Medway Local Plan - Waste Evidence Base

Medway Waste Needs Assessment 2024 Update

Report 2 - Management Requirements for Commercial & Industrial Waste in Medway to 2041

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Table of Contents

List of Tables

List of Figures

Abbreviations and Glossary of Terms

Abbreviations

AD	Anaerobic Digestion
C & I	Commercial & Industrial Waste
C, D & E / CDEW	Construction, Demolition & Excavation Waste
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EfW	Energy from Waste
EWC	European Waste Catalogue
GVA	Gross value added
HWRCs	Household Waste Recycling Centres
LACW	Local Authority Collected Waste
MRF	Material Recycling Facility
MRS	Metal Recycling Site
RDF	Refuse Derived Fuel
WDF	WasteDataFlow
WDI	Waste Data Interrogator
WNA	Waste Needs Assessment
WPA	Waste Planning Authority
WTS	Waste Transfer Station

Glossary of Terms

Agricultural Waste	Waste produced on a 'farm' in the course of 'farming'. Agricultural waste takes both 'natural' (or organic) and 'non-natural' forms e.g. plastics.
Anaerobic Digestion	A process to manage organic matter including green waste and food waste broken down by bacteria in the absence of air, producing a gas (biogas) and nutrient rich solid or liquid (digestate). The biogas can be used to generate energy either in a furnace, gas engine, turbine or to power vehicles, and digestate can be applied to land as a fertiliser. Classed as 'Other Recovery' but counted towards composting.
Biodegradable waste/ biowaste	Waste that can break down over time due to natural biological action/processes, such as food, garden waste and paper.
Commercial Waste	Waste arising from premises which are used wholly or mainly for trade, business, sport, recreation or entertainment, excluding local authority collected and industrial waste.
Commingled collection	Refers to a system where dry mixed recyclables are collected together for subsequent separation rather than separately collected at source.
Construction and Demolition Waste	Waste arising from construction and demolition activities, including excavation during construction, mainly consisting of inert materials such as soils, stone, concrete, and brick. This waste stream also contains non-inert elements such as wood, metals, plastics, cardboard and plasterboard.
DEFRA	The UK Government department responsible for developing national waste management policy.
Dry mixed recyclables	Widely recycled materials that are collected together (commingled) for subsequent separation.
Energy from Waste	The conversion of the calorific value of waste into energy, normally heat and/or electricity, through applying thermal treatment of some sort. May also include the production of gas that can be used to generate energy.
Environment Agency	The body responsible for the regulation of waste management activities through issuing Environmental Permits to control activities that handle or produce waste. It also provides up-to-date information on waste management matters and deals with other matters such as water issues including flood protection advice.
Exemptions	Certain activities exempt from the need to obtain an Environmental Permit. Each exemption has specific limits and conditions that must be complied with to remain valid. Exemptions must be registered with the Environment Agency. Each registration lasts 3 years.
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 composting.
Hazardous Waste	Waste requiring special management under the Hazardous Waste Regulations 2005 due to it posing potential risk to public health or the environment (when improperly treated, stored, transported or disposed). This can be due to the quantity, concentration, or its characteristics.
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. The main component of Local Authority Collected Waste.
Household Waste Recycling Centres	A facility that is available to the public to deposit waste not collected through kerbside collection (also known as a civic amenity site).

Incineration	The controlled combustion of waste. Energy may also be recovered in the form of heat (see Energy from Waste). Classed as disposal alongside landfill unless plants meet a minimum energy efficiency performance threshold.
Industrial Waste	Waste arising from any factory and from any premises occupied by an industry (excluding mines and quarries).
Landfill (including land raising)	The permanent disposal of waste to land, by the filling of voids or similar features, or the construction of landforms above ground level (land-raising).
Landfill Directive	Retained European Union legislation restricting the landfilling of biodegradable municipal waste and requiring pre treatment of all waste destined to be landfilled and separate disposal of hazardous, and non hazardous and inert wastes.
Leachate (associated with landfill)	Effluent arising from the breaking down of degradable waste in landfill when liquid (normally rainwater) is introduced. Normally carries pollutants from decomposing waste requiring special collection and treatment.
Materials Recycling Facility (MRF)	A facility for sorting recyclable materials from the incoming waste stream.
Mining Waste	Waste from extractive operations (i.e. waste from extraction and processing of mineral resources) including materials that must be removed to gain access to mineral resources, such as topsoil, overburden and waste rock, as well as tailings remaining after minerals have been largely extracted from the ore. Management subject to control through retained EU Directive 2006/21/EC.
Non Hazardous Landfill	A landfill permitted to accept non-inert (biodegradable) wastes e.g. municipal and commercial and industrial waste and other non-hazardous (including inert) wastes. May only accept hazardous waste if a special cell is constructed.
Other Recovery	Subjecting waste to processes that recover value by means other than recycling and composting – mainly thermal treatment to recover energy.
Recovery	Subjecting waste to processes that recover value including recycling, composting or thermal treatment to recover energy.
Recycling	The separation and aggregation of materials extracted from the waste stream for reprocessing either into the same product or a different one.
Refuse Derived Fuel	A fuel produced to a contract specification by processing the combustible fraction of waste.
Residual Waste	Waste remaining after materials for re-use, recycling and composting/organic waste treatment e.g. anaerobic digestion have been removed.
The Plan Area	The area subject to the Local Plan to which this study relates; in this case Medway.
Waste Local Plan	A statutory development plan prepared (or saved) by a waste planning authority setting out polices in relation to the management of waste arising within its area and provision of development to manage waste arising within that area.
Waste Planning Authority (WPA)	The local authority responsible for waste development planning and control; in this case Medway Council.
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

1.1 The Medway Waste Needs Assessment (WNA) 2024 Update consists of an overall main report, a review of strategic waste flows and five waste stream specific supporting reports which refresh the evidence base relating to projected management requirements for waste arising in Medway. The five waste stream specific reports are:

1. Local Authority Collected Waste;
2. Commercial & Industrial Waste;
3. Construction, Demolition & Excavation Waste;
4. Hazardous Waste; and
5. Scoping Review of Other Waste.

1.2 This report is concerned with updating the forecast for Commercial and Industrial (C&I) waste arising in Medway through to 2041, using 2022 data as a baseline.

1.3 The WNA 2020 estimated the C&I waste attributable to Medway baseline in 2018 to be c237,500 tonnes[1].

[1] Note that the method used to generate baseline estimates has since evolved. To allow direct comparison baselines for previous years presented in Table 11 have been adjusted to reflect the updated method.

2. Estimating C&I Waste Baseline Arisings

Context

2.1 There is currently no requirement on businesses to publicly release records of the waste they produce and hence estimating quantities of C&I waste arisings for a specific Plan area, with any degree of accuracy, is a challenge. Historically two different methods have been taken to estimate a baseline for C&I waste as follows:

- 'Point of management'.

