

City of Bradford Metropolitan District Council

Waste Capacity Study

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Date: 25.07.2024

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Waste Capacity Study

City of Bradford Metropolitan District Council

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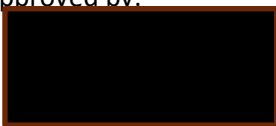
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About Anthesis

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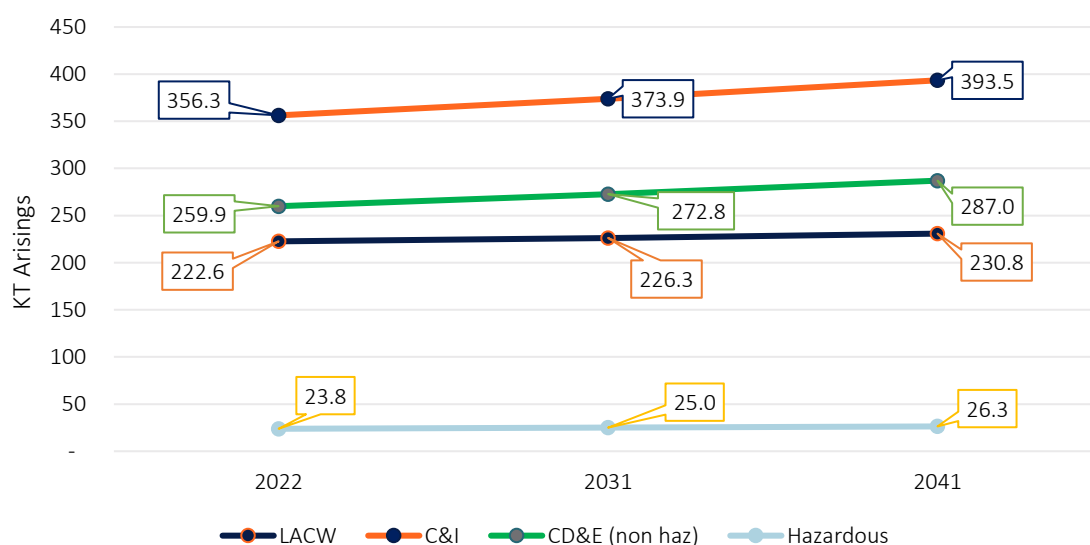
Our team combines broad and deep sustainability expertise with the commercial and operational capabilities it takes to conceive and deliver real change.

Executive Summary

City of Bradford Metropolitan District Council (CBMDC) commissioned Anthesis to undertake a waste capacity gap assessment for the authority, to provide robust supporting evidence for the Bradford District Local Plan.

Using the most recently publicly available datasets, the total amount of waste generated in Bradford District in 2022 was estimated to be 862,800 tonnes as per the below graph, formed of the constituent waste streams – local authority collected waste (LACW), commercial and industrial (C&I), construction, demolition and excavation (CD&E), hazardous and agricultural waste. Note agricultural waste is not shown on the graph below as quantities are too small to display.

Summary of Projected Waste Arisings in Bradford 2022, 2031 and 2041



The 2022 baseline figures were used as the starting point for projecting arisings to 2041, in line with the new Local Plan time horizon. Projecting future arisings was completed using assumptions around waste growth and future recycling performance. By 2041 there is projected to be 393,460 tonnes of C&I waste, 230,840 tonnes of LACW, 287,040 tonnes of CD&E waste and 26,340 tonnes of hazardous waste arising in Bradford, as per the above graph. Due to the low volume of agricultural waste, arisings were projected to remain the same as 2022 by 2041 at 124 tonnes.

Existing and planned waste treatment capacity in Bradford was then identified and compared to the projected arisings to establish Bradford District's potential waste treatment capacity gap.

The analysis suggests that there is a capacity gap within Bradford District over the Local Plan period (to 2041) for residual C&I and LACW, recyclable C&I and LACW, CD&E waste and hazardous waste. Bradford should consider the provision of capacity within the district in order to address the capacity gap and identify sufficient opportunities to meet the identified capacity gaps, ensuring that the sites and areas are suitable for the provision of waste management facilities and are in appropriate locations.

CBMDC is both an importer and exporter of waste and therefore should continue to engage with WPAs within the region, and others receiving significant tonnages of waste from the Bradford District. If not already underway, joint evidence bases or studies could be considered, recognising that waste does travel beyond local authority boundaries and a regional approach may best identify the waste capacity needs at a regional level, allowing for more specific provision to be made at a local level.

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1 Introduction & Background

1.1 Background

City of Bradford Metropolitan Council commissioned Anthesis to undertake a waste capacity gap assessment for the authority, to provide robust supporting evidence for the Bradford District Local Plan.

This report for Bradford District is underpinned by a waste model, which considers baseline waste arisings (2022) as well as projections to 2041 in line with the new Local Plan time horizon for the following waste streams:

- Local authority collected waste (LACW);
- Commercial and industrial waste (C&I);
- Construction, demolition and excavation waste (CD&E);
- Hazardous waste;
- Agricultural waste;
- Low Level Radioactive waste; and
- Waste water.

The model also includes existing and planned waste treatment capacity, thus allowing a 'capacity gap' profile to be generated, which represents the difference between the projected waste arisings needing treatment and the known capacity of facilities within the district to deliver treatment. The resulting capacity gap should be considered when planning for any additional treatment capacity in Bradford.

1.2 Scope of this Report

This report is structured as follows:

- **Section 1** (this section) provides background for the study.
- **Section 2** provides the planning policy context underpinning the evolution of waste capacity gap figures calculated for Bradford district. This includes an overview of national, regional, local and emerging legislation and policy relevant to waste planning in England.
- **Section 3** describes the methodology used to calculate the current waste arisings and future projected waste arisings.
- **Section 4** provides the current waste arising estimates.
- **Section 5** provides the projected waste arisings estimates.
- **Section 6** describes the current and future waste treatment capacity gaps for the district.
- **Section 7** outlines additional cross-boundary considerations.
- **Section 8** draws a summary and conclusions.
- **Section 9** the appendix provides high and low recycling rate scenario results and lists the sites included in Bradford's waste treatment capacity estimates.

2 Planning Policy Context

City of Bradford Metropolitan District Council (CBMDC) is currently developing a new Local Plan, an important document that will set out how the authority will meet the District's future social, economic and environmental needs. It will be used to assess all planning applications and development proposals.

In developing the Local Plan, CBMDC must comply with national, regional and local planning policies. With regards to waste, these are summarised below:

2.1 International Planning Policy for Waste

The most significant sources of drivers in waste management over the past decades have been European Union Directives transposed into UK law. The revised Waste Framework Directive (Directive 2008/98/EC)¹ sets targets for the management of certain waste streams. In addition, the Landfill Directive (Directive 1999/31/EC)² specifically relates to the management of waste by landfill. The Waste Framework Directive set a target of 50% recycling for household and similar waste by 2020, and a target to reuse, recycle or recover 70% of non-hazardous construction and demolition waste (excluding natural soil) by 2020. The Landfill Directive requires the diversion of biodegradable household and similar waste from landfill to 35% of the total (by weight) in 1995 by 2020. The Waste Framework Directive also enshrined the application of the 'waste hierarchy' priority order into law, meaning waste should be managed as high up the hierarchy as possible, as per Figure 1.

Figure 1 Waste Hierarchy Diagram (Waste Framework Directive, 2023)



¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098>

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31999L0031>

Alongside the waste framework directive, the EU Circular Economy Package (CEP)³ adopted by the UK Government⁴ in 2020 increased the recycling targets for municipal (household and similar) waste in the Waste Framework Directive to 55% by 2025, 60% by 2030 and 65% by 2035, alongside amending the Landfill Directive to set a maximum of 10% of household and similar waste to landfill by 2035 (i.e. 90% landfill diversion). This revision to the Waste Framework Directive also established the principles of ‘self-sufficiency’ and ‘proximity’, which requires Member States to “establish an integrated and adequate network of waste disposal installations and of installations for recovery of mixed municipal waste collected from private households.” The requirement includes municipal wastes and those of a similar composition from other producers. The network of waste management infrastructure must enable waste to be disposed of or be recovered at one of the nearest appropriate facilities by means of the most appropriate methods and technologies, to ensure a high level of protection for the environment and public health. In this way, the network should enable the community as a whole to become self-sufficient in waste disposal and recovery.

In addition to the basic principles of the directive, Article 28 also requires each Member State to prepare a Waste Management Plan. In order to achieve this requirement in the UK, the Waste Management Plan for England was published in December 2021⁵ and a new Resources and Waste Strategy was published at the end of 2018⁶. The National Planning Policy for Waste (NPPW)⁷, published in October 2014 also forms part of the Waste Management Plan for England, setting out the national policy context for waste planning. When adopted, the Local Plan will also comprise part of the overall Waste Management Plan for England, as all Waste Development Plan Documents do.

2.2 National Planning Policy for Waste

The Waste (England and Wales) Regulations 2011⁸ transposed the EU Waste Framework Directive into UK legislation and set requirements for the collection, transport, recovery and disposal of waste. This framework is supported by other legislation and planning documents including:

- **The Environmental Permitting (England and Wales) Regulations 2016⁹** transposed provisions of 15 EU Directives which impose obligations required to be delivered through permits or capable of being delivered through permits, including waste management facilities.

³ https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en#:~:text=It%20targets%20how%20products%20are,for%20as%20long%20as%20possible.

⁴ [https://www.gov.uk/government/publications/circular-economy-package-policy-statement/circular-economy-package-policy-statement#:~:text=The%20Circular%20Economy%20Package%20\(%20CEP,for%20waste%20management%20and%20recycling.](https://www.gov.uk/government/publications/circular-economy-package-policy-statement/circular-economy-package-policy-statement#:~:text=The%20Circular%20Economy%20Package%20(%20CEP,for%20waste%20management%20and%20recycling.)

⁵ <https://www.gov.uk/government/publications/waste-management-plan-for-england-2021>

⁶ <https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england>

⁷ <https://www.gov.uk/government/publications/national-planning-policy-for-waste>

⁸ <https://www.legislation.gov.uk/uksi/2011/988/contents/made>

⁹ <https://www.legislation.gov.uk/ukdsi/2010/9780111491423/contents>

- **The National Planning Policy Framework (NPPF)**¹⁰, first published in 2012 and revised in 2018, 2019 and 2023, effectively replaced the previous National planning policy system. The NPPF includes minimising waste as an environmental objective (paragraph 8c) and specifies that plans should set out strategic policies for matters including waste management (paragraph 20), alongside stipulating that it should be read in conjunction with the National Planning Policy for Waste (NPPW)¹¹. The NPPW defines strategic principles for waste planning policy development and sets out considerations when determining planning applications for waste management facilities. The NPPW maintains the premise of driving waste up the waste hierarchy. Sitting alongside the NPPW is the national Planning Practice Guidance (PPG) for Waste¹², which details how the Government's policy on waste is to be interpreted/applied in practice.
- **The Resources and Waste Strategy 2018**⁶ highlights the Government's priorities to achieve a circular economy as part of the transition to a sustainable economy. It builds on measures in the 25-year Environment Plan and Clean Growth Strategy and sets out how the stock of material resources is to be used sparingly by minimising waste and promoting resource efficiency.
- **National Policy Statements (NPS)**¹³. NPS provide the primary basis for decisions on applications for certain defined nationally significant infrastructure projects (NSIP), determined by the Infrastructure Planning Unit within the Planning Inspectorate on behalf of the Secretary of State. The NPS may also be a material consideration in decision making on applications that are to be determined by the waste planning authorities under the Town and Country Planning Act 1990 (as amended). Whether, and to what extent, the NPS are material, are assessed on a case-by-case basis. Those most relevant to waste management are listed below:
 - EN-1: Overarching National Policy Statement for Energy (2011)
 - EN-3: National Policy Statement for Renewable Energy Infrastructure (2011)
 - National Policy Statement for Hazardous Waste (2013)
 - National Policy Statement for Waste Water (2012)

2.3 Duty to Co-operate

Waste is a strategic cross-boundary issue and is subject to the Duty to Cooperate¹⁴. This is a mechanism for Local Planning Authorities (LPAs) to engage with each other on key strategic cross boundary planning issues including waste movements between their areas to establish if there are any planning reasons why these exports and imports cannot continue. The Duty requires local

¹⁰ <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

¹¹ <https://www.gov.uk/government/publications/national-planning-policy-for-waste>

¹² <https://www.gov.uk/guidance/waste>

¹³ <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-national-policy-statements>

¹⁴ <https://www.gov.uk/guidance/waste#:~:text=Waste%20is%20a%20strategic%20issue,management%20facilities%20is%20in%20place.>

planning authorities to “consider joint approaches to plan making, evidence gathering and infrastructure planning”.

The Duty to Cooperate statement requires close collaboration with neighbouring local planning authorities and various public bodies.

The Yorkshire & Humber Waste Technical Advisory Body consists of seventeen Waste Planning Authorities in the region and the Environment Agency. It was established in 2014 with an aim to improve co-ordination on waste planning issues and to meet the requirements of the duty to cooperate. The body also works closely with neighbouring authorities on cross-boundary planning issues, including waste at the sub-regional and regional levels. They also engage with the West Yorkshire Combined Authority, Local Enterprise Partnerships, and Local Nature Partnerships.

2.4 Local Planning Policy

The local planning policy framework for sustainable waste management in Bradford consists of the *Bradford Local Plan Core Strategy (2017)*, the *Shipley and Canal Road Corridor Area Action Plan (AAP) (2017)* and the *Waste Management DPD (2017)*.

The Bradford Local Plan Core Strategy provides a strategic planning framework and spatial direction for managing waste in Bradford district. The framework promotes sustainable waste management and recycling, seeking to minimise the negative effects of waste generation, reflecting the need to practically apply the waste hierarchy. The policies outlined in the framework set the broad context for the Shipley and Canal Road Corridor AAP and Waste Management DPD.

The Shipley and Canal Road Corridor AAP highlights that it will support the objectives of the Waste Management DPD by ensuring that future development supports the sustainable management of waste, in accordance with the Waste Hierarchy. It highlights that there are two waste management sites within the AAP boundary – the now former AWM site to the north of Frizinghall Station and the Crossley Evans site to the south of Shipley town centre.

The Waste Management DPD aligns with national guidelines and best practices, aiming to ensure that Bradford district has the necessary infrastructure to achieve self-sufficiency in waste management over the specified plan period. The document outlines the Council’s strategy for managing waste generated in the region, including mechanisms to identify suitable land for waste management facilities, policies for planning applications related to waste management, relevant input from local authorities, statutory agencies and stakeholders through the Yorkshire and Humber Waste Technical Advisory Body.

