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1 Introduction

1.1 The following report is an update of the waste data evidence report that was published in December 2013, and uses the latest waste data held by the Environment Agency's Waste Data Interrogator (WDI), which provides data on inputs to permitted waste sites for 2014. The report is a compilation of the waste data that is available, and looks at the following:

- Total waste arisings;
- Waste imports;
- Waste flows;
- Waste exports;
- Waste projections;
- Capacity of waste facilities;
- Future waste capacity requirements.

1.2 There are a number of different waste streams, and these are described below:

Table 1.1 Waste Types

Waste Type	Description
Local Authority Collected Waste (LACW) (1)	Includes all household wastes, street litter, waste delivered to Council recycling points, Council office waste, Household Waste Recycling Site waste, and some commercial waste from shops and smaller trading estates where local authority waste collection agreements are in place.
Commercial & Industrial (C&I)	Commercial - Waste arising from premises that are used wholly or mainly for trade, business, sport, recreation or entertainment. (Note - If a local authority has waste collection agreements in place it will be classed as MSW). Industrial - Waste arising from factories and industrial plants.
Construction, Demolition & Excavation (CD&E)	Waste arising from construction, maintenance, and demolitions of buildings, roads and other structures.
Hazardous	Previously known also as 'Special waste', Hazardous wastes pose a greater risk to the environment and human health and are therefore subject to a strict control regime.
Waste Water	Water and Solids flowing to a sewage treatment plant operated by a water company.
Agricultural	Waste arising from farms

1. LACW was formerly referred to as Municipal Solid Waste (MSW)

1.3 The main focus of the Local Plan is on the following waste streams:

- Local Authority Collected Waste (LACW);
- Commercial and Industrial (C&I) waste;
- Construction, Demolition & Excavation (C,D&E) waste; and
- Hazardous Wastes.

1.4 The Local Plan will not be allocating sites for agricultural waste therefore only a summary of arisings will be presented in the report; in terms of waste water, Yorkshire Water are a statutory consultee

and will provide comments on the overall Local Plan alongside any future revisions of the Local Plan's Infrastructure Delivery Plan (IDP) therefore all the subsequent analysis will not include this type of waste.

Waste Imports

1.5 Chapter 2 provides a detailed breakdown of wastes that are imported into Calderdale, including the types of waste, how the waste is dealt with, and the origins of the waste.

Waste Flows

1.6 Chapter 3 provides analysis on the types of waste input to the different types of permitted sites, as well as the different outputs from permitted facilities.

Waste Exports

1.7 Chapter 4 sets out the types of waste exported from Calderdale, as well as the destinations and the fate of the exported waste.

Establishing Waste Arisings

1.8 Of the available data on the different waste types, other than LACW and Hazardous Wastes, recorded arisings and projections of other waste types remain difficult to collect. The Environment Agency's 'Waste Data Interrogator' (WDI) has improved the situation greatly, as this database provides the largest range of recorded inputs of waste into permitted sites; this report analyses the most recent version which provides data from 2014. As the Local Plan is prepared, this report will be updated as and when the subsequent years data become available. It is important to note however that all data provided by the WDI is based on information on returns from permitted sites, and therefore does not include wastes that were dealt with by exempt sites, wastes that were disposed of illegally, or wastes that went directly for recycling, recovery or export.

1.9 Apart from hazardous waste, which has a separate WDI, it is not possible to separate out the different types of waste in the WDI in terms of inputs to permitted sites - there are no specific LACW, C&I, and CD&E categories; therefore, apart from certain estimates, it is not possible to breakdown the arisings and recorded inputs into the different waste types as set out above.

1.10 A detailed analysis of waste arisings is provided in Chapter 5.

Future Waste Projections

1.11 For LACW, the projected arisings have been calculated using data from the council's Waste Management team alongside future levels of housing growth.

1.12 The first editions of the WDR have relied on the regional report carried out by Urban Mines[1] as a basis for the C&I projection forecast, however, given the length of time that has passed since this document, it was considered appropriate to develop another set of C&I projections. The 2009 Urban Mines study used the waste per employee (by industry classification) to estimate the C&I projections, with employee numbers based on the Regional Econometric Model (REM). In order to provide an updated estimate for C&I waste, the 2013 REM employee projections were applied to the waste per employee figure from the original Urban Mines figure to arrive at a new set of estimated C&I projections. More details on the C&I projections is given in Section 6.

1 Urban Mines Yorkshire & Humber Commercial & Industrial Waste Projections 2006 - 2026, 2009

1.13 Both the CD&E and Hazardous Waste projections are based on a report prepared for the Regional Spatial Strategy[2]

1.14 Further details on waste projections is in Chapter 6.

Future Waste Capacity Required

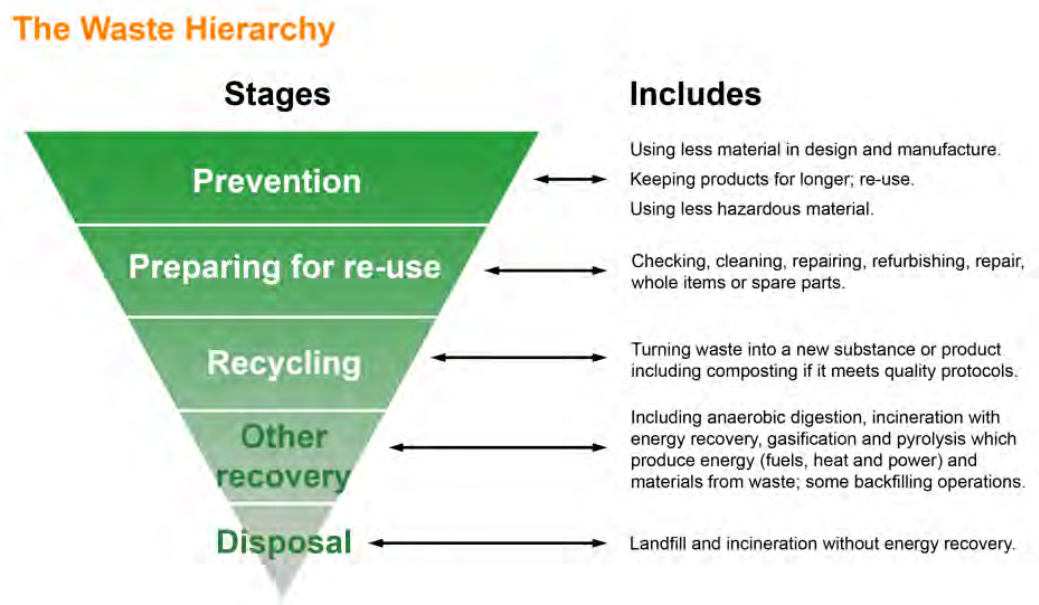
1.15 The capacity data is provided by the Environment Agency, which holds information on the permitted capacities of all licenced waste facilities in Calderdale; this information is compared to the projected arisings to arrive at the estimated surplus or shortfalls in the different types of waste capacities in the future. From this, the Local Plan will include policies to deal with the waste issues in Calderdale.

1.16 Further details on both existing capacity and future capacity requirements can be viewed in Chapters 7 and 8 respectively.

Waste Planning Policy

1.17 At a European level, there are a number of directives that influence waste planning policy, such as the EU Landfill Directive, which introduced measures that required more and more waste to be diverted from disposal in landfill, and the EU Waste Framework Directive, which introduced the concept of the Figure 1.1 'Waste Hierarchy' sets out the preferred methods for dealing with waste, prevention being the most preferred option:

Figure 1.1 Waste Hierarchy



Source: Government Review of Waste Policy in England 2011, Defra

1.18 At a national level, the EU directives and associated targets that set the context for waste management are transposed through the National Waste Management Plan for England (2013) and the Waste (England and Wales) Regulations 2011. The regulations repeat the targets set out in the EU directives for diverting MSW from landfill and associated recycling and recovery levels, which are as follows:

- Recycling & Composting of Household Waste:
  - 50% by 2020.

2 A Report by Enviros Consulting Limited, Government Office for Yorkshire and the Humber, Waste Arisings Forecasting, June 2007

1.19 In addition, targets for reducing the amount of Biodegradable Municipal Waste (BMW)[3] landfilled have been set as follows:

- By 2020 to reduce BMW landfilled to 35% of that in 1995.

1.20 National Planning Policy for Waste ('NPPW', CLG, 2014) is the key national planning policy document which establishes key planning principles, including delivering the waste hierarchy, addressing waste as a resource, and viewing disposal as the last option, but one which must be adequately catered for. The NPPW alongside the Waste Management Plan for England (2013) form the National Waste Management Plan.

1.21 The Local Plan will contain specific planning policies on waste. This report will provide analysis on the movement and deposit of waste in and out of the district, in order that sufficient land can be allocated to manage the waste arisings and will also inform the development of policies. The next consultation on the Local Plan will be in the second part of 2016.

Overall Waste Arisings

1.22 Waste that originated within Calderdale and was treated within the district totalled 250,648 tonnes, whilst the district imported some 172,646 tonnes. Therefore the total waste dealt with by permitted sites in Calderdale for the year 2014 is estimated to have been 423,295 tonnes. In the same year, the EA data shows that 53,711 tonnes of waste was exported from Calderdale, which means that the total waste handled at some stage in 2014 in Calderdale was 477,006 tonnes.

1.23 The following table compares the waste arisings in the period 2007 to 2014.This shows that the total tonnages of wastes dealt with by Calderdale (irrespective of where they are treated or disposed of) have increased between 2007 and 2014, although 2014's total is lower than 2012 and 2013. **Note** : table shows totals with Flint Street, Kirklees removed from (A) Flint Street inputs attributed as exports from Kirklees to Calderdale amount to 4770 tonnes - Only need to remove from imports (i.e. From Kirklees to Calderdale) as they do not affect exports.

Table 1.2 Waste Arisings 2007-2014

	2007 (tonnes)	2008 (tonnes)	2009 (tonnes)	2010 (tonnes)	2011 (tonnes)	2012 (tonnes)	2013 (tonnes)	2014 (tonnes)
A) Calderdale Home Arisings Dealt within Calderdale	196,783	182,377	191,645	210,843	246,287	261,803	258,122	250,648
B) Calderdale Imported Wastes	155,595	102,248	245,059	166,830	136,859	180,574	227,657	172,646
C) Total waste dealt with by permitted sites in Calderdale (A+B)	352,377	284,625	436,704	377,673	383,147	442,377	485,778	423,295

3 Waste collected by the Waste Collection Authority, including trade wastes and Civic Amenity Wastes. Material that can be broken down usually by micro-organisms into basic elements. The Government declared that municipal waste is 68% biodegradable. Calderdale MBC Municipal Waste Management Strategy 2006.

	2007 (tonnes)	2008 (tonnes)	2009 (tonnes)	2010 (tonnes)	2011 (tonnes)	2012 (tonnes)	2013 (tonnes)	2014 (tonnes)
D) Calderdale Exported Wastes	111,514	131,594	67,832	78,474	85,314	57,390	59,386	53,711
E) CMBC Total Waste Handled (C+D)[1]	463,891	416,219	504,536	456,147	468,460	499,767	545,164	477,006

1. Totals may not sum due to rounding up

Source: Environment Agency Waste Data Interrogator 2007 - 2014

1.24 In terms of waste dealt within Calderdale (home arisings dealt with in the district + imported wastes) the table illustrates that compared to years 2007 and 2008, the last five years with available data show an increase in the levels of waste dealt within Calderdale. Levels of exports have fluctuated significantly over the period, with 2008 experiencing the highest levels overall, and 2014 showing the lowest levels.

2 Waste Imports

2.1 In 2014, according to Environment Agency's Waste Data Interrogator (WDI), of the 423,295 tonnes of waste that was deposited in permitted waste facilities in Calderdale, 172,646 tonnes were imported wastes. Of the total imports, 34% did not have a recorded origin at local authority level, although 16% were recorded as originating from within the Yorkshire and Humber region. In all, imports in 2014 were approximately 50,000 tonnes down on the previous year.

2.2 The most common origins of the imported wastes were as follows:

- Kirklees (23%);
- No recorded origin within Yorkshire & Humber (16%);
- No recorded origin within the North East (14%);
- Wigan (14%);
- Lancashire (10%)

2.3 In 2014 the most common type of imported waste was classed as 'Animal and Mixed Food Waste', with 'Soils' and 'Construction and Demolition Wastes' also figuring prominently. The main types and percentage of total wastes imported into the district they represented in 2014 were as follows:

- Animal and Mixed Food Waste (31%)
- Soils (22%)[4]
- Construction and Demolition Wastes (19%)
- Household and Similar Wastes (16%)

Imports by Fate

2.4 In terms of the methods for dealing with imported wastes the table below sets out the most common destination within Calderdale for imported wastes were treatment sites, with both 'Landfill' and 'Use of Waste' sites both accepting significant levels of imported wastes. Since 2010, there has been a gradual reduction of imports ending up at landfill, reducing from 28% to 19% in 2014.

Table 2.1 Destination for Imported Waste 2014

Site Category	Imports 2014 (tonnes)	% of total imports
Treatment	98,882	57%
Use of Waste	24,190	14%
Transfer	7,827	5%
Landfill	32,000	19%
MRS	9,747	6%
On/In Land	-	-
Total	**172,646**	

Source: Environment Agency Waste Data Interrogator 2014

4 This classification was not available in the 2010 WDI, therefore in 2007-2010 it was likely that this would have been included in the 'Naturally Occurring Minerals' waste category, which would also explain the sharp drop in this type of waste

Types of Waste Imported by Site Category

2.5 In terms of the types of imported waste deposited in 2014, 31% was classed as 'Animal and Mixed Food Waste', with 22% being categorised as 'Soils'. This repeats the pattern of the previous four years when these categories of waste were the most common types of imports. The other waste types of note imported in 2014 were 'Construction and Demolition Wastes' (19%), and 'Household and Similar Wastes' (15%).

2.6 In 2014, by far and away the most common type of imported waste deposited at treatment facilities was classed as 'Animal and Mixed Food waste', which accounted for 55% of imports to this kind of facility. 'Household and Similar Wastes' accounted for 21% of imports deposited at treatment facilities, with the other waste types of note being 'Construction and Demolition Wastes' (15%). Comparing like for like against previous years is somewhat difficult given the new types of waste categories that were introduced in 2011.

2.7 There were only 2 types of waste deposited at 'Use of Waste' sites, 'Construction and Demolition Wastes' was the most common (76%) with the remainder being classed as 'Soils'. There were no recorded imports to the On/In land site category. All wastes imported to landfill was classed as 'Soils'.

