



Cumbria Waste Needs Assessment 2022

Management Requirements for Local Authority Collected Waste in Cumbria to 2037

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Abbreviations and Glossary

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
DMR	Dry mixed recyclables
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
MBT	Mechanical Biological Treatment
MRS	Metal Recycling Site
MRF	Material Recycling Facility
MWMS	Municipal Waste Management Strategy
RDF	Refuse Derived Fuel
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
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.
Biodegradable 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
Controlled Waste	Waste subject to controls emanating from the EU Waste Framework Directive.
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.
Gross value added	Gross value added (GVA) measures the contribution made to an economy by one individual producer, industry, sector or region. The figure is used in the calculation of gross domestic product (GDP)
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).
Kerbside Collection	The collection of recyclate and waste from households, or occasionally industrial and commercial premises.
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).
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 (solid) waste (MSW).
Materials Recycling Facility (MRF)	A facility for sorting recyclable materials from the incoming waste stream.
Mechanical Biological Treatment (MBT)	A waste facility that combines a sorting facility with a form of biological treatment such as composting or anaerobic digestion.
Municipal Solid Waste (MSW) (from 2010)	Local Authority Collected Waste plus any wastes similar in nature and composition including that collected from businesses by private waste collection companies. (Term used for reporting against retained EU Directives only).
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.
Open Windrow Composting	A process in which biodegradable waste (such as green waste) is broken down in an open air environment (aerobic conditions) by naturally occurring micro-organisms to produce a material suitable for use as a soil improver.
Other Recovery	Processes such as energy from waste that recover value from waste other than recycling or composting. Sits below recycling in the waste hierarchy, but above disposal.
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.
Waste Collection Authority (WCA)	A local authority that has a duty to collect household waste. WCAs also have a duty to collect commercial waste if requested to do so and may also collect industrial waste. In this case Cumbria Council. In two tier areas the District or Borough Council is the WCA.
Waste Disposal Authority (WDA)	A local authority responsible for managing the waste collected by waste collection authorities and the provision of household waste recycling centres. In this case Cumbria Council. In two tier areas the County Council is the WDA.
Waste Minimisation / Reduction	The most desirable way of managing waste according to the Waste Hierarchy, by avoiding the production of waste in the first place.
Waste Planning Authority	The authority responsible for planning for waste within a specific administrative area. In this case Cumbria County Council.
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 the Cumbria Waste Needs Assessment 2022. The Waste Needs Assessment consists of the following documents:

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

This report relates to the management requirements for Local Authority Collected Waste in Cumbria. This has been assessed by projecting arisings from the baseline year of 2020 forward to 2037.

1.1 Principal Data Sources

The principal data sources used to generate the underlying evidence for this report are the Environment Agency's Waste Data Interrogator (WDI) and Wastedataflow (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 current version available (version 4 released Feb 2022). The WDI now includes inputs to facilities such as incinerators which were reported separately through the Environment Agency's Waste Incinerator Returns up to 2019.

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 used to ensure comparability between datasets.

1.2 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.
4. Final values have been corrected to nearest five hundred.

2. Introduction

This section of the report is concerned with updating the baseline value for forecasting future arisings of Local Authority Collected Waste (LACW) in Cumbria. The report is also concerned with assessing appropriate targets and establishing the current LACW management capacity in order to identify potential future capacity needs that may need to be planned for.

2.1 Definition

In the UK, until 2010, the term Municipal Solid Waste (MSW) was taken as meaning waste collected by local authorities (mainly from households). However, to ensure consistency with the EU definition of MSW, in 2010, the UK expanded the definition to include not just waste from households but any wastes similar in nature and composition and so, for the first time, MSW included wastes (of a similar type) collected from businesses by private waste collection companies.

In light of this it was necessary to establish a new term for waste for which local authorities have responsibility to collect/manage – this term is “Local Authority Collected Waste” (LACW). LACW includes ‘household waste’ (waste produced by householders collected from their homes (collected household waste) and waste deposited at Household Waste Recycling Centres (HWRCs), plus commercial waste collected by councils, street sweepings, litter and fly tipped materials. In general, the non-household waste fraction of LACW represents around 5% of total LACW arisings.

It should be noted that even though hazardous waste is accounted for separately, arisings in the LACW stream have not been discounted from the totals on the basis that the tonnage received was insignificant (c1,000 tonnes in 2020).

2.2 Cumbria County Council

As the county authority for Cumbria, Cumbria County Council has the responsibility as the Waste Disposal Authority (WDA) for the final management of Local Authority Collected Waste arising in Cumbria¹. In 2009, Cumbria County Council entered into a 25-Year Public Private Partnership (PPP) contract with Renewi (formerly Shanks Waste Management) to manage LACW arising within Cumbria through to 2034. It is the responsibility of each of the six district councils as Waste Collection Authority to provide collection services for waste and recyclable materials, collected directly from householders. This includes residual, recycling, garden, and bulky waste collections, as well as managing local recycling centres (known as bring sites) and making contractual arrangements for sorting of recyclable materials. Waste collection authorities are also responsible for street cleansing services, including the removal of street litter, fly-tipping, leaf fall and debris. These services are either carried out by direct labour or contracted out to third party waste collection companies.

¹ Note that as of the 1st of April 2023, Cumbria County Council will be replaced by two new unitary authorities that will each act as WDA and WCA of their respective administrative areas.

3. Cumbria LACW Management Profile

The change to the way LACW arising in Cumbria has been managed over the last decade is shown in Figure 1 below.

