Kent Waste Needs Assessment 2022 Update

Non-Hazardous Waste Recycling/Composting Capacity Requirement in Kent

Report: Post Client Review

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Abbreviations and Glossary

Abbreviations

AD	Anaerobic Digestion
DEFRA	Department for Environment, Food and Rural Affairs
EfW	Energy from Waste
HWRC	Household Waste Recycling Centre
IVC	In Vessel Composting
LACW	Local Authority Collected Waste
MSW	Municipal Solid Waste

Glossary of Terms

Anaerobic Digestion	A process involving the decomposition of biodegradable and putrescible matter including green waste and food waste within a vessel to produce biogas and nutrient rich solid or liquid (digestate). The biogas can be used to generate energy or to power vehicles, and digestate can be applied to land as a fertiliser.
Commercial Waste	Waste arising from premises which are used wholly or mainly for trade, business, sport, recreation or entertainment, excluding municipal and industrial waste.
Composting	A process in which biodegradable waste (such as green waste and kitchen waste) is broken down in aerobic conditions by naturally occurring micro-organisms to produce a material suitable for use as a soil improver. May be open windrow or in-vessel.
Energy from Waste	The conversion of the calorific value of waste into energy, normally heat or electricity through applying thermal treatment of some sort..
Green waste	Biodegradable plant waste from gardens and parks such as grass or flower cuttings and hedge trimmings, from domestic and commercial sources suitable for subjecting to composting.
Household Waste	Waste from households collected through kerbside rounds, bulky items collected from households and waste delivered by householders to household waste recycling centres and 'bring recycling sites'. along with waste from street sweepings, and public litter bins.
Household Waste Recycling Centres	A facility that is available to the public to deposit waste not collected through kerbside collection (otherwise known as a civic amenity site).
Industrial Waste	Waste arising from any factory and from any premises occupied by an industry (excluding mines and quarries).
Kerbside Collection	The collection of materials and waste from households, or occasionally industrial and commercial premises.
Lifecycle Assessment (LCA)	A scientific approach to quantify the environmental impacts associated with a specific product, supply chain and waste management option applying lifecycle thinking. This allows comparisons to be made between the environmental impacts associated with different options.
Local Authority Collected Waste	All waste collected by a local authority. Includes household waste and business waste where collected by a local authority and non municipal fractions such as construction and demolition waste. LACW is the term used in statistical publications, previously referred to as municipal waste.
Municipal Solid Waste (MSW)	Household waste and any other waste collected by a waste collection authority such as municipal parks and gardens waste and waste resulting from the clearance of fly-tipped materials, plus waste that has a similar composition arising from businesses.
Organic Waste Treatment	Processes involving the decomposition of biodegradable and putrescible matter including green waste and food waste either by aerobic processes i.e. composting, or anaerobic processes i.e., digestion.
Other Recovery	Processes that recover value from waste such as thermal treatment to recover energy. Ranked lower than recycling or composting on the waste hierarchy.
Recovery	Term to cover any waste management process that recovers value from waste including recycling, composting or thermal treatment to recover

	energy.
Recycling	The reprocessing of materials extracted from the waste stream either into the same product or a different one.
Residual Waste	Waste remaining after materials for re-use, recycling and composting/organic waste treatment e.g., anaerobic digestion have been removed.
Waste Hierarchy	Ranking of waste management options according to what is regarded as best for the environment. It gives top priority to preventing waste. When waste is unavoidable, it gives priority to preparing it for re-use, then recycling, then 'other recovery', with disposal (e.g. landfill or incineration without energy recovery) as the option of last resort. The waste hierarchy is set out at Article 4 of the revised Waste Framework (Directive 2008/98/EC) and compliance with it is obligatory under The Waste (England and Wales) (Amendment) Regulations 2012.
Waste Transfer Station	A site to which waste is delivered for bulking prior to transfer to another place for further processing or disposal.

1. Introduction

This report considers the waste management capacity required to achieve the targets proposed in the update of the adopted Kent Minerals and Waste Local Plan (KMWLP) for the management of non-hazardous waste by methods further up the waste hierarchy (see Figure 1) than landfill or other recovery. The report takes account of existing consented recycling and/or composting/organic waste treatment capacity to calculate whether additional capacity is required over the Plan period (2023-2038) to meet the targets proposed in the proposed update to policy CSW4 (See Table 1).

