



Cumbria Waste Needs Assessment 2022

Management Requirements for Construction, Demolition and Excavation Waste in Cumbria

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Abbreviations

Abbreviation	Full Name
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
HWRCs	Household Waste Recycling Centres
LACW	Local Authority Collected Waste
LAA	Local Aggregate Assessment
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

Term	Definition
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.
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).
Local Aggregate Assessment	Annual local aggregate supply and demand assessment conducted by Mineral Planning Authorities which includes a survey of recycled aggregate producers within their particular Plan area.
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.
Materials Recycling Facility (MRF)	A facility for sorting recyclable materials from the incoming waste stream.
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.
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.
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.
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;
2. Commercial & Industrial Waste Management Requirements;
3. Construction, Demolition & Excavation Waste Management Requirements;
4. Hazardous Waste Management Requirements; and
5. Scoping Review of Other Waste Management Requirements.

This report is concerned with updating the Construction, Demolition and Excavation (C, D & E) 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 as follows:

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 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 Data Interrogator. Data is currently reported down to receiving local area rather than by receiving site. The HWI 2020 was released in February 2022.

Recycled Aggregate Survey Results

Cumbria County Council as Mineral Planning Authority produce an annual Local Aggregate Assessment (LAA) which includes a survey of all recycled aggregate producers in the Plan area. This is the primary source of data used to inform assessment of the quantity of C, D & E waste converted into recycled aggregate.

Exemption Register

Some waste operations are exempt from needing an environmental permit, thus are not required to submit returns to the Environment Agency. However, the number of exemptions registered in a Plan area can be established through the Environment Agency held exempt register. Specific to C, D & E waste is the 'U1'¹ exemption which can then be used alongside an estimation of quantity of waste managed under different exemptions in the WRAP 2013 report²

¹ The U1 permitting exemption covers the use of limited tonnages of specified inert waste in construction.

² Waste Resources Action Programme (WRAP), 2013, *Review of the Factors Causing Waste Soil To Be Sent To Landfill; 2007 to 2011*

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

Data Presentation

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, D & E Waste Baseline Arisings

2.1 Introduction

This section of the report is concerned with estimating current arisings for Construction, Demolition and Excavation (C, D & E) waste in Cumbria. From this, future arisings can be forecast from which appropriate targets can be proposed. The current C, D & E 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

The Cumbria Minerals and Waste Local Plan adopted in September 2017 defines C, D & E waste as follows:

“Arising from the construction, repair, maintenance and demolition of buildings and structures. It mostly includes brick, concrete, hardcore, subsoil and topsoil, but it can also include quantities of timber, metal and plastics. These wastes often arise with Excavation waste, in which case they are termed Construction, Demolition and Excavation (CD&E) wastes.” (Glossary)

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

- **‘Point of production’** method which uses data based on the construction activity within an area and applying waste production factors (related to the different types of activity such as new build and refurbishment) derived from Site Waste Management Plans (SWMP). Construction activity statistics data is no longer produced at a sub-regional level and so it is not possible to reliably replicate this method.
- **‘Point of management’** using data related to C, D & E waste managed. This relies on records of waste delivered to, and removed from, permitted waste management 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 unpermitted sites that don’t report through the WDI, such as the Environment Agency’s exemption register and recycled aggregate producers.

The Joint Cumbria WNA 2019 applied the ‘point of management’ approach to both the Construction & Demolition (CD) and Excavation (E) waste streams on an individual basis which generated baseline arising estimates of c204,000 and c587,500 tonnes respectively in the Plan area in 2017. This combines to make a total C, D & E waste baseline estimate value of around c791,500 tonnes in 2017.

3. Methodology

The national methodology for estimating annual waste generation from the Construction, Demolition and Excavation (C, D & E) Sectors for England (the 'Point of Management' method), uses information from four key management routes:

- 1) Waste managed at transfer and treatment facilities i.e. intermediate sites (reporting through Environment Agency WDI).
- 2) Waste managed by landfill (reporting through Environment Agency WDI).
- 3) Waste managed under certain exemptions from permitting.
- 4) Waste recycled as aggregate (from a national estimate prepared by the Mineral Products Association)

In order to assess C, D & E waste arisings at Plan area level the national methodology has been applied and modified to reflect local circumstances. In particular, the following modifications have been made:

- Values for Plan Area waste classed as C, D & E waste managed through permitted sites in 2020 as reported in the WDI with steps taken to avoid possible double counting and capture wastes that may have been reclassified as a consequence of processing through intermediate sites.
- The population of exempt sites registered in Cumbria has been established through the Environment Agency held exempt register. Then the estimated value for the quantity of waste managed at the key exemption managing C, D & E waste ('U1') from a government funded study³ was applied.
- The quantity of waste converted into recycled aggregate has been based on responses to an annual survey of recycled aggregate producers conducted by Cumbria County Council as part of the production of the Cumbria LAA cross referenced to the WDI 2020, rather than from national estimates produced by the Mineral Products Association.

The key steps in the methodology are:

- 1) Calculate inputs arising in Cumbria, to all permitted facilities applying European Waste Catalogue (EWC) codes selected for their inclusion of C, D & E waste
- 2) Deduct EWC codes relating to hazardous waste (this waste is accounted for in a separate report).
- 3) Quantify waste going to its final fate or leaving the Plan area.
- 4) Calculate the tonnage of C, D & E waste from the Plan Area treated within the Plan Area that may have been subject to reclassification following treatment.
- 5) Add figure for recycled aggregate adjusted for % input arising from Cumbria.
- 6) Calculate quantity of C, D & E waste managed at exempt sites.
- 7) Quantify and apportion waste managed at sites within Cumbria but not attributed to an area below regional level within the WDI.
- 8) Sum the above to gain an overall figure.

³ Referred to footnote 2

The detail of how this methodology has been applied is set out in the sections below.

C, D & E waste is taken to be comprised of wastes falling within the following List of Waste/European Waste Catalogue codes:

- Chapter 17 (Construction & Demolition Waste)
- 19 12 09 (minerals such as sand, stones)
- 20 02 02 (soil and stones).

A check has also been undertaken for any waste classified under EWC 19 13 02 as this includes remediated soils which should be included in the C, D & E waste arisings total⁴.

⁴ Note no waste of this type was reported as coming from Cumbria in the WDI 2020

3.1 Inputs to permitted waste management facilities

Step 1: Calculate the tonnage of C, D & E waste from Cumbria in the Environment Agency WDI sent to permitted sites.

The total quantity of C, D & E waste reported in the WDI 2020 as arising in Cumbria managed at permitted sites in 2020 was c778,500 tonnes. The breakdown in terms of management routes is shown in Table 1 below.

Table 1: C, D & E Waste Arising from Cumbria (tonnes)

Source: WDI 2020

	Landfill			Recovery to Land	Metal Recycling Sites	Transfer	Treatment	Grand Total
	Haz	Non-Inert	Inert					
Managed within Cumbria	0	68,301	3,302	76,982	610	118,853	492,860	760,908
Managed outside Cumbria	572	1,580	0	7,247	2,402	860	4,779	17,440
Totals	572	69,881	3,302	84,228	3,012	119,713	497,639	778,348

Step 2: Deduct EWC codes relating to hazardous component of C, D & E waste

Requirements for management of hazardous waste arising in Cumbria are accounted for in a separate report. Therefore, the hazardous waste component is deducted to avoid double counting. Of the inputs shown in Table 1, a total of 5,315 tonnes was identified as hazardous waste which when deducted gives a revised total of c773,000 tonnes. The amended values are shown in Table 2

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

Source: WDI 2020

	Landfill		Recovery to Land	Metal Recycling Sites	Transfer	Treatment	Grand Total
	Non-inert	Inert					
Managed within Cumbria	68,301	3,302	76,982	610	118,589	492,831	760,614
Managed outside Cumbria	653	0	7,247	2,402	648	1,468	12,418
Totals	68,954	3,302	84,228	3,012	119,237	494,299	773,032

Step 3: Quantify waste going to its final fate or leaving the plan area

Step 3a. C, D & E waste from Cumbria managed at permanent deposit sites.

As inputs to Landfill and Recovery to Land involve the permanent deposit of the waste, they are regarded as final points of management, so these values are taken as final as follows: 72,256 (combined landfill values in Table 2) + 84,228 (Recovery to Land value from Table 2) = 156,484 tonnes. Table 3 shows the initial C, D & E arising tonnage as a cumulative value.