Emerging Bradford District Local Plan

The Bradford Council Plan (2021-2025) outlines the district's goals for waste management, focusing on keeping the area clean, promoting recycling, and reducing fly-tipping. It aligns with the Bradford District Local Plan and aims to increase household and business recycling rates to match the national average. CBMDC is currently developing a new single Local Plan to replace the existing framework, integrating various policy areas and site allocations, which includes those for waste management.

3 Overarching Waste Arisings and Projections Methodology

3.1 Methodology Summary

Anthesis followed a practiced methodology when undertaking the capacity assessment for CBMDC. In summary, this included:

- **Estimation of baseline waste arisings** – LACW, C&I, CD&E, hazardous, agricultural and radioactive waste, alongside wastewater arisings, were estimated using publicly available datasets from 2022. This selection of waste types is in line with the PPG which requires local authorities to plan for these seven waste streams.
- **Waste Growth** – has been used to explore future waste arisings with different waste growth factors used for different waste streams.
- **Scenario analysis** – for LACW and C&I waste streams, a scenario analysis was conducted providing a range of low-high recycling rates to reflect variation in recycling performance between 2031 and 2041.
- **Waste treatment capacity** - has been assessed to estimate the current and future projected waste treatment capacity within Bradford District for the management of waste.
- **Waste treatment capacity gap** – has been assessed to estimate potential capacity requirements within Bradford District for the management of waste over the Local Plan period.

The approach to these steps is set out in the following sections along with the associated results.

3.2 Data Sources

The first step in calculating the baseline waste arisings within Bradford was to collate relevant data sources. These included:

- Extracting LACW data for Bradford from WasteDataFlow (WDF)¹⁵, the web-based system for local authority waste data reporting by UK local authorities to Government;
- Extracting C&I, CD&E, agricultural and hazardous waste arisings from the Environment Agency's Waste Data Interrogator (WDI)¹⁶;
- Extracting hazardous waste arisings from the Environment Agency's Hazardous Waste Data Interrogator (HWDI)¹⁷ to be compared with WDI results;
- Extracting Low Level Radioactive arisings from the Integrated Pollution Prevention and Control (IPCC) Pollution Inventory dataset for 2022¹⁸; and
- Local insights from CBMDC were sought around waste arisings and waste treatment sites.

¹⁵ <https://www.wastedataflow.org/>

¹⁶ <https://www.data.gov.uk/dataset/aa53a313-f719-4e93-a98f-1b2572bd7189/2022-waste-data-interrogator>

¹⁷ <https://www.data.gov.uk/dataset/e8d0b36b-692f-4d4d-a7dd-cbcff44a616e/2022-hazardous-waste-interrogator>

¹⁸ <https://www.data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory>

Data provision for LACW is of higher quality and granularity than other waste streams because statutory reporting requirements mean it is clear from which district or borough waste originates.

In contrast, producers of C&I, CD&E, agricultural and hazardous waste have no requirement to report waste arisings, making it more challenging to make accurate estimates within a given area. The methodologies described below for estimating the arisings of each waste stream have known limitations, as there are nuances and weaknesses of the data provision that make precise modelling of waste flows difficult to achieve. Detail on these nuances and weaknesses are discussed in the following section and are specific to each waste type.

4 Current Waste Arisings

4.1 Local Authority Collected Waste

LACW is primarily comprised of waste generated by households and other wastes collected by local authorities: for example:

- Household wastes consisting primarily of waste collected directly from households, but also that which is accepted at recycling centres, and collected in street bins and street sweepings;
- Non-household waste such as commercial waste (sometimes known as ‘trade waste’) collected by local authorities, which, depending on its source, is sometimes deemed to be of a similar composition to household waste.

Historically LACW waste has been known as the ‘municipal solid waste’ stream.

Baseline LACW arisings were calculated using the most recent data set available from WDF as per PPG guidance, which at the time of the study was calendar year 2022. WDF shows all waste collected and managed by each district and borough, including both recycling and residual waste. Multiple WDF questions were analysed, addressing the waste arising from a range of sources, including households, commercial or trade waste, street scene and Household Waste Recycling Centres (HWRCs). The WDF questions used to inform the analysis are detailed in the Appendix.

As per Table 1, analysis of the data shows that CBMDC collected and managed 222,647 tonnes of LACW in 2022. Of this material, approximately 150,579 tonnes was residual waste, and 72,068 tonnes was recycling – this included dry recycling, green waste and various other streams collected for recycling from HWRCs. The overall recycling rate was calculated to be 32%. An estimated 89% of waste arisings were collected from household sources, whilst 11% were collected from non-household sources. Where CBMDC’s waste is currently treated is presented in Section 6.

Table 1: Bradford LACW Waste Arisings 2022

Waste Type	Waste arisings (tonnes)				
	Total	From household sources	From non-household sources	Household waste arisings per household (t/hh) ¹⁹	Household waste arisings per capita (t/cap) ²⁰
Dry Recycling	56,196	51,261	4,935*	0.24	0.09
Organic (green only)	15,872	14,256	1,616	0.07	0.03
Residual Waste	150,579	132,539	18,040	0.63	0.24
Total Waste	222,647	198,056	24,519	0.94	0.36

Source: WasteDataFlow, 2022. There may be discrepancies due to rounding.

Number of households: [https://ubd.bradford.gov.uk/about-us/population/#:~:text=Bradford%20has%20a%20total%20of,Census%20\(2021%20census%20data\).](https://ubd.bradford.gov.uk/about-us/population/#:~:text=Bradford%20has%20a%20total%20of,Census%20(2021%20census%20data).)

Number of people <https://ubd.bradford.gov.uk/about-us/population/#:~:text=Bradford%20population&text=The%20mid%2D2022%20results%20show,2021%20population%20estimates%20were%20published.>

*Includes 4,759 tonnes of plasterboard, rubble and soil as per WDF guidance:

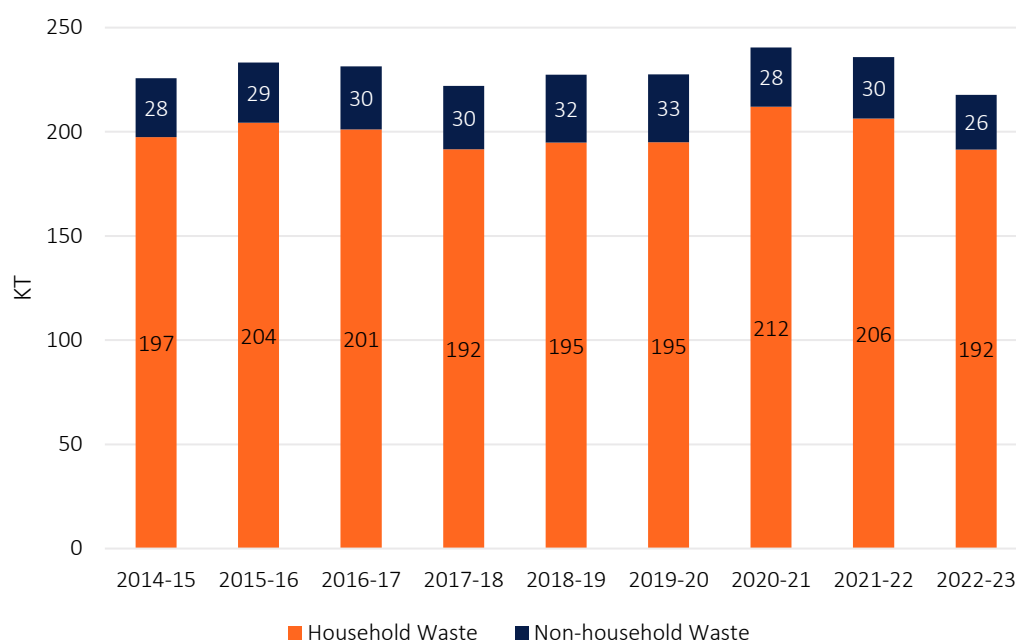
https://www.wastedataflow.org/documents/guidancenotes/Specific/GN17a_Report_Rubble_2.0c.pdf

Trends in Bradford's LACW waste arisings over the past nine years are shown in Figure 2. Note figures do not fully align with Table 1 as they are reported by financial year, rather than calendar year. The split of CBMDC's arisings between household and non-household collected waste are relatively stable over time, with the exception of 2020-21 where an increase in household waste and a decrease in non-household waste is visible, this is a reflection of the COVID-19 lockdowns where many people worked from home and lots of businesses temporarily closed.

¹⁹ Based on assumption of 209,900 households (2021)

²⁰ Based on assumption of 552,660 people (2022)

Figure 2 Bradford City MDC (MBC) Local Authority Waste collected by financial year (thousand tonnes)



Source: <https://www.gov.uk/government/statistics/local-authority-collected-waste-management-annual-results>

4.2 Commercial and Industrial Waste

The composition of C&I waste is varied as it depends on the type of business from which the waste arises. It is typically generated from the following activities:

Commercial Sectors:

- Retail and wholesale
- Hotels and catering
- Public administration and social work
- Education
- Transport and storage services

Industrial Sectors:

- Food, drink and tobacco manufacturing businesses
- Textiles/wood/paper/publishing businesses
- Power and utilities companies
- Chemical/non-metallic minerals manufacturing businesses
- Metal manufacturing businesses
- Machinery & equipment (other manufacturing) businesses

Waste from businesses in the commercial sector often includes waste of a similar format to LACW, including separate residual and recycling streams.

Estimating C&I waste arisings in England has always been a challenge, with no statutory reporting requirements for businesses to report their waste generation. Primary data has periodically been

gathered through surveys to estimate waste arising from C&I sources, however, this has been sporadic and only based on a limited number of data points. The last example of such a survey was DEFRA's 'Survey of Commercial & Industrial Waste Arisings' published in 2010 using 2009 data, making it outdated for use in this study.

The approach taken for this study is similar to the new Reconcile methodology that is used by DEFRA when producing national estimates of C&I waste arisings, with WDI and site permit returns used as the basis for analysis as per PPG guidance. WDI covers annually reported figures on waste as it enters and exits permitted waste management sites. In some instances, C&I waste may be managed at a site that operates under an exemption from environmental permitting. Tonnages managed in this way are not reported through the WDI.

While the initial 'Reconcile' methodology attempted to estimate quantities of waste managed through these routes, the updated DEFRA Reconcile methodology for C&I waste (Oct 2018) now excludes an estimate of waste managed through exemptions, as estimates of this waste are inherently unreliable. The new methodology reflects the 'best estimate' that can be produced on an annual basis from the available data. DEFRA now use this method to produce their official reports on waste. It should also be noted that some waste management activities may be conducted in ancillary to a principal land use and therefore may not have express planning consent. Consequently, a proportion of waste arisings are managed outside of the permitting system.

There are some drawbacks to using WDI data, including potential double counting of waste streams as they travel in and out of different sites, however, the Reconcile methodology avoids the potential for duplication in the way it excludes chapter 19 coded data, as this waste is produced at waste treatment and transfer sites rather than being waste generated by source activities.

Use of WDI is therefore considered to be the best available dataset when estimating how much waste from all sources is being processed by the waste management sector and therefore is arising each year. WDI data can be filtered by waste type and origin (geographical) and therefore can be used to quantify the total tonnage of all non-hazardous and non CD&E waste originating in Bradford, from which LACW waste arisings can be deducted to provide an estimate of C&I waste arisings in the study area.

The principal steps used to calculate C&I waste arisings are detailed below and highlighted in Table 2:

1. The WDI received data set was used to extract waste with a WPA origin "Bradford" and basic waste category "Hhold/Ind/Com" (household waste and C&I waste). Wastes from waste or wastewater treatment processes (chapter 19 coded waste) and agricultural waste (chapter 2.01 coded waste) were then removed to remove double counting of waste that has already been accounted for within arisings captured by other EWC codes. In this step, waste processed via EfW (Energy from Waste) is captured if it is municipal waste i.e. 200301 but not if its RDF 19.12.12. Waste arriving at a physical treatment site and being processed into RDF would be captured. As a result of this first step, 474,051 tonnes of Hhold/Ind/Com were estimated to arise in Bradford in 2022.
2. In addition to this, WDI arisings with 'unknown' WPA origins, but 'known' regional origins were identified. As Bradford sits in the 'Yorks and Humber' and 'West Yorkshire' regions, waste from these regional origins therefore needed to be apportioned to the relevant WPAs based on the known WPA origins. To do this, waste with the regional origin 'Yorks & Humber WPA' was extracted from WDI (excluding chapter 19 coded waste and EWC 02.01

coded waste) and the percentage of Hhold/Ind/Com arisings that originated from Bradford calculated. The percentage was then applied to the tonnage of 'Yorks & Humber WPA *Not codeable*' waste arisings, in order to calculate the tonnage of uncodeable Yorks & Humber waste associated with Bradford. The same approach was then applied to the 'West Yorkshire' region waste. This allowed Bradford's portion of 'unknown' WPA waste arising from the 'Yorks and Humber' and 'West Yorkshire' regions to be estimated.

3. Using WDI it was estimated that 6% of waste categorised as basic waste category 'Hhold/Ind/Com' and arising in the Yorks & Humber Region in WDI in 2022 originated in Bradford, whilst 25% of 'Hhold/Ind/Com' arising in the five West Yorkshire WPAs in WDI originated in Bradford in 2022. This apportionment was then applied to the "Yorks & Humber WPA uncodeable" and "West Yorkshire" WPA Hhold/Ind/Com waste streams to estimate the portion of this waste arising in Bradford. This waste estimated to amount to an additional 104,870 tonnes of Hhold/Ind/Com waste in 2022. When combined with the volumes specifically arising from Bradford, a total of 578,921 tonnes of Hhold/Ind/Com waste was estimated to arise in Bradford in 2022.
4. An estimate of the C&I proportion of the Hhold/Ind/Com waste stream was then made by subtracting LACW arisings (222,647 tonnes as per Table 1) from the total Hhold/Ind/Com arisings from WDI (578,921). This provided an estimated 356,274 tonnes of C&I waste arising in 2022. This creates a balance of 62% of Bradford's non-hazardous and non CD&E waste being from C&I source's, which is comparable to DEFRA's estimates of a 60% C&I to 40% LACW split at a national level.
5. Bradford's C&I recycling performance is estimated to be between 40-45% based on insights from the waste and resources sector. DEFRA do not give any estimate of C&I recycling rates to allow for comparison. The mid-point 42.5% (rounded to 43%) was used for analysis.

