

Topic Paper: West of England approach to identifying future Capacity Requirements for the Joint Waste Core Strategy.

1. Context of the Topic Paper

- 1.1 The West of England Joint Waste Core Strategy (JWCS) sets out the Partnership Authorities' aspirations for all levels of waste management until 2026, in accordance with the waste hierarchy: prevention; re-use; recycling; recovery; and disposal to landfill as a last resort.
- 1.2 In order to ensure the delivery of sufficient waste management infrastructure to meet the West of England's needs, the JWCS has been informed by an evidence base that considers future capacity requirements, incorporates European and national policy requirements and the aspirations of the Partnership Authorities as set out in local policy documents (Sustainable Community Strategies and the Joint Residual Municipal Waste Strategy, June 2008).
- 1.3 This topic paper gives the overall picture of the waste infrastructure requirements for the West of England, clarifies how the evidence base has been used to prepare the JWCS and demonstrates how the JWCS policy framework will enable the delivery of the appropriate level of capacity.

2. Establishing baseline waste arisings and management methods

- 2.1 In order to calculate the future capacity needs of the West of England it is necessary first to understand the baseline information, ie the current arisings and management method(s) within the Plan area. The JWCS provides contextual information on the current waste management position (at Section 2.2). The baseline data was gathered for the year 2007/08, as this was the most up to date information available at the time, it is summarised in Table 1 below. Table 1 provides both the data for total waste recycled/composted and these management routes separated. This latter level of detail is available for municipal waste (MW) only.

Table 1. All Waste Arisings - Baseline Year 2007/2008

Waste	Arising	Recycled/Composted		Landfill		Recycled		Composted	
	(tpa)	(tpa)	(%)	(tpa)	(%)	(tpa)	(%)	(tpa)	(%)
MW	540,000	221,400	41	318,600	59	143,100	26.5	78,300	14.5
C&I	900,000	306,000	34	594,000	66	306,000	34	-	-
CD&E	2,300,000	1,380,000	60	920,000	40	1,380,000	60	-	-
Hazardous*	84,650	-	-	27,000	32	23,700	27	-	-

Source: WEP Needs Assessment- included in the JWCS submission document July 2010 at page 6.

NB: data not available from the Environment Agency (-).

* The table notes that 32% was landfilled and 27% recycled. The other 41% was either treated / recovered or transferred.

2.2 Waste Strategy for England 2007 (WSE 2007) presents a target to recycle/compost 40% of MW by 2010. Table 1 demonstrates that this target has already been reached in the West of England.

2.3 Update MW figures are available, as presented in Table 2. The updated MW data for 2009/10 shows: a slight decrease in overall waste arisings from 2007/08; a very slight increase in the percentage recycled / composted; and a very slight decrease in the amount landfilled. It can reasonably be concluded that there is no significant change in the generation and management of MW in the West of England over the periods presented.

Table 2. Municipal Waste Arisings – Year 2009/10

Waste	Arising	Recycled / Composted		Landfill	
	(tpa)	(tpa)	(%)	(tpa)	(%)
MW	507,000	211,281	42%	296,686	58%

2.4 More recent data for C&I or CD&E could not be sourced. Thus, the data in Table 1 remains relevant.

2.5 It should be noted that radioactive waste is not considered by the JWCS. Radioactive waste arisings for the West of England are unknown and are managed through national policy rather than local development plan policy. The Government’s detailed policy and plans for the long-term management of higher activity radioactive wastes is set out in two documents - the *Nuclear Decommissioning Authority (NDA) Strategy, 2006* and *Managing Radioactive Waste Safely White Paper, June 2008*. NDA is currently consulting (1st September – 24th November 2010) on a new strategy (which will update the 2006 version) and is expected to publish a final version by end of March 2011. In addition to this the *UK Strategy for Management of Solid Low*

Level Radioactive Wastes from the Nuclear Industry was published in August 2010, which sets out the Government's approach for the management of low level radioactive waste. These three documents provide a high level policy framework for long term management of all radioactive wastes arising in the UK.