Table 3: Non-hazardous (including inert) C, D & E Waste from Cumbria – Step 3a

Source: WDI 2020

Component	Value	Cumulative Total
Permanent Deposit	156,484	156,484

Step 3b. C, D & E waste from Cumbria managed at intermediate sites outside Cumbria

As shown in Figure 1 below waste from Cumbria managed at intermediate sites outside Cumbria ceases to be identified as coming from Cumbria following receipt at the intermediate management facility ('next step' site). Hence the tonnage managed at intermediate sites outside Cumbria is also taken to be a 'final value' as follows: 2,402 (out of plan area MRS from Table 2) + 648 (out of plan area transfer from Table 2) + 1,468 (out of plan area treatment from Table 2) = 4,518 tonnes. This is shown in Table 4.

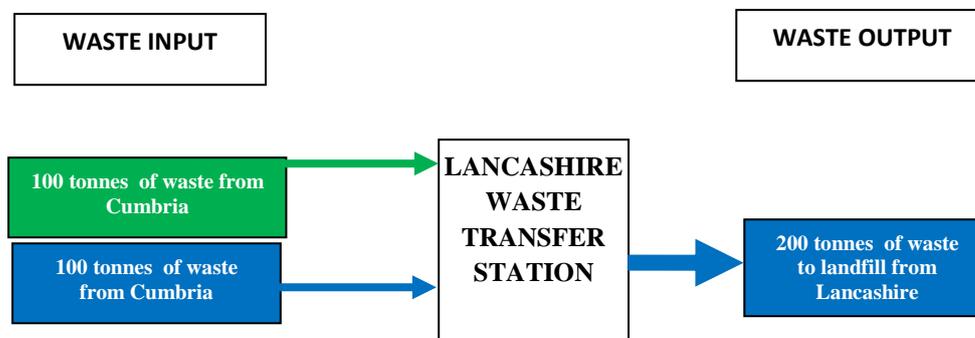


Figure 3: Schematic of how flows of Cumbria waste to sites outside Cumbria are reported in the WDI.

Table 4: Table 3 plus Cumbria waste managed at intermediate sites outside of Cumbria (tonnes) – Step 3b

Component	Value	Cumulative Total
Permanent Deposit	156,484	156,484
Managed out of Cumbria	4,518	161,003

Step 4: Calculate the tonnage of C, D & E waste from Cumbria treated in Cumbria that may have been subject to reclassification

Inputs to intermediate sites within Cumbria also need to be accounted for, however, these need to be further interrogated to ensure that this value does not:

- 1) double count inputs to intermediate sites that subsequently get managed at another site within Cumbria and hence over report arisings; nor
- 2) misses C, D & E waste that may have been classified under a non C, D & E waste EWC code following processing through these sites and hence under report arisings. This is because waste leaving an intermediate site may be reclassified as a waste from a waste management process (the relevant waste chapter is 'Chapter 19'). This is explained by the following example:

'Intermediate' Site 1 in the Plan Area receives 100 tonnes of Plan Area C, D & E waste. Following treatment e.g. sorting and some processing, the 100 tonnes gets split into:

- 25 tonnes of soil (classed as Chapter 17 waste) which is moved onto 'next step' Site 2 a Recovery to Land facility. The 25 tonnes of soil is therefore also recorded at the point of input to the Recovery to Land site as waste arising from the Plan Area (regardless of whether Site 2 is within or outside the Plan Area).
- 50 tonnes of recycled aggregate sold directly as a product and hence not recorded in the WDI. This is counted under the recycled aggregate value obtained via the annual local production survey for the Local Aggregates Assessment;
- 25 tonnes of waste now classed as Chapter 19 waste due to the incoming waste having been processed and then reclassified as waste from waste management processes. This will be received at the 'next step' site as waste arising from Cumbria but because it is classed as Chapter 19 it will not be identified as arising from the C, D & E waste stream unless this exercise is undertaken.

