JACOBS BABTIE

South East England Regional Assembly

Towards a Methodology for Apportionment of London's Exported Waste

Final Report
July 2005

JACOBS BABTIE

Client: South East England Regional Assembly (SEERA)

Title: Towards a Methodology for the Apportionment of London's Waste

Job No: 17262

ISSUE NUMBER	001	002		
DATE	17/05/05	07/07/05		
AUTHOR	JM/CB	JM/CB		
CHECKED	AW	AW		

Jacobs Babtie, School Green, Shinfield, Reading RG2 9HL

Tel: 0118-988 1555 Fax: 0118-988 1666

CONTENTS

Appendices

List of Tables

1 INTRODUCTION

Background to the Study

1.1 The South East England Regional Assembly (SEERA) has produced a Regional Waste Management Strategy (RWMS) which will become part of the new South East Regional Spatial Strategy (RSS).

1.2 One of the key policy themes of the RWMS is the concept of regional self sufficiency. Currently the South East Region accepts waste from London for disposal to landfill due to lack of sufficient landfill void space in London. Policy W3 of the RWMS seeks to limit provision for London's exports to landfill in line with the region's overall targets for landfill reduction and, by 2016, to provide only for residual waste that has been subject to recovery processes or from which value cannot be recovered.

1.3 Policy W4 of the RWMS requires Waste Planning Authorities (WPAs) to provide capacity for London's waste where appropriate and consistent with Policy W3. However the RWMS contains no explicit guidance to WPAs on how to provide for London's waste at the sub-regional level. Following a recent Examination in Public (EiP) on the RWMS, the EiP Panel recommended that a methodology be developed for the apportionment of exports of waste from London to the South East WPA areas.

1.4 This methodology would provide greater certainty to WPAs in preparing their Waste Development Frameworks and to industry in considering future investment. The EiP Panel Report proposed the following criteria as a basis for a future sub-regional apportionment:

- surplus of void space over and above that required to meet the sub region's own needs at 2015;
- suitability of geology and/or engineering;
- proximity to London;
- ability to use sustainable transport modes;
- the availability of and potential for alternative recovery methods.

1.5 Jacobs Babtie was commissioned by SEERA to develop the apportionment methodology having regard to sustainability and practical factors. These factors included the apportionment criteria proposed in the EiP Panel report and the following factors:

- existing contracts;
- historical patterns of movement;
- forecasts of future exports from London;
- and other land use, environmental and economic factors.

1.6 For the purpose of this study, the sub-regions of the South East were taken to be the Waste Planning Authority Areas (WPAAs), equivalent to counties and their associated Unitary Authority areas, and the combined Unitary Authorities of the former county of Berkshire.

Objectives of the Study

1.7 The study objectives were:

a) to agree apportionment criteria using the EiP Panel Report criteria and the SEERA criteria as a starting point;

b) to prepare a methodology for the apportionment of Municipal Solid Waste (MSW) and other waste exported from London by sub-region, having regard to the agreed criteria;

c) to quantify broadly (in percentage rather than tonnage) waste apportioned to each Waste Planning Authority area.

2 POLICY CONTEXT

Adjoining region's policies

2.1. In order to consider the implications of adjoining region's policies, a review of the East of England Regional Assembly (EERA) and Greater London Authority (GLA) waste policies was undertaken.

2.2. The East of England Regional Waste Strategy was published in 2002. It contains policies on waste movements and regional (and sub-regional) self sufficiency. The East of England Region has in the recent past been a major provider of landfill capacity for London's waste. The strategy states that 'it is essential that the high level of export of waste from London should be drastically reduced' (pg 32).

2.3. EERA has taken quite a restrictive line in its strategy on waste imports, proposing only to accept treatment residues and, exceptionally, waste which cannot be treated in any way apart from landfill, after 2010 (now 2015).

2.4. In London, the Waste Strategy is contained in the 2004 London Plan with more detail on MSW provided in the 2003 *Rethinking Rubbish in London: The Mayor's Municipal Waste Management Strategy.* The London strategy recognises achieving net regional self-sufficiency is unlikely to be possible due to limited opportunities for new landfill capacity within London. The London Strategy therefore aims to reduce the capital's waste exports through more recovery and recycling.

