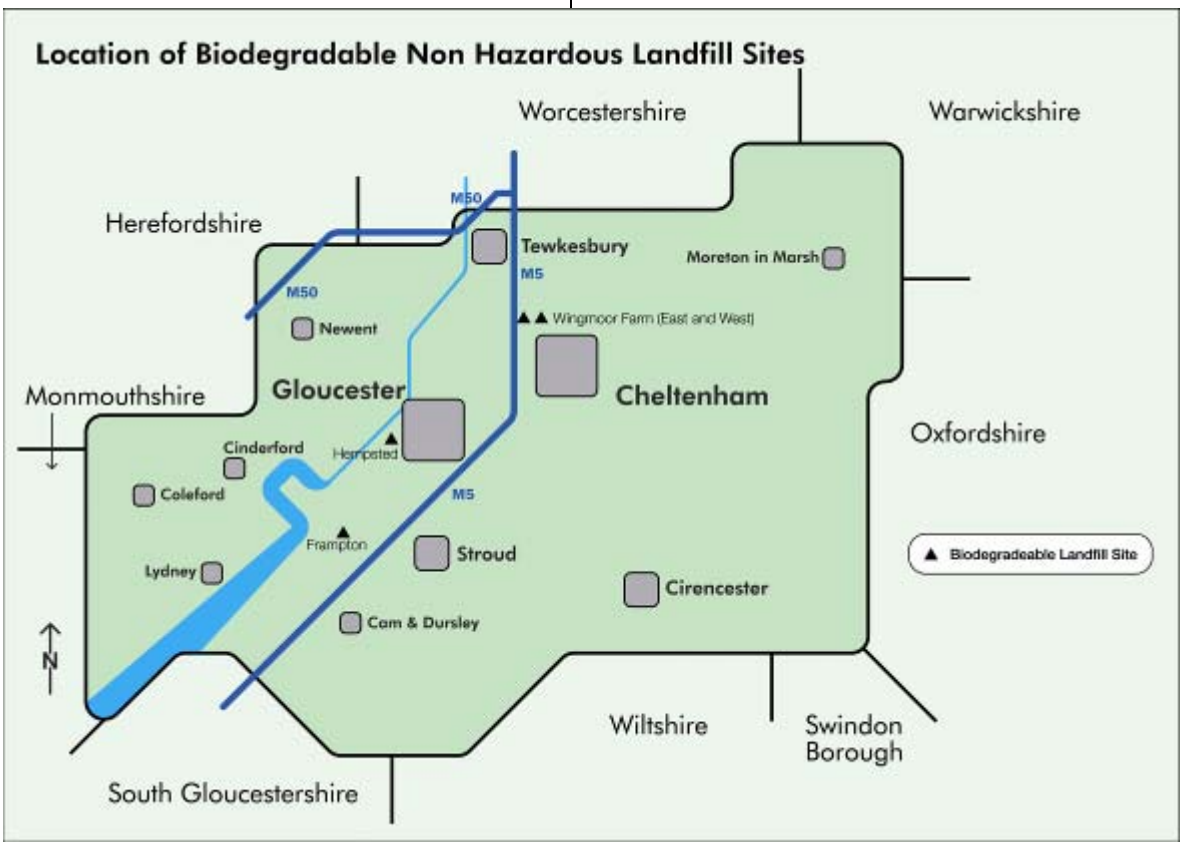
Biodegradable Waste Landfill

209. There are four main landfill sites in the County for disposing of non-hazardous waste (MSW, C&I and C&D) [see Figure 9 below]. The sites are:

- Hempsted, Gloucester.
- Frampton, Stroud.
- Wingmoor Farm East, Bishops Cleeve.
- Wingmoor Farm West, Bishops Cleeve.

210. One of the four landfills (Wingmoor Farm East) comprises two adjacent sites operating under single ownership (one for non-hazardous waste and the other for hazardous waste), hence the reference to Gloucestershire currently having five landfill sites on the EA website.

Figure 9



211. The Environment Agency have advised that these four landfill sites have (at Feb 2007) a combined voidspace capacity of around 8,985,000m³ for non-hazardous waste.

212. Three of the four sites are operationally limited to varying degrees by their respective planning permissions:

- Frampton (nr Stroud) has very limited permitted capacity remaining and is due to close soon (around 2008).
- Hempsted, under its current permission, is likely to be completed within the next 8 years.
- Wingmoor Farm East has a time-limited planning permission to 2009 (although there is significant remaining voidspace and the operator proposes to submit an application to extend the planning consents for operations to continue to 2034 – Grundon's Scoping Report, December 2006).