3. Forecasting future growth

- 3.1 Forecasting waste growth is necessary in order to understand how much waste might need to be managed in the future. The forecasting of future waste growth is notoriously difficult and figures can only be considered as indicative. This is because there are numerous factors that influence how much waste is produced, primarily, waste minimisation initiatives, housing numbers and rates of economic growth.
- 3.2 Therefore, it is important to review, and understand the implications of, a range of scenarios, rather than focusing on choosing a 'best' growth profile. A number of growth scenarios for each waste stream were considered when preparing the JWCS, in the *'West of England Waste Management Capacity Needs Assessment An assessment of the current and future waste management capacity needs'*, 2009 (WEP Needs Assessment).
- 3.3 These are summarised below in Table 3, with full details provided in the WEP Needs Assessment. Those growth scenarios chosen to forecast future waste arisings are shown in bold font. The explanation behind the choice of each scenario is provided in paragraphs 3.4 to 3.7 of this topic paper.

Table 3. Growth Scenarios considered for each waste stream

<p>Municipal Waste (MW)</p> <p>Five growth scenarios were considered for the projection of future municipal waste arisings:</p> <ul style="list-style-type: none">• 'No growth' Scenario. Assumes that there will be no growth in MW from 2008/09 to 2028/29, providing a proxy for waste minimisation measures to be successful in the future.• 'Trend over 3 year (2005-2008) period' Scenario: This scenario bases future changes in waste arisings on the downward trend in waste arisings observed for the Partnership Authorities over the previous three years (2005/06 to 2007/08).• 'Housing Growth' Scenario: This was based on the figures in the former draft RSS which forecasted housing growth numbers for the Partnership Authorities over the years – 2006/07, 2011/12, 2016/17, 2026/27 and 2031/32. The growth rate derived from these housing figures was applied to the baseline (2007/08) waste arisings.• 'Housing Growth + Trend over 3 years' Scenario: This scenario amalgamates the housing growth rates and 3 year waste arisings trend.• Draft RSS Growth Rate Scenario: This scenario incorporated the growth rates assumed in the former draft RSS for the South West.

Commercial and Industrial (C&I) Waste

Three growth scenarios were considered for the projection of future C&I waste arisings:

- 'No Growth' Scenario: This scenario assumes zero growth in waste arisings from 2007/08 to 2028/29, providing a proxy for waste minimisation measures to be successful in the future.
- 'Economic Growth' Scenario: This growth rate assumes that arisings of C&I waste are directly proportional to economic output and is based on data taken from the International Monetary Fund (IMF) forecasts produced in April 2009. This suggests a short term decline in economic growth followed by an increase. The IMF forecast projects forward to 2014, following which we assume that this growth rate extends throughout the rest of the forecast period.
- **Draft RSS Growth Rate Scenario: This scenario incorporated the growth rates assumed in the former draft RSS for the South West.**

Construction, Demolition and Excavation (CD&E) Waste

Three growth scenarios were considered for the projection of future CD&E waste arisings:

- 'No Growth' Scenario: This scenario assumes zero growth in waste arisings from 2007/08 to 2028/29, providing a proxy for waste minimisation measures to be successful in the future.
- 'Housing Growth' Scenario: The former draft RSS forecast a certain growth in housing numbers for the Partnership Authorities over the years – 2006/07, 2011/12, 2016/17, 2026/27 and 2031/32. These growth rates for housing numbers were applied to the baseline waste arisings.
- **'Economic Growth' Scenario: This growth rate assumes that arisings of CD&E waste are directly proportional to economic output and is based on data taken from the IMF forecasts produced in April 2009. This suggests a short term decline in economic growth followed by an increase. The IMF forecast projects forward to 2014, following which we have assumed that this growth rate extends throughout the rest of the forecast period.**

Hazardous Waste

Four growth scenarios were considered for the projection of future hazardous waste arisings:

- 'No Growth' Scenario: This scenario assumes zero growth in waste arisings from 2007/08 to 2028/29.
- 'Economic Growth' Scenario: This growth rate assumes that arisings of hazardous waste are directly proportional to economic output and is based on data taken from the IMF forecasts produced in April 2009. This suggests a short term decline in economic growth followed by an increase. The IMF forecast projects forward to 2014, following which we have assumed that this growth rate extends throughout the rest of the forecast period.
- Legislative Drivers – 5% decrease: This scenario assumes that due to the introduction of recent legislation (Hazardous Waste Regulations, 2005) the amount of hazardous waste produced in the UK will decrease by 5% from the baseline year (2007) over the forecast period.
- **Legislative Drivers – 10% decrease: This scenario assumes that due to the introduction of the recent legislation, the amount of hazardous waste produced in the UK will decrease by 10%.**

Source: Growth Scenarios - WEP Needs Assessment (2009).