2.5. The EERA Strategy aims for net regional self sufficiency, while the GLA Strategy recognises that achieving self sufficiency is unlikely due to the limited opportunities for new landfill capacity within London. The SEERA strategy also aims for self sufficiency. A recent study by MEL for the three regional assemblies (SEERA, EERA and GLA – *Regional self-sufficiency and assessment of waste movements, 2004*) concluded that if EERA adopts its policies and SEERA does not, there is a risk that the South East will need to bear the burden of London's exports. Similarly, if SEERA adopts its policies and EERA does not, the reverse will apply.

2.6. There is also a risk that the capacity gap will be larger than expected if London does not pursue it's policy of reducing waste exported from the capital. It is therefore important for the three regions to continue working closely together in developing their strategy targets. *The Regional Self-sufficiency and assessment of waste movements report, M.E.L, 2004, considers it is not acceptable* to set targets and make policies independently of the realities of waste movements to adjoining regions.

SERP 160

2.7. A review of previous guidance (SERP 160, SERPLAN March 1997) and underpinning methodology was undertaken to inform the development of the new apportionment methodology. The SERP 160 apportionment exercise assumed distribution of waste arising in London requiring landfilling in the South East between counties with forecast surplus, in proportion to surplus capacity.

2.8. In developing the new apportionment methodology, the model considered the total forecast void space in the period 2005-2015 as one apportionment criteria. A higher suitability index was attributed to counties with total surplus void, subject to proportion of surplus void. This approach recognises that actual available void space is just one of several important factors in determining which WPA areas can take waste from London.

3 METHODOLOGY

Overview

3.1 In order to agree the apportionment criteria, and subsequently determine weightings and a methodology to apply the criteria, consultation of key officers within the South East and adjoining regions was undertaken. The consultation mechanism was primarily a Steering Group that consisted of officers from the South East region WPAs, representatives of the waste industry, SEERA and from adjoining regional assemblies, EERA and GLA. The preliminary results of the research were presented to SERTAB in May 2005. Comments generated from this consultation are recorded and addressed in Appendix 5.

3.2 Following consultation with the Steering Group and with reference to the EiP Panel Report the following criteria were agreed:

Criteria 1. Availability of suitable landfill void space;
Criteria 2. Suitability of geology/and or engineering;
Criteria 3. Proximity to London;
Criteria 4. Sustainable transport;
Criteria 5. Contracts and patterns of waste movement (existing major rail based contracts);
Criteria 6. Other land uses/environmental factors.

3.3 The Steering group agreed not to take forward the criterion on availability of and potential for alternative recovery and disposal methods put forward in the EiP Panel Report, as it was felt that the focus of the study was on apportionment of residual waste and this criterion did not fit within this focus.

3.4 The Steering Group agreed to the modelling of criteria 2 and 6 (suitability of geology/engineering and other land use and environmental factors) on a sieving basis, to enable identification of actual areas that were not constrained by these factors and were therefore taken to be suitable in principle for landfill/landraising.

3.5 It was also agreed that the model should take account of capacity that is already committed to London's exports through long-term contracts. Criterion 5 (Contracts and patterns of waste movement - existing major rail based contracts) was therefore used as a 'reality check' when assessing the void space capacity in Criterion 1 and the tonnage currently being imported from London would be accounted for when assessing available surplus void space. Criterion 5 was also used as a 'reality check' when assessing sustainable transport - Criterion 4 - by adding a percentage penalty to those WPAAs with existing long term rail-based contracts to receive waste from London.

3.6 Relative weighting was applied to each of the agreed criterion. The weightings were based on the relative significance of each criterion in the determination of suitability for landfill and the quality of available data. Weighting also took into account the robustness of the assumptions that underpin the modelling.

3.7 Each criterion was subject to a modelling exercise to evaluate the performance of each WPAA against each criterion. The results of modelling ('Criteria Indexes') were fed into an overall model that produced a percentage apportionment figure for each WPAA.

Criterion 1 Availability of suitable void space

3.8 The aim of this criterion was to allocate greater suitability scores to WPAAs with spare capacity over and above their own needs.

3.9 For each WPAA the total landfill requirement is based on volume of waste requiring landfill after both reduction and diversion targets set in Policy W5 of the RWMS have been applied to MSW and Commercial and Industrial Waste (C&I) arising in the region. This data was taken from a report to SEERA by Environmental Resource Management (ERM) – Update of the 'Model for future Waste Management Capacity Needs in the South East, June 2005.