Inert Waste Landfill

213. Inert material is used for capping, covering and engineering all types of landfill sites in the County. It is also being used for restoration purposes at mineral sites, engineering/landscaping schemes and for agricultural improvements on farmland. These latter activities have EA waste management license exemptions.

214. Exempt sites (for definition see earlier section) comprise an important part of the provision of capacity for managing inert materials. These exempt sites generally comprise land restoration activities such as restoring mineral voids, as such they should not technically be seen as a disposal 'landfilling' activity as they are a re-use of the material. The alternative would be to use primary aggregate for restoration, which would to an extent negate the purpose of winning it in the first place.

215. However, for the reasons given in Section 4 on C&D waste it is not possible to provide a precise figure for the total capacity of exempt sites (including available voidspace). However, work undertaken by the WPA estimates that there is possibly around 1.25 million m³ of capacity currently in the County.

Hazardous Waste Landfill

216. The hazardous waste landfill voidspace in Gloucestershire is between 2.8 and 3.6 million m³ (at February 2007). This is all contained at one site: Wingmoor Farm East, Bishop's Cleeve. However, as with the non-hazardous part of the site, its planning permission expires in 2009.

Future Landfill Requirements

217. The Regional Spatial Strategy [RSS] (Policy W1) requires waste planning authorities to make provision for an indicative amount of waste facilities in their areas. This includes provision for landfilling.

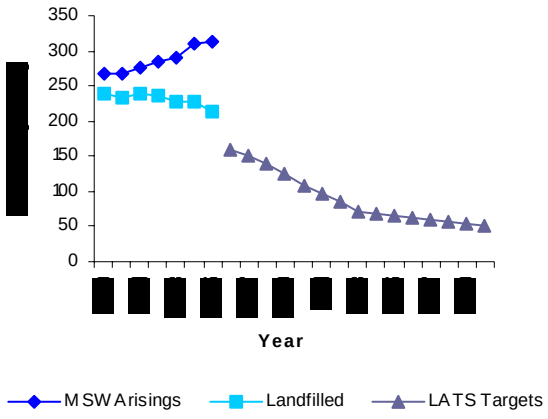
218. According to the draft RSS the maximum amount of **MSW** that can be landfilled in Gloucestershire is:

- 160kt (by 2010)
- 130kt (by 2013)
- 60kt (by 2020)

219. The corresponding LATS target years (see Table 7) are:

- 107kt (by 2010)
- 72kt (by 2013)
- 50kt (by 2020)

Impact of LATS on Gloucestershire



220. Whilst the RSS figures appear to allow more MSW to landfill the RSS (Policy W1) however is clear that its allocations are only "*indicative*". Additionally, the LATS figures relate only to the biodegradable fraction of MSW, whereas the RSS tonnages are for biodegradable and inert.

221. The Government has nationally set the biodegradable content of MSW at 68%. Consequently, if 32% inert is added to the LATS tonnages, the disparity between the two sets of target figures is lessened.

222. For **C&I** waste the RSS provides a range of capacities for landfilling: 285-315kt (2010), 240-260 (2013) and 110-120 (2020). This capacity includes a proportion of inert, biodegradable, and metal wastes.

223. For the purposes of making provision for landfill voidspace it is considered prudent to combine the non-hazardous biodegradable and inert MSW and C&I requirements. This is because the two types of waste have a comparable composition, similar site requirements and therefore, unsurprisingly, are currently taken to the same sites in the County.

224. Although the EA website[6] states that Gloucestershire has 20 years of landfill capacity remaining as at 31/3/05 (based on a remaining voidspace of 15 million m³ for non-inert waste), this does not accord with the detailed information provided by the EA in respect of named landfill sites operating in Gloucestershire. Consequently the WPA proposes to use the more detailed figures set out at the beginning of this section (see paragraphs 211 [non-hazardous] & 216 [hazardous]).

225. For the purposes of estimating the required voidspace needed for the plan period (i.e. from 2007 up to 2020 inclusive, 14 years[7]) a range is put forward derived from considering two alternatives. Firstly, an assumption that the tonnages of non-hazardous waste being inputted into licensed sites are a continuation of the latest figures, and secondly that LATS

[6] http://www.environment-agency.gov.uk/commondata/103196/1701305?referrer=/subjects/waste/1031954/315439/1434288/1434293/1489081/

[7] Calendar years are used to reflect RSS requirements, Table 7 is based on financial years (i.e. 2006/07 – 2020/21 comprises 15 years).

targets for MSW and national targets for reducing C&I and C&D to landfill are all met as per the discussions in earlier sections of this paper. [Please note that C&D waste compaction rates are 1.5t/m³ whereas biodegradable waste is taken to be 1t/m³, additionally all figures have been rounded to the nearest thousand].