Table 2 C&I Arisings calculations

Step	Estimated figure	Tonnes 2022	Waste Type (as per WDI)
1	WDI Bradford arisings	474,051	Hhold/Ind/Com
2/3	WDI West Yorkshire, Bradford apportion	35,201	Hhold/Ind/Com
2/3	WDI Yorks and Humber <i>not codeable</i> , Bradford apportion	69,669	Hhold/Ind/Com
3	Sum of Hhold/Ind/Com arising in Bradford	578,921	Hhold/Ind/Com
4	LACW Arisings in Bradford (As per Table 1)	222,647	Hhold portion of Hhold/Ind/Com

Step	Estimated figure	Tonnes 2022	Waste Type (as per WDI)
4	C&I Arisings in Bradford (Sum of Hhold/Ind/Com arising in Bradford less LACW arisings)	578,921 – 222,647 = 356,274	Ind/Com portion of Hhold/Ind/Com

Source: WDI and WDF

Bradford's previous Waste Needs Assessment published in 2016 estimated 474,000 tonnes of C&I waste arisings in 2013. Using the same approach the council has since estimated C&I waste at 414,000 tpa (for 2021 Comparable year) which is 16% higher than projected using the above approach. However, the approach is based on the previously mentioned DEFRA survey from 2009 and does not factor in any waste minimisation or resource efficiency that has occurred within the 14-year timeframe since primary data collection. It is therefore likely that methodologies using the 2009 base data approach may overestimate C&I arisings when applied to current industry practices.

Table 3 outlines the fate of household and commercial waste arising in Bradford as per WDI 2022. Table 4 describes each fate. 94% of waste arising in Bradford has been reported as being sent to a site for recovery, 61% of which is sent for recovery in Bradford, while the remainder is sent outside of the region. As the capacity outlined in section 6 shows, a significant number of waste sites in CBMDC are transfer stations. These range widely, from those which purely bulk waste for onward transport to those which carry out either fairly crude or more sophisticated sorting of recyclates on-site. However, as Table 4 (which shows the definitions of fates as reported in WDI) shows, the definition of recovery includes storage pending other recovery operations, which also could account for a high proportion of waste being reported as sent for recovery.

Table 3: Household and C&I Waste Arisings, Fate and Treatment Location *

Fate	Total LACW and C&I Waste Arising in Bradford (t)	Tonnage of waste received at sites in:			% of waste treated in:		
		Bradford (t)	West Yorkshire (t)**	Other regions of the UK (t)	Bradford (%)	West Yorkshire (%)	Other regions of the UK (%)
Recovery	446,880	274,630	141,971	30,279	61%	32%	7%
Treatment	3,146	0	1,395	1,751	0%	44%	56%
Transfer (D)	2,282	473	74	1,735	21%	3%	76%
Landfill	3,585	669***	2,881	35	19%	80%	1%
Incineration	18,122	0	448	17,674	0%	25%	75%

Fate	Total LACW and C&I Waste Arising in Bradford (t)	Tonnage of waste received at sites in:			% of waste treated in:		
		Bradford (t)	West Yorkshire (t)**	Other regions of the UK (t)	Bradford (%)	West Yorkshire (%)	Other regions of the UK (%)
Other Fate	35	0	0	35	0%	0%	100%
Total	474,050	275,772	146,769	51,509	-	-	-
Total incl. apportioned waste arisings	578,921						

*Note locations are across England, locations do not only include Bradford.

Source: WDI

**excluding Bradford

*** There are no C&I landfills in Bradford. This data is likely an error due to being categorised incorrectly.

Table 4 Description of Fates of Waste Arising in Bradford

Fate	Primary Activity
Incineration	Incineration on land for the purposes of disposal
	Use principally as a fuel or other means to generate energy
Landfill	Landfill
Other Fate	Land treatment without agricultural benefit or improvement
	Surface impoundment
Recovery	Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)
	Recycling/reclamation of metals and metal compounds
	Recycling/reclamation of other inorganic materials
	Land treatment resulting in benefit to agriculture or ecological improvement
	Exchange of wastes for submission to any of the operations numbered R1 to R11
	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)

Fate	Primary Activity
Transfer (D)	Transfer for disposal
	Storage for disposal
Treatment	Treatment prior to disposal
	Physical / physico- chemical treatment

4.3 Construction, Demolition and Excavation Waste

Construction & Demolition waste comprises waste arising from construction and demolition activities, including stone, concrete, brick, tiles etc, whilst excavation waste includes materials excavated during construction and is made up of mainly inert materials such as soils. There are also non-inert elements in this waste stream such as wood, metals, plastics, cardboard, and residual household-like wastes. The inert elements, however, make up the majority of the tonnage.

Establishing the current arisings of CD&E waste is challenging due to the lack of robust data sources for this waste type. WDI collates data from waste returns from individual waste sites and although it has limitations as discussed in the C&I section above, it is still the best data available as per PPG guidance and allows CD&E waste to be identified as it is coded under Chapter 17 (Construction and Demolition Waste) of the European Waste Catalogue (EWC).

The steps taken to estimate CD&E arisings are as follows and as shown in Table 5:

1. All waste tagged as inert/CD&E was extracted from WDI excluding chapter 19 coded wastes to avoid duplication of waste arisings. This totalled 202,870 tonnes for 2022.
2. In line with the C&I methodology outlined above, a proportion of CD&E waste managed in the Yorks & Humber and West Yorkshire does not specify its WPA origin in WDI. An estimated 2% of CD&E waste managed in the Yorks & Humber and 11% of CD&E waste managed in West Yorkshire originated in Bradford. This apportionment was applied to the "Yorks & Humber WPA uncodeable" and "West Yorkshire" unknown WPA waste arisings of CD&E waste. This amounts to an additional 57,043 tonnes of CD&E arisings.
3. When combined with the volumes specifically arising from Bradford this provides a total of 259,913 tonnes of CD&E waste arising in Bradford in 2022.

Table 5 CD&E Arisings Calculations

Step	Estimated figure	Tonnes 2022	Waste Type (as per WDI)
1	WDI Bradford arisings	202,870	Inert/C+D
2	WDI West Yorkshire, Bradford apportion	11,603	Inert/C+D

Step	Estimated figure	Tonnes 2022	Waste Type (as per WDI)
2	WDI Yorks and Humber not codeable, Bradford apportion	45,440	Inert/C+D
3	Sum of Inert/C+D arising in Bradford (CD&E waste)	259,913	Inert/C+D

Table 6 outlines the fate of CD&E waste arising in Bradford. ~50% of CD&E waste is sent to recovery and ~50% is treated at landfill. 62% of waste sent to recovery is treated in Bradford and 77% of waste sent to landfill is landfilled in Bradford. The remainder is sent to other regions in the UK. As arisings apportioned from West Yorkshire and the Wider Yorkshire Humber region were estimated, is it not possible to determine the fate of this waste from WDI.

Bradford's previous Waste Needs Assessment, published in 2014 estimated 440,000 tonnes of CD&E waste arising in 2013. The large reduction in CD&E waste arisings over the last 10 years may be explained by the fact that CD&E waste is highly influenced, particularly in urban areas, by large-scale infrastructure projects as well as commercial and residential developments, which means that peaks and troughs are common, and arisings do not necessarily follow a steady linear pattern.

This is an important to remember looking at the future CD&E waste arisings projected in this study, taking into account that there are major infrastructure projects currently underway, planned projects and projects in the pipeline not yet confirmed. Examples of these projects include the Transforming Cities Fund work to improve active travel in Bradford City Centre, and improvements to access to Interchange railway station.

Table 6: CD&E Waste Arisings, Fate and Treatment Location

Fate	Total CD&E Waste Arising in Bradford (t)	Tonnage of waste treated in:			% of waste treated in:		
		Bradford (t)	West Yorkshire (t)*	Other regions of the UK (t)	Bradford (%)	West Yorkshire (%)	Other regions of the UK (%)
Recovery	101,139	62,868	27,298	10,974	62%	27%	11%
Treatment	1,016	0	912	104	0%	90%	10%
Transfer (D)	0.65	0	0	0.65	0%	0%	100%
Landfill	100,715	77,740	21,937	1,038	77%	22%	1%
Total	202,870	140,608	50,147	12,117	-	-	-

Total incl. apportioned waste arisings	259,913
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Source: WDI
*excluding Bradford

4.4 Hazardous Waste

Hazardous wastes are categorized as those that are harmful to human health, or the environment, either immediately or over an extended period of time. They range from asbestos, chemicals, and oil through to electrical goods and certain types of healthcare waste. Hazardous waste requires a range of specialist facilities for treatment and disposal, and so often this waste may travel further than types of non-hazardous waste.

Estimates of hazardous waste were collated from both WDI (2022) and the EA's Hazardous WDI (HWDI 2022). HWDI reports records from consignment notes and is considered by the EA and the PPG to be the most accurate data source for this waste type, whilst WDI's hazardous waste category also shows the site type where waste is treated and destinations, allowing transfer/storage sites to be excluded from capacity estimates.

The steps taken to estimate hazardous waste arisings are as follows and as shown in Table 7:

1. All waste tagged as 'hazardous' was extracted from WDI excluding chapter 19 coded wastes to avoid duplication of waste arisings. WDI suggests 18,904 tonnes of hazardous waste arose in Bradford District in 2022. This was received at a range of facilities within the District and elsewhere.
2. In line with the apportionment methodology described for the C&I and CD&E waste streams, an estimated 2% of "Yorks & Humber WPA uncodeable" hazardous records and 14% of "West Yorkshire" hazardous records were estimated to arise in Bradford in 2022. This contributes an additional 4,942 tonnes of waste to Bradford's arisings.
3. The total quantity of hazardous waste estimated to have arisen in Bradford District in 2022 was therefore estimated to be 23,846 tonnes.
4. This arisings figure was crossed checked against the EA's HWDI 2022 to ensure the tonnage extracted from WDI was accurate. HWDI 2022 suggests that a total of 20,140 tonnes of hazardous waste arose in Bradford District in 2022, which is slightly lower than the WDI calculated figure, however, the HWDI figure excludes apportioned Yorks & Humber WPA uncodeable and West Yorkshire waste, which is included in the WDI figure, and therefore may explain the difference in the arisings estimates from the two datasets.

Table 7 Hazardous waste arisings calculations

Step	Estimated figure	Tonnes 2022	Waste Type (as per WDI)
1	WDI Bradford arisings	18,904	Hazardous
2	WDI West Yorkshire, Bradford apportion	3,779	Hazardous

Step	Estimated figure	Tonnes 2022	Waste Type (as per WDI)
2	WDI Yorks and Humber not codeable, Bradford apportion	1,163	Hazardous
3	Sum of Hazardous arising in Bradford	23,846	Hazardous
4	Check against HDWI Bradford arisings	20,140	Hazardous

Source: WDI and HDWI

The hazardous waste arisings in Bradford as per WDI (excluding waste coded chapter 19 and Yorks & Humber WPA uncodeable and West Yorkshire waste) are defined by the EWC codes as set out in Table 8. This includes waste with the fate listed as “Transfer (D)”. This identifies hazardous waste from other sources being the largest category (gases in pressurised containers and discarded chemicals, end of life vehicles from other means of transport, discarded equipment and off specification batches and unused products being largest contributors) followed by hazardous waste from municipal sources and organic chemical processing.

Table 8 Hazardous waste arisings in Bradford by EWC

EWC chapter	Tonnage	% of waste
02 – Agricultural and food processing	0	0%
06 - Inorganic Chemical Process Waste	105	1%
07 - organic chemical process waste	3,117	16%
08 - paint, adhesive, sealant and ink manufacturing waste	253	1%
09 - photographic industry wastes	4	0%
10 - thermal processes waste	0	0%
11 - chemical surface treatment and metal coating wastes	297	2%
12 - shaping and physical treatment of metals and plastics	264	1%
13 - oil wastes and wastes of liquid fuels	1,266	7%
14 - organic solvent, refrigerant and propellant waste	6	0%
15 - packaging, absorbents, wiping cloths etc n.o.s.	1,113	6%
16 - wastes not otherwise specified in the list	6,179	33%

EWC chapter	Tonnage	% of waste
17 - construction and demolition wastes	2,713	14%
18 - human and animal health care waste	287	2%
20 - municipal wastes	3,298	17%

Source: WDI.

Table 9 shows the fate of hazardous waste arising in Bradford. 60% of hazardous waste is sent for recovery, the majority (44%) of which is sent outside of Bradford to other regions in West Yorkshire. The majority of hazardous waste is sent outside of Bradford for treatment.

Table 9: Hazardous Waste Arisings, Fate and Treatment Location

Fate	Total Hazardous Waste Arising in Bradford (t)	Total tonnage of waste treated in:			% of waste treated in:		
		Bradford (t)	West Yorkshire (t)*	Other regions of the UK (t)	Bradford (%)	West Yorkshire (%)	Other regions of the UK (%)
Recovery	11,344	2,278	4,990	4,076	20%	44%	36%
Incineration	1,580	0	60	1,520	0%	4%	96%
Treatment	2,840	0	776	2,064	0%	27%	73%
Transfer (D)	1,840	542	471	827	29%	26%	45%
Landfill	1,300	0	489	811	0%	38%	62%
Total	18,904	2,820	6,786	9,298	-	-	
Total incl. apportioned waste arisings	23,846						

*excluding Bradford

Source: WDI

4.5 Low Level Radioactive Waste

Radioactive waste is any material that is either radioactive itself or is contaminated by radioactivity and for which no further use is envisaged. Most radioactive waste is produced from nuclear power stations, through the fuel manufacturing process. This is referred to as “nuclear waste”. Radioactive waste is not included in the definition of hazardous waste.

Radioactive waste can be classified as Higher Activity Wastes (HAW) and Lower Activity Waste (LAW). HAW is unsuitable for disposal in the Low Level Waste Repository (LLWR) and arises from activities such as reactor operation, reprocessing of spent nuclear fuel and decommissioning.²¹ HAW is not one of the waste streams that the PPG requires waste planning authorities to plan for.