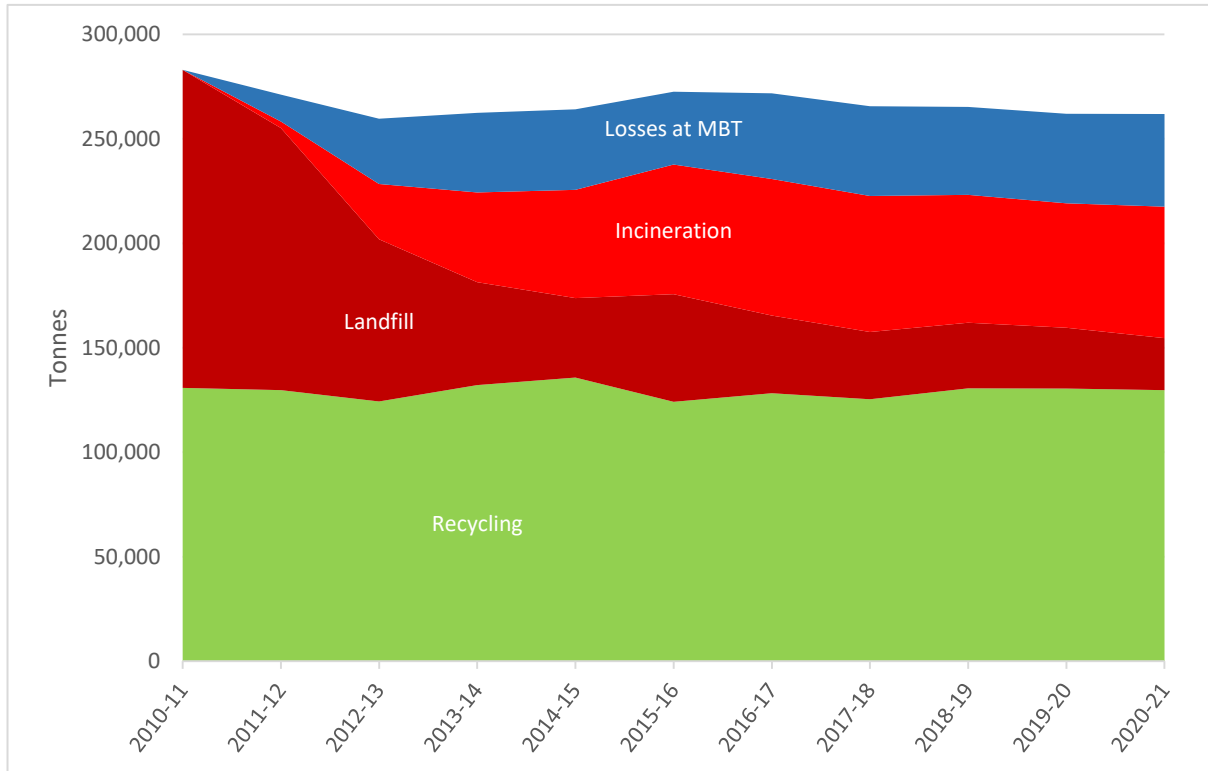


Figure 1: Management Profile for Cumbria LACW 2010/11 – 2020/21 (tonnes)

Figure 1 shows that the LACW management profile between 2010/11 and 2020/21 is underpinned by recycling and composting which peaked in 2014/15 and stabilised from 2015/16 onwards with an average rate of c50% (c130,000 tpa). It also shows the transition in final management method for residual waste (waste remaining after recycling/ composting), from landfill to incineration with landfill reducing by 44% and incineration increasing by 24% from 2010/11 to 2020/21 with the difference being accounted for by losses at the two MBT plants where collected LACW undergoes pre-treatment for final management.

4. Cumbria LACW forecast

The following have been taken into account in projecting future LACW arisings in Cumbria over the Plan period:

- National Planning Practice Guidance (nPPG)
- National forecast of LACW growth in England
- Historical pattern of LACW arisings in Cumbria
- Cumbria Joint Municipal Waste Management Strategy

These are discussed below.

4.1 Planning Practice Guidance

The national Planning Practice Guidance (PPG)² states the following in relation to forecasting future MSW arisings (now referred to as LACW):

"How should waste planning authorities forecast future municipal waste arisings?"

Forecasts of future municipal waste arisings are normally central to the development of Municipal Waste Management Strategies.

It will be helpful to examine municipal waste arisings according to source (i.e. household collections, civic amenity site wastes, trade waste etc.). This may allow growth to be attributed to particular factors and to inform future forecasts.

A 'growth profile', setting out the assumed rate of change in waste arisings may be a useful starting point for forecasting municipal waste arisings. The growth profile should be based on two factors:

- *household or population growth; and*
- *waste arisings per household or per capita.*

How is a growth profile prepared?

A growth profile is prepared through a staged process:

- *calculate arisings per head by dividing annual arisings by population or household data to establish short- and long-term average annual growth rates per household and*
- *factor in a range of different scenarios, e.g. constant rate of growth, progressively lowering growth rates due to waste minimisation initiatives.*

The final forecast can then be modelled with scenarios based on the long- and short-term rate of growth per household, together with household forecasts."

It is notable that the examples of growth scenarios given in PPG refer to either a constant rate or lowering of growth rates i.e. there is no mention of the possibility of a rising growth rate, suggesting that the Government does not see increasing growth in LACW as a scenario to be modelled.

² Ref.: Revision date: 16 10 2014 Paragraph: 029 & 30 Reference ID: 28-029-20141016

4.2 National forecast of LACW growth in England

DEFRA published a study of Future Waste Arisings in England³ in 2021. This includes the most current national growth forecast published by Government for the LACW waste stream (amongst others). The method used to produce a forecast for LACW waste nationally involved the development of a model⁴ using external variables such as population growth and Regional Gross Disposable Household Income trends (GDHI) to project LACW growth. Three scenarios were constructed (central, lower and upper) but for the purposes of this exercise the central forecast is referred to. The graph resulting from the forecast produced is reproduced as Figure 2 below.