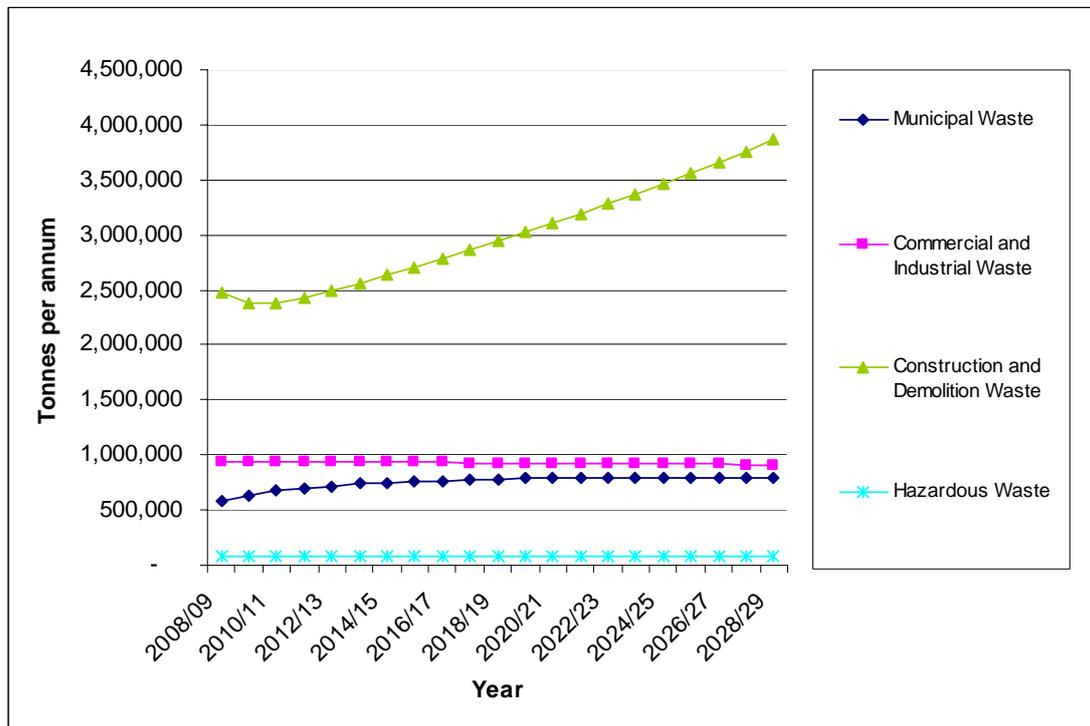
- 3.4 At the time of preparing the JWCS, the former draft RSS was a development plan document with which the JWCS should accord. As such, the growth scenarios selected for municipal and C&I waste ensured the former draft RSS growth apportionments could be delivered. The former draft RSS did not consider CD&E or hazardous wastes.
- 3.5 The draft RSS has now been revoked, but the evidence base that underpinned its development remains a relevant consideration to preparation of the JWCS. The RSS growth scenario offers the ‘worse case’, ie forecasting the greatest potential amount of MW. This is advantageous to preparation of the JWCS: it will avoid the potential for provision of a lack of capacity, should more waste be generated than would be forecast by a lower growth scenario; and provides flexibility to ensure as much waste as possible can be diverted from landfill. The potential for over estimation is balanced by the use of the draft RSS Growth Scenario for the C&I waste stream, where it indicates significantly less wastes than that forecast by the Economic Growth Scenario.
- 3.6 The Economic Growth Scenario was selected for the management of CD&E waste. This is considered to offer an appropriate forecast, as there are strong links between economic growth and the amount of waste that is produced by construction and demolition works. This was also the ‘worse case’ scenario.
- 3.7 The Legislative Drivers - 10% decrease Scenario was selected for hazardous waste. This assumes that legislative drivers will succeed and reduce the amount of hazardous waste produced. Anecdotal evidence suggests that this assumption is being proved to be correct.
- 3.8 Table 4 presents the forecast waste arisings at spot years throughout the plan period. Figure 1 illustrates the selected growth profiles for each waste stream.