However, LAW is one of the waste streams the PPG requires waste planning authorities to plan for. Within LAW there are two further categories:

- Low Level Waste (LLW): These are radioactive wastes other than that suitable for disposal with ordinary refuse. Radiation levels do not exceed 4 gigabecquerels per tonne of alpha activity, or 12 gigabecquerels per tonne of beta or gamma activity. (A Becquerel is the unit of radioactivity, representing one disintegration per second.) Unlike HAW, LLW does not normally require shielding during handling or transport. Most LLW comes from the operation and decommissioning of nuclear facilities, and is mainly scrap metal items, paper and plastics. Some smaller amounts of LLW also come from hospitals and universities;
- Very Low Level Waste (VLLW): This is a sub-category of LLW and can be disposed of to unspecified destinations with municipal, commercial or industrial waste. High volume VLLW can be disposed of to specified landfill sites and controlled as specified by the environmental regulators.

The main sources of LLW from CBMDC are the Bradford Royal Infirmary teaching hospital and the University of Bradford.

Estimates of Radioactive waste were extracted from the Integrated Pollution Prevention and Control (IPPC) Pollution Inventory dataset for 2021²² (latest available at time of writing) as per PPG guidance. This dataset provides the quantity of radioactivity released from radioactive waste regionally. This data is reported in becquerel (Bq) units of radioactivity and is minimal in Bradford.

The IPPC Pollution Inventory dataset reports 1,592 GBq of radioactive waste released in Bradford in 2021 from one site, Bradford Teaching Hospital NHS Trust. No data was available for the University of Bradford, however, two licences for the keeping and use of radioactive materials and disposal of radioactive waste are held by the University.

This material is disposed of through 'Wastewater' and so does not have an impact on any of CBMDC's solid waste management infrastructure requirements. As a result, this waste stream has been excluded from the future projections and capacity gap analysis.

More information around LLW is disposal available on the Overview of the Production and Management of Radioactive Waste in the UK Guide by the Nuclear Decommissioning Authority.²³

²¹ Nuclear decommissioning Authority, *UK Radioactive Waste Inventory*. Available at: <https://ukinventory.nda.gov.uk/about-radioactive-waste/what-is-radioactivity/what-are-the-main-waste-categories/>

²² Environment Agency, *2021 Pollution Inventory Dataset*, October 2022. Available at: <https://www.data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory>.

²³ Nuclear decommissioning Authority, *Overview of the Production and Management of Radioactive Waste in the UK* https://ukinventory.nda.gov.uk/wp-content/uploads/2021/03/20201222-Official-Rep-PO023346-Main-UKRWI-Report_Final.pdf

4.6 Agricultural Waste

Since 2006, most agricultural waste has been subject to the same controls that have applied to other sectors for many years (with the exception of natural wastes including slurries and manures used as fertiliser on agricultural premises). In the 2006 waste management regulations, agricultural waste was defined as waste from premises used for agriculture within the meaning of the Agriculture Act 1947. The Chartered Institute of Wastes Management refer to it as waste that has been produced on a farm in the course of 'farming'.²⁴

WDI has been used to estimate current agricultural waste arisings, using EWC codes beginning 02 01 arising in Bradford and apportioning waste arising in Yorks & Humber and West Yorkshire with an uncodeable WPA. From this, an estimated 124 tonnes of agricultural waste was generated in Bradford District in 2022. The waste arisings do not reflect overall agricultural arisings, but that which is managed within permitted waste facilities. Overall arisings are likely to be higher, but the vast majority of agricultural waste is treated on-site, and as such places no requirement on waste management infrastructure. Given the minimal tonnage, it is not considered to need specific waste management consideration and therefore is excluded from the future projections and capacity gap analysis.

Table 10 outlines the fate of agricultural waste arising in Bradford. The majority (98%) is sent for recovery, of which 40% is recovered in Bradford and the remainder in other regions of the UK.

Table 10: Agricultural Waste Arisings, Fate and Treatment Location

Fate	Total Agricultural Waste Arising in Bradford (t)	Total tonnage of waste treated in:			% of waste treated in:		
		Bradford (t)	West Yorkshire (t)	Other regions of the UK (t)	Bradford (%)	West Yorkshire (%)	Other regions of the UK (%)
Recovery	121	49	0.2	72	40%	0%	60%
Transfer (D)	0.08	0	0	0.08	0%	0%	100%
Landfill	3	0	3	0	0%	100%	0%
Total	124	49	3	72	-	-	-

Source: WDI

²⁴ CIWM, *Agricultural Waste*, Accessed 28 July 2023. Available at: <https://www.ciwm.co.uk/ciwm/knowledge/agricultural-waste> [Accessed 28.07.23].

4.7 Waste Water/Sewage Sludge

Waste water in Bradford is managed by Yorkshire Water who operate the Waste Water Treatment Works (WWTW). Yorkshire Water has 631 WWTW across their area. Within Bradford District, Yorkshire Water operates eight WWTW that serve its various settlements, with Esholt being the largest. It is the only one that is listed in the WDI as receiving any waste. For 2022, WDI states that a total of 18,700 tonnes of HIC waste was received (EWC Chapters 02, 19 and 20) for recovery.

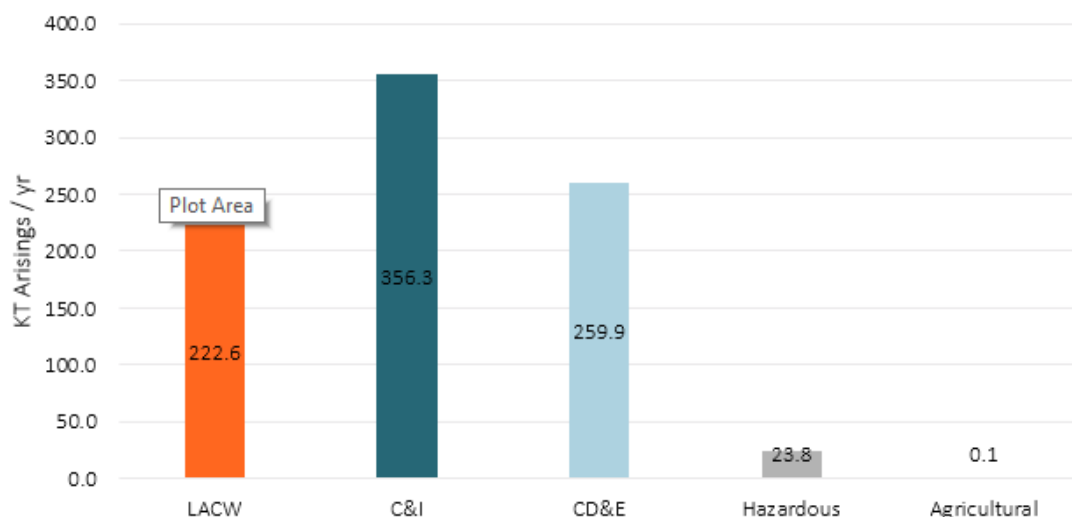
This originated from Bradford District and other unknown areas in the Yorkshire and Humber region (classed as Yorks & Humber (WPA Not Codeable) in the WDI). 10,350 tonnes of waste were shown as being removed from the site for further treatment elsewhere in the region. The site also includes a 3.2mW Combined Heat & Power (CHP) plant that provides heat and power for the wider Esholt Estate as well as creating 62,000 tonnes of fertiliser for the agricultural sector²⁵.

The PPG states "Waste planning authorities are responsible for determining all waste development except: waste water treatment plants with a capacity to exceed a population equivalent of 500,000", therefore, future WWTW requirements have not been estimated in this study as the population served by the current waste water treatment works is in excess of 500,000. Further discussion will take place with Yorkshire Water as part of developing the Local Infrastructure Plan.

4.8 Total Current Waste Arisings in Bradford

The total quantity of waste arising in Bradford in 2022 was estimated to be 862,803 tonnes, this is broken down into the constituent waste streams in Figure 3. It is important to note that this figure does not include radioactive waste or wastewater for the aforementioned reasons.

Figure 3 Current LACW, C&I, CD&E, Hazardous and Agricultural Waste Arisings in Bradford (2022)



²⁵ <https://www.edina.eu/case-studies/esholt-sewage-treatment-works>

5 Future Waste Arisings

5.1 Waste Growth Modelling and Recycling Performance Scenario

The core aim of the study is to try and understand the infrastructure requirements for the in-scope waste streams treatment in Bradford up to 2041.

To achieve this, the baseline waste arisings calculated in section 4 have been projected forward to 2041 using the following key assumptions:

- **Waste growth** – to what extent waste arisings are expected to grow year on year, for LACW, C&I, CD&E and hazardous waste. Agricultural waste and wastewater have been excluded from the modelling (for reasons please see sections 4.6 and 4.7 respectively).
- **Recycling Performance Scenario** – To what extent do we expect policy initiatives to impact the market positively, to either drive waste minimisation or improve recycling performance for LACW and C&I waste in particular. The results of this section are provided across three scenarios, ranging from low recycling performance to high recycling performance. The central scenario is used in the capacity gap results.

The rationale for setting the assumptions used are described below.

5.2 Waste Growth Projections

Different methods to projecting waste growth were applied to key waste streams, drawing on the waste PPG.

LACW

Population growth was selected to inform the growth profile as LACW arisings largely correlate with population numbers.

For this study, Office of National Statistics (ONS) population forecast data for Bradford was used to generate year-on-year (YoY) growth rates to 2041.²⁶ The average annual growth rate calculated from this ONS forecast was 0.19%. Please see the Appendix for the population growth rate data.

C&I

For this study employment growth rates were used to project C&I waste arisings to 2041. Employment growth rates reflect the size and productivity of commerce and industry, and by extension there will be a correlation to non-household waste arisings. Employment growth rates YoY from Bradfords Future Employment Analysis Paper²⁷ published in 2021 were used and applied to waste arisings. This study estimates an increase of 1,111 jobs per year between 2018-2037. This results in an average YoY growth in employment of 0.53%, applied to C&I waste arisings to 2041. Please see Appendix for the full growth rate data.

²⁶ Office of National Statistics. *Population projections – local authorities: SNPP Z1*, 2018. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandz1>

²⁷ Edge Economics, *City of Bradford MDC Future Employment Analysis Paper*, 2021

CD&E

PPG suggests waste planning authorities should start from the basis that net arisings of CD&E 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.

Another consideration is whether there are any significant planned regeneration or major infrastructure projects over the timescale of the Local Plan, as these can distort CD&E arisings considerably within a given year(s).

For this study the same employment growth rates for C&I arisings were used (0.53% annual growth on average), which represent the size and productivity of the wider economy and therefore are considered a suitable projection for CD&E waste arisings to 2040.

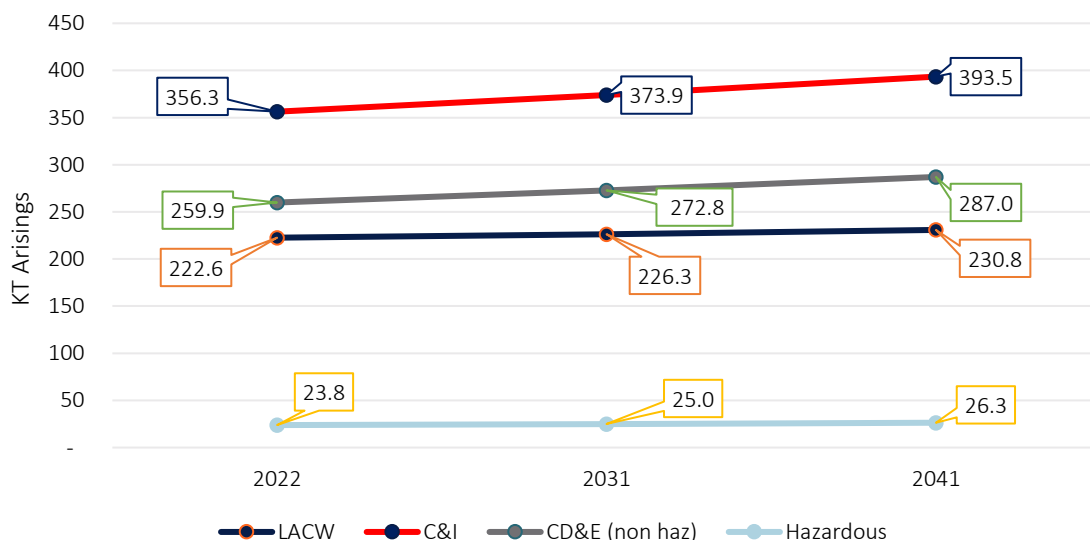
Hazardous

Hazardous waste is generated through various economic activities and so the same approach used for C&I waste was applied to hazardous arisings. This uses employment growth rates applied to waste arisings.

Projected Arisings

Figure 4 shows how the volume of waste arisings in Bradford have been projected to change over time between 2022 and 2041 using the aforementioned growth rates. The figures represent both residual waste and recycling tonnages combined. By 2041 there is projected to be 393,463 tonnes of C&I waste, 230,842 tonnes of LACW, 287,044 tonnes of CD&E waste, and 26,335 tonnes of hazardous waste arising in Bradford. It is important to note that while low-high scenarios were not applied to the projections of waste arisings, they impact the recycling performance of both Commercial & Industrial (C&I) and Household waste as per the subsequent section.

Figure 4 Summary of Projected Waste Arisings in Bradford 2022, 2031 and 2041



5.3 Recycling Performance Scenario - National

Previous modelling carried out by Anthesis on behalf of Local Authorities suggests that up to 80% of the material in household waste could theoretically be recycled. In practice, this theoretical potential is limited by existing service provision (i.e. more recyclable material streams could be

collected – which is directly linked to available funding), household participation, capture rates of specific materials and contamination issues.

The Government is currently in a round of consultation processes which will deliver a package of policy-led measures that are aimed at setting England on course to achieve a 65% recycling target by 2035. These include:

- Simpler Recycling, whereby by 2026 every local authority in England will collect seven recyclable waste streams from households in their area. These will be food waste, glass recycling, garden waste, metal, plastic, paper and card.
- Revisions to the Extended Producer Responsibility (EPR) regulations, including mandatory targets for recycling of packaging waste materials, combined with the full net cost of recovery at end of life being charged to the producers. This includes a moderated and malice fee payment system which will aim to drive up recycling from October 2025 when the new system is expected to be implemented (this date is correct at the time of writing following a recent announcement by DEFRA regarding further delays).²⁸
- A consistent approach to collections and labelling of recyclability is also under review by the Government with a view to increasing awareness and driving pro-recycling behaviours amongst consumers and householders.
- A separate deposit return scheme (DRS) being considered for 2027 to boost recycling of beverage containers.
- A Plastic Packaging Tax (PPT) came into force in the UK in April 2022. It applies a rate of £210.82 per tonne on plastic packaging with less than 30% recycled plastic, manufactured or imported into the UK. This is expected to drive a change in the collection and reprocessing marketplace to meet the producers' requirements for post-consumer recycled (PCR) content plastic.
- DEFRA has outlined longer-term intentions to review other waste and material streams that could also be incorporated into the EPR policy frameworks of the future.
- With the UK recycling rate fluctuating between 45% and 47%,²⁹ these measures rely on business as well as households to improve participation and capitalise on the new level of environmental awareness and interest in climate change and sustainability to improve recycling rates across the country.