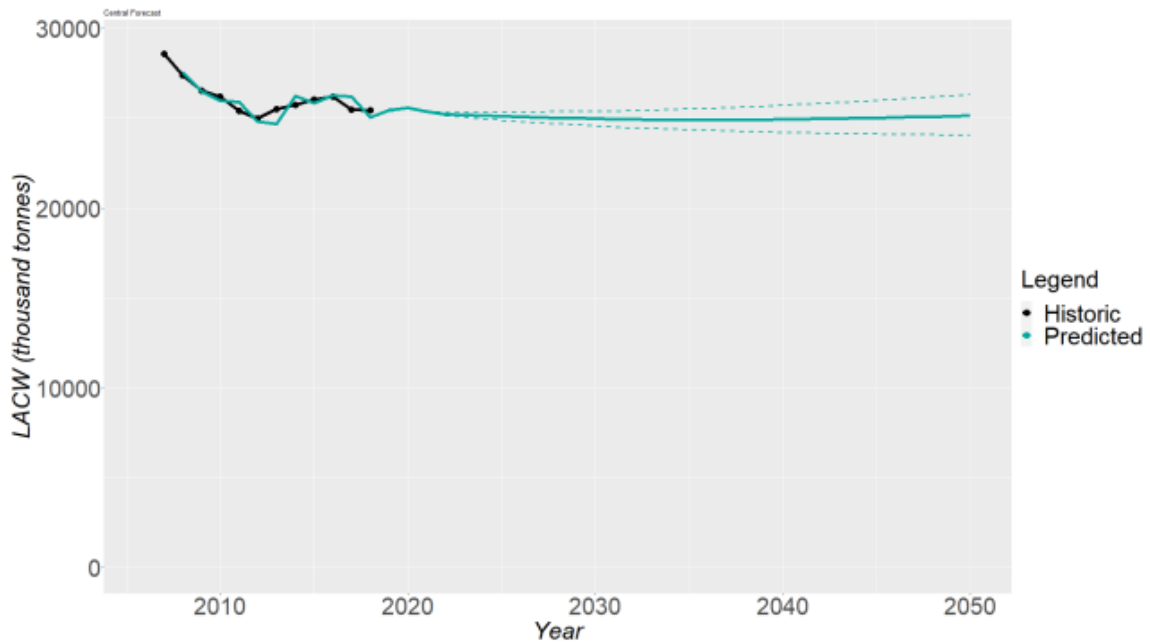


Figure 2: Central Local Authority Collected Waste Arisings Forecast for England (2020-2050)

Source: Future Waste Arisings, for DEFRA (2021)

Figure 2 shows that nationally, LACW arisings are predicted to increase slightly in 2020 and then decrease marginally from 2022 to 2035, with a slight upswing from 2035 to 2050. The growth rate indicated at 5-year intervals from 2020 is shown in Table 1 below:

Table 1: Defra National LACW Forecast 5-year Growth Rates

	2020	2025	2030	2035	2040	2045	2050
5-year growth rate	-	-2.12%	-0.18%	-0.54%	+0.37%	+0.18%	+0.54%

The DEFRA 2021 report provides a feel for the direction in which growth in LACW in Cumbria may be headed, but it should of course be noted that the report is intended to provide a national picture, and so presents an average of what is predicted to happen across England. Thus, it masks any regional

³ 'Future Waste Arisings' Eunomia, April 2021

⁴ This is different to a standard time-series forecast as it includes lagged dependent variables

or local differences, such as varying levels of prosperity and associated consumption. It should be noted that the forecasts presented in the DEFRA 2021 report are being used as the basis for modelling of the achievement of targets related to the policy goals of national Resources & Waste Strategy published in 2018⁵ and the Environment Act, and so represents the forecast of LACW that is driving national policy that can reasonably be expected to impact LACW arising in Cumbria locally.

4.3 Historical Pattern of LACW Arising in Cumbria

The applicability of the conclusions of the 2021 DEFRA report on future LACW arisings to the situation in Cumbria, can be tested by considering the observed pattern of LACW arisings in Cumbria over the past decade, as shown in Figure 3 below. The average annual growth rate over this period is minus 0.75% as shown in Table 2.

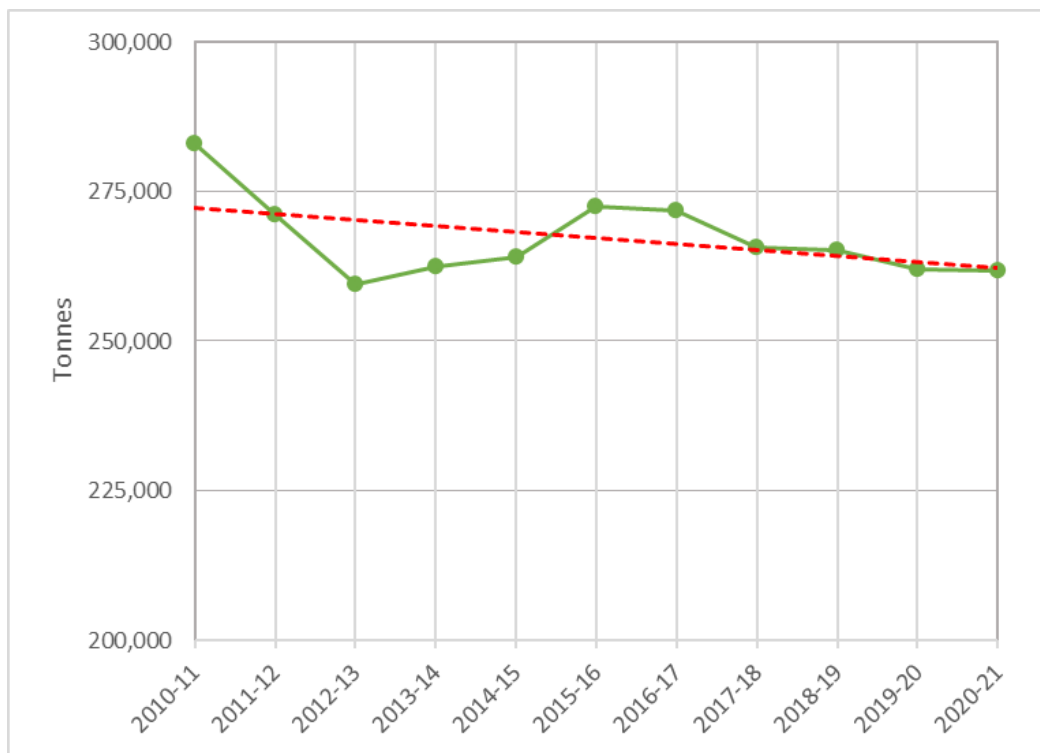


Figure 3: Trend in LACW Arisings in Cumbria 2010/11 to 2020/21
Dashed red line is a trend line that indicates an average annual growth rate of -0.75 over the period.
 (y axis not set to zero)

⁵ Our Waste, Our Resources: A Strategy for England, Department for Environment, Food & Rural Affairs, December 2018.

Table 2: Cumbria LACW arisings between 2010/11 and 2020/21 including 5yr growth rates

Year	Total	Annual growth rate	5-year growth rate
2010-11	282,961		
2011-12	271,105	-4.19%	-0.71%
2012-13	259,575	-4.25%	
2013-14	262,384	1.08%	
2014-15	264,066	0.64%	
2015-16	272,500	3.19%	
2016-17	271,726	-0.28%	-0.79%
2017-18	265,554	-2.27%	
2018-19	265,223	-0.12%	
2019-20	261,937	-1.24%	
2020-21	261,827	-0.04%	
	Average growth rate	-0.75%	

Historical data for LACW arisings (Figure 3 and Table 2) shows an overall declining trend in arisings from 2010/11 to 2020/21 with an average annual growth rate over the decade of minus 0.75%. LACW arisings temporarily experienced a short period of positive growth in the years 2014/15 and 2015/16 at 0.64% and 3.19% respectively. Post 2015, the pace of decline has increased slightly in the final 5-year period suggesting an established trend. The decline in the tonnage of LACW arising in Cumbria may be due to a number of factors including local service changes and waste minimisation initiatives such as subsidised provision of home composting bins.