Table 4. Forecast Arisings for Municipal, C&I, CD&E and Hazardous Wastes (spot years) (tonnes)

Waste stream	2010/11	2015/16	2020/21	2025/26
MW	680,000	757,000	800,000	800,000
C&I	935,000	934,000	925,000	917,000
CD&E	2,371,000	2,707,000	3,104,000	3,560,000
Hazardous	83,000	81,000	79,000	77,000

Source: WEP Needs Assessment - Growth Scenarios (draft RSS growth Scenario for municipal and C&I wastes; Economic Growth Scenario for CD&E waste; Legislative Drivers - 10% Reduction Scenario for hazardous waste).

Figure 1. Forecast Arisings for Municipal, C&I, CD&E and Hazardous Wastes (selected growth profiles)



4. Waste Management Targets

4.1 There is a policy imperative enforced throughout European and national policy to divert waste from landfill. The JWCS incorporates this objective through an overall aim to divert 85% of all waste arising away from landfill over the plan period, ie up to 2026. The positive policy framework provided within the JWCS will bring forward the facilities necessary to drive waste up the hierarchy, reducing the amount sent to landfill.

Recycling and Composting.

4.2 As recognised at paragraph 6.4.2 of the JWCS, the WSE 2007 establishes future household recycling and composting targets: 40% at 2010, 45% at 2015 and 50% at 2020. Within the JWCS these targets are assumed to apply to total municipal waste arisings. Municipal waste arisings are substantially made up of household waste, but also include other waste collected by local authorities (eg street sweepings and waste collected at civic amenity sites). The JWCS therefore assumes greater levels of recycling/composting will be achieved than as set out in WSE 2007.

4.3 Table 1 above separately presents the proportion of MW recycled and composted in the baseline year. However, the targets set within WSE 2007 apply to recycling/composting together; there are currently no discrete targets for these management routes. On this basis, the

JWCS does not seek to separate these management routes in policy. To do so would provide an assumption based upon historical data that would not take into account future changes that are more appropriately developed through the Municipal Waste Management Strategy(ies) of the Partnership Authorities and could prove too prescriptive and inflexible to inform policy.

- 4.4 There is no nationally established recycling/composting target for C&I waste, only an objective to divert it from disposal. As the management methods for C&I waste are similar to MW, the same targets have been applied in preparing the JWCS.
- 4.5 There are no specific waste management targets for CD&E waste identified in other policy documents. WSE 2007 presents an intention to halve the amount of CD&E waste disposed of to landfill by 2012. Reference to the current position at Annex C3 of that document would indicate that a total of 85% of CD&E waste arisings should be diverted from landfill. This target has therefore been adopted in preparation of the JWCS.
- 4.6 There are no nationally established targets set for the management of hazardous waste. Hazardous wastes are generally treated very specifically and so it would be inappropriate to seek to apply a uniform set of targets.
- 4.7 Table 5 applies the targets described above to each of the relevant forecast waste arisings presented in Table 4. Table 5 also indicates the consequent tonnes per year.

Table 5: JWCS Targets - Recycling and Composting

Waste stream	2010/11		2015/16		2020/21		2025/26	
	(%)	(tonnes)	(%)	(tonnes)	(%)	(tonnes)	(%)	(tonnes)
MW	40	272,000	45	341,000	50	400,000	50	400,000
C&I	40	374,000	45	420,000	50	463,000	50	458,000
CD&E	70	1,660,000	85	2,301,000	85	2,639,000	85	3,026,000

Recovery

- 4.8 The Vision of the JWCS is to provide the sustainable waste management infrastructure required within the sub region. This will be achieved by driving waste up the hierarchy, represented by delivering 85% total recovery by 2020. This target of total recovery incorporates the 50% recycling/composting driven by policy (WSE 2007) plus an additional 35% recovery of residual wastes.
- 4.9 Table 6 illustrates the indicative tonnages required to be managed by recovery facilities at key years in line with the targets discussed above.

Table 6: JWCS Targets - Recovery

Waste stream	2010/11		2015/16		2020/21		2025/26	
	(%)	(tonnes)	(%)	(tonnes)	(%)	(tonnes)	(%)	(tonnes)
MW	20	150,000	27	255,230	35	370,000	35	370,000
C&I	20	184,937	27	235,388	35	360,393	35	355,118

Landfill

4.10 The remainder of wastes are assumed to be disposed of to landfill. However, this is not to set a cap on recovery (whether by recycling/composting or other residual waste treatment methods) capacity. Achieving greater than 85% recovery of wastes would be advantageous to the delivery of a sustainable waste management infrastructure. Table 7 illustrates the indicative tonnages to be managed per annum at landfill sites, in line with the targets outlined above.

