



Cumbria Waste Needs Assessment 2022

Management Requirements for Commercial & Industrial Waste in Cumbria to 2037

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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
MRS	Metal Recycling Site
MRF	Material Recycling Facility
RDF	Refuse Derived Fuel
WDF	WasteDataFlow
WDI	Waste Data Interrogator
WIR	Waste Incinerator Returns
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 and metal.
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.
Bio waste	Waste that can break down over time due to natural biological action/processes, such as food, garden waste and paper.
Commercial Waste	Waste from factories or premises used for the purpose of trade or business, sport, recreation or entertainment.
Construction, Demolition & Excavation Waste	Waste arising from the building process comprising demolition and site clearance waste and builders' waste from the construction/demolition of buildings and infrastructure. Includes masonry, rubble and timber.
Defra	The UK Government department responsible for developing national waste management policy.
Energy from Waste	The conversion of the calorific value of waste into energy, normally heat 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 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.
European Waste Catalogue (EWC)	Comprehensive listing of wastes divided into 20 chapters, most of which are industry-based, although some are based on materials and processes. Each waste type is assigned a unique six-digit code. Otherwise referred to as List of Waste (LoW).
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 and hedge trimmings, from domestic and commercial sources suitable for composting.
Hazardous Waste Landfill	Sites where hazardous waste may be disposed by landfill. This can be a dedicated site or a single cell within a non-hazardous landfill, which has been specifically designed and designated for depositing hazardous waste.
Hazardous Waste	Waste requiring special management under the Hazardous Waste Regulations 2005 due to 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 characteristics of the waste.
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.
Incineration	The controlled combustion of waste. Energy may also be recovered in the form of heat (see Energy from Waste).
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	European Union requirements restricting the landfilling of biodegradable municipal waste and requiring pre-treatment of all waste to be landfilled and separate disposal of hazardous, and non hazardous and inert wastes.
Local Authority Collected Waste	Waste collected by or on behalf of 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 delivered to HWRCs. LACW is the definition used in statistical publications, which previously referred to municipal waste.
Mass Balance	Method of assessing the quantity of waste that may be converted to recycled aggregate by comparing inputs and outputs for sites reporting through the WDI.
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 extracted from the ore. Management subject to control through EU Directive 2006/21/EC.
'Next step' Site	Some waste to intermediate sites may not undergo any processing, thus are reported as leaving the site leave under the same EWC and are accounted for again at the 'next step' site where it is to be managed.
Non-Hazardous Waste 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.
Recovery	Subjecting waste to processes that recover value 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.
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 Waste Local Plan to which this study relates. In this case the county of Cumbria including the Lake District National Park.
Waste Planning Authority	The authority responsible for planning for waste within a specific administrative area. In this case Cumbria County Council and the Lake District National Park Authority.
Waste Transfer Station	A site to which waste is delivered for sorting or baling prior to transfer to another place for recycling, treatment or disposal.

1. Purpose

Cumbria County Council has contracted BPP Consulting to produce an updated Waste Needs Assessment for Cumbria including the Lake District National Park.

The Waste Needs Assessment consists of the following documents:

1. Local Authority Collected Waste Assessment of Management Requirements to 2037;
2. Commercial & Industrial Waste Assessment of Management Requirements to 2037;
3. Construction, Demolition & Excavation Waste Assessment of Management Requirements to 2037;
4. Hazardous Waste Assessment of Management Requirements to 2037; and
5. Scoping Review of Other Waste.

This report is concerned with updating the Commercial and Industrial (C&I) waste baseline for 2020 and assessing its projected management requirements to 2037.

Principal Data Sources

The principal data sources used to generate this Waste Needs Assessment are the Environment Agency's Waste Data Interrogator (WDI), and Hazardous Waste Interrogator (HWI) supplemented by reference to Cumbrian council's entries into Waste Data Flow (WDF).

Waste Data Interrogator

Operators of all sites permitted to manage waste submit quarterly returns on the quantities, types and origin of waste received and, where applicable, destination of waste removed at their sites. These returns are collated by the Environment Agency and are included in a national database known as the Waste Data Interrogator (WDI). This is released approximately nine months after the end of the calendar year to which the data relates. The 2020 WDI (composed of data for the calendar year 2020) is the most current version available (version 4 released Feb 2022). The WDI now includes inputs to facilities such as incinerators which up to 2019 were reported separately through the Environment Agency's Waste Incinerator Returns.

Hazardous Waste Interrogator

Producers and managers of hazardous waste must notify the environment agencies (which depends on which part of the UK) of movements of waste classed as hazardous. This data is collated and reported in the Hazardous Waste Interrogator. Data is currently reported down to receiving local area rather than by receiving site. The HWI 2020 was released in February 2022.

