
8. WASTE GENERATION FORECASTS

The National Waste Prevention Programme sets a series of objectives to decouple the relationship between economic growth and waste generation. At present waste growth is linked with economic growth nationally. It is against this background that the waste forecasts for the period of the plan are set.

8.1. Waste Forecasts

The following documents were consulted to calculate the quantities of waste expected to arise within the region for management during the period of the plan. The design year is 2011:

- Regional Planning Guidelines for the South East Region
- National Spatial Strategy (NSS)
- National Strategy on Biodegradable Waste, Draft Strategy Report
- National Overview of Waste Management Plans (NOWMP)
- Joint Waste Management Plan for the South East (2002) (JWMPSE)

Waste forecasts were derived for the three primary waste sectors;

- household
- commercial
- industrial

The quantities of industrial waste used to model future facility requirements do not include industrial non-hazardous sludges, hazardous industrial waste or industrial waste arisings that are currently managed by the industries themselves on site.

Baseline waste tonnages were determined based on 3 data sources:

- NWD 2003
- regional audit
- in the case of household waste, arisings were estimated by multiplying the number of houses in the region by a factor. The factor is 1.28 t per household per annum, which is the average quantity of waste produced by households in region. The average was calculated from:
 - household waste collected by the Local Authorities for (1, 2 and 3) bin collection services
 - recyclables delivered to bring and recycling centres
 - large bulky household items delivered directly to landfills

When varying tonnages for a particular waste fraction was encountered, the highest tonnage was taken to calculate the size requirements for waste management infrastructure.

Future waste arisings were predicted using growth rates from the Regional Planning Guidelines, NOWMP and the JWMPSE 2002. The growth factors used in the NOWMP are outlined in Table 8.1. It should be noted that the growth factor percentage increases are not compounded. The NOWMP considers the following factors to determine growth rates:

- population statistics
- economic factors
- deduction in household size
- level of success of the National Waste Prevention Programme

It was considered that these projections are the most comprehensive waste predictions to date and accordingly are used for projections in this proposed review.

Post 2010, the original projection of the 2002 JWMP is utilised. This is to provide for some redundancy in the system for forward planning purposes in the medium to long term.

For example, for the year 2011 the JWMPSE gives a prediction of 220,000 tonnes for household waste arisings whereas using the NOWMP gives a figure of 224,000 tonnes. The difference is not significant.

Table 8.1: Waste Arisings Forecast for the South East Region 2006-2026

Waste Stream	2006*	2007*	2008*	2009*	2010	2011- - 2026	Total Increase
Household	5.0%	2.5%	2.4%	1.7%	1.3%	2%	44.9%
Commercial/Industrial	3.3%	1.1%	1.2%	0.6%	0.3%	2%	38.5%

Based on these growth rates, waste tonnages were calculated for the period 2006 – 2026. The waste arising estimates for 2006 and 2011 have been compared with the predictions made in the JWMPSE in 2002 for waste arisings 2006 and 2011 in Tables 8.2 and 8.3. The estimates in Tables 8.2 and 8.3 were used in the financial and scenario modelling* in both this (2005) Review and in the JWMPSE (2002). 2011 is the design year for the plan.

* Household Waste estimates (2005) are based on generation of waste at 1.28 t/household and a coverage of 80% of households and include the household fraction of waste that is assumed to be home composted (4% of household fraction). Commercial waste arisings are estimated as a 1:1 ratio with household for the baseline year.

Table 8.2: Waste tonnages for the base year 2006

Data Source	Review ⁽²⁰⁰⁵⁾	JWMPSE ⁽²⁰⁰²⁾
Waste Stream	2006 (t)	2006 (t)
Household	171,000	147,000
Commercial/Industrial	151,000	130,000

Table 8.3: Waste tonnages for the design year 2011

Data Source	Review ⁽²⁰⁰⁵⁾	JWMPSE ⁽²⁰⁰²⁾
Waste Stream	2011 (t)	2011 (t)
Household	186,000	192,740
Commercial/Industrial	159,000	144,780

Although different growth rates were used in the original plan and in this review there are no significant changes.