Table 7: JWCS Targets - Landfill

Waste stream	2010/11		2015/16		2020/21		2025/26	
	(%)	(tonnes)	(%)	(tonnes)	(%)	(tonnes)	(%)	(tonnes)
MW	40	300,000	28	213,000	15	120,000	15	120,000
C&I	40	396,000	28	327,000	15	156,000	15	155,000
CD&E	30	679,000	15	394,000	15	457,000	15	529,000

5. The Requirement for Future Capacity*Non Hazardous Wastes*

5.1 To calculate the additional capacity required over the plan period, one subtracts existing capacity from the waste tonnes that forecast. Table 6 presents both the capacity operating in the West of England in the baseline year 2007/08 (as used in the WEP Needs Assessment) and updated data for 2010. For the purposes of this exercise MW and C&I waste are considered together: these are both non-hazardous wastes, with a generally similar composition and facilities commonly manage the two streams together. Indeed, this is a situation promoted in WSE 2007.

Table 8. Non hazardous Capacity in the West of England in 2007/08 and 2010.

Category	Capacity from WEP Need Assessment (2007/08)	Updated 2010 Capacity
Recycling / Composting	850,000	812,000
Residual/Recovery	160,000	225,000
Landfill	2,000,000	2,250,000
CD&E Recycling	-	-
Inert Landfill	402,000	752,000

Source: Environment Agency, September 2010 (updated figures).

- 5.2 Table 8 indicates a slight decrease in non hazardous recycling/composting capacity at 2010, but it is not a significant quantity and may be the result of a single facility having ceased operation.
- 5.3 Table 8 indicates a more significant increase in non-hazardous residual waste management capacity at 2010, than the baseline year. However, additional research indicates that a significant proportion, if not all, of this capacity (not just the increase between the two years) is dedicated to managing the wastes generated at chemical works/industrial processes operating in the Plan area. As such, it is not considered available for the management of general non-hazardous wastes and is not considered further.
- 5.4 There has also been a small increase in landfill capacity (250,000 tonnes) for non-hazardous waste.
- 5.5 There is no data available for CD&E recycling. This is not surprising as much of the recycling of this waste stream takes place on site and using mobile equipment. The 2010 data indicates an increase in inert landfill capacity, to 752,000 tonnes.
- 5.6 Using the updated data the capacity gap can be calculated for each waste stream and management type. Table 9 presents the calculated capacity requirements for non-hazardous recycling, recovery and landfill up until 2025/26. It also illustrates the future requirements for CD&E recycling and landfill.

Table 9. Future capacity requirements

Waste Stream / Management Type	Overall Capacity Required (up to 2025/26) (tpa)	Updated 2010 Capacity (tpa)	Shortfall (tpa)
Non-Hazardous			
Recycling	858,000	812,000	46,000
Residual/Recovery	725,000	0	725,000
Landfill	7,102,000*	2,250,000	4,852,000*
CD&E			
Recycling	3,026,000	0	3,026,000
Inert Landfill	8,651,000*	752,000	7,900,000*

* Cumulative total over the plan period.

- 5.7 Table 7 indicates that there is broadly sufficient recycling / composting capacity with a shortfall of an estimated 46,000 tonnes in the Plan area, equivalent to one facility. This outcome means that there is not a strategic need to provide more recycling/composting capacity. Additional capacity would be advantageous and can be provided at a range of locations that can be adequately delivered through criteria based policy.
- 5.8 The conclusion in Table 9 is reached by incorporating an assumption that 20% of the overall capacity of waste transfer facilities operates as recycling capacity. This point is considered further in Section 6 of this document.
- 5.9 Table 9 demonstrates that there is a strategic requirement to deliver residual waste management capacity within the West of England. In order to provide this infrastructure the JWCS will need to allocate sites/areas across the sub region, in accordance with a defined Spatial Strategy. This is discussed in more detail in Section 7.
- 5.10 Table 9 also demonstrates that there is a significant need to provide additional non-hazardous landfill capacity. The tonnages presented in the table are the total calculated over the plan period, not a per year requirement.
- 5.11 Future capacity is also required for recycling and landfilling of CD&E waste. However, it is considered that Table 6 paints a pessimistic view of the ability to recycle CD&E wastes within the West of England. Much of this activity is undertaken on site, using mobile equipment. It is not possible to accurately measure the capacity provided by this equipment because it is mobile and may originate from outside the plan area. This position is supported by anecdotal evidence from the Partnership Authorities and Environment Agency confirming that fly-tipping of CD&E waste is not common with the plan area.
- 5.12 Quarries within the plan area will provide infilling opportunities and other restoration projects (like that listed as a landfill at Filton Playing Fields) which are often landfill tax exempt, are already present and will continue to be available for the disposal of CD&E wastes.
- 5.13 In conclusion, the evidence indicates that there is not a strategic need to identify sites/areas for the management of CD&E wastes. Additional capacity would be advantageous and can be provided at a range of locations that can be adequately delivered through criteria based policy. This landfill requirement is discussed in more detail at Section 8 of this topic paper.