  The 'point of management' method uses data related to the management of C&I waste. This approach forms the basis for the Defra 'Reconcile' method used to estimate C&I waste arisings at a national level[2]. This is primarily based on records submitted by operators of permitted waste management facilities to the Environment Agency (EA) of waste delivered to, and removed from, their sites. The EA collates this data in a database known as the 'Waste Data Interrogator' (WDI) on an annual (calendar year) basis. The data is usually published in the Autumn of the following year.

- 'Point of production'

  The 'point of production' method uses data based on the profile of businesses within an area and the application of waste production factors which relate to the different business profiles. This method was used in the Defra national survey undertaken in 2009[3] that informed the previous approach to national estimates.

Terminology

2.2 While this report is concerned with the management of C&I waste arisings it should be noted that waste arising from businesses that is similar in nature and composition to household waste is included under the term 'municipal waste' and is normally classified under EWC Chapter 20 Municipal Waste. National analysis of waste composition studies indicates that a significant proportion of waste generated by businesses not collected by Local Authorities falls within this definition. Most recent estimates for England as a whole found that around 43% of the total C&I waste stream may be waste of a type classed as municipal[4] and 60% of the commercial waste stream alone. This means that national targets set for municipal waste encompass both LACW and a significant proportion of the C&I waste stream. LACW and C&I waste may be managed at the same facilities and hence consideration of management requirements have been combined in the subsequent assessment.

2 *New Methodology to Estimate Waste Generation by the Commercial and Industrial Sector in England*, Defra 2014 as updated by *Commercial and Industrial Waste Arisings Methodology Revisions for England*, Defra October 2018 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873328/Commercial_and_Industrial_Waste_Arisings_Methodology_Revisions_Oct_2018_contact_details_update_v0.2.pdf

[3] *Commercial and Industrial Waste Survey 2009: Final Report*, Defra May 2011 http://archive.defra.gov.uk/evidence/statistics/environment/waste/documents/commercial-industrialwaste101216.pdf

[4] National Municipal Waste Composition, England 2017 WRAP January 2020

Methodology

2.3 The methodology used to generate the updated baseline C&I waste arising value for 2021 replicates the 'point of management' method used for 2020 and is based on the national 'Reconcile' methodology.

2.4 This methodology considers quantities of waste that are actually managed at waste management facilities, rather than simply produced. Data for waste identified as arising from Medway managed at permitted waste management facilities reported in the latest EA WDI dataset (for the calendar year 2022) is used, along with data provided by Medway WDA relating to Local Authority Collected Waste (LACW)[5].

2.5 In order to avoid double counting, deductions are made to eliminate the following:

- Waste streams included in the datasets but covered elsewhere in the WNA such as Agricultural, Mining, Construction, Demolition & Excavation Waste (C, D & E), wastewater and hazardous waste;
- LACW managed through WDI reporting facilities but also reported through a separate database provided by Medway WDA;
- The method also includes a calculation to avoid double counting of waste inputs to 'intermediate' facilities[6] within Medway.

2.6 The national 'Reconcile' method has been subject to an amendment that omits waste managed at sites exempt from the need for an Environmental Permit on the basis that materials managed through these sites will emerge at a permitted site at some point in the management chain[7]. To be consistent with the national method, consideration of this category of sites has been omitted from the methodology applied.

[5] WasteDataFlow would normally be used but all 4 quarters covering the calender year were not available to download at the time of writing.

[6] Intermediate facilities are those which do not provide the final fate of waste. That is waste received leaves for onward management at other facilities elsewhere either having been subjected to some form of treatment or just simply bulked up e.g. transfer stations.

[7] Commercial and Industrial Waste Arisings Methodology Revisions for England October 2018.https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873328/Commercial_and_Industrial_Waste_Arisings_Methodology_Revisions_Oct_2018_contact_details_update_v0.2.pdf

3. Detailed C&I Waste Baseline Arisings Calculation

Inputs to permitted waste management facilities

Step 1: Collect data relating to waste arising in Medway from the Environment Agency WDI.

3.1 The starting point is to collect all data relating to waste reported as arising in Medway from the EA WDI 2022. This is identified as waste arising in Medway managed within Medway and waste arising in Medway managed beyond Medway as shown in Table 1 below. This shows that the total quantity of waste reported as arising from Medway managed through permitted sites was c493,000 tonnes.

Table 1: Waste Arising in Medway (tonnes)

Source WDI 2022

	Landfill	MRS	Transfer	Treatment	Recovery to Land	Incineration	Grand Total
Managed within Medway	33,545	0	142,997	41,626	0	0	**218,168**
Managed outside Medway	52,245	7,137	29,598	96,961	815	88,224	**274,979**
Total	**85,790**	**7,137**	**172,594**	**138,587**	**815**	**88,224**	**493,148**

Step 2: Make deductions in waste recorded in the WDI as arising from Medway to eliminate non-C&I waste streams

3.2 Waste identified under waste codes considered to represent C, D & E waste (European Waste Catalogue (EWC) Chapter 17 plus EWC 19 12 09, 19 13 02[8] & 20 02 02), and therefore accounted for in the separate estimates of C, D & E waste, need to be deducted from the totals in Table 1. The quantities remaining after this deduction are displayed by management route in Table 2 below. This shows that the quantity of waste arising is reduced by 77,402 tonnes[9] to c415,500 tonnes.

Table 2: Waste Arising from Medway minus C, D & E Waste (tonnes).

Source: WDI 2022

	Landfill	MRS	Transfer	Treatment	Incineration	Grand Total
Managed within Medway	0	0	140,109	25,626	0	**165,735**
Managed outside Medway	46,727	5,035	29,286	81,103	87,859	**250,010**
Totals	**46,727**	**5,035**	**169,395**	**106,729**	**87,859**	**415,745**

3.3 Waste identified under waste codes considered to represent agricultural waste (EWC Chapter 02 01), mining (EWC Chapter 01) and hazardous waste (all codes with *[10]) are accounted for separately in the WNA update and so are also deducted. The quantities remaining after this deduction are displayed by management route in Table 3 which shows that the quantity of waste arising is reduced to c400,500 tonnes.

[8] This is solid waste from soil remediation. Note that none of this was reported as coming from Medway in the WDI 2022.

[9] See Report 3 on C, D & E waste for further detail.

[10] All hazardous waste codes are identified by an asterisk in the European Waste Catalogue.