As shown in Figure 4, Cumbria's estimated total population fell between 2010/11 and 2014/15 by an average of 0.09% per annum followed by a small peak and subsequent decline from 2016/17 to 2017/18 and a return back to 2010 levels, increasing from 2017/18 to 2019/20 by an average of 0.08% per annum. LACW arisings also saw a decline to 2013/14 of 2.23% and a small peak in 2016/17, however, post 2017/18 there does not appear to be any correlation between the trends. This suggests that while there is a relationship between growth in population and growth in LACW initially, a growth profile based on the assumption that there is a linear relationship between growth in population and growth in total LACW arisings would not be robust, given the multiple variables that can influence LACW arisings.

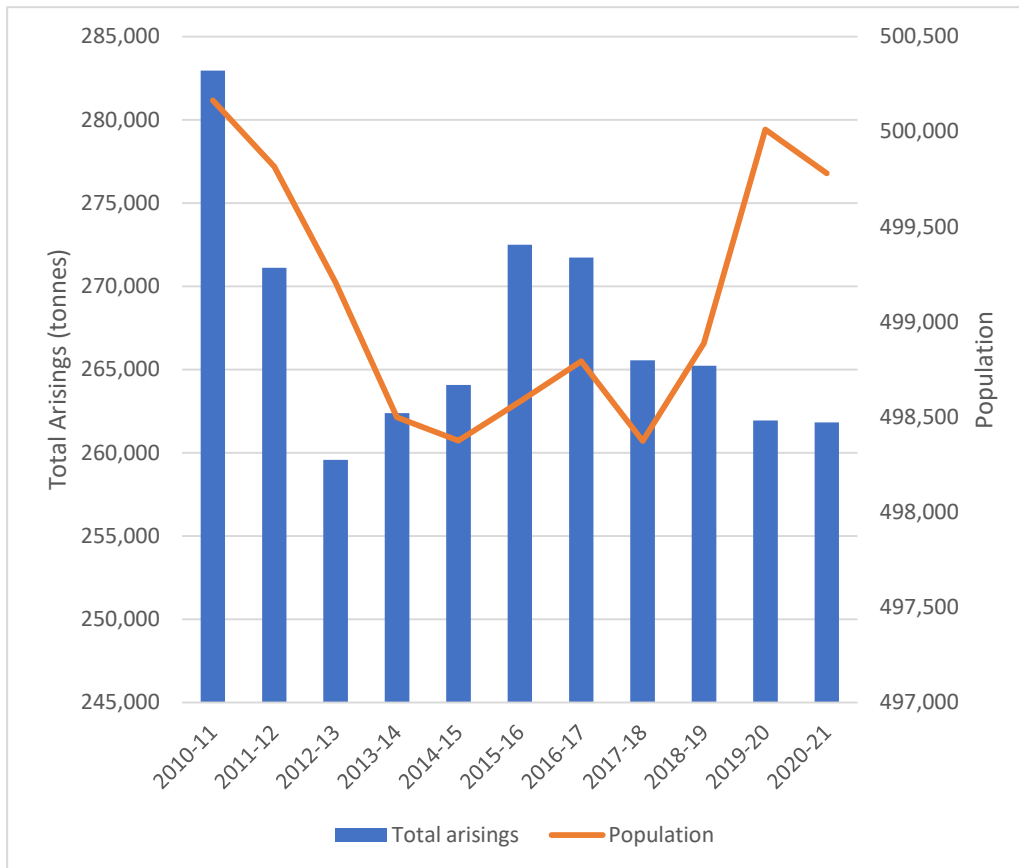


Figure 4: Total LACW arising (bar chart) vs population (orange line) 2010/11 to 2020/21
 (y axis not set to zero)

4.4 Cumbria Joint Municipal Waste Management Strategy 2007-2020

PPG identifies the Municipal Waste Strategy (MWMS) produced by collaboration between the WDA and WCAs in an area as a source of LACW growth forecasts. However, the Cumbria Joint Municipal Waste Management Strategy 2007-2020 only runs to 2020. The Interim Cumbria Joint Municipal Waste Management Strategy 2022-26 was adopted by the Cumbria Strategic Waste Partnership (CSWP) a partnership between the six WCAs and the County Council as WDA. This includes the following objectives relevant to this WNA:

1. To contribute to the 55% Recycling Rate for Local Authority Collected Waste (LACW) including kerbside, bring sites and HWRCs by 2025, to drive waste further up the waste hierarchy, reduce recyclables within the residual stream and reduce the carbon footprint of waste collected;
2. To reduce the overall amount of LACW sent to landfill;
3. Implement the reduction in carbon emissions arising from LACW by 2026 against the 2021 baseline, implementing the Waste Reduction Group's High-Level Roadmap and action plan towards the 2037 Net Zero target for Cumbria;
4. To begin the roll-out of separate food waste collections across the county, where possible, and engage with value chain partners to explore and assess appropriate processing capacity and capabilities, including Anaerobic Digestion (AD).

5. Generating a Forecast for LACW

The method proposed in the PPG suggests that a growth profile is based on household growth and waste arisings per household and/or population growth and waste arisings per capita, which can then be modelled with a range of different scenarios e.g. constant rate of growth and progressively lowering growth rates due to waste minimisation.

5.1 Building a Growth Profile

A growth profile can be established by following the guidance in PPG on a step-by-step basis:

- Step 1 – Establish short-term average annual growth rates per household/population
- Step 2 – Establish long-term average annual growth rates per household/population

This is done (as indicated by PPG) by dividing annual arisings by population or household numbers data. Figure 5 below shows the results of this exercise by population.