3.10 This criterion also takes into account existing contracts for exporting waste from London.

3.11 In accordance with the EiP Panel Report recommendation, surplus void space over and above that required to meet each WPA's needs at 2015 was assessed. Void space capacity at 2015 is shown in Table 1, Appendix 1.

Weighting *– Medium*
The weighting was agreed to be medium due to limited accuracy in base data (void capacity and forecast arisings). There also exists a potentially complex interrelationship with other criteria, for example need to avoid double counting of sustainable transport factor.

Modelling of criteria:

3.12 The apportionment model considered the total forecast surplus void in the period 2005-2015 as one apportionment criteria. Surplus void space for each WPAA was added to give an overall total for the South East. The model allows for tonnages of waste imported from London to be taken into account in the assessment of remaining available void space, to identify a more accurate overall surplus/deficit. However, data on the main rail-based contracts was not available.

3.13 The surplus void space for each WPAA was given a representative value. These values were added up to give a total. A higher suitability index was attributed to WPAAs with total surplus void than those without, subject to proportion of surplus void. A Suitability Index was then attributed to each WPAA.

3.14 Full details of this exercise are given in Appendix 1 and the results are shown in Section 4 of this report.

Criteria 2 & 6 Geology/engineering and other environmental constraints

Geology/engineering

3.15 Locational aspects for landfill sites are subject to the Environment Agency's (Agency) policy on ground water and geological and engineering requirements. In order to assess areas where landfill sites would generally be compatible with the Agency's polices, we reviewed the Agency's policy on Ground Water Protection -Landfill Directive Regulatory Guidance Note 3 (RGN3) and Landfill Directive Regulatory Guidance Note 6 (RGN6) on geological/ engineering requirements.

3.16 For groundwater protection, the Agency has developed Source Protection Zones (SPZs) providing an indication of the risk to groundwater supplies. The zones are determined by hydrogeological characteristics of the strata and the direction of ground water flow. The following zones are recognised (Map JB/17262/003):

- Source Protection Zone I (Inner source protection zone)
- Source Protection Zone II (Outer catchment zone)
- Source Protection Zone III (Source catchment zone)

3.17 For the purposes of this exercise the following assumptions based on RGN3 and explained in detail in Appendix 1 were made:

- The Agency will object to any proposed landfill site in SPZ I and SPZ II; and
- Non-hazardous sites will be allowed in SPZ III.

3.18 The Agency's policy in relation to presence of Major and Minor Aquifers was also assessed using Groundwater Vulnerability Maps (GVMs). This was to enable mapping out of areas where there was potential for unacceptable discharge from landfill causing pollution to groundwater sources. The Agency will object to proposals for landfill on or in a Major Aquifer (Map JB/17262/004).

Urban Areas/major settlements

3.19 In order to give a more realistic area that was suitable for landfill, data on urban areas/major settlements was supplied by SEERA and mapped on GIS. The mapped areas plus a 250m buffer zone were excluded from WPAA as part of the exercise (Map JB/17262/005).

3.20 Together, SPZs, areas where Major Aquifers occur and urban areas were used to determine where the Agency would generally allow landfilling in accordance with RGN3 and RGN6. Areas constrained by these combined factors were mapped out on GIS and are shown on Map JB/17262/007.

Weighting *– High*
The weighting for this criterion was agreed to be high. This is because data quality is high and the criterion has a very significant influence on landfill suitability due to the Environment Agency's policy on ground water protection and geological/engineering suitability.

Other Environmental constraints

3.21 National and international environmental and nature conservation designations were considered an important factor, as they would normally constrain planning applications for landfill development. Designations assessed included: Areas of Outstanding Natural Beauty (AONB) (Map JB/17262/002), Sites of Special Scientific Interest (SSSIs) (Map JB/17262/002), Special Protection Areas (SPAs) (Map JB/17262/002), Greenbelt Areas (Map JB/17262/006), National Parks (Map JB/17262/006), and Flood Plain Areas 2&3 (Map JB/17262/005a).

3.22 These designations were mapped on GIS for the whole of the South East Region. The results are presented merged on Map JB/17262/008.

