South East Waste Planning Advisory Group (SEWPAG)

Residual Non-Hazardous Waste Treatment Capacity in the South East

V5.0 Final Report

20 May 2021

Cool Planet Resources

Contents

1. Introduction and Context

1.1 The Wider South East of England is covered by three regional waste advisory groups which include the Waste Planning Authorities (WPAs) within each region as follows:

- South East Waste Planning Advisory Group (SEWPAG)
- East of England Technical Advisory Body (EoETAB)
- London Waste Planning Advisory Forum (LWPF)

1.2 Amongst other matters, each group monitors the development and evolution of waste management capacity within its region.

1.3 A particular area of focus for all three groups is the extent to which waste management capacity for managing 'residual non-hazardous waste' is being developed by the waste industry. This is with both a concern to ensure sufficient capacity is available to meet future needs, but also to ensure waste will be managed in accordance with the Waste Hierarchy (see Fig 1).

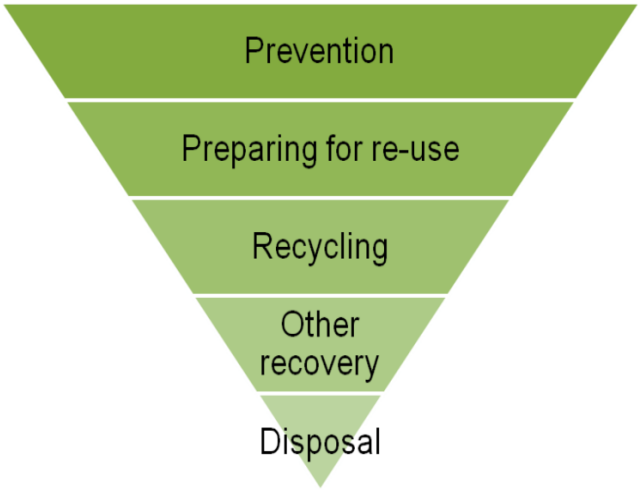

Fig. 1 The Waste Hierarchy[1]

1.4 Residual non-hazardous waste is waste which cannot be practically recycled or managed by other methods further up the waste hierarchy[2]. Residual non-hazardous waste is generally managed by energy from waste facilities with a decreasing quantity being managed by landfill. Residual

[1] Source: National Planning Policy for Waste

[2] The recent monitoring report for the Government Resources and Waste Strategy (p.33) describes residual non-hazardous waste as "waste that has not been prevented, reused or recycled. It is usually collected from households or businesses in a black bag or wheelie bin to ultimately end up at an energy recovery plant or landfill." The actual waste captured by the term can be expected to change over time, and as the Defra monitoring report identifies ought to reduce as recycling of wider streams become more viable.

non-hazardous waste is derived from Local Authority Collected Waste and Commercial and Industrial waste streams.

1.5 Government has indicated[3] that it intends to achieve 65% recycling of municipal waste by 2035 and this is reflected in many Waste Local Plans in the South East. The government considers that its *'major waste reforms – including consistent recycling collections in England and extended producer responsibility for packaging – will drive progress towards achieving this target'*[4]. It should also be noted that some WPAs in the South East have set a 70% target for recycling municipal waste.

1.6 If the 65% target is achieved then there will be no more than 35% of municipal waste remaining (the 'residual waste' fraction) to be managed by landfill or 'other recovery' such as Energy from Waste (EfW)[5]. Municipal waste includes waste from households and wastes of a similar type arising from businesses.

1.7 EfW facilities already exist across the South East and are making an important contribution to reducing the amount of waste being managed by landfill. Many WPA areas in the South East have EfW facilities within them that were developed to ensure that the amount of biodegradable household waste being landfilled reduced in line with Landfill Directive targets[6]. These facilities are also managing some residual non-hazardous waste from commercial and industrial sources.