Wastedataflow

Wastedataflow (WDF) is a web-based data entry portal for local authorities to report on local authority waste management arrangements to central Government on a quarterly basis. The data input is used to report on national recycling and landfill diversion performance as well as local authority league tables on recycling rates etc following independent quality checking. While Councils normally report in financial years, as the EA WDI reports for calendar year the data for Cumbria covering the four quarters of 2020 has been accessed to ensure comparability between datasets.

1.1 Advice on Data

The principal source of advice with respect to the use of data to inform production of a plan evidence base is the national Planning Practice Guidance available at <https://www.gov.uk/guidance/waste>. This states that:

"Assessing waste management needs for Local Plan making is likely to involve:

- understanding waste arisings from within the planning authority area, including imports and exports*
- identifying the waste management capacity gaps in total and by particular waste streams*
- forecasting the waste arisings both at the end of the period that is being planned for and interim dates*
- assessing the waste management capacity required to deal with forecast arisings at the interim dates and end of the plan period."*

Paragraph: 022 Reference ID: 28-022-20141016

It includes a section entitled "Using data to monitor and forecast waste needs", which articulates the following principles should waste planning authorities adopt when using data to plan for waste management:

- Make clear assumptions on how data were handled, as well as their impact (including on forecasting)*
- Provide data to an appropriate level of significance, based on their explicit assumptions. In practice, data quoted to more than 2 or 3 significant figures will not be helpful and spurious accuracy stemming from precise figures should be avoided*
- Plan for a range of each type of waste rather than a specific single figure."*

Paragraph: 036 Reference ID: 28-036-20141016 Revision date: 16 10 2014

In order to respect the need to avoid "spurious accuracy", the following approach has been taken:

1. Where actual tonnage data has been accessed, this has been used in the computations.
2. Where data has been subject to computation, this has been included to 3 sf.
3. Where percentages have been used to generate data, the percentages are presented as whole numbers, however the computations actually use the full value. This means that values presented may not always precisely correspond to the values computed when applying the percentage value presented in this report.

2. Estimating C&I Waste Baseline Arisings

2.1 Introduction

This section of the report is concerned with estimating arisings of Commercial and Industrial (C&I) waste in Cumbria in 2020. From this, future arisings can be forecast and appropriate management targets proposed. The current C&I waste management capacity will also be assessed, with a view to understanding potential future capacity needs for which the Waste Local Plan may need to provide.

2.2 Context

Commercial waste can be defined as waste from factories or premises used for the purpose of trade or business, sport, recreation or entertainment. Industrial waste can be defined as waste arising from any factory and from any premises occupied by an industry (excluding mines and quarries)¹.

Currently there is no requirement on businesses to submit records of waste produced and hence estimating quantities of Commercial and Industrial waste arisings for a specific Plan Area is a challenge. Two different approaches can be taken to estimate a baseline for C&I waste as follows:

- **'Point of production'** using data based on the profile of businesses within an area and the application of waste production factors (related to the different business profiles). This method was used in the Defra national survey undertaken in 2009 that informed the previous approach to national estimates.
- **'Point of management'** using data related to C&I waste managed. This relies on records of waste delivered to, and removed from, permitted waste facilities. The Environment Agency (EA) collates this data submitted by operators in its 'Waste Data Interrogator' (WDI) on an annual (calendar year) basis. This data is supplemented by data for wastes managed at permitted sites that don't report through the WDI via Waste Incinerator Returns (WIR). This approach is now used to estimate C&I waste arisings at national level and is referred to as the 'Reconcile' method.

The Joint Cumbria WNA 2019 applied the 'point of management' approach to both the Commercial (C) and Industrial (I) waste streams on an separate stream basis. This generated baseline estimates of c292,000 and c641,000 tonnes respectively arising in the Plan area in 2017. This combines to make a total C&I waste baseline estimate value of around c933,000 tonnes in 2017.

¹ this differs to the definition included in the Cumbria WLP, which is considered to be incomplete.

3. Methodology

The method used to generate the updated baseline C&I waste arisings value in this report applies the ‘point of management’ approach adapted to reflect local circumstances and account for any double counting.

The methodology considers a number of datasets, in totality, to capture quantities of commercial and industrial waste that are managed rather than produced, through:

- Permitted waste management facilities reporting through Environment Agency Waste Data Interrogator (WDI)
- Taking into account the quantity sent directly for export, in this case outside Cumbria.
- Excluding waste streams that fall outside the definition of Commercial & Industrial waste such as Agricultural, Mining, Construction, Demolition & Excavation Waste (C, D & E), wastewater treatment waste and hazardous waste included in the datasets; and
- Local Authority Collected Waste (LACW) managed through WDI reporting facilities (as reported through WasteDataFlow²); and adjusting for
- Waste managed through waste management facilities in Cumbria classed by the Environment Agency as waste transfer (due to risk of double counting).