Bradford District's recycling rate may increase more rapidly due to some initiatives compared to others. However, as there is uncertainty around the launch date of many of the above initiatives, alongside changes to recycling rates depending on how rapidly services change, for example how quickly EPR fees will be invested and services changed, a linear increase in recycling rates has been modelled to 2041.

²⁸ Department for Environment, Farming and Rural Affairs, *Extended producer responsibility for packaging: who is affected and what to do*, July 2023. Available at: <https://www.gov.uk/guidance/extended-producer-responsibility-for-packaging-who-is-affected-and-what-to-do>

²⁹ Oluwadipe S, Garelick H, McCarthy S, Purchase D. *A critical review of household recycling barriers in the United Kingdom*. Waste Manag Res. 2022 Jul;40(7):905-918. Epub 2021 Nov 20. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9109241/>

5.4 Recycling Performance Scenario Methodology – Bradford District

Aside from the national drivers for recycling it has also been important to assess the current position and future recycling ambition within Bradford District.

LACW

Anthesis has undertaken a benchmarking exercise using Waste and Resources Action Programme (WRAP) data to assess the waste from household recycling performance of Bradford relative to the rest of the UK.³⁰

The benchmarking presented in Table 11 demonstrates that Bradford District's household kerbside collection service recycling rates (the biggest contributor to LACW) are in the lower 25-50% of local authorities across the UK. Whilst the dry recycling rate (24.42%) is not far behind the national average (26%), garden waste (5%) contributes less than half the national average (16%) towards the recycling rate. Furthermore, Bradford does not currently provide a food waste collection service from households.

This shortfall in recycling performance is, by extension, reflected in the relatively high residual waste percentage. Ultimately this suggests that Bradford District may find it challenging to reach a 65% recycling rate, the national target, by 2035.

Table 11: Benchmarking Bradford against UK Local Authorities LACW (waste from households) 2022

	Dry recycling	Garden waste	Food waste	Residual waste
Baseline (Bradford)	24.42%	5.18%	0%	70.40%
National waste from households' rates ³¹	25.9%	16.2%	2.2%	55.7%
Bradford's position compared with UK Local Authorities	Bottom 50%	NA	Bottom 25%	Bottom 25%

Based on the benchmarking data it is therefore assumed that for modelling purposes, the recycling performance for 2041 would be 53% for the low scenario representing a +20% increase from current rate (+1% increase per year), 58% for the central scenario representing a +25% increase from current rate (+1.25% increase per year), and 65% in the high scenario assuming the 65% recycling target is met (+1.55% per year) - as shown in Table 12.

This is on the basis that whilst Bradford District will receive an immediate recycling rate uplift through anticipated roll-out of separate food waste collections, closing the gap on dry recycling and garden waste collections will be more difficult to achieve. Dry recycling services are already embedded throughout Bradford District, and so gains here are more likely to be marginal. Garden

³⁰ Waste and Resources Action Programme, *Benchmarking*. Accessed 27 July 2023. Available at: <https://laportal.wrap.org.uk/benchmark>

³¹ National Statistics. *Local authority collected waste management - annual results 2021/22*. Updated 14 April 2023. Available at: <https://www.gov.uk/government/statistics/local-authority-collected-waste-management-annual-results-202122/local-authority-collected-waste-management-annual-results-202122#:~:text=Amongst%20the%2033%20local%20authorities,per%20cent%20in%202021%2F22>

waste collection services are already embedded throughout Bradford District through a subscription service, so again, gains here are more likely to be marginal unless the subscription cost is reduced. The effect of national policy drivers such as EPR and DRS are likely to be similar across the country, albeit with lower performing areas such as Bradford having the potential to improve dry recycling performance to a greater extent (from a low base) than comparator authorities.

C&I

As there is not a recycling target set for C&I waste in the UK, for modelling purposes, the recycling performance for C&I waste by 2041 is assumed to follow the same increase as LACW estimates as the composition of the two waste streams is relatively similar and the waste is typically treated at the same type of facilities.

The recycling performance for C&I waste by 2041 is projected to be 63% for the low scenario representing a +20% increase from current rate (+1% increase per year), 68% for the central scenario representing a +25% increase from current rate (+1.25% increase per year), and 75% in the high scenario assuming a +31% increase from the current rate, which is the same difference as per the LACW high scenario - as shown in Table 12.

The central scenario represents the most likely scenario as the benchmarking exercise suggests that Bradford District may find it challenging to reach a 65% recycling rate.

Table 12: Recycling performance scenario results in 2031 and 2041

Waste stream	Scenario level	2022 recycling rate	2031 projected recycling rate	2041 projected recycling rate	2041 rate assumptions
LACW	Low Scenario	33%	44%	53%	+20% increase from current rate = 1% per year
	Central Scenario	33%	46%	58%	+25% increase from current rate = 1.25% per year
	High Scenario	33%	50%	65%	assumes 65% target is met= 1.55% per year
C&I	Low Scenario	43%	53%	63%	+20% increase from current rate as per LACW estimate
	Central Scenario	43%	56%	68%	+25% increase from current rate as per LACW estimate

Waste stream	Scenario level	2022 recycling rate	2031 projected recycling rate	2041 projected recycling rate	2041 rate assumptions
	High Scenario	43%	60%	75%	+32% increase from current rate, same difference as per LACW estimate

5.5 Projected Waste Arisings in Bradford 2031 and 2041

Using the waste growth rates described in section 5.1 the waste arising in Bradford for 2031 and 2041 have been projected. Table 13, Table 14 and Table 15 show the waste streams (i.e. residual and recycling/composting) from both LACW and C&I sources, alongside CD&E and hazardous waste arisings, to give an indication of the likely scale of treatment capacity required for these types of waste arisings in Bradford between now and 2041 under the high, central and low recycling scenario.

The declining trend of residual LACW and C&I waste arisings is driven by increasing recycling due to the aforementioned reasons.

Table 14, the central scenario, shows the LACW, C&I, CD&E and hazardous arisings used to calculate Bradford's capacity gap in the main body of this report. High and low recycling scenario results can be found in the Appendix.

Table 13: Projected waste arisings (tonnes) in Bradford (High Recycling Scenario)

Waste Type	2022	2031	2041
LACW Recycling	72,069	106,473	150,047
LACW Residual	150,580	119,811	80,795
C&I Recycling	153,198	214,613	295,097
C&I Residual	203,076	159,277	98,366
CD&E	259,913	272,764	287,044
Hazardous	23,846	25,025	26,335

Table 14: Projected waste arisings (tonnes) in Bradford (central recycling scenario)

Waste Type	2022	2031	2041
LACW Recycling	72,069	98,702	132,431

Waste Type	2022	2031	2041
LACW Residual	150,580	127,581	98,411
C&I Recycling	153,198	202,835	267,555
C&I Residual	203,076	171,055	125,908
CD&E	259,913	272,764	287,044
Hazardous	23,846	25,025	26,335

Table 15: Projected waste arisings (tonnes) in Bradford (low recycling scenario)

Waste Type	2022	2031	2041
LACW Recycling	72,069	93,611	120,889
LACW Residual	150,580	132,673	109,953
C&I Recycling	153,198	194,423	247,882
C&I Residual	203,076	179,467	145,581
CD&E	259,913	272,764	287,044
Hazardous	23,846	25,025	26,335

6 Waste Treatment Capacity and Capacity Gap

6.1 Methodology

In this section existing and planned waste treatment capacity is identified and compared to the projected arisings in section 5 to establish Bradford District's waste treatment capacity gap. This chapter focuses on waste facilities within Bradford District.

The capacity of waste management facilities in Bradford District has been compiled using information from WDI, planning consents and applications, and Bradford's annual monitoring reports. This data includes both existing, operational and under construction facilities, as well as significant facilities in planning. The maximum throughput capacity of these sites in 2021 and 2022 was extracted for modelling purposes using WDI waste received data, in order to calculate operational capacity.

For the purposes of the capacity gap analysis, LACW and C&I projected arisings have been combined as the two waste streams are often treated at the same facilities. In addition to this, capacity for waste treatment sites are grouped by the basic waste category 'Hhold/Ind/Com' on WDI, covering waste arising from both sources. Table 16 shows the LACW and C&I arisings used to calculate Bradford's capacity gap, the central scenario results are displayed in the main body of this report whilst the high and low scenario results are presented in the Appendix.

Table 16 LACW and C&I Arisings (tonnes) used for capacity gap analysis

Waste Type	2022	2031	2041
High Scenario			
LACW Recycling	72,069	106,473	150,047
C&I Recycling	153,198	214,613	295,097
LACW Residual	150,580	119,811	80,795
C&I Residual	203,076	159,277	98,366
Central Scenario			
LACW Recycling	72,069	98,702	132,431
C&I Recycling	153,198	202,835	267,555
LACW Residual	150,580	127,581	98,411
C&I Residual	203,076	171,055	125,908
Low Scenario			
LACW Recycling	72,069	93,611	120,889
C&I Recycling	153,198	194,423	247,882
LACW Residual	150,580	132,673	109,953
C&I Residual	203,076	179,467	145,581

6.2 Transfer Facilities

The Appendix outlines 22 waste transfer and/or storage facilities located in Bradford with throughput registered in WDI for at least one year between 2021 and 2022 (please note Wakefield Road Depot and Stockbridge Depot, both operated by City of Bradford MDC, do not have throughput for 2021 or 2022 recorded on WDI, but are understood to be operational sites, therefore are included in the estimate for transfer capacity). The total permitted capacity of these facilities in 2022 was 860,462 tonnes. In 2022, 393,250 tonnes of waste was received at these transfer sites (note this is waste received from all locations, not only Bradford), and 384,292 tonnes of waste was removed from these transfer sites. This suggests that 8,958 tonnes of waste was either treated at transfer sites within Bradford in 2022, or was stored at transfer sites in Bradford in 2022 before being removed in 2023, whilst 384,292 of waste was transferred to other sites for treatment, either within or outside Bradford.

Transfer stations operated by waste management contractors tend to bulk collected wastes before transporting to other facilities for landfilling, energy recovery or separation for recycling. Increasingly, transfer stations carry out separation of materials to make additional revenue for the onward sale of recyclates or refuse derived fuel and to minimise costs of sending materials to landfill.

Given the total arisings estimate of ~863ktpa of waste from within Bradford District, operational transfer capacity represents up 46% of total waste arisings, representing a significant proportion of waste being potentially managed via these facilities. As such, whilst a critical step in the waste management supply chain and although this capacity does not count towards the total available treatment capacity in Bradford, it is considered that Bradford is well serviced with transfer capacity.

6.3 LACW and C&I

Residual waste

This includes landfill (non-hazardous), energy from waste (EfW) facilities, and other residual waste sorting facilities such as mechanical biological treatment (MBT) facilities.

In Bradford there is currently no residual waste treatment capacity, as most residual waste received at sites in Bradford is subject to sorting and transfer. Within the wider Yorks & Humber region, three non-hazardous landfills have been identified as receiving waste in this stream from Bradford. Hazel Lane Quarry in Doncaster, Welbeck Landfill Site in Wakefield and Pilsforth South Landfill in Bury based. This indicates that there may be sufficient landfill capacity within the wider Yorks & Humber region which could help meet Bradford's need.

Looking forward, a planned EfW facility was identified in Bradford, and if successfully built will contribute an additional 100,000 tonnes per annum C&I waste treatment capacity. The facility, to be operated by Endless Energy, received planning permission in 2018, however, no details have been identified on the expected operational date, therefore, this tonnage has been excluded from the capacity gap figures, but should be noted as potential future capacity for commercial and industrial waste³².

Analysing data from WDI, shows that some residual waste is going to direct to landfill and incineration in other authority areas. However, there is also a portion going via transfer stations, and direct to specific treatment sites. C&I waste routes is dependent on the contracts businesses have in place to manage their waste.

As per Table 17, it is estimated that within Bradford in 2022 there was a capacity gap of 353,056 tonnes for LACW and C&I residual waste, which is projected to reduce to 223,719 tonnes by 2041 as residual waste arisings are anticipated to decline in line with national waste recycling targets. However, these figures do not take into account capacity in the rest of West Yorkshire and the wider Yorks & Humber region. Bradford has a 12 year contract to send around 150,000 tonnes³³ of LACW residual waste to Associated Waste Management's (AWM) (recently acquired by Beauparc³⁴) waste treatment facility in Leeds where recyclates are separated and a refuse derived

³² <https://www.endswasteandbioenergy.com/article/1685704/endless-energy-efw-waste-to-fuel-plants-secure-draft-permit>

³³ <https://www.letsrecycle.com/news/beauparc-continues-uk-expansion-with-awm-deal/>

³⁴ <https://www.letsrecycle.com/news/awm-bradford-contract/>

fuel (RDF) is prepared. The RDF is sent onto SSE Ferrybridge facility for incineration with energy recovery³⁵. According to the Local Authority Collected Waste Statistics published by Defra for the period 2022/23, 145,642 tonnes was sent to AWM, with 132,272 going on to incineration with energy recovery³⁶. The difference between the inputs to AWM and inputs to energy from waste, will be additional recyclates separated and sorting residues, which are unsuitable for energy recovery and therefore sent to landfill. Therefore, Bradford will need to continue to work closely with neighbouring WPAs to discuss future residual capacity requirements for Bradford.

Table 17: LACW and C&I Residual Waste Capacity Gap

	Operational capacity used in capacity gap calculations (tonnes)		
	2022	2031	2041
Total capacity	0	0	0
Arisings	353,656	298,636	224,319
Capacity Gap	353,656	298,636	224,319

The following sites were excluded from the residual waste capacity estimates:

Octane House site operated by Octane Holding Group Ltd is believed to only process their own waste, therefore has been excluded from the LACW and C&I residual treatment capacity estimate.

Old Crown Dyeworks treatment site operated by Ellis Fairbank Recycling Ltd is understood to perform very little treatment at site, as high quantities of waste are being removed from the site as per WDI 2022. It seems this site is operating more as a transfer station than a treatment site, therefore has been excluded from the LACW and C&I residual treatment capacity estimate.