Hazardous Waste

5.14 The former draft RSS acknowledged that the Region was broadly self-sufficient for hazardous waste management. The forecast of wastes (summarised in Table 4 above) further demonstrates that there are not significant amounts of these wastes arising within the West of England.

5.15 It is noted that hazardous waste would be produced as part of the treatment of waste by energy from waste (EfW) facilities. Assuming that all 725,000 tonnes of the recovery requirements is sent to an EfW facility it is estimated that 40,000 per annum of hazardous waste would be produced. This is a relatively insignificant amount of waste produced within the Plan area and as mentioned the policies of the JWCS allow for new hazardous waste sites to be delivered.

6. The assumption that 20% of waste transfer station capacity can be considered as recycling capacity

6.1 The calculation for future capacity requirements includes an assumption that the waste transfer stations in the Plan area contribute to recycling capacity (20% of the total waste transfer station capacity). This has been applied to acknowledge the role that waste transfer stations play within the Plan area.

6.2 Whilst the primary role of the waste transfer stations is to bulk waste before transporting it to be processed at another site, some processing inevitably occurs e.g. the recycling of metals/cardboard. Therefore 20% of the overall capacity of waste transfer stations has been included in the understanding of operational recycling / composting capacity.

6.3 This is a typical recycling rate based on experience elsewhere; it is not implied that any one transfer facility recycles 20% of its own, discrete capacity. Full details of this assumption can be found in the Recycling, Composting & Transfer Station Briefing Paper, August 2009. The Environment Agency is not able to provide data on the exact proportion of waste recycled at transfer stations.

6.4 Further, consultation with the industry throughout development of the JWCS, and significant site assessment research, has shown there are broadly adequate recycling / composting sites within the Plan area. The key issue of delivery relates to residual waste treatment and therefore the JWCS focuses on the delivery of such facilities.

7. Indicative number and size of residual waste treatment facilities

7.1 Section 5 of this topic paper demonstrates a strategic need for residual waste management capacity in the West of England. Additional facilities will be required to address this short fall; to ensure delivery, appropriate locations should be allocated in the JWCS.

- 7.2 The actual recovery technology that will be delivered is not an issue for the JWCS. However, it is necessary to ensure that sufficient land has been allocated to provide for the total amount of additional residual waste treatment capacity required.
- 7.3 Table 10 presents average land requirements of, and assumed capacity provided by a number of different waste treatment facilities. It is sourced from a document published by the Office of the Deputy Prime Minister in August 2004 and titled '*Planning for Waste Management Facilities: A Research Study*'.

Table 10. Indicative Site Sizes and Throughput Capacity.

Waste Facility Type	Through put (tpa)	Area Req. (ha)
Anaerobic Digestion (small scale)	5,000	0.15
Anaerobic Digestion (large scale)	40,000	0.6
Processing of Recyclables	50,000	1-2
Mixed Waste Processing (MBT)	50,000	< 1-2
Pyrolysis and Gasification	50,000	1-2
Thermal (small scale)	50,000	1-2
Thermal (large scale)	250,000	2-5