² <http://www.wastedataflow.org/>

3.1 Inputs to permitted waste management facilities

Step 1: Data relating to waste arising in Cumbria from the Waste Data Interrogator (WDI)

The starting point is to collect all data relating to waste reported as arising in Cumbria from the WDI 2020. This is waste arising in Cumbria that is managed both within and beyond Cumbria as shown in Table 1 below. This shows that the total quantity of waste arising in Cumbria managed through permitted sites reporting through the WDI for 2020 was c2,161,000 tonnes.

Table 1: Waste Arising from Cumbria (tonnes)

Source: WDI 2020

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	Grand Total
Managed within Cumbria	228,054	34,302	363,242	1,063,740	76,982	1,766,319
Managed outside Cumbria	112,484	35,878	61,636	139,478	45,312	394,788
Total	340,539	70,180	424,878	1,203,217	122,293	2,161,107

Step 2: Make deductions of non-C&I waste streams

Waste identified under waste codes considered to represent C, D & E Waste (European Waste Catalogue (EWC) Chapter 17 plus waste codes 19 12 09 & 20 02 02), and therefore accounted for in the separate estimates of C, D & E waste³, need to be deducted from the values in Table 1. The quantities remaining after this deduction are displayed in Table 2 below. This shows that total waste arising has reduced to c1,383,000 tonnes.

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

Source: WDI 2020

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	Grand Total
Managed within Cumbria	156,451	33,692	244,389	570,879	0	1,005,411
Managed outside Cumbria	110,332	33,477	60,776	134,699	38,065	377,348
Total	266,783	67,168	305,165	705,578	38,065	1,382,760

Waste identified under waste codes considered to represent Agricultural Waste (EWC Chapter 02 01), mining (EWC Chapter 01) and hazardous waste (all codes with *) are accounted for separately in this WNA⁴ and so are deducted from the values in Table 2. The quantities remaining after this deduction are displayed in Table 3. This shows that total waste arising has reduced to c1,299,000 tonnes.

³ Cumbria WNA 2022 Management Requirements for Construction, Demolition and Excavation Waste in Cumbria BPP Consulting

⁴ Cumbria WNA 2022 Management Requirements for Hazardous Waste in Cumbria BPP Consulting

Table 3: Table 2 Minus Agricultural, Mining & Hazardous Waste (tonnes)
Source: WDI 2020

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	Grand Total
Managed within Cumbria	156,348	25,584	240,286	511,207	0	933,425
Managed outside Cumbria	110,313	31,288	59,266	126,366	38,065	365,297
Total	266,660	56,872	299,552	637,573	38,065	1,298,722

Step 3: Make deductions of Local Authority Collected Waste

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 waste collection and disposal authorities for reporting LACW. This allows the quantities of LACW managed through specific sites to be ascertained. Cross referencing between the sites identified in WDF and the category assigned where that site is listed in the WDI enables attribution to specific routes, as shown in Table 4:

Table 4: Local Authority Collected Waste Received at Facilities included in WDI
Source: WasteDataFlow 2020 & WDI 2020

	Landfill	Metal Recycling Sites	Transfer	Treatment
Managed within Cumbria	13,259	0	60,840	179,828
Managed outside of Cumbria	0	2,145	14,166	55,153

When values displayed in Table 4 are deducted from the values in Table 3 the total remaining arisings value is as shown in Table 5 below.

Table 5: Gross C&I Waste Arising from Cumbria

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	Grand Total
Managed within Cumbria	143,089	25,584	179,446	331,379	0	679,497
Managed outside Cumbria	110,313	29,143	56,921	59,392	38,065	293,834
Total	253,402	54,727	236,367	390,770	38,065	973,331

Step 4: Make deductions of specific wastes accounted for separately

Landfill leachate and sludges from waste water treatment plants are expressly excluded from the national Reconcile reporting 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. Based on this, the value for leachate and wastewater

sludges from Cumbria managed at permitted facilities has also been deducted. This is calculated to be 190,220 tonnes of waste, of which 142,225 tonnes was managed within Cumbria.

Table 6 shows that deducting these values gives a revised headline value of c783,000 tonnes.

Table 6: Gross C&I Waste Arising in Cumbria (tonnes)

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	Grand Total
Managed within Cumbria	143,089	25,584	178,967	189,633	0	537,272
Managed outside Cumbria	110,313	29,143	11,345	56,972	38,065	245,839
Total	253,402	54,727	190,312	246,606	38,065	783,111

Step 5: Make adjustments to account for intermediate sites (inc. waste transfer stations)

Adjustments may be needed to address recording waste at intermediate sites to account for:

- Double counting - the same waste being recorded once as an input from Cumbria to an initial facility in Cumbria, and then again as an input from Cumbria to a further or 'next step' facility if it goes for onward management; and
- Loss of some waste - as a consequence of residues from the processing of waste arising at intermediate sites like MRFs where some outputs may be recoded from the original source of inputs i.e., the source identity gets lost, are not suppressing the final C&I waste arisings value.