2.8 Unsurprisingly, in terms of inputs to Metal Recycling Sites (MRS), 59% of imports were classed as 'Mixed Ferrous and Non-Ferrous Metals', with 34% being classed as 'Ferrous Metal Wastes'.

3 Waste Flows

3.1 This section provides analysis of the flow of waste through permitted sites in Calderdale, reviewing the types of waste input to the different types of facilities, as well as what happens to the outputs from these facilities. The data used for this analysis is again from the Environment Agency's Waste Data Interrogator (WDI).

Inputs

3.2 The total recorded inputs for 2014 to permitted waste facilities in Calderdale are listed below.

3.3 In 2014, treatment facilities dealt with the highest tonnages (37%), with transfer facilities (29%), and landfill (23%) also dealing with significant quantities. This was a slight change to the pattern of previous years, as transfer facilities had accepted the highest levels of inputs between 2010 and 2013. Tonnages input to treatment facilities continued to increase, whilst tonnages to landfill increased when compared with the previous two years of reporting.

3.4 Inputs to MRS facilities remained around the 16,000 tonnes mark, whilst waste deposited at facilities classed as 'Use of Waste' reduced significantly by approximately 60,000 tonnes less than the 2013 figure. There were no recorded inputs to 'On/In land' facilities in 2014, reflecting the temporary nature of this type of facility.

Table 3.1 Inputs to Permitted Waste Facilities 2014

Site Category	Inputs 2014 (tonnes)	%
Transfer	124,568	29
Treatment	158,287	38
Landfill	96,000	23
MRS	15,843	4
On / In Land	-	
Use of Waste	28,597	7
Totals	**423,295**	

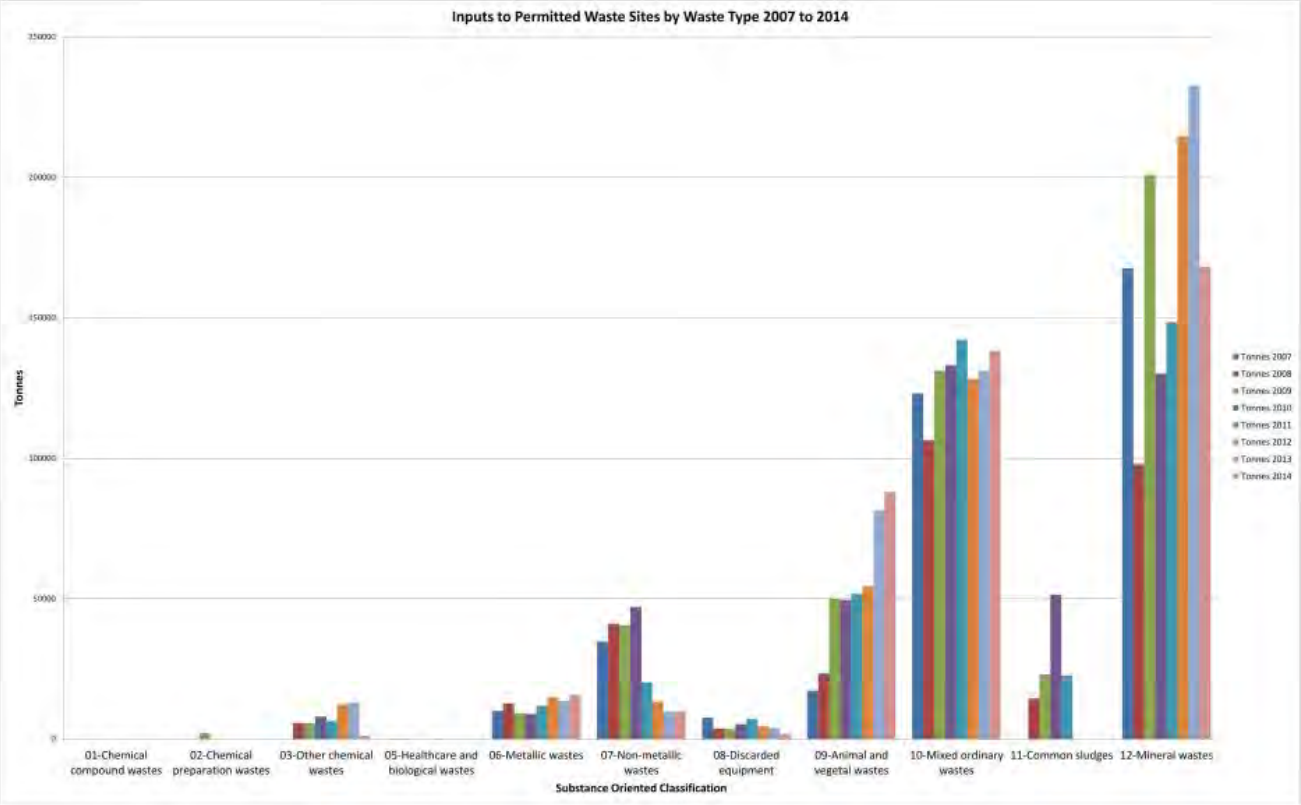
Source: Environment Agency Waste Data Interrogator 2014. Totals may not sum due to rounding up.

Inputs by Site by Waste Type

3.5 Overall, the 2014 data shows that the two main waste types input to waste facilities in Calderdale were classed as 'Mineral Wastes' and Mixed Ordinary Wastes (including 'Mixed Wastes')', which as the chart below shows, repeats the picture of the previous years. When reviewing individual site categories, the waste types are split down to the next level of reporting[5] to give a more detailed breakdown of inputs, as 'Mineral Wastes' include waste types such as 'Soils', whilst 'Non Metallic Wastes' include glass and plastic wastes;

5 Types of waste are split into three levels of reporting, each level being more specific that the previous level. This is known as the Substance Oriented Classification, or 'SOC' For the purposes of this report analysis uses either SOC level 1 or 2.

Figure 3.1 Inputs by Waste Type 2007 - 2014



3.6 In terms of inputs to transfer facilities, 88% of recorded inputs were classed as 'Household and Similar Wastes'; of the other waste categories, only 'Vegetal' wastes (7%) were of note. In relation to treatment facilities, 42% of recorded inputs were classed as 'Animal and Mixed Food Wastes', with other categories of note being 'Construction and Demolition Wastes' (21%) and 'Household and Similar Wastes (17%). All inputs to Landfill were classed as 'Soils', whilst Metal Recycling Sites inputs were mainly comprised of 'Metal Wastes Ferrous' (48%) and 'Metal Wastes, Mixed Ferrous and non-ferrous' (36%). Use of Waste inputs consisted of 'Construction and Demolition Wastes' (64%) and 'Soils' (36%).

Inputs by Facility Type

3.7 Within each of the site categories, there are a number of individual types of sites as follows:

- Metal Recycling Sites (MRS)
    - These include sites dealing with cars (Car Breakers, End of Life Vehicle Sites) and other Metal Recycling Sites (Scrap Yards etc).
- Treatment facilities
    - These sites include Composting, Physical-Chemical (facilities that treat waste by physical or chemical means in order to prepare for disposal or recovery e.g. Photographic chemicals processing, waste water treatment etc.), and Material Recycling Facilities (MRF), where recyclable wastes are separated and sorted prior to reprocessing.

- Transfer Facilities
  - These include the council's Household Waste Recycling Sites, and other private sites which bulk up waste prior to forwarding elsewhere for disposal or treatment.
- Landfill
  - Disposal of waste into land. Can include inert waste, such as soils and rubble, as well as Household and Commercial wastes.
- On / In Land
  - These could be classed as lagoons or land recovery facilities.
- Use of Waste
  - These could be classed as land reclamation sites or sites where waste is used in construction.
- The following tables split the inputs by the individual types of each site category.

Table 3.2 Inputs to Metal Recycling Sites 2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Totals (Tonnes)
Metal Recycling Site (MRS)	Car Breaker	Metal Recycling	Vehicle Depollution Facility	End of Life Vehicle (ELV) Facility		
Tonnes	803	14,510	525	5		**15,843**

Source: Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

Table 3.3 Inputs to Treatment Facilities 2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Totals (Tonnes)
Treatment	Composting	Physical -Chemical Treatment	Material Recycling Facility	Inert Waste Transfer/ Treatment	Non - Hazardous Waste Transfer/ Treatment	WEEE [1] Treatment Facility	Physical Treatment	
Tonnes	77,230	17,812	13,982	34,465	13,861	710	226	**161,028**

1. Waste Electrical and Electronic Equipment

Source: Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

Table 3.4 Inputs to Transfer facilities 2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Totals (Tonnes)
Transfer	Household Waste Recycling Site	Hazardous Transfer	Inert Transfer	Non Hazardous Transfer			
Tonnes	28,492	0	0	93335			**121,827**

Source: Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

Table 3.5 Inputs to Landfill 2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Totals (Tonnes)
Landfill	Inert Landfill						
Tonnes	96,000						**96,000**

Source: Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

Table 3.6 Inputs to On/In Land facilities 2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Totals (Tonnes)
On/In Land	Land Recovery						
Tonnes	0	0	0	0	0	0	**0**

Source: Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

Table 3.7 Inputs to Use of Waste facilities 2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Totals (Tonnes)
Use of Waste	Reclamation	Construction					
Tonnes	28,597	-					**28,597**
				Total Inputs to Permitted Facilities 2014			**423,295**

Source: Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

3.8 The next set of tables compare the inputs over the reporting period 2007-2014, to identify any significant differences in tonnages. The first table looks at Metal Recycling Sites (MRS) inputs.

Overall tonnages into MRS sites were the highest since 2008. The first two years of the reporting period remain the years with the highest recorded inputs.

Table 3.8 Inputs to Metal Recycling Sites 2007-2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Totals (tonnes and % v 07,08,09,10, 11,12, 13 &14)
Metal Recycling Sites (MRS)	Car Breaker	Metal Recycling	End of Life Vehicle (ELV) Facility	Vehicle Depollution Facility	
Tonnes 2014	803	14,510	5	525	15,843
Tonnes 2013	1,106	13,365	0	229	14,700
% + or - v 2013	-27	9	100	129	8
Tonnes 2012	1,897	13,547	32	1	15,477
% + or - v 2012	-58	7	-84	>100	2
Tonnes 2011	3,492	11,939	0	79	15,509
% + or - v 2011	-77	22	100	>100	2
Tonnes 2010	1,824	9,549	0	0	11,373
% + or - v 2010	-56	52	100	100	39
Tonnes 2009	1,335	10,073	0	0	11,408
% + or - v 2009	-40	44	100	100	39
Tonnes 2008	1,766	14,248	50	0	16,064
% + or - v 2008	-55	2	-90	100	-1
Tonnes 2007	3,176	14,173	113	0	17,461
% + or - v 2007	-75	2	-96	100	-9

Source for Inputs: Environment Agency Waste Data Interrogator 2007-2014. Figures may not sum due to rounding

3.9 Inputs to Metal Recycling Sites were unsurprisingly dominated by 'Metal Wastes Ferrous' (48%) and 'Metal Wastes, Mixed Ferrous and non-ferrous' (36%).

Treatment Inputs

3.10 In terms of overall trends in treatment inputs, recorded inputs in 2014 were the highest of the reporting period, approximately 11,000 tonnes up on 2013 and significantly up on any of the previous years. Inputs to Material Recycling Facilities increased by nearly three times compared to the previous year, and inputs to Non Hazardous Waste Transfer / Treatment Facilities increased eight fold, although although trends in these facilities are difficult to establish as a result of reporting categories changing during this period. There was however a reduction in levels recorded at Physical Chemical Treatment Facilities alongside Inert Waste Transfer / Treatment Facilities.

3.11 In terms of the most common categories of wastes input to treatment facilities, since 2011 the most common type has been 'Animal and Mixed Food Wastes'; in 2014 this represented some 42% of treatment inputs. Other types of waste forming significant inputs to treatment facilities in 2014 were 'Construction and Demolition Wastes' (21%), with 'Household and Similar Wastes' (17%).

Table 3.9 Inputs to Treatment Facilities 2007-2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Facility Type	Totals (tonnes and % v07,08, 09,10,11,12, 13 &14)
Treatment	Composting	Physical Chemical Treatment	Material Recycling Facility	Inert Waste Transfer/ Treatment	Non Hazardous Waste Transfer/ Treatment	WEEE	Physical Treatment	
Tonnes 2014	77,230	17,812	13,982	34,465	13,861	710	226	**158,287**
Tonnes 2013	72,802	20,377	3,724	47,294	1,487	1,438	135	**147,256**
% + or - v 2013	6	-13	275	-27	832	-51	67	**7**
Tonnes 2012	42,961	10,664	2,447	38,715	1,661	2,029	0	**98,477**
% + or - v 2012	80	67	471	-11	734	-65	100	**61**
Tonnes 2011	40,750	25,334	4,119	20,888	3,423	2,470	0	**96,984**
% + or - v 2011	90	-30	239	65	305	-71	100	**63**
Tonnes 2010	38,608	30,263	2,988	2,859	2,048	1,807	0	**78,573**
% + or - v 2010	100	-41	368	1105	577	-61	100	**101**
Tonnes 2009	38,843	30,185	2,501	0	0	0	0	**71,529**
% + or - v 2009	99	-41	459	100	100	100	100	**121**
Tonnes 2008	19,167	58,806	3,883	0	0	0	0	**81,856**
% + or - v 2008	303	-70	260	100	100	100	100	**93**
Tonnes 2007	12,208	55,881	4,455	0	0	0	0	**72,543**
% + or - v 2007	533	-68	-16	100	100	100	100	**162**

Source for Inputs: Environment Agency Waste Data Interrogator 2007- 2014. Figures may not sum due to rounding

Inputs to Transfer Facilities 2007-2014

3.12 Overall, inputs to transfer facilities in 2014 were down by near 20% slightly up on the previous year. In terms of Civic Amenity waste facilities, recorded inputs (apart from 2008) have been generally consistent, and although inputs to Non Hazardous transfer stations were down on all previous years, this type of transfer facility continued to receive the highest levels of recorded inputs of all the different types of transfer facilities, reflecting the pattern of the previous years. There were no recorded inputs to Hazardous Waste Transfer and Inert Transfer facilities in 2014. In terms of inputs to transfer facilities, 88% of recorded inputs were classed as 'Household and Similar Wastes'; of the other waste categories, only 'Vegetal' wastes (7%) were of note.