Recycling

Assessing the capacity requirements for recyclable waste can be problematic, as some of the recyclates segregated by businesses for recycling is transported directly to reprocessors without passing through a transfer station or another licensed waste management facility. This means that material recovery facilities (MRF) capacity is not necessarily required in order to increase the quantity of materials recycled and there is likely to be more recycling capacity available than presented. Equally, much of Bradford District's mixed recycling waste is sent to the wider Yorks & Humber region for treatment.

Bradford currently has 133,520 tonnes of metal recycling capacity, mainly processing C&I waste. The largest facilities include EMR and Bradford Waste Traders Ltd (WML 60642), processing a combined 111,700 tonnes of waste metals based on 2022 WDI waste received data. According to WDI approximately 25,000 tonnes of industrial metal waste originated from Bradford in 2022 and was received at sites across England. There is therefore more than sufficient capacity for C&I

³⁵ <https://resource.co/article/awm-wins-long-term-bradford-waste-treatment-contract-11805>

³⁶ LACW statistics do not report specific facilities used, but these figures align closely with figures from WasteDataFlow Question 100, which reports 146,206 tonnes as being sent to AWM for 2022.

metal recycling capacity in Bradford, and it also provides significant capacity for waste arisings in other local authority areas.

Green waste arising in Bradford is taken to Esholt WWTW by the council for composting. Green waste in Bradford is collected from both kerbside collections and Household Waste Recycling Centres³⁷. WDF suggests 15,800 tonnes of green waste was collected at the kerbside, HWRC sites or from parks in Bradford in 2022. As the Esholt site currently receives 69,000 tonnes of green waste per year (according to WDI), there is deemed to be enough green waste capacity in Bradford at present. However, the government's 'Simpler Recycling' plans mean local authorities will be required to collect both garden and food waste by March 2026. The Esholt facility is not suitable for the treatment of food waste. If the council wishes to collect food and garden waste together, an alternative in-vessel composting facility will be required. However, if the council wishes to continue using the Esholt facility for separately collected green waste, food waste will need to be collected separately and then sent to an anaerobic digestion facility. On average, local authorities in the UK collect 56.6kg of food waste per household per year. This means that in Bradford approximately 11,860 tonnes of food waste from households could arise annually when the Simpler Recycling scheme is introduced and therefore, CBMDC should consider this level of capacity when making provision for additional organic waste treatment facilities.

This study has not identified any operational MRF facilities located within Bradford, however, it is understood that CBMDC awarded AWM a three-year contract in July 2023 to process comingled dry mixed recycling (DMR) waste. AWM runs four sites across Leeds and Bradford (transfer station), taking over a recycling contract previously held by HW Martin LTD, processing up to 42,000 tonnes of co-mingled dry mixed recycling per year³⁸. Therefore, it is understood that a large portion of Bradford's LACW recycling waste is sent outside of the District for sorting. After this contract runs out, Bradford should consider making provision for MRF facilities or will need to work with other local authorities to continue to use facilities in other districts. Similar to food and garden waste, Simpler Recycling will also mean local authorities will be required to collect a range of dry recyclable materials including glass, metal, plastic (rigid and flexibles), paper and card. At present there are no facilities located in Bradford that are capable of processing these materials from household sources. There is an abundance of metal recycling capacity although it is thought that this capacity is currently geared towards industrial metal waste, rather than metal waste arising from households.

Analysing data from WDI, shows that recyclates from C&I sources are going direct to some metal reprocessing, other processing and treatment sites, and sometimes via transfer stations both in and out of the district. C&I waste routes is dependent on the contracts businesses have in place to manage their waste.

Table 18 provides details on the recycling, reuse, and composting facilities in Bradford that processed LACW and C&I waste in 2022 (or 2021 for sites with no throughput recorded in 2022). A 22,321 tonne capacity gap was calculated for recycling in Bradford based on the sites' operational capacities, which increases to 197,041 tonnes by 2041 as more materials are expected to be

³⁷

<https://www.bradford.gov.uk/Documents/WasteManagementDPD/1%20Evidence%20base%20update//Waste%20needs%20assessment%20capacity%20gap%20analysis%20and%20site%20facility%20requirements%20study%20-%20Part%20B.pdf>

³⁸ <https://www.letsrecycle.com/news/awm-bradford-contract/>

collected separately for recycling. It is important to note that this does not take into account the composition of the waste arisings, and compares the recycling capacity currently being used for specific materials (C&I metals and garden waste) against the arisings of all recyclable material types (metal, organic and dry recyclables). As discussed, there appears to be enough recycling capacity for green waste and potentially also metal waste (at present), but a lack of recycling capacity for other materials, in particular DMR both now and in future, and food waste in future.

Bradford outsources recyclable waste to facilities outside the Local Authority and it is assumed both LACW and C&I is exported as there is a lack of overall recycling capacity within the district. Whilst this is acceptable as waste often travels across different local authority areas in the UK for treatment and recycling, waste planning authorities should plan for the disposal of waste and the recovery of mixed municipal waste in line with the proximity principle and should prepare Local Plans which identify sufficient opportunities to meet the identified needs of their area for the management of waste streams. Waste planning authorities should identify, in their Local Plans, sites and/or areas for new or enhanced waste management facilities in appropriate locations.

To allow for Bradford to be able to make provision for a wider variety of recyclates beyond metals, two capacity gaps have been provided in Table 18. Taking into account the current estimate of 25,000 tonnes arisings being metals, the surplus metal recycling capacity has been added to the capacity gap.

Table 18: LACW and C&I Recycling Capacity Gap

Facility Type	Site Name	Permitted Capacity (tonnes)	Operational capacity* used in capacity gap calculations (tonnes)		
			2022	2031	2041
Metal Recycling	Bradford Waste Traders Ltd (WML 60642)	75,000	52,000	52,000	52,000
Metal Recycling	Bradford Waste Traders Ltd (WML 101425)	74,999	270	270	270
Metal Recycling	Bradford Waste Traders Ltd (Dick Lane Metals WML 60647)	24,999	5,200	5,200	5,200
Metal Recycling	EMR**	130,000	59,700	59,700	59,700
Metal Recycling	Hector Moore Ltd	4,999	970	970	970

Facility Type	Site Name	Permitted Capacity (tonnes)	Operational capacity* used in capacity gap calculations (tonnes)		
			2022	2031	2041
Metal Recycling	Land at Foster Cliffe Farm	1,560	45	45	45
Car Breakers	Tay Motors	2,499	35	35	35
Metal Recycling	Ridgenorth Ltd	24,999	15,300	15,300	15,300
Composting (green waste)	Eshholt WWTW	150,000	69,425	69,425	69,425
Total operational capacity for metal recycling	133,520	133,520	133,520	133,520	133,520
Total operational capacity for composting	69,425	69,425	69,425	69,425	69,425
Total operational recycling / composting capacity	202,945	202,945	202,945	202,945	202,945
Arisings (all recyclable waste types)	225,266	301,537	301,537	399,986	399,986
Arisings (metals only)	25,000	33,465	33,465	44,390	44,390
Surplus capacity for metals	108,520	100,055	100,055	89,130	89,130
Capacity gap	22,321	98,592	98,592	197,041	197,041
Capacity gap excluding metals surplus	130,841	198,647	198,647	286,171	286,171

* Operational capacity is estimated based on max throughput of Hhold/Ind/Com waste in 2021-2022.

** Note EMR's site also accepts a small portion of hazardous and C&I metal wastes, but as Hhold/Ind/Com waste represented >95% of throughput in 2022, the sites capacity has been included in the LACW and C&I section of this study.

6.4 CD&E

Data from this waste stream is poor and it is common that waste is managed or re-used on construction sites, or exempt sites, rather than at permitted waste facilities.

Due to the weight and scale of CD&E waste, there is a need to ensure that there are appropriate sites to support the proper management of this type of waste near to where it arises. Such sites should be able to accommodate storage and processing facilities so that material can be recycled.

As per Table 19 Bradford has a capacity gap of 37,786 tonnes in 2022 rising to 208,844 tonnes in 2041. Based on information provided by CBMDC, Midgeham Cliff End Quarry is expected to close in 2028, The Far Shay in 2030, and Hallas Rough Quarry in 2038. This reduces the available CD&E capacity in Bradford by 170,721 tonnes by 2041. This, combined with a projected increase in arisings of CD&E waste, results in the capacity gap increase. As CD&E waste is heavy and typically travels fewer miles before disposal compared to LACW and C&I waste, CBMDC should look to develop additional local capacity to treat the material. At the time of writing, there are a number of infrastructure projects/schemes which are currently underway, such as the delivery of the Transforming Cities Fund to improve the pedestrian environment in Bradford City Centre, or may come forward over the Local Plan period, all of which may generate a requirement for additional waste management capacity. At this stage it is not possible estimate exact requirements.

Table 19: CD&E Waste Capacity Gap

Facility Type	Site Name	Permitted Capacity (tonnes)	Operational capacity* used in capacity gap calculations (tonnes)		
			2022	2031	2041
Inert LF	Hallas Rough Quarry	114,000	36,180	36,180	0
Inert LF	The Far Shay	100,000	77,800	0	0
Non-Haz Waste Transfer/treatment	Associated Waste Management Ltd	74,999	8,000	8,000	8,000
Physical Treatment	Hammerton Street Aggregate Recycling Facility	74,999	41,000	41,000	41,000
Inert LF and Recycling	Midgeham Cliff End Quarry	174,999	30,000	0	0

Facility Type	Site Name	Permitted Capacity (tonnes)	Operational capacity* used in capacity gap calculations (tonnes)		
			2022	2031	2041
Inert Waste Transfer/ Treatment	Beckside Works	249,999	29,200	29,200	29,200
Total capacity			222,127	114,380	78,200
Arisings			259,913	272,764	287,044
Capacity Gap			37,786	158,384	208,844

* Operational capacity is estimated based on max throughput of Hhold/Ind/Com waste in 2021-2022.

6.5 Hazardous

Based on Table 20, Bradford has a capacity gap of 21,296 tonnes in 2022, rising to 23,785 tonnes in 2041 caused by a projected increase in arisings of hazardous waste. No changes to existing capacity were identified before 2041.

CBMDC should look to develop additional local capacity to treat their hazardous waste or will need to work with other local authorities via the Duty to Cooperate to ensure continued access to capacity. Note there are three sites excluded from the hazardous capacity estimates in Table 20 (E M R, Hector Moore Ltd and Ridgenorth Ltd T/a Tommy Holmes) because they only accept only very small portions of hazardous waste, representing <95% of site throughput. These sites have instead been included in the capacity estimates for LCAW and C&I, or CD&E based on the throughput types recorded on WDI.

Table 20: Hazardous Waste Capacity Gap

Facility Type	Site name	Permitted Capacity (tonnes)	Operational capacity* used in capacity gap calculations (tonnes)		
			2021	2031	2041
Vehicle Depollution Facility	Bradford 4x4 Spares Limited	4,999	200	200	200
Car Breaker	Bradford Autospares & Salvage	2,499	15	15	15

Facility Type	Site name	Permitted Capacity (tonnes)	Operational capacity* used in capacity gap calculations (tonnes)		
			2021	2031	2041
Car Breaker	City Salvage	2,499	20	20	20
Metal Recycling	Bradford Waste Traders Ltd (WML 60642)	75,000 (note permitted capacity is split between hazardous and LACW/C&I as per WDI waste received.	1,400	1,400	1,400
Metal Recycling	Bradford Waste Traders Ltd (WML 65403)	24,999	350	350	350
Car Breaker	Listerhills Salvage	2,500	15	15	15
Metal Recycling	Newgate Works (Bradford Waste Traders WML 60648)	4,999	270	270	270
Car Breaker	Quarry Autospares	4,999	20	20	20
Car Breaker	CCS Auto Salvage & Spares Ltd Simmonites	330	40	40	40
Physical Chemical Treatment	Bow Beck Clinical Waste Treatment Facility	24,999	0	0	0
Vehicle Depollution Facility	Bank Auto Spares/Manningham Car Breakers	4,999	60	60	60
Vehicle Depollution Facility	Shipley Auto Spares	5,000	5	5	5
Car Breaker	Yorkshire Van Breakers Ltd	2,499	100	100	100

Facility Type	Site name	Permitted Capacity (tonnes)	Operational capacity* used in capacity gap calculations (tonnes)		
			2021	2031	2041
Vehicle Depollution Facility	Laisterdyke Vehicle Dismantlers	2,499	55	55	55
Total capacity			2,550	2,550	2,550
Arisings			23,846	25,025	26,335
Capacity Gap			21,296	22,475	23,785

* Operational capacity is estimated based on max throughput of Hhold/Ind/Com waste in 2021-2022.

6.6 Agricultural Waste

Only a very small quantity of agricultural waste is generated in Bradford, and it is not considered necessary to provide additional facilities for this waste stream.

6.7 Radioactive Waste

This waste places no requirement on solid waste management infrastructure and it is not necessary to provide additional facilities for this waste stream.

6.8 Waste Water (Sewage Sludge)

Sewage sludge is a by-product of the treatment process for waste water. Bradford has a number of WWTW that serve the local community and parts of neighbouring areas. Though data suggests one facility, Yorkshire Water's second largest sewage sludge treatment works plant, Esholt Waste Water Treatment Works received sewage sludge over the reporting period. This site provides sewage sludge treatment for Bradford and Leeds serving a population of 760,000. Yorkshire Water use information in the public domain to forecast when upgrades will be required. They monitor the sites performance and population information from ONS and council's monitoring reports and upgrade the works accordingly, ahead of needs. Implications for the wastewater treatment network will be addressed via the Local Infrastructure Plan and further discussions will take place with Yorkshire Water as part of developing this when required.

7 Cross-boundary Considerations

7.1 Bradford Waste Destinations

Waste is a strategic cross-boundary issue and is subject to the Duty to Cooperate, whereby in preparing Local Plans, waste planning authorities should work collaboratively in groups with other waste planning authorities and in two-tier areas with district authorities through the statutory duty to cooperate, to provide a suitable network of facilities to deliver sustainable waste management.

To understand how much waste moves to/from Bradford, it is important to understand the destination of waste arising in Bradford, which has been extracted from WDI waste received data. Table 21 shows that of the waste arising in Bradford district in 2022, 60% was received at facilities

in Bradford (419,249 tonnes), whilst 40% was exported to facilities in other areas (276,695 tonnes).