Table 1: Waste Management Targets Proposed in updated Kent MWLP 2022

	Milestone Year				
	2020[1]	**2025/26**	**2030/31**	**2035/36**	**2040/41**
Local Authority Collected Waste					
Recycling/composting[2] floor	*50%*	55%	60%	65%	70%
Other Recovery (remainder)	*45%*	43%	38%	33%	28%
Remainder to Landfill ceiling	*2%*	2%	2%	2%	2%
Commercial & Industrial Waste					
Recycling/composting floor	*64%*	55%	60%	65%	70%
Other Recovery (remainder)	*14%*	32.5%	30%	26.5%	25%
Remainder to Landfill ceiling	*22%*	12.5%	10%	8.5%	5%

The report utilises updated assessments of the arisings and forecasts of LACW and C&I waste set out in separate reports[3], and more recent data for existing consented waste management capacity for recycling, composting/organic waste treatment.

[1] Values in this column do not sum to 100% due to rounding.

[2] This is taken to include organic waste (including green and kitchen waste) treatment by Anaerobic Digestion

[3] The detailed assessment is set out in separate October 2022 reports concerning LACW and C&I prepared by BPP Consulting which form part of the overall Waste Needs Assessment 2022 Update.

1.1. Definitions

1.1.1. The Waste Hierarchy

The waste hierarchy is set out at Article 4 of the revised Waste Framework (Directive 2008/98/EC) and compliance with it is obligatory under *The Waste (England and Wales) (Amendment) Regulations 2012*. The hierarchy sets an order of preference by which waste is to be managed, starting with the preferred option of prevention, followed by preparing waste for re-use, recycling/composting and 'other recovery', with disposal (such as landfill or incineration without energy recovery) as the last resort as shown in Figure 1.

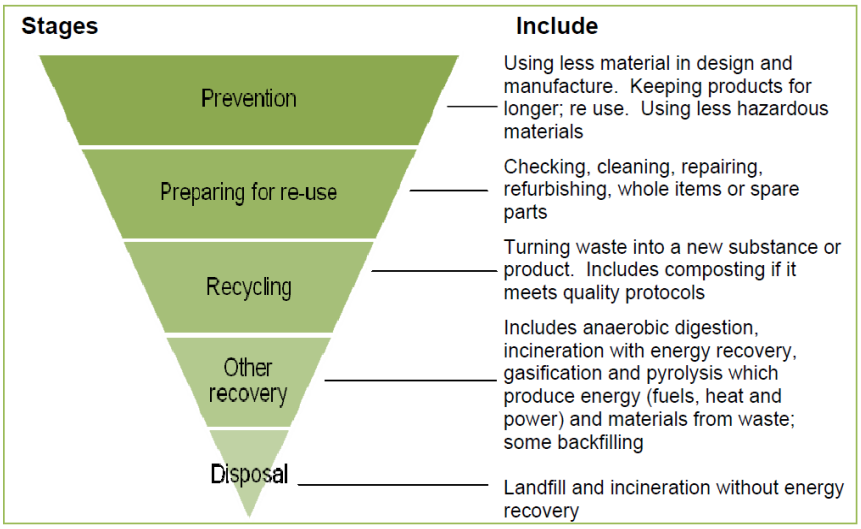

Figure 1: Diagramatic representation of the Waste Hierarchy extracted from UK Government Guidance [4]

Following the waste hierarchy should generally lead to the most resource efficient and environmentally sound approach to managing waste. However, because the 'best' choice can be influenced by specific local conditions such as energy mix, and because different waste streams have different characteristics, in some cases departing from the hierarchy can lead to better environmental outcomes. When considering whether a departure from the hierarchy would be justified decision-makers need to base their choices on lifecycle thinking which is normally expressed through the findings of Life Cycle Assessments (LCAs). The findings of relevant LCAs relevant to decision making on the application of the hierarchy to waste management have been summarised by DEFRA in a document entitled *Applying the Waste Hierarchy: evidence summary June 2011*[5].