Table 3: Table 2 minus agricultural, mining & hazardous waste (tonnes)

Source: WDI 2022

	Landfill	MRS	Transfer	Treatment	Incineration	Grand Total
Managed within Medway	0	0	139,820	25,024	0	**164,844**
Managed outside of Medway	46,713	3,410	28,872	68,976	87,859	**235,830**
Totals	**46,713**	**3,410**	**168,692**	**93,999**	**87,859**	**400,674**

Step 3: Make deductions to account for Local Authority Collected Waste

3.4 LACW is not distinguishable from C&I waste by reference to EWC Codes. It is, however, possible to cross reference from the WDI to data from Wastedataflow (WDF), the online portal used by councils for reporting recycling performance data on LACW to central government. However, data covering all four quarters of 2022 were not available to download at the time of writing this report. Therefore, the WDI was compared to a dataset provided by Medway WDA[11]. Cross referencing between the sites identified in the Medway WDA listing and those listed in the WDI enables attribution to specific routes, as shown in Table 4.

Table 4: LACW Received at Facilities included in WDI Arising from Medway (tonnes)

Source: Medway WDA & WDI 2022

	Landfill	Transfer	Treatment	Incineration	Grand Total
Managed within Medway	0	140,102[12]	2,188	0	**142,001**
Managed outside of Medway	1,699	465	33,745	59,943	**95,853**
Totals	**1,699**	**140,278**	**35,934**	**59,943**[13]	**237,854**

3.5 When values displayed in Table 4 are deducted from the values in Table 3 the total remaining arisings value is c163,000 tonnes as shown in Table 5 below. This may be referred to as the 'gross C&I waste arising' value.

Table 5: Gross C&I Waste Arising from Medway (tonnes)

Source: Table 3 minus Table 4

	Landfill	MRS	Transfer	Treatment	Incineration	Grand Total
Managed within Medway	0	0	7	22,836	0	**22,843**
Managed outside Medway	45,015	3,410	28,407	35,230	27,916	**139,977**
Totals	**45,015**	**3,410**	**28,414**	**58,066**	**27,916**	**162,820**

[11] This was supplemented by cross referencing entries in the WDF 2021 to ensure all deductions were made.

[12] Includes c8,000 tonnes sent to HWRC's and c132,000 tonnes managed at Medway MRF & WTS operated by Veolia ES (UK) Ltd.

[13] Although Table 7 of LACW report indicates c69,000 tonnes of LACW went for EfW, only c60,000 tonnes has been deducted as not all EfW sites to which Medway LACW was sent (as shown in Medway WDA data) reported receiving the corresponding tonnage of Medway waste in the WDI. The lower value has been used so as to avoid over deducting.

Step 4: Make deduction for specific wastes accounted for separately

3.6 Landfill leachate and sludges from waste water treatment plants are expressly excluded from the national 'Reconcile' method, as Defra considers counting wastes generated by waste management facilities from processes handling wastes generated elsewhere in the economy to be double counting under this overall waste stream[14]. Based on this, the value for leachate and sludges from Medway managed at permitted facilities has also been deducted. This is calculated to be 1,503 tonnes of waste, all but 62 tonnes of which is exported for management at sites outside Medway (1,441t treated in Kent).

3.7 Table 6 shows that deducting these values gives a revised headline value of c161,500 tonnes.

Table 6: Revised Gross C&I Waste Arising from Medway (tonnes)

Source: Table 5 minus Step 4 values

	Landfill	MRS	Transfer	Treatment	Incineration	Grand Total
Managed within Medway	0	0	7	22,774	0	**22,781**
Managed outside Medway	45,015	3,410	28,407	33,789	27,916	**138,536**
Totals	**45,015**	**3,410**	**28,414**	**56,563**	**27,916**	**161,317**

Step 5: Make adjustments to account for intermediate sites (inc. waste transfer stations).
Step 5a: Deduct movements of waste arising in Medway to intermediate sites within Medway

3.8 The national 'Reconcile' method discounts inputs to all types of transfer facilities recorded in the WDI on the basis that if the waste is only being transferred there is no processing of the waste hence there is in theory no loss of waste in the movement of waste into and out of the site and a risk of double counting the same tonnage of waste managed through the site at the 'next step' site. This is illustrated in Figure 1.

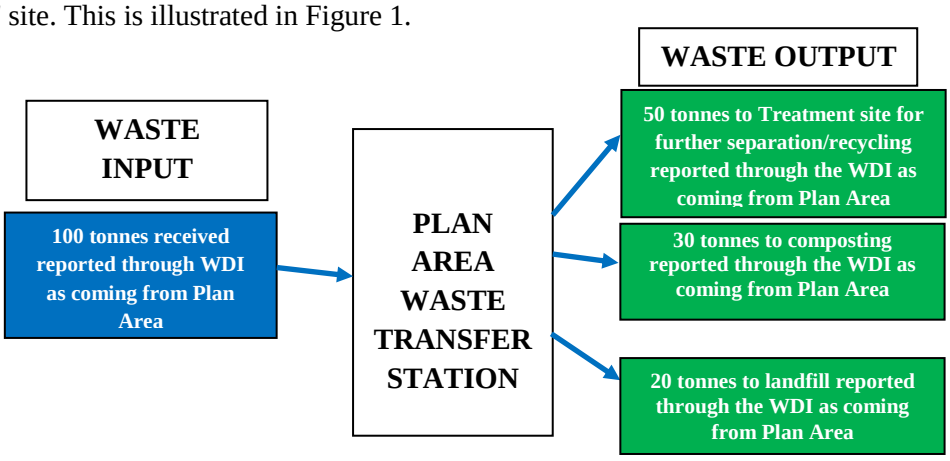

Figure 1: Schematic of Flows for Waste Transfer Stations Showing Double Counting of Wastes in WDI

[14] See footnote 1 of DEFRA Waste Data Overview, May 2011.

3.9 In reality, outputs of any type of intermediate site might be managed through routes that do not report through the WDI once they have left the site, e.g. exported to steel works abroad or delivered directly to reprocessing sites in England or to sites outside England. While the national method includes estimates for exports and movements to reprocessors, it is not possible to disaggregate this data down to Plan area level. Therefore, the outputs from intermediate sites within that received waste from Medway in 2022 have been further analysed to determine whether outputs do in fact go to destinations reporting through the WDI i.e. a 'next step' site. This is illustrated in Figure 2 below.

