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Waste Need Assessment Update 2018

HEREFORDSHIRE MINERALS AND WASTE LOCAL PLAN DRAFT PLAN

Hendeca
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Contents

Annex

1. Introduction

1.1 Background and Purpose of this Document

1.1.1 Herefordshire Council has commenced preparation of the Minerals and Waste Local Plan (MWLP) to guide development related to minerals and waste within Herefordshire up to 2031.

1.1.2 A Waste Need Assessment was produced in February 2017 (WNA 2017) to provide an understanding of waste management infrastructure within Herefordshire and to consider potential future demand so as to prepare comprehensive, compelling and long-lasting policy.

1.1.3 Key data sources, principally WasteData Flow (the local authority collected waste data base) and the Environment Agency's Waste Data Interrogator (WDI) are updated each year, with the data for 2016 becoming available.

1.1.4 This report updates the principal data tables and figures from the WNA 2017 where new data is available. It also addresses key matters raised in response to the Issues and Options Report (I&O Report) such as a desire to see increased recycling and consideration of cross boundary movements.

1.1.5 This updated need assessment (WNA Update 2018) has been prepared to be a discrete report, so the reader does not need to refer back to WNA 2017; where there are interesting comparisons to be made cross referencing is provided as appropriate.

Plan making context

1.1.6 The National Planning Policy for Waste (published October 2014, the NPPW) identifies that positive planning should play a pivotal role in delivering waste ambitions through:

- delivery of sustainable development and resource efficiency, including provision of modern infrastructure, local employment opportunities and wider climate change benefits, by driving waste management up the waste hierarchy;
- ensuring that waste management is considered alongside other spatial planning concerns, such as housing and transport, recognising the positive contribution that waste management can make to the development of sustainable communities;
- providing a framework in which communities and businesses are engaged with and take more responsibility for their own waste, including by enabling waste to be disposed of or, in the case of mixed municipal waste from households, recovered, in line with the proximity principle;
- helping to secure the re-use, recovery or disposal of waste without endangering human health and without harming the environment; and
- ensuring the design and layout of new residential and commercial development and other infrastructure (such as safe and reliable transport links) complements sustainable waste management, including the provision of appropriate storage and segregation facilities to facilitate high quality collections of waste.

1.1.7 The NPPW requires waste planning authorities to prepare a local plan addressing waste management that: is based on a proportionate evidence base; will identify the level of need of their area; and will identify sites and/or areas for new or enhanced waste management facilities.

1.1.8 A range of wastes are generated and managed within Herefordshire and these are all addressed as relevant within this need assessment.

1.1.9 The Minerals and Waste Local Plan (MWLP) will be applicable across all of Herefordshire and is intended to have a plan period to 2031. Once adopted, it will sit with the Herefordshire Core Strategy[1] and be part of the development plan.

1.2 Structure

1.2.1 This report is structured as follows:

- Section 1 - Introduction;
- Section 2 - Context: repeats the key definitions for waste and the sources of data used;
- Section 3 - Permitted facilities in Herefordshire: updates the current waste management infrastructure operating within the county;
- Section 4 - Waste Arisings: estimating waste arisings for year 2016 where data is available and drawing comparisons with 2015 data;
- Section 5 - Waste Forecasts: estimating future waste arisings, up to 2035; and
- Section 6 - Capacity Needs: considering the need for new waste management capacity.

[1] Herefordshire Local Plan Core Strategy 2011-2013, Herefordshire Council, October 2015

2. Context

2.1 Explanations for Waste Terminology

2.1.1 Waste terminology has changed over time as a result of greater understanding of different waste streams, changes to waste classification systems and the adoption of common European definitions. This section explains some key definitions used within this report.

Municipal waste, local authority collected waste and household waste

2.1.2 In 2011, the UK adopted the European definition of municipal waste, which is '*waste from households, as well as other waste which, because of its nature or composition, is similar to waste from households*'. This definition is quite broad and includes those wastes not collected by a local authority (principally commercial and industrial wastes).

2.1.3 To provide consistency with the data recorded pre-2011 and to provide clarity over the different waste streams, the term 'local authority collected waste', abbreviated to 'LACW' is used to refer to all waste collected by a local authority.

2.1.4 Within this report, LACW is further categorised as:

- household waste - waste collected from households within the local authority;
- trade waste - the commercial and industrial waste collected by the local authority (eg from local businesses);
- other municipal wastes - for example waste from parks and gardens, or fly tipping; and
- non-municipal fractions - principally construction and demolition waste.

Commercial and industrial waste

2.1.5 Commercial waste is generated from the business sector, including the activities of wholesalers, catering establishments, shops and offices. Industrial waste is generated by factories and industrial facilities.

2.1.6 These wastes have different properties but are often, and within this report, considered together, using the abbreviation 'C&I waste'.

2.1.7 The majority of C&I waste is managed directly through contracts held between the business and the waste management industry, however some is collected by the local authority. This report makes clear the C&I waste generated within Herefordshire and whether it is managed through the waste management industry or as LACW.

Construction, demolition and excavation waste

2.1.8 Construction and demolition wastes are those generated through building projects; whilst excavation waste refers to wastes produced from earth moving activities. The abbreviation used is 'CD&E waste'.

2.1.9 Again, these wastes are generally managed through private contracts held directly with the waste management industry. However, a small amount is captured in LACW, principally through deposits made at household waste recycling centres (HWRC) also known as civic amenity (CA) sites.

Agricultural waste

2.1.10 Agricultural waste is that generated by the agriculture sector, principally farms. Most of this waste is natural and can be managed on-farm, eg soiled animal bedding; non-natural wastes (eg plastic wrapping) is generally managed through the private sector.

Hazardous waste

2.1.11 Hazardous waste relates to wastes that could cause harm to human health or the environment due to the presence or concentration of dangerous substances.

2.1.12 Hazardous wastes are a component of other waste streams, i.e. hazardous wastes can arise in households, from industrial premises, at construction sites etc.

Radioactive waste

2.1.13 Radioactive waste is not a controlled waste under UK legislation. However, waste planning authorities are required to consider disposal requirements that may arise for this waste stream in preparing their development plans.

Waste management hierarchy

2.1.14 The waste hierarchy is set out at Article 4 of the revised Waste Framework Directive (Directive 2008/98/EC). The definitions of each of the stages can be found in Article 3 of the Directive. Non-exhaustive lists of disposal and recovery operations can be found in Annexes I and II of the Directive, respectively.

2.1.15 Directive 2008/98/EC sets out the priority actions for waste management, seeking to avoid waste creation in the first place, but when waste is created it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal.

- Preparing for reuse – checking, cleaning, repairing and refurbishing items that have become waste so that they can be re-used without any other pre-processing.
- Recycling - the reprocessing of waste materials into products, materials or substances whether for the original or other purposes. It includes composting provided that the output meets the required quality standards.
- Other Recovery - which includes incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materials from waste; some backfilling, for example when soils are used as the daily cover material at a landfill facility.
- Disposal - principally to a landfill facility, but also includes incineration without energy recovery.

Waste technology and future trends

2.1.16 A response to the I&O Report requested more information on waste technologies and commentary on the technical direction in which the industry is moving. Both Defra and WRAP[2] provide useful references for responding to these requests.

2.1.17 In June 2011, Defra published report titled 'Guidance on applying the Waste Hierarchy'.[3] This provides information on dealing with waste in line with the hierarchy. Over the past 10 years or so waste management in the UK has already shifted significantly to recycling and recover

[2] Waste and Resources Action Programme

[3] https://www.gov.uk/government/publications/guidance-on-applying-the-waste-hierarchy

waste rather than dispose of it to landfill; this is likely to continue into the future. Looking forward there is likely to be a focus on those wastes that would have greatest impact on carbon emissions, primarily plastics and biodegradable wastes (eg food waste). Locally, the EnviRecover Facility at Hartlebury in Worcestershire commenced operation in 2017. This enables a further 200,000 tonnes per annum (tpa) to be diverted from landfill.

2.1.18 However, there is also a greater focus on the Circular Economy, an alternative approach to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life. Figure 2.1 is taken from the WRAP website. The MWLP will be developed to help the Circular Economy to thrive in Herefordshire.

Figure 2.1 Graphic representation of the Circular Economy[4]

2.1.19 In February 2013, Defra published a document titled 'Energy from waste, A guide to the debate' that was accompanied by waste technology briefs to provide more detail on specific energy from waste technologies. These are all available at the GOV.UK website: https://www.gov.uk/government/publications/energy-from-waste-a-guide-to-the-debate.

2.1.20 WRAP designs and delivers grant programmes to promote and encourage waste prevention, resource efficiency, renewable energy and the sustainability of products and materials. Information on resource efficiency and waste management initiatives are available on its website: http://www.wrap.org.uk.

2.2 Data Sources

Arisings data

2.2.1 In 2012, the UK generated an estimated 200 million tonnes of waste across various sectors. However, there are notable gaps in our knowledge and we cannot be certain about the total amount of commercial and industrial, construction, demolition and excavation or agricultural

[4] http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy

wastes because currently data are not captured from all waste management facilities or about waste producing sectors.

2.2.2 The only waste stream where the total waste generation is accurately known is Local Authority Collected Waste (LACW). This is as a result of the detailed data set collected through WasteDataFlow.

2.2.3 WasteDataFlow is the web based system for municipal waste data reporting by UK local authorities to government. The system went live over ten years ago on 30 April 2004 and validated information held on WasteDataFlow can be downloaded by the general public.

2.2.4 For most other waste streams and data on permitted facilities, the Waste Data Interrogator (WDI) run by the Environment Agency, is the data source point. Data on hazardous waste are available from the Hazardous Waste Data Interrogator (HWDI) also run by the Environment Agency. Both these data sets require information to be submitted by the waste management facility operator.

2.2.5 In relation to waste streams other than LACW, there are limitations in the data available on waste generation:

- C&I waste. Data gaps result from the lack of reporting associated with exempt activities and it is difficult to allocate waste accurately to the producing sectors. In addition, most recent estimates have been at the national level and the data has not been broken down to the regional or waste planning authority level.
- CD&E waste. Significant quantities of waste are processed at the site of production and/or managed at exempt facilities. This has resulted in this waste stream historically being estimated through surveys, but there has been limited new research available in 2010, when WRAP published 'Construction, demolition and excavation waste arisings, use and disposal for England 2008'. The WRAP report looked at national level arisings rather than waste generated within regions or waste planning authority.
- Agricultural waste. Limited data is captured on natural and non-natural agricultural wastes as wastes generated on farms are often managed under exemptions.

Facility data

2.2.6 Some caution also needs to be applied in using data relating to waste management capacity. The Environmental Permitting (England and Wales) Regulations 2010 provide the system for environmental permits (EP) for industrial activities and waste operations, including treating, keeping and disposing of waste. Environmental Permits set out conditions under which waste management facilities must operate.

2.2.7 The first principle to establish is that this needs assessment only considers those **waste management facilities that are operational**. In many authority areas, planning permission is gained for new or enhanced waste management facilities that are not implemented for a variety of reasons. This capacity is considered only to have been consented but not operational and is not incorporated into this waste need assessment.

2.2.8 Within this assessment, it has been assumed that if a facility has an EP, i.e. if it is permitted, it is operational and should be considered as part of the current capacity operating within Herefordshire. However, there remains a further **complication between permitted and operational capacity**.

2.2.9 When applying for an EP, an operator is required to state the facility's annual capacity. This is considered by the Environment Agency during the application process and a maximum input is stated within the EP. The maximum input is related to the type of EP and the risks associated with the type of facility (e.g. Standard Rules Permit "SR2015 No21: Materials Recycling Facility up to 75kte per annum"); the maximum input is often set within pre-defined bands. The maximum input set out in the EP is the facility's permitted capacity; however, this may not reflect the actual quantity of waste that the facility could handle in a year.

2.2.10 In many cases, the permitted capacity is higher than the actual throughput a facility can handle. Therefore, care is needed when considering available capacity, an assumption that the permitted capacity is the available capacity may result in capacity being over-estimated.

2.2.11 Certain activities, generally related to recovery and temporary storage of waste, can be exempt from the requirement to hold an environmental permit. Part 1 of Schedule 3 to the Environmental Permitting (England and Wales) Regulations 2010 lists and describes the waste operations which do not require an environmental permit, providing that the establishment or undertaking carrying them out has registered the exemption(s) with the Environment Agency.

2.2.12 **Exempt activities** are those considered to be low risk due to the type and quantity of waste handled. There is no requirement for the operator of exempt activities to report on the type or quantity of waste handled, resulting in an incomplete data set.

2.2.13 At the time of writing this report (November 2018) the Government had undertaken a consultation on proposals to tackle crime and poor performance in the waste sector and introduce a new fixed penalty for the waste duty of care[5]. This may change how waste management activities are registered to be exempt activities in the future, but has not affected the estimation contained in this Update.

2.2.14 The WDI contains details of all waste deposited and removed from permitted waste facilities in England; this includes wastes handled through **transfer stations**. Therefore, care is needed when collating tonnages handled through transfer stations to avoid double counting.

[5] https://consult.defra.gov.uk/waste/crime-and-poor-performance-in-the-waste-sector/supporting_documents/Waste_Crime_Cons_English.pdf

3. Waste Management Facilities in Herefordshire

3.1 Facilities Operating under an Environmental Permit

3.1.1 All operators of permitted waste management facilities must provide the EA with details of the quantities and types of waste handled i.e. waste received onto site, the process it went through on site, and waste sent from site on to other destinations. This data is collated in the WDI, which provides the detail of all permitted facilities by waste planning authority (WPA) area.

3.1.2 Table 3.1 is updated to summarise the type and number of waste management facilities permitted in Herefordshire over the years 2013 to 2017, providing some context to the changes in the number of facilities permitted.

3.1.3 Data for calendar years 2015 to 2017 has been considered where it is available and practicable to analyse.

Number and type of permitted facilities and the type of wastes accepted

3.1.4 Table 3.1 shows that in 2017 there were 38 permitted facilities operating in Herefordshire, compared to the 35 in 2015 and 39 in 2016 (line 22).

3.1.5 Whilst most waste management capacity has stayed fairly constant, there are a few changes of note:

- there are now two hazardous waste transfer facilities (line 1) however one is not a new facility, but a change of permit type from S0807: Household, Commercial & Industrial Waste TS/Treatment/Asbestos in 2016 (line 13). The other relates to an animal funeral service, which became operational in 2017;
- an additional physical treatment facility became operational in 2016 (lines 6);
- the number of car breakers has fluctuated since 2013, increasing to four in 2014 and five by 2016, following by a reduction back to three in 2017 (lines 7);
- a new material recycling facility to handle construction and demolition wastes commenced operation in 2016 (line 5); and
- the clinical waste transfer facility (line 16) was not operational in 2017.

3.1.6 The use of anaerobic digestion to treat on-farm waste grew significantly from 2013 to 2015, with a couple of additional facilities becoming operational over the past two years (line 17).

3.1.7 Table 3.1 still highlights that whilst there is a range of waste management, re-use and recycling capacity permitted in Herefordshire addressing a variety of wastes, there are no residual waste management facilities such as energy from waste plant or landfill sites.

Table 3.1 Number of permitted facilities in Herefordshire, 2013 to 2017

	Facility type	Site Category	Site Type	2013	2014	2015	2016	2017
1	A9: Haz Waste Transfer Station[1]	Transfer	Hazardous Waste Transfer	n/r	n/r	n/r	1	2
2	A11: Household, Commercial & Industrial WTS	Transfer	Non-hazardous waste transfer	3	2	2	3	3
3	A11: Household, Commercial & Industrial WTS and A13: Household Waste Amenity Site	Transfer	Non- hazardous waste transfer and civic amenity site	2	2	2	2	2
4	A13: Household Waste Amenity Site	Transfer	Civic amenity site	3	3	3	3	3
5	A15: Material Recycling Treatment Facility	Treatment	Material recycling facility	1	n/r	n/r	1	1
6	A16 : Physical Treatment Facility	Treatment	Physical treatment	1	-	3	4	4
7	A19: Metal Recycling Site (Vehicle Dismantler)	Metal Recycling Site	Car breaker	3	4	4	5	3
8	A19a: End of Life Vehicle Facility	Metal Recycling Site	Car breaker	1	1	1	1	1
9	A20: Metal Recycling Site	Metal Recycling Site	Metal recycling	2	2	2	2	2
10	A23: Biological Treatment Facility	Treatment	Biological treatment	2	3	4	4	4
11	A25: Deposit of waste to land as a recovery operation	On/In Land	Deposit of waste to land (recovery)	1	1	1	1	1
12	S0803: Household, Commercial & Industrial Waste TS/Treatment	Treatment	Non- hazardous waste transfer / treatment	1	1	1	1	1
13	S0807: Household, Commercial & Industrial Waste TS/Treatment/Asbestos[1]	Treatment	Hazardous waste transfer / treatment	1	1	1	n/r	n/r
14	S0813: Non-hazardous & hazardous HWA Site	Transfer	CA Site	n/r	n/r	n/r	1	1
15	S0821: Metal recycling site	Metal Recycling Site	Metal recycling	1	1	1	n/r	n/r
16	S0824: Clinical Waste Transfer Station (A12: Clinical Waste Transfer Station in 2013)	Transfer	Clinical waste transfer	1	1	1	1	n/r
17	S1210: On-farm AD using farm wastes only	Treatment	Anaerobic digestion	1	5	8	8	9
18	SR2010 No7: Use of waste in construction <50ktps	Use of Waste	Construction	1	n/r	n/r	n/r	n/r

	Facility type	Site Category	Site Type	2013	2014	2015	2016	2017
19	SR2010 No8: Use of waste in construction <100ktps	Use of Waste	Construction	1	n/r	n/r	n/r	n/r
20	SR2010 No12: Treatment of waste to produce soil <75ktpa	Treatment	Physical treatment	n/r	1	1	1	n/r
21	SR2010 No16: On-farm anaerobic digestion <75,000tpa	Treatment	Anaerobic digestion					1
22			**Total**	**26**	**28**	**35**	**39**	**38**

n/r: no active sites reported ktps: kilo tonnes per site ktpa: kilo tonnes per annum

1: A9: Haz Waste Transfer Station was previously S0807: Household, Commercial & Industrial WTS/Treatment/asbestos

3.1.8 Figures 3.1 and 3.2 show the origin of waste received at permitted facilities in Herefordshire in 2016 and 2017, respectively. In both years, over 85% of the waste originated in Herefordshire; an increase on the 77% reported in 2015. This suggests either that Herefordshire is managing more wastes within the county than previous year, or that more waste is being deposited at permitted facilities. It also suggests that Herefordshire is reasonably self-sufficient, at least in waste transfer capacity; although as noted above there is no residual waste management capacity.

3.1.9 The remaining wastes originate from adjacent and nearby authorities. Full details are provided in Annexes D and E.

Figure 3.1 Origin of waste received at permitted facilities in Herefordshire, 2016

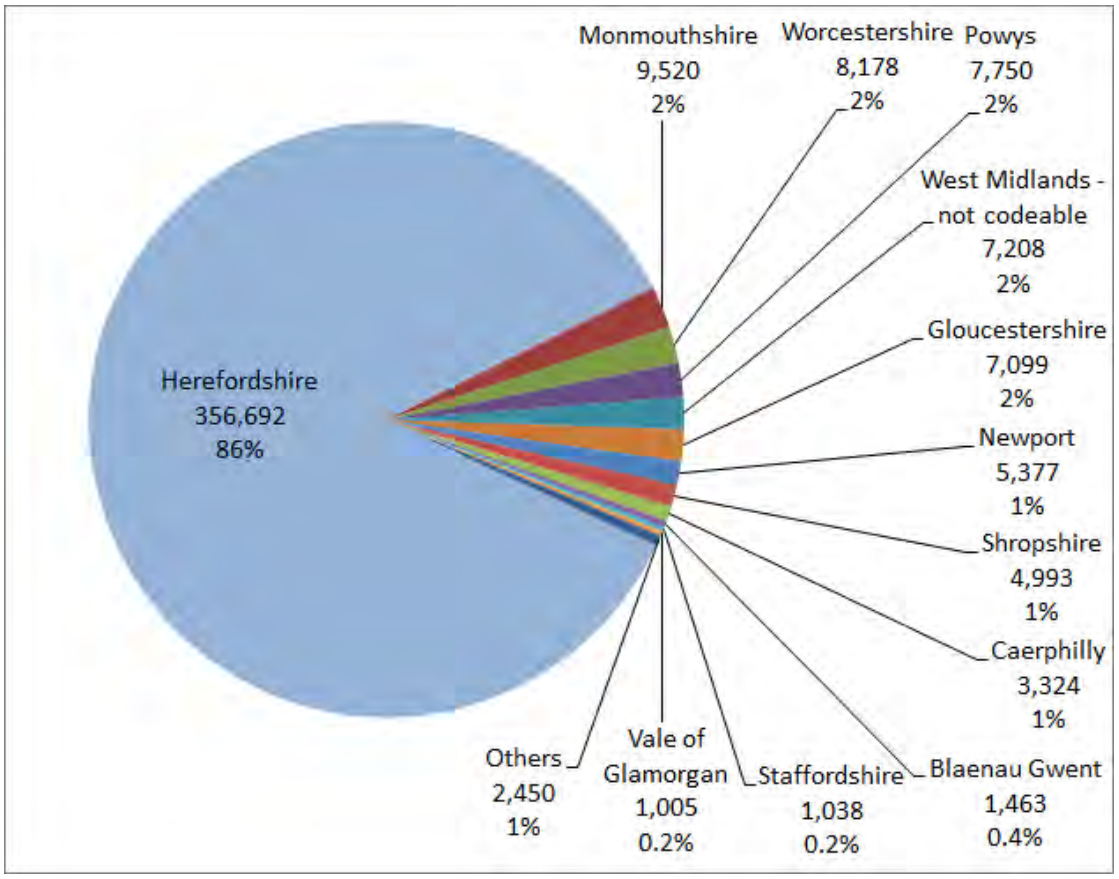
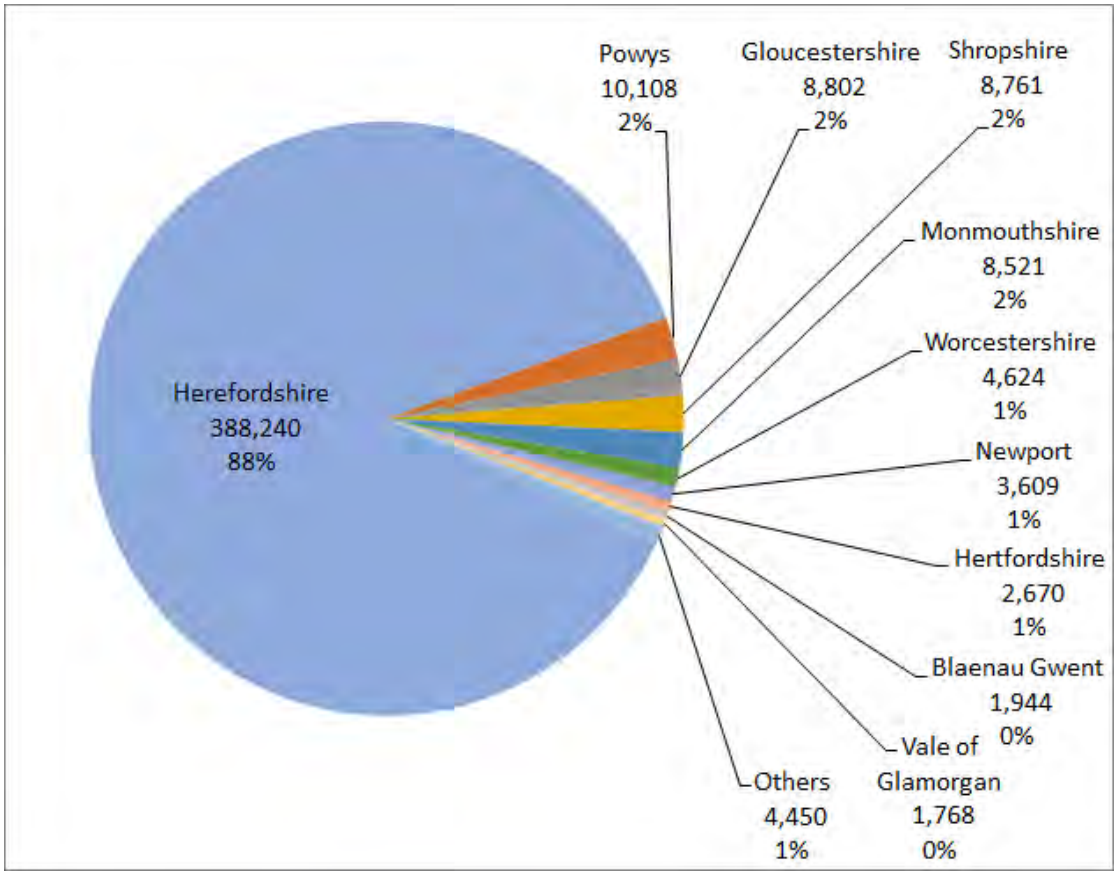


Figure 3.2 Origin of waste received at permitted facilities in Herefordshire, 2017



3.1.10 The updated Table 3.2 summarises the types and quantities of waste accepted at those permitted facilities in 2016 and 2017. The waste types are categorised using the European List of Wastes[6] (LoW) chapter headings (see Annex A).

3.1.11 Table 3.2 shows that in 2017, permitted facilities located in Herefordshire managed 443,000 tonnes of waste, compared to nearly 407,500 in 2015.

3.1.12 Details for 2016 and 2017 are provided in Annexes B and C to this report; details for years 2013, 2014 and 2015 are provided in Annexes B to D of the WNA 2017, respectively.

3.1.13 Again, the single largest tonnage is municipal waste (principally wastes from households); representing 44% to 47% of the wastes managed at permitted facilities in Herefordshire between 2016 and 2017. The second largest tonnage is formed by construction and demolition wastes (29% in 2017, although only 19% in 2016) followed by agriculture and food processing wastes (20% in 2017, and 22% in 2016). If all the other wastes are added together, they still only represent about 6% to 11% of all wastes managed at permitted facilities in Herefordshire, depending on the year being considered.

[6] Commission Decision 2000/532/EC, as amended, most recently by Commission Decision 2014/955/EU), formally known as the European Waste Catalogue (EWC). The LoW is the system used for classifying waste, required by law and used in most waste regulatory and data reporting systems.

3.1.14 This is quite different to the picture seen nationally, where construction and demolition wastes generally make up about 50% of total arisings, with C&I waste at around 25%, municipal waste at around 20% and other wastes making up the remainder.

3.1.15 That municipal and agriculture and processing wastes continue to dominate is perhaps not surprising considering the county is very rural. The increase in construction and demolition wastes may be attributed to development growth in the county and/or that CD&E recovery facilities have commenced operations and are drawing these wastes in, whereas they may previously have gone out of Herefordshire.

3.1.16 The site numbers in Table 3.2 are not entirely consecutive. This WNA Update was originally prepared (but not published) to incorporate 2016 data. It was on this data that the site assessments were undertaken over Autumn/Winter 2017/18. In order to retain some consistency with the number references used in the site assessment, the three new sites that became operational in 2017 (Rachael Slaughter, animal funeral services; R Edwards & Co (Staunton), anaerobic digestion; and Mr P Mann, Mr M Mann & Mrs J Mann, anaerobic digestion) have been placed in order of facility type, but not given consecutive numbering within Table 3.2. All the facilities are mapped on Figure 3.3.