The plan has chosen 2011 as the design year. This means, waste arisings in 2011 will be used for waste planning purposes, such as sizing facilities. In this way planned facilities will be of a reasonable size with little redundancy. Facility size requirements can be reviewed either at the plan review intervals or as part of the facility procurement process. Facilities should be sized for economies of scale and on a value for money basis. This may require inter-regional waste movements to achieve these objectives.

8.2. Future Infrastructural Capacity Requirements

Waste forecasts were used to carry out financial and scenario modelling during the review process of the Plan. Future infrastructural capacity requirements include quantities of:

- household waste for collection
- commercial/industrial waste for collection
- dry recyclables for recovery
- organic waste for recovery/recycling
- residual waste for disposal

In the preparation of this review, it is clear that there is still some uncertainty as to the total quantity of wastes arising in the region. This is in part due to legal waste movements out of the region but also to illegal movements. Due to the uncertainty of an accurate figure for waste generation sensitivity analysis was carried out on the data to ensure adequate sizing of infrastructure that will be required to manage waste generated in the region for the duration of the Plan.

The range of sensitivity included reducing household waste arisings by 20%, to increasing commercial/industrial waste arisings by 50%. These are clearly absolute minimum/maximum waste figures and are labelled B and C respectively in Table 8.4.

Table 8.4: Data Sensitivity Table

	Household	Commercial & Industrial	Year	Household	Commercial & Industrial	Total	Dry Recyclables	Organics	Residual (Total)	Thermal
	1.28 tonnes @ 80 % ^{Note 1}	As reported	2002	144,446	138,917	283,363				
	1.28 tonnes @ 80 %	As reported	2011	185,614	158,901	344,515	136,005	54,538	144,692	130,223
	1.28 tonnes @ 80 %	As reported	2016	200,058	175,440	375,498 ³	148,786	59,483	157,227	141,504
	1.28 tonnes @ 85 %	As reported	2002	153,474	138,917	292,391				
	1.28 tonnes @ 85%	As reported	2011	197,215	158,901	356,116	139,276	56,278	150,702	135,631
	1.28 tonnes @ 85%	As reported	2016	212,562	175,440	388,002	152,312	61,358	163,704	147,334
D	1.28 tonnes @ 80 %	1.5	2002	144,446	208,376	352,822				
	1.28 tonnes @ 80 %	1.5	2011	185,614	238,352	423,966	177,836	67,885	168,965	152,068
	1.28 tonnes @ 80 %	1.5	2016	200,058	263,160	463,218	194,970	74,220	184,026	165,623
C	1.28 tonnes @ 85%	1.5	2002	153,474	208,376	361,850				
	1.28 tonnes @ 85%	1.5	2011	197,215	238,352	435,567	181,107	69,625	174,974	157,476
	1.28 tonnes @ 85%	1.5	2016	212,562	263,160	475,722	198,496	76,095	190,503	171,452
B	90% of 1.28 tonnes @ 80 % ^{Note 2}	As reported	2002	130,002	138,917	268,919				
	90% of 1.28 tonnes @ 80 %	As reported	2011	167,052	158,901	325,954	130,770	51,753	135,078	121,570
	90% of 1.28 tonnes @ 80 %	As reported	2016	180,053	175,440	355,493	143,144	56,482	146,864	132,178
	90% of 1.28 tonnes @ 85 %	As reported	2002	138,127	138,917	277,044				
	90% of 1.28 tonnes @ 85 %	As reported	2011	177,493	158,901	336,395	133,715	53,319	140,486	126,437
	90% of 1.28 tonnes @ 85 %	As reported	2016	191,306	175,440	366,746	146,317	58,170	152,693	137,424
A	90% of 1.28 tonnes @ 80 %	1.5	2002	130,002	208,376	338,377				
	90% of 1.28 tonnes @ 80 %	1.5	2011	167,052	238,352	405,405	172,601	65,101	159,350	143,415
	90% of 1.28 tonnes @ 80 %	1.5	2016	180,053	263,160	443,213	189,329	71,219	173,663	156,296
	90% of 1.28 tonnes @ 85 %	1.5	2002	138,127	208,376	346,502				
	90% of 1.28 tonnes @ 85 %	1.5	2011	177,493	238,352	415,845	175,546	66,667	164,758	148,282
	90% of 1.28 tonnes @ 85 %	1.5	2016	191,306	263,160	454,466	192,502	72,907	179,492	161,543