Inputs if meeting targets (up to 2020)

MSW: 3,101kt (based on Table 7 calendar years)
C&I: 2,193kt
C&D: 1,887kt *(1,258m³)*

Total = 7,181kt *(6,552m³)*

Current annual inputs (x 14 years)

MSW: 215kt x 14 = 3,010kt
C&I: 267kt x 14 = 3,738kt
C&D: 222kt x 14 = 3,108kt *(2,072m³)*

Total = 9,856kt *(8,820m³)*

The voidspace range is therefore between:

7,181kt *(6,552m³)* and **9,856kt** *(8,820m³)*

226. Therefore, in light of this range of inputs of non-hazardous waste into the four licensed sites, the non-hazardous voidspace of 8,985,000m³ at February 2007 is expected to last between 12.8 years and 17.5 years.

227. The strategy of the WPA and WDA however is to reduce these current rates and thereby husband the existing voidspace (see the scenarios below).

228. The situation for landfilling inert **C&D** wastes is also linked to the restoration of mineral sites and the granting of Environment Agency 'exemptions'. More information on the use of inert material for mineral site restoration is set out in Technical Evidence Paper MCS-F 'After Minerals – Restoration, Aftercare and After-use in Gloucestershire'.

229. The RSS does not set out indicative landfill capacities for C&D waste, although the RWMS (Oct 2004) gives a figure for each of the three target years of 210kt. Information on C&D waste management is set out in Section 4 of this paper.

230. The RSS also does not set out indicative capacities for **hazardous** waste landfill. Its draft Policy W3 however requires waste planning authorities to recognize the need for such facilities and to safeguard existing sites, where environmentally acceptable. Further detail on this issue is set out in Technical Evidence Paper WCS-E 'Hazardous waste'.

Scenarios for Landfilling Non-Hazardous Biodegradable Waste

231. The key issues and assumptions upon which landfill provision in the County is based include:

- waste growth rates for each stream;
- meeting various targets;
- contractual issues;
- using all permitted capacity;
- availability of material etc.

232. If any of these assumptions were to change, then the amount of voidspace in Gloucestershire would either be shortened or extended. For example, if inputs reduce through successful waste minimisation initiatives, and meeting LATS targets (see graph above) then landfill capacity could last for longer. Conversely, reduced compaction through fewer inputs of biodegradable material (as a result of LATS) could lessen the amount (in tonnes) of material that can be disposed in the same voidspace, albeit that cubic voidspace would remain unchanged.

233. It is possible that the available voidspace at existing sites could increase by, for example, re-profiling restoration contours or by removing additional clays for flood defence. This however would require a further planning permission(s).

234. Although there are many combinations of alternative circumstances, six scenarios have been developed by the waste planning authority that take into account a variety of variables (from the list set out above) that could affect the amount of voidspace available for landfilling.

235. All six scenarios are based on static input data from 2004/05 and voidspace data as of February 2007 for the County's four main sites. Scenarios 2 – 5 assume that no additional waste facilities will come on-line to reduce the amount of material requiring final disposal. Scenario 1 is the only alternative that uses variable waste inputs

Scenario 1

236. Under this scenario landfill voidspace will last until around **2020**. This is based upon the following assumptions:

- MSW growth as per WDA strategy with reducing biodegradable inputs to landfill through the use of new waste treatment facilities.
- Biodegradable MSW landfilling will meet LATS targets.
- Static C&I and Inert growth and inputs.
- All currently permitted non-hazardous voidspace is utilized by cross transfer of waste following completion of other sites in the County.

237. The main variables in relation to this scenario are that facilities are developed in the County to divert MSW from landfill and that all non-hazardous voidspace at Wingmoor Farm East is available (i.e. that the operator will be granted planning permission to extend the time limit on the site to utilise the current voidspace).

238. The scenario assumes that all inert MSW will be landfilled. As it also assumes an annual growth in MSW the inert fraction by default increases proportionately.

Scenario 2

239. Under this scenario landfill voidspace will last significantly **beyond the plan period**. This is based upon the following assumptions:

- Static biodegradable and inert waste inputs up until closure of each site.

- Once a landfill site closes the waste going to it similarly ceases.
- All currently permitted voidspace is utilized.