This is illustrated in Figure 2 below:

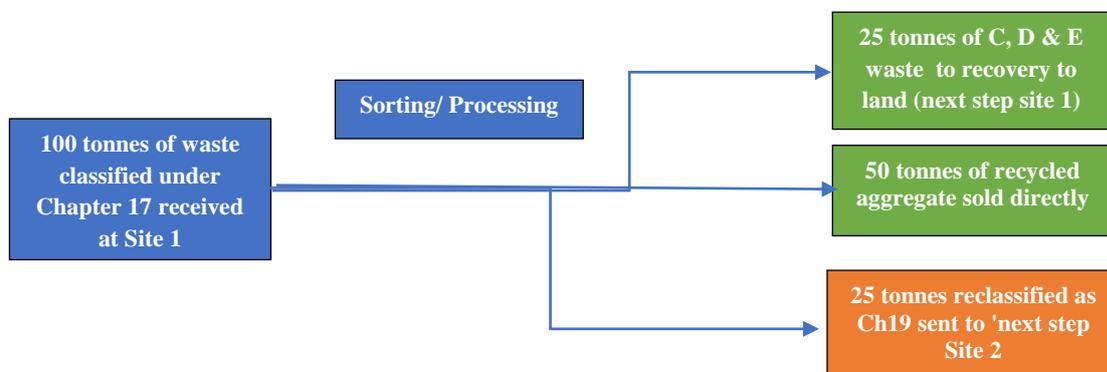


Figure 4: Schematic of intermediate site outputs to track Cumbria C, D & E waste fate.

Therefore, that element of Chapter 19 waste that came from intermediate sites in Cumbria that arose from C, D & E waste coming from the Plan Area needs to be estimated. This is done by identifying each intermediate site within the Plan Area that received C, D & E waste from the Plan Area that also reported Chapter 19 waste as an output. The proportion of the Chapter 19 output to be attributed to the Plan Area C, D & E waste input is determined as follows:

- 1) Did the site have a shortfall between the C, D & E waste received and removed?
- 2) Did the site have outputs classed under Chapter 19?
- 3) If yes then the percentage of total inputs attributed to Cumbria is applied to the outputs of Chapter 19 to give a Chapter 19 'makeup'.

NB: Where the Ch 19 output is greater than the shortfall, only the shortfall value is used. Where the shortfall can't be made up this may be taken to indicate that tonnages of C, D & E Waste are converted into recycled aggregate which is not generally declared on the permit waste returns as it has ceased to be waste.

Applying this method to the Cumbria Intermediate sites (Metal Recycling Sites⁵, Waste Transfer Stations & Waste Treatment sites) identified as both receiving C, D & E waste from Cumbria and producing Chapter 19 waste in 2020 yields the following:

Q1: 21 intermediate waste sites identified as receiving C, D & E waste from the Plan Area and having outputs classed under Chapter 19 of greater than 500 tonnes⁶.

Q2: Of these sites, 10 had outputs of waste classified as Chapter 19 as shown in Table 5.

Q3: The percentage inputs from Cumbria has been applied to the Chapter 19 outputs to give a total Chapter 19 makeup of 74,815 tonnes to be added to the cumulative C, D & E arising value as shown in Table 6.

⁵ No shortfall over 500 tonnes between CDE inputs and outputs was found for any MRS sites.

⁶ 500 tonnes is taken to be a tonnage regarded as significant for the purposes of this exercise.

Table 5: Intermediate sites within Cumbria with a shortfall between CDE inputs <500t also reporting an output of waste under Ch 19

Facility Type	Site ⁷	Shortfall <500t (tonnes)	Net Ch 19 produced (tonnes) WDI 2020	% C, D & E waste input from Cumbria	Ch 19 make up (tonnes) (amber box in Fig 2) (If net Ch 19>shortfall, then the shortfall value taken. If net Ch 19<shortfall then the net Ch 19 taken) % from PA*
Treatment	Goldmire Quarry	75,742	27,731	99%	27,562
	Hespin Wood Landfill	17,725	9,333	100%	9,333
	Hespin Woods MRF	1,414	10,754	100%	1,414
	Karen House	4,664	732	100%	732
	Land At Kingmoor Sidings	118,940	1,435	100%	1,435
Transfer	12 Shap Road Ind Estate	922	49	100%	49
	Coopers Yard	10,747	12,100	100%	10,747
	Kingmoor Park Rockcliffe Estate	43,483	37,524	39%	14,604
	Sandscale Park	9,830	7,980	100%	7,980
	Scarth Road	963	3,323	100%	959
	Total				74,815

Table 6: Table 4 plus Chapter 19 (Table 5) (tonnes) – Step 4

Component	Value	Cumulative Total
Permanent Deposit	156,484	156,484
Managed out of Cumbria	4,518	161,003
Cumbria intermediate site Ch 19	74,815	235,817

Step 5: Account for C, D & E waste converted into Recycled Aggregate

This section sets out how the calculation accounts for the quantity of C, D & E waste arising in Cumbria that is used to produce recycled aggregate. Once established, this quantity is included in the overall calculation of C, D & E waste baseline arisings value.