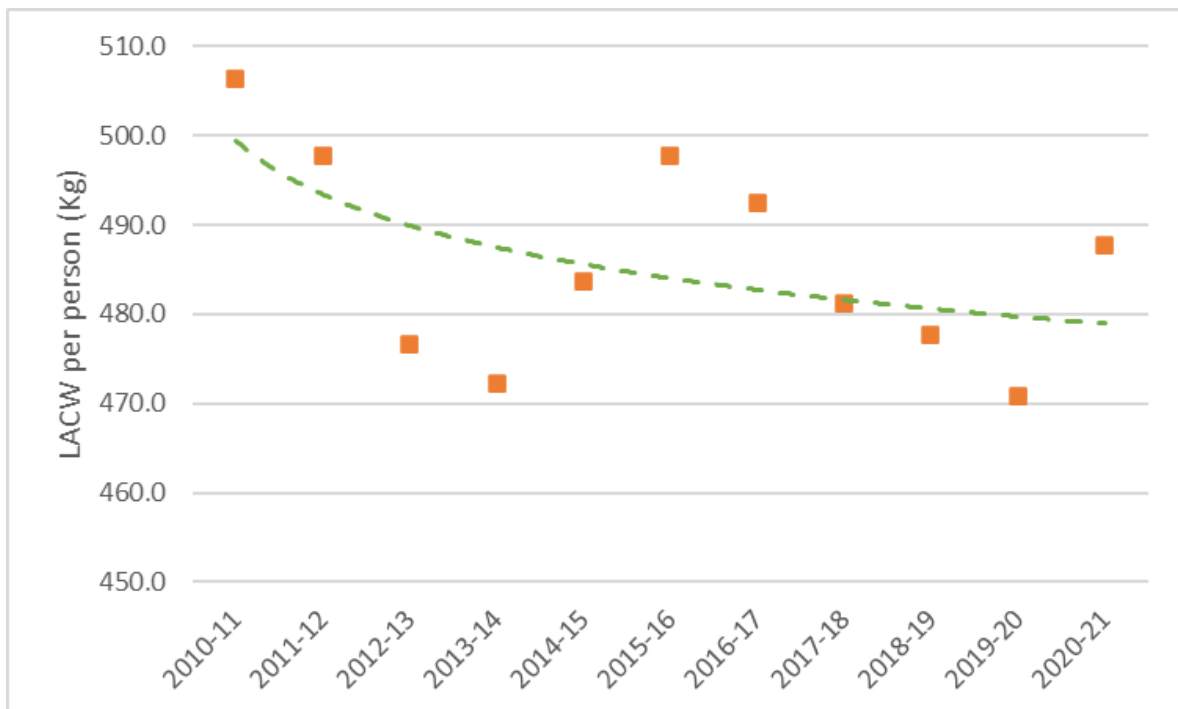


Figure 5: LACW per person in Cumbria 2010/11 to 2020/21

Green dashed line is a trendline NB: y axis not at zero.

It is evident from Figure 5 that the average LACW per person has experienced large fluctuations over the decade, but has overall been declining as shown by the trend line to approximately 488 kg per person in 2020/21. This yields the following:

- the average compound annual growth rate for LACW per person for the period 2010/11 to 2020/21 is minus 0.20% (the long-term growth rate);
- the average compound annual growth rate for household arisings per person for the 5-year period 2014/15 to 2020/21 is 0.16% (short-term growth rate).

The next step is to add the average compound growth rates (for both the short and long-term) for household waste arisings per person to the household growth forecast supplied by Cumbria WDA. Table 3 presents the outcome of this.

Table 3: Household growth rate and the long and short-term growth rates in household waste arisings

	Household growth forecast	Long term household forecast (minus 0.20%) plus household growth forecast value	Short terms household forecast (plus 0.16%) plus household growth forecast value
2020/21	-	-	-
2021/22	0.26%	0.06%	0.42%
2022/23	0.29%	0.09%	0.45%
2023/24	0.26%	0.07%	0.43%
2024/25	0.24%	0.04%	0.40%
2025/26	0.17%	-0.03%	0.33%
2026/27	0.18%	-0.02%	0.34%
2027/28	0.20%	0.00%	0.36%
2028/29	0.20%	0.00%	0.36%
2029/30	0.16%	-0.03%	0.33%
2030/31	0.14%	-0.06%	0.30%
2031/32	0.15%	-0.05%	0.31%
2032/33	0.14%	-0.05%	0.31%
2033/34	0.16%	-0.04%	0.32%
2034/35	0.14%	-0.06%	0.30%
2035/36	0.13%	-0.06%	0.29%
2036/37	0.16%	-0.04%	0.32%
2037/38	0.15%	-0.04%	0.31%

This shows that while adding the projected growth in the number of households over the Plan period increases the projected growth in arisings for both the long and short-term growth rates in household waste per person, the long-term growth scenario remains negative (or zero) from 2025/26 to 2037/38.

For the purpose of this exercise, the long and short-term growth rate for household waste arisings has been applied to the baseline LACW arisings value for 2020 along with the following set of growth factors to create a cone of possibilities:

- DEFRA National Forecast of LACW at 5-year intervals;
- Historical LACW Growth of minus 0.75% per annum (see Table 2).

The predicted arisings applying the above growth rates to the most recent LACW arisings value for 2020/21 i.e. baseline, are plotted in Figure 6 below.