240. This scenario is very unlike to occur. The closure of a landfill site will not mean that the waste that went to it will no longer arise or require managing in Gloucestershire. The only way such a scenario could happen is if Gloucestershire's waste were to be transferred to sites outside of the County.

Scenario 3

241. Under this scenario landfill voidspace will last until around **2019/20**. This is based upon the following assumptions:

- Static biodegradable and inert waste inputs.
- All currently permitted voidspace being utilized.
- Once a landfill site closes the waste goes to one of the other sites in the County.

242. The main variable in relation to this scenario is that all non-hazardous voidspace at Wingmoor Farm East is available (i.e. that the operator will be granted planning permission to extend the time limit on the site to utilise the current voidspace). However, should the operator choose not to accept cross transfer the pre-application scoping report for extending the life of the site indicates that the operator wishes to extend the life until 2034.

243. Whilst this scenario differs from Scenario 1 in that it assumes that MSW inputs will be constant rather than reducing to meet LATS targets, this is balanced by a zero increase to the inert fraction. The result is that Scenario 3's life is similar to Scenario 1.

Scenario 4

244. Under this scenario landfill voidspace will last until around **2013/14**. This is based upon the following assumptions:

- Static biodegradable and inert waste inputs.
- Once a landfill site closes the waste goes to one of the other sites in the County.
- Wingmoor Farm East landfill site closes in 2009 (with around 3.7million m^3 of non-hazardous voidspace remaining) and thereafter waste which used to go to Wingmoor East is added to that deposited at Wingmoor Farm West.

245. This scenario could occur if planning permission is not granted in 2009 to utilise the remaining non-hazardous voidspace at Wingmoor Farm West.

Scenario 5

246. Under this scenario landfill voidspace will last until beyond **2030**. This is based upon the following assumptions:

- Static biodegradable and inert waste inputs.
- All currently permitted voidspace being utilized.
- Once a landfill site closes 50% of the waste goes to one of the other sites in the County.

247. This scenario assumes that there will be a degree of market rationalization, particularly for those wastes arising outside of Gloucestershire, and waste reduction occurring in the County as landfill voidspace becomes more scarce.

Scenario 6

248. A further scenario seeks to husband the existing landfill voidspace. Depending on the success of reduction strategies and recycling/recovery would extend landfill voidspace until **beyond the end of the plan period**.

249. This scenario assumes that additional waste management facilities are developed in the County that will divert waste from landfill. Such facilities could include additional recycling, transfer/bulking-up and composting facilities.

250. The Waste Disposal Authority have undertaken detailed modelling of the landfilling implications of various different waste facilities for MSW in order to meet (or better) LATS requirements and recycling composting targets. They conclude that by 2015 there could be MSW treatment facilities developed in the County, which would significantly reduce the amount of biodegradable material requiring disposal.

Consideration of Landfill Scenarios

251. It is difficult to state which scenario is most likely to occur as the calculations are, to a large extent, dependant on the fate of remaining non-hazardous biodegradable void at Wingmoor Farm East. If permission is granted for a time extension then the scenarios most likely to occur are 1 and 3. If permission is refused, or the voidspace lessened, then scenario 4 could be most likely.

252. In the case of the former (1&3), additional non-hazardous voidspace would be needed in Gloucestershire during the latter stages of the WCS period, most likely for the period after 2019/20. In the case of the latter (4) the voidspace could run out as soon as 2013. And the WPA would therefore be obliged to make provision for new or extended landfill disposal in the County within a site allocations DPD.

253. However, gaining planning permission for such development can take a number of years and therefore if scenario 4 occurs this matter needs to be considered earlier than these dates.

Section 9
Time Period of the Plan

Stakeholders comments on the Plan's Time Period

254. At Issues & Options stage three options were put forward for the timeframe of the WCS: 2018; 2020; and 2026. Responses from stakeholders differed considerably on which was the most appropriate. This is possibly linked to potential conflicts between national, regional and local aspirations. For example: PPS12 requires the WCS to look forward for a period of at least 10 years from the date of adoption. As the WCS should be adopted by mid 2008 the timeframe for the WCS would be up to at least 2018. PPS10 states that the Regional Spatial Strategy should look forward for a 15 – 20 year period. The SW RSS consequently has an end date of 2026.

255. However, the RWMS on which the waste 'apportionments' are set only looks up to 2020. This in turn reflects the furthermost target year for Landfill Allowance Trading Scheme (LATS) requirements. Advice from GOSW is that it would be logical for the WCS to look to 2026. Despite this, the Environment Agency note that the longer the time period the greater the uncertainty, and this is also the opinion of the WPA.