Cumbria County Council as the Minerals Planning Authority for Cumbria conducts an annual Survey which reports on how much aggregate is produced and sold and how this relates to the demand for aggregate to inform production of the annual Local Aggregate Assessment (LAA). This includes a survey of recycled aggregate producers of the quantity of recycled aggregate sold that may have originated from amongst other sources the C, D & E waste stream. This equated to 188,938 tonnes in the 2020 LAA survey.

⁷ 4 of these sites were also found to be producing recycled aggregate from C, D & E input which is accounted for in a later step.

The value presented in the 2020 LAA survey for recycled aggregate production has been adjusted for the % inputs attributed to Cumbria for those sites that also appear in the WDI (where they did not appear, the value reported in the LAA survey has been taken in full). For 2020 this amounted to 173,783 tonnes⁸.

For those sites that had not responded to the LAA survey, 5 sites had responded in previous years survey and so the previous year value was taken after sense checking against the WDI 2020 'mass balance' value. For 1 site, the previous years survey response was taken and was adjusted for the % input from Cumbria. This amounted to 10,806 tonnes. For the remaining 4 sites, the 'mass balance' value was taken as a more representative value for the total amount of recycled aggregate produced. This amounted to 215,870 tonnes.

To account for the sites that had not responded to the LAA survey, reference was made to the list of recycled aggregate main processing facilities listed in the Joint Annual Local Aggregates Assessment 2019 report and the 'mass balance' value was taken. This was the case for 5 sites which amounted to 94,004 tonnes in 2020. Further to this, two sites were not listed in the latest Joint Annual Local Aggregates Assessment, but on further inspection are in fact sites processing waste into recycled aggregate. This included 1 site that appeared in the 'mass balance' exercise which amounted to 4,479 tonnes in 2020 and 1 site that has permission to process recycled aggregate with inputs of 23,253 tonnes in the WDI 2020⁹. When these values are added to the values obtained for the recycled aggregate survey respondents, it gives a total of 522,196 tonnes.

When the amount managed at the recycled aggregate sites is added to the cumulative C, D & E arising value it gives a total of 758,013 tonnes as shown in Table 7 below:

Table 7: Table 6 plus Recycled Aggregate (tonnes) – Step 5

Component	Value	Cumulative Total
Permanent Deposit	156,484	156,484
Managed out of Cumbria	4,518	161,003
In Cumbria intermediate site Ch 19	74,815	235,817
Recycled Aggregate	494,464	758,013

Step 6: Account for waste managed at exempt sites managing C, D & E waste

The national Planning Practice Guidance (nPPG) advises that: "...when forecasting construction and demolition waste arisings, the following may be relevant:

- *the fact that a sizeable proportion of construction and demolition waste arisings are managed or re-used on-site, or exempt sites, so it is critical that some provision is made for unseen capacity in this way.* (emphasis added)

⁸ Of the 6 sites that responded to the LAA survey in 2020, 4 also reported through the WDI.

⁹ Note the 'mass balance' method was not used here due to a greater amount of outputs from the site than inputs which is likely due to stockpiling at the site.

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Regulations were introduced in 2011 which dramatically reduced the maximum quantities of waste that could be managed by activities for which exemptions rather than environmental permits could be relied upon and so the quantity of C, D & E waste managed through exempt activities has reduced substantially. However, as the quantification of waste going to certain exemptions is specifically referred to in the nPPG it is still considered appropriate to give consideration to the contribution some activities may make to management of this stream, and hence to the calculation of arisings, albeit in a substantially reduced quantity.

Activities registered under Paragraph U1 (use of waste in construction) potentially account for the management of the most significant quantities of C, D & E waste by registered exemptions. A government funded report produced in 2013¹⁰ estimated a mean value for the quantity of waste managed by an activity registered under U1 as 600 tonnes.