1.8 In addition to EfW, there is some Mechanical Biological Treatment (MBT) capacity which may also be counted towards 'other recovery' at Brookhurst Wood in West Sussex. MBT is considered 'pre-treatment' and is an intermediate process before recovery. The MBT process separates out recyclable/digestable material and the remaining residual waste is reduced through moisture extraction to become refuse derived fuel (RDF). Around 40% of the capacity of the Brookhurst Wood facility can be counted as 'other recovery' of residual waste.

1.9 Additional EfW facilities have been consented and some of these are undergoing construction (See Tables 3 and 5). Planning applications have also been made for such facilities and are currently being determined by the relevant WPA. In addition, EfW capacity has been, and is being, developed

[3] Resources and Waste Strategy for England, 2018
[4] Government Response to the National Infrastructure Assessment, November 2020
[5] For the purpose of this report EFW includes all forms of Thermal Treatment
[6] For example, East Sussex, South Downs and Brighton & Hove contract for MSW management involved construction of the Newhaven Energy Recovery Facility.

via the Nationally Significant Infrastructure Projects (NSIPs) route provided for by the Planning Act 2008. For example, an application for a Development Consent Order (DCO) for a new EfW and expansion of existing EfW at Kemsley in Kent (commented on by SEWPAG) is currently in the process of being determined by the SoS and another aimed at adding a new line at the existing Allington EfW plant, also in Kent, is expected to be submitted in 2021. An application for an EfW NSIP in Hampshire was made but subsequently withdrawn in 2020.

1.10 EfW infrastructure has an operational life of at least 30 years and so has a considerable impact on how waste will be managed in future. If insufficient capacity is developed then waste will continue to be landfilled but, on the other hand, if too much is developed then management of waste in accordance with the waste hierarchy, in particular the achievement of recycling targets, may be hindered. Indeed, once capacity is operational it is not commercially possible to reduce inputs to enable waste to be managed by recycling and other methods further up the waste hierarchy. Hence waste is locked into a long term supply. Figure 2 below provides an illustration of how 'surplus' EfW capacity might occur.