***Weighting** – High*
The weighting for this criterion was agreed to be high. This was due to availability of good quality data and the high importance attached to the criterion as national designations present major planning constraints for landfill.

Modelling

3.23 In order to identify actual areas in each WPAA that were suitable in principle for landfill, areas constrained by the above two criteria were overlaid on GIS taking in to account areas where there was overlap. The overall results showed areas that were constrained in each sub-region. Constrained areas were subtracted from the total area of each authority to give the total area that is suitable in principle in the South East based on geological suitability and other environmental constraints. The results of this exercise are presented on Map JB/17262/009.

3.24 The suitability index used for modelling was based on total area of WPAA that was suitable in principle following the sieving exercise. For the above criterion, it was agreed that the model should take account of the relative size of each WPAA, rather than simply assessing criteria on the basis of percentage of each area. This was because percentage indicators would not reflect the real and relative area of land that is suitable in principle in each WPAA.

3.25 The total suitable area per WPAA was added up to give the total area suitable for landfill in principle in the South East. A Suitability Index was then attributed to each WPAA, that is, the percentage contribution of each WPAA to the total South East area that is suitable.

3.26 Full details of this exercise are given in Appendix 1 and the results are shown in Section 4 of this report.

Criterion 3 Proximity to London

3.27 The aim of this criterion was to provide a comparative assessment of each of the WPAAs in proximity principle terms. It was agreed that this assessment would only take account of the road network to model proximity principle.

3.28 A spatial analysis of the distance from the M25 to the central point of each WPA was undertaken and is shown on maps JB/17262/012 and JB/17262/013.

3.29 This analysis also takes into account the density of motorway and A-class roads within each WPAA and the travel times to the centre of the WPA area.

3.30 Additional/alternative proximity principle indicators were considered, including taking account of relative, as the crow flies, proximity to London. It was considered by the Steering Group that alternative indicators would be too complex to include in the modelling for this project and that the proposed indicators were broadly acceptable.

Weighting *– Medium*
Proximity principle is a key national waste management policy. However, a medium rating was agreed as the assumptions required to model proximity principle introduce a potentially significant margin of error.

Modelling

3.31 The suitability index was based on two factors:

- the average time taken to travel from a point on the M25 to the centre of each WPAA via the motorway and A-Class road network; and,
- the density of road network per WPAA.

3.32 For each WPAA, travel time from a point on the M25 to the centre of each WPAA via the motorway and A-Class road network was calculated. The travel time for each WPAA was converted into a representative value – the shorter the time, the greater the value attached. The representative values for each WPAA were added together to give an overall total. The representative values for each WPAA are then divided by the overall total representative value for the region to give a suitability index for each WPAA.

3.33 Road density was calculated by dividing the total length of roads per WPAA by the total area of each WPAA. The road density for each WPAA was converted into a representative value – the higher the density, the greater the value attached. The representative values for each WPAA were added together to give an overall total. The representative values for each WPAA are then divided by the overall total representative value for the region to give a suitability index for each WPAA.

3.34 To arrive at the overall suitability score for the proximity principle criterion, the representative values from the two factors above (travel time and density of roads) were combined to give an overall score, using a 50:50 weighting.

3.35 Detailed methodology is included in Appendix 1 and the results are shown in Section 4 of this report.

Criterion 4 Sustainable Transport

3.36 In order to assess the potential for use of sustainable transport modes to transport waste from London to the South East, it was agreed to undertake a spatial analysis of major rail routes and waterways across the South East. However, due to lack of data, navigable waterways were not assessed.

3.37 The assessment was based on the density of rail within each WPAA in areas mapped as potentially suitable for landfill, and on current rail based contracts from London to the South East. The results of this are shown on maps JB/17262/010 and JB/17262/011.

***Weighting** – Low*
Sustainable transportation is a significant national planning policy aim and influences the proximity principle. However, a low weighting was agreed as the assumptions required to model the criterion introduce a potentially significant margin of error. For example, the practicalities of implementing rail transport were not considered.

Modelling

3.38 The modelling (suitability index) was based on an assessment of the density of rail track within each WPAA in areas mapped as potentially suitable for landfill during the sieving exercise for criteria 2 and 6.

3.39 The density for each WPAA was converted into a representative value, the higher the density, the greater the value attached. The density representative values for each WPAA were added together to give an overall total. The density representative values for each WPAA are then divided by the overall total representative value for the region to give a density suitability index for each WPAA.