Table 3.2 Wastes accepted at permitted facilities in Herefordshire, 2016 and 2017

Map No.	Operator	Site Name	Facility Type	Year	02: Agriculture and Food Processing Wastes	03: Furniture, Paper and Cardboard Manufacturing Wastes	08: Paint, Adhesive, Sealant and Ink Manufacturing Waste	10: Thermal Processes Waste	12: Shaping and Physical Treatment of Metals And Plastics	13: Oil Wastes and Wastes of Liquid Fuels	15: Packaging, Absorbents, Wiping Cloths etc N.O.S.	16: Wastes Not Otherwise Specified	17: Construction and Demolition Wastes	18: Human and Animal Health Care Waste	19: Waste and Water Treatment Wastes	20: Municipal Wastes	Grand Total
1	Eastside 2000 Limited	Eastside Recycling Facility	Haz Waste Transfer	2016	1,046	61	2	82		1	650	255	20,142		399	18,186	40,824
				2017	738		<1	83		5	556	200	22,763		48	16,643	41,035
40	Rachael Slaughter	Animal Funeral Services	Haz Waste Transfer	2016													n/r
				2017										18			18
2	Lively Joseph Henry	Quickskip (Hereford) Transfer Station	Non-Haz Waste Transfer	2016												34,780	34,780
				2017												31,739	31,739
3	Wye Valley Skips	Wye Valley Skips	Non-Haz Waste Transfer	2016												296	296
				2017									45			6	51
4	MS & EM Patrick Ltd	Marlbrook Farm	Non-Haz Waste Transfer	2016											467	9,380	9,847
				2017								<1				2,531	2,531
5	Mercia Waste Management Ltd	Leominster Household Waste Site	Non-Haz WTS and CA Site	2016								2	131			25,586	25,718
				2017								1	151			24,175	24,326
6	Mercia Waste Management Ltd	Rotherwas Household Waste Site	Non-Haz WTS, CA Site and MRF	2016								3	253			55,847	56,103
				2017								1	283			57,982	58,266
7	Mercia Waste Management Ltd	Ledbury HWRC	CA Site	2016								1				2,584	2,585
				2017								<1				2,531	2,531
8	Mercia Waste Management Ltd	Ross on Wye HWRC	CA Site	2016								1				4,571	4,573
				2017								1				4,640	4,641
9	Mercia Waste Management Ltd	Bromyard HWRC	CA Site	2016								1				2,066	2,067
				2017								<1				2,093	2,093
10	Severn Waste Services Ltd	Kington HWRC	CA Site	2016								<1	5			844	850
				2017								<1				1,361	1,361
11	Hereford Crushing and Demolition Ltd	H C D Limited	Material Recycling Facility	2016									2,950				2,950
				2017									3,657				3,657

Map No.	Operator	Site Name	Facility Type	Year	02: Agriculture and Food Processing Wastes	03: Furniture, Paper and Cardboard Manufacturing Wastes	08: Paint, Adhesive, Sealant and Ink Manufacturing Waste	10: Thermal Processes Waste	12: Shaping and Physical Treatment of Metals And Plastics	13: Oil Wastes and Wastes of Liquid Fuels	15: Packaging, Absorbents, Wiping Cloths etc N.O.S.	16: Wastes Not Otherwise Specified	17: Construction and Demolition Wastes	18: Human and Animal Health Care Waste	19: Waste and Water Treatment Wastes	20: Municipal Wastes	Grand Total
12	Balfour Beatty Living Places Ltd	Land Adjacent to Unit 3	Physical Treatment	2016									1,520			1,825	3,345
				2017						<1			1,254			2,493	3,747
13	Hereford Quarries Limited	Former Lugg Bridge Quarry	Physical Treatment	2016									42,036		8,921		50,956
				2017									86,009		1,400		87,409
14	Kingspan Insulation Ltd	Kingspan Insulation Ltd	Physical Treatment	2016							4		200				205
				2017							3		141				144
15	Quickskip Hereford Ltd	Quickskip Hereford Limited	Physical Treatment	2016												6,825	6,825
				2017												9,990	9,990
16	Quickskip Hereford Limited	Fir Tree Lane Site	Physical Treatment	2016												2,200	2,200
				2017													n/r
17	Avalon Metals Limited	Eastside Recycling Facility	Car Breaker	2016	481				<1			7,172	2,016		9,950	4,721	24,340
				2017	582				329			6,590	5,575		11,471	5,402	29,950
18	Jason Baker And Richard Baker	J & R Recovery	Car Breaker	2016								76					76
				2017								9					9
19	Mr David Craddock & Mrs Janet Evans	City Spares	Car Breaker	2016								30					30
				2017													n/r
20	P & T Moore Limited	P & T Moore Vehicle Dismantlers	Car Breaker	2016								1,478					1,478
				2017								1,658					1,658
21	UK Bus Dismantlers Ltd	Streamhall Garage	Car Breaker	2016								201					201
				2017								148					148
22	Avalon Metals Limited	R Smith Metals	Car Breaker	2016	89				90			112	23		8	470	792
				2017													nr
23	Avalon Metals Limited	Former EMR Facility	Metal Recycling	2016	14				232			249	61			1,050	1,607
				2017	27				271			718	98			1,920	3,034
24	Evans R	Cobhall Cottage	Metal Recycling	2016								5	211				216
				2017								15	225				240

Map No.	Operator	Site Name	Facility Type	Year	02: Agriculture and Food Processing Wastes	03: Furniture, Paper and Cardboard Manufacturing Wastes	08: Paint, Adhesive, Sealant and Ink Manufacturing Waste	10: Thermal Processes Waste	12: Shaping and Physical Treatment of Metals And Plastics	13: Oil Wastes and Wastes of Liquid Fuels	15: Packaging, Absorbents, Wiping Cloths etc N.O.S.	16: Wastes Not Otherwise Specified	17: Construction and Demolition Wastes	18: Human and Animal Health Care Waste	19: Waste and Water Treatment Wastes	20: Municipal Wastes	Grand Total
25	Mayglothling Waste Ltd	Yaidon Farm	Biological Treatment	2016	6,987						67	132			22	21,381	28,590
				2017	4,984							242				22,933	28,159
26	Mr Nigel Green & Mrs Sally Green	Much Fawley Farm	Biological Treatment	2016	12,432												12,432
				2017	12,350												12,350
27	STL Energy Ltd	STL Energy Ltd	Biological Treatment	2016	5,977												5,977
				2017	4,437												4,437
28	Tradebe Gwent Limited	Eign Waste Treatment Centre	Biological Treatment	2016	9,788							4,712		34	11,576	4,604	30,714
				2017	7,012							820		10	3,328	2,924	14,094
29	Gelpack Excelsior Ltd	Gelpack Excelsior Ltd	Non-Haz Waste Transfer/Treatment	2016							19						19
				2017							1						1
30	Sodexo Property Solutions Ltd	County Hospital	Clinical Waste Transfer	2016										23			23
				2017													n/r
31	Assured Energy LLP	Two Hoots Farm A D Plant	Anaerobic Digestion	2016	4,477												4,477
				2017	806												806
32	Bowley Storage and Marketing Ltd	Bowley Court	Anaerobic Digestion	2016	3,807												3,807
				2017	6,023												6,023
33	David And Helen Morgan	Penllan A D	Anaerobic Digestion	2016	4,466												4,466
				2017	4,658												4,658
34	Herefordshire Biogas Limited	Herefordshire Biogas	Anaerobic Digestion	2016	12,155												12,155
				2017	13,792												13,792
35	M & M Power Limited	The Biogas Facility	Anaerobic Digestion	2016	11,810												11,810
				2017	13,290												13,290
36	Mr D, Mrs E & Mr R Pursey	Trevase Farm A D	Anaerobic Digestion	2016	1,098										370		1,468
				2017	1,462												1,462
37	P T Baker Farms Limited	Eardisley Park Farm Facility	Anaerobic Digestion	2016	1,475												1,475
				2017	1,996												1,996

Map No.	Operator	Site Name	Facility Type	Year	02: Agriculture and Food Processing Wastes	03: Furniture, Paper and Cardboard Manufacturing Wastes	08: Paint, Adhesive, Sealant and Ink Manufacturing Waste	10: Thermal Processes Waste	12: Shaping and Physical Treatment of Metals And Plastics	13: Oil Wastes and Wastes of Liquid Fuels	15: Packaging, Absorbents, Wiping Cloths etc N.O.S.	16: Wastes Not Otherwise Specified	17: Construction and Demolition Wastes	18: Human and Animal Health Care Waste	19: Waste and Water Treatment Wastes	20: Municipal Wastes	Grand Total
41	R Edwards & Co (Staunton) Limited	R Edwards & Co (Staunton) Limited	Anaerobic Digestion	2016													n/r
				2017	200												200
38	Shed Field Growers Limited	The Leen Digester	Anaerobic Digestion	2016	16,712												16,712
				2017	15,626												15,626
42	Mr P Mann, Mr M Mann & Ms J Mann	Heath Farm	Anaerobic Digestion	2016													n/r
				2017	957												957
39	The Pipe Corporation Limited	Land at Lower Vern	Deposit of waste to land (recovery)	2016									9,108				9,108
				2017									9,898				9,898
			Total	**2016**	**92,814**	**61**	**2**	**82**	**322**	**1**	**741**	**14,430**	**78,657**	**57**	**31,712**	**197,218**	**416,097**
				2017	**88,966**		**0**	**83**	**601**	**5**	**560**	**10,404**	**130,101**	**28**	**16,273**	**196,478**	**443,498**

Herefordshire Minerals and Waste Local Plan

Figure 3.3
Herefordshire Waste Facilitiies

ID	Facility Name	Site PC
1	Eastside Recycling Facility	HR2 6NS
40	Animal Funeral Services	HR5 3HX
2	Quickskip (Hereford) Transfer Station	HR2 6JT
3	Wye Valley Skips	HR2 8NX
4	Marlbrook Farm	HR6 0PE
5	Leominster Household Waste Site & Transfer Station	HR6 8EA
6	Rotherwas Household Waste Site, Transfer Station & MRF	HR2 6LD
7	Ledbury Household Waste Site	HR8 2DP
8	Ross On Wye Household Waste Site	HR9 7AQ
9	Bromyard Household Waste Site	HR7 4QT
10	Kington Household Recycling Centre	HR5 3HB
11	H C D Limited	HR4 8DZ
12	Land Adjacent To Unit 3	HR2 6JT
13	Lugg Bridge Quarry	HR1 3LZ
14	Kingspan Insulation Ltd	HR6 9LA
15	Quickskip Hereford Limited	HR2 6LD
17	Eastside Recycling Facility	HR2 6NS
18	J & R Recovery	HR1 1JS
20	P & T Moore Vehicle Dismantlers	HR6 0LR
21	Streamhall Garage	HR7 4QT
23	Former E M R Facility	HR4 9LW
24	Cobhall Cottage	HR9 9BW
25	Yaidon Farm	HR5 3LH
26	Much Fawley Farm	HR1 4SP
27	S T L Energy Ltd	HR1 4JU
28	Eign Waste Treatment Centre	HR1 1TG
29	Gelpack Excelsior Ltd	HR4 8DS
31	Two Hoots Farm A D Plant	HR7 4RZ
32	Bowley Court	HR6 0PL
33	Penllan A D	HR2 0SU
34	Herefordshire Biogas	HR6 9LA
35	The Biogas Facility	HR6 9LB
36	Trevase Farm A D	HR2 8ND
37	Eardisley Park Farm Facility	HR3 6NT
38	The Leen Digester	HR6 9HN
39	Land At Lower Vern	HR1 3EX
41	R Edwards & Co (Staunton) Limited	HR6 9HR
42	Heath Farm	SY7 0QB

Legend

Waste Facility Type

- Anaerobic Digestion (Farm Waste)
- Biological Treatment
- CA Site
- Non-Haz Waste Transfer
- Non-Haz Waste Transfer & CA Site; Non-Haz Waste Transfer and CA Site
- Non-Haz Waste Transfer / Treatment
- Physical Treatment
- Deposit of waste to land (recovery)
- Car Breaker
- Metal Recycling
- Haz Waste Transfer
- Material Recycling Facility
- Herefordshire County Boundary

N

0 5 10 15

Kilometres

SCALE 1:250,000 @ A3

DATE 01/11/2018

hendeca

Movement of waste

3.1.17 Responses to the I&O Report sought greater clarity over the movement of wastes to/from Herefordshire.

3.1.18 Figures 3.1 and 3.2 above shows that, in 2016 and 2017, 86% to 88% of wastes received at permitted facilities operating in Herefordshire, originated in the county. Of the waste imported from outside of Herefordshire: c. 6 to 6.5% came from authorities in Wales; 1 to 2% is attributable to each of the West Midlands, Worcestershire, Shropshire and Gloucestershire; and smaller amounts from elsewhere. Individually these are not significant tonnages of waste.

3.1.19 Table 3.3 provides a summary of the waste removed from permitted facilities in 2016 and 2017, identifying both the destination waste planning authority and fate of the waste.

3.1.20 Care is needed when considering these figures. Operators are asked to report 'Fate' from a list limited to six options: landfill; recycling; reprocessing; transfer; and unknown. The quality of reporting is reliant upon the operator's knowledge of the destination and its location. The potential for error is highlighted by the indication that approximately 31,000 tonnes of waste are reported to have been sent to landfill in Herefordshire in 2016 and 58,000 tonnes in 2017; there are no operational landfill facilities in Herefordshire. The site known as Land at Lower Vern (see Table 3.5) is permitted for the deposit of waste to land as a recovery operation.

3.1.21 Whilst recognising the potential for error in Table 3.3, it provides notable context for the management of wastes from Herefordshire. Nearly half, even disregarding the tonnage attributed to landfill, is indicated to remain within Herefordshire. The greatest tonnage exported is sent to Worcestershire. This is not surprising as the Herefordshire and Worcestershire waste disposal authorities have a joint municipal waste management contract and jointly procured capacity, which is located in Worcestershire[7]. Table 3.3 indicates that Herefordshire achieved 67% self-sufficiency in 2016, increasing to 75% in 2017, because the municipal waste recovery facility became operational in year 2017. Clearly, the capacity in Worcestershire is not located in Herefordshire, but the municipal waste facilities are co-funded by Herefordshire and there was corporate political agreement for Worcestershire to host them.

3.1.22 In 2016, exports of more than 10,000 tonnes were made to Not Codeable locations, Vale of Glamorgan, and Doncaster; in 2017, only the Vale of Glamorgan fits within this category. Exports of 5,000 to 10,0000 tonnes were sent to Bristol, Cardiff, Doncaster and Gloucestershire. Approximately 7,000 tonnes went to Gloucestershire in 2016, reducing to 6,000 tonnes in 2017. In 2016 a similar amount was received from Gloucestershire, with imports from that county increasing to nearly 9,000 tonnes in 2017. The majority of this waste was sent for recovery and incineration; this indicates a need for increased residual waste management capacity in Herefordshire.

3.1.23 The other export amounts are less than 5,000 tonnes each and are not considered significant to consider individually. What is interesting to note from Table 3.3 is that the majority of waste exported from Herefordshire went for recovery, incineration or treatment. Whilst this indicates waste management in line with the hierarchy, it also indicates a need for increased residual waste management capacity.

[7] The EnviRecover Facility at the Hartlebury Trading Estate.

Table 3.3 Tonnage of waste removed from permitted facilities in Herefordshire by fate and waste planning authority, 2016 and 2017

2016							
Waste Planning Authority Area	**Incinerator**	**Landfill**	**Recovery**	**Transfer**	**Treatment**	**Unknown**	**Total**
Herefordshire		30,718	72,708	5,107	49,842	2,033	160,409
Worcestershire	6,905	42,384	21,452			12	70,753
WPA Not Codeable[1]			1,437		29,055		30,492
Vale of Glamorgan		1,049	23,383	27			24,459
Doncaster	12,862						12,862
Bristol		921	8,557		40		9,518
Gloucestershire		1,027	6,062			8	7,097
Birmingham City			4,222				4,222
Liverpool			3,993				3,993
Monmouthshire			3,939				3,939
Wales Not Codeable[2]			3,295				3,295
Newport UA			120	26	3,119		3,264
West Midlands Not Codeable[3]			1,370	30		383	1,783
Scottish WPA			1,566				1,566
Warwickshire			1,513				1,513
Other[4] (<1,000 tonnes)	23	-	5,476	318	2	6	5,826
Total	**19,790**	**76,099**	**159,094**	**5,507**	**82,058**	**2,443**	**344,991**
2017							
Waste Planning Authority Area	**Incinerator**	**Landfill**	**Recovery**	**Transfer**	**Treatment**	**Unknown**	**Total**
Herefordshire	4	57,775	86,313	3,366	52,170	329	199,956
Worcestershire	38,569	10,570	25,030		102	4	74,274
Vale of Glamorgan		49	33,532				33,582
Cardiff	6,966		2,965		27		9,958
Bristol		890	7,800		185		8,874
Gloucestershire		93	5,760		18	96	5,967
Doncaster	5,120						5,120
West Midlands Not Codeable[3]			3,524	2		661	4,188
Merseyside Not Codeable[5]			3,487				3,487
Monmouthshire			3,035				3,035
Wales Not Codeable[2]			2,190				2,190
Newport			141	336	990		1,467
Kent			1,081				1,081
Other[4] (<1,000 tonnes)	46	67	9,331	37	189	1,139	10,810
Total	**50,705**	**69,443**	**184,189**	**3,741**	**53,681**	**2,230**	**363,989**

Notes
1 It is not possible to identify the destination of the waste went
2 It is not possible to identify the destination of this waste within Wales
3 It is not possible to identify the destination of this waste within the West Midlands
4 Culmination of all waste movements of less than 1,000 tonnes
5 It is not possible to identify the destination of this waste within Merseyside

Capacity and waste input at the permitted facilities

3.1.24 Table 3.4 provides a summary of the permitted capacity and actual throughput by waste management facility category between years 2013 and 2017.

3.1.25 Table 3.4 shows that annual permitted capacity of each site is generally materially greater than the actual input to the facility. This may be due to a number of reasons, with the most likely being that the permitted capacity is simply the closest band available or that the facility is just starting operations and so building up to full capacity.

3.1.26 This demonstrates the need to exercise caution in relying on the permitted capacity; some sites may never be able to accept the maximum amount of waste set out in their Environmental Permit and this would inflate the amount of useful, operational capacity available within Herefordshire.

3.1.27 Table 3.5 presents both the permitted capacity and the annual input for each operational site over years 2013 to 2017 and provides additional detail to supplement the summary provided in Table 3.4. Full details for 2016 and 2017 are provided in Annexes B and C.

Table 3.4 Summary of permitted capacity and waste input for all facilities in Herefordshire, 2013 to 2017

Category	Facility Type	2013		2014		2015		2016		2017	
		Capacity	Input	Capacity	Input	Capacity	Input	Capacity	Input	Capacity	Input
		tonnes		tonnes		tonnes		tonnes		tonnes	
Transfer	Haz Waste Transfer	n/r	n/r	n/r	n/r	n/r	n/r	75,000	40,824	80,000	41,053
	Non-Haz WTS	74,997	35,909	49,998	35,024	49,998	40,605	106,239	44,923	106,239	41,491
	Non-Haz WTS and CA Site	109,550	76,344	109,550	79,202	109,550	80,613	109,550	81,821	109,550	82,592
	CA Site	34,349	8,338	34,349	8,673	34,349	8,691	109,348	10,075	109,348	10,626
	Clinical WTS	520	153	75,000	84	75,000	38	75,000	23	n/r	n/r
Metal Recycling Site	Car Breaker	64,897	1,820	138,397	23,581	138,397	24,691	149,597	26,917	105,997	31,765
	Metal Recycling	88,768	11,062	88,768	7,336	88,768	7,455	77,568	1,823	77,568	3,274
Treatment	Non-Haz WTS / Treatment	74,999	172	74,999	115	74,999	22	74,999	19	74,999	1
	Haz Waste WTS / Treatment	75,000	53,338	75,000	70,389	75,000	52,399	n/r	n/r	n/r	n/r
	Biological Treatment	283,999	52,326	299,998	73,699	333,998	106,282	333,998	77,713	333,998	59,040
	AD (farm wastes only)	36,499	807	166,413	6,574	339,413	52,497	339,413	56,370	450,912	58,810
	Material Recycling Facility	24,999	6,789	n/r	n/r	n/r	n/r	70,000	2,950	70,000	3,657
	Physical Treatment	5,000	2,949	75,000	22,020	99,999	22,086	174,998	63,531	334,999	101,290
Recovery in/on land and use in construction	Deposit of waste to land (recovery)	58,000	23,400	58,000	19,005	94,000	12,120	94,000	9,108	94,000	9,898
	Use of waste in construction	149,998	30,662	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
	Total	**1,081,575**	**304,069**	**1,245,472**	**345,702**	**1,513,471**	**407,499**	**1,789,710**	**416,097**	**1,947,610**	**443,497**

Capacity: EP capacity Input: Waste input n/r: no reported tonnage
AD: Anaerobic Digestion WTS: Waste Transfer Station HWS: Household Waste Site

Table 3.5 Permitted capacity and waste input for all facilities in Herefordshire, 2013 to 2017

Operator	Site Name	Site Type	Annual Permitted Capacity[1]	Input				
				2013	2014	2015	2016	2017
			Tonnes					
Eastside 2000 Ltd.	Eastside Recycling Facility	Haz Waste Transfer[2]	75,000	53,338	70,389	52,399	40,824	41,035
Rachael Slaughter	Animal Funeral Services	Haz Waste Transfer	5,000	n/r	n/r	n/r	n/r	18
Lively Joseph Henry	Quickskip Transfer Station	Non-Haz Waste Transfer	24,999	6,000	n/r	n/r	n/r	n/r
Lively Joseph Henry	Quickskip (Hereford) Transfer Station	Non-Haz Waste Transfer	75,000[3]	19,780	27,636	31,244	34,780	31,739
Wye Valley Skips	Wye Valley Skips	Non-Haz Waste Transfer	6,240	n/r	n/r	n/r	296	51
MS & EM Patrick Ltd	Marlbrook Farm	Non-Haz Waste Transfer	24,999	10,129	7,388	9,361	9,847	9,701
Mercia Waste Management Ltd	Leominster HWRC & WTS	Non-Haz Waste Transfer	39,050	9,324	10,335	18,354	19,167	17,804
		CA Site		6,227	6,400	6,601	6,551	6,522
Mercia Waste Management Ltd	Rotherwas HWRC, WTS & MRF	Non-Haz Waste Transfer	70,500	50,583	49,521	41,869	41,807	44,826
		CA Site		10,210	12,946	13,789	14,296	13,440
Mercia Waste Management Ltd	Ledbury HWRC	CA Site	4,350	2,276	2,462	2,493	2,585	2,531
Mercia Waste Management Ltd	Ross on Wye HWRC	CA Site	25,000	4,210	4,334	4,347	4,573	4,641
Mercia Waste Management Ltd	Bromyard HWRC	CA Site	4,999	1,852	1,877	1,851	2,067	2,093
Severn Waste Services Ltd	Kington Household Recycling Centre	CA Site	74,999	n/r	n/r	n/r	850	1,361
The Mann Organisation Ltd	Mann Organisation Ltd	Material Recycling Facility	24,999	6,789	n/r	n/r	n/r	n/r
Hereford Crushing and Demolition Limited	HCD Limited	Material Recycling Facility	70,000	n/r	n/r	n/r	2,950	3,657
Balfour Beatty Living Places Ltd	Land Adjacent to Unit 3	Physical Treatment	5,000	2,949	n/r	3,740	3,345	3,747
Hereford Quarries Limited	Lugg Bridge Quarry	Physical Treatment	250,000[4]	n/r	n/r	5,655	50,956	87,409

Operator	Site Name	Site Type	Annual Permitted Capacity[1]	Input				
				2013	2014	2015	2016	2017
			Tonnes					
Kingspan Insulation Ltd	Kingspan Insulation Ltd	Physical Treatment[5]	5,000[6]	172	115	141	205	144
Quickskip Hereford Ltd	Quickskip Hereford Limited	Physical Treatment[5]	74,999	n/r	n/r	n/r	6,825	9,990
Avalon Metals Ltd	Eastside Recycling Facility	Car Breaker	73,500	n/r	21,369	22,572	24,340	29,950
Avalon Metals Ltd (Pre 2015 Smith R)	R Smith Metals	Car Breaker[7]	11,200	3,358	2,742	2,117	792	n/r
Jason and Richard Baker	J & R Recovery	Car Breaker	2,499	74	85	70	76	9
Mr David Craddock & Mrs Janet Evans (Pre 2016 Morris F G)	City Spares MRS Site	Car Breaker	32,400	154	194	266	30	n/r
P & T Moore Ltd	P & T Moore Vehicle Dismantlers	Car Breaker	4,999	1,376	1,708	1,514	1,478	1,658
UK Bus Dismantlers Ltd	Streamhall Garage	Car Breaker	24,999	216	225	269	201	148
Avalon Metals Ltd (Pre 2015 European Metal Recycling Ltd)	Former EMR Hereford	Metal Recycling	75,000	7,514	4,431	5,162	1,607	3,034
Evans R	Cobhall Cottage	Metal Recycling	2,568	190	163	176	216	240
Mayglothling Waste Ltd	Yaidon Farm	Biological Treatment	49,999	25,626	25,503	24,258	28,590	28,159
Mr N Green & Mrs S Green	Much Fawley Farm	Biological Treatment	15,999	n/r	11,887	12,560	12,432	12,350
STL Energy Ltd	STL Energy Ltd	Biological Treatment	34,000	n/r	n/r	28,826	5,977	4,437
Tradebe Gwent Ltd	Eign Waste Treatment Centre	Biological Treatment	234,000	26,700	36,309	40,638	30,714	14,094
The Pipe Corporation Ltd	Land at Lower Vern	Deposit of waste to land (recovery)	58,000	23,400	19,005	12,120	9,108	9,898
Gelpack Excelsior Ltd	Gelpack Excelsior Ltd	Non-Haz Waste Transfer/ Treatment	74,999	n/r	n/r	22	19	1
Sodexo Property Solutions Ltd	County Hospital	Clinical Waste Transfer	75,000	153	84	38	23	n/r
Assured Energy LLP	Two Hoots Farm AD Plant	Anaerobic Digestion	28,314	n/r	1,773	8,985	4,477	806
Bowley Storage and Marketing Ltd	Bowley Court	Anaerobic Digestion	100,000	n/r	n/r	8,985	3,807	6,023

Operator	Site Name	Site Type	Annual Permitted Capacity[1]	Input				
				2013	2014	2015	2016	2017
			Tonnes					
David and Helen Morgan	Penllan AD	Anaerobic Digestion	36,500	n/r	n/r	200	4,466	4,658
Herefordshire Biogas Ltd	Herefordshire Biogas	Anaerobic Digestion	36,500	n/r	394	13,669	12,155	13,792
M & M Power Limited	The Biogas Facility	Anaerobic Digestion	28,600	n/r	2,210	10,965	11,810	13,290
Mr D, Mrs E & Mr R Pursey	Trevase Farm AD	Anaerobic Digestion	36,500	n/r	368	1,460	1,468	1,462
PT Baker Farms Ltd	Eardisley Park Farm Facility	Anaerobic Digestion	36,499	807	1,829	1,391	1,475	1,996
R Edwards & Co (Staunton) Limited	R Edwards & Co (Staunton) Limited	Anaerobic Digestion	36,500	n/r	n/r	n/r	n/r	200
Shed Field Growers Ltd	The Leen Digester	Anaerobic Digestion	36,500	n/r	n/r	11,363	16,712	15,626
Mr P Mann, Mr M Mann & Ms J Mann	Heath Farm	Anaerobic Digestion	74,999	n/r	n/r	n/r	n/r	957
Quickskip Hereford Ltd	Fir Tree Lane Site	Physical Treatment (Soil Production)	75,000	n/r	22,020	12,550	2,200	n/r
Eastside 2000 Ltd	The Valletts	Use of waste in construction	49,999	6,990	n/r	n/r	n/r	n/r
Smiths (Gloucester) Ltd	Land At Netherton Road	Use of waste in construction	99,999	23,672	n/r	n/r	n/r	n/r

Key points on permitted waste capacity

3.1.28 The permitted facilities data for 2016 and 2017 shows transfer (with basic treatment) capacity, biological treatment and recovery capacity, and CD&E recovery capacity operating in Hereford. However, there is no residual waste treatment capacity for other waste streams, such as mechanical biological treatment (MBT) refuse derived fuel (RDF) production, incineration (with or without energy recovery) and no disposal capacity (landfill) beyond one land recovery operation.

3.1.29 There remains some reliance on residual waste management and disposal capacity outside the county, including a significant proportion of strategic capacity that has been jointly procured with Worcestershire County Council to manage LACW.

3.1.30 Permitted facilities are mapped, at Figure 3.4 and Figure 3.5:

- Figure 3.4 shows each facility represented by its capacity under the Environmental Permit, in 2017;
- Figure 3.5 shows each facility represented by the tonnage of waste received, in 2017.

Herefordshire Minerals and Waste Local Plan

Figure 3.4
Waste Facilities by Environmental Permit Capacity, 2017

ID	Facility Name	Site PC
1	Eastside Recycling Facility	HR2 6NS
40	Animal Funeral Services	HR5 3HX
2	Quickskip (Hereford) Transfer Station	HR2 6JT
3	Wye Valley Skips	HR2 8NX
4	Marlbrook Farm	HR6 0PE
5	Leominster Household Waste Site & Transfer Station	HR6 8EA
6	Rotherwas Household Waste Site, Transfer Station & MRF	HR2 6LD
7	Ledbury Household Waste Site	HR8 2DP
8	Ross On Wye Household Waste Site	HR9 7AQ
9	Bromyard Household Waste Site	HR7 4QT
10	Kington Household Recycling Centre	HR5 3HB
11	H C D Limited	HR4 8DZ
12	Land Adjacent To Unit 3	HR2 6JT
13	Lugg Bridge Quarry	HR1 3LZ
14	Kingspan Insulation Ltd	HR6 9LA
15	Quickskip Hereford Limited	HR2 6LD
17	Eastside Recycling Facility	HR2 6NS
18	J & R Recovery	HR1 1JS
20	P & T Moore Vehicle Dismantlers	HR6 0LR
21	Streamhall Garage	HR7 4QT
23	Former E M R Facility	HR4 9LW
24	Cobhall Cottage	HR9 9BW
25	Yaidon Farm	HR5 3LH
26	Much Fawley Farm	HR1 4SP
27	S T L Energy Ltd	HR1 4JU
28	Eign Waste Treatment Centre	HR1 1TG
29	Gelpack Excelsior Ltd	HR4 8DS
31	Two Hoots Farm A D Plant	HR7 4RZ
32	Bowley Court	HR6 0PL
33	Penllan A D	HR2 0SU
34	Herefordshire Biogas	HR6 9LA
35	The Biogas Facility	HR6 9LB
36	Trevase Farm A D	HR2 8ND
37	Eardisley Park Farm Facility	HR3 6NT
38	The Leen Digester	HR6 9HN
39	Land At Lower Vern	HR1 3EX
41	R Edwards & Co (Staunton) Limited	HR6 9HR
42	Heath Farm	SY7 0QB

Legend

Annual Capacity Tonnes

- < 10,000
- 10,001 - 20,000
- 20,001 - 50,000
- 50,001 - 100,000
- 100,001 - 250,000
- Herefordshire County Boundary

N

0 5 10 15

Kilometres

SCALE 1:250,000 @ A3

DATE 01/11/2018

hendeca

ID	Facility Name	Site PC
1	Eastside Recycling Facility	HR2 6NS
40	Animal Funeral Services	HR5 3HX
2	Quickskip (Hereford) Transfer Station	HR2 6JT
3	Wye Valley Skips	HR2 8NX
4	Marlbrook Farm	HR6 0PE
5	Leominster Household Waste Site & Transfer Station	HR6 8EA
6	Rotherwas Household Waste Site, Transfer Station & MRF	HR2 6LD
7	Ledbury Household Waste Site	HR8 2DP
8	Ross On Wye Household Waste Site	HR9 7AQ
9	Bromyard Household Waste Site	HR7 4QT
10	Kington Household Recycling Centre	HR5 3HB
11	H C D Limited	HR4 8DZ
12	Land Adjacent To Unit 3	HR2 6JT
13	Lugg Bridge Quarry	HR1 3LZ
14	Kingspan Insulation Ltd	HR6 9LA
15	Quickskip Hereford Limited	HR2 6LD
17	Eastside Recycling Facility	HR2 6NS
18	J & R Recovery	HR1 1JS
20	P & T Moore Vehicle Dismantlers	HR6 0LR
21	Streamhall Garage	HR7 4QT
23	Former E M R Facility	HR4 9LW
24	Cobhall Cottage	HR9 9BW
25	Yaidon Farm	HR5 3LH
26	Much Fawley Farm	HR1 4SP
27	S T L Energy Ltd	HR1 4JU
28	Eign Waste Treatment Centre	HR1 1TG
29	Gelpack Excelsior Ltd	HR4 8DS
31	Two Hoots Farm A D Plant	HR7 4RZ
32	Bowley Court	HR6 0PL
33	Penllan A D	HR2 0SU
34	Herefordshire Biogas	HR6 9LA
35	The Biogas Facility	HR6 9LB
36	Trevase Farm A D	HR2 8ND
37	Eardisley Park Farm Facility	HR3 6NT
38	The Leen Digester	HR6 9HN
39	Land At Lower Vern	HR1 3EX
41	R Edwards & Co (Staunton) Limited	HR6 9HR
42	Heath Farm	SY7 0QB

Herefordshire Minerals and Waste Local Plan

Figure 3.5
Waste facilities by tonnes of waste received, 2017

Legend

Site Input 2017 (Tonnes)

- < 5,000
- 5,001 - 10,000
- 10,001 - 20,000
- 20,001 - 40,000
- > 40,000
- Herefordshire County Boundary

N

0 5 10 15

Kilometres

SCALE
1:250,000 @ A3

DATE
01/11/2018

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3.2 Facilities Exempt from Environmental Permitting

3.2.1 Exemptions can be gained for the use, treatment, disposal and storage of waste. In 2010 there was a significant change to the waste exemptions system that brought greater clarity over the types and quantities of waste that can be handled under each exemption.

3.2.2 The revised system required all exempt operations to be newly registered and limits each exemption to three years from the date of registration, at which point there is a need to re-register the exemption if an operator wants to continue to benefit from the exemption.

3.2.3 Under the old system, there was no requirement to remove an exemption from the register once an operation had ceased, so the new system results in a "cleaner" data set in that the exemption expires after three years. However, there is no requirement for an exemption that is completed within the three-year registration period to be removed from the register. This is a potential issue for estimating capacity for exemptions related to construction activities, which would not normally accept waste for the full three years.

3.2.4 There is no reporting of waste tonnage inputs to exempt facilities. However, the details provided in the waste exemption registrations can be used to estimate waste arisings and capacity.

3.2.5 Exempt activities are split into four categories:

- Using waste (U codes);
- Treating waste (T codes);
- Disposing of waste (D codes); and
- Storing waste (S codes).

3.2.6 However not all exempt activities are important to the waste need assessment on the basis that:

- they do not contribute to the waste management capacity in the county;
- they do not significantly affect C&I or CD&E waste estimates; or
- the wastes handled through a particular exemption would be captured in other exemptions/permitted facilities once moved on (and so recognising them would result in double counting).

3.2.7 A summary of all exemptions is provided in Annex F along with comments and assumptions about which exemptions need to be considered in terms of waste arisings and capacity estimates.

3.2.8 An extract from the Environment Agency's Environmental Permit Exemptions Database for Shropshire, Herefordshire, Worcestershire and Gloucestershire was obtained for the WNA 2017, providing the details of each exemption registered at a site as of September 2016. The data provided needed to be cleansed to:

- identify exemptions within Herefordshire where the county was not identified in the address field, by using 'HR' postcodes where the county was missing from the address;
- remove the exemptions from Shropshire, Worcestershire and Gloucestershire;

- split the exemptions into non-farm and on-farm exemptions, as the latter are unlikely to affect overall capacity or have a significant impact on C&I and CD&E waste estimates;
- identify the exemptions registered at each site, as multiple exemptions are often registered at a given site; and
- remove duplicate registrations.

3.2.9 A distinction is made between non-farm and on-farm exemptions.

3.2.10 Due to the level of data cleansing and analysis required of the relevant data within the Environmental Permit Exemptions Database, and that the data presented in the WNA 2017 Assessment covered the period up to September 2016, the analysis of exempt facilities has not been revised. The WNA 2017 assessment has been repeated in this Update.

Non-farm exemptions

3.2.11 Within Herefordshire, there are 35 non-farm locations with registered exemptions in the Environment Agency Exemptions Database, with a total of 68 exemptions registered across these locations (see Annex G).