Table 3.10 Inputs to Transfer Facilities 2007-2014

Site Category	Facility Type	Facility Type	Facility Type	Facility Type	Totals (tonnes and % v 07,08, 09 ,10 ,11, 12,13 &14)
Transfer	Household Waste Recycling Sites	Hazardous Waste Transfer	Inert Transfer	Non Hazardous Transfer	
Tonnes 2014	28,492	0	0	96,076	**124,568**
Tonnes 2013	27,590	0	220	123,851	**151,661**
% + or - v 2013	3	-	-100	-22	**-18**
Tonnes 2012	28,020	0	0	143,216	**171,236**
% + or - v 2012	2	-	-	-33	**-27**
Tonnes 2011	27,748	53	345	153513	**181,659**
% + or - v 2011	3	-100	-100	-37	**-31**
Tonnes 2010	28,975	37	1,635	152,702	**183,348**
% + or - v 2010	-2	-100	-100	-37	**-7**
Tonnes 2009	30,491	35	1,519	143,453	**175,498**
% + or - v 2009	-7	-100	-100	-33	**-2**
Tonnes 2008	19,329	25	2,524	142,986	**164,863**
% + or - v 2008	47	-100	-100	-33	**4**
Tonnes 2007	28,109	40	4,806	121,346	**154,300**
% + or - v 2007	1	-100	-100	-21	**11**

Source for Inputs: Environment Agency Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

Inputs to Landfill Facilities 2007 - 2014

3.13 Recorded inputs to inert landfill were up on the previous year by around 26%. The landfill inputs are managed by a single site in the district. According to the Environment Agency, no inputs to non hazardous landfills have been recorded since 2009, which confirmed the lack of such a suitable site within the district. All inputs to Landfill were classed as 'Soils'.

Table 3.11 Inputs to Landfill 2007-2014

Site Category	Facility Type	Facility Type	
Landfill	Inert Landfill	Non Hazardous Landfill	Totals (tonnes and % v 07,08,09,10 & 11)
Tonnes 2014	96,000	0	**96,000**
Tonnes 2013	76,236	0	**76,236**
% + or - v 2013	26	0	**26**
Tonnes 2012	82,539	0	**82539**
% + or - v 2012	16	0	**16**
Tonnes 2011	69,398	0	**69,398**
% + or - v 2011	38	0	**38**
Tonnes 2010	94,498	0	**94,498**
% + or - v 2010	2	0	**2**
Tonnes 2009	71,160	3,769	**74,929**
% + or - v 2009	35	-100	**28**
Tonnes 2008	1,530	20,312	**21,842**
% + or - v 2008	6,175	-100	**340**
Tonnes 2007	75,176	32,896	**108,072**
% + or - v 2007	28	-100	**-29**

Source for Inputs: Environment Agency Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

Inputs to On / In land Facilities 2009 - 2014

3.14 Inputs to On/In land facilities were significantly down on all previous years where this type of facility was recorded in the inputs data. This reduction is likely to be as a result of development projects that accepted inert wastes as part of the land recovery phase nearing completion. The small amount was entirely made up from 'Soils'.

Table 3.12 Inputs to On/In Land Facilities 2009-2014

Site Category[(1)]	Facility Type	
On/In Land	Land Recovery	Totals (tonnes and % v 09,10,11,12 & 13)
Tonnes 2014	0	**0**
Tonnes 2013	20	**20**

Site Category[1]	Facility Type	
On/In Land	Land Recovery	Totals (tonnes and % v 09,10,11,12 & 13)
% + or - v 2013	-100	**-100**
Tonnes 2012	6,680	**6,680**
% + or - v 2012	-100	**-100**
Tonnes 2011	18,520	**18,520**
% + or - v 2011	-100	**-100**
Tonnes 2010	9,880	**9,880**
% + or - v 2010	-100	**-100**
Tonnes 2009	103,340	**103,340**
% + or - v 2009	-100	**-100**

1. No data for either 2007 or 2008 against this site category

Source for Inputs: Environment Agency Waste Data Interrogator 2009-2014. Figures may not sum due to rounding.

Inputs to Use of Waste Facilities

3.15 In 2014, inputs to 'Use of Waste' facilities totalled 28,597 tonnes, which represented a 70% reduction compared to the previous year, highlighting the temporary nature of such facilities. The two types of waste deposited were classed as 'Construction and Demolition Wastes' (64%) and 'Soils' (36%).

Table 3.13 Inputs to Use of Waste Facilities 2011-2014

Site Category[1]	Facility Type	Facility Type	
Use of waste	Reclamation	Construction	Totals (tonnes and % v 09,10, & 11)
Tonnes 2014	28,597	0	**28,597**
Tonnes 2013	66,465	29,440	**95,905**
% + or - v 2013	-57	-100	**-70**
Tonnes 2012	44,568	23,400	**67,968**
% + or - v 2012	-36	-100	**-58**
Tonnes 2011	5,970	0	**5,970**
% + or - v 2011	1013	100	**379**

Site Category[1]	Facility Type	Facility Type	
Use of waste	Reclamation	Construction	Totals (tonnes and % v 09,10, & 11)
	Total Inputs to Permitted Sites 2014		**423,295**

1. No data prior to 2011against this site category

Source for inputs : Environment Agency Waste Data Interrogator 2011-2014

Outputs

3.16 In addition to inputs to permitted waste facilities, outputs from waste facilities also act as a useful analysis. The following tables therefore present the estimated outputs from Calderdale's permitted waste facilities for 2014.

3.17 The outputs from MRS facilities in 2014 show that 'Recovery' was the most popular output fate, which mirrors the previous 4 years results, with the remainder of outputs not registering any tonnages of note. The total tonnages of outputs from MRS did however increase by ~5% from 2013. There were no incidences of an unknown fate amongst outputs from MRS.

Table 3.14 Outputs from Metal Recycling Sites (MRS) 2014

Site Category	Incinerator	Landfill	Recovery	Transfer	Treatment	Unknown	Total
MRS outputs (tonnes)	0	25	14,900	459	31	0	**15,414**
% of MRS Outputs	0	<1	97	3	<1	0	

Source; Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

3.18 Treatment and recovery were the two most frequent fates of outputs from transfer facilities; 63% of outputs went to treatment facilities, whilst 30 % of outputs went to recovery facilities. This mirrors the 2013 most common outputs from transfer facilities. Only 2% of outputs were directed to other transfer facilities, compared to 15% in 2013, marking a significant reduction of further waste outputs. In 2014, 5% of outputs went to landfill, continuing a sharp fall from the start of the reporting period, when 55% of transfer outputs ended up in landfill. However transfer outputs to landfill didn't significantly reduce from the previous year. The total outputs from transfer facilities in 2014 were the lowest recorded at any time between 2007 and 2014, reducing by ~16% from 2013. There were no incidences of an unknown fate amongst outputs from transfer facilities.

Table 3.15 Outputs from Transfer Facilities 2014

	Incinerator	Landfill	Recovery	Transfer	Treatment	Unknown	Totals
Transfer outputs (tonnes)	143	6,957	39,414	2221	82,879	0	**156,711**
% of Transfer outputs	<1	5	30	2	63	0	

Source: Environment Agency Waste Data Interrogator 2014. Figures may not sum due to rounding

3.19 'Recovery' was the most frequent destination for outputs from Treatment facilities in 2014, accounting for 57% of the outputs, increasing from 52% in 2013. Of the other known fates, incineration accounted for 28%, reducing from 40% in 2013. Landfill however increased from 2013 which accounted for 11% compared to 6% respectively. Transfer and treatment both accounted for <1%. Incidences of 'Unknown Fates' however increased from 1% to 4% from 2013 to 2014. Overall, outputs from treatment facilities consecutively increased to their highest levels recorded during 2007 to 2014.

Table 3.16 Outputs from Treatment Facilities 2014

	Incinerator	Landfill	Recovery	Transfer	Treatment	Unknown	Totals
Treatment Outputs (Tonnes)	39,308	15,219	80,071	170	219	5378	**140,365**
% of Treatment outputs	28	11	57	<1	<1	4	

Source: Environment Agency Waste Data Interrogator 2014 Figures may not sum due to rounding

3.20 The following table illustrates the fate of all outputs from the different types of facility. This shows that in 2014 'Recovery' and 'Treatment' facilities accepted the highest amounts of outputs from permitted sites in Calderdale respectively, mirroring 2013. Total tonnage outputs reduced from 2013 to 2014 by 19,072 tonnes.

Table 3.17 Final Destination of Outputs from all Permitted Sites 2014

	Incinerator	Landfill	Recovery	Transfer	Treatment	Unknown	Total (Tonnes)
Total Output (tonnes)	39,451	22,201	134,384	2849.8	83,129	5378	**287,393**
% of Total Outputs	14	8	47	<1	29	2	

Source: Environment Agency Waste Data Interrogator 2014 Figures may not sum due to rounding

3.21 The overall difference in the tonnages input to MRS, Treatment and Transfer sites and the outputs in 2013 was 11,305 tonnes. As in the previous year, the biggest reduction in terms of inputs and outputs took place in treatment facilities, with outputs being some 17,922 tonnes less than inputs. Transfer facilities saw an increase in terms of outputs compared to inputs; this could be down to the transfer and 'bulking up' operations that these types of facility operate[6]

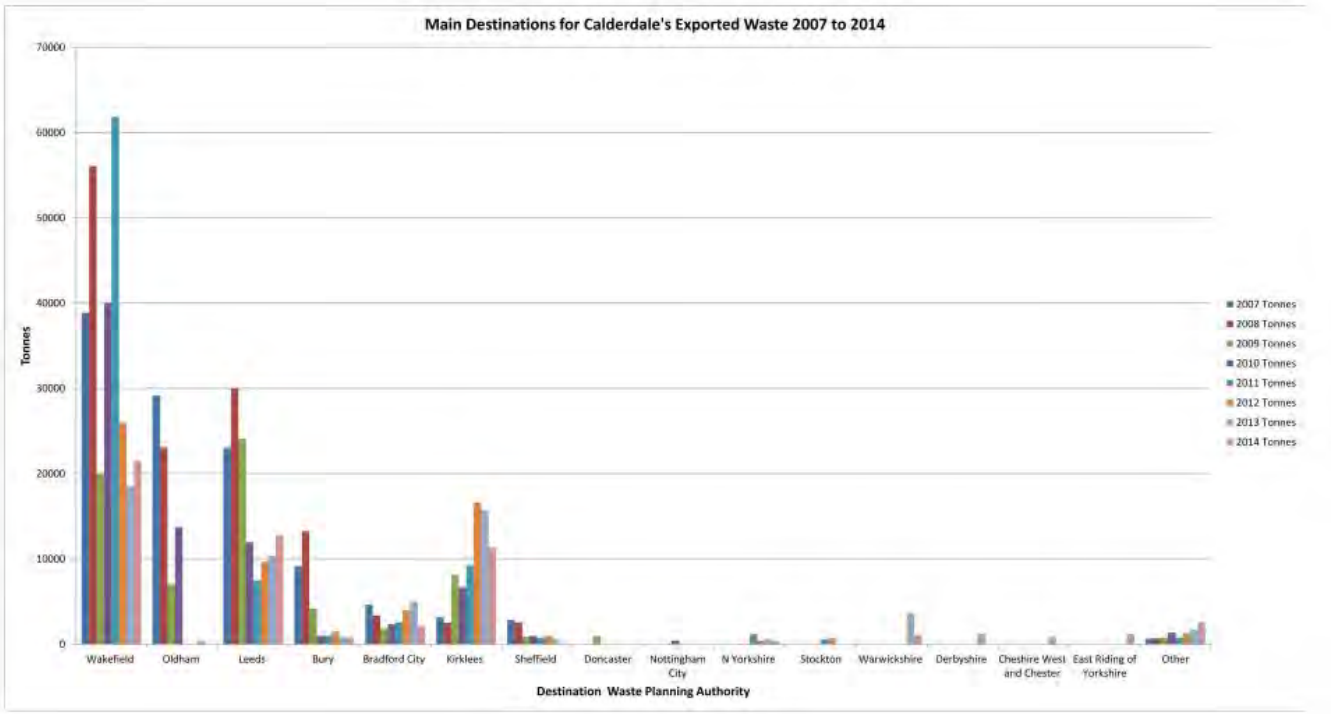
6 The treatment process can reduce the weight of materials, composting for example can reduce the volume of waste inputs by 25%.

4 Waste Exports

4.1 In 2014 the total wastes exported from Calderdale to permitted waste sites was estimated to have been 53,711 tonnes; this was the lowest recorded amount of exports during the reporting period of 2007 to 2014. The areas receiving the highest levels of exports from Calderdale in 2014 were as follows:

- Wakefield (40%)
- Leeds (24%); and
- Kirklees (21%).

Figure 4.1 Main destinations of Calderdale's exported waste 2007 - 2014



Source: Environment Agency Waste Data Interrogator 2007-2014.

4.2 The chart above illustrates the drop in exports from Calderdale, but also that shows that Wakefield and Leeds have consistently received significant levels of Calderdale's exported wastes, with exports to Kirklees also representing a significant amount. Levels of exports to Bury and Oldham have reduced significantly, as a result of the change in destinations for the LACW exported from the district.