The following steps ensure that C, D & E waste managed by activities registered under paragraph U1 is taken into account in the assessment of C, D & E waste arisings in Cumbria. The number of U1 exemptions registered in Cumbria involving waste being used at a location other than a farm in 2020 was 34¹¹.

Applying the value of 600 tonnes per exemption, it is estimated that the total quantity of C, D & E waste managed by such activities in the Plan Area is 20,400 tonnes which is added to the cumulative C, D & E waste arising value as shown in Table 8 below:

Table 8: Table 7 plus Exemptions (tonnes)

Component	Value	Cumulative Total
Permanent Deposit	156,484	156,484
Managed out of Cumbria	4,518	161,003
In Cumbria intermediate site Ch 19	74,815	235,817
Recycled Aggregate	522,196	758,013
Exemptions	20,400	778,413

Step 7: Account for unattributed below regional level C, D & E waste

The WDI 2020 reports two Cumbria sites as having received inputs of C, D & E type waste not coded below regional level. A factor has been applied to the unattributed C, D & E waste based on the percentage of total C, D & E inputs already attributed to Cumbria received at these sites as shown in Table 9.

¹⁰ WRAP, 2013, *Review of the Factors Causing Waste Soil To Be Sent To Landfill*; 2007 to 2011

¹¹ The exemption registration process asks if the activity is taking place "on a farm". It has been assumed that "on farm" U1 exemptions only involves agricultural waste and to verify this assumption a simple visual check was done whereby any exemptions that may have been registered by construction waste management companies might be identified. One site was apparent, so has been included.

Table 9: C, D & E Waste inputs to Cumbria sites not attributed below regional level

Site	Tonnes Received uncodeable below Regional Level	% of total C, D & E inputs actually from Cumbria	Derived Value (tonnes)
Hespin Wood (A.W. Jenkinson Woodwaste)	788	25%	195
Unit A, Site 6, Rockcliffe Estate (North West Recycling Ltd)	1,777	85%	1,492
Total			1,687

This gives a total unattributed waste attributed to Cumbria of 1,687 tonnes which is added to the cumulative C, D & E arising value as shown in Table 10 below.

Table 10: Table 8 plus unattributed waste (tonnes)

Component	Value	Cumulative Total
Permanent Deposit	156,484	156,484
Managed out of Cumbria	4,518	161,003
In Cumbria intermediate site Ch 19	74,815	235,817
Recycled Aggregate	522,196	758,013
Exemptions	20,400	778,413
Unattributed waste	1,687	780,101

Step 9: Accounting for misattributed tonnage.

It was found that c1,000 tonnes of C, D & E waste was being reported as being sent for incineration outside of Cumbria in the WDI 2020. After closer inspection it was found that the waste was plasterboard containing gypsum that was being recycled rather than sent for incineration. Thus 1,000 tonnes has been added to the cumulative C, D & E arising value as shown in Table 11 below:

Table 11: Table 10 plus misattributed waste (tonnes)

Component	Value	Cumulative Total
Permanent Deposit	156,484	156,484
Managed out of Cumbria	4,518	161,003
In Cumbria intermediate site Ch 19	74,815	235,817
Recycled Aggregate	522,196	758,013
Exemptions	20,400	778,413
Unattributed waste	1,687	780,101
Misattributed waste	1,000	781,101

The outcome of this process is a baseline value of **c781,000 tonnes** of C, D & E waste generated in Cumbria in 2020. This compares with a combined C, D & E waste value of c791,500 tonnes in 2017.

4. Forecasting Future C, D & E Waste Growth

The nPPG states when looking to forecast C, D & E waste:

“Waste planning authorities should start from the basis that net arisings of construction and demolition waste will remain constant over time as there is likely to be a reduced evidence base on which forward projections can be based for construction and demolition wastes.”

Hence the starting point for any assessment is that there will be no growth in arisings in the forecast period. However, comparison between the 2017 and 2020 value indicates that a negative growth rate might be justified. This may be attributed to the following factors:

1. the cost pressure to minimise material wastage and off-site management;
2. the use of Site Waste Management Plans as industry best practice;
3. the reduction in utilisation of bulky building materials in the building stock resulting in less waste during demolition e.g., Victorian housing with internal brick wall replaced by housing utilising stud walls;
4. increasing use of recycled aggregates in construction encouraging onsite processing of C, D & E waste arisings using mobile crushers which aren't counted in the method used to derive the baseline value;
5. increased reliance on the CL:AIRE Definition of Waste Code of Practice (DoW CoP) enabling excavation material from large construction sites to be managed outside the permitting system and without it ever actually being counted as waste.