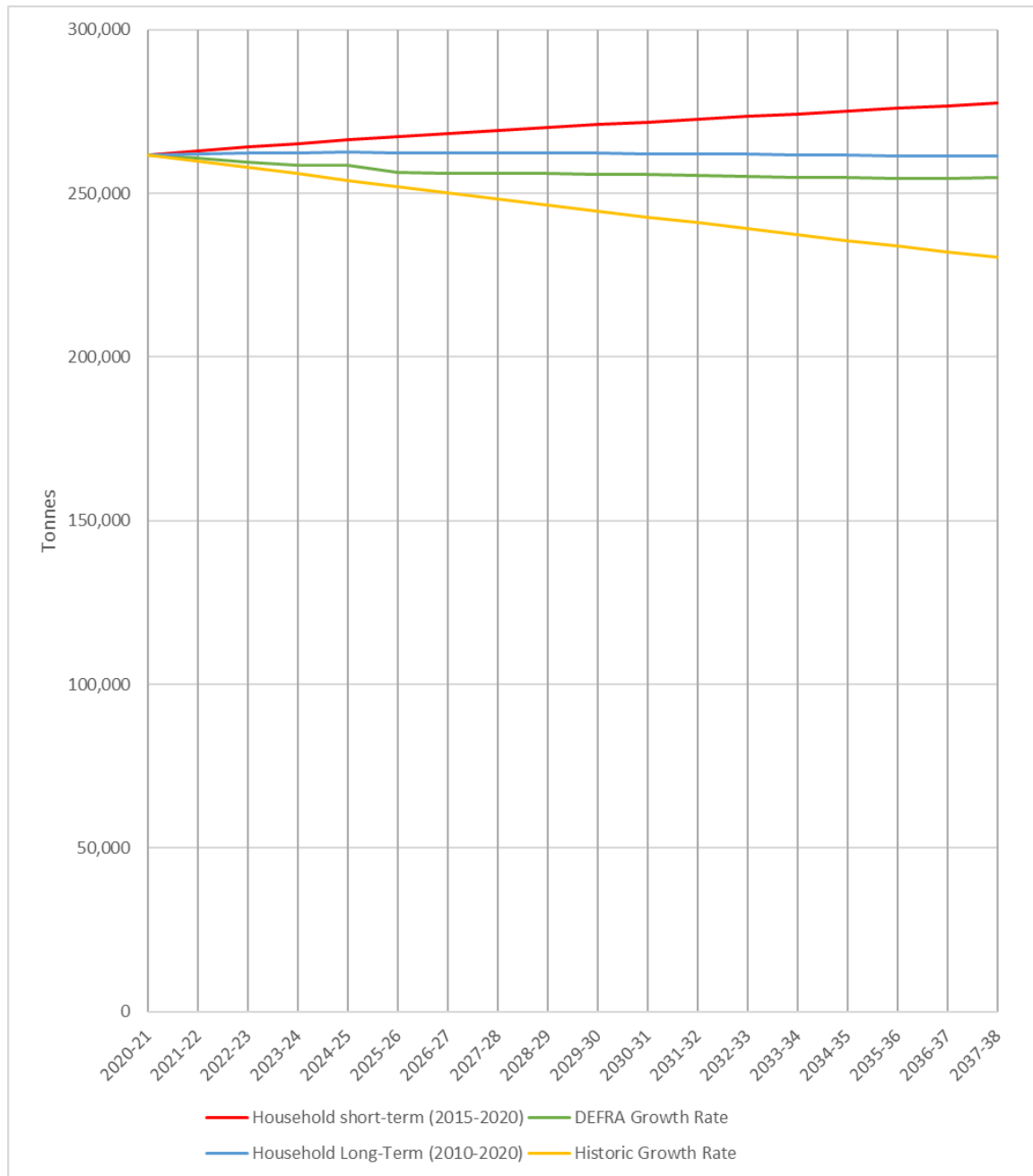


Figure 6: LACW arisings forecasts (using 2020/21 baseline)

The corresponding values are presented in Table 4 below.

Table 4: Initial forecast values for Cumbria LACW arisings (Tonnes)

	Historic Growth Rate projection	DEFRA Growth Rate	Household Long-Term arisings forecast	Household Short-Term arisings forecast
2020/21	261,827	261,937	261,937	261,937
2021/22	259,863	261,827	261,827	261,827
2022/23	257,914	260,717	261,996	262,937
2023/24	255,980	259,607	262,232	264,118
2024/25	254,060	258,497	262,405	265,242
2025/26	252,155	258,497	262,522	266,314
2026/27	250,264	256,276	262,451	267,199
2027/28	248,387	256,184	262,404	268,110
2028/29	246,524	256,092	262,416	269,086
2029/30	244,675	255,999	262,422	270,059
2030/31	242,840	255,907	262,333	270,938
2031/32	241,018	255,815	262,174	271,748
2032/33	239,211	255,539	262,044	272,590
2033/34	237,417	255,262	261,904	273,423
2034/35	235,636	254,986	261,795	274,293
2035/36	233,869	254,710	261,645	275,121
2036/37	232,115	254,434	261,476	275,932
2037/38	230,374	254,622	261,370	276,811

Three out of the four scenarios are showing a declining LACW trajectory. This suggests that the most likely zone within which the actual trajectory will fall will be bounded by the Household Short-Term growth (red line) and Historic Growth Rate (yellow line). Therefore, a value of around 255,500 tonnes at 2037 is considered most likely, which would equate to a minus 2.55% decrease over the Plan period and a waste per household factor of 1.09t/hh by 2037.

5.2 Relating forecasts to waste per household arisings

In order to gauge how realistic the proposed forecasts might be, the waste per household factors implied by each scenario at 2037 have been calculated and then compared against the actual waste per household factor in 2020 of 1.15t/hh. This is shown in Table 5 below.

Table 5: Waste per household factors implied by the chosen scenarios at 2037 compared to 2020 actual and the percentage change year on year implied (tonnes)

Forecast	Waste arisings per household factor at 2037 (t/hh)	Difference from actual in 2020 over 17 years (t/hh)	Percentage annual change
Historic	0.98	-0.17	-0.80%
DEFRA	1.09	-0.07	-0.16%
Long-Term Growth	1.12	-0.04	-0.01%
Short-Term Growth	1.19	0.03	+0.34%
Central value from cone of possibilities	1.09	-0.06	-0.15%

Findings

The findings from the comparison shown in Table 5 are as follows:

- The historic data scenario implies a reduction of 0.17 tonnes per household over the Plan period. This equates to a -0.80% fall per household year on year;
- the national DEFRA central forecast implies a reduction of 0.07 tonnes per household over the Plan period. This equates to a -0.16% fall per household year on year;
- the long-term growth scenario implies a reduction of 0.04 tonnes per household over the Plan period. This equates to a -0.01% fall per household per year;
- the short-term growth scenario implies an increase of 0.03 tonnes per household over the Plan period. This equates to a 0.34% rise per household year on year;
- the central value from the cone of possibilities forecast implies a reduction of 0.06 tonnes per household over the Plan period. This equates to a -0.15% fall per household year on year.