4.3 The main types of waste exported in 2014 and the percentage they represented of the total exports are given below;

- Sorting Residues - 25%;
- Wood Wastes - 15%;
- Mixed and Undifferentiated Materials - 12%;
- Paper and Cardboard Wastes - 11%;

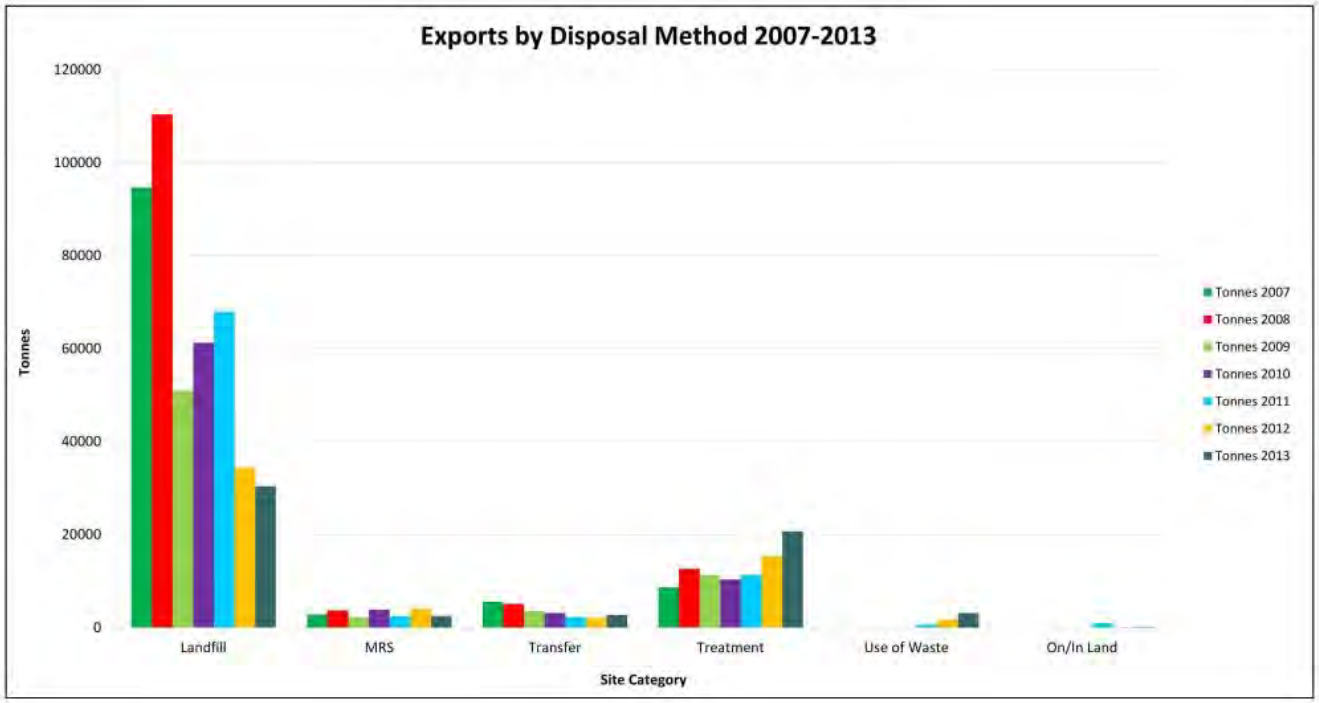
4.4 This repeats the picture in 2013 in terms of the types of waste exported, as 'Sorting Residues' were the most common type. The levels of 'Household and Similar Wastes' have dropped off in the past two years as this category was consistently the most common type of waste exported during the reporting period 2007-2012.

4.5 In terms of the types of wastes exported to the main destinations illustrated in Figure 4.1, these were as following;

- Wakefield - 62% of exports to Wakefield were classed as 'Sorting Residues' with 'Mixed and Undifferentiated Wastes' representing 22%;
- Leeds - 57% of exports to Leeds were classed as 'Wood Wastes';
- Kirklees - 39% of exports to Kirklees were classed as 'Soils', with 38% classed as 'Paper and Cardboard Wastes';

4.6 As regards the types of waste facility accepting exported waste from Calderdale, the following chart illustrates the primary method for dealing with wastes exported from Calderdale in 2014 was landfill, although the levels exported to this type of facility were the lowest in the reporting period. Levels exported to treatment facilities remained relatively stable throughout 2007 to 2012, but in 2013 and 2014 levels increased to around the 20,000 tonne mark. Exports to other categories of site did not represent significant tonnages.

Figure 4.2 Exports by disposal methods 2007 - 2013

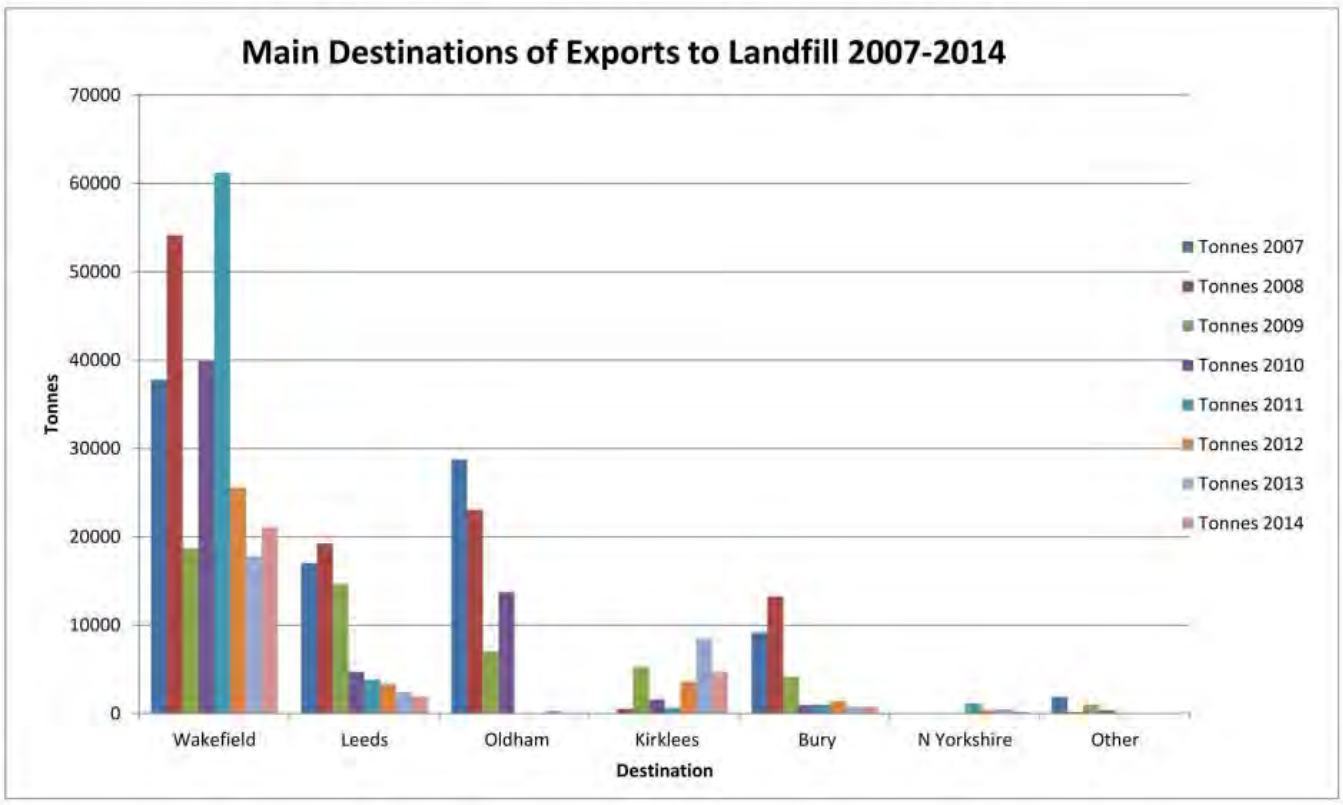


Source: Environment Agency Waste Data Interrogator 2007-2014.

Exports to Landfill

4.7 Repeating all the previous reporting years, by far the main destination for wastes exported from Calderdale to landfill in 2014 was Wakefield accounting for ~73% these exports. The only other noticeable amounts of exported landfill waste was disposed of in Kirklees and Leeds respectively. It is noticeable from the reporting period 2007 to 2012, overall exports to landfill reduced significantly. Whereas overall exports to landfill have continued to reduce from 2012 to 2014, this reduction has slowed in this period.

Figure 4.3 Main Destinations of exports to Landfill 2007-2014



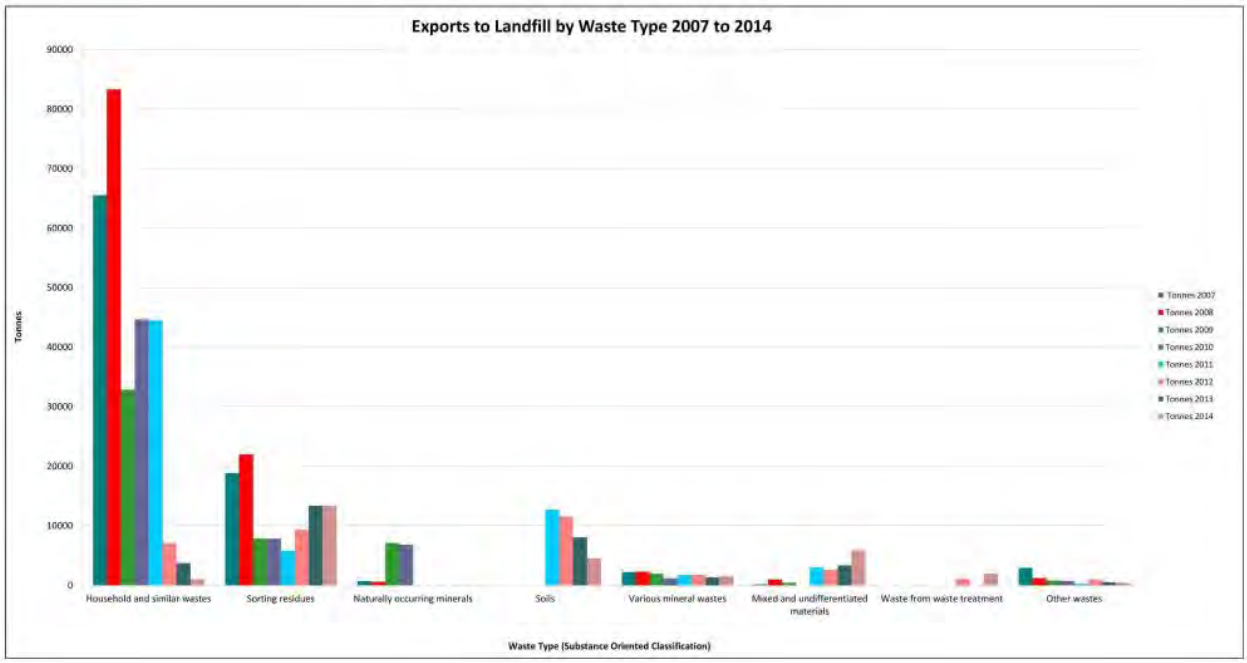
Source: Environment Agency Waste Data Interrogator 2007-2014.

4.8 The main destinations and the types of waste exported to landfill in 2014, were made up of the following:

- Wakefield - 63% of waste exported to landfill in Wakefield was classed as 'Sorting Residues';
- Kirklees - 94% of waste exported to landfill in Kirklees was classed as 'Soils';
- Leeds - 59% of waste exported to landfill in Leeds was classed as 'Mixed and undifferentiated materials.

4.9 In 2014, the main type of waste exported to landfill was classed as 'Sorting Residues', this matches the trend from 2013. The following chart illustrates the most common types of wastes exported to landfill between 2007 and 2014. Notably exports to landfill of 'Household and Similar Wastes' continued to decrease from 2011 and reduced by over 60% from 2013. However exports to landfill of 'Mixed and undifferentiated materials' increased by almost 40% from 2013 to 2014.

Figure 4.4 Exports to Landfill by Waste Type 2007 - 2014

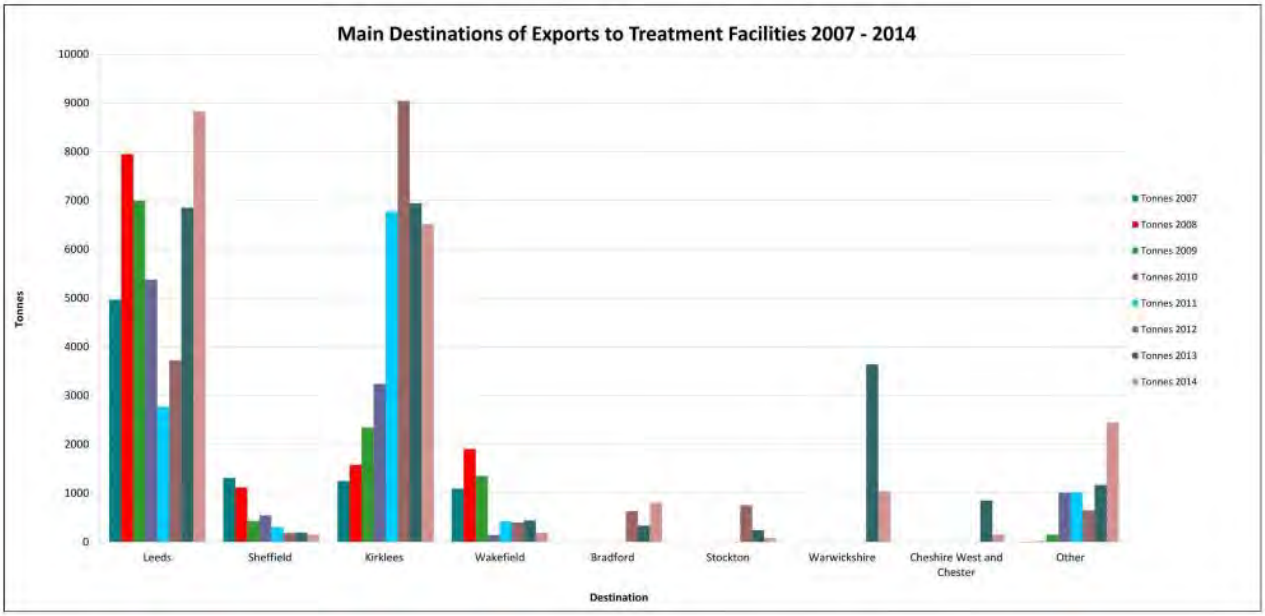


Source: Environment Agency Waste Data Interrogator 2007-2014

Exports to Treatment Facilities

4.10 In 2014, as in 2012 and 2013, the vast majority of exports to treatment facilities were sent to Leeds and Kirklees respectively. Exports for treatment to Leeds increased notably from 2013. Amongst other destinations only Kirklees accepted noticeable amounts. The exports to 'other' treatment facilities increased by ~50%, due to an increase in a larger number of facilities each receiving relatively small tonnages of treatment waste.