3.2.12 However, when this data set is rationalised there remain 18 locations covering 43 exempt activities that should be considered in arisings estimates and/or capacity estimates. Rationalisation is achieved by the removal of:

- duplicate registrations;
- storage only exemptions;
- treatment exemptions where the outputs are likely to be captured at a permitted facility once moved on (e.g. T28 - Sorting and denaturing of controlled drugs for disposal, T17 - Crushing waste fluorescent tubes); and
- activities where the tonnage involved is likely to be insignificant are excluded (e.g. D6 - Disposal by incineration).

3.2.13 Table 3.6 presents a summary of the relevant data.

Table 3.6 Relevant non-farm exempt activities, Herefordshire, September 2016

Exemption	Description	Number
D1	Deposit of waste from dredging of inland waters	4
D4	Deposit of agricultural waste consisting of plant tissue under a Plant Health Notice	1
D7	Burning waste in the open	12
T6	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising	3
T9	Recovery of scrap metal	2
T32	Treatment of waste in a biobed or biofilter	1
U1	Use of waste in construction	5
U4	Burning of waste as a fuel in a small appliance	4
U8	Use of waste for a specified purpose	4
U10	Spreading waste on agricultural land to confer benefit	2
U12	Use of mulch	2
U13	Spreading of plant matter to confer benefit	1
U14	Incorporation of ash into soil	2
	Total	43
Note: It should be noted that some of these exemptions could be on-farm activities based on the address provided for certain exemptions (see Annex G)		

3.2.14 The detail of these exempt activities has been reviewed so as to estimate the waste tonnages that should be used within this waste need assessment. Table 3.7 shows how the exemptions have been considered and are proposed to be used.

3.2.15 There are a number of exemptions that are more appropriately considered as agricultural (on-farm) wastes. These are reported in the non-farm data set as an entry error by the operator.

Table 3.7 Assumptions for non-farm exempt activities

Code	Explanation	Assumption
D1	Relates to the deposit of dredging material at the point of production and therefore would not contribute to the CD&E waste stream nor does it provide capacity to manage other CD&E waste. Dredging often occurs on agricultural and would be capture in agricultural waste estimates.	Assumed within agricultural waste
D4	Only applies to agricultural plant tissue waste, the disposal of which is required under a Plant Health notice. It is limited to 250 tonnes and would be captured within agricultural waste estimates.	Assumed within agricultural waste
D7	Allows organisations such as landscape gardeners to burn hedge trimmings, branches, etc on a bonfire at the place of production. It does not provide capacity to manage other wastes.	The annual tonnage assumed through each D7 exemption is 10 tonnes Added to C&I waste stream
T6	Allows waste wood and waste plant matter to be chipped, shredded, cut or pulverised to make it easier to store and transport, or to convert it into a suitable form for use. The maximum throughput under the exemption is 500 tonnes of plant tissue waste, wood and untreated wooden packaging in any 7-day period.	The annual tonnage assumed through each T6 exemption is 2,000 tonnes Added to C&I waste stream
T9	Relates to the small-scale recovery of metals only, and the quantity of material is likely to be captured when the material is deposited at larger MRS. T6 exemptions do provide treatment capacity.	Not considered further as tonnage captured elsewhere
T32	Allows the treatment of up to 15 tonnes per annum of non-hazardous pesticides washings at the place of production. The majority of these wastes are assumed to come from agricultural sources and would be captured in agricultural waste estimates.	Assumed within agricultural waste
U1	Allows the use of suitable wastes for small scale construction instead of using virgin raw materials. Suitable wastes include: up to 5,000 tonnes of mainly inert materials for general construction; up to 1,000 tonnes of soil; up to 1,000 tonnes of wood chip for paths, bridleways or car parks; and 50,000 tonnes soil, stone and road plannings for road construction. This exemption can therefore provide a notable outlet for CD&E wastes and exemption needs to be considered in CD&E waste capacity. However, it cannot be considered as a guaranteed capacity to manage CD&E wastes.	The annual tonnages assumed through each U1 exemption is between 100 to 1,000 tonnes Considered in the capacity for CD&E wastes
U4	Relates to the burning of plant tissue waste, wood and untreated wooden packaging in appliances with a net rated thermal input of less than 0.4 megawatts.	The annual tonnage assumed through each U4 exemption is 10 tonnes Added to C&I waste stream
U8	Allows a range of direct uses for waste without treatment, the most relevant being: untreated wood and paper from paper manufacturing; and end of life tyres, used for horse ménages, ornamental purposes, animal bedding, weighting cover sheeting on agricultural premises. Varying quantities apply for the different specific uses e.g. use in horse ménages 1,000 tonnes; use in animal bedding 100 tonnes; end of life tyres 40 tonnes.	The annual tonnage assumed through each U8 exemption is 250 tonnes Added to C&I waste stream

Code	Explanation	Assumption
U10	Allows specified wastes (mainly waste from food production and arising from treatment exemption) to be spread on agricultural land to replace manufactured fertilisers or virgin materials. Limits are based on tonnes per hectare, therefore it is difficult to estimate annual tonnages handled under this exemption. Given the waste type allowed, the exemption is likely to be used to manage on-farm generated waste which would be captured in agricultural waste estimates.	Assumed within agricultural waste
U12	Allows landscapers and farmers to spread mulch as a protective covering onto land around trees, bushes, or plants. The maximum throughput under the exemption is 100 tonnes of untreated wood and plant matter per month	The annual tonnage assumed through each U12 exemption is 200 tonnes Added to C&I waste stream
U13	Allows the spreading of plant matter at the place of production to confer benefit, with a limit of 50 tonnes per hectare in a 12-month period. Given the waste type allowed, the exemption is likely to be used to manage on-farm generated waste which would be captured in agricultural waste estimates.	Assumed within agricultural waste
U14	Allows ash from the burning of plant tissues to be incorporated back into the soil returning nutrients to the soil. Given the limited tonnage and the nature of the exemption, this has been excluded from C&I and CD&E waste estimates.	Not considered further

On-farm exemptions

3.2.16 Many everyday activities on farms need to be carried out under an exemption. These include:

- using hardcore/road planings/woodchip to improve tracks;
- using tyres on a silage pit;
- using paper or woodchip as bedding;
- using railway sleepers in farmyard construction;
- clearing drainage ditches;
- treatment of waste in biobeds;
- burning waste in the open;
- storing sewage sludge before spreading; and
- washing out spray containers.

3.2.17 This means that most farms have to register for numerous exemptions. In Herefordshire, 635 farms/locations on farms have registered exemptions, with multiple exemptions registered at many farms.

3.2.18 Table 3.8 lists the top 20 most registered exemptions by farms in Herefordshire. Table 3.8 highlights that the majority of registered exemptions relate to handling wastes generated on-farm, which would be captured within agricultural waste estimates.

Table 3.8 Top 20 on-farm exemptions, Herefordshire, September 2016

Exemption	Description	Number
D7	Burning waste in the open	520
U10	Spreading waste on agricultural land to confer benefit	386
D1	Deposit of waste from dredging of inland waters	367
U1	Use of waste in construction	318
T6	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising	308
U8	Use of waste for a specified purpose	297
S2	Storage of waste in a secure place	181
S1	Storage of waste in secure containers	151
U4	Burning of waste as a fuel in a small appliance	147
U13	Spreading of plant matter to confer benefit	145
D4	Deposit of agricultural waste consisting of plant tissue under a Plant Health Notice	131
U12	Use of mulch	111
U14	Incorporation of ash into soil	94
T14	Crushing and emptying vehicle waste oil filters	84
T1	Cleaning, washing, spraying or coating relevant waste	83
T23	Aerobic composting and associated prior treatment	72
D6	Disposal by incineration	71
T4	Preparatory treatments (baling, sorting, shredding etc)	64
T9	Recovery of scrap metal	49
U15	Pig and poultry ash	43

3.2.19 However, there are a small number of on-farm exemptions that will import C&I and CD&E wastes and need to be considered further. The key exemptions are:

- U10 (Spreading waste on agricultural land to confer benefit) which would mainly relate to materials such as paper pulp and sewage sludge, which are both commonly used to improve the condition of soil.
- U1 (Use of waste in construction) which would mainly relate to the use of hardcore/road planings/woodchip to improve tracks.
- U8 (Use of waste for a specified purpose) which would mainly relate to using tyres to weight down cover sheeting or the use of paper or woodchip as bedding.

Summary of Capacity Operating in Herefordshire

3.2.20 Permitted capacity within the county is limited to facilities that offer transfer with basic treatment or provide biological treatment; there is no residual waste treatment or disposal capacity such as MBT, RDF production, incineration (with or without energy recovery) or landfill. This means there is a reliance on such facilities that are located outside of Herefordshire, including a significant proportion of strategic capacity that has been jointly procured with Worcestershire County Council to manage LACW (see section 6.2).

3.2.21 Over the last four years there has been a notable increase in the capacity and waste inputs to permitted facilities. This is predominately driven by an increase in biological treatment and anaerobic digestion facilities, with permitted capacity increasing by approximately 700kt and waste inputs by 110kt.

3.2.22 In 2016, there was permitted capacity of 1,789,710 tonnes provided across facilities that actually received 416,097 tonnes.

3.2.23 Whilst there are a significant number (approximately 670) of exemption activities/sites across Herefordshire:

- the majority are on-farm exemptions which cover many everyday on-farm activities, such as burning waste in the open, spreading waste on agricultural land to confer benefit, deposit of waste from dredging of inland waters etc;
- there are a small number of non-farm exemptions, which provide some treatment capacity for C&I and CD&E wastes; and
- there are over 300 locations with U1 exemptions (use of waste in construction); these do provide important capacity for CD&E wastes but cannot be considered as guaranteed capacity.

4. Waste Arisings

4.1 Introduction

4.1.1 Data for calendar years 2015, 2016 and 2017 has been considered where it is available and practicable to analyse.

4.2 Local Authority Collected Waste (LACW)

4.2.1 In 2014, Defra's Waste Statistics team split LACW into 'waste from households' and 'waste not from households' for statistical purposes to provide a harmonised UK indicator with a comparable calculation in each of the four UK countries.

4.2.2 Whilst 'waste from households' is the Government's statistical measure it does not truly reflect waste generated by households as it excludes CD&E waste collected at CA sites that will predominately be generated by householders.

4.2.3 Therefore, when considering LACW arisings and forecasts, it can be useful to consider waste generated by households discretely from other LACW such as trade waste and parks waste etc.

LACW arisings in Herefordshire

4.2.4 In 2016, approximately 89,650 tonnes of LACW was produced in Herefordshire, of which 77,350 tonnes was 'waste from households'. This is consistent with LACW growth scenarios 2 and 4a (see section 5.2).

4.2.5 By 2017, approximately 88,870 tonnes of LACW was produced in Herefordshire, of which 76,750 tonnes was 'waste from households'. This is a slight reduction in both the LACW and 'waste from households' arisings compared to 2016. The figure sits between the LACW growth scenarios 2 and 4a, and scenarios 1 and 4 (see section 5.2).

4.2.6 Table 4.1 and Figure 4.1 show Herefordshire's LACW arisings broken down into 'waste from households' and 'waste not from households' and the generic waste management method used, during years 2011 to 2017.

4.2.7 LACW has a good dataset available and it is useful to consider previous years to inform assumptions about potential future arisings. Table 4.1 also summarises the number of households and waste generation rates for those years based on data published by the Ministry for Housing, Communities and Local Government (MHCLG, formerly DCLG). This is useful information in considering future arisings.

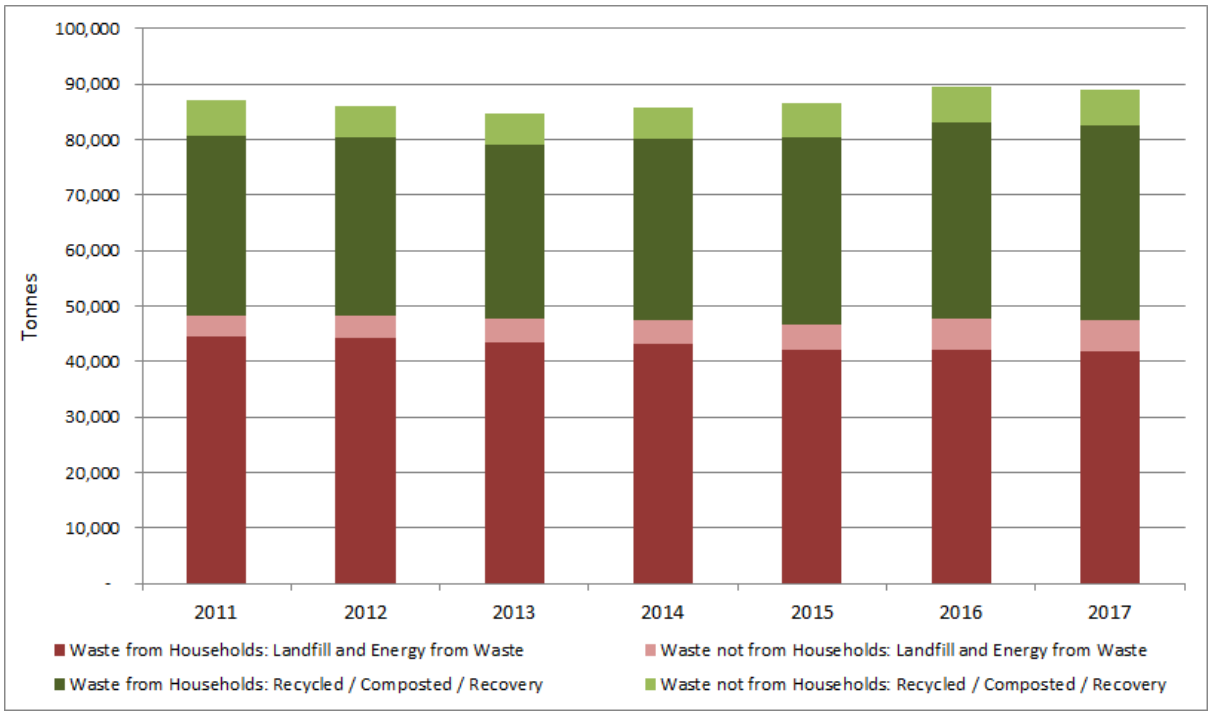
4.2.8 However, since the WNA 2017, the responsibility for household projections transferred to the Office for National Statistics (ONS). At the end of September 2018, ONS published its first projections since the transfer of that responsibility. Therefore, Table 4.1 also includes waste generation rates based on the ONS household projections. The ONS household projections are fractionally lower than the MHCLG projections, which means the resultant waste generation rates are fractionally higher.

Table 4.1 LACW arisings, Herefordshire, 2011 to 2017

		2011	2012	2013	2014	2015	2016	2017
Waste from households	Recycled / composted / recovery	32,454	32,054	31,210	32,610	33,717	35,325	34,883
	Landfill and Energy from Waste	44,399	44,335	43,563	43,251	42,039	42,033	41,870
	Total waste from households	**76,854**	**76,389**	**74,773**	**75,861**	**75,755**	**77,358**	76,753
Waste not from households	Recycled / composted / recovery	6,395	5,713	5,732	5,592	6,212	6,464	6,430
	Landfill and Energy from Waste	3,133	3,367	3,452	3,636	3,933	5,808	5,688
	Total waste not from households	**9,528**	**9,079**	**9,184**	**9,228**	**10,145**	**12,273**	12,118
Total LACW		**87,184**	**86,146**	**84,723**	**85,800**	**86,631**	**89,631**	**88,871**
Total waste generated by households[2]		83,337	82,180	80,548	81,470	81,984	83,841	83,164
MHCLG Number of households[3]		78,454	79,215	79,829	80,526	81,244	81,961	82,653
Waste from households per household (tonnes/household)		0.980	0.964	0.937	0.942	0.932	0.944	0.929
LACW per household (tonnes/household)		1.111	1.087	1.061	1.065	1.066	1.094	1.075
Waste generated by households per household (tonnes/household)		1.062	1.037	1.009	1.012	1.009	1.023	1.006
ONS Number of households[4]		78,192	78,865	79,328	79,944	80,463	81,102	81,570
Waste from households per household (tonnes/household)		0.983	0.969	0.943	0.949	0.941	0.954	0.941
LACW per household (tonnes/household)		1.115	1.092	1.068	1.073	1.077	1.105	1.090
Waste generated by households per household (tonnes/household)		1.066	1.042	1.015	1.019	1.019	1.034	1.020

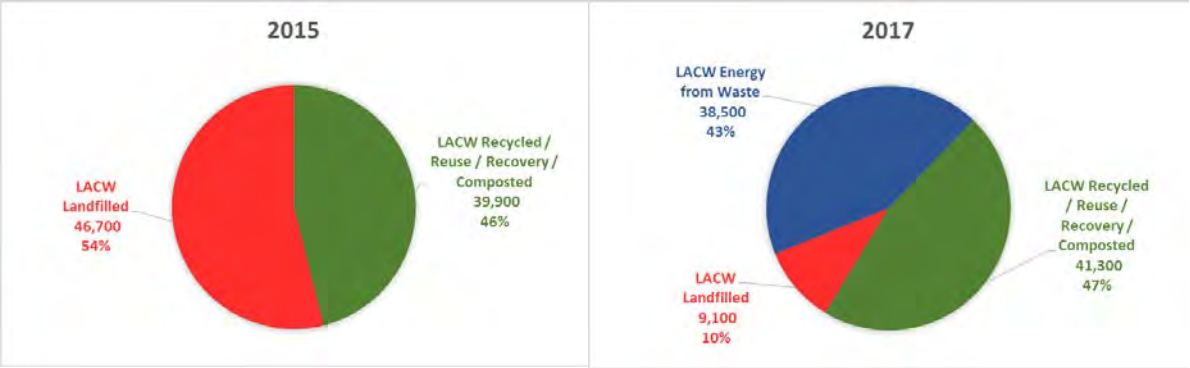
Notes:
1. Tonnage data source, Herefordshire Council
2 LACW excluding trade waste collected by the local authority and other municipal wastes collected by the local authority (e.g. parks and gardens waste, fly tipping etc.)
3. Ministry for Housing, Communities and Local Government (MHCLG) Household projections (formerly DCLG)
4. ONS Household projections in England: 2016-based, September 2018

Figure 4.1 LACW arisings, Herefordshire, 2011 to 2017



4.2.9 As an aside, Figure 4.1 is not able to show the shift in the management routes used for Herefordshire's LACW since the EnviRecover Facility started operating in 2017. For information, this is shown in Figures 4.2 below.

Figure 4.2 LACW management methods, Herefordshire, 2015 and 2017



4.2.10 The trend in the annual LACW arisings in Herefordshire is consistent with the trend in LACW arisings at the England level, with total arisings dropping to a low point in 2013 followed by a gradual increase.

4.2.11 Waste generated could be expected to increase if households (and population) are projected to grow. However, economic growth and changing consumption habits will also influence waste production. Therefore, the two key influences on waste arisings are:

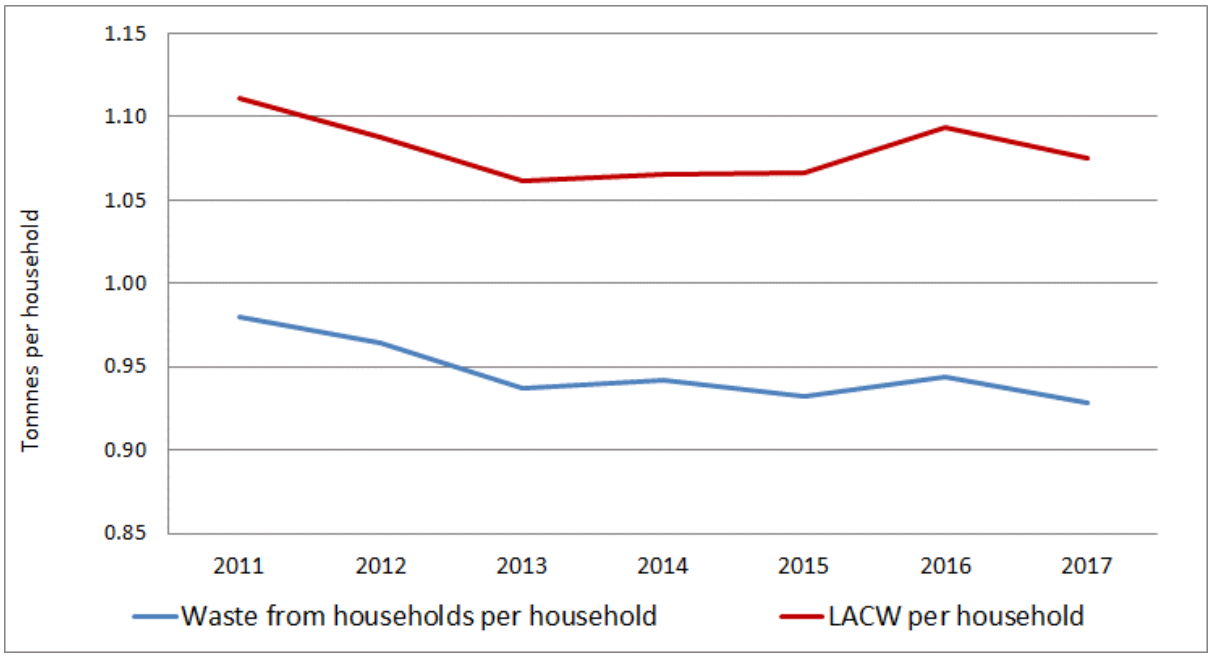
- the number of households (and to a lesser extent population) the growth which could result in an increase in total household waste arisings; and

- the state of the economy, as economic decline and growth directly affect public consumption, purchasing habits and changes in consumption patterns, which may lead to an increase or decrease in per capita or per household waste generated.

4.2.12 Table 4.1 and Figure 4.3 show that both 'waste from households' per household and LACW per household have stayed relatively constant over the last seven years. This would suggest that, historically, waste generation in Herefordshire is more closely linked to change in the number of households rather than economic growth. A more significant growth in LACW per household would indicate that economic growth had a greater influence.

4.2.13 The addition of the 2016 data is interesting in that it shows a greater upturn in LACW per household, which would imply economic growth is having an influence on LACW in Herefordshire. However, the 2017 data shows the waste generation levels reverting to those seen in years 2013 to 2015.

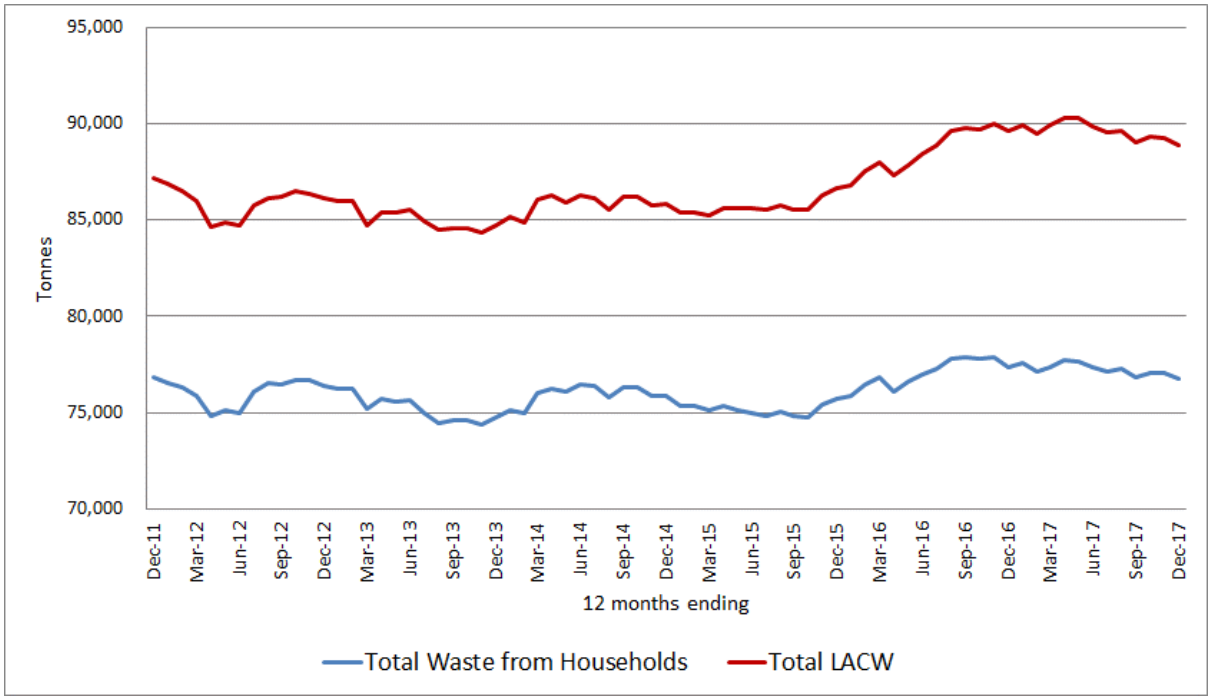
Figure 4.3 Trends in LACW and waste from households per household, Herefordshire, 2011 to 2017



4.2.14 However, whilst annual waste arising data provide an indication of the trends, using a rolling 12-month tonnage helps to take account of seasonal variations and provides a clearer understanding of trends. Figure 4.4 provides the rolling 12-month tonnage data[8] for total LACW arisings using monthly data from December 2011 to December 2017 inclusive.

[8] Each data point presents the tonnage for the preceding 12 months, so that each data point represents a full year's tonnage.

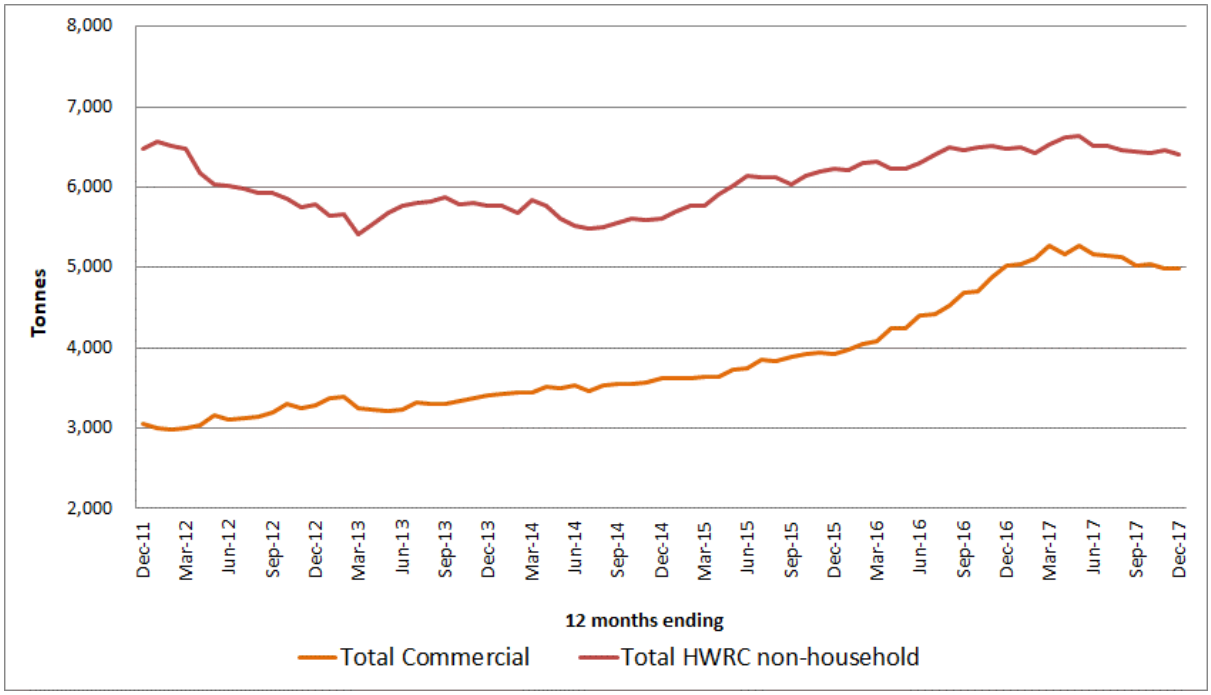
Figure 4.4 Total LACW and 'waste from households', rolling 12 month tonnage, Herefordshire, December 2011 to December 2017



4.2.15 Figure 4.4 shows a notable increase in LACW from September 2015 to September 2016, which then appears to stabilise through the first half of 2017, followed reduction toward the end of 2017. Between August 2016 and August 2017, there have been some minor decreases in most elements of the LACW stream.

4.2.16 However, as shown in Figure 4.5, the commercial waste element of LACW continued to grow until the end of 2016, before stabilising during 2017.

Figure 4.5 Total commercial and non-household CA site waste arisings, rolling 12 month tonnage, Herefordshire, December 2011 to June 2017



4.3 Commercial and Industrial (C&I) waste

Introduction

4.3.1 The most recent C&I waste arisings estimates (2014) were made at the national level and were not broken down to the regional or individual WPA level. Therefore C&I waste arisings need to be estimated using a number of datasets. The approach used in this report is based on the methodology developed by Defra in 2014.[9]

4.3.2 However, it should be noted that the Defra methodology was designed to estimate arisings at the national level and so did not need to consider the origin of the waste. Therefore, the methodology has been adapted for use at the WPA level but the basic steps remain similar.

4.3.3 The method calculates the total amount of C&I waste by adding up:

- inputs to permitted facilities with Herefordshire as the origin and adjusting for waste handled through transfer stations and from waste management facilities;
- incineration inputs; and
- inputs to exemption facilities;

and subtracting LACW, CD&E waste, hazardous and agricultural wastes.

[9] Methodology to Estimate Waste Generation by the Commercial and Industrial Sector in England, Defra, 2014

Inputs to permitted facilities

4.3.4 Operators of permitted waste facilities are requested to provide information on the 'origin' of the waste accepted at their sites. Where data is supplied, the entry is normally completed showing the town or county where the waste came from.

4.3.5 However, where operators do not provide accurate information on the origin of waste, the WDI reports the origin as 'Not Codeable'; where possible 'Not Codeable' waste is assigned to the region of origin. Having considered wastes identified as originating in Herefordshire, there is a need to consider the potential tonnage of 'Not Codeable' waste that can reasonably be assumed to have been generated in Herefordshire.

4.3.6 The WDI for 2013 to 2017 were used to identify wastes received at permitted facilities which have the origin of waste identified as Herefordshire. The data were extracted by LoW 6-digit waste code (i.e. the classification codes for individual wastes) and by receiving site. Table 4.2 summarises the data extracted to show the quantities of waste received by sites in England with the origin identified as Herefordshire.

Table 4.2 Waste received at permitted facilities in England with Herefordshire origin 2013 to 2017 by LoW Chapter heading (rounded to nearest 100 tonnes)

LoW Chapter	Chapter Description	Tonnes				
		2013	2014	2015	2016	2017
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	30,130	38,620	95,970	121,710	134,170
03	Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	180	220	270	250	5
04	Wastes from the leather, fur and textile industries	-	-	3	-	-
06	Wastes from inorganic chemical processes	8	30	2	40	3
07	Wastes from organic chemical processes	1	1	1	30	100
08	Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks	255	150	250	350	600
09	Wastes from the photographic industry	23	20	7	2	<1
10	Wastes from thermal processes	7	40	90	150	120
11	Wastes from chemical surface treatment and coating of metals and other materials, non-ferrous hydro-metallurgy	997	80	220	60	1,580
12	Wastes from shaping and physical and mechanical surface treatment of metals and plastics	363	150	330	550	550
13	Oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19)	1,880	1,630	1,100	1,190	1,750
14	Waste organic solvents, refrigerants and propellants (except 07 and 08)	121	20	20	30	100
15	Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	1,683	2,040	2,220	2,230	2,080
16	Wastes not otherwise specified in the list	6,865	24,760	11,570	14,990	13,790

LoW Chapter	Chapter Description	Tonnes				
		2013	2014	2015	2016	2017
17	Construction and demolition wastes (including excavated soil from contaminated sites)	104,462	111,710	72,960	77,750	122,140
18	Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)	1,299	420	360	450	410
19	Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use	63,090	43,030	52,350	81,330	25,900
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	178,997	182,600	209,590	221,940	231,140
Total		390,360	405,520	447,310	523,050	534,440
Tonnages rounded to nearest 10 tonnes, unless the tonnage was less than 10 tonnes, for which tonnage round to the nearest 1 tonne						

4.3.7 There are three notable differences between the 2015 and 2016 datasets:

- Under LoW Chapter 2, 28,000 tonnes of waste with LoW code 02 07 04, 'materials unsuitable for consumption or processing from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)', was sent to Netheridge Sewage Treatment Works in Gloucestershire. It is possible that this is a one-off arising.
- An additional 29,000 tonnes were reported under LoW Chapter 19. The change is predominantly due to the increase in the following waste types; however, they will be filtered out at the next stage:
  - LoW code 19 07 03 (+2,000 tonnes), non-hazardous landfill leachate;
  - LoW code 19 12 02 (+4,650 tonnes), ferrous metal from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified;
  - LoW code 19 12 09 (+8,900 tonnes), minerals (for example sand, stones) from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified, which is likely to be from the processing of CD&E wastes;
  - LoW code 19 12 12 (+11,675 tonnes), other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11 (for example sorting, crushing, compacting, pelletising), which is potentially from increased processing of wastes at transfer stations.
- An additional 11,700 tonnes were reported under LoW Chapter 20, which will partly be as a result of the increase in LACW and some potential double counting of that waste when handled through transfer stations.