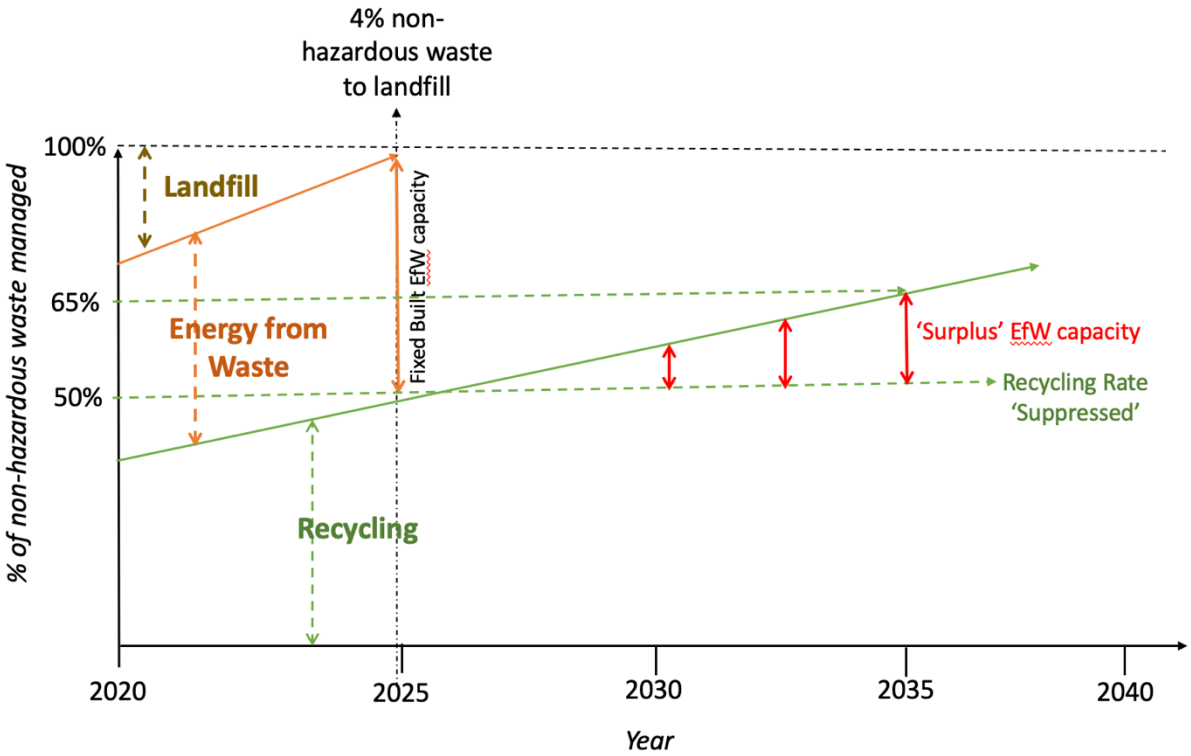

Fig. 2 'Surplus' EfW Capacity Scenario (for illustrative purposes only)

This study contributes towards a Wider South East study intended to give a sense of the extent to which additional residual non-hazardous waste

management capacity is needed to minimise landfill and at the same time avoid hindering the management of waste further up the waste hierarchy.[7]

1.11 EfW plants are normally developed in accordance with economies of scale. That is to say the larger the plant the lower the cost per unit of waste processed. This means that developers may build plants of such a size that they attract waste from beyond the WPA area within which they are located. It is likely therefore that residual non-hazardous waste will be transported across regional 'boundaries' for management and hence it is considered that the findings from a study which covers the Wider South East will provide a more useful indicator of need for residual non-hazardous waste management capacity.

1.12 Ultimately the findings will provide information to help the regional waste planning groups and their WPAs with the following:
- Responding to planning applications made for non-hazardous residual waste management capacity (including DCOs); and,
- preparing Waste Local Plans.

1.13 Members of SEWPAG have been consulted on earlier drafts of this report and have contributed to ensuring the accuracy of the underpinning data.

2. Scope and Limitations of the Study

2.1 This study considers residual non-hazardous waste treatment capacity in the South East in the form of EfW capacity that is operational, being commissioned or being constructed. It does not include other forms of 'recovery' capacity including Anaerobic Digestion. It also doesn't account for RDF manufacture (e.g. by Mechanical Biological Treatment).

2.2 Notwithstanding the approach of the Study, it is recognised that London Boroughs and other WPAs may count RDF manufacture e.g. by Mechanical Biological Treatment, as residual waste management capacity alongside EfW capacity when establishing 'other recovery' requirements in their Waste Local Plans.

2.3 When estimating the need for residual waste treatment capacity a '4% to landfill' factor has been applied. This has been included to reflect the fact that there will likely always be some waste that will be managed by landfill.

[7] Please note that this report has been prepared independently of similar reports that may have been, or are being, prepared by SEWPAG members.

4% reflects the 96% diversion of LACW achieved by East Sussex, South Downs and Brighton & Hove in 2018/19 (according to its latest Authority Monitoring Report (AMR))[8]. It should be noted that Defra data[9] indicates 8.7% of municipal waste was managed by landfill in 2018/19.

2.4 The study has not taken account of existing landfill capacity as its intention is to identify how much residual non-hazardous waste treatment capacity is required under a virtual 'zero' waste to landfill scenario which is consistent with the Waste Hierarchy and Waste Local Plans of South East WPAs.

2.5 The study does not consider the Construction, Demolition and Excavation waste stream. The vast majority of this waste stream is inert and related residual waste cannot be managed via 'other recovery' facilities of the type considered in this report.

2.6 The study is intended to provide a snapshot of the estimated capacity gap at the end of 2020.

2.7 Except where indicated, estimates of forecast arisings and existing capacity are based on existing WPA data and projections included in adopted plans and related evidence base reports including AMRs.

2.8 Details of how 2020 arisings estimates have been derived is set out in a separate excel document but the basic approach taken is as follows:

- Where a projection for 2020 is available this has been used.
- Where a projection for the year 2020/21 exists this has been taken as arisings in 2020.
- In a few cases extrapolation of projections has been applied.