Given the above factors, a drop in arisings per housing unit might be expected, which is also true given the forecast growth in housing in Cumbria is expected to be modest, therefore waste from that element of construction activity may not be a major source of C, D & E waste going forward. However, the downward pressure may be counteracted to some degree by the planned major infrastructure in the county¹². It is therefore considered that a zero-growth rate as per nPPG advice is appropriate.

¹² Cumbria Minerals and Waste Local Plan 2015-2030 refers to 2.5 million cubic metres of excavation spoil may arise as a result of developments such as new nuclear build and the associated upgrade of the National Grid network under the North West Coast Connections project. How much of this spoil will require offsite management is unknown. However, neither of these projects will now be going forward.

5. Profiling the Existing C, D & E Waste Management Methods

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

Backfilling of mineral workings

The WDI allocates tonnages to sites by permit category granted by the Environment Agency. Where a site involving the permanent deposit of waste to land has been determined by the Agency to not qualify for a recovery to land environmental permit under its guidance, it will be classed as a landfill. In that situation inputs to sites involving backfilling of mineral workings are classed against the landfill category in the WDI. However, given that activities such as backfilling of mineral workings are classed as recovery according to Government guidance on the waste hierarchy, and sites where this takes place may be classed as a landfills for permitting purposes, there is a mismatch between the values shown as having gone to landfill and the activity based targets that may be set out in the Waste Local Plan. Table 12 sets out how the datasets for those sites have been disaggregated to distinguish a disposal to landfill value and recovered value (assuming that all inert waste have actually been used in restoration or to meet operational needs and therefore do not represent disposals).

Table 12: Allocation of Quantities to Management Categories for Cumbria C, D & E Waste in 2020

Non Inert Landfill (Table 2)		Inert Landfill (Table 2)	Recovery to Land (Table 2)	Exemptions (Table 8)
Non inert	Inert	3,302	84,228	20,400
329	68,625			
Disposed to Landfill	Assumed to be Recovered			

Table 12 shows that the vast majority of waste received at non-inert landfill was in fact inert material; mainly soils and stones classed under EWC 17 05 04. Given the relatively low gate fee charged for this material relative to non-inert waste, much of this is likely to be used as restoration material including backfilling of a mineral working so ought to be classed as recovery even though the receiving site has not qualified for a recovery environmental permit.

Table 13 presents the management profile arrived at using the 2020 baseline of 781,101 tonnes.

Table 13: C, D & E Waste Management Profile Actual Data 2020

Route	Purpose	Tonnes	% of known
Recycling & Reuse	Recycled Aggregate (Table 7)	522,196	67%
	Plasterboard for recycling (Table 11)	1,000	
	Subtotal	523,196	
Recovery	Exemptions	20,400	23%
	Use of Waste/ Recovery to Land	84,228	
	Inert landfill + inert waste to non-inert landfill	71,927	
	Subtotal	176,555	
Non-Inert Landfill	Disposals to non-inert landfill	329	9%
	Chapter 19 outputs (95% to landfill)	71,074	
	Subtotal	71,403	
Unknown	Treatment (remainder)	9,947	1%
	Total	781,101	

Table 13 gives the following management profile for C, D & E waste arising in Cumbria in 2020:

- 67% re-used and recycled;
- 23% recovered in some other way;
- 9% landfilled;
- 1% to treatment (unknown)

5.1 C, D & E Waste Composition

The principal distinction in the C, D & E waste stream in terms of management (and so targets) is between inert and non-inert materials, with a further possible distinction between hard and soft inert materials. By considering what type of material would be suitable for which component of the management profile shown in Table 13 above, it is possible to arrive at an indicative breakdown by material type shown in Table 14. This can inform the setting of appropriate targets as some types of material are only suited to some types of management method. For example, only hard inert material can be converted into recycled aggregate, and generally material used in backfill will be soils and sub-soils.