Deduct movements of waste arising in Cumbria to transfer stations within Cumbria:

The national methodology (the 'Reconcile' method) discounts inputs to all types of transfer facility recorded in the WDI. However, since 2019, non-hazardous transfer sites and treatment sites have been reclassified under a new field as transfer/ treatment sites in the WDI but are categorised as transfer overall. Therefore, this step applies to transfer sites as well as all sites falling under the classification of transfer/ treatment in the WDI. Since some processing takes place at many sites classed as waste transfer sites by the Environment Agency, it was not considered appropriate to simply deduct all inputs on the assumption that they would reappear at a 'next step' site in the same form i.e., classified under the same EWC code.

Instead, inputs to sites identified in the WDI under the category of waste transfer within Cumbria were assessed against declared outputs, with the difference between inputs and outputs taken to be tonnage 'lost' as a result of some processing taking place on the transfer site. The difference between input and output is counted as an arising, and not deducted. Given such sites often accept waste from beyond Cumbria, it is necessary to attribute the tonnage lost. This has been done by assessing the proportion of the input reported as arising from Cumbria and then applying that proportion (percentage) to the tonnage lost.

For example, a Cumbria waste transfer site received 200 tonnes, 100 tonnes of which comes from Cumbria, therefore inputs from Cumbria represent 50% of the total. It is then taken that 50% of the output value has arisen from Cumbria waste and has been attributed to it.

Table 7 shows a resulting value of 178,009 tonnes is to be deducted from the total arising value to arrive at an overall value of c605,000 tonnes as shown in Table 8.

Table 7: Transfer Station Double Counting

Source: WDI 2020 Cumbria site outputs

Dataset	2020 Tonnage
Value from Table 6	
Total input to Cumbria transfer stations (ex HWRC's, CDE, LACW, Haz, Agri, sludges & leachate)	274,319
Cumbria input to Cumbria transfer stations	245,318
% of Cumbria T Stn input from Cumbria (Line 2/1)	89%
Output from Cumbria transfer stations	199,053
Tonnage of output attributed to Cumbria input (82%) deducted to avoid double counting (line 4 x line 3)	-178,009

Table 8: Gross C&I Waste Arising in Cumbria (tonnes)

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	Grand Total
Managed within Cumbria	143,089	25,584	957	189,633	0	359,263
Managed outside Cumbria	110,313	29,143	11,345	56,972	38,065	245,839
Total	253,402	54,727	12,302	246,606	38,065	605,102

Deduct waste from intermediate facilities under 19 12 12⁵

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 Cumbria, it is deducted for intermediate sites excluding the MBT plants which is understood to be solely managing LACW⁶.

The principal waste of concern is wastes resulting from mechanical treatment (Coded under EWC 19 12 12). Analysis of the waste removals data in the WDI for intermediate sites within Cumbria indicates that the net output of this waste type in 2020 was 150,154 tonnes. Where the input of C, D & E was greater than the net output of 19 12 12, no attribution of this waste was taken as C&I waste;

⁵ Note that 19 12 10 is also a principal waste resulting from mechanical treatment, but no significant amount was identified.

⁶ Note that the MBT sites do receive some commercial waste collected by district councils (Allerdale and Copeland), this is treated as contract waste thus accounted for under LACW.

where there was a shortfall, this was taken to be from C&I waste inputs. The result of this calculation is 21,165 tonnes of 19 12 12 output attributed to C&I waste is deducted from the total arisings value, bringing the total arising value to c591,500t as shown in Table 9.

Table 9: Gross C&I Waste Arising in Cumbria (tonnes)

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	Grand Total
Managed within Cumbria	143,089	25,584	0 ⁷	176,804	0	345,476
Managed outside Cumbria	110,313	29,143	11,345	56,972	38,065	245,839
Total	253,402	54,727	11,345	233,776	38,065	591,315

3.2 Additions

Step 6: Add non LACW inputs to Energy from Waste (EfW) facilities

There are no operational EfW plants in Cumbria. Examination of EA data for inputs to EfW facilities indicates that 4,348 tonnes of waste attributed to Cumbria, was sent to principally 2 EfW plants in England (and hence reported in the WDI) as shown in Table 10.

Table 10: Principal EfW facilities receiving C&I waste from Cumbria and the principal waste type

Route	Principal Waste Type	Tonnes
Wilton 11 EfW in Redcar and Cleveland	RDF and sorting residues	1,850
Cauldon Cement Park in Staffordshire	End-of-life tyres	2,498
Total		4,348

A check of the WDF for LACW arising from Cumbria found that 0 tonnes of LACW⁸ was received at these sites. Therefore, 4,348 tonnes has been added to the baseline value to get a value of c596,000 tonnes as shown in Table 11 below.