2.9 While different WPAs apply different methods of estimating arisings, the values presented have been taken as presented in their documentation. That is to say no attempt has been made to standardise them and it is possible that there could be disparities between the methods used to establish estimates.

2.10 Existing capacity is taken as those facilities currently in operation as well as those being commissioned and those under construction. The report indicates how much of the total capacity is not yet operational but is under construction. The capacity of facilities that are under construction but won't be operational until after 2020 are included.

[8] The East Sussex, South Downs and Brighton & Hove Waste and Minerals Plan landfill diversion target for 2015/16 was 98%; Kent CC achieved 98.5% diversion of MSW from landfill in 2019/20.
[9] https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

2.11 In a few cases data used was taken from reports and plans published some time ago and more recent data would likely improve the accuracy of the findings especially with regard to the WPAs responsible for Slough and the Isle of Wight.

2.12 The calculation of residual waste assumes that all waste managed at a recycling facility will be recycled, however in reality some material losses take place at recycling facilities where a percentage of material then needs to be disposed of at another facility such as incineration or landfill[10]. It is estimated that the average reject rate for MRFs in England is approximately 10%. As this has not been taken account in the calculation of residual waste requiring management, the resulting capacity gap values are underestimates.

2.13 In light of the above, the findings should be taken as 'ballpark' i.e. they provide an indication of what capacity gap for residual waste management capacity exists under different recycling scenarios in the South East and thus inform SEWPAG's response to applications for additional capacity, particularly DCOs.

2.14 Consultation with WPAs on the raw data underpinning the findings was undertaken and this report takes account of the responses received.

2.15 An assessment of the impact of various assumptions has been included in Appendix 1.

3. Method

3.1 Projected arisings data for local authority collected waste and commercial and industrial waste for the calendar year 2020 or the financial year 2020/21 were extracted from adopted waste plans and related evidence base reports including AMRs. These arisings were summed together to give a total projected tonnage for non-hazardous waste arisings as shown in Table 1 below.

3.2 Projections made on a financial year basis i.e. for 2020/21 were taken to apply to 2020. Where WPA projections for arisings have been made for 2021 and 2022 these were taken to apply to 2020.

Table 1 – Estimated non hazardous waste arisings by WPA for 2020

WPA	LACW	C&I	Total
Buckinghamshire	279,000	582,000	861,000

[10] https://www.local.gov.uk/lga-over-half-million-tonnes-recycling-rejected-point-sorting

Central and Eastern Berkshire	262,817	508,920	771,737
East Sussex (inc. B&H & SDNP)	385,000	516,420	930,420
Hampshire (inc Soton and Portsmouth)	809,974	1,257,500	2,067,474
Isle of Wight	45,946	63,530	109,476
Kent	721,188	1,274,080	1, 995,268
Medway	129,639	206,125	335,764
Milton Keynes	147,000	34,000	181,000
Oxfordshire	343,000	560,000	903,000
Slough**	59,472	381,000	440,472
Surrey	540,000	744,000	1,284,000
West Berkshire	81,483	174,090	255,573
West Sussex (inc. SDNP)	435,000	456,000	891,000
Totals	**4,158,036**	**6,558,575**	**10,741,611**

3.3 To establish the amount of residual waste that would be managed by 'other recovery' i.e. not managed by recycling and landfill, the following scenarios were applied:
Landfill: 4%[11] (i.e. 96% diversion from landfill)
Recycling:

- 50%
- 55%
- 60%
- 65%
- 70%

3.4 Although the 65% level is not envisaged to occur until 2035 it has been applied to the estimated waste arisings in 2020 to give a 'snapshot' feel for how much 'other recovery' capacity could be needed to achieve 96% diversion from landfill overall. The 70% value has been included to reflect the fact several WPAs in the South East have included this as a target in their Waste Local Plans.

3.5 It should be noted that Defra data[12] indicates 47.2% of household waste was 'sent for reuse, recycling or composting' in England in 2018/19.