Recycling is taken to include any activity that either results in the separation of materials suitable for reuse as a raw material and/or its actual conversion to a product. Recycling capacity counted in this WNA does not include capacity where a material such as waste paper is converted into a product such

[4] Guidance on applying the Waste Hierarchy DEFRA June 2011
www.gov.uk/government/uploads/system/uploads/attachmentdata/ file/69404/pb13529-waste-hierarchy-summary.pdf

[5] Applying the Waste Hierarchy: evidence summary DEFRA June 2011
www.gov.uk/government/uploads/system/uploads/attachment_data/ file/69404/pb13529-waste-hierarchy-summary.pdf

as newsprint where that is a process regarded as a manufacturing process. Plants where such processes take place are classed as reprocessors, and are generally not classed as a 'County matter'. Recycling capacity counted may take the form of depots where source separated recyclable materials can be bulked up, through to facilities where materials may be separated out on delivery e.g., HWRCs, to fully fledged Material Recycling Facilities where complete loads are passed through a processing line to maximise the recycled materials extracted.

Composting, involves the decomposition of biodegradable and putrescible matter by aerobic processes. Composting facilities come in two principal forms, open-air (windrow), or enclosed (In Vessel Composting - IVC). Open-air composting is only suitable for treating biodegradable waste such as green waste and some cardboard, while IVC can also process putrescible wastes such as kitchen wastes.

The targets considered for 'recycling/composting' in the Plan can be met by organic waste treatment processes including those which involve anaerobic processes known as Anaerobic Digestion (AD). AD involves the decomposition of biodegradable and putrescible matter within a vessel to produce biogas and, although it is classified in the waste hierarchy as a form of 'other recovery', life cycle assessment has demonstrated that it is better than other recovery options for the management of food wastes, and garden waste in some cases. Given that deviation from compliance with the waste hierarchy may be justified by life cycle assessment it is therefore considered appropriate for AD to be considered alongside composting as an organic waste treatment method that can contribute to meeting recycling/composting targets. This is consistent with Government advice on applying the waste hierarchy.

'Recycling/composting' is therefore used as a shorthand term for material recycling and organic waste treatment in the Plan and this report.

Context

1.1.2. Recycling & Composting Capacity Assessment – current KMWLP

Table 2: Projected Recycling & Composting Requirement

Source: WNA Update 2018

	Milestone Year				Plan Period Peak Capacity Requirement
	2015/16	**2020/21**	**2025/26**	**2030/31**	
LACW	*331,433*	362,500	403,000	444,000	444,000
C&I	n/a	637,000	736,000	844,500	844,500
Total		**999,500**	**1,139,000**	**1,289,000**	**1,289,000**

The combined recycling and composting capacity[6] values at 2015 were taken to give an overall recycling/composting capacity of 2,014,000 tpa.

Comparison of the total identified recycling/composting capacity against the identified requirement (to achieve net self-sufficiency) concluded the following on the possible existence of a capacity gap as set out in Table 3 below.

Table 3: Capacity Requirement for Recycling/Composting in Kent Projected in adopted Plan (tonnes)

Source: WNA Update 2018

	Milestone Year			
	2015/16	**2020/21**	**2025/26**	**2030/31**
Total Required Capacity *(from Table 2 above)*	n/a	999,500	1,139,000	1,289,000
Existing Capacity @ 2014/15	2,014,000	2,014,000	2,014,000	2,014,000
Capacity Gap		0 (1,014,500 surplus)	0 (875,0000 surplus)	0 (725,000 surplus)

Table 3 above shows that there was no predicted shortfall in capacity for recycling/composting at any point in the Plan period.

[6] Consented capacity in 2010

2. Forecasts of Non-Hazardous Waste to be Managed by 'Recycling/Composting'

The draft KMWLP 2022 proposes the introduction of targets for the extended Plan period set out in Table 4:

Table 4: Proposed Recycling/Composting Targets (floor)

	Milestone Year				
	2020[7]	**2025/26**	**2030/31**	**2035/36**	**2040/41**
Local Authority Collected Waste	*50%*	55%	60%	65%	70%
Commercial & Industrial Waste	64%	55%	60%	65%	70%

Applying the targets above to the revised forecast LACW arisings & C&I waste arisings results in the capacity requirements set out in Table 5 below.