Table 11: Gross C&I Waste Arising in Cumbria (tonnes)

	Landfill	Metal Recycling Sites	Transfer	Treatment	Recovery to Land	EfW	Grand Total
Managed within Cumbria	143,089	25,584	0	176,804	0	0	345,476
Managed outside Cumbria	110,313	29,143	11,345	56,972	38,065	4,348	250,187
Total	253,402	54,727	11,345	233,776	38,065	4,348	595,663

⁷ Note Cumbria to Cumbria transfer has been set to 0 given deductions result in negative inputs

⁸ Significant quantities of RDF and SRF arising from LACW were sent for EfW outside England but are not reported in the WDI.

Step 7: Accounting for waste recorded to North West only

Data quality of the WDI relies on operators of permitted sites to report inputs down to origin WPA level. A number of sites do not report inputs to that level, preferring to report at regional level only. This means that there is a potential for an underestimation of the tonnage of waste managed in Cumbria that is not attributed down to or below regional level. However, the WDI 2020 reports only 83 tonnes of C&I type waste that is not attributed down to WPA level going to one Cumbria site, therefore no attempt to attribute non-attributed waste to Cumbria has been made as it is not considered a significant amount (<500t).

The outcome of this process is a baseline value of c596,000 tonnes of C&I waste generated in Cumbria in 2020. This compares with a combined C&I waste value of c933,000 tonnes in 2017.

4. Forecasting Future C&I Waste Growth

The PPG states when looking to forecast C&I waste:

- *"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

Hence the PPG anticipates the application of a positive growth rate.

4.1 DEFRA Analysis of Future C&I Waste Growth

Defra commissioned a Future Waste Arisings report in 2020⁹ which reported in 2021. This includes the most current national growth forecast for the C&I waste stream published by Government. 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 could then be used to generate C&I waste arisings forecasts. The forecasts also incorporate the impact of growth in the number of businesses 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 forecasting models were produced for England from 2019 to 2050: one for commercial waste arisings (refer to Figure 1) and the other for industrial waste arisings (refer to Figure 2). The resultant graphs are reproduced as Figures 1 and 2 respectively.

⁹ 'Future Waste Arisings' DEFRA, April 2021

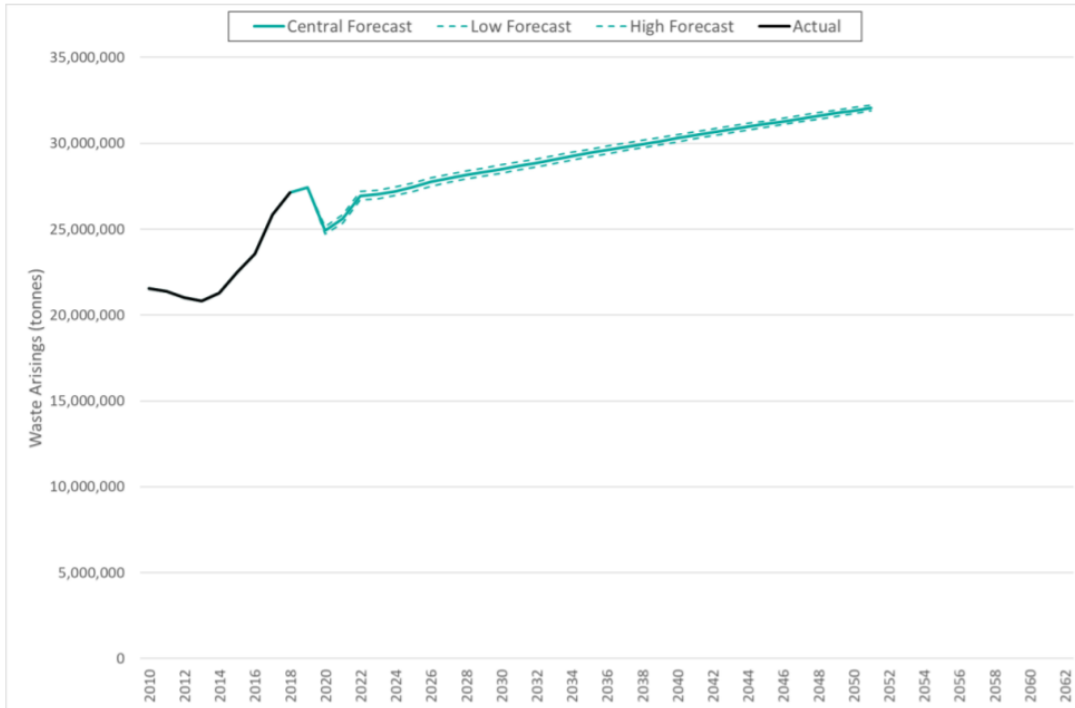


Figure 2: Commercial Waste Arisings Forecasts for England (2019-2050)
Source: Future Waste Arisings, produced for DEFRA (2021)