Table 2 – Estimated residual non hazardous waste arisings by WPA

[11] To allow for landfill 4% of the total waste arising was subtracted from the quantities remaining after recycling
[12] https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

WPA	Recycling Scenarios				
	50%	**55%**	**60%**	**65%**	**70%**
Buckinghamshire	430,500	387,450	344,400	301,350	258,300
Central and Eastern Berks	385,869	347,282	308,695	270,108	231,521
East Sussex (inc. B&H & SDNP)	450,710	405,639	360,568	315,497	270,426
Hampshire	1,033,737	930,363	826,990	723,616	620,242
Isle of Wight	54,738	49,264	43,790	38,317	32,843
Kent	997,634	897,871	798,107	698,344	598,580
Medway	167,882	151,094	134,306	117,517	100,729
Milton Keynes	90,500	81,450	72,400	63,350	54,300
Oxfordshire	451,500	406,350	361,200	316,050	270,900
Slough**	220,236	198,212	176,189	154,165	132,142
Surrey	642,000	577,800	513,600	449,400	385,200
West Berkshire	127,787	115,008	102,229	89,451	76,672
West Sussex (inc. SDNP)	445,500	400,950	356,400	311,850	267,300
Total Residual Waste	*5,498,592*	*4,948,733*	*4,398,874*	*3,849,874*	*3,299,155*
4% to landfill	*219,944*	*197,949*	*175,955*	*153,961*	*131,966*
Residual waste for 'other recovery'	**5,278,648**	**4,750,783**	**4,222,919**	**3,695,054**	**3,167,189**

3.6 The existing 'other recovery' capacity available to manage the residual waste arisings within the South East is estimated to be **3,724,460 tpa.** The facilities counted as providing this capacity and sources of the estimates are set out in Table 3 below.

Table 3 Existing residual non-hazardous waste management capacity ('other recovery')

Name of EfW/MBT facility and WPA (operational/under construction)	**Capacity (tonnes per annum)**	**Source**
Newhaven EfW (East Sussex) (operational)	242,000	Veolia (Operator)
Greatmoor EfW (Buckinghamshire) (operational)	345,000	As above

Forest Road ERF (Isle of Wight) (under construction)	44,000	Environment Agency - Notice of variation and consolidation, p. 2
Lakeside EfW at Colnbrook (Slough) (operational)	460,000	Environment Agency - Application for an environmental permit Part C3, p. 6 (Table 5)
Slough Multifuel (Slough) (consented)	438,000	Environment Agency - non-technical summary, p. 1 SSE (Operator)
Portsmouth ERF (Hampshire) (operational)	210,000	Veolia - Annual Performance Report 2019 for Portsmouth ERF, p. 3
Chineham ERF (Hampshire) (operational)	110,000	Veolia - Annual Performance Report 2019 for Chineham ERF, p. 5
Marchwood ERF (Hampshire) (operational)	220,000	Veolia - Annual Performance Report 2019 for Marchwood ERF, p. 3
Allington (Kent) (operational)	500,000	Surrey County Council, Communities, Environment and Highways Select Committee 18 June 2020 document pack, p. 29
Kemsley K3 (Kent) (commissioning)	550,000	Application Letter as part of National Infrastructure Planning application pack
Charlton Lane Eco Park (Surrey) (commissioning)	55,460	Determination of an Application for an Environmental Permit, p. 14
Oxfordshire Ardley ERF (operational)	326,000	Viridor (Operator)
Milton Keynes Waste Recovery Park (Milton Keynes) (operational)	93,600	Amey (Operator)
Brookhurst Wood MBT (West Sussex) (operational)	130,400[13]	WDI 2019
Total Capacity	**3,724,460**	

3.7 The gap between residual waste arisings not managed at landfill and 'other recovery' capacity was then calculated by subtracting the estimated total capacity value in Table 3 from the total residual waste arisings value arrived at in Table 2.