Note 1: 1.28 t per household, with collection of waste from 80% of households

Note 2: with an increase in diversion rates, reduced quantities of waste goes into each household bin, i.e. a % of 1.28 t

Note 3: The impact of 100% collection participation by households is an increase in total waste arisings by 6% for the design year.

As shown in Table 8.4, a number of scenarios were examined to determine the most realistic range of tonnages that will require management. The minimum and maximum ranges have been excluded. Realistically it is estimated that there will be a 80% coverage by household collection services in the region. The realistic range is based on:

- a 10% decrease in household waste arisings
- a 50% increase on reported commercial waste arisings

This “realistic” range gives a fairly tight band of facility requirements as set out in Table 8.5 and is summarised below:

Table 8.5: Design Year 2011

Fraction	Range	B (t)	C (t)	Range	A (t)	D (t)	No. of main facilities realistic range
Dry Recyclables ⁽¹⁾	min-max	130,770	181,107	realistic	172,601	177,836	5
Organics ⁽²⁾		51,753	69,625		65,101	67,885	2
Thermal (3)		121,570	157,476		143,415	152,068	1
Landfill		13,508	17,493		15,935	16,897	1
<i>Residual (Total)</i>		135,078	174,974		159,350	168,965	1

Note 1 dry recyclables, 172,000 tpa to 177,000 tpa or typically 5-6 facilities in the range of capacities of 25,000 tpa to 30,000 tpa

Note 2 organics, 65,000 tpa to 68,000 tpa or typically 2-3 facilities in the range of capacities of 25,000 tpa to 30,000 tpa

Note 3 residual landfill/thermal, 143,000 tpa to 170,000 tpa or one facility of each type in the capacity range of 150,000 tpa.

8.2.1. Short Term Requirements

Table 8.5 also gives an insight into the capacity required in the short term to cover the period 2005 - 2011 while recycling increases from a low level at present to required levels by 2011.

Within the “realistic” range (A and D), there is an immediate requirement for disposal of between 338,377 tpa to 352,822 tpa. This will reduce to between 159,350 tpa to 168,965 tpa by 2011 with the provision of an integrated waste facility, (comprising thermal treatment, associated transfer systems, biological and dry material recovery facilities) and less than half of this range again thereafter.

To cater for this short term deficiency within the region, landfill capacity should be maintained and/or developed either by extension and/or development of at least one significant (capacity >150,000 tpa) facility. It may also be prudent to progress a second new facility to preconstruction stage (in the event of delays in the procurement process of the regional integrated facility) and to ensure the region is self sufficient in this transition period.

This phasing of facilities requires co-ordination between the authorities to avoid excess capacity and hence excessive cost/expenditure. Required capacity should be jointly developed as this provides the best opportunity to develop value for money short term solutions.

In the case where the public sector landfill capacity is insufficient there is also a role for the private sector in the provision of residual landfill capacity in accordance with diversion targets set out in the Plan and the Landfill Directive.

Prior to the implementation of the integrated waste treatment facilities (including thermal treatment) the Plan anticipates that approximately 5 - 10 % of the anticipated biodegradable waste generated in the Region will require an alternative management strategy to comply with the Landfill Directive. The possible short term options may include:

- *Inter regional waste movement (which is currently the position)*
- *Other waste treatment outside the Region subject to compliance with the Landfill Directive.*