Figure 4.5 Main Destinations of Exports to Treatment Facilities 2007 to 2014



Source: Environment Agency Waste Data Interrogator 2007-2014

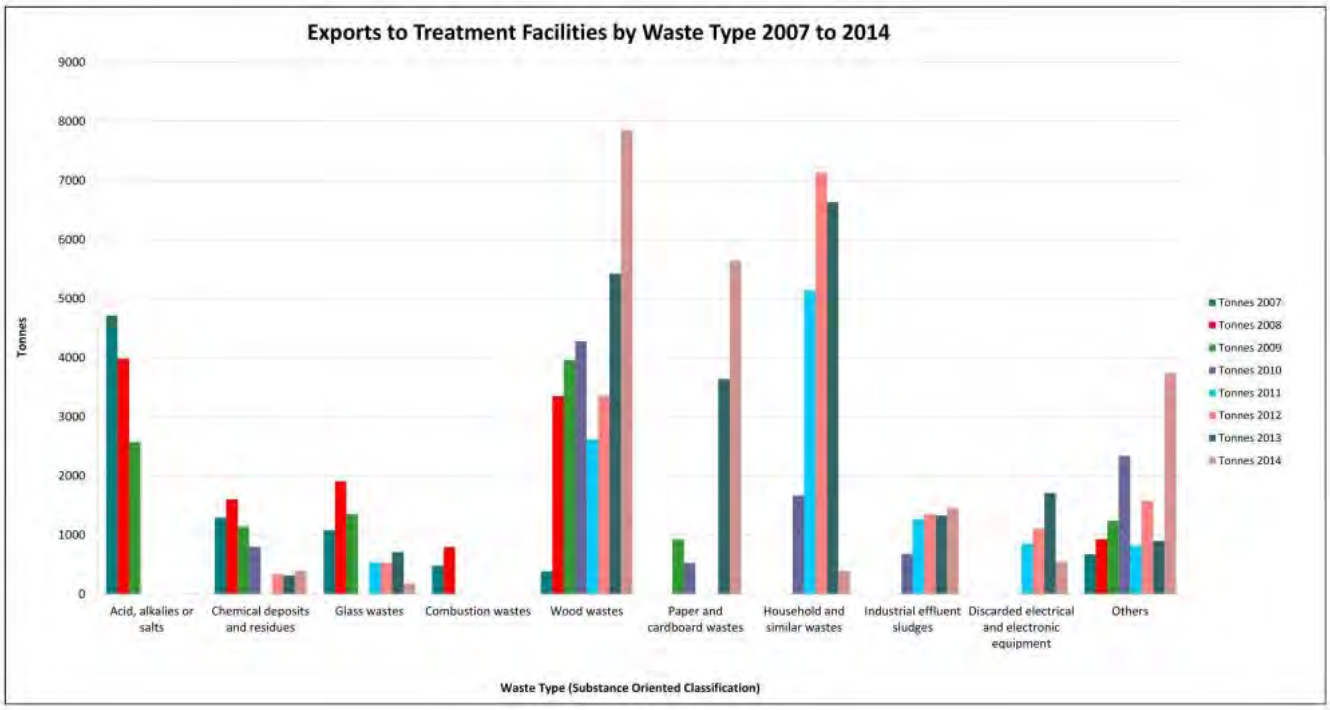
28 Waste Exports

4.11 The main types of waste that Leeds and Kirklees received in 2014 is summarised as follows:

- Kirklees - 48% of wastes exported to treatment facilities in Kirklees were classed as 'Household and Similar Wastes';
- Leeds - 82% of wastes exported to treatment facilities in Leeds were classed as 'Wood Wastes';

4.12 For the first time since 2010, the main type of waste exported to treatment facilities was classed as 'Wood Waste'; which increased significantly from 2013. In 2013 'Household and Similar Wastes' was the main type of waste exported to treatment facilities, however in 2014 this reduced by ~90%. This is likely due to that fact that 'Household and Similar Waste' has been increasingly treated within Calderdale, as opposed to exporting it elsewhere. The other type of waste that contributes significantly to exports to treatment facilities during 2014 are 'Paper and Cardboard Wastes' which formed a significant level of the exports. There was a reduction of >50% in 'Discarded electrical and electronic equipment' exported to treatment facilities in 2014 compared to 2013.

Figure 4.6 Treatment Facilities by Waste Type 2007 - 2014



Source: Environment Agency Waste Data Interrogator 2007 -2014

Exports to Metal Recycling Facilities

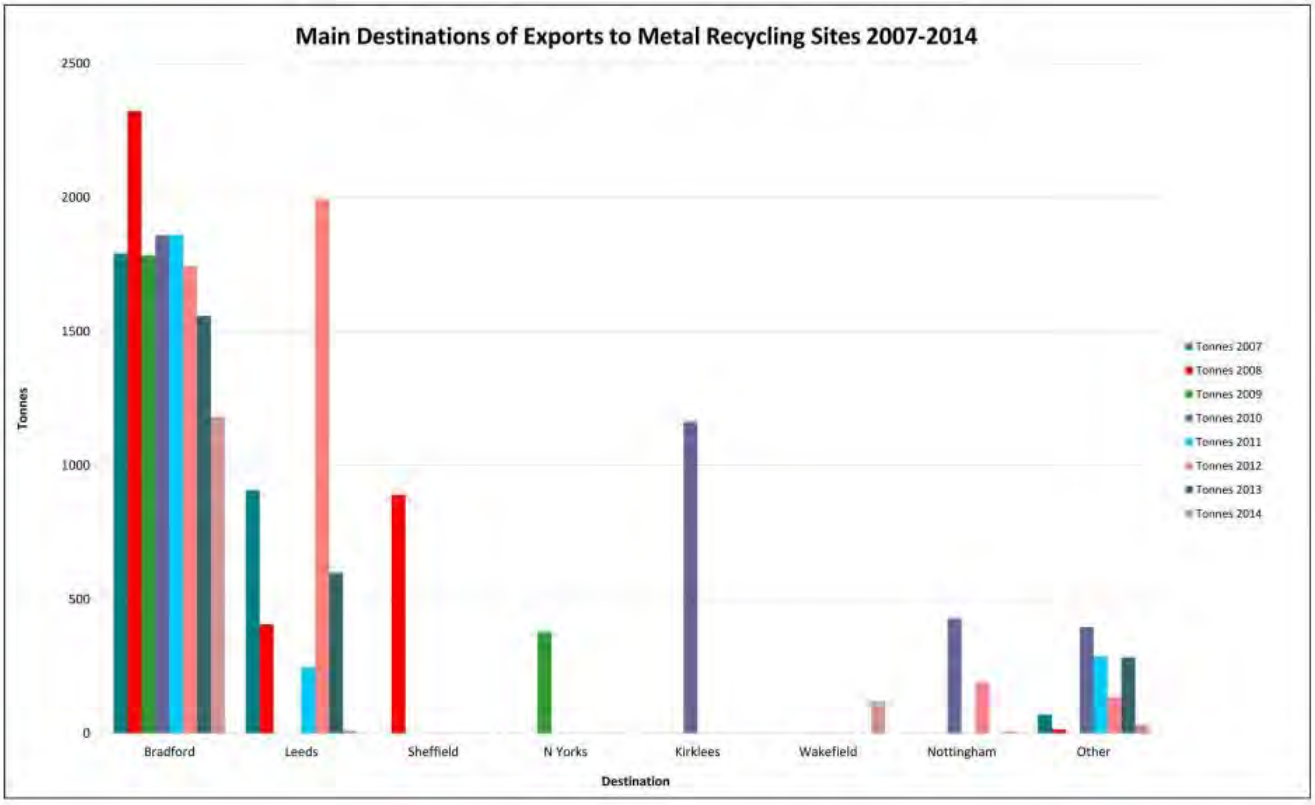
4.13 The levels of wastes exported to MRS facilities are significantly smaller than those exported to landfill or treatment facilities; however the analysis is included for completeness.

4.14 In 2014, some 1,348 tonnes of wastes was exported from Calderdale to Metal Recycling Sites (MRS), a significant reduction of 55% from that of 2013. Of this amount, 87% went to MRS facilities in Bradford and 9% went to Wakefield, which previously hasn't received any notable amounts of MRS waste.

4.15 The types of metals exported to MRS sites in 2010 were as follows:

- Bradford - 68% of metals exported to Bradford were classed as 'Ferrous Metal Waste';
- Wakefield - 83% of metals exported to Wakefield were also classed as 'Ferrous Metal Waste'

Figure 4.7 Main Destinations of Exports to Metal Recycling Sites 2007-2014



Source: Environment Agency Waste Data Interrogator 2007-2014.

Exports to Waste Transfer

4.16 The total amount exported to transfer facilities in 2014 was 3,237 tonnes, which is an increase of ~20% from 2013. However it is important to note that any analysis of wastes deposited in Transfer facilities has to be treated with caution because there is no accurate way of knowing exactly what happens to wastes once they are sorted; for example waste that originated in Calderdale that is exported to an initial facility outside the district may then go on to be transported to a number of other destinations prior to the final disposal or recovery process.

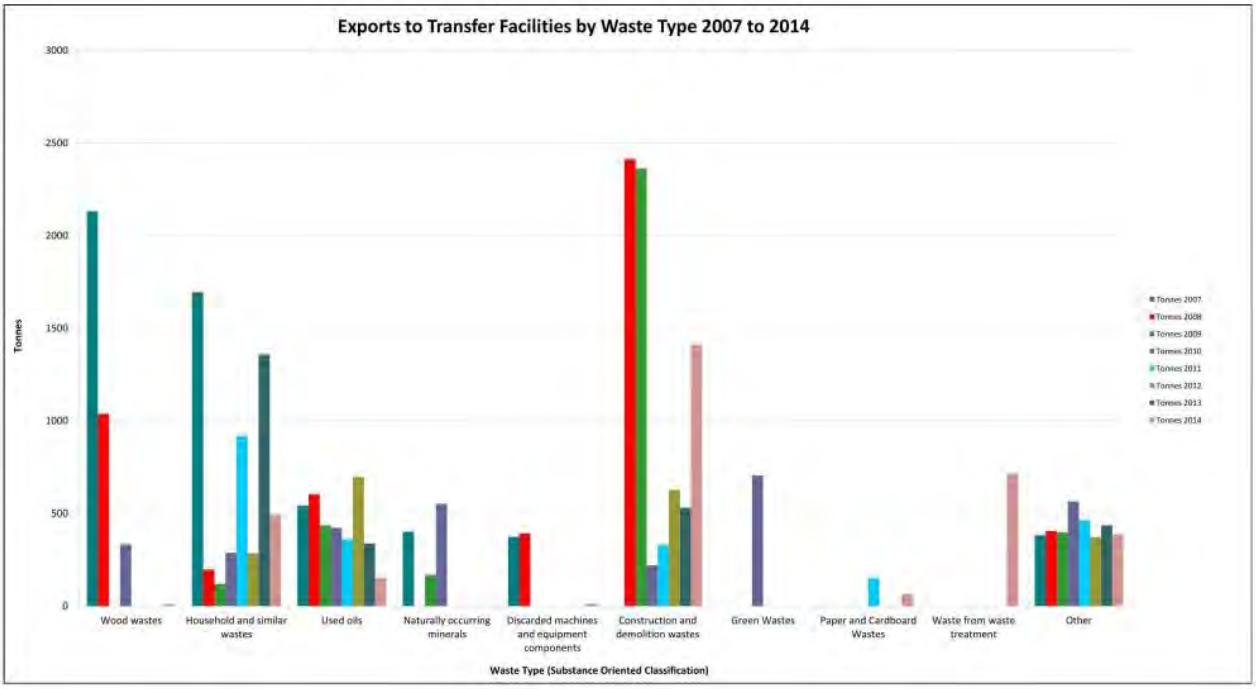
4.17 The chart showing the main destinations of exports to transfer facilities indicates that initially, the most common destinations in 2014 were Leeds and Derbyshire, mirroring 2013; however the quantities are small compared to treatment and landfill, and does not give a full picture as these are only the initial destinations of transfer exports.

Figure 4.8 Main Destinations of Exports to Transfer Facilities 2007 - 2014

Source : Environment Agency Waste Data Interrogator 2007 to 2014

4.18 The types of waste exported to transfer facilities are shown on the following chart. This highlights that levels of waste exported to transfer facilities are smaller than those to either landfill or treatment facilities, and that throughout the reporting period there are a number of different types of waste that have represented the main type of waste exported to transfer sites outside Calderdale. Of the waste types 'Construction and demolition wastes' was exported the most to transfer facilitates in 2014, accounting for 43.5% of all exports to transfer. For the first time since 2007 'Waste from waste treatment' featured as a significant waste type to be exported to transfer sites.

Figure 4.9 Exports to Transfer Facilities by Waste Type 2007 - 2014



Source : Environment Agency Waste Data Interrogator 2007 to 2014

Summary of Exports

4.19 In 2014 the total wastes exported from Calderdale to permitted waste sites was estimated to have been 53,711 tonnes. This amount was lower than any of the previous years of reporting. In summary:

- Landfill facilities received the highest levels of exported wastes;
- The main destination for exports to Landfill facilities was Wakefield;
- The main destination for exports to Treatment facilities was Leeds;
- The main destination for exports to MRS facilities was Bradford;
- The main destination for exports to Transfer facilities was Leeds.

4.20 The main types of waste exported from Calderdale and the percentage of overall exports these represented in 2014 were:

- Sorting Residues - 25%
- Wood Wastes - 15%;
- Mixed and undifferentiated materials - 12%;
- Paper and Cardboard - 11%

4.21 The main types of waste exported to respective facilities were as follows:

- The main type of waste exported to Landfill was classed as 'Sorting Residues';
- The main type of waste exported to treatment facilities was classed as 'Wood Wastes';
- The main type of waste exported to MRS facilities was classed as 'Ferrous Metal Wastes';
- The main type of waste exported to Transfer facilities was classed as 'Construction and Demolition'

5 Waste Arisings

5.1 The following section provides information on the different types of waste and the most recent data in terms of arisings. Arisings data clearly separated into Local Authority Collected Wastes (LACW) and Hazardous Waste are more readily available than those for other waste streams.

Local Authority Collected Waste

5.2 Waste formerly referred to as Municipal Solid Waste (MSW) has been replaced by the following two terms:

- Local Authority Collected Waste (LACW) - all wastes collected by local authorities, including CD&E, but excludes waste collected by private companies.
- Local Authority Collected Municipal Waste (LACMW) - waste collected by the authority , including household and business waste where collected by the local authority.

Household Waste

5.3 For reporting purposes, the following section concentrates mainly on the LACW type. Initially however,the first table below concentrates on the 'household waste' element from the LACW waste stream, since this is the waste stream that the EU and consequently the National Waste Management Plan refer to in relation to the 50% recycling targets.

5.4 In terms of the following arisings information, Table 5.1 sets out the household waste arisings over the last 5 years. This shows that over the 7 years of reporting, the recycling rate has increased from 26% to 60%, helped by an increase in the levels of recyclates recovered from the residual waste, for example this was 2,265 tonnes in 2011/12, compared with 16,557 tonnes in 2013/14.

5.5 The table below shows that only the last year of reporting shows an actual increase of total waste arisings; however there are a number of reasons for this. Some of this increase may be slightly distorted by operational arrangements over the last couple of years due to the HWRC refurbishment whereby residents were not restricted as to the amount of waste they could place for collections during the closure periods.