3.40 The WPAAs with current rail based contracts are given a representative value depending on the contracted tonnage[1]. The contract representative values for each WPAA were added together to give an overall total. The contract representative values for each WPAA are then divided by the overall total representative value for the region to give a contract suitability index for each WPAA.

3.41 To arrive at the overall suitability score for the sustainable transport criterion, the representative values from the two factors above (density and contracts) was combined to give an overall score, using a 75:25 weighting.

3.42 A detailed modelling methodology and assumptions made are presented in Appendix 1 and the results are shown in the Section 4 of this report.

Criterion 5 Contracts and Patterns of movement

3.43 As explained in paragraph 3.5 in the methodology, this criterion was agreed to be used as a "reality check" for when modelling both criterion 1 available void space capacity and criterion 4 on sustainable transport. This would involve accounting for capacity required to take in contracted tonnages when assessing surplus void space for criterion 1, and adding a percentage penalty to those WPAAs with existing rail-based contracts for London's waste exports going to Landfill.

3.44 Data on existing rail based contracts for significant quantities of waste was received from GLA. The detailed information is contained in Appendix 4.

3.45 The data shows that there are long term contracts for significant quantities of waste to sites in Buckinghamshire and Oxfordshire. It also reveals that there exists functioning rail infrastructure into landfill sites in both counties.

[1] The contracted tonnages are not currently known, so each WPAA with a contract was allocated a value of 1

4 RESULTS

4.1. The following section presents the results of the modelling exercise. The results are divided into the following sub-sections:

A. Performance of each WPAA when weighted against each of the criteria; and

B. Performance of each WPAA against overall Criteria.

A Performance of each WPAA when weighted against each of the criteria

4.2. This section shows how each of the WPAAs performs against each of the criteria. Appendix 1 provides detailed information on how the results were arrived at and includes raw data such as void space figures and other relevant data.

Criterion 1 - Availability of surplus void space

4.3. Table 1 below shows how each WPAA scored against criterion 1. The results show Milton Keynes as having the highest suitability index (19.2%) followed by Buckinghamshire (17.2%), Oxfordshire (12.67%), Berkshire (10.7%) and Surrey (10.57%).

Table 1 Performance by WPAA against Criterion 1

WPAA	Suitability Index
Berkshire	10.7%
Buckinghamshire	17.2%
East Sussex &B&H	8.6%
Hampshire	0.0%
Isle of Wight	9.9%
Kent and Medway	4.7%
Milton Keynes	19.2%
Oxfordshire	12.6%
Surrey	10.5%
West Sussex	6.7%

Criteria 2&6 – Geological/engineering suitability /other environmental factors

4.4. Table 2 outlines how each WPAA scored against geological suitability and other environmental factors - Criteria 2&6. From the table below, Oxfordshire scores highest (22 %) against these criteria followed by Buckinghamshire (17%), Kent and Medway (16%), and West Sussex and Hampshire both 13%.

Table 2: Performance by WPA against Criteria 2 & 6

WPAA	Suitability Index
Berkshire	3%
Buckinghamshire	17%
East Sussex &B&H	8%
Hampshire	13%
Isle of Wight	2%
Kent and Medway	16%
Milton Keynes	3%
Oxfordshire	22%
Surrey	3%
West Sussex	13%

Criterion 3 - Proximity to London

4.5. Table 3 shows how each WPAA scored against the proximity principle criterion. Surrey scores best (14%) followed by Berkshire (12%). Buckinghamshire, Kent and Medway and Milton Keynes score the same (11%) while the Isle of Wight has the lowest score (6%).

Table 3: Performance by WPA against Criterion 3

WPAA	Suitability Index
Berkshire	12%
Buckinghamshire	10%
East Sussex &B&H	9%
Hampshire	8%
Isle of Wight	6%
Kent and Medway	11%
Milton Keynes	11%
Oxfordshire	9%
Surrey	14%
West Sussex	9%

Criterion 4 - Sustainable Transport

4.6. Performance by WPAA against the criterion on sustainable transport is shown on the table below. Buckinghamshire performs best with a suitability index of 23% followed by Oxfordshire 19% and Kent and Medway 13%. Isle of Wight scores lowest with a suitability index of 4%.