256. Consequently, the most realistic option for the WCS to follow is to use an end date of 2026, but look in detail to the target year of 2020 and flexibly thereafter.

Preferred Option for WCS Time Period

257. Use an end date of 2026, but look in detail to the LATS and RSS target year of 2020 and more flexibly thereafter, in the absence of longer term targets.

Reasons for Discounting Other Options

258. A timeframe that only looks to 2018, whilst being more focussed in terms of medium term delivery, would miss a crucial target year for both LATS requirements and also the emerging RSS apportionments. Notwithstanding this limitation it is likely that the WCS will be revised prior to 2018 to take account of the latest requirements in this particularly fast moving and dynamic industry.

Appendix A Registered Exempt Sites for Managing Construction and Demolition Waste

The baseline information in this section was provided by the Environment Agency in August 2007. The 'Total Tonnage' column relates to the total amount of material that can be deposited at that site. Where a site has no tonnage shown this signifies that it can accept material up to the standard limit of the particular exemption it holds – the standard amount is included at the beginning of each section (**in bold**).

Figures in black are those provided by the Environment Agency.

Figures in **green** are those provided by the operator and represent a TOTAL capacity for the site (i.e. they not an annual input figure).

Those sites that appear to have been completed from the information provided are shown in **grey** type in the table below.

Where no return has been received in response to the WPA survey for 'disposal capacity' an estimated tonnage (either 1kt if it comprises a small localised activity or 10kt if it is a slightly larger operation, or 50kt if it comprises a large mineral site restoration) has been used for that site based on the WPA knowledge of site activities. These are shown in **brown**.

Table A1: Waste License Exemption Sites for Inert C&D Material

Background data provided by the Environment Agency, August 2007
Operator data collated by WPA, September 2007

Site	District	Completion date (if stated by operator)	Total Tonnage
Spreading of waste for land reclamation/improvement			**20,000 m³ / hectare**
Land At Perry Way, Frampton On Severn,	Stroud	ceased	ceased
Former Transport Depot, St Johns Avenue, Churchdown	Tewkesbury	Sep 07	400
Southfields, Abbots Court Farm, Church End, Twyning	Tewkesbury	Dec 07	20,000
Manor Farm Quarry, Washpool Lane, Kempsford	Cotswold	mid 2012	150,000
The Grandage, Hatherop, Glos	Cotswold		50
Spratsgate Lane, Somerford Keynes	Cotswold	31 Dec 08	50,000
Shorncote Quarry (Cotswold Community Land), Shorncote	Cotswold		50,000
Kineton Thorns Restoration, Buckle Street, Naunton	Cotswold	2013	180,000
		TOTAL	**450,450**
Use of demolition/storage/excavation waste			**50,000 t/6mths**
Vallets Wood, Off Ne Road, Coleford, Gloucestershire	Forest of Dean	ceased	ceased
Mount Lane, Haresfield, Gloucestershire	Stroud	ceased	ceased
Seven Bends Road, Gloucestershire	Tewkesbury	ceased	ceased
Forest Vale Road, Cinderford, Glos	Forest of Dean		10000
Phase 1, Area E, Benhall, Cheltenham, Glos,	Cheltenham		1000
Phase 1, Priors Road, Oakley, Cheltenham, Glos,	Cheltenham		1000
Baird Road Waterwells Business Park, Gloucester	Gloucester	2007	1667
British Waterways	Gloucester	ceased	ceased
British Waterways	Stroud	ceased	ceased
Gloscat Phase 2 - Site, Llanthony Road	Gloucester	ceased	ceased
Former Ambulance Station, Eastern Avenue, Gloucester	Gloucester	ceased	ceased
Off Bourton On The Hill Road, Blockley, Moreton In Marsh	Cotswold		20000
Hartpury House, Gloucester, Glos	Gloucester		1000
Jackson Civil Engineering	Cheltenham		1000
Clingre Farm, Clingre Lane, Stinchcombe, Dursley	Stroud		1000
Coopers Edge, Brockworth Airfield, Glos,	Gloucester		1000
Canal Works, Harbour Road, Lydney, Glos	Forest of Dean		10000