4.3.8 There are also some notable differences between the 2016 and 2017 datasets:

- Under LoW Chapter 2, the tonnage report against LoW code 02 07 04, 'materials unsuitable for consumption or processing from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)' was not a one-off arising. In 2017,

28,670 tonnes with LoW code 02 07 04, were sent to Netheridge Sewage Treatment Works in Gloucestershire.

- An additional 12,500 tonnes were reported under LoW Chapter 02, which is made up of some increase and decrease across the sub-sectors covered under LoW Chapter 02. The predominant change was an increase of 18,000 tonnes in the 'waste form agriculture, horticulture, aquaculture, forestry, hunting and fishing' which was off-set by reductions in the wastes from:
  - the preparation and processing of meat, fish and other foods of animal origin (-1,300 tonnes);
  - fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation (-3,150 tonnes); and
  - the dairy products industry (-1,250 tonnes).

  The increases in the 'waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing' are principally from the two waste streams LoW code 02 01 03 'plant-tissue waste' (+10,600 tonnes) and LoW code 02 01 03 'animal faeces, urine and manure' (+ 7,500 tonnes). Both of these waste streams are likely to be handled through on-farm anaerobic digestion systems (for which there has been a significant increase in capacity over the last 5 years) and would not normally contribute to C&I waste arisings.
- An additional 44,400 tonnes were reported from the under LoW Chapter 17, C&D waste. The change is predominantly due to the increase in the following waste types; however, they will be filtered out at the next stage:
  - LoW code 17 01 07 (+9,400 tonnes), non-hazardous mixtures of concrete, bricks, tiles and ceramics;
  - LoW code 17 05 04 (+27,700 tonnes), non-hazardous soil and stones;
  - LoW code 17 08 02 (+3,150 tonnes), non-hazardous gypsum-based construction materials minerals; and
  - LoW code 17 09 04 (+3,500 tonnes), non-hazardous mixed construction and demolition wastes.
- A reduction of 55,400 tonnes reported under LoW Chapter 19. The change is predominantly due to the reduction in two waste types; however, they will be filtered out at the next stage:
  - LoW code 19 12 09 (-7,500 tonnes), minerals (for example sand, stones) from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified, which is likely to be related to the processing of CD&E wastes;
  - LoW code 19 12 12 (-42,000 tonnes), other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11 (for example sorting, crushing, compacting, pelletising), which is potentially from a change in coding by transfer stations processing of wastes.

4.3.9 The next step aims to isolate the C&I waste fraction by filtering the data to remove:

- Waste coded under LoW sub-chapter 02 01 'Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing', to exclude agricultural waste.
- Waste coded under LoW Chapter 17 'Construction and demolition wastes (including excavated soil from contaminated sites)' to exclude CD&E waste. Waste coded under LoW Chapter 19 'Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use' to prevent the double counting of wastes handled at waste management facilities.
- Waste deposited at Leominster HWRC & WTS, Rotherwas HWRC, WTS & MRF and Ledbury, Ross on Wye, Bromyard HWRC and Kington HWRC, as this is predominately household waste with the exception of commercial waste collected by Herefordshire Council which needs to be factored back into the estimates and CD&E waste received at HWRC (which would have been filtered out under LoW Chapter 17).

4.3.10 For the years 2013 to 2015, these steps reduced the tonnage by approximately 250,000 to 270,000 tonnes. Using the 2016 data, these steps reduce the tonnage by approximately 300,000 tonnes and for 2017 the tonnage was reduced by approximately 310,000 tonnes.

Waste Transfer Stations

4.3.11 There is a significant risk of double counting waste handled through waste transfer stations. Depending on how waste is handled the outgoing waste may or may not be assigned the same waste code. In addition, the sites receiving waste from a waste transfer station may assign the waste a different code(s) to that used by the waste transfer station.

4.3.12 An example of this is highlighted by the potential double counting of LACW handled through the Mercia Waste Management facilities. In 2015, approximately 47,600 tonnes of LACW was sent from the Mercia Waste Management facilities to Severn Waste Services' Hill and Moor Landfill, Pershore, coded under LoW Chapter 20. However, the waste received at the Hill and Moor Landfill from Herefordshire was recorded as:

- 39,500 tonnes under LoW code 19 12 12, which related to the waste received from the waste transfer station; and
- 8,100 tonnes under LoW 20 03 01 which related to the waste received from the HWRC.

4.3.13 So, whilst Step 3 above would have prevented the double counting of the waste coded under LoW Chapter 19, the waste coded under LoW Chapter 20 could be double counted. Therefore, a more detailed review of waste handled through waste transfer stations is needed

4.3.14 Table 4.3 summarises the key tonnages that need to be discounted to prevent double counting based on the detailed review. However, it should be noted that due to the complexity of C&I waste flows it is not possible to definitively identify all potential occurrences of double counting.

Table 4.3 Tonnages discounted to prevent double counting for years 2013 to 2017

Year	Potential Double Counting
2013	**LACW:** All waste sent from the Mercia Waste Management facilities to landfill was coded under LoW 20 03 01, however the receiving sites appear to have used LoW code 19 12 12. Therefore, this waste will have already been discounted by the initial Step 2 above 15,730 tonnes coded under LoW 20 03 01 deposited at Severn Waste Services' Envirosort MRF, Norton, Worcestershire, which is assumed to be the mixed dry recyclables sent from Mercia Waste Management facilities in Herefordshire. 1,870 tonnes of garden waste sent to Bennion's Rose Hill Farm, Gloucestershire from HWRC. Although 1,640 tonnes of scrap metal were removed from the Mercia Waste Management facilities, it has not been possible to identify from the EA WDI which sites may have received the waste. 2,860 tonnes of timber sent to Quickskip (Hereford) Transfer Station from HWRC. **Waste Transfer Stations:** 9,250 tonnes of septic tank sludge received at Eign Waste Treatment Centre and Yaidon Farm is assumed to be from the Marlbrook Farm Transfer Station. This is because all waste removed from Marlbrook Farm is transferred for recovery/treatment to other sites in Herefordshire and Eign Waste Treatment Centre and Yaidon Farm are the only sites in Herefordshire accepting septic tank sludge for treatment. Quickskip (Hereford) Transfer Station record all waste received under LoW code 20 03 01 (mixed municipal waste) with an origin of Herefordshire. Of the waste removed from the site, 9,590 tonnes were removed under LoW code 20 03 01 to other transfer stations in Herefordshire and therefore needs to be discounted to prevent double counting. A further 2,000 tonnes of waste was removed under LoW code 20 03 01 to other transfer stations in Gloucestershire from another Quickskip site on the Rotherwas Industrial Estate, which also needs to be discounted to prevent double counting. Balfour Beatty Living Places sent 1,725 tonnes of waste coded as LoW 20 03 03 to other transfer stations in Herefordshire and therefore needs to be discounted to prevent double counting. Approximately 83% of the waste received at the Eastside Recycling Facility in CD&E waste and has already been discounted by the initial Step 2 above. Of the remainder 3,175 tonnes under LoW code 20 03 01 need to be discounteded to prevent double counting.

Year	Potential Double Counting
2014	**LACW:** 49,720 tonnes coded under LoW 20 03 01 were sent to landfill in Worcestershire from the five Mercia Waste Management facilities in Herefordshire. Herefordshire Council records show it was deposited at Hill and Moor Landfill, however there are no recorded inputs to the Hill and Moor Landfill in the 2014 EA WDI. Whilst this means this tonnage will not be double counted, it does highlight some of the data quality errors with the EA WDI. 17,320 tonnes coded under LoW 20 03 01 deposited at Severn Waste Services' Envirosort MRF, Norton, Worcestershire, which is assumed to be the mixed dry recyclables sent from Mercia Waste Management facilities in Herefordshire. 4,410 tonnes of garden waste sent to Bennion's Rose Hill Farm, Gloucestershire from HWR. 1,700 tonnes of scrap metal sent to Wye Valley Waste's Eastside Recycling Facility from HWRC. Although 3,100 tonnes of timber were sent to Quickskip (Hereford) Transfer Station from HWRC, in 2014 Quickskip recorded timber and wood waste under code 17 02 01. This would have been discounted by the initial Step 2 above. **Waste Transfer Stations:** 7,820 tonnes of septic tank sludge received at Eign Waste Treatment Centre and Yaidon Farm is assumed to be from the Marlbrook Farm Transfer Station, as all waste removed from Marlbrook Farm is transferred for recovery/treatment at other sites in Herefordshire and Eign Waste Treatment Centre and Yaidon Farm are the only sites accepting septic tank sludge for treatment. Quickskip (Hereford) Transfer Station received 17,190 tonnes of waste under LoW code 20 03 01 (mixed municipal waste) with an origin of Herefordshire. Of the waste removed from the site 2,500 tonnes were removed under LoW code 20 03 01 to sites in Wales, which would not be captured in the EA WDI. The remaining tonnage needs to be discounted to prevent double counting. In addition, Quickskip operate a soil production site at Fir Tree Lane and in the EA WDI 11,000 tonnes were removed from the site to locations in Herefordshire. It is therefore assumed that the material is transferred between the two Quickskip sites and needs to be discounted to prevent the material being counted multiple times. Approximately 83% of the waste received at the Eastside Recycling Facility in CD&E waste and has already been discounted by the initial Step 2 above. Of the remainder 1,000 tonnes were removed under various LoW codes (mainly 20 03 01) to sites in Wales, which would not be captured in the EA WDI. Once LoW Chapter 17 and 19 wastes are discounted only a further 770 tonnes need to be discounted to prevent double counting.

Year	Potential Double Counting
2015	**LACW:** 8,100 tonnes coded under LoW 20 03 01 deposited at Hill and Moor Landfill. 17,670 tonnes coded under LoW 20 03 01 deposited at Severn Waste Services' Envirosort MRF, Norton, Worcestershire, which is assumed to be the mixed dry recyclables sent from Mercia Waste Management facilities in Herefordshire. 3,450 tonnes of garden waste sent to Bennion's Rose Hill Farm, Gloucestershire from HWRC. 1,960 tonnes of scrap metal sent to Wye Valley Waste's Eastside Recycling Facility from HWRC. 3,130 tonnes of timber sent to Quickskip (Hereford) Transfer Station from HWRC. 135 tonnes of fridges/freezers sent to Aqua Force Recycling, Wolverhampton from HWRC. **Waste Transfer Stations:** 9,040 tonnes of septic tank sludge received at Eign Waste Treatment Centre and Yaidon Farm is assumed to be from the Marlbrook Farm Transfer Station, as all waste removed from Marlbrook Farm is transferred for recovery/treatment at other sites in Herefordshire and Eign Waste Treatment Centre and Yaidon Farm are the only sites accepting septic tank sludge for treatment. Quickskip (Hereford) Transfer Station record all waste received under LoW code 20 03 01 (mixed municipal waste) with an origin of Herefordshire. Of the waste removed from the site 12,750 tonnes were removed under LoW code 20 03 01 to sites in Wales, which would not be captured in the EA WDI. The remaining tonnage needs to be discounted to prevent double counting. In addition, Quickskip operate a soil production site at Fir Tree Lane and in the EA WDI 11,550 tonnes were both accepted and removed from the site to and from locations in Herefordshire. It is therefore assumed that the material is transferred between the two Quickskip sites and needs to be discounted to prevent the material being counted multiple times. All the waste received at Balfour Beatty Living Places was sent to other transfer stations in Herefordshire and therefore needs to be discounted to prevent double counting. Approximately 65% of the waste received at the Eastside Recycling Facility is CD&E waste and has already been discounted by the initial Step 2 above. Of the remainder, 11,000 tonnes were removed under various LoW codes (mainly 20 03 01) to sites in Wales, which would not be captured in the EA WDI. Once LoW Chapter 17 and 19 wastes are discounted only a further 780 tonnes need to be discounted to prevent double counting.

Year	Potential Double Counting
2016	**LACW:** 4,710 tonnes coded under LoW 20 03 01 deposited at Hill and Moor Landfill. 17,610 tonnes coded under LoW 20 03 01 deposited at Severn Waste Services' Envirosort MRF, Norton, Worcestershire, which is assumed to be the mixed dry recyclables sent from Mercia Waste Management facilities in Herefordshire. 8,250 tonnes of garden waste sent to Bennion's Rose Hill Farm, Gloucestershire from HWRC. 2,420 tonnes of scrap metal and 6,090 tonnes of rubble sent to Wye Valley Waste's Eastside Recycling Facility from HWRC. 315 tonnes of fridges/freezers sent to Aqua Force Recycling, Wolverhampton from HWRC. **Waste Transfer Stations:** 9,040 tonnes of septic tank sludge received at Eign Waste Treatment Centre and Yaidon Farm is assumed to be from the Marlbrook Farm Transfer Station, as all waste removed from Marlbrook Farm is transferred for recovery/treatment at other sites in Herefordshire and Eign Waste Treatment Centre and Yaidon Farm are the only sites accepting septic tank sludge for treatment. Quickskip (Hereford) Transfer Station record all waste received under LoW code 20 03 01 (mixed municipal waste) with an origin of Herefordshire. Of the waste removed from the site 12,860 tonnes were removed under LoW code 20 03 01 to a site in Doncaster and 970 tonnes were removed under LoW code 20 01 01 to a site in Birmingham. In addition, Quickskip operate a physical treatment facility at Rotherwas Industrial Estate and soil production site at Fir Tree Lane and in the EA WDI these sites receive 9,025 tonnes of waste under LoW code 20 02 02 which assumed to be part of the 16,000 tones LoW code 20 02 02 waste removed from Quickskip (Hereford) Transfer Station to locations in Herefordshire. It is therefore assumed that the material is transferred between the three Quickskip sites and needs to be discounted to prevent the material being counted multiple times. All the waste received at Balfour Beatty Living Places was sent to other transfer stations in Herefordshire and therefore needs to be discounted to prevent double counting. Approximately 50% of the waste received at the Eastside Recycling Facility is CD&E waste and has already been discounted by the initial Step 2 above. Of the remainder, the majority is sent to sites in Wales, which would not be captured in the EA WDI. Once LoW Chapter 17 and 19 wastes are discounted only a further 1,090 tonnes need to be discounted to prevent double counting.

Year	Potential Double Counting
2017	**LACW:** 2,430 tonnes coded under LoW 20 03 01 deposited at Hill and Moor Landfill. Whilst 10,630 tonnes were removed from Herefordshire's Household Waste Sites, 8,100 tonnes were recorded under LoW 19 12 12 at Hill and Moor Landfill from Herefordshire, which is assumed to be the balance of the LACW and has already been discounted under LoW Chapter 19. 18,590 tonnes coded under LoW 20 03 01 and 20 tonnes of deposited LoW 20 01 02 at Severn Waste Services' Envirosort MRF, Norton, Worcestershire, which is assumed to be the mixed dry recyclables sent from Mercia Waste Management facilities in Herefordshire and is consistent with the tonnes that were removed from Herefordshire's Household Waste Sites. 8,410 tonnes of garden waste sent to Bennion's Rose Hill Farm, Gloucestershire from HWRC. 2,400 tonnes of scrap metal, 5,660 tonnes of rubble and 120 tonnes of cardboard sent to Wye Valley Waste's Eastside Recycling Facility from HWRC. 160 tonnes of fridges/freezers sent to Aqua Force Recycling, Wolverhampton from HWRC. 90 tonnes of WEEE and Metal to Simms in Redditch from HWRC. **Waste Transfer Stations:** 9,700 tonnes of septic tank sludge received at Eign Waste Treatment Centre and Yaidon Farm which was removed the Marlbrook Farm Transfer Station, as all waste removed from Marlbrook Farm is transferred to other sites in Herefordshire, with Eign Waste Treatment Centre and Yaidon Farm the only sites accepting septic tank sludge. Quickskip (Hereford) Transfer Station record all waste received under LoW code 20 03 01 (mixed municipal waste) with an origin of Herefordshire. Of the waste removed from the site 5,120 tonnes were removed under LoW code 20 03 01 to a site in Doncaster and 790 tonnes were removed under LoW code 20 01 01 to a site in Birmingham. Quickskip operate a physical treatment facility at Rotherwas Industrial Estate and in the WDI these sites receive 9,990 tonnes of waste under LoW code 20 02 02 which are assumed to be part of the 14.840 tones LoW code 20 02 02 waste removed from Quickskip (Hereford) Transfer Station to locations in Herefordshire. All the waste received at Balfour Beatty Living Places was sent to other transfer stations in Herefordshire and therefore needs to be discounted to prevent double counting. Approximately 40% of the waste received at the Eastside Recycling Facility is CD&E waste and has already been discounted by the initial Step 2 above. Of the remainder, the majority is sent to sites in Wales, which would not be captured in the WDI. Once LoW Chapter 17 and 19 wastes are discounted only a further 1,040 tonnes need to be discounted to prevent double counting.

4.3.15 As highlighted above, commercial waste collected by Herefordshire Council needs to be factored back into the estimates. The commercial waste tonnages collected, which would be coded under LoW Chapter 20, were:

- 3,409 tonnes in 2013;
- 3,619 tonnes in 2014;
- 3,916 tonnes in 2015;
- 5,020 tonnes in 2016; and
- 4,910 tonnes in 2017.

Metals Recycling Sites

4.3.16 Metals recycling site/vehicle dismantlers generally use LoW codes 19 12 02 and 19 12 03 for the ferrous metal and non-ferrous metal removed from sites, however a combination of other codes are also used to describe the metals and components removed. In addition, small vehicle dismantlers often send their processed scrap metal to larger metals recycling site for bulking and onward shipment for recovery.

4.3.17 A detailed review of the waste removed from metals recycling site/vehicle dismantlers in 2013 highlighted 5,560 tonnes of waste that would not have been excluded by removing LoW Chapter 17 & 19 wastes as part of the initial analysis. However, the processes at metals recycling site/vehicle dismantlers generate additional wastes streams, for example when a car is dismantled components within the car such as oils, lead-acid batteries etc. are separated as individual waste streams. In addition, 90 tonnes were transferred to another facility in Herefordshire which means it is likely to be double counted twice.

4.3.18 A detailed review of the waste removed from metals recycling site/vehicle dismantlers in 2014 highlighted 4,260 tonnes of waste that would not have been excluded by removing LoW Chapter 17 & 19 wastes as part of the initial analysis. In addition, 130 tonnes were transferred to another facility in Herefordshire which means it is likely to be double counted twice. There also appears to be a data entry error with 5,600 tonnes of lead-acid batteries being removed from P & T Moore Vehicle Dismantlers, when the site only received 1,700 tonnes of waste in total. It is assumed that the figure had been entered as kg i.e. 5.6 tonnes, which would be consistent with the other tonnes of this material removed from the site.

4.3.19 The detailed review of the waste removed from metals recycling site/vehicle dismantlers in 2015 highlighted 5,640 tonnes of waste that would not have been excluded by removing LoW Chapter 17 & 19 wastes as part of the initial analysis. In addition, 310 tonnes were transferred to another facility in Herefordshire which means it is likely to be double counted twice.

4.3.20 The detailed review of the waste removed from metals recycling site/vehicle dismantlers in 2016 highlighted 5,650 tonnes of waste that would not have been excluded by removing LoW Chapter 17 & 19 wastes as part of the initial analysis. In addition, 360 tonnes were transferred to another facility in Herefordshire, which means it is likely to be double counted twice.

4.3.21 The detailed review of the waste removed from metals recycling site/vehicle dismantlers in 2017 highlighted 3,600 tonnes of waste that would not have been excluded by removing LoW Chapter 17 & 19 wastes as part of the initial analysis. In addition, 440 tonnes were transferred to another facility in Herefordshire, which means it is likely to be double counted twice.

Estimated C&I waste arisings managed through permitted facilities in England with Herefordshire identified as origin

4.3.22 In collating the data from the analysis, it was noticed that in 2017 there was a significant tonnage of waste, 9,550 tonnes, coded under LoW 20 01 08 'biodegradable kitchen and canteen waste', when in previous years less than 500 tonnes of waste were attributed to this LoW code. LoW 20 01 08 is normally used for separately collected food waste, and as Hereford Council does not collected separated food waste for households, the source of this waste was investigated further.

4.3.23 The waste was received at Cumberlow Green Farm (Permit No. EPR/QP3097NT) a composting facility in Buntingford, *Hertfordshire*. This indicated a potential error in the coding of the origin of the waste.

4.3.24 WDF was used to determine if any local authorities use Cumberlow Green Farm for the treatment of organic waste. In 2016 (the last full calendar year available in WDF) the data from WDF showed that the local authorities of Hertfordshire sent 29,800 tonnes of food and garden wastes to Cumberlow Green Farm, which is comparable to the 30,470 tonnes of food and garden wastes reported in the WDI 2016 with Herefordshire as the origin.

4.3.25 This would suggest that a proportion of the waste received at Cumberlow Green Farm has been incorrectly coded to Herefordshire as opposed to Hertfordshire in the WDI 2017. Therefore, waste received at Cumberlow Green Farm with an origin of Herefordshire has been excluded from the data.

4.3.26 Table 4.4 draws together the analysis above to provide an estimate of the C&I waste arisings managed through permitted facilities in England with Herefordshire identified as the origin, concluding an interim total of 148,300 tonnes in 2017. This indicates growth in the C&I waste arisings over the study period.

Table 4.4 Estimated C&I waste arisings managed through permitted facilities in England with Herefordshire identified as the origin, 2013 to 2017

LoW Chapter	Chapter Description	Tonnes				
		2013	2014	2015	2016	2017
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	29,900	18,460	40,830	68,890	63,370
03	Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	180	220	270	250	10
04	Wastes from the leather, fur and textile industries	-	-	3	-	-
06	Wastes from inorganic chemical processes	8	30	2	40	-
07	Wastes from organic chemical processes	1	1	1	30	100
08	Wastes from the MFSU of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks	250	150	250	350	600
09	Wastes from the photographic industry	23	20	7	2	-
10	Wastes from thermal processes	7	40	90	150	120
11	Wastes from chemical surface treatment and coating of metals and other materials, non-ferrous hydro-metallurgy	1,000	80	220	60	1,580
12	Wastes from shaping and physical and mechanical surface treatment of metals and plastics	360	150	330	550	550
13	Oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19)	1,870	1,630	1,100	1,190	1,750
14	Waste organic solvents, refrigerants and propellants (except 07 & 08)	120	20	20	30	100
15	Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	1,680	2,040	2,210	2,110	2,080
16	Wastes not otherwise specified in the list	6,860	24,750	11,430	14,830	13,640
18	Wastes from human or animal health care and/or related research (except kitchen & restaurant wastes not arising from immediate health care)	1,300	420	360	450	410
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	56,970	45,010	52,090	63,010	67,580
Total following exclusion of LoW Sub-chapters 0201, Chapters 17 and 19, LACW and the estimated double counted wastes passing through WTS		100,530	93,010	109,210	151,930	151,900
Potential double counting at metal recycling sites		-5,560	-4,260	-5,640	-5,650	-3,600
Estimated C&I waste arisings managed through permitted facilities in England with Herefordshire identified as origin (rounded to nearest 1,000 tonnes)		**95,000**	**89,000**	**104,000**	**146,000**	**148,300**
Chapter tonnages rounded to nearest 10 tonnes unless the tonnage is less than 10 tonnes, for which the tonnage is rounded to the nearest tonne.						

4.3.27 The 2016 and 2017 estimated arisings for C&I waste show a notable increase from that at 2015. Part of this increase is due to 28,000 to 29,000 tonnes of materials unsuitable for human consumption or processing from the production of alcoholic and non-alcoholic beverages being sent to a wastewater treatment facility.

4.3.28 However, there has been a steady increase in the quantity of waste, with origins in the West Midlands, handled through permitted facilities between 2013 and 2017 (see Table 4.5 below). This suggests that overall waste arisings are increasing, which is potentially linked to the improvement in the economy as it recovers from the recession.

4.3.29 Consequently, for forecasting purposes it is proposed that the 2017 estimate of waste managed through permitted facilities minus the 28,670 tonnes of materials unsuitable for consumption or processing is used, i.e. 120,000 tonnes (rounded to the nearest 1,000 tonnes).

'Not Codeable' waste

4.3.30 The origin of waste is normally recorded at the sub-region or WPA level, however when the origin of the waste is not known to this level the term 'Not Codeable' is used and the origin attribute to the region of origin. This means that wastes can be identified as arising in the West Midlands but 'Not Codeable' to a sub-region or WPA level. This in turn means that there is the potential for wastes that arise in Herefordshire to be included in the 'Not Codeable' wastes at the West Midlands level.

4.3.31 'Not Codeable' tonnages within the WDI can be significant and therefore need to be considered.

4.3.32 Table 4.5 presents the tonnage of waste with the origin identified as the West Midlands, along with the tonnage from the West Midlands that could not be coded to the sub-region or WPA levels.

Table 4.5 Quantity of Not Codeable waste in West Midlands, 2013 to 2016

	Tonnes				
	2013	2014	2015	2016	2017
Origin identified as the West Midlands	12,827,289	14,148,269	15,884,277	17,172,672	18,461,852
'Not Codeable' to sub-region or WPA level	3,944,825	3,574,756	4,633,702	5,270,077	5,825,810
Percentage 'Not Codeable'	30.8%	25.3%	29.2%	30.7%	30.7%

4.3.33 The figures show that for waste with the origin identified as the West Midlands 25% to 30% of the waste cannot be attributed to the sub-region or WPA level. Therefore, if Herefordshire is typical of the region as a whole in this regard, C&I waste estimates for Herefordshire could be 25% to 30% higher as a result of the 'Not Codeable' data at the West Midlands level within the WDI. This is equivalent to 20,000 to 35,000 tonnes waste, depending on which year is being considered.

Waste handled at exempt facilities

4.3.34 Section 3.2 summarises the exempt activities registered in Herefordshire; the potential contribution to the C&I waste estimates is shown in Table 4.6.

Table 4.6 Potential C&I waste quantities handled through exempt facilities

Exemption	Contribution to the C&I waste estimates	Number of Exemptions	Estimate C&I waste managed through exemption
D7 - Burning waste in the open	10 tonnes annum per exemption	12	120
T6 Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising	2,000 tonnes per annum per exemption	3	6,000
U4 - Burning of waste as a fuel in a small appliance	10 tonnes annum per exemption	4	40
U8 - Use of waste for a specified purpose	250 tonnes per annum per exemption	4	1,000
U12 - Use of mulch	200 tonnes per annum per exemption	2	400
Total			7,560

Waste sent directly to permitted facilities in Wales

4.3.35 Waste sent from Herefordshire directly to permitted facilities in Wales are not captured in the 2013 to 2015 WDI. To provide an understanding of the waste potentially sent directly to permitted facilities in Wales for the WNA 2017, data from the 2011 and 2012 WDI (which included Welsh data) were reviewed.

4.3.36 Since the WNA 2017 was published, Natural Resources Wales has published waste permit returns for 2013 to 2017, which provides comparable data to the Environment Agency's WDI. This Update has consequently analysed the data from 2011 to 2017 to provide an understanding of the waste potentially sent directly to permitted facilities in Wales. This is presented in Table 4.7.

4.3.37 The data highlight that there are some potential issues with the coding of waste, particularly in years 2014 and 2015, with notable quantities coded under LoW 20 03 01 (mixed municipal waste). A detailed review of the waste received at permitted facilities in Wales and the waste removed from permitted facilities in Herefordshire highlighted the following points:

- The quantities and waste types removed from facilities in Herefordshire do not match the quantities and waste types received at facilities in Wales. There are a number of potential reasons for this, e.g. some wastes may be sent to facilities not covered by the Natural Resources Wales permit returns (e.g. exempt sites), the receiving site may use different LoW codes, the receiving site may not code the origin of the waste or code it incorrectly. This means it is difficult to actually determine waste potentially sent directly to permitted facilities in Wales.
- In 2016, over 70% of the waste removed from permitted facilities in Herefordshire was from the Eastside Recycling Facility and was predominantly coded under LoW Chapter 19. 5,150 tonnes of waste under LoW Chapter 20 was removed from facilities in Herefordshire and identified with Wales as the destination; however only 4,460 tonnes of waste was received at permitted facilities in Wales under LoW Chapter 20 with the origin identified as Herefordshire.
- In 2015, almost 22,000 tonnes of waste from the Eastside Recycling Facility and Quickskip (Hereford) Transfer Station was coded as LoW 20 03 01, as opposed to under LoW

Chapter 19. In addition, 3,350 tonnes of biodegradable garden and park wastes (LoW 20 02 01) was sent to Wales from the Rotherwas Household HWRC/Transfer Station/MRF. So whilst these wastes have been accounted for through the assessment as wastes received at permitted facilities in England, there is a risk of double counting them as they have been coded under Chapter 20.

- In 2014, 6,280 tonnes of waste under LoW Chapter 20 was removed from facilities in Herefordshire and identified with Wales as the destination; however 13,070 tonnes of waste was received at permitted facilities in Wales under LoW Chapter 20 with the origin identified as Herefordshire. Equally 35,490 tonnes of waste under LoW Chapter 19 was removed from facilities in Herefordshire and identified with Wales as the destination; however only 7,570 tonnes of waste was received at permitted facilities in Wales under LoW Chapter 19 with the origin identified as Herefordshire.

4.3.38 Wastes coded under LoW Chapters 17 (CD&E waste) and 19 (wastes from waste management facilities) received at permitted facilities in Wales with the origin identified as Herefordshire need to be discounted because they are not C&I waste or have already been considered in the wastes received at sites in Herefordshire. In addition, the data for 2014 and 2015 potentially needs to be discounted due to the issues with the coding of waste highlighted above.

4.3.39 Following these steps results in a range of 2,000 to 6,000 tonnes of waste that may have been sent directly to permitted facilities in Wales. Given the uncertainty prevalent in the data, it has been assumed that 4,000 tonnes (the midpoint in that range) of waste arising in Herefordshire was sent directly to Wales in 2014 and 2015.

Table 4.7 Waste sent to permitted facilities in Wales from Herefordshire, 2011 to 2017

LoW Chapter	Tonnes						
	2011	2012	2013	2014	2015	2016	2017
02: Agriculture and food processing wastes	0.04	20	1,191	0.001	30	66	1,138
03: Furniture, paper and cardboard manufacturing wastes	-	-	-	-	0.01	0.04	
06: Inorganic chemical process waste	207	8	15	6	7	5	2
07: Wastes from organic chemical processes	-	7	-	-	-	-	
08: Paints, adhesives, sealants and ink manufacturing waste	-	0.4	0.3	1	0.3	1	1
09: Photographic industry wastes	0.05	0.001	0.004	-	0.001	-	
11: Chemical surface treatment and coating of metals waste	565	654	505	1,622	1,226	884	556
12: Shaping and physical treatment of metals and plastics	66	28	36	307	78	43	115
13: Oil wastes and wastes of liquid fuels	189	124	237	451	239	12	91
14: Organic solvent, refrigerant and propellant waste	1	0.01	1	0.5	2	-	
15: Waste packaging; absorbents, wiping cloths etc not otherwise specified.	8	3	11	11	8	149	74
16: Wastes not otherwise specified in the list	448	720	1,377	249	162	111	50
17: Construction and demolition wastes	19	1	373	1,495	359	212	626
18: Human and animal health care waste	55	33	51	369	13	-	
19: Waste and water treatment wastes	18,295	15,810	5,051	7,569	2,438	10,437	21,658
20: Municipal wastes	1,441	419	1,227	13,070	27,444	4,464	2,939
Total	21,293	17,827	10,074	**25,151**	**32,007**	**16,385**	**27,250**
Total minus LoW Chapters 17 and 19	2,980	2,016	4,650	16,087	29,210	5,735	4,966

C&I waste arisings estimates for Herefordshire

4.3.40 Having undertaken the steps to analyse the available data, Table 4.8 summarises the estimated C&I waste arisings estimated for Herefordshire for years 2013 to 2017.