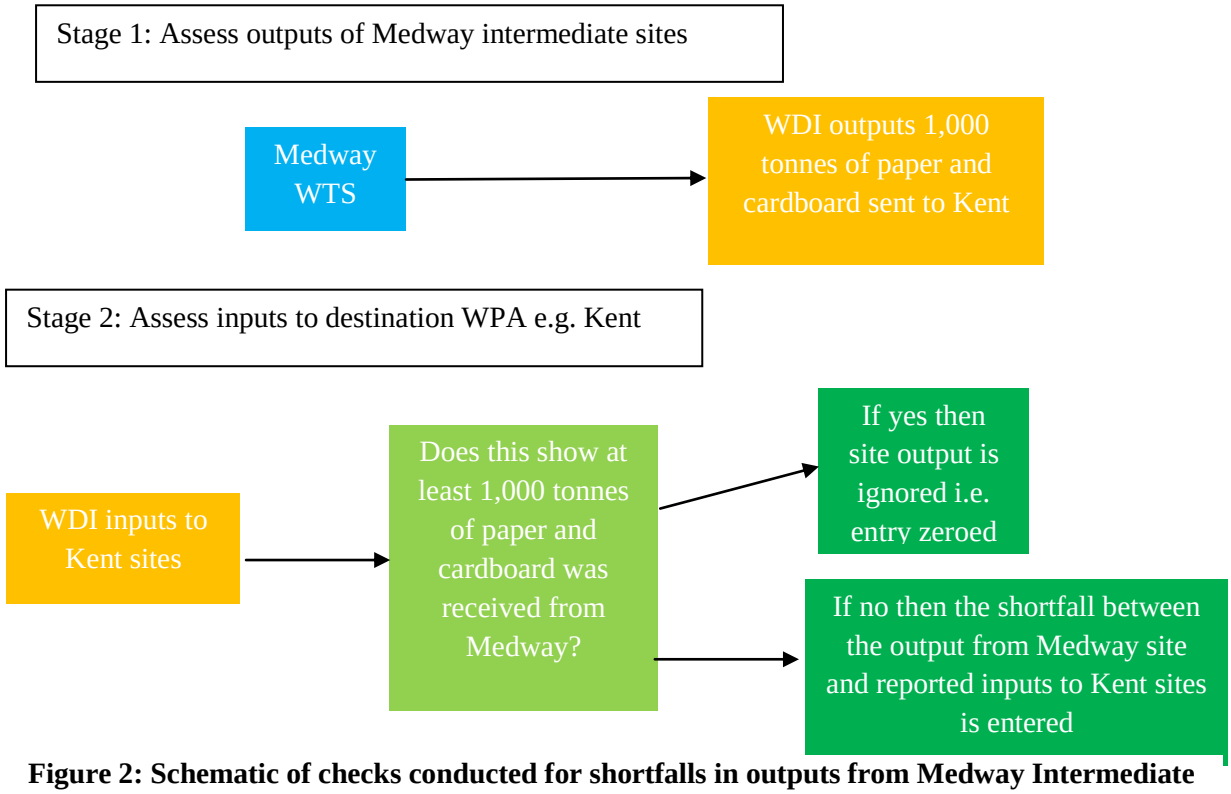

Figure 2: Schematic of checks conducted for shortfalls in outputs from Medway Intermediate sites (confirming if double counting of Medway outputs has in fact occurred)

3.10 This step applies to all intermediate sites in Medway reporting through the WDI. Firstly, the values for Medway C&I waste managed at Medway intermediate sites are set to zero. Then the following steps are undertaken to identify any 'lost' tonnage:

- Intermediate sites within Medway (classed as WTS[15], MRS[16] and treatment) receiving significant tonnages (>500 tonnes) of C&I waste from Medway were identified[17].
- Then the principal outputs (>500 tonnes) of these sites were analysed by EWC code, fate and destination WPA.
- For each tonnage of output waste, the input data listed in the WDI by receiving WPA, EWC code and fate was cross checked to confirm if a comparable or greater tonnage of that

[15] No WTSs were identified as having outputs of C&I waste greater than 500 tonnes.
[16] No MRSs were identified as having outputs of C&I waste greater than 500 tonnes.
[17] Excluding LACW sites.

waste type from the Plan area was reported as received at the same facility type/management route in the destination WPA area.

3.11 Where a greater or comparable tonnage did not appear as an input to a specific WPA area and facility type/ management route, the difference between any input value and the Plan Area site output value was recorded, on the basis that a shortfall in the WDI entry means the tonnage needs to be counted at the source site e.g. Medway treatment, otherwise it will be lost as a false deduction.

3.12 Where a greater or comparable tonnage did appear as an input, the intermediate site input was taken as having been accounted at the 'next step' site and therefore is not counted in this computation, to avoid double counting of this tonnage of waste.

3.13 Where the receiving location has not been coded below regional level a review of entries for destination WPAs within the specified region has been conducted to identify a possible destination. If no WPA within the region is named then it is assumed that none of the waste has been counted as an input to a site within that region, and the tonnage has been added back. For waste identified as going outside the UK it is assumed that this travelled directly from Medway i.e. exported from a Medway port and hence wasn't counted at a 'next step' site and therefore, the whole value has been added back. Any waste identified as managed at sites located within Medway has not been counted as it would add the risk of double counting. Table 7 below presents the outcome of the analysis for each principal waste type (by EWC code) by fate and named destination (WPA) for treatment sites.

Table 7: Destinations & Fates of Principal Outputs (500t or more) from Medway Treatment sites taking C&I waste (tonnes)

Site Category	EWC code	Named Destination (WPA)	Fate	Shortfall
Treatment	19 12 01 paper and cardboard	Hampshire	**Recovery**	2,777
		Kent		5,520
		Lancashire		808
		Outside UK		4,590
		Southampton City		1,144
	19 12 02 ferrous metal	Barking and Dagenham		3,847
		Gloucestershire		4,177
		Kent		1,526
		Newham		575
		Norfolk		3,462
	19 12 04 plastic and rubber	Kent		614
		Manchester		1,192
		Outside UK		2,194
	19 12 05 glass	Essex		2,533
	20 01 01 paper and cardboard	Outside UK		1,620
			Total	**36,580**

3.14 Table 7 presents the outcome of the exercise applied to the Medway Treatment sites with a shortfall of c36,500 tonnes being identified. The final step is to apply the percentage inputs from Medway to the output shown in Table 7. Analysis of the inputs reveals c9% was received from Medway. When applying this to the value shown in Table 7, this brings the total tonnage to be accounted for down to c3,000 tonnes.

3.15 As the above exercise indicates that some of the output waste from Medway Treatment sites do not appear to be accounted for at 'next step' sites outside Medway, instead of completely disregarding the inputs to these sites by zeroing the values displayed (on the basis that the tonnages are managed through 'next step' facilities reporting through WDI as per the national method), the shortfall tonnages derived from the above computation exercise are taken. This gives a revised gross C&I waste headline value of c142,000 tonnes as shown in Table 8.

Table 8: Revised Gross C&I Waste Arising from Medway (tonnes)

Source: Table 6 minus Step 5a values

	Landfill	MRS	Transfer	Treatment	Incineration	Grand Total
Managed within Medway	0	0	7	3,228	0	**3,235**
Managed outside Medway	45,015	3,410	28,407	33,789	27,916	**138,536**
Totals	**45,015**	**3,410**	**28,414**	**37,017**	**27,916**	**141,771**

5b. Interrogation of waste from intermediate facilities coded under 19 12 12 and 19 12 10

3.16 Outputs from facilities that treat waste prior to its final fate such as Material Recovery Facilities (MRF) and Mechanical Biological Treatment (MBT) plant, for example, was deducted from the national estimates. These are likely to be coded under EWC Chapter 19 (Wastes from Waste Management Facilities). For the purposes of applying this method to Medway, it is deducted for intermediate sites.