Table 5: Proposed Recycling/Composting Target Management Requirements (tonnes)

	Actual	**Milestone Year**			
	2020	**2025/26**	**2030/31**	**2035/36**	**2040/41**
LACW	*298,702*	377,140	415,556	454,706	494,600
C&I waste	*691,304*	627,551	719,745	819,870	928,398
Total	***990,006***	**1,004,691**	**1,135,301**	**1,274,576**	**1,422,998**

[7] Values in this column do not sum to 100% due to rounding.

3. Future Non-hazardous Waste Recycling/Composting Capacity Requirements in Kent

Table 5 above suggests that the peak annual quantity of non-hazardous waste requiring management through recycling/composting over the period 2023 to 2038 would be c1.4 million tonnes (at the end of the Plan period).

3.1. Capacity Provision vs Capacity Requirement

Comparison of the total consented recycling/composting management capacity at 2020 (see Appendix 1 for further detail) against the identified requirement gives the outcome shown in Table 6 below.

Table 6: Projected Capacity Gap for Recycling/Composting in Kent (tonnes)

	Actual	Milestone Year			
	2020	**2025/26**	**2030/31**	**2035/36**	**2040/41**
Total Required Capacity *(from Table 7 above)*	990,006	1,004,691	1,135,301	1,274,576	1,422,998
Existing Capacity @ 2020	2,476,000	2,476,000	2,476,000	2,476,000	2,476,000
Capacity Gap		0 (1,471,500 surplus)	0 (1,341,000 surplus)	0 (1,201,500 surplus)	0 (1,053,000 surplus)

Table 6 shows that when the peak requirement for recycling/composting capacity is compared with the existing consented capacity value of c2,476,000 tpa no shortfall in capacity is predicted.

3.2. Conclusion

The assessment shows that the combined consented recycling/composting capacity in Kent would be sufficient to meet the proposed higher overall recycling/composting targets associated with the management of non-hazardous waste over the Plan period as proposed in the revision to Policy CSW4. Therefore, net self-sufficiency in recycling/composting capacity would be achieved in Kent without provision of additional capacity.

Appendix 1: Consented 'Recycling/Composting' Capacity in Kent

Recycling Capacity

The previous WNA 2018 Report entitled *Non-Hazardous Waste Recycling/Composting Capacity Requirement* identified a total recycling capacity of **1,780,946 tpa.** More recent data indicates that at least a further 390,000 tpa of capacity has been consented and/or been developed since 2015 giving a total capacity of **2,170,946 tpa.** However, 245,000 tonnes of this is from the Littlebrook Business Park Recycling Facility which proposed to accept both C&I waste and C, D & E waste. It was not clear what amount would be of C&I waste therefore it is included on a basis that the capacity could theoretically be utilised for C&I waste exclusively. It is noted that without this additional capacity there would still be a surplus of recycling capacity to the end of the Plan period

In addition, 1,074,879 tpa of metal recycling/End of Life Vehicle processing which will manage waste for recycling from both LACW and C&I waste streams capacity was also identified in the previous WNA 2018. However, this has not been counted towards recycling capacity for the purposes of this exercise.

'Composting' capacity (including Anaerobic Digestion)

There are nine extant planning consents for 'composting' capacity in Kent. These are listed below (Table A1):

Table A1: Consented 'Composting' Capacity (2020)

Site Name	Capacity (tpa)	Capacity Type
Composting Facility, Shelford Landfill Site	20,000	Open windrow (green waste only)
Hope Farm	35,000	
Conghurst Farm	5,000	
Blaise Farm Quarry, West Malling	100,000	In Vessel Composting (green waste & food waste & card)
Total Composting	**155,000**	
Blaise Farm Quarry, West Malling	75,000	Anaerobic Digestion (AD) (food waste plus some green waste)
Richborough AD	*25,000*	Consented but still to be built out
Otterpool Quarry AD	*20,000*	Consented but still to be built out. Subject to application for non-waste use.
Conghurst Farm AD	12,500	Anaerobic Digestion (AD) (mainly agricultural waste)
Lested Farm AD	17,035	
Total AD	**150,000**	
Grand Total:	**305,000**	

The combined recycling and composting capacity for non-inert waste in Kent is therefore at least **c2,476,000 tonnes before accounting for metal recycling capacity**.