Table 14: C, D & E Waste Composition from Management Profile Actual Data 2020

Hierarchy Tier	Management Route	Inert		Non Inert/ Mixed
		Hard	Soft	
Recycling/Reuse	Recycled Aggregate	522,196	0	0
	Plasterboard	0	0	1,000
Other Recovery	Exemptions	0	20,400	0
	Use of Waste/ Recovery to Land	0	84,228	0
	Inert Landfill + inert waste to non-inert landfill	0	71,927	0
Disposal	Non-Inert Landfill	0	0	329
	Chapter 19 outputs	0	0	71,074
Unknown	Treatment	0	0	9,947
	Totals	522,196	176,555	82,350
	Breakdown	67%	23%	10%

In the absence of specific data, all waste going to 'Treatment' has been assumed to be non-inert. This gives an overall inert content of 90%, with 10% being non-inert.

6. Management Targets

The revised EU Waste Framework Directive set a minimum target of 70% by weight of non-hazardous for Construction & Demolition waste prepared for re-use, recycling and other material recovery by 2020¹³.

It should be noted that:

- Backfilling operations using waste to substitute other fill materials may be counted towards the target. i.e. backfilling of mineral workings may be classed as recovery.
- Naturally occurring material categorised under EWC 17 05 04 (soil & stones) is excluded from the target. i.e. its use is unconstrained by targets.

The current profile arrived at for 2020 shown in Table 13 (Yr 0) shows that an 90% recycling, reuse and other recovery rate is already being achieved in Cumbria. This suggests that at least 85% re-use, recycling and other recovery is achievable through the Plan period, if not more, thus a 'floor' of 85% C, D & E waste management target is proposed to be set through to 2037, with a reducing 'ceiling' on landfilling. The remainder is shown to be managed through treatment that may for example reduce the quantity of inert material present in trommel fines disposed to landfill (increasing the tonnage of inert material recovered). Hence treatment is an intermediate step between recovery and disposal to landfill.

Table 15: Proposed targets for C, D & E Waste Management

Component		Yr0 (2020)	Yr5 (2022)	Yr10 (2027)	Yr15 (2032)	Yr20 (2037)
Inert	Recycled Aggregate					
	Recovery to Land inc exemptions and inert landfill	90%	≥85%	≥85%	≥85%	≥85%
Non-inert	Treatment	1%	4%	7%	10%	13%
	Remainder to Landfill	9%	≤8%	≤6%	≤4%	≤2%

6.1 Projected Management Requirement for Cumbria's C, D & E Waste

Applying the management targets in Table 15 to the updated baseline value gives the predicted management requirement at each of the Plan Milestone years shown in Table 16. For example, the non-inert management target in Table 15 for 2032 of 10% has been applied to the Cumbria baseline value to give c78,000 tonnes of non-inert C, D & E for treatment.

¹³ The UK Government has committed to achieving targets set in the revised Waste Framework Directive even though the UK has now left the EU.

Table 16: C, D & E Waste Targets Applied to Forecast at Plan Milestone years (tonnes)

Component	2020	2022	2027	2032	2037	Diff
Inert	702,991	≥640,000	≥640,000	≥640,000	≥640,000	-
Non-inert Treatment	7,811	31,000	55,000	78,000	102,000	+94,000
Remainder to Landfill	70,299	≤62,500	≤47,000	≤32,000	≤16,000	-55,000

Table 16 shows management capacity for inert waste will need to remain at least at 640,000 tonnes over the plan period for the proposed target or floor to be met, while the ability to treat at least c102,000 tonnes of non-inert waste will be required by the end of the plan period. If the residual component of the C, D & E waste stream goes to landfill in accordance with the targets or ceiling, this represents a cumulative non-hazardous landfill requirement of c762,000 tonnes to the end of the Plan period as shown in Table 17 below. This material is less suited to diversion to EfW due its less combustible nature, but is suited to pre-treatment to reduce its quantity over time.

Table 17: Projected Residual C, D & E Waste Non Haz Landfill Requirement (tonnes)

Year	Tpa	Tonnes Cumulative
2020	70,299	70,299
2021	66,394	136,693
2022	62,488	199,181
2023	59,364	258,544
2024	56,239	314,784
2025	53,115	367,898
2026	49,990	417,889
2027	46,866	464,755
2028	43,742	508,496
2029	40,617	549,114
2030	37,493	586,607
2031	34,368	620,975
2032	31,244	652,219
2033	28,120	680,339
2034	24,995	705,334
2035	21,871	727,205
2036	18,746	745,951
2037	15,622	761,573