3.17 The principal stream of concern is wastes coded as refuse derived fuel (RDF) under EWC code 19 12 10 and that resulting from mechanical treatment (Coded under EWC 19 12 12). Analysis of the waste removals data in the WDI for treatment sites[18] within Medway indicates that the net output of these waste types in 2022 was 9,318 tonnes. The % inputs of C, D & E waste to these sites was then applied to the net output of 19 12 12 and 19 12 10. The remainder was taken to represent C&I waste. This was then apportioned by the proportion of inputs from Medway going to intermediate sites within Medway. The calculations are shown in Table 10 and is illustrated by Figure 3 below:

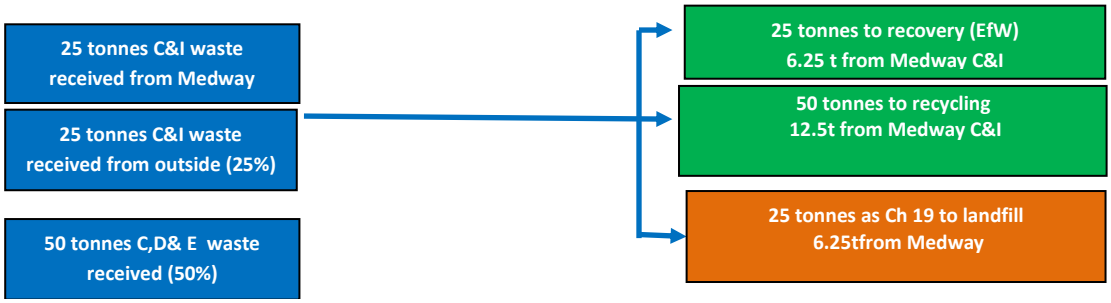

Figure 3: Schematic of Intermediate site outputs

[18] No net output for transfer sites.

Table 9: Net output of 19 12 12 + 19 12 10 attributed to Medway C&I waste to deduct

	Net output of 19 12 12 and 19 12 10	% CDE inputs	19 12 12 Attributed to CDE	19 12 12 attributed to C&I	% inputs from Medway	Medway C&I 19 12 12 + 19 12 10
Treatment	9,318	12%	1,083	8,235	10%	804
					Total	**804**

3.18 Table 9 shows the result of this calculation is 804 tonnes of 19 12 12 and 19 12 10 output being attributed to C&I waste. Given this value is taken to be a double count it has been deducted from the Medway-to-Medway treatment site value bringing the total arising value to c141,000 tonnes as shown in Table 10.

Table 10: **Revised Gross C&I Waste Arising from Medway (tonnes)**

Source: Table 8 minus Step 5b values

	Landfill	MRS	Transfer	Treatment	Incineration	Grand Total
Managed within Medway	0	0	7	2,423	0	**2,430**
Managed outside Medway	45,015	3,410	28,407	33,789	27,916	**138,536**
Totals	**45,015**	**3,410**	**28,414**	**36,212**	**27,916**	**140,967**

Additions

Step 6: Accounting for waste recorded to regional level source only.

3.19 The WDI 2022 reports one Medway site as receiving uncodeable waste from South East. Given it is less than 500 tonnes, no further computation has been undertaken.

Final C&I waste baseline arisings estimate & management profile

3.20 The outcome of this process is the baseline value estimate of c141,000 tonnes of C&I waste arising in Medway in 2022.

Comparison previous baseline estimate

3.21 In order to check for the possible effect of the Covid-19 pandemic on C&I waste arisings a review of C&I waste arisings has been undertaken. To allow for direct comparison, the 2018, 2019 and 2020 baseline have been reworked to align with the updated method, particularly for Step 5. The outcome is shown in Table 11 below and plotted on Figure 4 including the trend line that these values indicate.

Table 11: Comparison of Medway C&I Waste Baseline Arisings (tonnes)

Year	2018	2019	2020	2021	2022
C&I Waste Arising	222,500	203,000	142,000	123,500	141,000
Growth Rate p.a.		-8.76%	-30.05%	-13.03%	14.14%
Average growth rate p.a.	-9.42%				

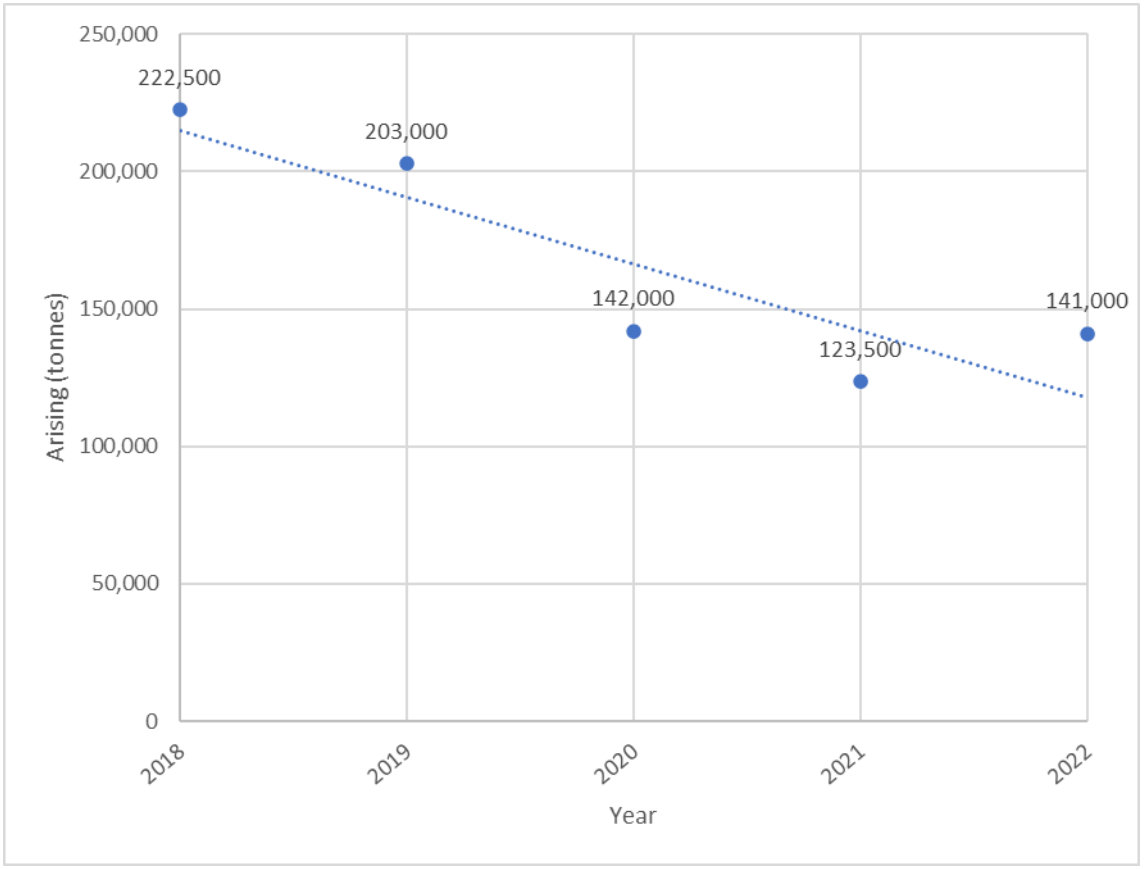

Figure 4: Values generated for C&I Waste arising in Medway (tonnes)