4 Results

4.1 Table 4 below shows the additional 'other recovery' capacity required for the management of residual non-hazardous waste assuming the achievement of

[13] Facility has capacity of 310,000tpa – value shown relates to final 'other recovery' of residual waste rather than intermediate treatment prior to management at another facility.

increasing levels of recycling. It also show the capacity 'gap' if consented capacity were to be built.

Table 4 Estimated 'other recovery' capacity gap in the South East for 2020 (negative values indicate surplus)

Recycling Scenario	50%	55%	60%	65%	70%
'Other Recovery' capacity gap	1,554,188	1,026,323	498,459	-29,406	-557,271
'Other Recovery' capacity gap inc. consented	1,267,188	739,323	211,459	-316,406	-844,271

4.2 Around 1,042,000 tpa of additional 'other recovery' capacity (in the form of EfW) has either been consented or applied for in the South East as shown in Table 5 below.

Table 5 Residual non-hazardous waste management capacity not built out i.e. consented or consent applied for ('other recovery')

Name of EfW facility and WPA (consented or consent applied for)	Capacity (tonnes pa)	Source
Consented:		
Britanniacrest 3R, Brookhurst Wood (West Sussex) (consented)	180,000	WSCC Planning Committee Report 19 June 2018
Kemsley K3 (Kent) (consented)	107,000	Application Letter as part of National Infrastructure Planning application pack
New Circular Technology Park, Ford (Grundon)	140,000	WSCC
Sub-total	*427,000*	
Applications:		
Ford EfW (West Sussex) (application)	135,000[14]	Viridor/Grundon (Operator)
'Energy Recovery Centre', Reading Quarry (West Berkshire) (application)	150,000	Planning Application
Alton energy recovery facility (Veolia) (Hampshire) (application)	330,000	Planning Application

[14] Application is for 275,000tpa but 140,000tpa will replace consented capacity at the same site

Sub-total	*615,000*	
Total	**1,042,000**	

5 Conclusion

5.1 Within the South East, if the use of landfill for the management of residual non-hazardous waste is minimised to 4%, the range of residual waste treatment capacity ('other recovery') required based on an estimate of arisings in 2020 and recycling scenarios ranging between 50% to 70% is estimated at between 1.55 million tpa and -557,271tpa.

5.2 Notwithstanding the limitations of this study, including the fact that it is solely based on the position within the South East, it may be concluded that there is a risk that if any of the 'other recovery' capacity in the pipeline (i.e. consented and applications pending) came on stream then it might not be possible to achieve 65% recycling of LACW and C&I waste.

5.3 The findings from this study have been combined with those undertaken for the London Waste Planning Forum and East of England Waste Technical Advisory Body to establish a picture of residual waste requirements across the Wider South East.

Appendix 1 - Assessment of Impact of Assumptions on Estimate of Residual Waste Management Capacity Requirements

Assumption	Impact on Estimate of Residual Waste Management Capacity Requirements (increase in estimate = green; decrease in estimate = red)	Direction of Effect
The vast majority of residual non-hazardous waste is derived from Local Authority Collected Waste and Commercial and Industrial waste streams and so non-hazardous CDEW has not been factored into the overall estimate of arisings	CDEW is largely inert and so cannot be managed by residual waste management options in particular energy from waste. However, by not factoring this in it may be said that a slight underestimate of residual non-hazardous waste arisings has occurred.	
WPA projections for arisings in 2021 and 2022 were applied to 2020.	As WPAs generally predict an increase in arisings over time it is more likely that this assumption will lead to an over-estimate of the residual waste arisings in 2020.	
4% of residual waste will be managed by landfill	If more than 4% of residual waste is managed by landfill then the amount of residual non-hazardous waste arisings requiring management by 'other recovery' (e.g. EfW) will be lower, it should be noted that some SE WPAs have assumed higher levels of landfill e.g. Oxon has assumed 5%. In addition, the Government goal[15] is for no more than 10% of municipal waste to be managed by landfill by 2035.	

[15] Our Waste, Our Resources: A Strategy for England, 2018