Table 4.8 Estimated C&I waste arisings, Herefordshire, 2013 to 2017

Element	Tonnes				
	2013	2014	2015	2016	2017
Estimated C&I waste arisings managed through permitted facilities in England with Herefordshire identified as origin	95,000	89,000	104,000	118,000	120,000
'Not Codeable' Waste	0 to 29,300	0 to 22,500	0 to 30,400	0 to 36,200	0 to 36,800
Waste handled at Exemption Facilities	8,000	8,000	8,000	8,000	8,000
Waste sent directly to permitted facilities in Wales	4,650	4,000	4,000	5,740	4,960
Total (rounded to nearest 1,000 tonnes)	**108,000 to 137,000**	**101,000 to 124,000**	**116,000 to 146,000[10]**	**132,000 to 168,000**	**133,000 to 170,000**

[10] The reference to 115,000 to 145,000 tonnes in the WNA 2017 was erroneous, the correct tonnages are stated here.

4.3.41 Due to the calculation necessary to estimate C&I waste generation in Herefordshire, it was considered useful to review relevant national waste data sources.

4.3.42 The estimated C&I waste arisings for England in 2012 was 43.8 million tonnes.[11] However, in December 2016, Defra[12] published a statistical notice to summarise waste estimates for the UK which have been calculated for European reporting purposes (the December 2016 Notice).

4.3.43 The December 2016 Notice presents a revised estimate for 2012 along with estimates for 2013 and 2014 based on a revised methodology. The revised estimates are:

- England 2012: 24.4 million tonnes of C&I waste
- England 2013: 21.9 million tonnes of C&I waste
- England 2014: 19.8 million tonnes of C&I waste

4.3.44 The December 2016 Notice states that the changes are due to the removal of tonnages that were likely to have been double counted. However, no further explanation is provided in the Notice. Initial discussions with Defra about the changes in methodology advise that:

- due to the uncertainty over the quantity of waste potentially handled through exemptions and the potential for such wastes to be subsequently handled at permitted facilities, Defra has decided to exclude waste handled through exemptions from the new estimates; and
- the tonnage handled through HWRC may not have been excluded resulting in the potential for double counting of some household waste; therefore, all HWRC tonnages have also been excluded. However, around 15% of waste received at HWRC is sent to transfer stations and would have been excluded from the previous estimates, which means that the exclusion of all HWRC tonnages is likely to overestimate any double counting.

4.3.45 The estimates for Herefordshire set out in Table 4.8 exclude waste received at HWRC and, due to the limited number of non-farm exemptions, the tonnage handled at exempt sites is unlikely to significantly distort the estimates.

4.3.46 Based on the current waste data reporting systems and the uncertainty over the total generation levels, the evidence base for quantifying the contributions from different business sectors is limited.

4.3.47 The Office for National Statistics (ONS) holds data on enterprises/local units[13] by SIC, employment size band and local authority, which can be used to give a broad indication of the number of enterprise/local units in Herefordshire compared to England.

4.3.48 The ONS data indicates that 0.45% of local units in England are in Herefordshire; if it is assumed that C&I waste is directly proportional to the number of local units, arisings in Herefordshire would equate to:

- between 89,000 to 110,000 tonnes of the C&I waste arising in England between 2013 and 2015, based on Defra's revised methodology (December 2016); or

[11] Defra, Digest of Waste and Resources Statistics, 2016 (March 2016)

[12] Defra, UK statistics on Waste Notice, December 2016

[13] Local units identify each location in which a company operates. Eg. Marks and Spencers - all stores, food stores, warehouses and offices at different locations will be separately identified and the number of employees at each reported.

- approximately 195,000 tonnes of the C&I waste arisings in England based on the 2014 methodology.

4.3.49 However, in October 2018 Defra published[14] a further revised figure for C&I waste arisings in England. The C&I arisings estimate for England in 2016 was 33.1 million tonnes. Applying the proportion of local units, as above, to the latest Defra estimate would to equate to a C&I waste arising for Herefordshire of 149,000 tonnes, which is in approximately the mid-point of the Herefordshire-specific analysis above.

4.3.50 Therefore, given the uncertainty over the national C&I waste estimates and the lack of granularity at a region or county level, the estimates based on the Herefordshire-specific analysis above provide a range of tonnages to forecast future C&I waste arisings.

4.3.51 It should also be noted that historically waste generation has been linked to economic growth; however, the latest Defra estimates suggest that the correlation between economic growth and waste growth in the C&I sector may no longer exist. Until there is a better understanding of the revised Defra methodology (December 2016) it would be prudent to base future estimates on the assumption that the link between economic growth and waste growth remains, as this would provide a 'worst case' assessment.

4.4 Construction, Demolition and Excavation Waste (CD&E waste)

Introduction

4.4.1 The construction and demolition sector produces the largest amount of waste in the UK. However, the data on CD&E waste is limited and historically estimates of arisings have been based on industry surveys. In addition, there has been limited new research on CD&E waste arisings since 2010 and information published over the last few years has only been at the national level (UK or England). Furthermore, significant quantities of CD&E waste are not managed at permitted waste facilities which mean the data in the WDI only provides a limited picture of CD&E waste arisings and management.

CD&E waste arisings in Herefordshire

4.4.2 The last national study to breakdown CD&E waste estimates to the region and sub-regional level was the CLG Report, Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005 Construction, Demolition and Excavation Waste (February 2007).

4.4.3 The report provided an estimate of the CD&E waste arisings in Herefordshire and Worcestershire for 2005, which is summarised in Table 4.9. Unfortunately, the estimates were not disaggregated to the Herefordshire level.

[14] Defra, UK Statistics on Waste, 9th October 2018

Table 4.9 CD&E waste arisings, Herefordshire and Worcestershire, 2005

Component	Tonnes
Estimated production of recycled graded aggregate	404,814
Estimated production of recycled ungraded aggregate	374,770
Estimated production of recycled soil (excl. topsoil)	69,349
Estimated tonnage of unprocessed CDEW entering licensed landfills for engineering, capping, disposal	335,602
Estimated weight of waste materials (mainly excavation waste) used on registered exempt sites	155,157
Total	1,339,693
Source: Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005 Construction, Demolition and Excavation Waste, CLG (February 2007).	

4.4.4 A report prepared for the West Midlands Regional Assembly, West Midlands Waste Facilities Phase 2: Future Capacity Requirements[15] in 2004, did provide an estimate for C&D wastes in Herefordshire of 351,000 tonnes per annum of the period up to 2007. The estimate was based on the relative levels of housing development in the West Midlands region.

4.4.5 A further report for the West Midlands Regional Assembly, A Study into Future Landfill Capacity in the West Midlands[16] in 2007, provided estimates for the cumulative construction and demolition waste arisings for the period 2002/03 to 2025/26. The cumulative estimates for Herefordshire ranged from 6,250,585 tonnes to 7,423,664 tonnes for the period, which is equivalent to an average annual tonnage of between 260,000 and 310,000 tonnes.

Defra, Digest of Waste and Resources Statistics, January 2015 and March 2016

4.4.6 The March 2016 Digest of Waste and Resources Statistics (at Figure 2.1 of that Digest) provides an estimate of all waste arisings in the UK between 2004 and 2012, with CD&E waste estimated to be in the region of 100 million tonnes in 2012. The data behind that Figure are summarised in Table 4.10.

Table 4.10 CD&E waste arisings, Digest of Waste and Resources Statistics, March 2016

Year	Waste Arisings (million tonnes)
2004	99.2
2006	109.5
2008	101.0
2010	102.2
2012	100.2

4.4.7 This data, different to later data estimates set out below, *includes* excavation waste and dredging spoils. Another point to note is that whilst the 2010 and 2012 figures are produced on a consistent basis; the older figures are less well documented so there is uncertainty over the consistency with the 2010 and 2012 estimates.

[15] West Midlands Waste Facilities Phase 2: Future Capacity Requirements. Report for West Midlands Regional Assembly, Shropshire County Council (2004)

[16] A Study into Future Landfill Capacity in the West Midlands Report for West Midlands Regional Assembly, Scott Wilson (May 2007)

4.4.8 The March 2016 Digest continues the headline tonnage data presented in January 2015 Digest, however this earlier source also includes an estimated of waste generation per capita, of 1,573kg per capita in 2012, based on the UK CD&E estimate of 100.2 million tonnes.

4.4.9 However, it should be noted that in mid-December Defra published an updated UK Statistics on Waste Notice (see below), which again revised the methodology used to estimate CD&E waste arisings, which resulted in new estimates for CD&E waste arisings in the UK.

Defra, UK Statistics on Waste Notice, August 2016 and December 2016

4.4.10 In August 2016, Defra published a Statistics on Waste Notice to summarise waste estimates for the UK calculated for European reporting purposes; this data is reproduced in Table 4.11. It provides data on non-hazardous construction and demolition waste for both the UK and England for 2010 to 2012. These figures exclude excavation waste and dredging spoils, so are a subset of the data reported in the Digest of Waste and Resources Statistics.

4.4.11 In addition, the August 2016 Statistics on Waste Notice states '*Accurately quantifying C&D waste is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, there is not a significant impact on the final recovery rate.*'

Table 4.11 Non-hazardous Construction and Demolition Waste, UK and England, 2010 to 2012, Statistics on Waste Notice, August 2016

Year	UK			England		
	Generation (000 tonnes)	Recovery (000 tonnes)	Recovery rate (%)	Generation (000 tonnes)	Recovery (000 tonnes)	Recovery rate (%)
2010	45,419	39,129	86.2%	39,832	35,480	89.1%
2011	47,067	40,622	86.3%	41,152	36,754	89.3%
2012	44,786	38,759	86.5%	38,938	34,714	89.2%
Source: UK Statistics on Waste Notice, August 2016 Figures exclude excavation waste						

4.4.12 In December 2016, a revised Statistics on Waste Notice was published, presenting a revised set of estimates for 2010 to 2012, along with estimates for 2013 and 2014 calculated using a revised methodology. These data are reproduced in Table 4.12.

4.4.13 The revised estimates show an estimated increase in non-hazardous construction and demolition wastes (again, excluding excavation waste and dredging spoils):

- 2010: +4.1 million tonnes;
- 2011: +2.9 million tonnes;
- 2012: +6.4 million tonnes.

Table 4.12 Non-hazardous Construction and Demolition Waste, UK and England, 2010 to 2014, Statistics on Waste Notice, December 2016

Year	UK			England		
	Generation (000 tonnes)	Recovery (000 tonnes)	Recovery rate (%)	Generation (000 tonnes)	Recovery (000 tonnes)	Recovery rate (%)
2010	49,499	43,378	87.6%	43,912	39,729	90.5%
2011	49,995	43,803	87.6%	44,080	39,934	90.6%
2012	51,178	45,322	88.6%	45,331	41,278	91.1%
2013	51,930	46,622	89.8%	46,267	42,140	91.1%
2014	54,960	49,436	89.9%	49,109	44,887	91.4%
Source: UK Statistics on Waste Notice, December 2016 Figures exclude excavation waste						

Defra, Digest of Waste and Resource Statistics – 2017 Edition, March 2017

4.4.14 Defra did release a Digest of Waste and Resource Statistics in 2017, but this did not contain information relevant to estimating CD&E waste arisings in Herefordshire.

Summary of Defra CD&E waste estimates

4.4.15 Table 4.13 presents the collation of the Defra CD&E waste estimates for England and UK between 2010 and 2014 and provides an estimation of waste generation per capita for each element: non-hazardous C&D waste; hazardous C&D waste; and excavation waste and dredging spoils.

4.4.16 This indicates that CD&E waste generation is increasing and that the total tonnage estimates are greatly influenced by the levels of excavation waste and dredging spoils.

Table 4.13 Summary of Defra CD&E waste data, England and UK, 2010 to 2014

England	2010	2011	2012	2013	2014
Non-hazardous C&D generation ('000 tonnes)	43,912	44,080	45,331	46,267	49,109
Hazardous C&D generation ('000 tonnes)			744		620
Excavation waste/dredging spoils ('000 tonnes)			47,773		57,829
Total CD&E waste generation ('000 tonnes)			**93,848**		**107,558**
Population ('000)[1]	52,642.5	53,107.5	53,493.7	53,865.8	54,316.6
Non-hazardous C&D kg per capita	834	830	847	859	904
Hazardous C&D kg per capita			14		11
Excavation waste/dredging spoils kg per capita			893		1,065
Total CD&E waste kg per capita			**1,754**		**1,980**
UK	**2010**	**2011**	**2012**	**2013**	**2014**
Non-hazardous C&D generation ('000 tonnes)	49,499	49,995	51,178	51,930	54,960
Hazardous C&D generation ('000 tonnes)			919		747
Excavation waste/dredging spoils ('000 tonnes)			56,741		64,687
Total CD&E waste generation ('000 tonnes)	**102,231**[3]		**108,838**		**120,394**
Population ('000)[2]	62,759.5	63,285.1	63,705.0	64,105.7	64,596.8
Non-hazardous C&D kg per capita	789	790	803	810	851
Hazardous C&D kg per capita			14		12
Excavation waste/dredging spoils kg per capita			891		1,001
Total CD&E waste kg per capita	**1,605**		**1,708**		**1,864**

1. ONS England population mid-year estimate
2. ONS United Kingdom population mid-year estimate
3. Based on old methodology

CD&E waste arisings estimates for Herefordshire

4.4.17 The published data highlights the limited information on which to base CD&E waste arisings estimates and whilst the historical data for Herefordshire provides an indication of the levels of CD&E waste, it does not reflect the impacts of the recession or changes in CD&E waste management practices.

4.4.18 No new national estimates for CD&E wastes have been published since the WNA 2017 and consequently the analysis of arisings has not been updated.

4.4.19 Herefordshire's population in 2014 was 187,200[17] which would give an estimated CD&E waste arising of:

- 370,000 tonnes (rounded) in 2014, based on the England CD&E waste per capita estimates of 1,980kg/capita; or
- 348,000 tonnes (rounded) in 2014, based on the UK CD&E waste per capita estimates of 1,864kg/capita.

4.4.20 Table 4.14 provide s a breakdown of these estimates by the headline CD&E waste streams.

[17] https://factsandfigures.herefordshire.gov.uk/about-a-topic/population-and-demographics

Table 4.14 CD&E waste generation estimates, Herefordshire, 2014 (rounded to nearest 1,000 tonnes)

CD&E waste streams	England kg/capita	Estimate arisings (tonnes)	UK kg/capita	Estimate arisings (tonnes)
Non-hazardous C&D	904	169,000	851	159,000
Hazardous C&D	11	2,000	12	2,000
Excavation waste/dredging spoils	1,065	199,000	1,001	187,000
Total	1,980	370,000	1,864	348,000
Based on a population of 187,200 in 2014 for Herefordshire.				

4.4.21 Whilst Table 4.14 relies upon national averages, the estimates can be related back to Herefordshire by using population data. The estimates could still overestimate the CD&E waste generated in Herefordshire in 2014, which may be below the national average particularly in relation to the excavation waste and dredging spoils.

4.4.22 Historically arisings of CD&E waste have been assumed to be strongly related to the level of construction outputs or economic growth in the construction sector. Table 4.15 shows the Office of National Statistics (ONS) construction outputs and compares them against the most recent national CD&E wastes estimates, i.e. 2012 to 2014. Table 4.15 shows there is a correlation between construction outputs and CD&E waste estimates.

Table 4.15 Comparison of construction outputs and national CD&E waste estimates

Year	2012	2013	2014
UK ONS construction outputs[1], £ (millions)	£116,732	118,429	£128,072
Annual growth		1.5%	8.1%
Average growth between 2012 and 2014			4.7%
UK CD&E waste estimate[2], tonnes (millions)	108,838		120,394
Average growth between 2012 and 2014			5.2%
UK C&D waste estimate[2], tonnes (millions)[3]	51,178	51,930	54,960
Annual growth		1.5%	5.8%
Average growth between 2012 and 2014			3.6%
Output in the Construction Industry: 'September and Q3 2016, ONS (November 2016) Defra, UK Statistics on Waste Notice, December 2016 Figures exclude excavation waste			

4.4.23 Therefore, reference was made to the ONS historic construction outputs and construction sector GVA growth to update the 2014 estimate and provide an estimate for the MWLP baseline year of 2015.

4.4.24 The percentage change in construction outputs for the West Midlands region between 2014 and 2015 was 3.7%.[18] However, construction outputs data are not presented to Herefordshire

[18] Output in the Construction Industry: September and Q3 2016 - Table 6: Construction output: Value non-seasonally adjusted current prices by region, ONS (November 2016)

level, so the Hereford and Worcestershire GVA data[19] was reviewed, which showed a 2.5% increase in GVA for the construction sector between 2014 and 2015.

4.4.25 Applying the Hereford and Worcestershire GVA growth figure to the 2014 estimates in Table 4.14 result in a range of 357,000 to 379,000 tonnes for 2015 and 2016 depending on whether the England or UK estimates of kg/capita are used. However, as highlighted above, this could be an overestimate of the CD&E waste in Herefordshire.

4.5 Agricultural Waste

Published agricultural waste data

4.5.1 There is limited published data on agricultural waste, with this assessment relying upon Defra estimates of agricultural waste generated for reporting under the EC Waste Framework Directive and EC Waste Statistics Regulations.

4.5.2 Table 4.16 shows the Defra estimates of the waste produced by the agriculture, forestry and fishing sector for 2010, 2012 and 2014. However, there is no breakdown by the three sectors or below the England level. In addition, these estimates relate to non-natural agricultural waste. There are no published estimates of naturally occurring agricultural waste, which is managed on farms.

4.5.3 No new national estimates for agricultural wastes have been published since the WNA 2017 and consequently the analysis of arisings has not been updated.

[19] Source: Experian ©

Table 4.16 Estimates of waste produced by the agriculture, forestry and fishing sector, England, 2010, 2012 and 2014

EWC-STAT description	Tonnes		
	2010	2012	2014
Used oils	21,571	22,067	20,591
Chemical wastes	103,009	95,281	105,708
Health care & biological wastes	1,021	1,015	1,025
Metallic wastes, mixed	954	4,254	4,449
Paper & cardboard wastes	5,843	5,678	5,629
Rubber wastes	21,798	10,696	11,316
Plastic wastes	82,291	82,293	82,268
Discarded equipment	9	9	10
Discarded vehicles	31,071	38,798	26,742
Batteries & accumulators' wastes	3,110	3,176	3,363
Animal & mixed food waste	14,348	14,169	14,109
Household & similar wastes	478	777	777
Mixed & undifferentiated materials	2,986	8,947	11,711
Other mineral wastes		21,293	19,919
Mineral waste from waste treatment & stabilised waste	20,919		
Total waste generation	309,409	308,454	307,617
Source: Defra, UK Statistics on Waste, December 2016 https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management			

4.5.4 Defra also publishes information on the number of commercial agricultural holdings and the area farmed by county/unitary authority, which can be used as a means of proportioning the estimated arisings to an administrative level.

Table 4.17 Commercial agricultural holdings and the area farmed, Herefordshire and England, 2010 and 2013

	2010			2013		
	England	Herefordshire	%	England	Herefordshire	%
Number of holdings	105,449	2,649	2.51%	102,836	2,664	2.59%
Farmed area (hectares)	8,887,289	172,246	1.94%	9,086,480	182,470	2.01%
Source: Defra, Structure of the agricultural industry https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june						

4.5.5 If it is assumed that the amount of waste generated is proportional to the number of commercial agricultural holdings or area farmed, it would mean that between 2% and 2.5% of the non-natural agricultural waste would be produced in Herefordshire. This equates to 6,000 to 8,000 tonnes of non-natural agricultural waste.

4.5.6 Waste coded under LoW sub-chapter 02 01 'Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing' which is handled at permitted facilities can be

extracted from the WDI. The data were extracted by LoW 6-digit waste code (i.e. the classification codes for individual wastes) and by receiving site. The extracts from the WDI for the quantities of waste coded under LoW sub-chapter 02 01 received at sites in England with the origin identified as Herefordshire are summarised in Table 4.18.

Table 4.18 Waste coded under LoW sub-chapter 02 01 received at permitted facilities in England with Herefordshire origin, 2013 to 2016

LoW code	Description	Tonnes			
		2013	2014	2015	2016
02 01 01	Sludges from washing and cleaning	147	2,719	1,360	597
02 01 02	Animal-tissue waste			0.8	
02 01 03	Plant-tissue waste		840	21,262	20,423
02 01 04	Waste plastics (except packaging)			2.6	2
02 01 06	Animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site	63	16,150	31,746	31,118
02 01 07	Wastes from forestry			0.1	
02 01 08*	Agrochemical waste containing hazardous substances	0.02	11	3	0.1
02 01 09	Agrochemical waste other than those mentioned in 02 01 08		136		
02 01 10	Waste metal	15	266	701	531
02 01 99	Wastes not otherwise specified		33	68	147
Total		**224**	**20,156**	**55,144**	**52,818**
For hazardous wastes the six-digit codes in the LoW have an asterisk (*) next to them.					

4.5.7 The data show that there has been a significant increase in the waste received at permitted facilities, which will be as a result of the development of on-farm anaerobic digestion (AD) systems (see section 3.1) being used to treat plant-tissue waste and animal faeces, urine and manure. However, in 2016 there were no new on-farm AD systems permitted and the tonnage received with an origin of Herefordshire is consistent with year 2015.

4.5.8 Historically these wastes would have been managed by methods such as spreading on land and would not have been captured in waste management data. Table 4.18 does not reflect the total quantity of natural agricultural waste generated in Herefordshire, only that which enters a permitted facility.

4.5.9 In addition, wastes such as packaging, discarded vehicles and oils etc. would be captured under LoW Chapters 13, 15 and 16 and included in the C&I wastes estimates; it is not possible to identify the generating sector.

4.5.10 In 2015, of the waste coded under LoW sub-chapter 02 01 received at permitted facilities in Herefordshire, 65% had origins identified as Herefordshire and 34% had origins identified as the West Midlands but not codeable to the WPA level.

4.5.11 In 2016, 88% has origins identified as Herefordshire, with all but 250 tonnes having origins identified as Staffordshire or the West Midlands, but not codeable to the WPA level.

4.6 Hazardous Waste

4.6.1 The HWI for 2011 to 2017 were used to identify the hazardous waste that arose in Herefordshire. Table 4.19 summarises the hazardous waste arisings by LoW Chapter heading.

Table 4.19 Hazardous waste arising, Herefordshire, 2011 to 2017 (including transfer stations)

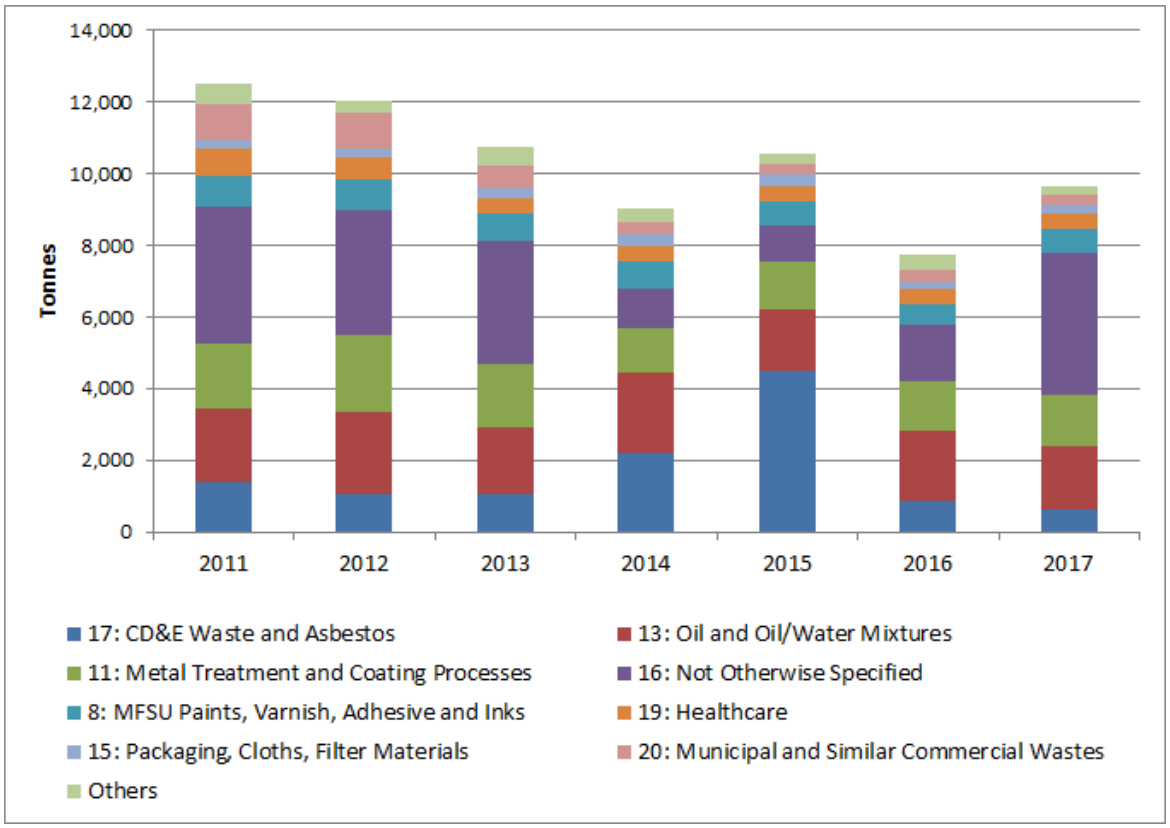
LoW Chapter	Tonnes						
	2011	2012	2013	2014	2015	2016	2017
01: Mining and Minerals	-	-	-	-	0.2	-	-
02: Agricultural and Food Production	1	1	0.04	0.8	2.7	0.4	4
03: Wood and Paper Production	-	27	-	22	27	9	1
05: Petroleum, Gas and Coal Processing Wastes	-	-	-	-	-	0.4	1
06: Inorganic Chemical Processes	303	71	149	124	87	95	6
07: Organic Chemical Processes	1	-	0.2	1.6	1.2	1	-
08: MFSU Paints, Varnish, Adhesive and Inks	867	831	759	729	665	589	655
09: Photographic Industry	11	10	11	8.6	8.0	5	3
10: Thermal Process Waste (inorganic)	5	6	4.6	0.7	0.9	5	3
11: Metal Treatment and Coating Processes	1,782	2,122	1,772	1,238	1,321	1,384	1,419
12: Shaping/Treatment of Metals and Plastics	138	131	248	116	77	158	95
13: Oil and Oil/Water Mixtures	2,096	2,281	1,891	2,273	1,718	1,927	1,790
14: Solvents	94	60	78	62	59	59	114
15: Packaging, Cloths, Filter Materials	285	220	280	332	326	217	263
16: Not Otherwise Specified	3,828	3,550	3,567	1,209	1,238	1,672	4,364
17: CD&E waste and Asbestos	1,432	1,132	1,137	2,547	4,765	1,160	800
18: Healthcare	743	649	464	469	432	424	406
19: Waste/Water Treatment Industry	8	7	5.9	9.1	10	73	11
20: Municipal Wastes	1,012	1,028	642	361	328	352	288
Total	**12,607**	**12,125**	**11,009**	**9,500**	**11,066**	**8,130**	**10,224**

4.6.2 However, the figures need to be adjusted to take account of waste handled through transfer stations in Herefordshire, which is the principal type of hazardous waste facility in the county with the exception of metal recycling/ vehicle de-polluting sites. Table 4.20 presents the hazardous waste arisings for Herefordshire from 2011 to 2017, excluding waste arising and deposited at transfer stations in Herefordshire, and this is presented graphically in Figure 4.6.

Table 4.20 Hazardous waste arising, Herefordshire, 2011 to 2017 (excluding waste arising and deposited at transfer stations in Herefordshire)

LoW Chapter	Tonnes						
	2011	2012	2013	2014	2015	2016	2017
01: Mining and Minerals	-	-	-	-	0.2	-	-
02: Agricultural and Food Production	1.0	0.7	0.0	0.2	2.7	0.4	4.2
03: Wood and Paper Production	-	27	-	22	27	8.7	0.8
05: Petroleum, Gas and Coal Processing Wastes	-	-	-	-	-	0.4	0.6
06: Inorganic Chemical Processes	303	71	149	124	87	95.4	5.5
07: Organic Chemical Processes	1.4	-	0.2	1.6	1.2	1.0	-
08: MFSU Paints, Varnish, Adhesive and Inks	867	831	756	728	665	587.5	655.4
09: Photographic Industry	11	10	11	8.6	8.0	5.1	2.7
10: Thermal Process Waste (inorganic)	4.6	5.7	4.6	0.7	0.9	5.3	2.8
11: Metal Treatment and Coating Processes	1,782	2,122	1,772	1,238	1,321	1,384.1	1,419.4
12: Shaping/Treatment of Metals and Plastics	138	131	248	116	77	157.6	94.6
13: Oil and Oil/Water Mixtures	2,093	2,280	1,880	2,251	1,709	1,921.2	1,758.8
14: Solvents	94	60	78	62	59	58.5	114.2
15: Packaging, Cloths, Filter Materials	282	218	279	331	324	215.8	262.5
16: Not Otherwise Specified	3,819	3,519	3,405	1,130	1,015	1,579.6	3,978.5
17: CD&E waste and Asbestos	1,370	1,077	1,048	2,177	4,512	876.4	646.6
18: Healthcare	743	649	464	468	429	413.7	405.8
19: Waste/Water Treatment Industry	8.4	7	5.9	9.1	10	72.8	11.5
20: Municipal Wastes	1,001	1,021	637	340	316	343.4	281.8
Total	**12,520**	**12,028**	**10,739**	**9,006**	**10,565**	**7,727**	**9,646**

Figure 4.6 Hazardous waste arising, Herefordshire, 2011 to 2017



4.6.3 The data show that hazardous waste arisings decreased between 2011 and 2014, believed to be mainly due to the reduction in waste coded under LoW Chapter 16 'Not Otherwise Specified' (which includes end of life vehicles, WEEE, batteries etc.). There was a small increase between 2014 and 2015, followed by a further decrease in 2016. This was mainly driven by the increases/decreases in hazardous waste generated from construction and demolition activities. In 2017, the arisings increased again, with the increase driven by a notable increase in LoW Chapter 16 'Not Otherwise Specified', back to the levels seen in years 2011 to 2013.

4.6.4 A more detailed analysis of the specific wastes streams highlights that over the last 7 years the hazardous waste arisings have been dominated by 12 wastes types, which have made up between 70% to 80% of the hazardous waste generated in the county.

4.6.5 These waste streams are summarised in Table 4.21 and show that:

- Prior to 2014, there was processing of waste electrical and electronic equipment, which has now ceased, hence the reduction in LoW code 16 02 15* 'Hazardous components removed from discarded equipment (WEEE)';
- There has been a change in the types of wastes generated from chemical surface treatment and coating of metals and other materials (LoW Chapter 11), which would suggest that some treatment processes have been added at the point of production to neutralise some of the acid wastes generated;
- During 2014 and 2015, there was an increase in the hazardous waste produced by the construction and demolition sector (LoW codes 17 05 03* and 17 06 05*). The generation of hazardous C&D waste is dependent on the nature of the developments being

undertaken at any one time e.g. demolition of building containing asbestos or the removal of contaminated soils etc. Therefore, the quantities of hazardous C&D waste can fluctuate significantly year on year.