Table 5.1 Household waste arisings 2008/9 - 2014/15

	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Total household Waste Arisings	82347	78912	77967	76953	76678	78624	78,846
% Change	-	-4.35%	-1.21%	-1.32%	-0.36%	2.48%	0.28%
Total Recycling / Composting	21,279	33,168	32,018	33,622	46,479	47,250	47,609
% recycling	26%	42%	41%	44%	61%	60%	60%
Total Residual		45,744	45,949	45,596	46,324	47,931	48,854

Source: CMBC Waste Management 2015

Local Authority Collected Waste

5.6 In the period April 2014 to March 2015, the total LACW arisings managed in Calderdale was 83,631 tonnes. Of this amount, 42%[7] was originally collected for recycling, composting, and reuse, with only 1% sent directly to landfill. Some 57% was recorded as being sent to other disposal routes (treatment plants), and less than 1% was sent directly for energy recovery. The table below shows the last seven years of LACW management methods. This shows a similar amount of MSW collected for recycling, composting and reuse over the past four years, alongside a reduction in landfill deposits; a significant factor in the increase in the diversion from landfill is the improved household waste recycling scheme implemented in April 2009 alongside the increasing costs of landfill disposal.

Table 5.2 LACW by Management Method 2008/9 - 2014/15

Year	LACW Collected for Recycling, Composting and Reuse (Includes collection rejects)	Total LACW sent directly for Energy Recovery	Total LACW sent directly to Landfill	Total LACW sent to other Disposal Routes	Total LACW Arisings (based on residual waste sent for disposal)
2014-2015	34,801	145	696	47,989	83,631
% of total	*42%*	*<1%*	*1%*	*57%*	
2013-2014	35,806	123	3,390	44,524	83,843
% of total	*43%*	*<1*	*4%*	*53%*	
2012- 2013	35,318	127	841	45,355	81,641
% of total	*43%*	*<1%*	*1%*	*56%*	
2011-2012	37,026	127	37,744	7,725	82,622
% of total	*45%*	*<1*	*46%*	*9%*	
2010 -2011	37,535	1,222	44,694	33	83,484
% of total	*45%*	*1%*	*54%*	*<1%*	
2009-2010	37,875	5,880	39,836	26	83617
% of total	*45%*	*7%*	*48%*	*<1%*	
2008-2009	25,675	5,443	55,590	22	86,729
% of total	*30%*	*6%*	*64%*	*<1%*	

Source:Waste Data Flow Web Site 2016 & CMBC Waste Management Section. Figures may not sum due to rounding.

7 The tonnages reported here reflect the inputs to waste management routes. For example, if material is collected for recycling but subsequently rejected to landfill it will be in the 'collected for recycling' column and not in the 'sent to landfill' column. Similarly, residual waste sent to treatment methods which have recyclate outputs (e.g. Advanced Thermal Treatment, MBT, AD) will be included in the 'other disposal' column. Source Waste Data Flow Web Site 25/08/2011

5.7 The following table provides an analysis of the final disposal route - this records the final disposal method for LACW. Columns 'A' and 'B' represent the total in 'C'. This shows that overall, some 63% of LACW waste is recycled, composted or reused.

Table 5.3 LACW Final Disposal Method 2008/9 - 2014/15

Year	A: Total LACW Collected for Recycling, Composting or Reuse (tonnes)	B: Total Recyclate Diverted from Residual Waste Stream (tonnes)	C: Total LACW sent for Recycling, Composting or Reuse net of Rejects (tonnes)	D: Total LACW sent for Energy Recovery,Including Treatment Outputs (tonnes)	E:Total LACW sent to Landfill, Including Treatment Outputs (tonnes)	F:Total LACW sent to other Disposal Routes (tonnes)	Total LACW
2014-2015	34,801	17,617	52,418	17,745	13,431	37	83,631
% of total	N/A	N/A	63%	21%	16%	<1%	

Source:Waste Data Flow Web Site 2016 & CMBC Waste Management Section. Figures may not sum due to rounding.

Commercial and Industrial Waste

5.8 Although it is accepted that Commercial and Industrial (C&I) waste forms a significant part of the waste arisings in Calderdale (much larger than LACW) and elsewhere, it remains the case that any arisings figure in relation to C&I is at best an estimate. The most recent data that was subject to an examination was the report[8] prepared in 2009 as part of the Regional Spatial Strategy (RSS) evidence base. According to this report, the levels of C&I waste arisings in Calderdale in 2014 were estimated at 212,486 tonnes.

5.9 Given the time since the last local level estimates were produced, as part of this waste data report update an updated forecast for C&I arisings has been prepared, based on the methodology used in the original regional report. The original methodology used the estimated waste per employee, and applied employment growth rates (provided by the Regional Econometric Model) to forecast C&I arisings for each year to 2026. The reasoning behind use of employment levels was the assumption that the amount of waste produced by a company is directly proportional to the level of employment. The report also assumed that the levels of waste produced by employee was constant across each year from 2006 to 2026.The report used the standard industrial classification (SIC) to split businesses up into different sectors, such as food, drink & tobacco, retail and wholesale etc. to provide an indication of the levels of C&I waste arising from different sectors. Additionally, the original study provided breakdown of companies by employee size band, as it was considered useful as an indicator regarding the levels of waste produced by a particular size of company in each sector.

5.10 This local level update has used the 2015 Regional Econometric Model (REM) to provide data on employment growth by the sectors used in the original report, and applied these updated REM figures to the waste per employee figure used in the original report. The update estimates that in 2015, C&I arisings in Calderdale were approximately 262,263 tonnes.

5.11 Subsequent to the RSS report, there have been additional reports in relation to regional C&I estimated arisings, produced by DEFRA[9] which provided estimates down to a regional level; this report estimated that in the Yorkshire & Humber the total C&I arisings in 2009 stood at 6,942,200 tonnes, compared to the RSS which estimated that C&I arisings would be approximately 9,441,843 tonnes; this vast difference (2,499,643 tonnes) highlights the difficulties involved in estimating C&I

8 Urban Mines Yorkshire & Humber Commercial and Industrial Waste Projections 2006 -2026
9 Commercial and Industrial Waste Survey 2010

levels. One potential reason behind the difference is the later report was prepared during a recession which may have contributed to a smaller C&I estimate.

5.12 In 2013 the Chartered Institute of Waste Management (CIWM) published a report[10] that reviewed the available datasets, forecast future projected levels of C&I and the necessary capacity resulting from these projections. However, this report was based on a national level, and therefore did not provide estimates down to a regional, sub regional, or local level. The report did predict a 'moderately stable' level of C&I for the period 2013 to 2020, with an overall reduction of around 0.2%.

5.13 The table below sets out the estimated levels of C&I using this methodology, commencing from 2014 as this is in line with the latest WDI data. This estimates that overall, there would be a small decrease over the lifetime of the Local Plan.

Table 5.4 Estimated C&I Waste Arisings and Projections

Year	2014	2015	2016	2021	2026	2031
Tonnes	256,180	262,362	262,362	262,271	258,316	253,444

Source: Urban Mines Yorkshire & Humber Commercial and Industrial Waste Projections 2006 -2026, REM 2015, CMBC 2016

Construction Demolition & Excavation Waste

5.14 Estimating levels of Construction, Demolition & Excavation (CD&E) wastes with any level of certainty is difficult, given that the tonnages recorded in the Environment Agency's WDI are assumed to reflect a small proportion of the actual CD&E waste arisings; this is partly due to a high level of on-site recycling and treatment, circumstances in which a return to the Environment Agency is not necessary. The latest Waste Statistics Digest[11] states that the recovery rate from non hazardous construction and demolition waste in the UK in 2012 was 86.5%. Overall, this type of waste made up 50% of the overall waste arisings in the UK in 2012[12]

5.15 In addition, there are issues relating to the recording and monitoring of non inert CD&E that is not landfilled; this is because of the waste management processes and facilities it passes through and the resulting outputs that mean much of this element of CD&E is no longer recognisable as CD&E. When using the term 'arisings' in the case of CD&E waste, it must be noted that in reality this represents the estimated levels of CD&E waste that were not managed on site, therefore the levels recorded in the following chapter are presenting a minimum level of this type of waste. A national study of CD&E waste[13] indicated that the vast majority of CD&E arisings are classed as 'inert' wastes. The non inert portion is dealt with in the other waste streams (MSW, C&I, Hazardous) analysis, as the management of this waste is the same as for the other streams.

5.16 Reviewing the methods for estimating levels of CD&E arisings, some authorities use the 'Survey of Arisings and Use of Alternatives to Primary Aggregates in England' (CLG, 2005) report as base data. Despite the report only going down to a West Yorkshire level, it is possible to apply the proportions of the recorded arisings in the WDI to apportion the report totals down to individual Waste Planning Authority (WPA) level. The 2005 report estimated that the total CD&E arisings in West Yorkshire was 3,463,198 tonnes. As part of this approach, the categories used for CD&E wastes are based on a report published by the Strategic Forum for Construction[14]

10 CIWM Report 2013 Commercial and Industrial Waste in the UK and Republic of Ireland, Ricardo-AEA, 2013
11 From UK Statistics on waste December 2015
12 From UK Statistics on waste December 2015
13 Construction, Demolition & Excavation Waste Arisings, Use & Disposal for England 2008, WRAP, April 2010
14 Halving Construction, Demolition & Excavation Waste to Landfill by 2012 compared to 2008, Measuring CD&E Waste to Landfill - A Methodology, Strategic Forum for Construction March 2010

5.17 The following table shows the estimated arisings for CD&E waste for Calderdale from 2007 to 2014,using the WDI categories used in the Strategic Forum for Construction's report, which are also applied in the only national methodology[15] The latest estimate CD& E waste deposited in permitted sites within Calderdale is 172,918. In terms of Exports, the figure was 22,840 tonnes, which meant in total CD&E estimated arisings stood at 195,758 tonnes.

Table 5.5 CD&E Estimated Waste Arisings 2007-2014 - Waste Data Interrogator

Year	2007	2008	2009	2010	2011	2012	2013	2014
Home CD&E Arisings Dealt with (tonnes)	58,785	35,683	38,912	54,832	73,341	104,022	103,065	97,142
Total CD&E Imports (tonnes)	105,304	36,745	154,789	71,781	61,860	109,200	129,398	75,776
All CD&E wastes Home Arisings Dealt with & Imports (tonnes)	164,088	72,428	193,701	126,613	135,200	213,222	232,463	172,918
All CD&E Exports (tonnes)	1,485	3,904	5,147	7,486	13,813	15,067	13,280	22,840
Total CD&E Arisings (tonnes)	165,573	76,332	198,848	134099	149,013	228,289	245,743	195,758

Arisings Information Source: Environment Agency Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

Alternative Method for Estimating CD&E Arisings

5.18 However, a second, alternative approach to calculating CD&E arisings has also been researched and considered as part of this update. This figure calculates the amount of CD&E waste by apportioning the national estimate of CD&E arisings based on the GVA of the district's construction industry. Defra estimated that for England, in total 84,359,000 tonnes of non hazardous CD&E wastes were generated in 2012[16] The national construction industry GVA in 2012 was £89 billion[17] whilst the construction industry in Calderdale was estimated to contribute approx £215 million, which equalled approximately 0.24% of the national figure.

5.19 Applying this figure to the national estimate of CD&E arisings in 2012 (e.g.0.24% of 84,359,000) gives an estimate of 204,172 tonnes for the year 2012. This can then be used as a base year to produce an annual estimate across the lifetime of the Local Plan, the tonnages reflecting the changes in the districts annual construction sectors GVA[18] 2014 is the reporting year in terms of waste arisings in this update, the estimated arisings using this approach is an estimated 207,581 tonnes. Some WPAs have also used a population proxy to establish an estimate; however, a population approach does not account for the differing profile of construction activity within different plan areas and therefore it is proposed not to use a population methodology. This approach results in a difference of approximately 24,116 tonnes when compared to the 2012 total set out in Table 5.4. Given the limitations of the WDI and the lack of robust CD&E data, it is proposed to use the GVA method to forecast future CD&E arisings, starting from a base year of 2012 and 204,172 tonnes.

15 Methodology for estimating annual waste generation from the construction Demolition and Excavation (CD&E) sectors in England, Defra, 2012
16 UK Statistics on Waste, Defra, December 2015
17 The construction industry statistics and policy, House of Commons Library, October 2015
18 Source: 2015 Regional Econometric Model

Hazardous Waste

5.20 Levels of Hazardous wastes are consistently lower than the other waste streams considered as part of the Waste Data Report. In 2014 the district dealt with 614 tonnes of Hazardous wastes that arose in Calderdale, whilst imports totalled 410 tonnes. In terms of exports from Calderdale, these amounted to 4,581 tonnes. In all therefore, the tonnages of Hazardous Wastes either deposited or exported in 2013 totalled 5,605 tonnes. This is the lowest tonnage recorded in the reporting period, and is significantly lower when compared to MSW, C&I, and CD&E wastes.

Table 5.6 Hazardous Wastes 2007 to 2014

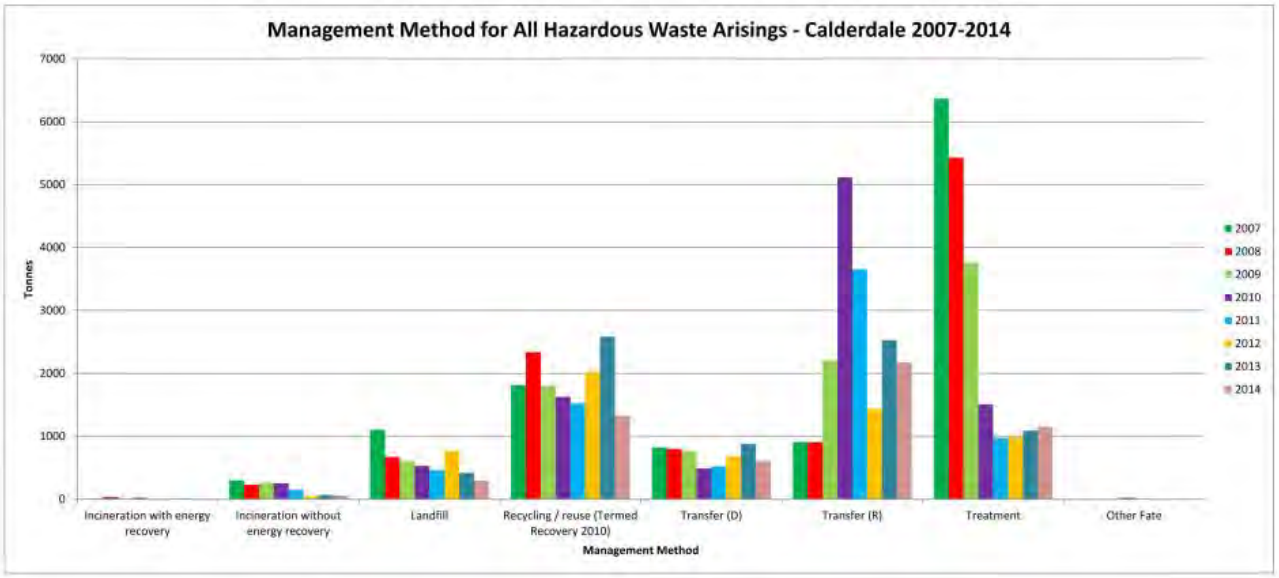
Year	Home Arisings Dealt with	Imports	Exports	Totals
2007	19	60	11,237	11,317
2008	25	105	10,264	10,394
2009	13	451	8,939	9,402
2010	116	2,311	7,135	9,562
2011	265	1,232	5,781	7,278
2012	69	223	5,647	5,939
2013	911	692	5,962	7,564
2014	614	410	4,581	5,605

Source: Environment Agency Hazardous Waste Data Interrogator 2007 to 2014. Figures may not sum due to rounding

5.21 In 2014 the district receiving the highest levels of exports was Kirklees. In the context of the overall waste arisings the levels of Hazardous wastes were small; however it is clear that the majority of hazardous waste arisings are exported from the district.