Table 21: Management of Waste Arising in Bradford in 2022

	2022	
	Tonnage*	Percentage
Total Waste Arisings	695,949	100
Managed within Bradford District	419,249	60
Exported to Other WPA Areas	276,700	40

Breakdown by WDI waste category:

Household/Industrial/Commercial	474,174	100
- Managed within Bradford District	275,821	58
- Exported to Other WPA Areas	198,353	42
Hazardous	18,904	100
- Managed within Bradford District	2,820	15
- Exported to Other WPA Areas	16,084	85
Construction & Demolition	202,870	100
- Managed within Bradford District	140,608	69
- Exported to Other WPA Areas	62,262	31
Agricultural Waste	124	100
- Managed within Bradford District	49	40
- Exported to Other WPA Areas	75	60

Source: Waste Data Interrogator, 2022 (Environment Agency)

*2022 data excludes waste arisings apportioned from West Yorkshire and Yorks & Humber due to uncertainty in specific locations of waste attributed to Bradford City.

7.2 Bradford facilities

Of the waste arising in Bradford in 2022, for the 60% being received by facilities in Bradford, Table 22 demonstrates the type of sites receiving this waste. This indicates there is limited recycling or incineration capacity within Bradford (with the exception of metal recycling sites), with 65% of waste received at transfer stations and 19% at landfill within the District.

Table 22 Type of sites within Bradford, receiving waste that arises in Bradford (2022)*

Site Type	Tonnes Received 2022	% of total tonnes received
Landfill	77,730	19%
MRS	22,411	5%
Transfer	272,896	65%
Treatment	46,213	11%

Site Type	Tonnes Received 2022	% of total tonnes received
Total	419,249	100%

Source: Waste Data Interrogator

*(excludes chapter 19 waste)

7.3 Exports

Other local authority facilities

Of the waste arising in Bradford in 2022, for the 40% exported, Table 23 demonstrates the type of sites receiving this waste. This indicates a large portion of Bradford's waste is being exported for treatment (this includes biological treatment, chemical treatment, hazardous treatment, inert treatment, DMR sorting and recycling, physical treatment, WEEE processing and transfer), 20% is exported for landfill/incineration and the remainder for other recycling or transfer to other facilities.

*Table 23 Exports of waste from Bradford into other local authority areas and the site types it is received at (2022)**

Site Type	Tonnes Received 2022	% of total tonnes received
Incineration	19,643	7%
Landfill	35,533	13%
Mobile Plant	0	0%
MRS (metal recycling)	21,580	8%
On/In Land	1,008	0%
Processing	13,057	5%
Storage	718	0%
Transfer	16,551	6%
Treatment	168,608	61%
Total	276,700	100%

Source: Waste Data Interrogator

*(excludes chapter 19 waste)

Regional destinations

Via its existing contracts with AWM, CBMDC has a reliance on access to LACW treatment capacity in neighbouring boroughs and planning authorities. Continued access to these facilities is vital to ensure local capacity gaps are not exacerbated and the efficient treatment and recovery of waste can continue at scale. Table 24 shows that around 80% of waste arising in Bradford is managed within the Yorkshire and Humber Region (excluding facilities in Bradford District). After Yorkshire and Humber, the largest proportions of waste are exported to the East Midlands.

Table 24 Destination of Waste Arising in Bradford (2022) (By Region and WPA)*

Region	WPA	Hazardous	Hhold/Ind/Com	Inert/C+D	Total
East Midlands	City of Derby	0	20	0	20
	Derbyshire	313	8,541	88	8,942
	Leicester City	0	7	0	7
	Leicestershire	46	70	0	116
	Lincolnshire	0	76	229	305
	Northamptonshire	1,334	1,139	0	2,473
	Nottingham City	348	0	0	348
	Nottinghamshire	93	17,653	15	17,761
East of England	Bedford	2	196	0	198
	Cambridgeshire	1	0	0	1
	Essex	206	0	0	206
	Hertfordshire	11	0	0	11
	Norfolk	0	0	0	0
	Peterborough	0	2	0	2
	Suffolk	1	0	0	1
London	Barking and Dagenham	0	19	0	19
North East	Gateshead	4	0	1	5
	Hartlepool	26	6,959	0	6,985
	Newcastle Upon Tyne	0	23	0	23
	Northumberland	0	0	0	0
	Redcar and Cleveland	117	34	0	151
	South Tyneside	0	0	0	0
	Stockton-on-Tees	694	0	18	712
	Sunderland	1	0	37	38
North West	Blackburn with Darwen	4	0	0	4
	Bolton	18	7	72	97
	Bury	6	48	46	101
	Cheshire East	164	11	0	175
	Cheshire West and Chester	1,586	932	0	2,517
	Halton	0	6	89	96
	Knowsley	136	1	0	136
	Lancashire	1,192	148	118	1,459
	Liverpool	1,520	294	0	1,814

Region	WPA	Hazardous	Hhold/Ind/Com	Inert/C+D	Total
	Manchester	82	665	0	747
	Oldham	0	214	0	214
	Salford	469	150	0	619
	St Helens	71	361	0	431
	Tameside	3	21	0	24
	Trafford	218	469	0	688
	Wigan	3	127	0	130
South East	Buckinghamshire	0	1,255	0	1,255
	Hampshire	183	0	0	183
	Kent	0	2,872	0	2,872
	Oxfordshire	0	0	0	0
South West	Bristol City	1	922	0	924
	Gloucestershire	0	0	0	0
	North Somerset	3	0	0	3
West Midlands	Birmingham City	10	51	0	61
	Dudley	0	1	0	1
	Herefordshire	0	0	0	0
	Sandwell	2	0	0	2
	Staffordshire	161	15	0	176
	Stoke-on-Trent City	16	342	0	358
	Telford and Wrekin	14	0	0	14
	Walsall	231	59	0	290
	Wolverhampton	623	0	0	623
	Worcestershire	9	0	12	22
Yorks & Humber	Barnsley	13	346	96	455
	Calderdale	20	15,308	1,051	16,379
	Doncaster	1	13	131	145
	East Riding of Yorkshire	0	677	1,008	1,685
	Kingston Upon Hull City	14	174	0	189
	Kirklees	2,286	2,662	26,227	31,176
	Leeds	1,979	125,494	17,390	144,863
	North East Lincolnshire	256	1	0	257
	North Lincolnshire	20	69	1	90
	North Yorkshire	32	5,449	4,380	9,861

Region	WPA	Hazardous	Hhold/Ind/Com	Inert/C+D	Total
	Rotherham	679	334	4,573	5,586
	Sheffield	317	597	1,200	2,113
	Wakefield	224	3,308	5,478	9,010
	York, City of	322	209	0	531

Source: Waste Data Interrogator

*Excludes waste received/managed at facilities within Bradford District.

Top receiving facilities

The top five facilities that received waste from Bradford in 2022 are shown in Table 25. As these sites are receiving significant quantities of Bradford's waste, the WPAs in which these are located should be engaged under the obligation for Duty to Cooperate, to ensure future provision of capacity for waste arising from the district, or to be notified of any issues relating to the ongoing operation of these sites.

The AWM Valley Farm Road receives the LACW residual waste, as discussed in section 6.3. The rest of these sites primarily accept C&I waste.

Table 25 Top facilities receiving waste from Bradford (2022)

Site Name	WPA	Site Type	Tonnes of Bradford waste received 2022*
AWM Valley Farm Road MRF	Leeds	MRF	109,968
Bradley Park Landfill	Kirklees	Landfill	26,692
JG Pears Power (O&M) Ltd	Nottingham	Incineration (Animal By-Products Incinerator)	17,649
B W Skip Hire	Leeds	Metal Recycling (Vehicle depollution facility)	16,597
Stainland Board Mill	Calderdale	Paper Recycling	10,063
		Total	180,969

*(excludes chapter 19 waste)

Source: Waste Data Interrogator

7.4 Imports

Waste is also imported into Bradford from other local authority areas. In 2022 just over 300,000 tonnes of waste was imported as per Table 26, around a quarter of this waste was received at Bradford's metal recycling sites, a quarter at transfer stations, 43% at treatment sites and 9% at landfill.

99% of waste imported into Bradford was from the Yorks and Humber region in 2022. The top WPAs exporting waste to Bradford were (in order): Leeds, Wakefield, Kirklees and Calderdale.

*Table 26 Imports of waste into Bradford from other local authority areas and the site types it is received at (2022)**

Site Type	Tonnes Received 2022	% of total tonnes received
Landfill	28,449	9%
MRS (metal recycling)	77,090	25%
Transfer	69,345	23%
Treatment	129,481	43%
Total	304,365	100%

*(excludes chapter 19 waste)

Source: Waste Data Interrogator

7.5 Net waste movement

On balance, in 2022 Bradford exported 276,695 tonnes of waste to other areas and imported 304,365 tonnes of waste from other areas. This suggests the district is a net importer of waste, so whilst it relies on other WPAs for treatment of some of its waste, it also provides capacity used by other WPAs, particularly for treatment and metal recycling. CBMDC should continue to engage with other waste planning authorities to ensure there is enough treatment capacity to process waste across the region and to comply with the Duty to Cooperate.

8 Conclusions and Recommendations

8.1 Capacity Gap Results

Anthesis undertook an independent waste capacity gap assessment within Bradford district. The work was underpinned by estimating the current arisings (2022) of different waste types arising within the district, including LACW, C&I, CD&E, Hazardous, Agricultural, Low Level Radioactive and Waste Water. Current arisings were then used to project future arisings up to 2041, based on estimated waste growth and anticipated recycling rates. The existing and planned waste treatment capacity within Bradford was also identified, which was then compared against current and projected arisings to estimate Bradford District's waste treatment 'capacity gaps'.

Capacity gaps were not calculated for three waste types for the following reasons:

- **Agricultural waste:** Waste capacity calculations have not been deemed necessary for Bradford, as a result of minimal agricultural waste generation requiring off-site treatment, placing very limited requirements on waste management infrastructure.
- **Low Level Radioactive waste:** This waste type places no requirement on solid waste management infrastructure, therefore it is not necessary to provide additional facilities for this waste stream.
- **Waste Water:** Yorkshire Water use information in the public domain to forecast when upgrades will be required to their Esholt facility. They monitor the site's performance and population information from ONS and council's monitoring reports and upgrade the works accordingly, ahead of needs. Implications for the waste water treatment network will be

addressed via the Local Infrastructure Plan and further discussion will take place with Yorkshire Water as part of developing this when required.

The analysis suggests that there are capacity gaps within Bradford over the Local Plan period (to 2041) for residual C&I and LACW, recyclable C&I and LACW, CD&E waste and Hazardous waste.

LACW and C&I Residual Waste: For residual C&I waste, this gap may be partially filled by Endless Energies planned 100,000 tonnes per year EfW facility, however, it is not clear whether this facility will go ahead as a construction date is unknown. In addition, Bradford's 12-year contract with AWM is still in place to treat large amounts of Bradford's LACW residual waste, AWM treats CBMDC's waste outside of the district. Bradford should continue to liaise with WPAs receiving this waste. However, this consideration should take into account existing regional EfW capacity. The most suitable residual waste infrastructure is likely to be enhanced separation facilities, perhaps at existing transfer stations, which remove more recyclables from residual waste streams and production of RDF, to better utilise the already existing network of EfW facilities.

LACW and C&I Recycling: It is important to note that the capacity gap shown in Table 27 does not take into account the composition of the waste arisings, and compares the recycling capacity currently being used for specific materials (C&I metals and garden waste) against the arisings of all recyclable material types (metal, organic and dry recyclables). As discussed, there appears to be enough recycling capacity for industrial green waste and metal waste (at present), but a lack of recycling capacity for other materials, in particular dry recyclables collected comingled (DMR) both now and in future, and food waste in future as per the below explanations:

- **Dry Recyclables:** Bradford has a large quantity of industrial metal / vehicle recycling capacity but lacks MRFs (for sorting dry recyclables collected comingled, predominantly from households but also from some commercial properties) and recycling facilities capable of processing other recyclable materials. CBMDC awarded Associated Waste Management (AWM) a three-year contract in July 2023 to process comingled dry recyclables waste, Bradford should consider making provision for MRFs for after this contract expires. The quantity of dry recyclables (particularly C&I) collected co-mingled compared to that which is collected separately and may go directly to reprocessors, is not extractable from WDI, and so it is unclear whether there is sufficient sorting capacity for comingled dry recyclable waste. Two capacity gaps have been calculated in Table 27, to enable Bradford to understand the additional requirement in land terms, to facilitate the recycling of a wider variety of materials than is currently done within Bradford.
- **Organic Waste:** At present there is enough organics waste treatment capacity in Bradford to treat green waste that is collected from within the local authority, however, when the government's Simpler recycling scheme is introduced in 2026 and food waste collection from households become mandatory, Bradford will need to consider making provisions for organic waste treatment facilities, for example anaerobic digestion or in-vessel composting.

CD&E Waste: Bradford does not have enough capacity to treat the quantity of CD&E waste that arises within the district and 31% of CD&E waste generated in Bradford District is treated outside the area – mainly in the wider West Yorkshire region. Bradford should consider making provision for CD&E treatment facilities and/or should work closely with sites receiving CD&E waste from Bradford in the wider West Yorkshire region, as CD&E waste is heavy and typically travels fewer miles for treatment compared to other waste types, therefore treatment at sites closer to Bradford is likely to be easier.

Hazardous Waste: There is not enough capacity in Bradford to treat the quantity of hazardous waste arisings in the district. It is likely that some hazardous waste types which require specialist

treatment only available at specific sites in the UK will continue to be exported from Bradford, however, CBMDC should consider making provision for hazardous waste treatment facilities where possible.

Table 27: Summary of results central scenario (low and high scenarios available in annex)

Waste Type		2022	2031	2041
LACW and C&I Residual	Arisings (LACW)	150,579	127,580	98,410
	Arisings (C&I)	203,076	171,055	125,908
	Capacity	0	0	0
	Capacity Gap	353,655	298,635	224,318
LACW and C&I Recycling	Arisings (LACW dry recyclables and organic waste)	72,068	98,701	132,430
	Arisings (C&I dry recyclables and organic waste)	153,198	202,835	267,555
	Capacity for Composting (mainly green waste)	69,425	69,425	69,425
	Capacity for metal recycling	133,520	133,520	133,520
	Surplus capacity for metal recycling	108,520	100,055	89,130
	Capacity Gap (calculated by combining composting and metal capacity)	22,321	98,592	197,041
	Capacity Gap excluding metals surplus	130,841	198,647	286,171
CD&E	Arisings	259,913	272,764	287,044

Waste Type		2022	2031	2041
	Capacity	222,127	114,380	78,200
	Capacity Gap	37,786	158,384	208,844
Hazardous	Arisings	23,846	25,025	26,335
	Capacity	2,550	2,550	2,550
	Capacity Gap	21,296	22,475	23,785

8.2 Recommendations for future facilities

The PPG states that Local plans should not generally prescribe waste management technologies to deal with specific waste streams. Rather, the Plan should identify the type or types of waste management facility that would be appropriately located on the allocated site or in the allocated area. Therefore, in order to calculate the amount of land needed in Bradford to meet the identified capacity gap, an average throughput per hectare to encompass a range of technologies must be used. Producing a robust figure for the amount of waste which can be processed on a given area of development land is not straight forward. A number of factors can have a significant impact on this figure, such as the type of waste management facility employed, and the type of waste being processed. Similarly, the range of technologies used for particular waste management process types can impact on the amount of land required to establish that technology.