- Over the last four years, generation levels across 9 of the 12 waste streams are relatively constant. The exceptions are:
  - hazardous C&D waste (LoW codes 17 05 03* and 17 06 05*), discussed above; and
  - end-of-life vehicles (LoW code 16 01 04*) where there has been a significant increase in 2017. A potential explanation for the increase could be the reduction in the number of vehicle dismantlers operating in Herefordshire. In 2017, the number of active vehicle dismantlers reduced from 5 to 3 (see Table 3.1), with the increase in arising being related to the removal of end-of-life vehicles from the sites which were no longer active. This could also be linked to the increase in lead batteries (LoW code 16 06 01*) in 2017.

Table 4.21 Main hazardous waste types, Herefordshire, 2011 to 2017

LoW Code	Description	Tonnes						
		2011	2012	2013	2014	2015	2016	2017
08 03 12*	Waste ink containing hazardous substances	678	609	626	602	492	425	400
11 01 05*	Pickling acids	1,211	1,738	1,550	728	613	852	871
11 01 11*	Aqueous rinsing liquids containing hazardous substances	128	24	48	473	444	486	411
13 02 05*	Mineral-based non-chlorinated engine, gear and lubricating oils	1,184	1,282	1,022	1,084	940	1,260	1,060
13 05 08*	Mixtures of wastes from grit chambers and oil/water separators	339	210	239	280	151	172	292
16 01 04*	End-of-life vehicles	85	186	1,038	511	532	1,042	3,508
16 02 15*	Hazardous components removed from discarded equipment (WEEE)	2,011	2,502	1,565	1	1	0.2	0.001
16 06 01*	Lead batteries	1,106	436	372	282	343	202	497
17 05 03*	Soil and stones containing hazardous substances	179	42	8	750	3,232	40	254
17 06 05*	Construction materials containing asbestos	1,151	869	929	1,309	1,296	870	368
18 01 03*	Healthcare wastes whose collection and disposal is subject to special requirements in order to prevent infection	723	628	451	449	412	410	387
20 01 35*	Discarded electrical and electronic equipment	708	625	436	309	279	327	211

Hazardous wastes management

4.6.6 Figures 4.7 to 4.9 provide the breakdown of the generic waste management methods used to manage the hazardous waste arisings in Herefordshire in 2015, 2016 and 2017 respectively. Table 4.22 provides the breakdown of generic waste management methods by LoW Chapter heading for the year 2017, to show the comparison management method and generic waste.

4.6.7 The data shows that the management method is driven by the proportion of different waste types generated each year. For example, in 2015 the proportion of 'treatment' was highest due the quantity of hazardous C&D waste sent for treatment, where in 2017 the proportion of 'recovery' was highest due the quantity of end-of-life vehicles.

4.6.8 The variations generally relate to the levels of recovery and treatment with the other management methods remaining broadly consistent from one year to the next.

Figure 4.7 Breakdown of generic hazardous waste management methods, 2015

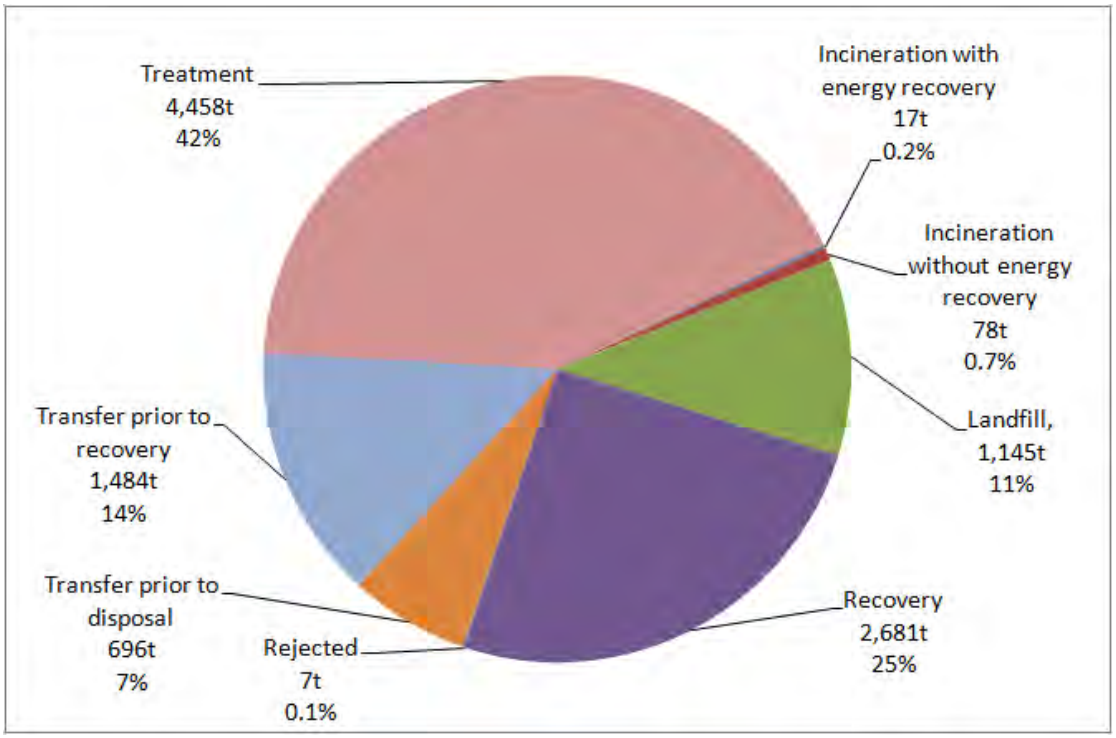


Figure 4.8 Breakdown of generic hazardous waste management methods, 2016

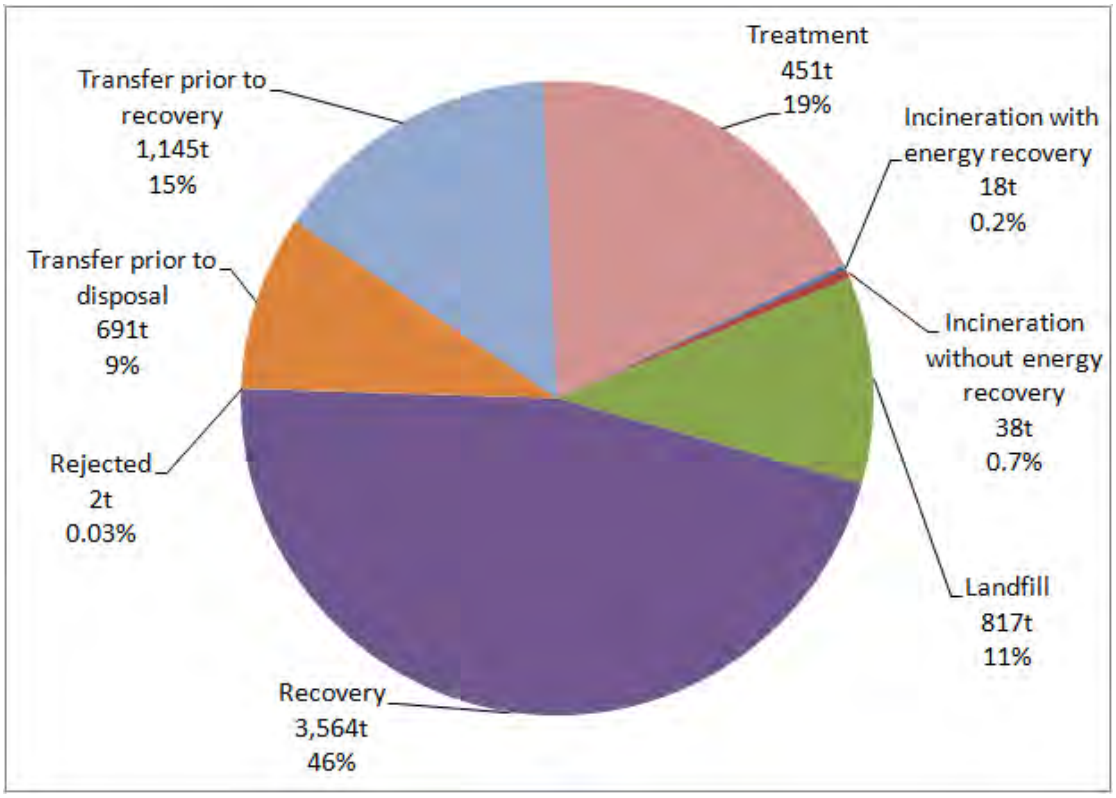


Figure 4.9 Breakdown of generic hazardous waste management methods, 2017

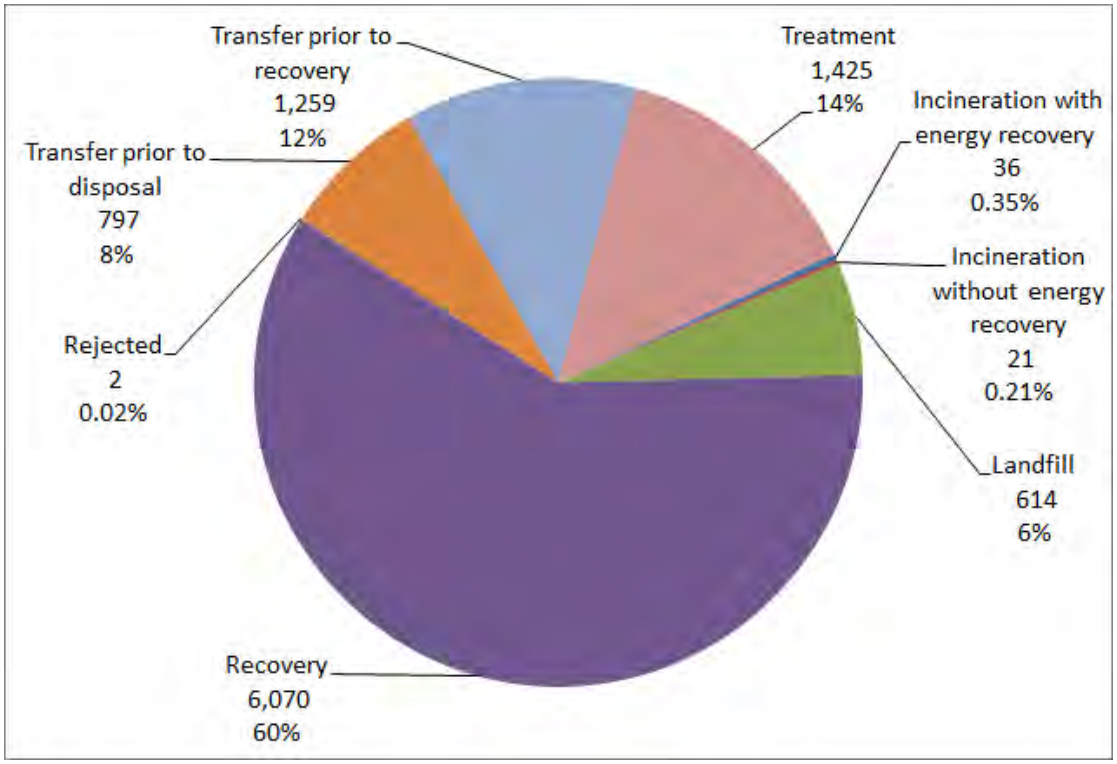


Table 4.22 Breakdown of generic hazardous waste management methods by LoW Chapter Heading, 2015 to 2017

LoW Chapter	Year	Incineration with energy recovery	Incineration without energy	Landfill	Recovery	Rejected	Transfer prior to disposal	Transfer prior to recovery	Treatment
01: Mining and Minerals	2015							<1	
	2016								
	2017								
02: Agricultural and Food Production	2015						<1	3	
	2016		0.2				0.3		
	2017						4	<0.1	
03: Wood and Paper Production	2015						27		
	2016						9		
	2017						0.8		
05: Petroleum, Gas and Coal Processing Wastes	2015								
	2016							0.4	
	2017							0.6	
06: Inorganic Chemical Processes	2015						3	85	
	2016						4	15	76
	2017						4	2	0.3
07: Organic Chemical Processes	2015							1	
	2016							1	
	2017								
08: MFSU Paints, Varnish, Adhesive and Inks	2015				492		86	86	<1
	2016		14	7	415		51	101	<0.1
	2017			114	399		43	99	1
09: Photographic Industry	2015				5		1	1	
	2016				2		2	1	
	2017				2		0.5		
10: Thermal Process Waste (inorganic)	2015						1		
	2016						5	0.2	0.2
	2017						2		0.8
11: Metal Treatment and Coating Processes	2015				314	7	97	221	681
	2016				430		15	142	797
	2017				402		21	103	893
12: Shaping/Treatment of Metals and Plastics	2015		25		2		12	8	30
	2016						100	5	52
	2017				7		79	9	
13: Oil and Oil/Water Mixtures	2015				888		169	524	128
	2016				1,078	2	118	529	194
	2017				1,217		116	247	210
14: Solvents	2015				3		1	35	21
	2016				5		15	39	
	2017				<0.1		35	79	

LoW Chapter	Year	Incineration with energy recovery	Incineration without energy	Landfill	Recovery	Rejected	Transfer prior to disposal	Transfer prior to recovery	Treatment
15: Packaging, Cloths, Filter Materials	2015		0	0	14		134	162	14
	2016				14		67	127	8
	2017	28			17		69	125	24
16: Not Otherwise Specified	2015		0	20	587		45	319	44
	2016		0.3	27	1,287		114	151	1
	2017		2	21	3,691	2	91	551	6
17: CD&E waste and Asbestos	2015	16	6	1,124	103		29	1	3,232
	2016	18		720	18		109	5	6
	2017	8		479	87		223	3	
18: Healthcare	2015	0	47		1		83	4	295
	2016		24		0.5		78	3	308
	2017		19		11		103	5	269
19: Waste/Water Treatment Industry	2015								10
	2016			63				0.1	10
	2017				2			0.2	9
20: Municipal Wastes	2015			0	273		8	34	1
	2016				316		3	24	0.3
	2017				235		5	36	12
Total	**2015**	**17**	**78**	**1,145**	**2,681**	**7**	**696**	**1,484**	**4,458**
	2016	**18**	**38**	**817**	**3,564**	**2**	**691**	**1,145**	**1,451**
	2017	**36**	**21**	**614**	**6,070**	**2**	**797**	**1,259**	**1,425**

4.6.9 Figures 4.10 to 4.12 provide the breakdown of the regions of deposit for hazardous waste arisings in 2015, 2016 and 2017 respectively.

4.6.10 The data highlight that approximately 60% to 70% of hazardous waste was deposited in the West Midlands.

4.6.11 The quantities sent to each region, other than the West Midlands, remain broadly consistent from one year to the next, with the West Midlands accommodating the variations in the tonnages generated in Herefordshire.

Figure 4.10 Hazardous waste by deposit region, 2015

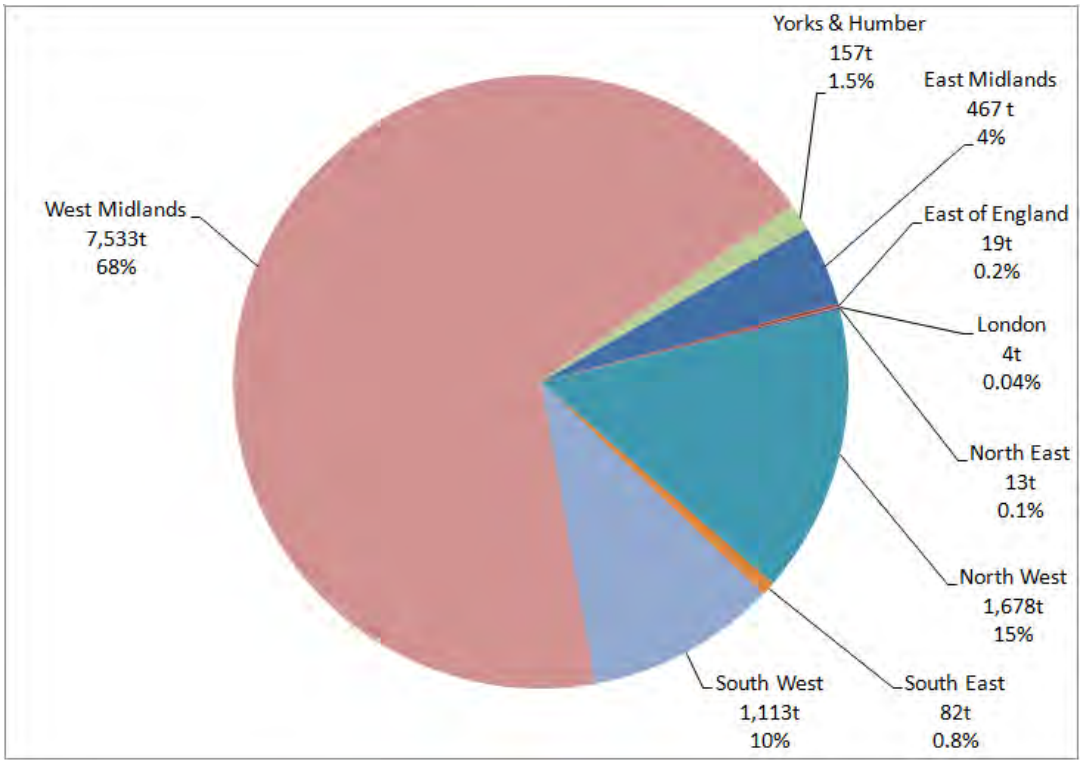


Figure 4.11 Hazardous waste by deposit region, 2016

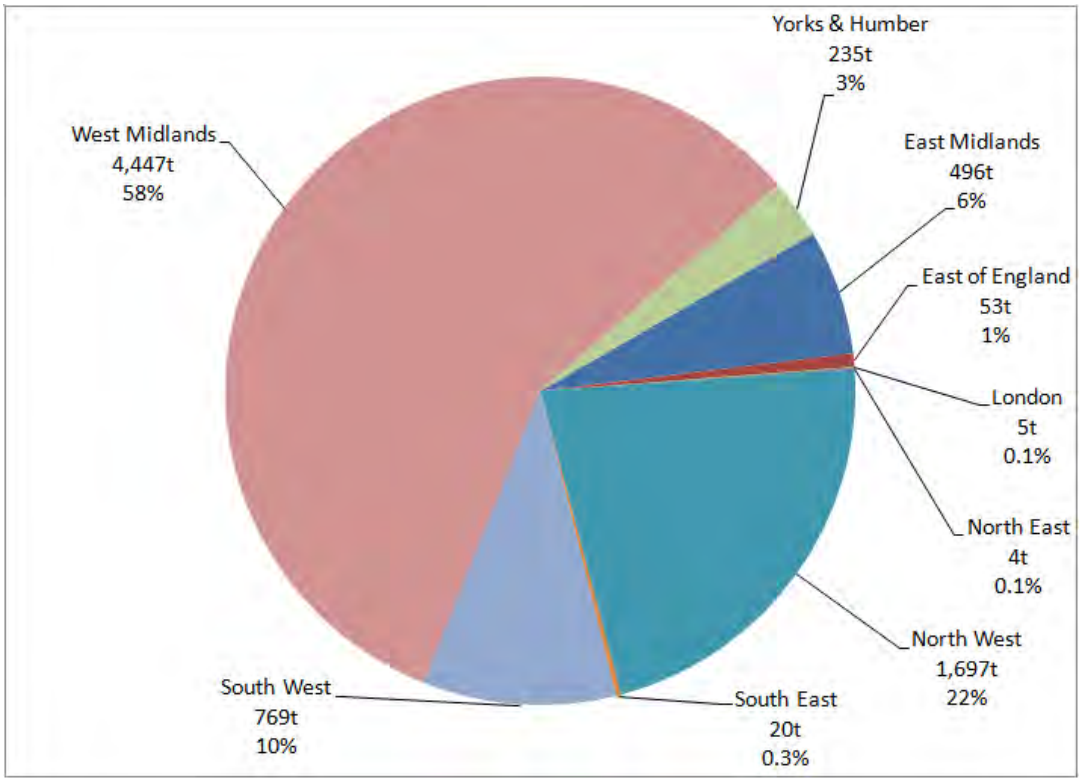
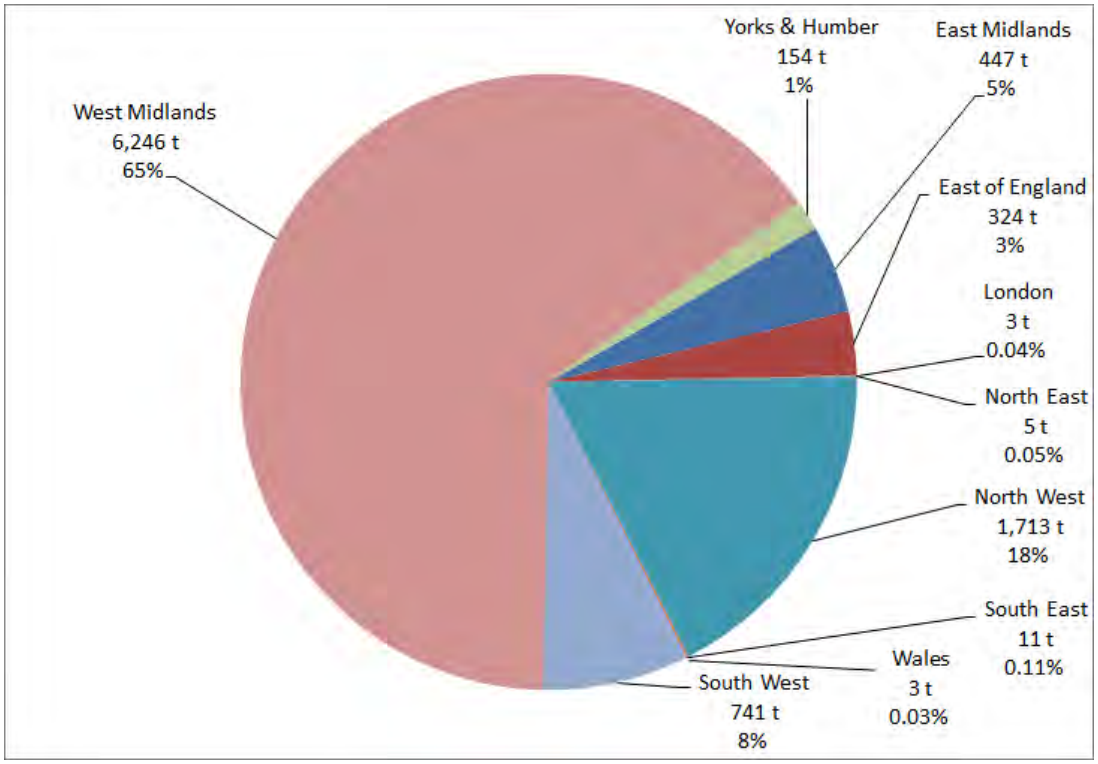


Figure 4.12 Hazardous waste by deposit region, 2017



4.7 Radioactive waste

4.7.1 Radioactive waste is not 'controlled waste' under UK legislation; however, WPA should make note in their Local Development Framework that disposal requirements for such wastes may arise from time to time.

4.7.2 The Environment Agency regulates the disposal of radioactive waste. In 2016, two organisations within Herefordshire had permits (known as authorisations) that allow the accumulation and disposal of radioactive waste. However, by 2018 there was only one active authorisation. For completeness, details of the organisations holding authorisations in 2016 and 2018 are included in Table 4.23. However, the need for future treatment/disposal capacity for radioactive waste is not considered in this report as materials are normally, and most appropriately, managed at the national level.

Table 4.23 Authorisations in Herefordshire for the keeping and use of radioactive material and/or disposal of radioactive waste

Organisation	Location	Permission No.	Approved	Active in 2016	Active in 2018
Wye Valley NHS Trust	Hereford County Hospital, Stonebow Road, Hereford, HR1 2ER	BF6973	06/05/1999	Yes	Yes
		BW8623	01/01/2004	Yes	Yes
Sequani Ltd	Bromyard Road Industrial Estate, Ledbury, HR8 1LH	CE5429	10/11/2010	Yes	No
		CE5437	10/11/2010	Yes	No
Source: Environment Agency Public Registers, accessed 21st November 2016 and 31st October 2018 https://environment.data.gov.uk/public-register/view/search-radioactive-substances-permits					

4.8 Summary of estimates for waste generated in Herefordshire

4.8.1 Table 4.24 provides a summary of the estimated waste arisings in Herefordshire between 2015 and 2017.

Table 4.24 Estimated waste generation in Herefordshire 2015 to 2017

Waste Stream	2015	2016	2017
Local authority collected waste:	86,600 tonnes	89,650 tonnes	88,870 tonnes
Commercial and industrial waste:	116,00 to 146,000 tonnes[20]	132,00 to 168,000 tonnes	133,00 to 170,000 tonnes
Construction, demolition and excavation waste:	357,000 to 379,000 tonnes	357,000 to 379,000 tonnes	357,000 to 379,000 tonnes
Agricultural waste (non-natural):	6,000 to 8,000 tonnes	6,000 to 8,000 tonnes	6,000 to 8,000 tonnes
Total	565,600 to 619,600[21] tonnes	584,600 to 644,600 tonnes	584,900 to 645,900 tonnes
Hazardous wastes	10,500 tonnes within the total, as a subset of the other waste streams.	7,750 tonnes within the total, as a subset of the other waste streams.	9,650 tonnes within the total, as a subset of the other waste streams.

4.8.2 This WNA Update 2018 indicates an increase of 19,000 to 25,000 tonnes from 2015 to 2016, predominantly as a result of the revised estimate for C&I wastes; followed by an increase of 300 to 1,300 tonnes from 2016 to 2017. These are not significant increases and are reflective of the different tonnage that may be received into any one facility across different years. It is important to remember that the available data can only be used to give a broad understanding of wastes generated in Herefordshire; it is generally not possible to be certain or specific.

Difference between tonnage managed through permitted facilities and estimated arisings

4.8.3 Of greater interest to plan making is consideration of the difference in tonnage between the amount of waste that managed through permitted facilities and the estimated arisings. Table 3.2 identifies that permitted facilities in Herefordshire accepted 416,097 tonnes of waste in 2016; most of which (86%, see Figure 3.1) originated in Herefordshire. In 2017, the permitted facilities accepted 443,098 tonnes, 88% of which originated in Herefordshire (see Figure 3.2).

[20] The reference to 115,000 to 145,000 tonnes in the WNA 2017 was erroneous, the correct tonnages are stated here. The total for 2015 is also corrected.

[21] The total has been updated from the WNA 2017 to recognise that hazardous wastes are a subset of the other waste streams.

4.8.4 This indicates a difference of some 200,000 tonnes (across both years) between the wastes managed within Herefordshire and the wastes estimated to arise.

4.8.5 This may be due to a number of reasons including: data imprecision; wastes going directly out of Herefordshire; double counting of wastes at waste transfer stations; and exclusion of the exempt activities.

5. Waste Forecasts

5.1 Introduction

5.1.1 Based on the waste arisings estimates in Section 4, a series of waste forecasts have been developed for each waste stream.

5.2 Local Authority Collected Wastes (LACW)

5.2.1 As highlighted above, future waste arisings are primarily linked to two main factors:

- the state of the economy; and
- changes in household numbers.

5.2.2 In addition, there are several policy and regulatory initiatives designed to impact on future waste generation, including:

- producer responsibility initiatives for packaging, recently extended to other products, e.g. batteries, electrical goods and electronic equipment and vehicles;
- waste prevention initiatives (e.g. light-weighting of packaging within industry and commerce) and national and local campaigns to encourage the public to use food and resources more efficiently and to reduce the waste they generate;
- possible effects of end-markets for recycled materials; and
- increased collections and services for recycling and composting.

5.2.3 Therefore, and as set out in the WNA 2017, when selecting long-term growth/reduction rates there is a need to consider:

- potential reduction in the rate of waste growth (or absolute reduction in waste arisings), as a result of the factors described above;
- factors that have, or will, distort trend analysis such as a change of collection systems, legislation (e.g. Landfill Tax) or seasonal factors (e.g. exceptionally dry years result in lower levels of garden waste); and
- the elements of the waste stream to be included or excluded in the trend analysis to ensure consistency (e.g. exclusion of commercial waste collected by the Council and fly-tipped waste).

5.2.4 To forecast waste from households up to 2035 in the WNA 2017, the trends in the waste generated per household were used to produce a number of waste growth scenarios, which were then combined with household projections provided by the Department for Communities and Local Government (DCLG, now named the Ministry of Housing, Communities & Local Government).

5.2.5 To forecast the remainder of LACW, future non-household waste generation needed to be factored into the estimates. The non-household waste stream predominantly comprised commercial waste and non-household CD&E waste collected at HWRC. Figures 4.4 and 4.5 show that whilst the HWRC non-household waste fraction has remained relatively constant over the past 12 months, it is still equivalent to the 2011 tonnage; whereas, the commercial

waste fraction has steadily increased since 2011 up to the end of 2016, since when it has stayed relatively constant.

5.2.6 Table 5.1 presents the series of waste per household growth scenarios used in the WNA 2017, to provide an estimate of future waste from households, along with assumptions about the non-household waste fraction.

5.2.7 There are a number of factors, in addition to the above, which will affect the quantities of non-household waste collected by local authorities in the future. These include:

- number, type of businesses and productivity/levels of waste generated;
- level of commercial waste service local authorities want to deliver;
- number of small and medium enterprises (SME) in different local authorities;
- nature and drivers of business types e.g. what their business activities are and the type of waste they generate;
- policy drivers, such as packaging e.g. light-weighting of packaging; and
- private sector waste collection companies seeking to maintain market share of commercial waste collections.

5.2.8 Due to the number of variables in the above factors, it is difficult to forecast any significant increase or decrease in the quantity of non-household waste collected by local authorities. It has therefore been assumed that the tonnage of non-household waste will remain constant within a scenario.

Table 5.1 LACW growth scenarios used in the WNA 2017

Scenario	Waste per household assumptions	Non-household assumptions
1	Static waste from households per household based on the average of annual arisings over the period 2013 to 2015 of 0.937 tonnes/household.	Waste not from households remains static at 2015 level of 10,875 tonnes per annum.
2	Static waste from households per household based on the 12 months ending August 2016 of 0.95 tonnes per household.	Waste not from households remains static at the 12 months ending August 2016 level of 11,775 tonnes per annum.
3	To reflect the growth over the 12 month period ending August 2016, waste from households per household increases by 1.9% per annum from the 12 months ending August 2016 figure of 0.95 tonnes per household up to 2020, then static.	Waste not from households remains static at the 12 months ending August 2016 level of 11,775 tonnes per annum.
3a	Same as Scenario 3, but with waste from households per household continuing to increase beyond 2020 but at half the rate of the period up to 2020, i.e. 0.95% per annum.	Waste not from households remains static at the 12 months ending August 2016 level of 11,775 tonnes per annum.
4	This scenario, uses the waste generated by households (i.e. include CD&E wastes) and applies a waste per household figure of 1.01 tonnes to the DCLG household projections, which is based on the average in annual arisings over the period 2013 to 2015.	Remaining non-household waste remains static at 4,650 tonnes per annum.
4a	Same as Scenario 4 but based on 12 months ending August 2016, using a figure of 1.03 tonnes per household.	Same as Scenario 4 but based on 12 months ending August 2016, with the remaining non-household waste static at 5,250 tonnes per annum.

5.2.9 Paragraph 4.2.4 highlights that the 2016 LACW actual arisings are consistent with LACW growth scenarios 2 and 4a, with the figure sitting at the midpoint of the forecasts for 2016. However, the 2017 actual arisings data shows the waste generation levels reverting to the levels seen in years 2013 to 2015 (see Figure 4.1), with a small reduction in the overall arisings. Consequently, the forecast arisings sit between the LACW growth scenarios 2 and 4a, and scenarios 1 and 4.

5.2.10 Therefore, the LACW growth scenarios have not been adjusted. However, in response to comments received to the I&O Report, the forecast period has been extended to 2035.