5.22 The following chart shows the disposal methods for Hazardous Wastes generated in Calderdale over the reporting period. This shows there has been a significant decrease in the tonnages sent to treatment facilities, and overall recovery is the most popular method of dealing with this type of waste, followed by Transfer sites that recover waste.

Figure 5.1 Management Method for all Hazardous Waste Arisings 2007-2014



Source: Environment Agency Hazardous Waste Data Interrogator 2007-2014

5.23 The most recent data available on Hazardous waste arisings shows that Calderdale produced approximately 1% of all Hazardous waste arisings within West Yorkshire. This compares to 7% in 2007, 6% in 2008, 7% in 2009, 4% in 2010, and 2% in 2011, 2012 and 2013. Averaging Calderdale's tonnages over the eight year reporting period gives an average tonnage of 8,382 per annum. It is proposed to apply this average figure to the projections for the Core Strategy, in line with the methodology applied to the Regional Spatial Strategy[19]

Table 5.7 Hazardous Wastes Calderdale and West Yorkshire 2007-2014

	Calderdale	West Yorkshire	% of WY Total
Tonnes 2007	11,257	169,839	7%
Tonnes 2008	10,289	171,616	6%
Tonnes 2009	8,952	132,811	7%
Tonnes 2010	9,562	238,634	4%
Tonnes 2011	7,278	298,542	2%
Tonnes 2012	5,939	346,582	2%
Tonnes 2013	7,564	373,214	2%
Tonnes 2014	5,605	412,692	1%

19 A Report by Enviros Consulting Limited, Government Office for the Yorkshire and Humber, Waste Arisings Forecasting, June 2007

Agricultural Waste

5.24 Although the Environment Agency WDI does provide information on Agricultural Wastes (the data includes an Agriculture and Food Processing Waste category) this type of waste is often dealt with on site, and is not recorded. Therefore the data held by the Environment Agency provides only a limited picture of the levels of Agricultural Wastes that have been generated over any particular period. The amount for Calderdale is given as 8,226 tonnes for 2014; the majority of which were imports that were recorded as being deposited at a composting facility.

Waste Water and Sludges

5.25 The Local Plan Waste Evidence base is focused on four waste types; Local Authority Collected Waste (LACW), Commercial and Industrial (C&I), Construction, Demolition, and Excavation (CD&E) and Hazardous; the future capacity required to deal with this waste stream will be addressed by the relevant infrastructure providers.

Summary

5.26 To summarise, the latest information on waste arisings in Calderdale is as follows:

- Municipal Solid Wastes;
  - 83,843 tonnes in 2013/14;
- Commercial & Industrial Waste
  - 256,180 tonnes in 2014;
- Construction Demolition & Excavation Waste
  - 207,581 tonnes in 2014;
- Hazardous Wastes
  - 7,564 tonnes in 2014.

6 Waste Projections

Local Authority Collected Waste

6.1 The projected waste arisings for Local Authority Collected Waste (LACW) are set out below. The projections are based on the apparent 'flattening out' of the amounts of waste generated per household, and the only growth will come on the form of new builds. Taking this into account, the following assumptions are therefore made:

- The 2014/15 household waste rate of 844kg per year applies across the duration of the Local Plan;
- The Local Plan estimated there is a need for 17,651 new dwellings 2015-16 to 2031-32;
- This equates to an estimated 1,038 additional new builds per annum;
- The projected additional waste arisings per annum are 1,038 x 0.844 tonnes = 876 tonnes additional waste per annum;
- The projected total additional arisings over the Local Plan period is 14,889 tonnes (0.844 tonnes x 17,651);
- The table below sets out the projected total LACW arisings at various stages in the Local Plan timeline.

Table 6.1 LACW Waste Projections 2014/15 - 2031/32

	2014/15	2015/16	2016/17	2021/22	2026/27	2031/32
Household Waste Projections (tonnes)	78,846	79,722	80,598	84,978	89,358	93,738

Source: Calderdale Council 2016 - Figures rounded up

Commercial and Industrial Waste

6.2 As stated in Chapter 5, data on Commercial and Industrial (C&I) waste arisings is not extensively recorded. As a result, any arisings or projections relating to C&I waste are to be treated with caution. Given the time since the last local level C&I estimates (7 years), as part of this waste data report update an updated forecast for C&I arisings has been prepared, based on the methodology used in the original Yorkshire & Humber Commercial and Industrial Waste Projections 2006-2026 report. In order to achieve a set of updated projections for Calderdale, the update applied the 2015 Regional Econometric Model (REM) employment projections and the waste per employee figure from the original report.

6.3 In the original report, the reasoning behind use of employment levels was the assumption that the amount of waste produced by a company is directly proportional to the level of employment. The report used the Standard Industrial Classification (SIC) to split businesses up into different sectors, such as food, drink & tobacco, retail and wholesale etc. to provide an indication of the levels of C&I waste arising from different sectors. There was also an assumption that the levels of waste produced by each employee was constant across each year from 2006 to 2026, for example, an employee in the food, drink and tobacco SIC would produce approximately 28 tonnes of waste each year, and this figure did not change. Additionally, the original study provided breakdown of companies by employee size band, as it was considered useful as an indicator regarding the levels of waste produced by a particular size of company in each sector.

6.4 The projections below are therefore based on the levels of waste per employee taken from the Yorkshire & Humber Commercial and Industrial Waste Projections 2006-2026, and multiplying this

by the projected levels of employment growth in each of those sectors across the lifetime of the Local Plan with data from the 2015 REM.

6.5 The following table summarises the projected C&I waste arisings across the lifetime of the Local Plan. This shows that in 2016 the estimated arisings will be approximately 262,362 tonnes, by the end of the plan period this figure has reduced to around 253,444 tonnes per annum.

Table 6.2 Commercial & Industrial Waste Projected Arisings

Year	2016	2021	2026	2031
Tonnes	262,362	262,271	258,316	253,444

Source: Urban Mines Yorkshire & Humber Commercial & Industrial Waste Projections 2006-2026 , Yorkshire & Humber REM 2015, and CMBC 2016. Figures may not sum due to rounding.

6.6 The projected levels of C&I waste by different sectors are displayed on the table below. This shows that the 'Other Services' sector is projected to create the largest proportion of waste throughout the lifetime of the plan. 'Other Services' includes Hotels and Catering, Transport, Communications, Banking & Insurance, Business Services, Other Financial and Business Services, and Other Services. The other sectors that are estimated to create significant levels of C&I waste across the lifetime of the plan are Food, Drink and Tobacco, and Retail and Wholesale.

Table 6.3 Summary of Projected Commercial and Industrial Waste Arisings by Sector

Employment Sectors	2016	*% of Total*	2021	*% of Total*	2026	*% of Total*	*2031*	*% of Total*
Food, Drink & Tobacco	49,484	*19*	49,946	*19*	48,737	*19*	46,387	*18*
Textiles / Wood / Paper / Publishing	17,651	*7*	15,998	*6*	14,265	*6*	12,381	*5*
Power & Utilities[(1)]	4	0	4	0	4	0	4	0
Chemicals / Non-Metallic Minerals Manufacturing	31,048	*12*	29,636	*11*	27,561	*11*	25,701	*10*
Metal Manufacturing	19,946	*8*	19,135	*7*	18,459	*7*	17,671	*7*
Machinery & Equipment (other manufacturing)	15,477	*6*	14,136	*5*	12,811	*5*	11,640	*5*
Retail & Wholesale	43,273	*16*	44,759	*17*	45,505	*18*	46,160	*18*
Other Services	66,598	*25*	69,406	*26*	70,945	*27*	72,694	*29*
Public Sector	18,881	*7*	19,252	*7*	20,029	*8*	20,807	*8*
Total	**262,362**		**262,272**		**258,316**		**253,444**	

1. The Urban Mines Report states that further work required to establish levels of waste from this sector

Source: Urban Mines Yorkshire & Humber Commercial & Industrial Waste Projections 2006-2026 , Yorkshire & Humber REM 2015, and CMBC 2016. Figures may not sum due to rounding.

6.7 The actual tonnage differences are shown in the table below - this shows that all sectors are projected to reduce the amounts of waste produced in 2031 compared to the 2016 estimates apart from the 'Textiles / Wood / Paper / Publishing', Retail and Wholesale', 'Other Services' and 'Public Sector' categories, which are projected to experience increases. Overall, there is a slight drop of 3.4% when compared to 2016.

Table 6.4 Summary of Commercial and Industrial waste projections - changes in tonnages 2016-2031 by sector

	2016	2021	*Change in Tonnes v 2016*	2026	*Change in Tonnes v 2016*	*2031*	*Change in Tonnes V2016*
Food, Drink & Tobacco	49,484	49,946	*0.9%*	48,737	*-1.5%*	46,387	*-6.3%*
Textiles / Wood / Paper / Publishing	17,651	15,998	*-9.4%*	14,265	*-19.2%*	12,381	*29.9%*
Power & Utilities	4	4	*0%*	4	*0%*	4	*0%*
Chemicals / Non-Metallic Minerals Manufacturing	31,048	29,636	*-4.5%*	27,561	*-11.2%*	25,701	*-17.2%*
Metal Manufacturing	19,946	19,135	*-4.1%*	18,459	*-7.5%*	17,671	*-11.4%*
Machinery & Equipment (other manufacturing)	15,477	14,136	*-8.7%*	12,811	*-17.2%*	11,640	*-24.8%*
Retail & Wholesale	43,273	44,759	*3.4%*	45,505	*5.2%*	46,160	*6.7%*
Other Services	66,598	69,406	*4.2%*	70,945	*6.5%*	72,694	*9.2%*
Public Sector	18,881	19,252	*2%*	20,029	*6.1%*	20,807	*10.2%*
Total	**262,362**	**262,272**	***0%***	**258,316**	***-1.5%***	**253,444**	***-3.4%***

Arisings Source: Urban Mines Yorkshire & Humber Commercial & Industrial Waste Projections 2006-2026, CMBC 2016. Figures may not sum due to rounding.

Construction Demolition & Excavation Waste

6.8 Projecting future levels of CD&E with any certainty is difficult, given uncertainties that exist around current arisings, and the factors that influence levels of CD&E. There are no projections that go down to a local level subsequent to those applied for the RSS. For the purposes of the Local Plan waste projections, the preferred scenario for CD&E projections is set out below, based on the estimated increases in the GVA of the construction sector during the lifetime of the Local Plan, as explained in Section 5. This estimates that by the end of the Local Plan period the CD&E arisings will be approximately 318,047 tonnes.

Table 6.5 CD&E projected arisings 2016-2031

Year	2016	2021	2026	2031
Projected Tonnes per annum	218,085	249,216	278,319	318,047

Source Yorkshire & Humber REM 2015 and CMBC 2016.

Hazardous Waste

6.9 The projections for Hazardous wastes are based on the waste evidence used for the RSS[20] This evidence indicated there would zero growth in Hazardous wastes. Therefore it is proposed to apply a zero growth rate for Hazardous Waste and consider the average recorded arisings of 8,382 tonnes as the projected level of this waste stream for the lifetime of the Local Plan.

Agricultural Waste

6.10 Given the difficulties in collecting reasonable estimates of agricultural waste arisings, it is not intended to forecast future arisings in this waste stream; however it will be considered when drafting future waste policies for Composting and Anaerobic Digestion.

Waste Water and Sludges

6.11 There are no projections available at present for this type of waste. Discussions held with Yorkshire Water as part of the evidence gathering for the Infrastructure Delivery Plan will inform future requirements.

Summary

6.12 In summary, the projected waste arisings for the Local Plan by 2031 are as follows:

- Local Authority Collected Waste
  - 93,738 tonnes per annum;
- Commercial and Industrial Waste
  - 253,444 tonnes per annum;
- Construction, Demolition & Excavation Waste
  - 318,047 tonnes per annum;
- Hazardous Waste
  - 8,880 tonnes per annum.

20 A Report by Enviros Consulting Limited, Government Office for Yorkshire and the Humber, Waste Arisings Forecasting, June 2007.

7 Capacity of Permitted Waste Facilities

7.1 The following table lists the number of different permitted waste sites in Calderdale, as at the end of December 2015, other than Landfill or 'On / In Land' Facilities, together with the combined capacities for each type of site and the recorded inputs 2007 to 2014. This indicates that there are sites with a total maximum permitted capacity of 1,892,250 tonnes per annum. The total recorded inputs in 2014 were 298,699 tonnes, which given the overall capacity of the facilities in Table 7.1 suggest there is more than sufficient capacity to deal with the levels of waste inputs.