Source: Planning for Waste Management Facilities: A Research Study, ODPM, 2004

- 7.4 This information is helpful when planning for waste facilities and has been used to provide a reasonable assumption of the land area necessary to manage waste within the West of England. It indicates that a small-scale facility generally requires a site area of 2 hectares whilst a large-scale facility requires a site of 5 hectares.
- 7.5 Table 11 presents each of the sites proposed to be allocated in the JWCS for recovery of residual wastes. The Table presents alternative scenarios for site size. The high case scenario assumes the whole site is available for development; whilst the low case scenario assumes only a small portion of each of the larger sites is used for waste development. However, Table 10 assumes a minimum of 5ha is available at these larger sites. The Spatial Strategy expects capacity of at least 50,000 tpa to be delivered in each zone, and the sites are allocated for residual waste management, which can reasonably be expected to be of a larger scale.
- 7.6 Some of the potential sites, such as BZL, Kings Weston Lane, Bristol, are significant in size, up to 44.2 ha. Looking at site size alone, it could be assumed that these sites provide opportunities for facilities with substantial capacity potential. However, this is not necessarily the case, as landowners may have other intentions for part of the site, or various planning controls may restrict development of the site, such as the Green Belt designation. Furthermore, it does not account for factors that may affect the final site size such as: groundworks; landscaping; or development in conjunction with an adjacent site. Therefore for the low

case scenario it is assumed that large sites would offer a maximum of 5 ha of land.

Table 11. High and Low Case Scenarios for Land Available from Allocated Sites in Policy 5

Site Name	High Case Scenario (ha)	Low Case Scenario (ha)
BA19 - Broadmead Lane, Keynsham, Bath and North East Somerset	4.49	4.49
BA12 - Former Fuller's Earth Works, Fosseyway, Bath and North East Somerset	3.36	3.36
BR505 - Hartcliffe Way, Bristol	2.20	2.20
DSO5 - Merebank, Kings Weston Lane, Bristol	6.63	5
DS06 - BZL Site, Kings Weston Lane, Bristol	46.20	5
DS07 - Sevalco Plant (northern part), Severn Road, Bristol	11.07	5
DS13 - Rhodia Chemical Works, Kings Weston Lane, Bristol	23.34	5
DS14 - Gypsy and Traveller Site, Kings Weston Lane, Bristol	2.53	2.53
DS15 – Advanced Transport System Ltd Site, Severn Rd, Bristol	3.32	3.32
SG39 - South of Severnside Works, South Gloucestershire	12.81	5
IS8 - Warne Rd, Weston-super-Mare, North Somerset	1.4	1.4
land that is located on existing industrial land in Yate within Strategic Area A	5*	5*
land that is located within the redevelopment area of Weston – Strategic Area B	5*	5*
Total Area of Sites	127.4	52.3

*Due to the extensive nature of the Strategic Areas, a maximum of 5ha is assumed for the purpose of this exercise in both high and low case scenarios.

- 7.7 Table 11 calculates that the allocated sites could offer approximately 127.4 ha (high case) or 52.3 ha (low case).
- 7.8 If it were to be assumed that all of the additional 725,000 tpa of residual waste treatment capacity required would be delivered through facilities offering just 50,000 tpa of capacity, a total of 14.5 facilities would be required (725,000/50,000) or 29 ha (14.5 x 2).
- 7.9 The JWCS seeks to allocate 13 locations, which would be just deficient of the number required in this scenario. However, the amount of land available for development in the low case scenario presented in Table 9 would also be sufficient.
- 7.10 However, this is an extreme and unlikely turn of events. Table 10 also indicates that up to 250,000 tpa may be delivered on a site of 5 ha. If all the capacity required were to be delivered through this scale of

development, then just 2.9 facilities would be required (725,000/250,000) or 14.5 ha of land (2.9*5). Again, this is also an extreme case and would not deliver all components of the Spatial Strategy presented in the JWCS.

The Spatial Distribution of Future Recovery Sites

7.11 The Spatial Strategy of the JWCS expects a distribution of sites to be provided in each identified zone. Table 12 presents how much land is required (assuming the low case scenario from Table 11) in each zone and how much capacity is potentially allocated in each zone by Policy 5. Table 12 demonstrates that sufficient land requirements have been identified in each zone.

Table 12. Indicative land requirements for each Zone of the Spatial Strategy.

Zone	Capacity required (Tonnes)	Land requirement (ha)*	Land Allocated in Policy 5 (ha)
A	390,000	16	31
B	100,000	4	5
C	150,000	6	8
D	60,000	2	2
E	100,000	4	6

*Assumes each new recovery facility would offer approximately 50,000 tonnes of capacity, as a worst case scenario (some facilities may provide more or less capacity).

7.12 The Spatial Strategy of the JWCS has been derived following a detailed assessment of alternative spatial options that considered: population distribution; waste arisings, the strategic road network; transport impacts; and deliverability.

7.13 This section of the topic paper demonstrates that there are more sites identified within Policy 5 of the JWCS than required to meet the calculated need for additional residual waste treatment capacity. This is important to build in flexibility and to ensure that the spatial distribution of sites is provided across the Plan area.