Blue dashed line is trend line across the values

3.22 Table 11 and Figure 4 show a clear downtrend in Medway C&I waste arisings over the past 4 years. Considering that the Covid-19 pandemic struck in early 2020, resulting in the cessation of many businesses it is not surprising that a significant reduction in arisings has been observed in 2020 particularly. However, arisings continued to fall into 2021, and while arisings in 2022 increased they were still significantly below pre 2020 arisings. The average growth across the 4-year period suggests a rate of minus 9.42% per annum. However, if the values over the most recent 3-year period were taken to calculate a short-term growth rate (as per national Planning Practice Guidance (nPPG)) this would be +0.57% per annum.

3. Forecasting of C&I Waste Arisings in Medway

3.23 Having established a baseline value for C&I waste arising in Medway in 2022, future management capacity requirements can be determined by:

- Forecasting how much waste may be produced in future, and,
- Establishing different management capacity requirements taking account of current management methods and objectives for future waste management e.g. proportion to be recycled during the plan period.

The section that follows addresses both of the above matters in turn.

Generating a Growth Profile

National Planning Practice Guidance

3.24 With respect to forecasting C&I waste arisings nPPG states the following:
"*Waste planning authorities can prepare growth profiles, similar to municipal waste, to forecast future commercial and industrial waste arisings. In doing so, however, they should:*

- *set out clear assumptions on which they make their forecast, and if necessary, forecast on the basis of different assumptions to provide a range of waste to be managed*
- *be clear on rate of growth in arisings being assumed. Waste planning authorities should assume a certain level of growth in waste arisings unless there is clear evidence to demonstrate otherwise."*

Paragraph: 032 Reference ID: 28-032-20141016 Revision date: 16 10 2014

3.25 Hence nPPG anticipates the application of a positive growth rate.

Defra Analysis of Future C&I Waste Growth

3.26 Defra commissioned a Future Waste Arisings report in 2020[19] that was published in 2021. This includes the most current national growth forecast for the C&I waste stream in England. The method used to produce a forecasting model for C&I waste included development of a time-series forecast for gross value added (GVA) for the commercial sector and separately for the industrial sector, which was then used to generate C&I waste arisings forecasts. The forecasts also incorporate the impact of growth in the number of businesses nationally on C&I waste arisings by combining data on waste generated per business size and sector and adjusting the GVA to waste ratios using the growth in the number of businesses in each sector by size respectively. Two forecasts were modelled for England from 2019 to 2050: one for commercial waste arisings (refer to Figure 5) and the other for industrial waste arisings (refer to Figure 6). The resultant graphs are reproduced as Figures 5 and 6 respectively.

[19] '*Future Waste Arisings'* DEFRA, April 2021.

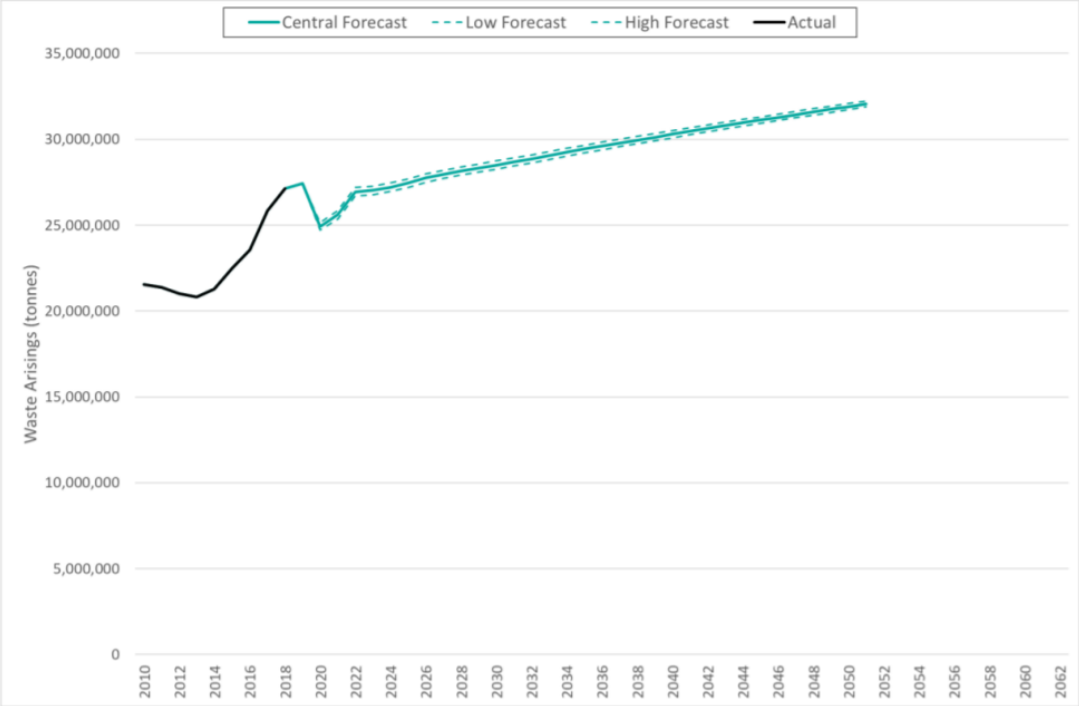

Figure 5: Commercial Waste Arisings Forecasts for England (2019-2050)

Source: Future Waste Arisings, produced for Defra (2021)