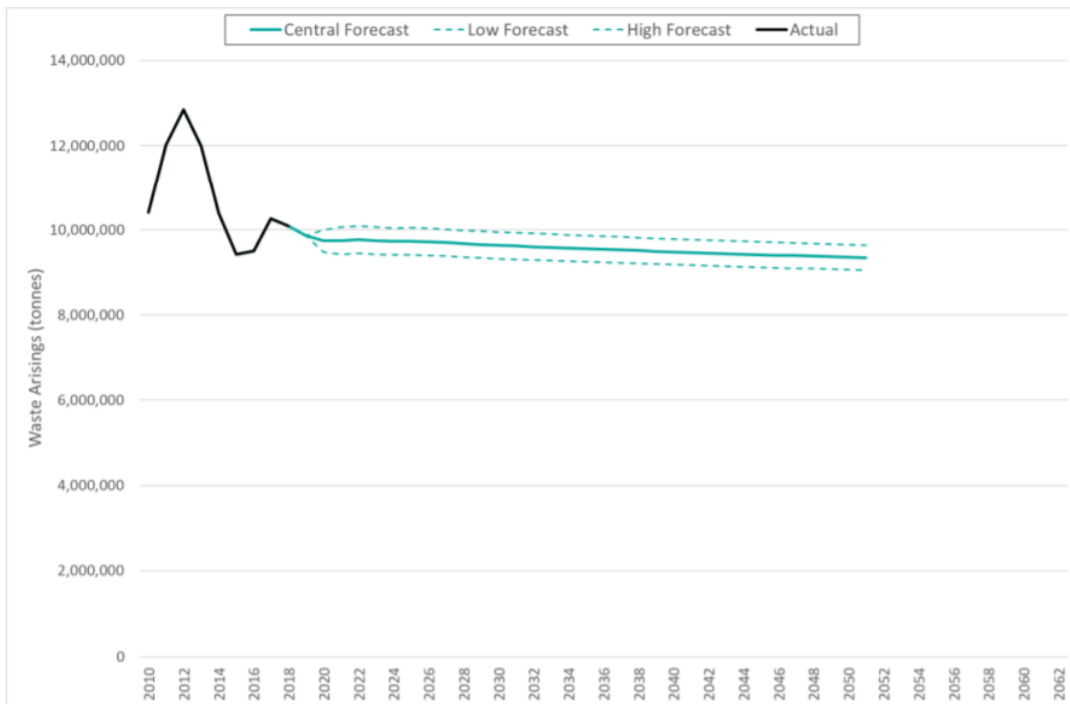


Figure 1: Industrial Waste Arisings Forecasts for England (2019-2050)
Source: Future Waste Arisings, produced for DEFRA (2021)

Figures 1 and 2 present central, low and high forecast waste arisings for the commercial and industrial sectors. Commercial waste arisings are projected to increase steadily from 2022 to 2050, whilst industrial waste arisings are projected to increase slightly in 2019 to 2020 and then progressively fall from 2020 to 2050.

In order to assess how the national forecasts may be taken into account when forecasting Cumbria's C&I waste arisings, data points have been extracted for the 2020-2037 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 1 for how the growth rates were ascertained using national central forecast values.

The average annual growth rate generated in the period 2020 to 2037 was +1.08% per annum for commercial waste and -0.12% 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 Cumbria in 2020.

The Joint Cumbria WNA 2019 found 292,192 tonnes of commercial waste was generated which represents c31% of the C&I baseline arising value for 2017. Therefore, a combined C&I waste growth has been calculated as follows:

- Commercial waste represents 31% of C&I arisings: 31% of +1.08% per annum = 0.33%
- Industrial waste represents 69% of C&I arisings: 69% of -0.12% = -0.08%

$$\underline{0.33 + -0.08 = 0.25\% \text{ per annum}}$$

The Joint Cumbria WNA 2019 envisaged an overall decline in C&I waste through the Plan period even when applying a baseline jobs growth scenario. However, a positive growth rate was arrived at using the other two scenarios forecast in the WNA 2019 and that generated above this is consistent to the PPG advice and the positive growth indicated nationally since 2015. Using a positive growth rate would also ensure flexibility in the plan. Therefore, 0.25% growth rate per annum has been applied to the 2020 C&I baseline value to forecast arisings to 2037 as shown in Table 12 below.

Table 12: C&I Forecast applying Growth Factor of 0.25% p.a. to 2020 baseline

	2020	2025	2030	2035	2040
Forecast	595,663	597,141	598,622	600,108	601,597

Table 12 shows that applying the growth factor of 0.25% per annum to the 2020 baseline value, C&I waste arisings are expected to rise marginally to c602,000 tonnes by the end of the Plan period.

5. Existing C&I Waste Management Profile

To establish realistic future management targets which then informs future capacity requirements it is first necessary to understand how the C&I waste produced in Cumbria is currently managed.

5.1 Baseline Profile

The management profile presented in Table 9 is based on the management data available through the WDI 2020. Since waste identified as undergoing treatment may go on for recycling, landfill or energy recovery, the principal management types considered are those that would represent a final fate. That is:

- Landfill
- EfW and Recovery to Land
- Composting

Landfill

As shown in Table 13 below, in 2020, c253,500 tonnes of C&I waste arising in Cumbria was sent to landfill.