7.14 The former draft RSS aimed to manage waste as close as practicable to the source of arisings, setting an expectation that facilities would be within 16km of the strategically significant cities and towns. Following the revocation of the draft RSS, it is considered that the spatial distribution of future sites set out in Policy 5 of the JWCS continues to provide the most sustainable framework of sites to manage waste arising in the Plan area. This is supported by conclusions of the Sustainability Appraisal.

8. Indicative Scale of Landfill Required.

8.1 It is estimated that there is 2,250,000 tonnes of non hazardous landfill capacity remaining in the Plan area. It is expected that this capacity will be exhausted by 2013. Table 13 below illustrates the capacity required at key dates throughout the Plan period necessary to deliver the calculated capacity gap for the disposal of non hazardous waste.

Table 13: Indicative scale of landfill capacity required for non hazardous wastes (municipal and C&I) from 2010

Year	Gross requirement (tonnes)	Capacity Tonnes*	Shortfall/Surplus
2010/11	700,000	2,250,000	1,550,000
2015/16	3,600,000	1,550,000	-2,050,000
2020/21	5,725,000	3,600,000	-2,125,000
2025/26	7,100,000	5,725,000	-1,375,000

* Assumes an existing capacity of 2,250,000 and capacity added in response to facilities required at each year.

Source: Growth Scenarios WEP Needs Assessment (draft RSS apportionment projections).

8.2 Table 13 indicates that a need for disposal capacity exists throughout the Plan period, but there is not an immediate need for the entire capacity shortfall. Landfill capacity requirement can be reduced if additional recovery capacity is delivered.

8.3 Additional capacity is also required for the landfilling of CD&E waste. There is currently 752,000 tonnes of inert landfill in the Plan area. It is expected that this capacity will be exhausted by 2011/12. Table 12 below indicates how much capacity could be required at key years during the Plan period based on the Waste Strategy targets. However, experience within the West of England, and elsewhere, demonstrates that inert wastes are frequently disposed of in exempt schemes, such as golf courses, land improvements and bunding. The scale indicated in Table 14 below is a theoretical worst case, but is not expected to need to be catered for.

Table 14: Indicative scale of landfill required for CD&E waste from 2010

Year	Gross requirement (tonnes)	Capacity Tonnes*	Shortfall/Surplus
2010/11	679,000	750,000	71,000
2015/16	4,000,000	71,000	-3,929,000
2020/21	6,155,000	4,000,000	-2,155,000
2025/26	8,651,000	6,155,000	-2,496,000

* Assumes capacity added in response to facilities required at each year.

Source: Growth Scenarios WEP Needs Assessment (Economic Growth Scenario).

8.4 Table 14 indicates that a need for disposal capacity exists throughout the Plan period, but there is not an immediate need for the entire capacity shortfall. However as mentioned in paragraphs 5.11 and 5.13 this does not offer a true reflection of the CD&E waste management situation and the policies within the JWCS offer a strong framework for managing this waste stream.

9. Conclusion

- 9.1 This topic paper summarises the evidence base underpinning the JWCS, seeking to update this where possible and clarify how it has informed policy development. It illustrates that there is broadly sufficient capacity present to manage future recycling / composting requirements until the end of the Plan period.
- 9.2 The need to deliver substantial new residual waste treatment capacity is demonstrated and that the JWCS provides an appropriate level of opportunity across the Plan area.
- 9.3 Additional capacity across all recycling/composting and residual waste treatment methods would be advantageous in diverting further wastes from landfill. However, setting an assumption that at least 85% of total diversion from landfill will be achieved, additional landfill capacity is required for non-hazardous waste. Policies 8 and 9 of the JWCS provide the positive policy framework required to deliver the forecast short fall.
- 9.4 The topic paper acknowledges that additional capacity is required for the management of CD&E waste. The recycling shortfall will be delivered by the positive policy framework set out in Policy 4 of JWCS.
- 9.5 The requirement for additional capacity for the landfilling on CD&E waste has been identified in this paper. However, the available evidence presents a falsely pessimistic view of CD&E capacity.

Opportunities for the disposal of CD&E waste are presented in policies 8 and 9 of the JWCS.

- 9.6 In conclusion the policy framework of the JWCS has been formulated to positively address the capacity requirements of the West of England for the Plan period.