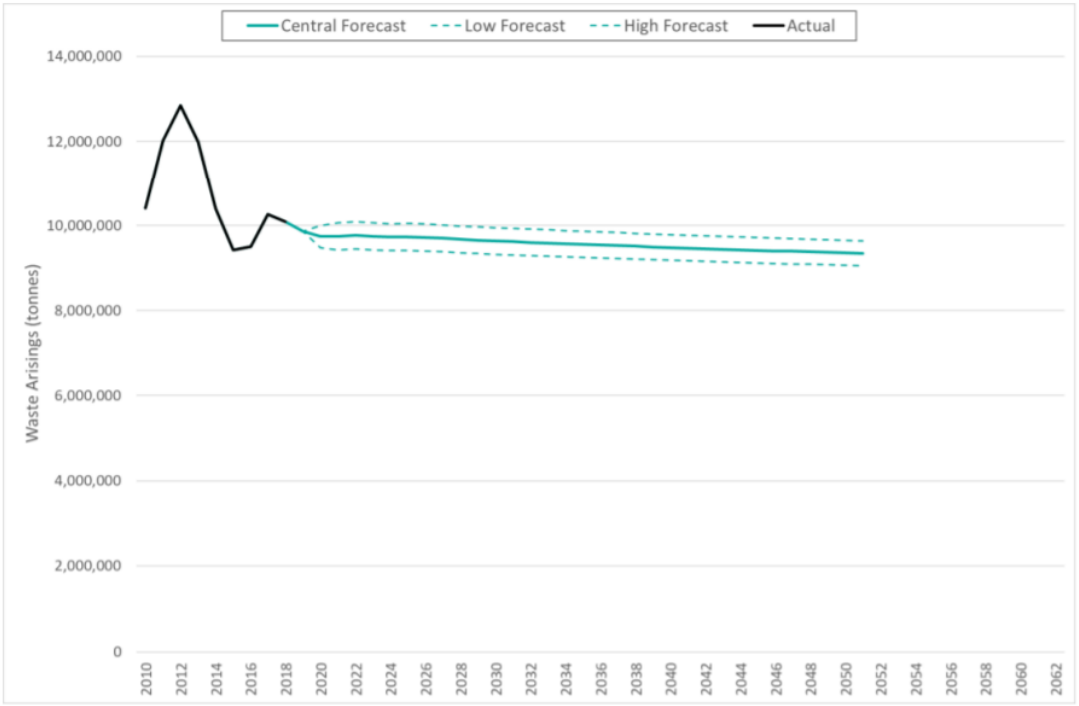

Figure 6: Industrial Waste Arisings Forecasts for England (2019-2050)

Source: Future Waste Arisings, produced for Defra (2021)

3.27 Figures 5 and 6 present central, low and high forecast waste arisings for the commercial and industrial sectors respectively albeit within a narrow range. Commercial waste arisings are projected to increase rapidly from 2021 to 2022 (the pandemic bounce-back) and then steadily rise from 2022 to 2050, whilst industrial waste arisings are projected to slightly increase from 2021 to 2022 before progressively falling from 2022 to 2050.

3.28 To assess how the national forecasts may be taken into account when forecasting Medway's C&I waste arisings, data points have been extracted for the 2022-2041 period as that is the period which this WNA covers. For the purpose of this exercise, the national central forecast values were used. See Appendix 3 for how the growth rates were ascertained using national central forecast values.

3.29 The average annual growth rate generated in the period 2022 to 2041 was +0.68% per annum for commercial waste and -0.21% per annum for industrial waste respectively. These can now be weighted according to the percentage contribution waste from commercial sources and that from industrial sources make to the overall baseline arising value for Medway. While the baseline value has been generated using the 'point of management ' method, reference is made to the 'point of production' method used in the Medway WNA 2009 to generate a split.

3.30 The Medway WNA 2009 took an average of employees working in different sectors and applied a per employee tonnage to generate a per sector arising. In the case of manufacturing, the principal source of industrial waste, it found the average number of employees stood at 12,076. This was then multiplied by an average tonnes per employee value of 6 to generate an arising value of 72,456 tonnes per annum of industrial waste. This represented 42% of the total arising of C&I waste in 2008.

3.31 ONS NOMIS data for Medway 2022 indicates that the number of employees in manufacturing in Medway has fallen to c7,000. Assuming the average tonnes generated per employee remains at 6 tonnes; total industrial waste may be estimated to have fallen to c42,000 tonnes. This represents c30% of the C&I baseline arisings value generated for 2022. Therefore, a combined C&I waste growth rate has been calculated as follows:

- Commercial waste represents 70% of C&I arisings: 70% of +0.68% per annum = 0.48%
- Industrial waste represents 30% of C&I arisings: 30% of -0.21% per annum = -0.063%

$$\underline{0.84 + -0.063 = 0.41\% \text{ per annum}}$$

3.32 The outcome of the assessment of possible growth rates yields a range between +0.41% to +0.57% p.a. Notably the growth rate applied in the forecast from the WNA 2020 of +0.5% per annum falls within this range.

3.33 A positive growth is consistent with the assessment of the potential economic growth in Medway forecast in the Medway Integrated Growth Needs Assessment. Use of a positive growth rate would also confer flexibility in the Plan. Given the nPPG advice, the DEFRA forecast and the short-term growth profile, the positive growth rate of +0.5% per annum used in the WNA 2020 is still considered to be robust.

Generating a Forecast

3.34 The results of applying such a growth rate to the updated baseline for 2022 to forecast waste arisings are shown in Table 12 below.

Table 12: C&I Waste Forecast applying WNA 2020 Growth Factor of 0.5% p.a. to 2022 Baseline

	2022	2023/24	2028/29	2035/36	2041/42
Updated Forecast	140,967	141,671	145,249	150,409	154,978

3.35 Table 12 shows that applying the growth factor of +0.5% p.a. to the 2022 baseline value, C&I waste arisings are expected to reach c155,000 tonnes by the end of 2041, an increase of c14,000 tpa on the 2022 baseline arising value.

4. C&I Waste Targets

4.1 This section seeks to establish the state of progress towards meeting the management targets specified in the adopted Medway WNA 2020 for the updated baseline data year of 2022.

Baseline Profile

4.2 The management profile presented in Table 13[20] below is based on the management data available through the WDI 2021. Since the WDI does not have an exclusive 'recycling' category it is not possible to establish how much of the waste managed goes on for recycling. Therefore, the principal known fates considered are those management types that would represent a final fate reported in the WDI as follows:

- Composting and AD
- Landfill
- EfW and Recovery to Land (together combined as 'other' recovery).

Composting and AD

4.3 As shown in Table 13, it is estimated that c20,500 tonnes of C&I waste was composted or sent to AD facilities in 2022.

Landfill

4.4 As shown in Table 13, it is estimated that c45,000 tonnes of C&I waste arising in Medway was sent to landfill in 2022.

'Other' Recovery

4.5 As shown in Table 13, it is estimated that c28,000 tonnes of C&I waste arising in Medway was recovered, all of which went to EfW facilities in 2022.

Recycling

4.6 The difference between the sum of the tonnages for the above categories and the baseline value has been taken to represent the tonnage that went on for recycling via permitted facilities. In 2022 this amounted to c48,000 tonnes as shown in Table 13 below. Given recycling and composting are at the same level of the Waste Hierarchy, they have been considered together as an overall percentage.

Table 13: Computed Medway C&I Waste Management Profile 2022

Route	Tonnes	%
Total Arisings	140,967	
Landfill	45,015	32%
'Other' Recovery	27,916	20%
Composting and AD	20,279	48%
Recycling & Reuse (remainder)	47,757	

[20] Produced from further analysis of Table 10.