Table 4: Performance by WPAA against Criterion 4

WPAA	Suitability Index
Berkshire	11%
Buckinghamshire	23%
East Sussex &B&H	5%
Hampshire	8%
Isle of Wight	4%
Kent and Medway	13%
Milton Keynes	6%
Oxfordshire	19%
Surrey	5%
West Sussex	5%

Criterion 5 – Contracts

4.7 This has been accounted for when modelling *Criteria 1* and *4.*

B Performance by WPA against overall criteria

4.8 In order to assess the performance of each WPAA against the overall criteria, the suitability index for each WPAA was multiplied by the weightings attributed to each respective criterion to give an overall weighted score (index) for each WPAA. This calculation is illustrated in tables 6 – 15 below.

4.9 To enable the above calculation, values were attached to the weight of each criterion (medium/higher) as shown in the table below.

Table 5: Criteria Weighting

Criteria Table		Weighting	
1	Identification of surplus void space.	Medium	25.0%
2	Geology/groundwater suitability, based on source protection zone or other appropriate criteria.	High	37.5%
3	Proximity to London	Medium	25.0%
4	Sustainable Transport	Low	12.5%

4.10 Details of how this weighting was proportioned are given in Appendix 2.

4.11 The following tables show the weighted suitability index and the overall weighted index for each WPAA.

Table 6: Berkshire

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	10.7%	25%	2.7%
Area Suitable in Principle for Landfill	2.9%	38%	1.1%
Proximity to London	11.9%	25%	3.0%
Sustainable Transport	10.6%	13%	1.3%
Overall weighted suitability			8.1%

Table 7: Buckinghamshire

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	17.2%	25%	4.3%
Area Suitable in Principle for Landfill	17.0%	38%	6.4%
Proximity to London	9.7%	25%	2.4%
Sustainable Transport	22.7%	13%	2.8%
Overall weighted suitability			15.9%

Table 8: East Sussex &B&H

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	8.6%	25%	2.1%
Area Suitable in Principle for Landfill	7.8%	38%	2.9%
Proximity to London	9.2%	25%	2.3%
Sustainable Transport	5.1%	13%	0.6%
Overall weighted suitability			8.0%

Table 9: Hampshire

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	0.0%	25%	0.0%
Area Suitable in Principle for Landfill	12.8%	38%	4.8%
Proximity to London	8.5%	25%	2.1%
Sustainable Transport	8.1%	13%	1.0%
Overall weighted suitability			7.9%

Table 10: Isle of Wight

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	9.9%	25%	2.5%
Area Suitable in Principle for Landfill	2.2%	38%	0.8%
Proximity to London	5.9%	25%	1.5%
Sustainable Transport	4.0%	13%	0.5%
Overall weighted suitability			5.3%

Table 11: Kent and Medway

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	4.7%	25%	1.2%
Area Suitable in Principle for Landfill	16.2%	38%	6.1%
Proximity to London	11.1%	25%	2.8%
Sustainable Transport	12.7%	13%	1.6%
Overall weighted suitability			11.6%

Table 12: Milton Keynes

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	19.2%	25%	4.8%
Area Suitable in Principle for Landfill	2.9%	38%	1.1%
Proximity to London	11.4%	25%	2.8%
Sustainable Transport	6.5%	13%	0.8%
Overall weighted suitability			9.5%

Table 13: Oxfordshire

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	12.6%	25%	3.2%
Area Suitable in Principle for Landfill	22.2%	38%	8.3%
Proximity to London	8.7%	25%	2.2%
Sustainable Transport	19.5%	13%	2.4%
Overall weighted suitability			16.1%

Table 14: Surrey

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	10.5%	25%	2.6%
Area Suitable in Principle for Landfill	2.9%	38%	1.1%
Proximity to London	14.4%	25%	3.6%
Sustainable Transport	5.3%	13%	0.7%
Overall weighted suitability			8.0%

Table 15: West Sussex

Criteria	Suitability Index	Weighting	Weighted Suitability Index
Identification of surplus void space.	6.7%	25%	1.7%
Area Suitable in Principle for Landfill	13.1%	38%	4.9%
Proximity to London	9.4%	25%	2.3%
Sustainable Transport	5.5%	13%	0.7%
Overall weighted suitability			9.6%

4.12 The total suitability index for each WPAA is shown below and is referred to as the 'overall weighted suitability index.'