Manor Farm, Longney, Gloucester, GL2 3SL,	Gloucester	Dec 07	1200
Sharpness Shipyard, Dock Road, Sharpness	Stroud		1000
Station Street, Cinderford, Gloucestershire	Forest of Dean		1000
The Old Airfield, Moreton Valence, Glos	Stroud	ceased	ceased
Former Lister-petter Site, Long Street, Dursley	Stroud	ceased	ceased
Murrells End House Farm, Hartpury, Glos, GL19 3DF,	Forest of Dean		1000
Bradley Green, Wootton Under Edge	Stroud		2499
Lake 10, Cotswold Water Park, South Cerney	Cotswold		20000
South Cerney Remote Depot, Ewen Road, South Cerney	Cotswold		10000
Andoversford Remote Depot, Station Road, Andoversford	Cotswold		10000
Claydon Pike Gravel Pit, Lechlade, Gloucestershire	Cotswold	Oct 2008	50000
Sandpool Farm Golf Course, Somerford Keynes,	Cotswold		10000
Lake 11, Station Road, South Cerney, Cirencester	Cotswold		500000
Lake 16, Station Road, South Cerney, Cirencester	Cotswold		150000
		TOTAL	**804,366**

Appendix B
Evidence from Grundons:
Wingmoor Farm Hazardous Waste Operations

The following information was provided by the operators of the Wingmoor Farm hazardous waste facility in response to WPA request for further information concerning the inputs into their site.

GRUNDON

Wingmoor Farm Site, Bishops Cleeve
Hazardous Waste Inputs

Treatment Plant	2003	2004	2005	2006	2007 Q1
APC Powders	33,846.41	35,323.00	32,961.61	18,123.03	6,907.73
Liquids	5067.84	3343.84	2,421.33	1,633.71	478.25
Leachate	1059.75	2357.02	3,614.58	4,207.09	1607.43
Total	39,974.00	41,023.86	38,997.52	23,963.83	8,993.41

Wingmoor Farm Hazardous Landfill	2003	2004	2005	2006	2007 Q1
Haz Waste	6734.63	41,625.55	22,737.39	58,863.41	10,667.52
Residues from Plant	39,974.00	41,023.86	38,997.52	23,963.83	8,993.41
Total	46,708.63	82,649.41	61,734.91	82,827.24	19,660.93

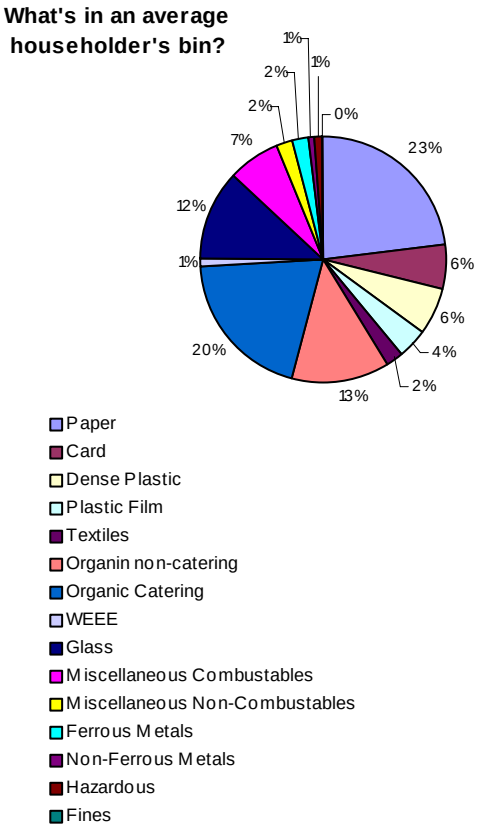
The tables above show the hazardous waste inputs into the Wingmoor Farm Landfill and the Treatment Plant from 2003 to the end of March 2007.

The inputs into the treatment plant consist of the Air Pollution Control Residues that are classed as hazardous; these are mixed with leachate that can be generated from within the site or imported liquid waste. The inputs into the plant have been relatively consistent throughout this period, although last year there was some reduction with a number of waste streams being diverted to an alternative treatment facility.

The landfill figures list just the hazardous waste that has been accepted for disposal during this period. The first line details the waste that is brought onto site and the second line details the waste that is transferred from the Treatment Facility to the landfill.

The difference in the levels of hazardous waste being disposed of is primarily due to changes in legislation. Since 16th July 2004 the site has operated a separate hazardous waste landfill and a non-hazardous waste landfill. The acceptance level of contaminations for waste since then has become more stringent, therefore the hazardous waste being accepted is now primarily contaminated soils or similar which are heavier and have therefore increased tonnage levels.

Appendix C
What's in Your Bin?



Source: Report commissioned by WDA (2004/05)