Management Targets

4.7 The management targets for C&I waste proposed in the WNA 2020 are shown in Table 12 alongside the actual values for 2021 and 2022:

Table 14: Proposed Targets for C&I Waste Management for Medway (WNA 2020)

	Actual values		**Milestone Year**		
	2021	***2022***	**2023/24**	**2028/29**	**2035/36**
Recycling/composting	*54%*	*48%*	44%	55%	60%
Other Recovery	*10%*	*20%*	13%	18%	30%
Remainder to Landfill	*36%*	*32%*	43%	27%	10%

4.8 Table 14 shows how actual values compare with the management targets for C&I waste proposed in the WNA 2020 as follows:

- recycling and composting is above the target trajectory/ floor;
- landfill diversion appears ahead of target/ ceiling by 11 percentage points;
- a greater proportion of waste is being subject to Other Recovery than envisaged by the 2023/24 target/ ceiling. While preferable to landfill, if it were to continue on that trajectory, this could put the achievement of the recycling targets at risk in 2028/9.

Key Policy Targets for Waste Management

4.9 There are no national policy targets addressing the management of C&I waste alone. However, a number of policy targets concerning the management, and prevention, of waste have been adopted by Government, which are relevant when considering future need for management capacity for C&I waste. These are summarised below:

- A stated intention to achieve the virtual elimination of biodegradable waste going to landfill from 2028;
- adoption of municipal waste recycling targets for 2025, 2030 and 2035;
- adoption of a residual waste reduction target such that it does not exceed 287 kg per capita per year [from 2019 levels] by 31 December 2042;

supported by the following interim targets to be achieved by 31 January 2028:

- Reduce residual waste produced per person by 24%.
- Reduce residual waste in total tonnes by 21%.
- Reduce municipal residual waste produced per person by 29%. and
- adoption of a long-term target for the virtual elimination of avoidable waste by 2050.

4.10 The residual waste reduction targets set out above are expected to be achieved through a combination of increased recycling rates and waste prevention measures. Government modelling has shown recycling rates may need to reach 75% by 2042. This is expected to be achieved by the introduction of Extended Producer Responsibility initiatives including a deposit return scheme relating to packaging waste, and the adoption of a more consistent approach to recycling involving the statutory requirement for the separate collection of at least

five materials: glass, metals, plastics, paper, and food waste from all households and business premises by 2028.

National Municipal Waste Management Targets

4.11 Municipal waste is LACW plus waste of a similar nature. It has been estimated that up to 60% of commercial waste could fall within that definition[21]. As commercial waste is estimated to contribute c70% of Medway's total C&I waste arisings, applying 60% to 70% of the total C&I waste arisings gives a value for non-household municipal waste arising in Medway of c44,000 tonnes.

4.12 As set out above the UK government has committed[22] to meet the following targets for the management of municipal waste in England:

- 55% recycling floor by 2025; and
- 60% recycling floor by 2030; and
- 65% recycling floor by 2035; plus
- 10% ceiling limit on landfilling by 2035.

4.13 The Medway C&I waste management profile arrived at for 2022 set out in Table 13 indicates that the current value of C&I waste was recycled (48%) is less than the 55% recycling target for municipal waste by 2025.

4.14 Furthermore, given the Environment Act target for a reduction of residual waste of 50% by 2042 per head, going beyond the current recycling target may be necessary. Based on this, updated targets for C&I waste management in Table 15 below are proposed.

4.15 In light of the above, it is suggested to increase the 2023/24 recycling/ composting target to 50% and reduce the landfill target to 30% with other recovery increasing to 20%. For the remaining milestone years, it is suggested to shift the targets forward to align with national municipal waste management targets as shown in Table 15 below.

Table 15: Proposed Updated C&I Waste Targets

	Milestone Year			
	2023/24	**2028/29**	**2035/36**	**2041/42**
Recycling/composting	50%	60%	65%	70%
Other Recovery	20%	30%	25%	28%
Remainder to Landfill	30%	10%	5%	2%

[21] See footnote 4.

[22] https://www.gov.uk/government/publications/circular-economy-package-policy-statement/circular-economy-package-policy-statement

5. Projected Waste Management Requirements

5.1 Applying the management targets presented in Table 15 to the updated forecast presented in Table 12 gives the following management requirements for the Plan Milestone years in Table 16.

Table 16: C&I Waste Management Requirements Derived by Applying Targets to Updated Forecast at Plan Milestone years (tonnes) (rounded)

	Waste Management Requirements at Milestone Years (tpa)				Peak Requirement / Cumulative Requirement (tonnes)
	2023/24	**2028/29**	**2035/36**	**2041/42**	
Recycling/composting	70,836	87,149	97,766	108,485	108,485
Other Recovery	28,334	43,575	37,602	43,394	43,394
Remainder to Landfill	42,501	14,525	7,520	3,100	274,383[23]

5.2 Table 16 indicates the following peak capacity requirements for the management of C&I waste arising in Medway during the Plan period:

- c108,500 tpa of recycling/composting (by 2041/42);
- c43,500 tpa Other Recovery (at 2028/29) declining to c37,500 in 2035/36;
- In addition, a cumulative requirement c274,500Mt of non-inert landfill capacity as shown in Table 17.

[23] Nb this is tonnes not cubic metres.

Table 17: Predicted Non Inert Waste Landfill Requirement for C&I Waste arising in Medway over Plan period (tonnes)

Year	Annual Requirement	Cumulative Requirement
2023	42,501	42,501
2024	36,906	79,408
2025	31,311	110,718
2026	25,715	136,434
2027	20,120	156,554
2028	14,525	171,079
2029	13,524	184,603
2030	12,524	197,127
2031	11,523	208,650
2032	10,522	219,172
2033	9,522	228,694
2034	8,521	237,215
2035	7,520	244,735
2036	6,783	251,518
2037	6,047	257,565
2038	5,310	262,875
2039	4,573	267,448
2040	3,836	271,284
2041	3,100	**274,383**

Appendix 1

Calculated growth rates for Commercial and Industrial waste from national central forecast values

Source: Figures 5 and 6

Year	Commercial	Growth rate	Industrial	Growth rate
2022	26,885,177		9,857,143	
2024	27,031,316	0.27%	9,821,429	-0.18%
2026	27,635,753	1.12%	9,750,000	-0.36%
2028	28,036,798	0.73%	9,714,286	-0.18%
2030	28,437,563	0.71%	9,642,857	-0.37%
2032	28,787,095	0.61%	9,607,143	-0.19%
2034	29,187,580	0.70%	9,571,429	-0.19%
2036	29,588,484	0.69%	9,535,714	-0.19%
2038	29,956,522	0.62%	9,500,000	-0.19%
2040	30,378,261	0.70%	9,464,286	-0.19%
2041	30,583,958	0.68%	9,457,807	-0.07%
Average growth rate p.a.		**+0.68%**		**-0.21%**