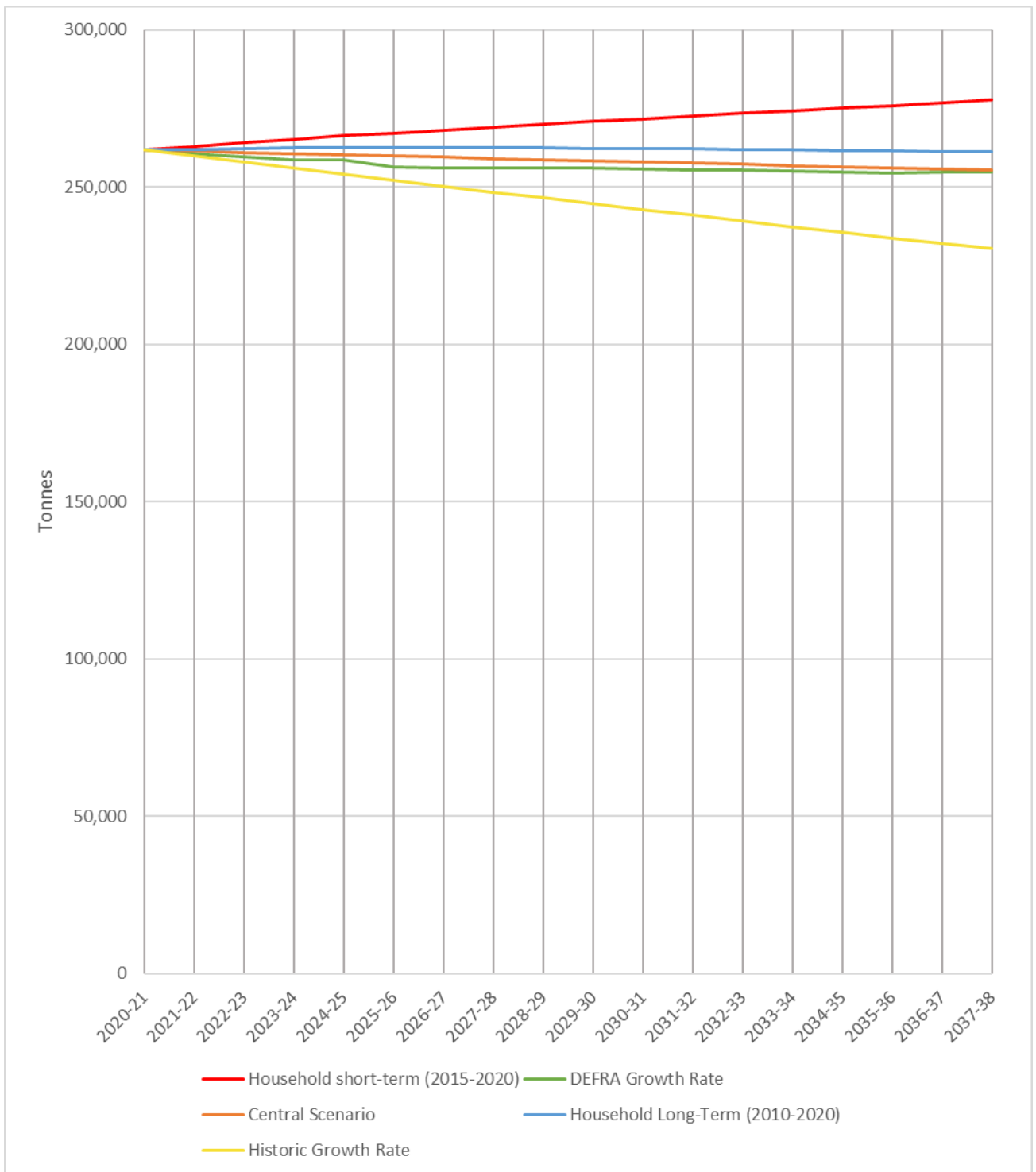


Figure 7: ‘Cone of Possibilities’ for LACW forecast with Central Scenario
(tonnes per annum)

The above analysis suggests a waste arisings per household year on year could vary between -0.80% and +0.34%. The cone of possibilities central forecast which predicts a fall in waste per household of -0.15% per year giving an overall a fall of c2.6% over the Plan period is considered to be the most realistic scenario. This yields the central scenario (Central Scenario – orange) shown in Figure 7.

Forecast Conclusion

Using the baseline arising value for 2020/21 and a ‘cone of possibilities’ central waste growth scenario generates a trajectory that tracks a path between the Household Short-Term growth and actual Historic growth trends in arisings. Therefore, it is recommended to apply this -0.15% per annum growth rate when considering future LACW capacity needs. Using this scenario results in projected LACW arisings by 2037 of c255,500 tonnes, a decrease of c7,000 tonnes on the 2020/21 value. The forecast arisings each year are shown in Table 6 below.

Table 6: Forecast LACW arisings each year using the preferred Central Scenario (tonnes)

	Preferred Central Scenario
<i>2020/21</i>	<i>261,827</i>
<i>2021/22</i>	<i>261,441</i>
<i>2022/23</i>	<i>261,054</i>
<i>2023/24</i>	<i>260,668</i>
<i>2024/25</i>	<i>260,281</i>
<i>2025/26</i>	<i>259,895</i>
<i>2026/27</i>	<i>259,508</i>
<i>2027/28</i>	<i>259,122</i>
<i>2028/29</i>	<i>258,735</i>
<i>2029/30</i>	<i>258,349</i>
<i>2030/31</i>	<i>257,963</i>
<i>2031/32</i>	<i>257,576</i>
<i>2032/33</i>	<i>257,190</i>
<i>2033/34</i>	<i>256,803</i>
<i>2034/35</i>	<i>256,417</i>
<i>2035/36</i>	<i>256,030</i>
<i>2036/37</i>	<i>255,644</i>
<i>2037/38</i>	<i>255,258</i>

6. Cumbria LACW Future Management Capacity Needs

Final Destinations (fates) and quantities of LACW managed at these destinations in 2020 are summarised in Table 7 below.

Examination of LACW management data reported in the WDF 2020 indicates the following:

- Of the c114,500t of LACW recycled, reused and composted, all source segregated recyclate (c34,000 tonnes) meets its final fate beyond Cumbria via aggregation points (either HWRCs or WTS) in Cumbria;
- Around 52,000t was composted, of which the majority was managed within Cumbria (c44,500t). No waste was sent to anaerobic digestion.
- Of the c212,000 tonnes of residual waste, the majority is managed at the two MBT facilities⁶ (c124,000t) within Cumbria with c23,500t sent to landfill within Cumbria and c61,000t sent as RDF outside of Cumbria (post MBT treatment).

Table 7: Final Fate Destinations and tonnages for Cumbria LACW arisings 2020 (500t+)

	Final Fate Destination Site	In Cumbria	Out Cumbria	Note
Residual Waste	Lancashire Waste Recycling	-	13,462	RDF for export
	Hapton Trading	-	47,555	
	Hespin Wood landfill	9,607	-	Landfill
	Flusco landfill	9,008	-	
	Bennett Bank landfill	4,926	-	
	Northern Resource Park	<i>68,858</i>	-	MBT
	Sowerby Wood Resource Park	<i>55,274</i>	-	
	Morris & Co Handlers		3,096	Residual MRF
Source Segregated Recycling	EMR		1,144	Metal recycling
	Sims Group		1,003	
	Latchford Locks Works		790	
	Mettalis Recycling		715	
	Palm Paper		3,474	Paper Recycling
	Shotton Works		2,151	
	Partington Paper Mill		1,877	
	Parry & Evans		1,712	
	U P M - Kymmene		1,699	
	Hyde House		621	
	Gary Catton Haulage		531	
	Biffa Polymers		595	
	Roydon Group		862	
	Manisty Wharf		7,215	Glass Recycling
	Glass Recycling (U K)		578	
	Junction Works		1,839	
	U R M (U K)		1,699	