'Other' Recovery

As shown in Table 13, in 2020, c42,500 tonnes of C&I waste arising in Cumbria was recovered of which c4,500 tonnes was sent to Energy from Waste facilities and c38,000 tonnes was sent to recovery to land sites¹⁰.

Composting

As shown in Table 13 below, in 2020, c34,000 tonnes of C&I waste arising in Cumbria was sent to permitted composting sites.

Recycling and Reuse

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 at permitted facilities. In 2020 this amounted to c266,000 tonnes as shown in Table 13 below.

Table 13: Computed C&I Waste Management Profile

Route	Tonnes	%
Total Arisings	595,663	
Landfill	253,402	42%
'Other' Recovery	42,413	7%
Composting	34,194	6%
<i>Recycling & Reuse (remainder)</i>	265,654	45%

Table 13 shows that if it is assumed that only three principal management routes are utilised the actual percentage of C&I waste recycled/ reused/ composted stands at 51%, while 'other' recovery stands at 7% and landfill stands at 42%.

¹⁰This usually covers to soils which fall under C, D & E waste.

6. Management Targets

Having established an existing management profile, the next step is to consider what management profile may be desirable and achievable and therefore what waste management targets ought to be set in the Plan to achieve that management profile.

There are no national government targets for the management of C&I waste. However, the recently adopted EU Circular Economy Plan¹¹, to which the UK government has confirmed its commitment¹², includes the following targets for municipal waste:

- 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.

Municipal waste is LACW plus waste of a similar nature. Given that it has been estimated that up to 60% of commercial waste could fall within that definition, the targets would apply to 31% of the overall C&I arisings given the split between commercial and industrial waste found in Cumbria. This leaves a substantial proportion of C&I waste outside this target. However, given the proposed adoption of a reduction of residual waste of 50% by 2042, going beyond the current targets is likely to be necessary¹³.

Given the current management profile shown in Table 13 and the above municipal waste targets, the following targets for C&I waste are proposed in Table 14 below.

Table 14: Proposed Targets for C&I Waste Management in Cumbria
Italicised values from Table 13

	Milestone Year				
	2020	2022	2027	2032	2037
Recycling/composting	<i>51%</i>	<i>≥53%</i>	<i>≥57%</i>	<i>≥61%</i>	<i>≥65%</i>
Other Recovery	<i>7%</i>	<i>9%</i>	<i>11%</i>	<i>17%</i>	<i>25%</i>
Remainder to Landfill	<i>42%</i>	<i>≤38%</i>	<i>≤32%</i>	<i>≤22%</i>	<i>≤10%</i>

The proposed targets have been arrived at as follows:

- Landfill: It is understood that there will always be a need to landfill some C&I waste, thus working back to give a year-on-year decline to achieve the ‘ceiling’ of 10% to landfill by 2035.
- Recycling: Working back to give a steady year on year progression to achieve the ‘floor’ target of 65% by 2035.

¹¹ A new Circular Economy Action Plan, European Commission December 2015

¹² <https://www.gov.uk/government/publications/circular-economy-package-policy-statement/circular-economy-package-policy-statement>

¹³ It is predicted that to meet this target a 72% recycling rate will need to be achieved by 2042.

- Other Recovery: Taking the remainder after the recycling floor target and the landfill diversion ceiling has been met.

6.1 Projected Management Requirements for Cumbria's C&I Waste

Applying the management targets presented in Table 14 to the forecast shown in Table 12 gives the following management requirements for the Plan Milestone years.

Table 15: C&I Waste Management Requirements derived by applying Proposed Targets in Table 14 to the Preferred Forecast at Plan Milestone years

	Waste Management Requirements at Milestone Years (tonnes)					Peak Requirement Difference / Cumulative Requirement (tonnes)
	2020	2022	2027	2032	2037	
Recycling/composting	299,848	316,485	341,215	366,066	391,038	391,038
Other Recovery	42,413	53,743	65,848	102,018	150,399	150,399
Remainder to Landfill	253,402	226,913	191,559	132,024	60,160	2,972,693

Table 15 indicates the following peak capacity requirement for the Plan period:

- c391,000 tpa of recycling/composting at 2037; and
- c150,500 tpa Other Recovery.

In addition, a cumulative capacity requirement c2.97Mt of non-inert landfill capacity at 2037.