5.2.11 The resulting LACW forecasts are presented in Table 5.2 and Figure 5.1. Figure 5.1 includes historic LACW arisings back to 2005/06[22], not least to highlight the impact of the recession on LACW and to show the predicted forecasts in context with previous years. Figure 5.1 has also been updated to show the actual arisings of LACW in 2016 and 2017.

5.2.12 As highlighted in paragraph 4.2.8, the ONS published its first household projections since the transfer of responsibility from MHCLG. The WNA 2017 has been re-run using the ONS household projections and the resulting LACW forecasts are presented in Table 5.3 and Figure 5.2. Again, Figure 5.2 shows the actual arisings of LACW in 2016 and 2017.

5.2.13 As the scenarios are mainly driven by housing growth, the forecasts based on the ONS household projections are lower than those based on the MHCLG household projections, by between 2,000 and 2,400 tonnes by the end of plan period.

5.2.14 The forecasts based on the ONS household projections have been used as the ONS data is the most recent dataset. The figures show that if household waste generation rates do not increase from either the 2015 tonnages or mid-2016 estimates, LACW could increase to between 96,500 to 99,500 tonnes per annum (Scenarios 1, 2 and 4) by 2035, driven only by the increasing number of households.

5.2.15 However, if the higher growth in waste experienced between August 2015 and August 2016 is factored into the forecasts, either as short term increases up to 2020 (Scenario 3) or prolonged growth up to 2035 (Scenario 3a), total LACW could increase to between 107,400 to 122,000 tonnes per annum by 2035.

[22] Defra Local Authority Collected and Household Waste Statistics

Table 5.2 LACW forecast based on MHCLG household projections, Herefordshire, 2016 to 2035 (rounded to nearest 100 tonnes)

Scen	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	86,600	87,700	88,300	89,000	89,700	90,400	91,000	91,600	92,300	92,900	93,500	94,100	94,700	95,200	95,800	96,300	96,800	97,300	97,800	98,200	98,600
2	86,600	89,600	90,300	91,000	91,700	92,400	93,000	93,600	94,300	94,900	95,500	96,100	96,700	97,300	97,900	98,400	98,900	99,400	99,900	100,300	100,700
3	86,600	91,100	93,300	95,600	97,900	100,300	101,000	101,700	102,400	103,100	103,800	104,500	105,100	105,800	106,400	106,900	107,500	108,000	108,500	109,000	109,500
3a	86,600	91,100	93,300	95,600	97,900	100,300	101,900	103,400	105,000	106,600	108,300	109,900	111,500	113,100	114,800	116,400	118,000	119,600	121,200	122,800	124,400
4	86,600	87,400	88,100	88,900	89,600	90,300	91,000	91,700	92,400	93,000	93,700	94,300	95,000	95,600	96,200	96,700	97,300	97,800	98,300	98,800	99,200
4a	86,600	89,700	90,400	91,100	91,900	92,600	93,300	94,000	94,700	95,400	96,100	96,700	97,400	98,000	98,600	99,200	99,700	100,200	100,700	101,200	101,700

Due to the greater clarity in the data, LACW tonnage is provided to the nearest 100 tonnes, rather than 1,000 tonnes as used for C&I and CD&E wastes.

Figure 5.1 LACW forecast based on MHCLG household projections, Herefordshire, 2016 to 2035 (rounded to nearest 100 tonnes)

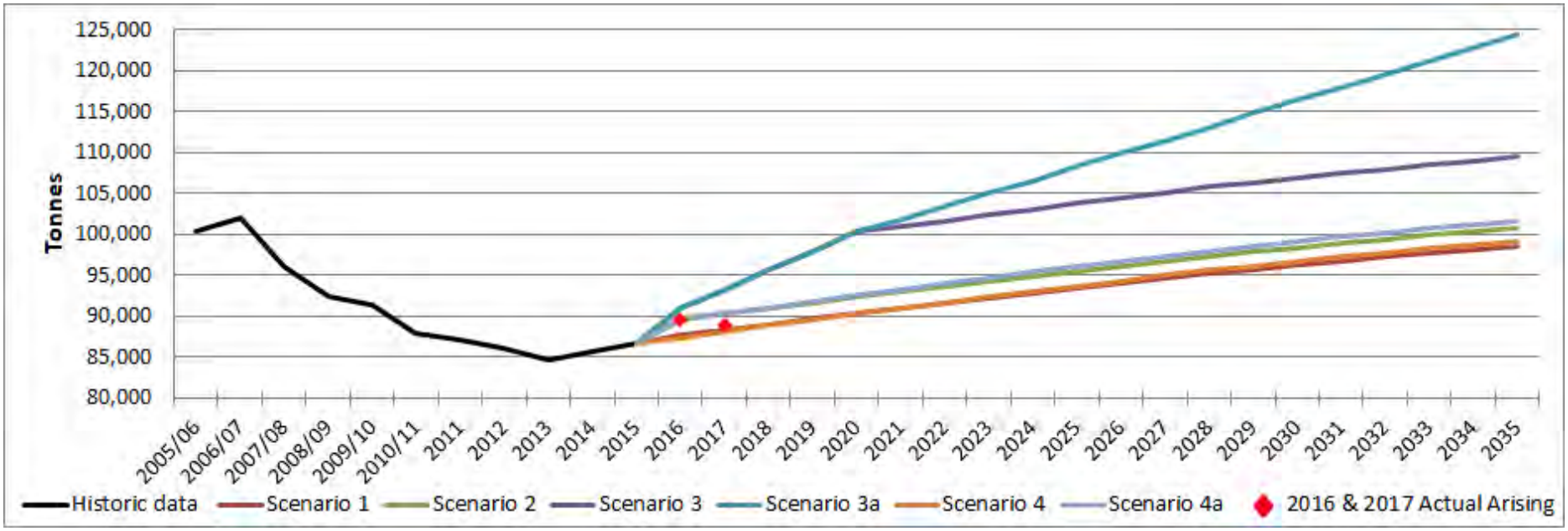
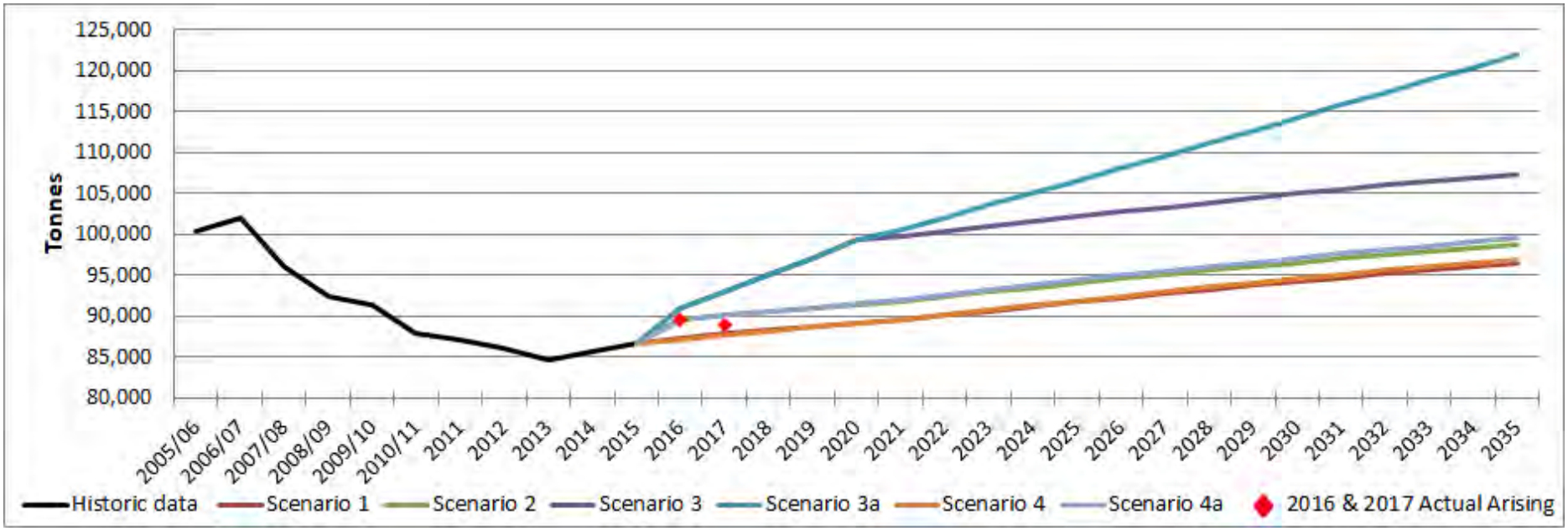


Table 5.3 LACW forecast based on ONS household projections ns, Herefordshire, 2016 to 2035 (rounded to nearest 100 tonnes)

Scen	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	86,600	87,400	87,900	88,300	88,800	89,200	89,600	90,200	90,700	91,300	91,800	92,300	92,800	93,300	93,800	94,300	94,700	95,200	95,600	96,100	96,500
2	86,600	89,600	90,100	90,500	91,000	91,400	91,800	92,400	93,000	93,500	94,100	94,600	95,100	95,600	96,100	96,600	97,100	97,500	98,000	98,400	98,800
3	86,600	91,100	93,100	95,100	97,200	99,300	99,800	100,400	101,000	101,600	102,200	102,800	103,300	103,900	104,500	105,000	105,500	106,000	106,500	106,900	107,400
3a	86,600	91,100	93,100	95,100	97,200	99,300	100,600	102,100	103,600	105,100	106,600	108,100	109,600	111,200	112,700	114,200	115,800	117,300	118,900	120,400	122,000
4	86,600	87,200	87,700	88,200	88,700	89,100	89,600	90,200	90,800	91,400	91,900	92,500	93,000	93,600	94,100	94,600	95,100	95,600	96,100	96,500	97,000
4a	86,600	89,600	90,100	90,600	91,100	91,600	92,000	92,600	93,200	93,800	94,400	95,000	95,500	96,100	96,600	97,100	97,700	98,100	98,600	99,100	99,500

Due to the greater clarity in the data, LACW tonnage is provided to the nearest 100 tonnes, rather than 1,000 tonnes as used for C&I and CD&E wastes.

Figure 5.2 LACW forecast based on ONS household projections, Herefordshire, 2016 to 2035 (rounded to nearest 100 tonnes)



5.3 Commercial and Industrial Waste (C&I waste)

5.3.1 If future C&I waste arisings are assumed to be predominantly linked to the number and types of businesses within Herefordshire, economic growth forecasts can be used as a means of estimating future C&I waste arisings.

5.3.2 However, as with any form of forecasting, predicting economic performance over a 20 year period is difficult due to the range of external factors that affect economic growth. In addition, as highlighted previously, the quality and lack of granularity of C&I waste data means it is not possible to produce estimates for the waste produced by different sectors and businesses, which could then be applied to the business profile of the county. This means that any C&I waste forecast needs to be viewed as a broad estimate, which should be reviewed periodically.

Herefordshire economic growth forecasts

5.3.3 There are no publicly available economic growth forecasts specifically for Herefordshire. Whilst national and regional forecasts could be applied, the Council's 'Facts and Figures about Herefordshire'[23] website states that *'Herefordshire's economic output is low compared to regionally and nationally when measured per head of population'*. Therefore, applying national or regional forecasts is likely to result in an overestimate of future waste arisings.

5.3.4 Consequently, GVA[24] forecasts specific to Herefordshire and Worcestershire were obtained from Experian for the WNA 2017. These forecasts are considered more likely to better reflect the potential economic growth in Herefordshire but could again result in overestimates if the economic growth in Worcestershire is stronger than in Herefordshire. The Experian GVA forecasts have been retained and used again in this Update.

5.3.5 At the Herefordshire level, the Economic Development Strategy, Invest Herefordshire: Herefordshire's Economic Vision, December 2016, includes an aim for economic growth of an *'increase GVA per head by 10% in real terms, from £19,500 to £21,500 by 2031 (at 2015 prices)'*. This level of growth is equivalent to an average annual growth of 0.65% in GVA.

5.3.6 If it is assumed that businesses and therefore C&I waste will grow in line with GVA, these economic growth forecasts can be used to develop scenarios to estimate future C&I waste arisings.

5.3.7 Due to the lack of certainty in the available data, the assessment has been undertaken using the same scenarios but separately using both years 2015 and 2017 data, with both extended to 2035. Tables 5.4 and 5.5 present the scenarios considered individually for each year.

[23] https://factsandfigures.herefordshire.gov.uk/about-a-topic/economy/productivity-and-gross-value-added.aspx

[24] Gross Value Added (GVA) measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom and is a headline measure used to monitor economic performance.

Table 5.4 C&I waste growth scenarios based on 2015 C&I waste estimates

Scenario	Basis	Forecast Starting Point[25]
1a	C&I waste growth in line with Hereford and Worcestershire GVA forecast	Lower 2015 C&I waste estimate (i.e. 116,000 tonnes)
1b	C&I waste growth in line with the Invest Herefordshire GVA growth target of 10% by 2031 (equivalent to an average annual growth of 0.65%)	
2a	C&I waste growth in line with Hereford and Worcestershire GVA forecast	Higher 2015 C&I waste estimate (i.e. 146,000 tonnes)
2b	C&I waste growth in line with the Invest Herefordshire GVA growth target of 10% by 2031 (equivalent to an average annual growth of 0.65%)	

Table 5.5 C&I waste growth scenarios based on 2017 C&I waste estimates

Scenario	Basis	Forecast Starting Point
1a	C&I waste growth in line with Hereford and Worcestershire GVA forecast	Lower 2017 C&I waste estimate (i.e. 133,000 tonnes)
1b	C&I waste growth in line with the Invest Herefordshire GVA growth target of 10% by 2031 (equivalent to an average annual growth of 0.65%)	
2a	C&I waste growth in line with Hereford and Worcestershire GVA forecast	Higher 2017 C&I waste estimate (i.e. 170,000 tonnes)
2b	C&I waste growth in line with the Invest Herefordshire GVA growth target of 10% by 2031 (equivalent to an average annual growth of 0.65%)	

5.3.8 The resulting C&I waste forecasts are presented in Table 5.6 (for 2015 estimates) and Table 5.7 (for 2017 estimates). These tables are presented graphically Figure 5.3 (for 2015 estimates) and Figure 5.4 (for 2017 estimates).

[25] The references to 115,000 to 145,000 tonnes in the WNA 2017 was erroneous, the correct tonnages are stated here.

Table 5.6 C&I waste estimates based on 2015 C&I waste estimate, Herefordshire, 2015 to 2035 (rounded to nearest 1,000 tonnes)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
C&I sectors GVA forecast (£millions)[1]	10,892	11,101	11,212	11,379	11,569	11,787	12,027	12,295	12,586	12,860	13,128	13,378	13,625	13,871	14,111	14,363	14,626	14891	15156	15418	15685
GVA forecast % growth		1.9%	1.0%	1.5%	1.7%	1.9%	2.0%	2.2%	2.4%	2.2%	2.1%	1.9%	1.8%	1.8%	1.7%	1.8%	1.8%	1.8%	1.8%	1.7%	1.7%
Invest Herefordshire GVA growth target[2]		0.65%																			
Scenario 1a	116,000	118,000	119,000	121,000	123,000	126,000	128,000	131,000	134,000	137,000	140,000	142,000	145,000	148,000	150,000	153,000	156,000	159,000	161,000	164,000	167,000
Scenario 1b	146,000	149,000	150,000	153,000	155,000	158,000	161,000	165,000	169,000	172,000	176,000	179,000	183,000	186,000	189,000	193,000	196,000	200,000	203,000	207,000	210,000
Scenario 2a	116,000	117,000	118,000	118,000	119,000	120,000	121,000	121,000	122,000	123,000	124,000	125,000	125,000	126,000	127,000	128,000	129,000	130,000	130,000	131,000	132,000
Scenario 2b	146,000	147,000	148,000	149,000	150,000	151,000	152,000	153,000	154,000	155,000	156,000	157,000	158,000	159,000	160,000	161,000	162,000	163,000	164,000	165,000	166,000

1. Hereford and Worcestershire GVA forecast for C&I sectors (Source: Experian ©)
2. Invest Herefordshire GVA growth target of 10% by 2031 (equivalent to an average annual growth of 0.65%)

Table 5.7 C&I waste estimates based on 2017 C&I waste estimate, Herefordshire, 2017 to 2035 (rounded to nearest 1,000 tonnes)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
C&I sectors GVA forecast (£millions)[1]		11,101	11,212	11,379	11,569	11,787	12,027	12,295	12,586	12,860	13,128	13,378	13,625	13,871	14,111	14,363	14,626	14891	15156	15418	15685
GVA forecast % growth				1.5%	1.7%	1.9%	2.0%	2.2%	2.4%	2.2%	2.1%	1.9%	1.8%	1.8%	1.7%	1.8%	1.8%	1.8%	1.8%	1.7%	1.7%
Invest Herefordshire GVA growth target[2]				0.65%																	
Scenario 1a			133,000	135,000	137,000	140,000	143,000	146,000	149,000	153,000	156,000	159,000	162,000	165,000	167,000	170,000	173,000	177,000	180,000	183,000	186,000
Scenario 1b			170,000	173,000	175,000	179,000	182,000	186,000	191,000	195,000	199,000	203,000	207,000	210,000	214,000	218,000	222,000	226,000	230,000	234,000	238,000
Scenario 2a			133,000	134,000	135,000	136,000	136,000	137,000	138,000	139,000	140,000	141,000	142,000	143,000	144,000	145,000	146,000	147,000	148,000	148,000	149,000
Scenario 2b			170,000	171,000	172,000	173,000	174,000	176,000	177,000	178,000	179,000	180,000	181,000	183,000	184,000	185,000	186,000	187,000	189,000	190,000	191,000

1. Hereford and Worcestershire GVA forecast for C&I sectors (Source: Experian ©)
2. Invest Herefordshire GVA growth target of 10% by 2031 (equivalent to an average annual growth of 0.65%)

Figure 5.3 C&I waste estimates 2015 to 2035, based on 2015 data

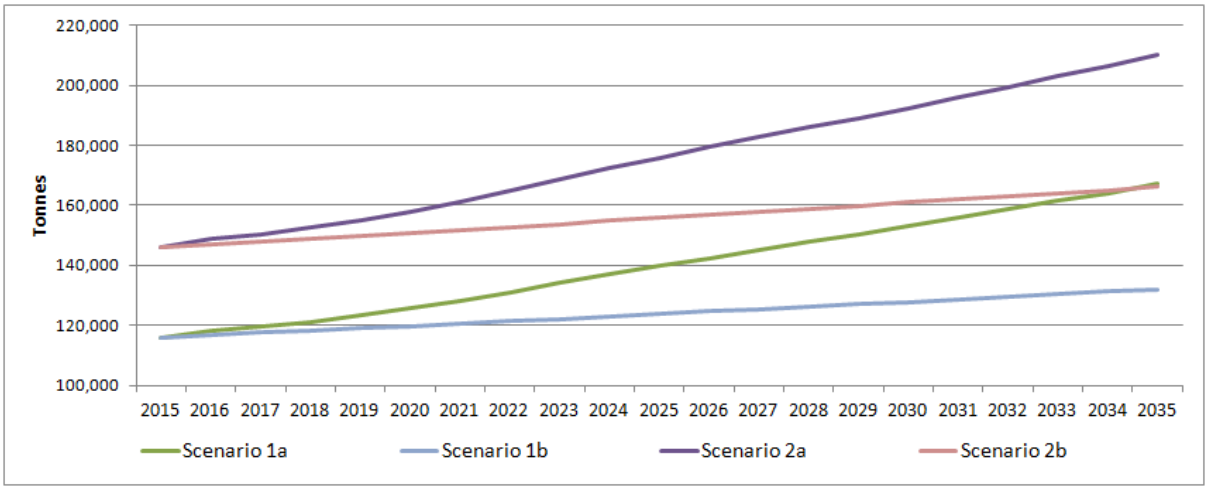
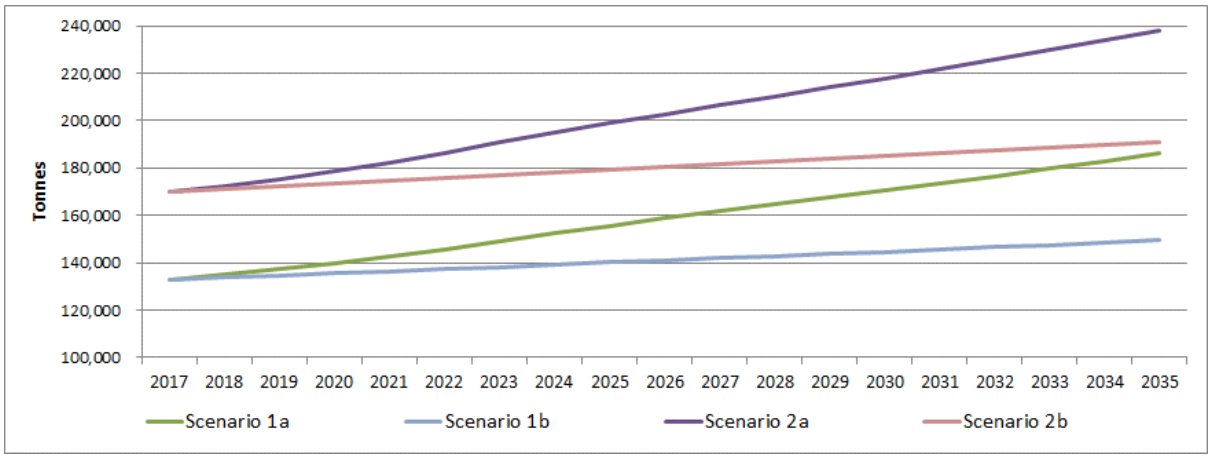


Figure 5.4 C&I waste estimates 2017 to 2035, based on 2017 data



5.3.9 The forecast estimates reflect the uncertainty in the C&I waste arisings estimates and the impact of differing economic growth forecasts. This degree of uncertainty makes assessing the future capacity need for C&I waste difficult.

5.3.10 For the purposes of assessing future capacity need it is concluded that a range of C&I waste arisings between Scenarios 1a and 2b should be used, taking account of the estimated arisings calculated for both 2015 and 2017, which is equivalent to between 167,000 and 191,000 tonnes by 2035. Scenarios 1a and 2b appear to be the more realistic forecasts, with 1b and 2a potentially acting as outliers.

5.3.11 It would be beneficial to keep these waste forecasts under review as the MWLP is developed. However, the C&I waste forecasts to be taken into assessing future capacity need are:

- Scenario 1a, using 2015 data, to give a minimum tonnage; and
- Scenario 2b, using 2017 data, to give a maximum tonnage.

5.4 Construction, Demolition and Excavation Waste (CD&E waste)

5.4.1 To forecast future CD&E waste arisings, the link between CD&E waste and construction sector growth, based on the Hereford and Worcestershire GVA data as gained from Experian, has been used. Two scenarios have been considered:

- Scenario 1: Growth based on Hereford and Worcestershire construction sector GVA growth and a baseline figure of 357,000 tonnes in 2015 (based on UK waste per capita); and
- Scenario 2: Growth based on Hereford and Worcestershire construction sector GVA growth and a baseline figure of 379,000 tonnes in 2015 (based on England waste per capita).

5.4.2 As no new national estimates for CD&E waste have been published since the WNA 2017, the CD&E scenarios have not changed in this Update, but the forecast period has been extended to 2035.

5.4.3 The resulting forecasts are presented in Table 5.8 and Figure 5.5. The forecasts have been broken down into the key elements of the CD&E waste stream based on relative proportions estimated in 2014 and assuming that these remain constant.

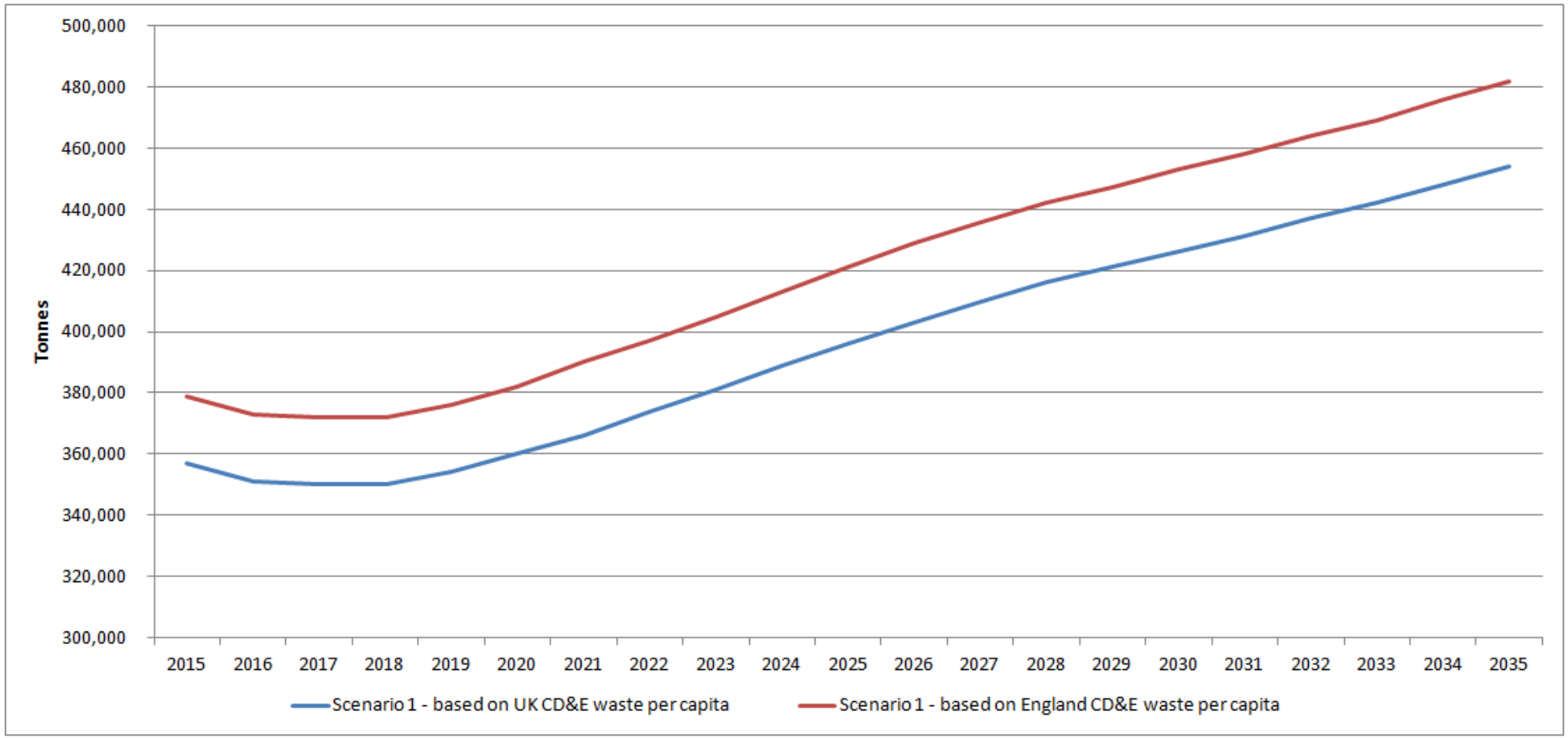
5.4.4 As highlighted above, the forecasts could overestimate future CD&E waste generation in Herefordshire, particularly in relation to excavation waste and dredging spoils. It might be considered unlikely, given the rural nature of Herefordshire, that approximately 200,000 tonnes of excavation waste would be produced every year. Therefore, as with the C&I waste forecasts, it is recommended that the CD&E waste forecasts are kept under review as the MWLP is developed.

Table 5.8 CD&E waste forecast, Herefordshire, 2016 to 2035 (rounded to nearest 1,000 tonnes)

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Hereford and Worcestershire construction sector GVA (£ millions)[1]		937.4	923.0	919.8	920.1	929.4	945.0	962.8	982.3	1002.4	1021.4	1041.5	1060.6	1077.8	1093.1	1106.7	1120.1	1133.9	1147.8	1161.5	1174.9	1189.4
Hereford and Worcestershire construction sector GVA growth			-1.5%	-0.3%	0.0%	1.0%	1.7%	1.9%	2.0%	2.0%	1.9%	2.0%	1.8%	1.6%	1.4%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
1	Non-hazardous C&D	163,000	160,000	160,000	160,000	162,000	164,000	167,000	171,000	174,000	178,000	181,000	184,000	187,000	190,000	192,000	195,000	197,000	200,000	202,000	204,000	207,000
	Hazardous C&D	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	3,000	3,000
	Excavation waste/ dredging spoils	192,000	189,000	188,000	188,000	190,000	194,000	197,000	201,000	205,000	209,000	213,000	217,000	221,000	224,000	227,000	229,000	232,000	235,000	238,000	241,000	244,000
	Total	**357,000**	**351,000**	**350,000**	**350,000**	**354,000**	**360,000**	**366,000**	**374,000**	**381,000**	**389,000**	**396,000**	**403,000**	**410,000**	**416,000**	**421,000**	**426,000**	**431,000**	**437,000**	**442,000**	**448,000**	**454,000**
2	Non-hazardous C&D	173,000	170,000	170,000	170,000	172,000	174,000	178,000	181,000	185,000	189,000	192,000	196,000	199,000	202,000	204,000	207,000	209,000	212,000	214,000	217,000	220,000
	Hazardous C&D	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	3,000	3,000
	Excavation waste/ dredging spoils	204,000	201,000	200,000	200,000	202,000	206,000	210,000	214,000	218,000	222,000	227,000	231,000	235,000	238,000	241,000	244,000	247,000	250,000	253,000	256,000	259,000
	Total	**379,000**	**373,000**	**372,000**	**372,000**	**376,000**	**382,000**	**390,000**	**397,000**	**405,000**	**413,000**	**421,000**	**429,000**	**436,000**	**442,000**	**447,000**	**453,000**	**458,000**	**464,000**	**469,000**	**476,000**	**482,000**

1: Source: Experian ©

Figure 5.5 CD&E waste forecast, Herefordshire, 2016 to 2035



5.5 Agricultural Waste

5.5.1 Future waste arising will be dictated by the nature of agricultural activity within Herefordshire. However, as highlighted in the River Wye Special Area of Conservation Nutrient Management Plan produced by the Environment Agency and Natural England, it is not possible to predict the future when it comes to agriculture in the River Wye catchment.

5.5.2 Therefore, it is assumed that the non-natural agricultural waste will remain in the range 6,000 to 8,000 tonnes and that the amount of natural agricultural waste which is managed at permitted facilities will be dictated by the development of on-farm AD systems.

5.5.3 Between 2014 and 2016, there were six planning permissions granted for AD systems. These are not listed as permitted facilities in the 2015 EA data, and so have the potential to increase the anaerobic digestion capacity in the county in the future. There were no new AD sites accepting waste in 2016 but two new sites accepted waste in 2017.

5.6 Hazardous Waste

5.6.1 The analysis of hazardous waste arisings highlights that over the last couple of years generation levels of hazardous wastes have, on the whole, been relatively constant and that the trend in arisings is now mainly affected by the level of hazardous waste produced by the construction and demolition sector.

5.6.2 Therefore, based on this analysis of the arisings between 2011 and 2017, it is estimated that the annual hazardous waste arising in the future will be in the range 8,000 to 12,000 tonnes, with the actual tonnage being dependent on the quantity of contaminated soil and asbestos containing waste generated by the construction and demolition sector.

5.6.3 In addition, the generation levels of different waste streams are relatively small and are unlikely to warrant the development of specialist waste treatment capacity.

5.7 Summary of Waste Forecasts

5.7.1 This Update has sought to incorporate any relevant fresh evidence to forecast future waste arisings. Table 5.9 summaries the waste forecasts for Herefordshire for years 2020, 2025, 2030 and 2035 based on the updated 2017 data, where it has been available.