Table 16: Overall weighted suitability index

WPAA	Overall score
Berkshire	8.1%
Buckinghamshire	15.9%
East Sussex &B&H	8.0%
Hampshire	7.9%
Isle of Wight	5.3%
Kent and Medway	11.6%
Milton Keynes	9.5%
Oxfordshire	16.1%
Surrey	8.0%
West Sussex	9.6%

4.13 It was agreed by the Steering Group and through wider consultation that the Isle of Wight would be excluded from the apportionment, as it was considered impractical to transport waste from London over water to the Isle of Wight. The Isle of Wight apportionment was therefore shared between the other counties in proportion to the overall weighted suitability index. This index represents the overall score for each WPA against the chosen criteria and it forms the basis for the apportionment.

4.14 The overall weighted suitability index represents the percentage to be applied in apportioning waste from London requiring landfilling in the South East, based on the assumptions and methodology described above.

Table 17: Apportionment

WPAA	Overall score	Apportionment
Berkshire	8.1%	8.5%
Buckinghamshire	15.9%	16.8%
East Sussex &B&H	8.0%	8.4%
Hampshire	7.9%	8.4%
Isle of Wight	5.3%	0.0%
Kent and Medway	11.6%	12.2%
Milton Keynes	9.5%	10.1%
Oxfordshire	16.1%	17.0%
Surrey	8.0%	8.4%
West Sussex	9.6%	10.1%

5 CONCLUSIONS

5.1 It is important to reiterate that one of the aims of this project was to produce a methodology for the apportionment of London's waste within the South East. The methodology developed and described above is a working methodology and it is dependent on the quality of data used and the assumptions that underpin it. The outputs from the methodology model, the 'results', are therefore provisional and subject to changes in data and assumptions that may be made should new or better quality information become available.

5.2 However, it is possible at this stage to make some general observations and draw some conclusions based on the provisional results described above. Table 17 in Section 4 above shows how each WPAA scores overall. The table below shows how each WPAA is ranked based on the above results.

Table 18: WPAA Ranking

WPAA	Apportionment	Ranking
Oxfordshire	17.0%	1
Buckinghamshire	16.8%	2
Kent and Medway	12.2%	3
West Sussex	10.1%	4
Milton Keynes	10.1%	5
Berkshire	8.5%	6
East Sussex &B&H	8.4%	7
Surrey	8.4%	8
Hampshire	8.4%	9
Isle of Wight	0.0%	10

Berkshire

5.3 Berkshire has medium apportionment rating in relation to the other WPAAs. It scores well in terms of proximity to London as it is relatively close to London in terms of distance and travel time. It is however highly constrained in terms of geology and other environmental designations.

Buckinghamshire

5.4 Buckinghamshire has the second highest apportionment of all the WPAAs. It is one of the WPAAs with surplus void space at 2015 and a relatively high suitability index is attributed to this criterion. Buckinghamshire is also not as highly constrained in terms of geology and other environmental designations as other WPAAs. The County has existing rail based contracts, which also contribute to an overall relatively high suitability for landfilling.

East Sussex and Brighton & Hove

5.5 East Sussex and Brighton & Hove has the joint lowest apportionment. Assessment of availability of surplus void at 2015 reveals a shortfall and the WPAA is relatively highly constrained by geological and environmental factors. Scores for proximity to London and sustainable transport are also below average.

Hampshire

5.6 Hampshire has the joint lowest apportionment. Hampshire will have a shortfall in void space at 2015 and does not score relatively well in terms of proximity to London and sustainable transport. However, it is not as highly constrained as some other WPAAs in terms of geology and other environmental designations.

Kent and Medway

5.7 Kent and Medway has a high overall weighted suitability index and the third highest apportionment after Oxfordshire and Buckinghamshire. This can be attributed to relatively high scores against geological and other environmental constraints, proximity principle and sustainable transport. However, Kent and Medway has no surplus void space at 2015.

Milton Keynes

5.8 The analysis reveals that Milton Keynes should have a mid-range apportionment in relation to the other WPAAs. Milton Keynes is highly constrained in terms of geology and other environmental designations and has one of the lowest scores against this criterion. Milton Keynes also scores below average on proximity principle and sustainable transport criteria. It however scores well against availability of surplus void space at 2015.