⁶ Note that inputs to the two resource park MBT sites are italicised in Table 7 as they only provide intermediate treatment prior either to landfill or RDF so present a risk of double counting

	Parkwood Road		4,213	
	Newhouse Glass Recycling Facility		789	
	Salmon Pastures Transfer Station		529	
Mixed Green and Food Waste	Hespin Wood Landfill Site	24,230		Composting
	Iron House Farm		7,668	
	Sinkfall Farm	5,249		
	Wilson Put Yard	3,781		
	Agriorganics	11,252		IVC
Dry Mixed Recyclables	Hespin Wood	10,859		MRF
	Kingmoor Recycling Centre	2,739		
	Ormsgill Yard	2,163		
	Kendall Fell	31,486		
WEEE	Cumbria Recycling Ltd	1,476		WEEE Processing
	Morecambe Metals Ltd		3,903	
	South Canada Dock 3		1,205	
Rubble	Distington Landfill	2,246		Aggregate Recycling
	Diamond Yard	2,109		
Wood	Hespin Wood Landfill Site	1,578		Wood Recycling

7. Existing LACW Management Profile

To establish realistic future management targets which then informs future capacity requirements it is first necessary to understand how the LACW produced in Cumbria is currently managed. Table 8 below shows the management profile using 2020 data.

Table 8: Current LACW Management Profile in Cumbria
Source: DEFRA 2020

Route	Tonnes	%
Total Arisings	261,827	
Recycling/ Composting	129,712	49.5%
Energy from Waste following MBT	62,895	24%
Landfill	24,888	9.5%
<i>Intermediate treatment (MBT)</i>	<i>44,331</i>	<i>17%</i>

Table 8 shows that the actual percentage of LACW recycled/ composted stands at c50%, while the amount sent to Energy from Waste following MBT stands at 24% and landfill stands at c10%. The tonnage sent to MBT's standing at 17% represents the process loss arrived at by processing c124,000 tpa through two plants, so may be regarded as a final fate as it reduces the tonnage of LACW requiring onward management through a final fate.

8. Waste Management Targets

Having established the 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.

The national Resource & Waste Strategy, includes the following targets for municipal waste:

- 65% recycling by 2035; and
- 10% limit of landfilling by 2035.

LACW is all classed as municipal waste (along with waste of a similar nature). Therefore, the following targets shown in Table 9 below are proposed.

It should be noted that if the LACW currently managed through MBT, did not go to MBT the additional tonnage represented by the process loss would require management through other means. Given that there is an established trajectory for recycling/composting and landfill, it has been factored into the 'other recovery' requirement on a contingency basis. Therefore, the current amount of LACW managed at the MBT has been held constant to maximise the use of the MBT before use of other 'other recovery' capacity.

Table 9: Proposed Targets for LACW Management in Cumbria
Italicised entries are actual values

		Milestone Year				
		2020/21	2022/23	2027/28	2032/33	2037/38
Recycling/composting (floor)		<i>49.5%</i>	≥55%	≥60%	≥65%	≥70%
Other Recovery	MBT treatment⁷	<i>17%</i>	17%	17%	17%	0%
	Other Recovery⁸ (remainder)	<i>24%</i>	18%	15%	12%	26%
Landfill (ceiling)		<i>9.5%</i>	≤10%	≤8%	≤6%	≤4%

Applying the proposed targets to the preferred forecast gives the following capacity requirement in Table 10:

⁷ Based on values representing 'process loss' arrived at by processing c125,000tpa through two plants.

⁸ Based on maintaining the current diversion from landfill percentage of 73% as a minimum.

Table 10: Future Management Profile for Forecast Cumbria LACW Arisings (tonnes)

	Forecast Arisings	Recycling/ composting	MBT treatment	Other Recovery	Landfill
2020/21	261,827	129,712	44,331	62,895	24,888
2021/22	261,441	136,646	44,331	54,966	33,590
2022/23	261,054	143,580	44,331	47,038	26,105
2023/24	260,668	145,958	44,331	45,348	25,030
2024/25	260,281	148,337	44,331	43,658	23,955
2025/26	259,895	150,716	44,331	41,968	22,880
2026/27	259,508	153,094	44,331	40,278	21,805
2027/28	259,122	155,473	44,331	38,588	20,730
2028/29	258,735	157,813	44,331	36,921	19,670
2029/30	258,349	160,153	44,331	35,254	18,610
2030/31	257,963	162,493	44,331	33,588	17,551
2031/32	257,576	164,833	44,331	31,921	16,491
2032/33	257,190	167,173	44,331	30,254	15,431
2033/34	256,803	169,475	44,331	37,477	14,387
2034/35	256,417	171,776	11,083	44,699	13,343
2035/36	256,030	174,078	0	51,922	12,299
2036/37	255,644	176,379	0	59,144	11,255
2037/38	255,258	178,680	0	66,367	10,210

8.1 Capacity Requirements

Many types of waste processing facilities are capital intensive so are influenced by economies of scale in construction and operation. This results in fewer, larger, more sophisticated facilities being developed that may service larger than local i.e. sub-regional (or regional) markets. Therefore, plans to maintain or increase recycling rates may not necessarily involve provision of specific additional recycling separation capacity within Cumbria. Rather, provision of sites with space where materials can be bulked up for onward management at out of Plan area sub regional facilities, may be more deliverable. These may occupy a smaller footprint than a treatment facility and may be accommodated on existing waste transfer/depot type sites if space is available. The same might be said of food waste management capacity, where in county bulking capacity might feed out of county processing capacity.

This would leave the management requirement for residual waste as follows:

- Additional 'Other recovery' requirement taking the process loss contribution of the MBT plants only, of c55,000 tonnes at 2021/22 reducing to c30,500 tonnes in 2031/32 and then increasing to c66,500 tonnes at the end of the Plan period due to the cessation of use of the MBT plants in 2034. This is on the worst case basis that the MBT plants only provide a bulk reduction of LACW of c44,500 tonnes reducing to c11,000 tonnes in 2033 to account for the contract ending in June 2034; and
- cumulative non-inert landfill requirement of c348,000 tonnes over the Plan period (to 2037) with a peak annual demand of c34,000 tonnes reducing to c10,000 tonnes.

The implications of these requirements are considered further in the combined Capacity Assessment Report.