5.7.2 For comparison, Table 5.10 is represented to show the same summary of waste forecasts as based on the 2015 data.

Table 5.9 Summary of waste forecasts for years 2020, 2025, 2030 and 2035, based on 2017 data (rounded to nearest 1,000 tonnes)

Waste Stream		Tonnes				
		Baseline	Forecast			
		2017	2020	2025	2030	2035
Local authority collected waste		88,900	89,100 to 99,300	91,800 to 106,600	94,300 to 114,200	96,500 to 122,000
Commercial and industrial waste		133,000 to 170,000	140,000 to 173,000	156,000 to 179,000	170,000 to 185,000	186,000 to 191,000
Construction, demolition and excavation waste	Total	357,000 to 379,000	360,000 to 382,000	396,000 to 421,000	426,000 to 453,000	454,000 to 482,000
	Non-hazardous C&D	163,000 to 173,000	164,000 to 174,000	181,000 to 192,00	195,000 to 207,000	207,000 to 220,000
Agricultural waste (non-natural)		6,000 to 8,000	6,000 to 8,000			
Hazardous waste (subset of other waste streams)		9,500	8,000 to 12,000			

Table 5.10 Summary of waste forecasts for years 2020, 2025, 2030 and 2035, based on 2015 data (rounded to nearest 1,000 tonnes)

Waste Stream		Tonnes				
		Baseline	Forecast			
		2015	2020	2025	2030	2035
Local authority collected waste		86,600	90,300 to 100,300	93,500 to 108,300	96,300 to 116,400	98,600 to 124,400
Commercial and industrial waste		116,000 to 146,000	126,000 to 151,000	140,000 to 156,000	153,000 to 161,000	166,000 to 167,000
Construction, demolition and excavation waste	Total	357,000 to 379,000	360,000 to 382,000	396,000 to 421,000	426,000 to 453,000	454,000 to 482,000
	Non-hazardous C&D	163,000 to 173,000	164,000 to 174,000	181,000 to 192,00	195,000 to 207,000	207,000 to 220,000
Agricultural waste (non-natural)		6,000 to 8,000	6,000 to 8,000			
Hazardous waste (subset of other waste streams)		10,500	9,000 to 12,000			

5.7.3 Largely due to data constraints, a difference in tonnage is not seen in the CD&E or agricultural waste streams. LACW data confirms that there has been a slight increase in waste generated from 2015 to 2016 following by a minor decrease between 2016 and 2017. These variations are within the forecast scenario and whilst the range of potential waste arisings at the end of the plan period are very similar, whether using 2015 or 2017 data, the forecasts based on the 2017 data are fractionally lower due to the use of the most recent ONS household projections. C&I waste forecasts grow in line with the uplift in the estimated arisings calculated for 2017. Hazardous waste is the only waste stream to show a potential decline, however the tonnages are small.

6. Capacity Needs

6.1 Introduction

6.1.1 The different waste streams considered within this report can have quite different management methods and expectations, particularly in relation to recycling and recovery targets. This section considers the policy relevant to each waste stream to consider future waste management capacity requirements.

6.2 Local Authority Collected Waste (LACW)

6.2.1 At the national level (England) there are two principal targets relating to the management of LACW:

- recycling and composting of household waste: 50% by 2020
- recovery of municipal waste: 75% by 2020.

6.2.2 These are national targets, but are not formally cascaded down to local authorities. The Waste Strategy for Herefordshire and Worcestershire: Managing Waste for a Brighter Future[26] does reflect these targets, and seeks to exceed them through achieving a more challenging recovery target of recovering value from a minimum of 78% of municipal waste by 2015. Whilst this target was not achieved in 2015 or 2016, it should be achieved in 2017 as the EnviRecover Facility started operating.

6.2.3 Recycling and recovery targets are still to be set for the period beyond 2020. The WNA 2017 relied upon the concurrent European Commission proposals of:

- A preparation for re-use and recycling (including composting/anaerobic digestion) target of 60% of municipal waste[27] by 2025.
- A preparation for re-use and recycling (including composting/anaerobic digestion) target of 65% of municipal waste by 2030.
- A gradual limitation on landfilling of municipal waste, to 10% by 2035.
- A requirement for the separate collection of bio-waste[28] for recycling (although no date is specified in the proposals).

6.2.4 Recognising the June 2016 decision to leave the European Union, it was unclear whether these targets would be adopted in the UK. However, in the absence of any future proposal for England at the time, they were used to consider future management capacity requirements for LACW.

6.2.5 These recycling targets were later softened, with several countries, including the UK, recognising that they may not be achievable. In Spring 2018, following much debate between

[26] The Joint Municipal Waste Management Strategy for Herefordshire and Worcestershire 2004 - 2034, First review August 2011

[27] As explained in section 2.1 of this report, the term municipal waste is wider than LACW and includes wastes from other sources that is comparable to household waste in nature, composition and quantity. Consequently this target would apply to a proportion of C&I waste.

[28] Bio-waste means biodegradable garden and parks waste, food and kitchen waste from households, restaurants, caterers and retail premises and comparable waste from food processing plants.

Member States, the European Commission and representatives of the European Parliament, agreement was reached on the revisions to the Waste Framework Directive and the Landfill Directive, including the following targets:

- A preparation for re-use and recycling (including composting/anaerobic digestion) target of 55% of municipal waste by 2025.
- A preparation for re-use and recycling (including composting/anaerobic digestion) target of 60% of municipal waste by 2030.
- A preparation for re-use and recycling (including composting/anaerobic digestion) target of 65% of municipal waste by 2035.
- A gradual limitation on landfilling of municipal waste, to 10% by 2035.
- A requirement for the separate collection of textiles and hazardous waste from households, by 2025.
- A requirement for the separate collection of bio-waste for recycling by 2024.

6.2.6 The UK government has signalled that these measures will be incorporated within UK legislation, even after the UK leave the UK, although a date has not yet been set. In order to maintain some consistency with the WNA 2017 and respond to comments to the I&O Report that aspirational recycling targets should be incorporated, the original EU proposals (as se out in the WNA 2017) have been retained. Table 6.1 presents the potential future capacity required to manage Herefordshire's LACW using these targets, i.e. achieving 65% recycling by 2030.

6.2.7 Two scenarios are used to consider the residual waste fraction (i.e. that remaining after recycling):

- assuming that the maximum allowable level of landfill is fully utilised; and
- assuming that all residual LACW is sent directly to a residual waste treatment facility.

Table 6.1 Forecast LACW waste management requirement (rounded to nearest 100 tonnes)

Description	2020	2025	2030	2035
LACW Forecasts				
Minimum	89,100	91,800	94,300	96,500
Maximum	99,300	106,600	114,200	122,000
Recycling and composting				
Potential recycling and composting targets	50%	60%	65%	65%
Recycling and composting capacity requirement				
Minimum (tonnes)	44,600	55,100	61,300	62,700
Maximum (tonnes)	49,700	64,000	74,200	79,300
Landfill				
Maximum allowed landfill assuming 75% municipal waste recovery by 2020 and gradual limitation to 2030 target	25%	12.5%	10%	10%
Landfill capacity requirement				
Minimum (tonnes)	22,300	11,500	9,400	9,700
Maximum (tonnes)	24,800	13,300	11,400	12,200

Residual treatment				
Minimum assuming maximum allowed landfill is utilised (tonnes)	22,200	25,200	23,600	24,100
Maximum assuming maximum allowed landfill is utilised (tonnes)	24,800	29,300	28,600	30,500
Minimum assuming no LACW direct to landfilled (tonnes)	44,500	36,700	33,000	33,800
Maximum assuming no LACW direct to landfilled (tonnes)	49,600	42,600	40,000	42,700

Increased recycling

6.2.8 Responses to the I&O Report requested a reduction in waste growth and increased recycling rates to be considered. A reduction in waste growth is not considered appropriate, as the plan is principally a land use document, seeking to provide opportunities for new development. Increased recycling levels have been considered, with the consequent capacity requirements.

6.2.9 It is worth remembering that the LACW management routes are already potentially higher than will be ratified by the European Commission. However, a further scenario of 70% recycling and composting and a maximum of 5% residual waste to landfill by 2030 has been modelled, and the results reported in Table 6.2.

Table 6.2 Forecast LACW management requirement, high recycling & composting (rounded to nearest 100 tonnes)

Description	2020	2025	2030	2035
LACW Forecasts				
Minimum	89,100	91,800	94,300	96,500
Maximum	99,300	106,600	114,200	122,000
Recycling and composting				
Potential recycling and composting targets	50%	65%	70%	70%
Recycling and composting capacity requirement				
Minimum (tonnes)	44,600	59,700	66,000	67,600
Maximum (tonnes)	49,700	69,300	79,900	85,400
Landfill				
Maximum allowed landfill assuming 75% municipal waste recovery by 2020 and gradual limitation to 5% landfill by 2030	25%	10.0%	5%	5%
Landfill capacity requirement				
Minimum (tonnes)	22,300	9,200	4,700	4,800
Maximum (tonnes)	24,800	10,700	5,700	6,100
Residual treatment				
Minimum assuming maximum allowed landfill is utilised (tonnes)	22,200	22,900	23,600	24,100
Maximum assuming maximum allowed landfill is utilised (tonnes)	24,800	26,600	28,600	30,500
Minimum assuming no LACW direct to landfilled (tonnes)	44,500	32,100	28,300	28,900
Maximum assuming no LACW direct to landfilled (tonnes)	49,600	37,300	34,300	36,600

6.2.10 This scenario indicates an increased demand of c.5,000 to 6,000 tonnes of recycling/composting capacity, and consequent reductions in landfill and residual waste manage capacity. This recycling/composting capacity demand is not considered to be significant in plan making terms.

Potential future LACW management capacity demand

6.2.11 Table 3.1 identifies that permitted capacity within the county is limited to facilities that offer transfer with basic treatment or provide biological treatment; there is no residual waste treatment or disposal capacity such as MBT, RDF production, incineration (with or without energy recovery) or landfill.

6.2.12 However, Herefordshire Council has historically worked with Worcestershire County Council to manage effectively the authorities' LACW jointly. This collaboration has resulted in the production of a Joint Municipal Waste Management Strategy and joint procurement of strategic waste management capacity, namely:

- a materials recovery facility (MRF) at Norton, near Worcester. The EnviroSort Facility has a permitted capacity of 105,000 tonnes per year; and
- an energy from waste (EfW) facility at Hartlebury, near Stourport. The EnviRecover Facility has a permitted capacity of 200,000 tonnes per year and became operational in 2017.

6.2.13 Consequently, whilst these facilities are not located in Herefordshire, long term capacity is available to manage Herefordshire's LACW; the contract is live until 2024, with the potential for a five-year extension. At the end of the contract period, the facilities revert to the two authorities. The use of these facilities for waste generated within both Worcestershire and Herefordshire has been considered carefully through the planning process and there is no planning reason why this should change throughout the plan period, or after.

6.2.14 Conclusions in relation to future LACW management capacity focus on the following:

- **Sufficient MRF capacity by 2030**: It is not possible accurately to predict the future composition of LACW, due to the limited data currently available and that composition changes with time. Consequently, the proportion of material that will need to be recycled or composted to achieve a 65% recycling and composting target is not clear. If it is assumed that there will a 50:50 split between recycling and composting, by 2030 there could be 31,000 to 38,000 tonnes of material to be recycled.
  - However, it is unlikely that all the material would need to be handled at a MRF as some material is collected separately and sent directly (or via transfer station) to reprocessors, for example the scrap metal, cardboard, timber etc. collected at HWRC. The current split between kerbside and HWRC recycling is approximately 70:30. If this split is maintained, between 22,000 and 27,000 tonnes of material from Herefordshire may need to be handled through a MRF by 2030.
  - There may be pressure on the current contracted MRF capacity by the end of the Plan period, depending on the amount of recyclable material sent to the EnviroSort Facility from Worcestershire.
- **Management of separately collected bio-waste**: Currently, the only form of bio-waste separately collected for composting is the garden waste collected at HWRC. Therefore, if the separate collection of bio-waste for recycling becomes a requirement, capacity would be necessary to handle separately collected food and garden waste.
  - Based on the assumption above of a 50:50 between recycling and composting, by 2030 there could be 31,000 to 38,000 tonnes of bio-waste to manage. The type and size of biological treatment capacity would depend on how the bio-waste is collected e.g. separate food and garden waste or mixed food and garden waste.

- There is currently significant capacity at biological treatment facilities in Herefordshire (not including on-farm AD systems) over 334,000 tonnes in 2015 and 2017, of which approximately 107,000 tonnes was utilised in 2015 and 60,000 tonnes in 2017. This would suggest there should be sufficient capacity to handle a 25,000 to 30,000 tonne increase in bio-waste.

- **Sufficient EfW Facility capacity by 2030**: The EnviRecover Facility capacity is 200,000 tonnes per annum. If it is assumed that this equates to 35% of the LACW generated, because 65% of the waste will be recycled or composted by 2030, this would be equivalent to a total LACW arising of approximately 575,000 tonnes.

  - Currently, Herefordshire and Worcestershire generate a total of approximately 400,000 tonnes per annum[29]. So even with growth in LACW arising and assuming a 65% recycled or composted rate is achieved, there should remain sufficient capacity to handle the residual LACW generated by 2030.

6.3 Commercial and Industrial Waste (C&I waste)

6.3.1 There are no specific targets for the management of C&I waste. Beyond 2020, the European Commission proposes to set recycling and recovery targets for municipal waste (see section 6.2). Recognising that the Commission's use of municipal waste includes wastes from other sources that is comparable to household waste in nature, composition and quantity, some C&I waste would become subject to these targets.

6.3.2 Given the nature of current data capture systems and the inability to track flows of C&I waste, it is not possible to quantify accurately either: the C&I fraction of municipal waste; or how much is recycled or recovered at the national level, let alone the Herefordshire level. Again, uncertainty over the UK's relationship with European policy means that is unclear whether the targets proposed by the European Commission will be adopted in the UK.

6.3.3 As with LACW, in the absence of any future proposal for England, the proposed European targets, as set out in the WNA 2017 and paragraph 6.2.3 above, are used to assess future management capacity requirements for non-hazardous C&I waste. Whilst this may overestimate the recycling/recovery requirement and underestimate the landfill need, as a municipal waste target would only apply to the waste comparable to household waste in nature, composition and quantity, it is likely that the Landfill Tax will continue to drive other C&I wastes away from landfill.

6.3.4 It is assumed that hazardous C&I waste will be handled through specialist hazardous waste management facilities (see section 6.6). Table 6.3 presents the potential future capacity required to manage Herefordshire's non-hazardous C&I waste.

6.3.5 Again, two scenarios are used to consider the residual waste fraction (i.e. that remaining after recycling):

- assuming that the maximum allowable level of landfill is fully utilised; and
- assuming that all residual C&I waste is sent directly to a residual waste treatment facility.

[29] Defra, LACW Statistic, 2016/17

Table 6.3 Forecast C&I waste management requirement (rounded to nearest 1,000 tonnes)

Description	2020	2025	2030	2035
C&I Forecasts				
Minimum (Scenario 1a) using 2015 data	126,000	140,000	153,000	167,000
Maximum (Scenario 2b) using 2017 data	173,000	179,000	185,000	191,000
Recycling and composting				
Potential recycling and composting targets	50%	60%	65%	65%
Recycling and composting capacity required				
Minimum (tonnes)	63,000	84,000	99,500	108,600
Maximum (tonnes)	86,500	107,400	120,300	124,200
Landfill				
Maximum allowed landfill assuming 75% C&I waste recovery by 2020 and gradual limitation to 2030 target	25%	12.5%	10%	10%
Landfill capacity required				
Minimum (tonnes)	31,500	17,500	15,300	16,700
Maximum (tonnes)	43,300	22,400	18,500	19,100
Residual treatment				
Minimum assuming maximum allowed landfill is utilised (tonnes)	31,500	38,500	38,200	41,700
Maximum assuming maximum allowed landfill is utilised (tonnes)	43,200	49,200	46,200	47,700
Minimum assuming no C&I waste direct to landfilled (tonnes)	63,000	56,000	53,500	58,400
Maximum assuming no C&I waste direct to landfilled (tonnes)	86,500	71,600	64,700	66,800

Increased recycling

6.3.6 As with the LACW waste capacity requirements, a further scenario of 70% recycling and composting and a maximum of 5% to landfill by 2030 have been modelled and the results are presented in Table 6.4.

Table 6.4 Forecast C&I waste management requirement, high recycling and composting (rounded to nearest 1,000 tonnes)

Description	2020	2025	2030	2035
C&I Forecasts				
Minimum (Scenario 1a) using 2015 data	126,000	140,000	153,000	167,000
Maximum (Scenario 2b) using 2017 data	173,000	179,000	185,000	191,000
Recycling and composting				
Potential recycling and composting targets	50%	65%	70%	70%
Recycling and composting capacity required				
Minimum (tonnes)	63,000	91,000	107,100	116,900
Maximum (tonnes)	86,500	116,400	129,500	133,700
Landfill				
Maximum allowed landfill assuming 75% C&I waste recovery by 2020 and gradual limitation to 5% landfill by 2030	25%	10%	5%	5%
Landfill capacity required				

Description	2020	2025	2030	2035
Minimum (tonnes)	31,500	14,000	7,700	8,400
Maximum (tonnes)	43,300	17,900	9,300	9,600
Residual treatment				
Minimum assuming maximum allowed landfill is utilised (tonnes)	31,500	35,000	38,200	41,700
Maximum assuming maximum allowed landfill is utilised (tonnes)	43,200	44,700	46,200	47,700
Minimum assuming no C&I waste direct to landfilled (tonnes)	63,000	49,000	45,900	50,100
Maximum assuming no C&I waste direct to landfilled (tonnes)	86,500	62,600	55,500	57,300

6.3.7 This scenario indicates an increased demand of 8,300 to 9,500 tonnes of recycling/composting capacity, and consequent reductions in landfill and residual waste manage capacity.

Potential future C&I waste management capacity demand

6.3.8 Section 3.1 identifies that there is transfer with basic treatment, metal recycling and biological treatment capacity within Herefordshire, with the biological treatment facilities receiving over 25,000 tonnes of waste from the food and drink production sector in 2016. No additional capacity is required, but may be brought forward.

6.3.9 However, there is no residual waste treatment or disposal capacity such as MBT, RDF production, energy from waste or landfill facilities. The treatment/disposal of residual C&I waste is reliant on facilities outside Herefordshire.

6.3.10 The assessment suggests that 40,000 to 65,000 tonnes of residual C&I waste treatment/disposal capacity could be required by 2030, if the assumed targets are applied to the whole C&I waste stream. This increases to a maximum demand of 66,500 tonnes at 2035. However, as indicated in section 4.3 there is a notable degree of uncertainty in the C&I waste estimates and forecasts that makes assessing the future capacity need for C&I waste particularly difficult.

6.3.11 Whilst the remaining potential capacity requirement is not insignificant, it is not particularly large; such capacity could be provided within a single facility or through a small number of facilities operating on an industrial estate. This would be the case even if increased recycling/composting targets are applied.

6.4 Construction, Demolition and Excavation Waste (CD&E waste)

6.4.1 Article 11(2)(b) of the European Waste Framework Directive[30], sets a target to recover at least 70% of non-hazardous C&D Waste by 2020. This is a national target, but it is not formally cascaded down to local authorities. In December 2016, Defra reported that this target is already being met within the UK, with a recovery rate of over 90% for each year between 2010 and 2014[31].

6.4.2 Beyond 2020 recovery targets for CD&E waste are still to be set. The European Commission's current proposals do not make any change to the current recovery target for non-hazardous construction and demolition waste but do require Member States to '*take measures to*

[30] Directive 2008/98/EC

[31] UK Statistics on Waste, Defra, December 2016

promote sorting systems for construction and demolition waste and for at least the following: wood, aggregates, metal, glass and plaster'.

6.4.3 In considering future capacity requirements for CD&E waste, the following assumptions have been made:

- Clean uncontaminated excavation wastes will be predominately be used for backfilling, which is defined as a recovery operation where suitable waste is used for reclamation purposes in excavated areas or for engineering purposes in landscaping or construction instead of other non-waste materials which would otherwise have been used for that purpose.
- Hazardous C&D waste will be handled through specialist hazardous waste management facilities (see section 6.5).
- At least 70% of non-hazardous C&D waste will be recovered per annum during the plan period

6.4.4 Based on these assumptions the potential future waste treatment capacity required to handle Herefordshire's CD&E waste is summarised in Table 6.5.

Table 6.5 Forecast waste management capacity required for forecast non-hazardous CD&E waste

Description	2020	2025	2030	2035
Backfilling capacity of excavation waste / dredging spoils				
Minimum	194,000	213,000	229,000	244,000
Maximum	206,000	227,00	244,000	259,000
Non-hazardous C&D forecasts				
Minimum	164,000	181,000	195,000	207,000
Maximum	174,000	192,000	207,000	220,000
Non-hazardous C&D recovery				
Assumed recovery target of 70% for non-hazardous C&D waste	70%	70%	70%	70%
Recovery capacity required				
Minimum (tonnes)	114,800	126,700	136,500	144,900
Maximum (tonnes)	121,800	134,400	144,900	154,000
Maximum required if the current UK recovery rate of 90% for non-hazardous C&D is maintained	90%	90%	90%	90%
Recovery capacity required				
Minimum (tonnes)	147,600	162,900	175,500	186,300
Maximum (tonnes)	156,600	172,800	186,300	198,000
Non-hazardous C&D landfill				
Maximum allowed landfill assuming 70% of non-hazardous C&D is recovered	30%	30%	30%	30%
Landfill capacity required				
Minimum (tonnes)	49,200	54,300	58,500	62,100
Maximum (tonnes)	52,200	57,600	62,100	66,000

Maximum required if the current UK recovery rate of 90% for non-hazardous C&D is maintained	10%	10%	10%	10%
Landfill capacity required				
Minimum (tonnes)	16,400	18,100	19,500	20,700
Maximum (tonnes)	17,400	19,200	20,700	22,000
Note: There is a high level of uncertainty associates with CD&E wastes estimates and forecasts. See section 4.4 for further explanation.				

6.4.5 Section 3.1 identifies that there is treatment/recovery capacity available for handling CD&E waste, with annual permitted capacity (in 2016) of:

- 58,000 tonnes for the deposit of waste to land (recovery);
- 75,000 tonnes of soil production; and
- approximately 100,000 tonnes of physical treatment capacity, although it should be noted that one site with 75,000 tonnes of permitted capacity has accepted less than 200 tonnes per annum for the last 3 years.

6.4.6 However, it is difficult to isolate the treatment capacity required for CD&E waste as some of the CD&E waste will be:

- handled at facilities which also receive LACW and C&I waste e.g. household, commercial and industrial transfer stations;
- handled at exempt facilities/sites; or
- processed at the site of production by mobile screening, crushing and grading equipment.

6.4.7 In terms of exemption facilities/sites, there are over 320 U1 exemptions (Use of waste in construction) registered in Herefordshire, which can be an outlet for CD&E wastes. However, these exemptions cannot be considered as a guaranteed capacity to manage CD&E wastes because:

- some exemption could be short term but remain on the register for 3 years; or
- in terms of on-farm exemptions (which account for almost 100% of the U1 exemptions) the need for material may be periodic, e.g. for the repair of farm tracks, and the exemption has been registered just in case material is required.

6.4.8 If it is assumed that half the U1 exemptions are active in any given year and the tonnage received at each exemption ranges from 100 to 1,000 tonnes, the registered exemptions could provide between 18,000 to 180,000 tonnes of recovery capacity. As highlighted in section 5.4, it is considered unlikely, given the rural nature of Herefordshire, that arisings in the region of 200,000 tonnes (the upper end of the range) of excavation waste would be produced every year.

6.4.9 Based on this assessment the following capacity demand for CD&E waste should be considered:

- Recovery (including recycling and re-use): 140,000 to 160,000[32] tonnes per annum through permitted and exempt facilities/sites, although this is potentially covered by the existing facilities and exemptions, for example the use of waste under U1 exemptions would be considered as recovery and over 40,000 tonnes is handled at permitted physical treatment and waste transfer/treatment facilities.
- Landfill: 15,000 to 70,000 tonnes per annum, depending on the level of recovery achieved; and
- For any developments that will generate significant quantities of excavation waste, the developer would need to demonstrate that there is sufficient capacity to handle the proposed arisings e.g. through backfilling or quarry restoration.

6.4.10 It is likely that some thought will need to be given to identifying strategic locations for the future management of non-hazardous CD&E waste.

6.5 Agricultural Waste

6.5.1 It is estimated that small quantities of non-natural agricultural waste are generated in Herefordshire, between 6,000 to 8,000 tonnes. This waste will consist of materials such as used oils, scrap metal, paper, cardboard and plastic wastes etc. much of which will be captured in the C&I waste estimates. These wastes will be coded under LoW Chapters 13, 15 and 16 and consequently the agricultural element cannot be differentiated.

6.5.2 Future waste arisings will be dictated by the nature of agricultural activity within Herefordshire. However, as highlighted in the River Wye Special Area of Conservation Nutrient Management Plan produced by the Environment Agency and Natural England, it is not possible to predict the future when it comes to agriculture in the River Wye catchment.

6.5.3 Therefore, it is assumed that the non-natural agricultural waste will remain in the range of 6,000 to 8,000 tonnes and that the amount of natural agricultural waste which is managed at permitted facilities will be dictated by the development of on-farm AD systems. Between 2014 and 2016, there were six planning permissions granted for AD systems. These are not listed as permitted facilities in the 2016 Environment Agency data, and so have the potential to increase the anaerobic digestion capacity in the county in the future.

6.5.4 If manures and slurries are not used appropriately within a farm there is the potential for over-application of nitrogen and other minerals, and also for potential impacts upon water resources. On-farm AD systems provide a method of managing such materials and the digestate produced has a lower biological oxygen demand that can be used as a more uniform, easily calibrated fertiliser than the original untreated manure[33].

6.5.5 The very low tonnages forecast to arise indicate that agricultural wastes should continue to be appropriate managed by the private sector; the MWLP does not need to identify strategic locations for its management.

[32] The reference to 170,000 tonnes in the WNA 2017 was erroneous and should have been 160,000 tonnes.

[33] Defra, Anaerobic Digestion Strategy and Action Plan, 2011

6.6 Hazardous Waste

6.6.1 Small quantities of hazardous waste are generated within Herefordshire, 10,500 tonnes in 2015 and 8,000 tonnes in 2016 (a very small fraction of the 4 million tonnes consigned in England)[34].

6.6.2 Whilst there is a legal requirement for England to have in place a range of facilities for the recovery of hazardous wastes, this is a national requirement that is not cascaded down to local authorities. The Government's considers that the waste industry has the expertise necessary to determine where infrastructure should be located and the most appropriate technologies to use[35]. In part this recognises that there is a need to account for economies of scale, as treatment facilities will only be economically viable above a certain capacity. Whilst this principle holds true across all waste management facilities, it is particularly relevant to hazardous waste as this is normally generated in very small tonnages at any one location. Furthermore, the cumulative effect of a number of smaller facilities, may, in some cases, be larger than those for one large facility[36].

6.6.3 The National Policy Statement for Hazardous Waste: A framework document for planning decisions on nationally significant hazardous waste infrastructure was published in June 2013 (the Hazardous Waste NPS). It sets out policy for nationally significant infrastructure projects that comprise:

- final recovery/disposal hazardous waste facilities with a permitted hazardous waste throughput capacity in excess of 30,000 tonnes per annum; or
- hazardous waste landfill or deep storage facility with a permitted hazardous waste throughput or acceptance capacity in excess of 100,000 tonnes per annum; or
- alterations to existing plant with an increase in capacity of 30,000 tonnes per annum or 100,000 tonnes for landfill.

6.6.4 The Hazardous Waste NPS does not preclude the provision of smaller scale facilities and applications for developments below the thresholds will continue to be considered by waste planning authorities under the existing planning system. However, the policy set out in the NPS may be a material consideration when determining any such application.

6.6.5 In conclusion, there would not appear to be a need for the MWLP to identify strategic locations for the management of hazardous waste within Herefordshire. Due to the location of the county, it is unlikely to be a destination chosen for a nationally significant infrastructure project, whilst smaller facilities should be capable of being accommodated on industrial estates and similar locations.

6.7 Summary of Capacity Requirements

6.7.1 Table 6.6 summarises the key capacity requirements concluded from the assessment for each waste stream.

[34] Waste Management Plan for England, December 2013

[35] Principle 2 of the Strategy for Hazardous Waste Management in England, 2010

[36] National Policy Statement for Hazardous Waste: A framework document for planning decisions on nationally significant hazardous waste infrastructure, Defra, June 2013

Table 6.6 Summary of key points from capacity need assessment

Waste Stream	Capacity Need Assessment – Key Points
Local authority collected waste	Permitted capacity within the county is limited to facilities that offer transfer with basic treatment or provide biological treatment; there is no residual waste treatment or disposal capacity such as MBT, RDF production, incineration (with or without energy recovery) or landfill. Herefordshire Council has historically worked with Worcestershire County Council to manage effectively the authorities' LACW. This collaboration has resulted in the production of a Joint Municipal Waste Management Strategy and joint procurement of strategic waste management capacity. Whilst these facilities are not located in Herefordshire, long term capacity is available to manage Herefordshire's LACW. However, the available capacity at these sites needs to be monitored as there may be pressure on the current contracted capacity towards the end of the Plan period. In addition, if the separate collection of bio-waste for recycling becomes a requirement, capacity would be necessary to handle separately collected food and garden waste. There is currently significant capacity at biological treatment facilities in Herefordshire, which should be sufficient capacity to handle separately collected local authority collected bio-waste.
Commercial and industrial waste	There is transfer with basic treatment, metal recycling and biological treatment capacity within Herefordshire, with the biological treatment facilities receiving over 25,000 tonnes of waste from the food and drink production sector in 2016. However, there is no residual waste treatment or disposal capacity such as MBT, RDF production, energy from waste or landfill facilities. The treatment/disposal of residual C&I waste is reliant on facilities outside Herefordshire. The assessment suggests that by 2035, depending on the levels of recycling and composting achieved 50,000 to 65,000 tonnes of residual C&I waste treatment/disposal capacity could be required, if the assumed targets are applied to the whole C&I waste stream. However, there is a notable degree of uncertainty in the C&I waste estimates and forecasts that makes assessing the future capacity need for C&I waste particularly difficult.
Construction, demolition and excavation waste	Like C&I waste, there is a notable degree of uncertainty in the CD&E waste estimates. This is recognised by Defra, who in their December 2016 Statistics on Waste Notice state '*Accurately quantifying C&D waste is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, there is not a significant impact on the final recovery rate*.' Based on this assessment the following capacity demand for CD&E waste should be considered:

Waste Stream	Capacity Need Assessment – Key Points
	Recovery (including recycling and re-use): 140,000 to 160,000 tonnes per annum through permitted and exempt facilities /sites, although this is potentially covered by the existing facilities and exemptions, for example the use of waste under U1 exemptions would be considered as recovery and over 40,000 tonnes is handled at permitted physical treatment and waste transfer/treatment facilities. Landfill: 15,000 to 70,000 tonnes per annum, depending on the level of recovery achieved; and For any developments that will generate significant quantities of excavation waste, the developer would need to demonstrate that there is sufficient capacity to handle the proposed arisings e.g. through backfilling or quarry restoration. It is likely that some thought will need to be given to identifying strategic locations for the future management of non-hazardous CD&E waste.
Agricultural waste (non-natural)	It is estimated that small quantities of non-natural agricultural waste are generated in Herefordshire, between 6,000 to 8,000 tonnes. Based on this level of generation, non-natural agricultural wastes should continue to be appropriately managed by the private sector; the MWLP does not need to identify strategic locations for its management. On-farm anaerobic digestion provides a method of managing manures and slurries and the ongoing development of on-farm AD systems should be considered in the Minerals and Waste Local Plan.
Hazardous waste	Small quantities of hazardous waste are generated within Herefordshire, 10,500 tonnes in 2015 and 8,000 tonnes in 2016 (a very small fraction of the 4 million tonnes consigned in England). In general, hazardous waste treatment and disposal facilities are considered at a national level because of the need to account for economies of scale. This is reflected in the Hazardous Waste NPS which requires final recovery/disposal hazardous waste facilities with capacity in excess of 30,000 tonnes per annum to be considered as nationally significant infrastructure projects. Therefore, based on the small quantities generated in Herefordshire, there would not appear to be a need for the MWLP to identify strategic locations for the management of hazardous waste within Herefordshire. Due to the location of the county, it is unlikely to be a destination chosen for a nationally significant infrastructure project, whilst smaller facilities should be capable of being accommodated on industrial estates and similar locations.

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