Oxfordshire

5.9 Oxfordshire has the highest apportionment percentage. It is the most suited WPA in terms of suitability for landfill with regard to geology and other environmental designations, and performs relatively well against criterion 1, as it is one of the few WPAAs with available surplus void space at 2015. Whilst the ratings for proximity principle and sustainable transport are average, there are existing rail-based contracts for waste from London for landfill in Oxfordshire which contribute to the overall highest score.

Surrey

5.10 Surrey has the joint lowest apportionment rating. It has surplus void space at 2015 and a high score against proximity to London. Surrey is however relatively tightly constrained in terms of suitability for landfill defined by geology and other environmental designations.

West Sussex

5.11 West Sussex has a mid-range apportionment rating. It has no available surplus void space at 2015 and has a low score in terms of sustainable transport and an average proximity to London score. However, the WPAA is not relatively highly constrained geologically and in terms of other environmental designations considered.

Summary

5.12 Objective a) was "to agree apportionment criteria using the EiP Panel Report criteria and the SEERA criteria as a starting point". Following consultation with the Steering Group, the following criteria were agreed:

Criteria 1. Availability of suitable landfill void space;
Criteria 2. Suitability of geology/and or engineering;

Criteria 3. Proximity to London;
Criteria 4. Sustainable transport;
Criteria 5. Contracts and patterns of waste movement (existing major rail based contracts);
Criteria 6. Other land uses/environmental factors.

5.13 Objective b) was to "to prepare a methodology for the apportionment of Municipal Solid Waste (MSW) and other waste exported from London by sub-region, having regard to the agreed criteria". This methodology was agreed following consultation with the Steering Group and wider consultation via SERTAB. The methodology is described above and in more detail in Appendix 1, and takes the form of a user-friendly Microsoft Excel model, which will allow SEERA to revisit the modelling results in the light of updated baseline data in the future.

5.14 Objective c) was to "to quantify broadly (in percentage rather than tonnage) waste apportioned to each Waste Planning Authority area". The modelling exercise produced an overall suitability index for each WPAA. These suitability indices, and consequent apportionment percentages, are a function of existing available void space, the actual area of each WPAA that is suitable in principle for landfilling, and indicators of proximity and sustainable transport. Existing rail-based contracts to export waste from London to the South East also influenced the suitability indices and apportionment.

Implementation of this model attributes the highest suitability indices and apportionment to Oxfordshire and Buckinghamshire. Kent and Medway, Milton Keynes and West Sussex have mid-range apportionment percentages, falling within a 2.1% band and would have to plan to accommodate broadly similar quantities of London's waste. Hampshire, Berkshire, Surrey and East Sussex and Brighton & Hove have the lowest apportionment percentages, all falling within a 0.1% band.

Further Refinement

5.15 **Baseline Data**
Paragraph 3.12 identifies the intention of the model to take account of the tonnages of waste currently contracted to be exported from London by rail, as part of the assessment of remaining void capacity in each of the WPAAs. At the time of writing, this information was not available. It is understood that the relevant information should be reasonably readily available and it would be a worthwhile exercise to identify this data and incorporate it into the model.

5.16 **Sensitivity Tests**
A number of sensitivity tests could be carried out on the provisional results.

a. The proximity principle criterion is based on two factors; travel time and road density. The model assumes a 50/50 split in the respective degree of influence of each of these indicators over the proximity principle. Sensitivity testing of different weightings would be a worthwhile exercise to determine the relative effect of each factor.

b. Sustainable transport is assessed using indicators of rail density and existing export by rail contracts. The model assumes a 75:25 split in the respective degree of influence of these indicators. Again, a sensitivity test on this weighting would be a valuable exercise, to ensure that a given indicator does not carry undue influence on the modelling results.

5.17 **Quantification of tonnage apportionments**.

The outputs from this research project were a set of modelling criteria, a user-friendly model and an indication of relative apportionment percentages to be applied to each South East Region WPAA. The next step in the apportionment process will be to apply the model to the quantity of waste from London that is estimated to require landfilling in the South East. This exercise will involve quantification of exports from London and agreement on apportionment between relevant regions. The resultant apportionment figures should also be geared towards implementation at WPAA level, and consequently should take account of different waste local plan / waste development framework timeframes.