Comparing the peak management requirement presented in Table 15 with the 2020 profile gives a capacity management gap for the Plan period:

- c91,000 tpa of recycling/composting; and
- c108,000 tpa Other Recovery;

6.2 Provision for recycling/ biowaste management

In the past provision for recycling has been taken to mean provision of waste management facility capacity to sort materials through a Materials Recycling Facility (MRF). However, where materials are separated at source the facility requirement may essentially constitute a transfer station where source separated materials (e.g. paper, plastic) are stored and bulked up in bays prior to onward bulk delivery to a reprocessor. Hence it may not be realistic to expect specific provision to be made for such capacity within Cumbria; that is to say this need for recycling capacity may be met by existing waste transfer facilities in Cumbria that offer bulking capacity of separately collected recyclables¹⁴.

¹⁴ It should be noted that the forthcoming Environment Act measures are expected to make separate collection of certain materials compulsory to all.

In contrast to this, biowaste management does require specific facilities. Hence additional consideration has been given to what the biowaste management capacity requirement might be. The C&I waste stream has been assessed to contain up to 13% organic waste¹⁵. Given that the Government committed to introduce separate food waste collections for households and businesses by 2023¹⁶, it can be assumed that all biowaste within the C&I stream would be effectively captured for separate treatment by 2025. This then yields the management capacity requirements for the recycling/biowaste management component shown in Table 15.

Table 16: Recycling/ Biowaste Management Requirement with Separate Biowaste Collection

	Waste Management Requirements at Milestone Years (tpa)				
	2020	2022	2027	2032	2037
Biowaste management	34,194	41,143	44,358	47,589	50,835
Recycling	265,654	275,342	296,857	318,477	340,203
Total (Table 15)	299,848	316,485	341,215	366,066	391,038

Table 16 shows the peak biowaste management capacity requirement would be approaching 51,000tpa at the end of the Plan period with an initial requirement of c41,000tpa in 2022. The difference between the peak requirement (50,800 tonnes) and the current arising of C&I waste sent for biowaste management (34,200 tonnes in 2020) suggests a potential capacity gap of 16,600 tonnes. However, this is based on the management profile for biowaste management in 2020 being a true reflection of the total available capacity to serve Cumbria's needs. As some sites may not have been operating to their full capacity, it is necessary to look at the peak inputs to Cumbria's principal biowaste management sites over 3 years in the WDI. The principal sites are shown in Table 17 below along with total inputs from the last 3 years.

Table 17: Inputs to Cumbria's principal composting sites over the past 3 years

Source: WDI

Site Name	Operator	2020 Input	2019 Input	2018 Input	Peak Input
Eden Organics	H & E Trotter	16,732	19,989	18,797	19,989
Hespin Wood	A.W. Jenkinson Woodwaste	56,640	89,458	84,308	89,458
Wilson Pit Yard	West Coast Composting	6,843	7,808	6,136	7,808
Total composting capacity					c117,500

Table 17 reveals a total of at least c117,500 tonnes of biowaste management capacity is currently available in Cumbria. When the total LACW (c28,000 tonnes) managed at these sites in 2020 is deducted, c89,500 tonnes of biowaste management capacity remains, which if it is to continue to be available until the end of the plan period provides a surplus of biowaste management capacity of c39,000 tonnes. This confirms net self-sufficiency for C&I biowaste through the plan period.

¹⁵ Commercial and Industrial Waste Survey 2009: Final Report, Defra May 2011.

¹⁶ Our Waste, Our Resources: A strategy for England, Defra December 2018

6.3 Provision for non-inert landfill

Table 14 shows that application of the proposed targets would still mean a cumulative non-inert landfill requirement over the Plan period of 2.97Mt as shown in Table 18 below.

Table 18: Predicted Non-Inert Waste Landfill Requirement for C&I Waste over the Plan Period

Year	Annual Requirement	Cumulative Requirement
2020	253,402	
2021	240,158	493,559
2022	226,913	720,473
2023	219,843	940,315
2024	212,772	1,153,087
2025	205,701	1,358,788
2026	198,630	1,557,418
2027	191,559	1,748,977
2028	179,652	1,928,629
2029	167,745	2,096,374
2030	155,838	2,252,212
2031	143,931	2,396,143
2032	132,024	2,528,167
2033	117,651	2,645,818
2034	103,278	2,749,096
2035	88,905	2,838,001
2036	74,532	2,912,533
2037	60,160	2,972,693

Appendix 1: Data taken from DEFRA's National forecast to produce average growth rates per annum

Year	Commercial	Growth rate p.a	Industrial	Growth rate p.a.
2020	24,858,115		9,717,112	
2022	26,885,177	4.08%	9,755,546	0.20%
2024	27,031,316	0.27%	9,713,007	-0.22%
2026	27,635,753	1.12%	9,710,955	-0.01%
2028	28,036,798	0.73%	9,647,868	-0.32%
2030	28,437,563	0.71%	9,605,052	-0.22%
2032	28,787,095	0.61%	9,562,070	-0.22%
2034	29,187,580	0.70%	9,519,198	-0.22%
2036	29,588,484	0.69%	9,516,814	-0.01%
2037	29,824,561	0.80%	9,508,771	-0.08%
Average growth rate p.a.		+1.08%		-0.12%