In calculating overall land take requirements, some facility types will be required more than others. For instance, with the focus on increased recycling of both dry recyclates and organic waste, the number of facilities required to achieve UK recycling targets may mean more land will be required for these types of facilities compared to that required for residual waste treatment and disposal.

For land take calculations presented in Table 28, a figure of 60,000 tonnes throughput per hectare has been used. This conversion figure has been based upon a number of data sources and conversion factors used for other adopted waste plans, for example the South London Waste Plan and the West London Waste Plan. These land take requirements are high level estimates based on existing facilities and their operations (which can vary significantly), and do not take into account potential additional land required for any environmental mitigations such as biodiversity net gain.

Table 28 Facilities and land take required to close capacity gap by 2041

Waste type	Type of facility required	Capacity required (tonnes)				Land take requirement (total hectares for all sites)
			2022	2031	2041	2041
LACW and C&I Residual	Energy from Waste, Mechanical Biological Treatment, RDF/SRF production, landfill		353,655	298,635	224,318	3.7
LACW and C&I Recycling	Anaerobic Digestion, In-Vessel Composting, Composting, Material Recovery Facility	Capacity gap	22,321	98,592	197,041	3.3
		Capacity gap excluding metal surplus	130,841	198,647	286,171	4.8 ³⁹
CD&E	CD&E specialist waste treatment		37,786	158,384	208,844	3.5
Hazardous	Hazardous specialist waste treatment		21,296	22,475	23,785	0.4

³⁹ Note this is instead of 3.3, rather than in addition to. If the capacity gap excluding the metal surplus is to be used, there is an additional 1.5 ha required.

As capacity gaps have been calculated for residual C&I and LACW, recyclable C&I and LACW, CD&E waste and Hazardous waste, it is recommended that CBMDC consider making provisions through their Local Plan and identify sufficient opportunities to meet the identified capacity gaps, ensuring that the sites and areas are suitable for the provision of waste management facilities and are in appropriate locations.

CBMDC is both an importer and exporter of waste, and therefore, should continue to engage with WPAs within the Yorks and Humber region, and others receiving significant tonnages of waste from the Bradford District.

9 Appendix

9.1 WDF Questions extracted from waste data flow to conduct the LACW analysis

Question	Description
Q10	Tonnes of material collected through kerbside schemes from household sources by LA or its contractors
Q11	Tonnes of material collected from commercial, industrial or other non-household sources by LA or its contractors
Q12	Tonnes of material collected through kerbside schemes by non-contracted voluntary/community sector from household sources
Q14	Tonnes of material collected for recycling/reuse at CA Sites operated by LA or its contractors
Q16	Tonnes of material collected for recycling/reuse at CA Sites operated by LA or its contractors
Q17	Tonnes of material collected at bring sites operated by LA or its contractors
Q18	Composting / Recycling tonnage collected through any other recycling schemes. Please note that it is optional to report how much of the total tonnage is from household sources
Q23	Please provide details of other waste collected for disposal. (The destination of the residual is required for authorities in Wales only.)
Q33	Tonnes of materials collected at bring sites operated by voluntary / community sector
Q34	Tonnes of material collected for recycling at street recycling bins

9.2 Bradford Population Growth Rates

Year	SNPP Population (Bradford)	Growth Rate
2022	543919.918	Baseline
2023	545205.119	0.24%
2024	546349.602	0.21%
2025	547332.649	0.18%

Year	SNPP Population (Bradford)	Growth Rate
2026	548299.773	0.18%
2027	549216.305	0.17%
2028	550112.492	0.16%
2029	551009.27	0.16%
2030	551917.88	0.16%
2031	552798.699	0.16%
2032	553725.601	0.17%
2033	554689.202	0.17%
2034	555681.716	0.18%
2035	556690.692	0.18%
2036	557760.121	0.19%
2037	558913.403	0.21%
2038	560132.888	0.22%
2039	561380.06	0.22%
2040	562645.339	0.23%
2041	563934.896	0.23%

9.3 Bradford Employment Growth Rates

Year	Employment Needs (number of jobs)	Growth Rate
2022	201,111	Baseline
2023	202,222	0.55%
2024	203,333	0.55%
2025	204,444	0.54%
2026	205,555	0.54%

Year	Employment Needs (number of jobs)	Growth Rate
2027	206,666	0.54%
2028	207,777	0.53%
2029	208,888	0.53%
2030	209,999	0.53%
2031	211,110	0.53%
2032	212,221	0.52%
2033	213,332	0.52%
2034	214,443	0.52%
2035	215,554	0.52%
2036	216,665	0.51%
2037	217,776	0.51%
2038	218,887	0.51%
2039	219,998	0.51%
2040	221,109	0.50%
2041	222,220	0.50%

9.4 LACW and C&I Capacity Gap Results (Low and High Scenarios)

LACW and C&I Residual Waste Capacity Gap (Low and High Recycling Scenarios)

	2022	2031	2041
Capacity	0	0	0
High Scenario			
LACW and C&I Arisings	353,656	279,088	179,161
Capacity Gap	353,656	279,088	179,161
Low Scenario			
LACW and C&I Arisings	353,656	312,140	255,534
Capacity Gap	353,656	312,140	255,534

LACW and C&I Recycling Capacity Gap (Low and High Recycling Scenarios)

	2022	2031	2041
Capacity	202,945	202,945	202,945
High Scenario			
LACW and C&I Arisings	225,267	321,086	445,144
Capacity Gap	22,322	118,141	242,199
Capacity Gap (excluding metals surplus)	130,842	216,027	326,317
Low Scenario			
LACW and C&I Arisings	225,267	288,034	368,771
Capacity Gap	22,322	85,089	165,826
Capacity Gap (excluding metals surplus)	130,842	186,643	258,420

9.5 Transfer Stations / Storage Facilities in Bradford

Site name	Operator	Post Code	Permit	Basic Waste Category	Annual Permitted Capacity (t)	Waste Received 2021* (t)	Waste Received 2022* (t)
Peel Park Depot	City of Bradford MDC	BD2 4BX	60644	Hhold/Ind/Com	4,999	0	334
Premises off Ripley Road	On the Dot Ltd	BD4 7EX	60638	Hhold/Ind/Com; Inert/C+D	24,999	2,445	2,420
Bradford Bulk Transfer Loading Station	City of Bradford MDC	BD4 8SZ	200000	Hhold/Ind/Com; Hazardous	216,500	0	137,300
Highspeed Group Ltd	Acumen Waste Services Ltd	BD21 4PQ	65417	Hhold/Ind/Com; Hazardous	5,000	511	22
Dealburn Road Household Waste Recycling Centre	City of Bradford MDC	BD12 0RG	60728	Hhold/Ind/Com; Hazardous; Inert/C+D	10,000	4,768	4,555
Keighley Household Waste Site	City of Bradford MDC	BD21 4BZ	60726	Hhold/Ind/Com; Hazardous; Inert/C+D	10,000	7,192	5,346
Bradford H W S	City of Bradford MDC	BD4 8SZ	60722	Hhold/Ind/Com; Hazardous; Inert/C+D	12,000	7,192	7,011
Dowley Gap Recycling Centre And Household Waste Site	City of Bradford MDC	BD16 1TP	60723	Hhold/Ind/Com; Hazardous; Inert/C+D	10,000	7,784	6,461
Keighley Bulk Transfer Station	City of Bradford MDC	BD21 4BZ	60721	Hhold/Ind/Com; Hazardous; Inert/C+D	150,000	65,377	40,773
Envirowaste Services Ltd	Envirowaste Services Ltd	BD8 7DS	60658	Inert/C+D	24,950	24,202	23,854
Hill Top Works	Autospares (Bingley) Ltd	BD16 6AA	60651	Hhold/Ind/Com; Inert/C+D	24,999	936	339
City Of Bradford Metropolitan District Council	City of Bradford MDC	BD8 7DQ	65546	Hhold/Ind/Com; Hazardous; Inert/C+D	24,999	5,830	7,912
Premises at Whitewell Street	Associated Waste Management Ltd	BD4 7Dy	60687	Hhold/Ind/Com; Inert/C+D	75,000	72,459	46,920

Site name	Operator	Post Code	Permit	Basic Waste Category	Annual Permitted Capacity (t)	Waste Received 2021* (t)	Waste Received 2022* (t)
Sparton Road Site	McHale Contracts & Plant Environmental LLP	BD12 0RY	65487	Hazardous	25,000	496	542
Laisterdyke Transfer Station	UK Waste Management Ltd	BD4 8UF	60684	Hhold/Ind/Com	74,999	22,190	23,442
Land Of Bradley Road	C. Atkinson	BD20 9PW	60702	Hhold/Ind/Com; Inert/C+D	917	0	2,430
Wakefield Road Depot	City of Bradford MDC	BD4 7NW	60700	Hhold/Ind/Com; Hazardous; Inert/C+D	4,200	0	0
Stockbridge Depot	City of Bradford MDC	BD21 4BZ	60699	Hhold/Ind/Com; Hazardous; Inert/C+D	4,400	0	0
Old Crown Dyeworks	Ellis Fairbank Recycling Ltd	BD4 8TB	60656	Hhold/Ind/Com	4,401	1	48,312
Harris Street Depot	City of Bradford MDC	BD1 5HU	60696	Hhold/Ind/Com; Hazardous; Inert/C+D	3,100	7	0
Unit 15	Bradford Waste Management & KAR Skip Hire Ltd	BD4 8SX	103792	Hhold/Ind/Com; Inert/C+D	74,999	6,867	6,476
Hallas Rough Quarry	Flappit Tipping & Recycling Ltd	BD13 4NB	400729	Inert/C+D	75,000	21,301	28,800

*Waste received from all Local Authorities, not only Bradford. Combined capacity for all basic waste categories accepted by the individual site as per WDI e.g. Inert/C+D, Hhold/Ind/Com, Hazardous. Source WDI.

9.6 Full List of Sites used in Capacity Estimates

Permit	WML	Site Name	Operator	Site Category	Permitted annual capacity (t)
BP3899ZS	60642	Bradford Waste Traders Ltd	Bradford Waste Traders Ltd	MRS	75,000
WE1135AB	120400	Beckside Works	Mone Brothers Excavations Ltd	Treatment	249,999
LB3302HU	103998	Bradford 4x4 Spares Limited	P. Illingworth; D. Ripley	MRS	4,999
TP3092ZN	65323	Bradford Autospares & Salvage	S.C. Tempest	MRS	2,499
RP3392ZA	65451	City Salvage	J. Mahmood	MRS	2,499
NP3792ZJ	65403	Bradford Waste Traders Ltd (WML 65403)	Bradford Waste Traders Ltd	MRS	24,999
DB3604GX	65441	Listerhills Salvage	Listerhills Salvage Ltd	MRS	2,500
SP3399ZT	60648	Newgate Works (Bradford Waste Traders WML 60648)	Bradford Waste Traders Ltd	MRS	4,999
ZP3494ZK	65067	Quarry Autospares	J. Moore	MRS	4,999
CB3508XM	60675	CCS Auto Salvage & Spares Ltd Simmonites	CCS Auto Salvage & Spares Ltd	MRS	330
HP3632MR	65292	Bow Beck Clinical Waste Treatment Facility	G.W. Butler Ltd - now owned & run by Cliniwaste	Treatment	24,999
FB3606TB	400866	Bank Auto Spares/Manningham Car Breakers	A. Hussain/T. Ahmed	MRS	4,999
HB3301LL	101817	Shipley Auto Spares	G. Spencer	MRS	5,000
PP3496ZS	65518	Yorkshire Van Breakers Ltd	Yorkshire Van Breakers Ltd	MRS	2,499
HB3303ZY	406171	Laisterdyke Vehicle Dismantlers	A Kelly, F. Kelly & S. Kelly	MRS	2,499
BP3899ZS	60642	Bradford Waste Traders Ltd	Bradford Waste Traders Ltd	MRS	75,000
FP3992SF	101425	Bradford Waste Traders Ltd	Bradford Waste Traders Ltd	Treatment	74,999
BP3799ZP	60647	Dick Lane Metals	Bradford Waste Traders Ltd	MRS	24,999

Permit	WML	Site Name	Operator	Site Category	Permitted annual capacity (t)
LB3402TR	60643	E M R	Sheppard Group Bradford Ltd	MRS	130,000
PP3299ZM	60633	Hector Moore Ltd	Hector Moore Ltd	MRS	4,999
GP3999ZT	60707	Land at Foster Cliffe Farm	F. Wainmans	MRS	1,560
RP3992ZX	65453	Tay Motors	F. Moheghegh	MRS	2,499
PP3699ZC	60635	Ridgenorth Ltd T/a Tommy Holmes	Ridgenorth Ltd	MRS	24,999
KP3337AN	65472	Esholt Waste Water Treatment Works	Yorkshire Water Services Ltd	Treatment	150,000
EB3530DY	103792	Unit 15, Iron Works Park	Bradford Waste Management & KAR Skip Hire Ltd (previously F. Khan)	Treatment	74,999
AB3602MU	65203	Hallas Rough Quarry	Flappit Tipping & Recycling Ltd	Landfill	114,000
FB3902XL	404583	The Far Shay	Soil Hill Quarries (Yorkshire) Ltd	Landfill	100,000
TP3496ET	102427	Associated Waste Management Ltd	Associated Waste Management Ltd	Treatment	74,999
JB3504KN	400354	Hammerton Street Aggregate Recycling Facility	Blackshaw Landfill Ltd (prev AWM)	Treatment	74,999

*It is understood that in addition to the capacity listed above that there are other specialist facilities that manage specific types of wastes or are for the specific use of businesses. These include two animal rendering plants (Omega Proteins, Erlings Works, Thornton and P. Waddington & Co, Buck Street, Bradford).