Table 7.1 Total Permitted Capacity and Inputs to Non Landfill Waste Facilities 2007-2014

Site Category	Number of Permitted Sites End Dec 2015	Total Max Capacity End Dec 15 (tonnes)	Recorded Inputs 2007 (tonnes)	Recorded Inputs 2008 (tonnes)	Recorded Inputs 2009 (tonnes)	Recorded Inputs 2010 (tonnes)	Recorded Inputs 2011 (tonnes)	Recorded Inputs 2012 (tonnes)	Recorded Inputs 2013 (tonnes)	Recorded Inputs 2014 (tonnes)
A9: Special Waste Transfer Station	1	5000	40	25	35	37	53	0	0	0
A11: Household, Commercial & Industrial Waste Transfer (Bulk)	1	120000	69903	64956	68654	71240	71889	79343	69626	57783
A11: Household, Commercial & Industrial Waste Transfer	7	353000	27085	56413	60836	70148	64457	57751	48745	35383
A13: Household Waste Amenity Site	5	57500	28109	28966	36829	33309	32574	32510	27373	28492
A14: Transfer Station taking Non-Biodegradable Wastes	1	5000	4706	2194	1399	1635	255	0	0	0
A15: Material Recycling Treatment Facility	2	50000	4455	3883	2501	2988	4013	2331	3724	13982
A16: Physical Treatment Facility	2	27500	0	0	0	0	0	0	135	226
A17: Physico-Chemical Treatment Facility	1	75000	55881	58806	30185	30263	25334	10664	20377	17812
A19: Metal Recycling Site; Vehicle Dismantler	8	31000	2713	1312	1259	1794	3451	1487	1076	803
A19a: End of Life Vehicle Facility	3	7500	17	0	64	27	40	32	29	5
A20: Metal Recycling Site (mixed MRS's)	4	40000	12399	11352	8435	8613	9029	10182	9740	10290
A22: Composting	2	98250	12208	19167	38843	38608	40750	42961	72802	77229
S0801: Household Commercial and Industrial Waste Transfer Site	2	150000	0	0	0	674	1123	473	716	170

Site Category	Number of Permitted Sites End Dec 2015	Total Max Capacity End Dec 15 (tonnes)	Recorded Inputs 2007 (tonnes)	Recorded Inputs 2008 (tonnes)	Recorded Inputs 2009 (tonnes)	Recorded Inputs 2010 (tonnes)	Recorded Inputs 2011 (tonnes)	Recorded Inputs 2012 (tonnes)	Recorded Inputs 2013 (tonnes)	Recorded Inputs 2014 (tonnes)
S0803: Household Commercial and Industrial Waste Transfer Site and Treatment Facility.	4	300000	3245	3579	5327	5393	9717	14647	12985	16603
S0811: Inert & Excavation Waste Transfer Station and Treatment Facility	3	225000	100	330	120	2858	20888	38715	47294	34466
S0820: Vehicle Depollution Facility	2	75,000	0	0	0	0	79	1	229	478
SR2011: Metal Recycling Site	2	30,000	0	0	0	0	2,910	3,365	3,625	4267
S0823: WEEE Treatment Facility	2	150,000	0	0	0	1807	2470	2029	1,438	710
Totals	**52**	**1,892,250**	**244,305**	**262,783**	**258,435**	**273,295**	**289,259**	**285,190**	**313,617**	**298,699**

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

7.2 Further analysis of the inputs and the available capacity is however required in order to establish the suitability of the spare capacity to meet the targets for recovering value from waste explained in Section 1. For instance, there are a significant number of permitted sites that have not received any recorded inputs in the past two years of reporting; whilst other sites last recorded inputs were further back than 2012. It is reasonable to assume therefore that a significant number are not considered to offer capacity, and further capacity analysis takes account of this.

7.3 Additionally, 19 of the 52 permitted sites can be classed as some form of Metal Recycling Site (MRS), which in total is 258,500 tonnes of capacity, representing 14% of the overall maximum permitted non landfill capacity. In 2014, 15,843 tonnes were input into MRS facilities, which in turn represented only 5% of the total inputs into non Landfill facilities in 2014. When comparing all recorded inputs into any kind of permitted waste facility in 2014, MRS inputs represented just 4% of inputs. Although these sites offer recycling capacity, the type of waste and inputs dealt with will not make a significant contribution to the overall recovery targets for MSW and C&I waste.

7.4 The following table therefore presents a refined list of those recycling, and treatment facilities that remain following the removal of the transfer and MRS capacity. In the case of sites permitted as 'S0803: Household Commercial and Industrial Waste Transfer Site and Treatment Facilities' and 'S0811: Inert & Excavation Waste Transfer Station and Treatment Facilities', some of these have previously held different functions (e.g. some sites under this category were classed as A11: Household, Commercial & Industrial Waste Transfer), and therefore there are instances in the earlier period of reporting where the figures relate to the site category at the time of the inputs, however the table below represents the site category as it was in the latest Environment Agency information[21]

21 Environment Agency Permitted Site Information as at December 2015.

Table 7.2 Capacity of and Inputs to Recycling and Treatment (RT) Facilities excluding Non Recovery / Treatment Capacity

Site Category	Number of sites	Total Maximum Capacity p.a. 2015 (tonnes)	Recorded Inputs 2007 (tonnes)	Recorded Inputs 2008 (tonnes)	Recorded Inputs 2009 (tonnes)	Recorded Inputs 2010 (tonnes)	Recorded Inputs 2011 (tonnes)	Recorded Inputs 2012 (tonnes)	Recorded Inputs 2013 (tonnes)	Recorded Inputs 2014 (tonnes)
A15: Material Recycling Treatment Facility	2	50000	4455	3883	2501	2988	4013	2447	3724	13982
A16: Physical Treatment Facility	2	27500	0	0	0	0	0	0	135	226
A17: Physico-Chemical Treatment Facility	1	75000	55881	58806	30185	30263	25334	10664	20377	17812
A22: Composting	2	98250	12208	19167	38843	38608	40750	42961	72802	77229
S0803: Household Commercial and Industrial Waste Transfer Site and Treatment Facility.	4	160000	1389	1454	1596	2048	3423	1661	1487	16603
S0811: Inert & Excavation Waste Transfer Station and Treatment Facility	3	225000	0	0	0	2858	20888	38715	47294	34466
S0823: WEEE Treatment Facility	2	150000	0	0	0	1807	2470	2029	1438	710
Totals	**16**	**855,750**	**73,932**	**83310**	**73,125**	**78572**	**96,984**	**98,477**	**147,256**	**161,028**

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

7.5 One of the categories (Inert & Excavation Waste Transfer Station and Treatment Facility) would appear to lend itself to recovering CD&E waste, as this category of site dealt only with 'Soils' or 'Construction and Demolition Wastes' in terms of inputs in 2014, and therefore is not considered to offer significant recovery potential for LACW or C&I. Additionally, the Household, Commercial, and Industrial Waste Transfer Site and Treatment Facility category offers primarily a waste transfer service, whilst in terms of the Waste Electrical and Electronic Equipment (WEEE) facility, as would be expected, over 70% of inputs in 2014 were from electrical machines and associated metals and equipment. Given the input information and the roles these treatment facilities play, (mainly CD&E and Electrical wastes) it is unlikely they will make a significant contribution to the recycling, and treatment of the general MSW and C&I waste streams that the Local Plan is focusing on, and are therefore removed from the Recycling and Treatment (RT) capacity analysis[(22)]

7.6 Although the original capacity data showed two 'A16 Physical Treatment Facilities', further analysis showed that one of these sites did not record any inputs at any time during the reporting period and is therefore discounted from the capacity analysis. Similarly two ' A15 Material Recycling Treatment Facilities' are listed, however one of these has since ceased trading at its site in Calderdale.

7.7 In terms of recovering value from MSW and C&I waste therefore, the existing capacity that would currently make a contribution is set out in the table below. This highlights a sharp drop in capacity when compared to the overall permitted capacity, reducing to 200,750 tonnes per annum.

Table 7.3 Capacity of and Inputs to Recycling and Treatment (RT) Facilities excluding Non Recovery / Treatment Capacity

Site Category	Number of sites	Total Maximum Capacity p.a. 2015 (tonnes)	Recorded Inputs 2007 (tonnes)	Recorded Inputs 2008 (tonnes)	Recorded Inputs 2009 (tonnes)	Recorded Inputs 2010 (tonnes)	Recorded Inputs 2011 (tonnes)	Recorded Inputs 2012 (tonnes)	Recorded Inputs 2013 (tonnes)	Recorded Inputs 2014 (tonnes)
A15: Material Recycling Treatment Facility	1	25,000	4,455	3,883	2,501	2,988	4,013	2,447	3,724	13,982
A16: Physical Treatment Facility	1	2500	0	0	0	0	0	0	135	226
A17: Physico-Chemical Treatment Facility	1	75,000	55,881	58,806	30,185	30,263	25,334	10,664	20,377	17,812
A22: Composting	2	98,250	12,208	19,167	38,843	38,608	40,750	42,961	72,802	77,229
Totals	**5**	**200,750**	**72,544**	**81,856**	**71,529**	**71,859**	**70,203**	**56,072**	**97,037**	**109,249**

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

7.8 The breakdown of capacity and recorded inputs by individual sites is useful in allowing analysis of the types of spare capacity that exist within Calderdale, and the suitability of this for dealing with the predicted levels of waste that will be produced in the future. As the table illustrates, the remaining Recycling, Recovery and Treatment (RRT) site categories appear to have surplus capacities against recorded inputs in the reporting period. The next section provides analysis as to the types of waste input and the estimated operational capacity of the RRT facilities.

22 The Inert & Excavation Waste Transfer Station and Treatment Facility along with the Household Commercial and Industrial Waste Transfer Site and Treatment Facilities are included in the transfer capacity analysis later on in this chapter

Estimating the Operational Capacity

7.9 Establishing the maximum operational capacity of waste facilities is complex. The actual maximum operational capacity of waste facilities is considered likely to be less than the maximum permitted capacity. The Core Strategy Refined Issues & Options (RI&O) consultation document presented two capacity scenarios; firstly that the maximum operational capacity is 80% of the maximum permitted capacity, based on the Environment Agency's calculation for incinerators. Additional studies have also estimated that operational capacities lie within the 54% to 79%[23] Secondly, the average of recorded inputs into facilities represented close to the maximum operational capacity.

7.10 Comments received during the Core Strategy RI&O consultation suggested that 80% of the maximum permitted capacity better reflects the maximum operational capacity, as opposed to the average of inputs, which was considered to be more a reflection of the economic situation rather than the maximum operational capacity of the facilities, and could lead to an underestimate of the potential operational capacity. This approach of adopting an 80% operational capacity was subsequently applied during the preparation of the Core Strategy Preferred Options, and is proposed to form the basis of future capacity requirements.

7.11 The main recycling facilities in Calderdale and their respective estimated 80% operational capacities are set out below, together with the recorded inputs from 2007-2014, and resulting spare capacity. The table shows a sharp increase in the amounts deposited in 2014 when compared to previous years; this is as a result of the council opening a Material Recycling Facility to deal with the LACW collected. Prior to 2013, there was a trend showing a reduction in surplus capacity in the MRF, although relatively small amounts of waste are recorded as being deposited into that site. Until 2013, there was only one composting facility, however this increased when a second one became operational in 2013. The table indicates that in 2014, there was approximately 1,371 tonnes spare composting capacity, which is the smallest capacity surplus of the reporting period.

Table 7.4 Capacity of and Inputs to Recycling and Composting Facilities 2007-2014

Inputs and Capacity [1]	Material Recycling Facility[2]	Composting Facility	TOTAL
Total Permitted Maximum Capacity per Annum (tonnes)	25,000	98,250	123,250
80% of Maximum Permitted Capacity (tonnes)[3] [4]	20,000	78,600	98,600
Recorded Inputs 2014 (tonnes)	13,982	77,229	91,211
Capacity Surplus (+) or Shortfall (-) 2014 v 80% 2014 Capacity figure (tonnes)	+6,018	+1,371	+7,389
Recorded Inputs 2013 (tonnes)	3,724	72,802	76,526
Capacity Surplus (+) or Shortfall (-) 2013 v 80% 2013 Capacity figure (tonnes)	+36,276	+5,798	+42,074
Recorded Inputs 2012 (tonnes)	2,447	42,961	45,408
Capacity Surplus (+) or Shortfall (-) 2012 v 80% 2011 Capacity figure (tonnes)	+17,553	+30,039	+47,592

23 Waste Facility Study Final Report, Land Use Consultants in association with SLR consulting Ltd, 2005

Inputs and Capacity [1]	Material Recycling Facility[2]	Composting Facility	TOTAL
Recorded Inputs 2011 (tonnes)	4,119	40,750	44,869
Capacity Surplus (+) or Shortfall (-) 2011 v 80% 2011 Capacity figure (tonnes)	+15,881	+32,250	+48,131
Recorded Inputs 2010 (tonnes)	2,988	38,608	41,596
Capacity Surplus (+) or Shortfall (-) 2010 v 80% 2010 Capacity figure (tonnes)	+17,012	+21,392	+38,404
Recorded Inputs 2009 (tonnes)	2,501	38,843	41,344
Capacity Surplus (+) or Shortfall (-) 2009 v 80% 2010 Capacity figure (tonnes)	+17,499	+21,157	+38,656
Recorded Inputs 2008 (tonnes)	3,883	19,167	23,050
Capacity Surplus (+) or Shortfall (-) 2008 v 80% 2010 Capacity figure (tonnes)	+16,117	+40,833	+56,950
Recorded Inputs 2007 (tonnes)	4,455	12,208	16,663
Capacity Surplus (+) or Shortfall (-) 2007 v 80% 2010 Capacity figure (tonnes)	+15,545	+47,792	+63,337

1. The capacity surplus or shortfalls reflect the capacity that existed at the time, apart from the 2014 data, which is compared to the latest capacity data from the Environment Agency (December 2015).
2. Material Recycling Facilities (MRF) are placed within the 'treatment' category in the Environment Agency data; however in line with the Yorkshire & Humber Waste Position Statement (January 2016), the view is taken that MRFs should be included under recycling because of the similar nature of the processes that take place at these types of site.
3. Until 2013 only 1 Material Recycling Facility Existed; 2013 Capacity updated to reflect the opening of an additional council facility at Battinson Road with a 25,000 Max Permitted Capacity (20,000 Max Operational Capacity).
4. Until 2013, only 1 composting facility was in operation, with a capacity of 91,250 tpa in 2011, and an estimated operational capacity of 73,000tpa. From 2007 to 2010 the Composting facility's Maximum Permitted Capacity was 75,000tpa, therefore the 80% figure was 60,000tpa. The Capacity Surplus or Shortfall figures are calculated against the capacity that existed at the time of the inputs, apart from 2014 when inputs are compared against the most recent Environment Agency capacity data (December 2015).

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding

Types of waste Input to Recycling Facilities.

7.12 In terms of the types of waste input to the material recycling facilities, the most common types were classed as 'Animal and Mixed Food wastes' (34%), 'Glass Wastes' (31%), and Paper and Cardboard Wastes (22%). Considering the main types of wastes exported from Calderdale in 2014 were 'Sorting Residues' these recycling facilities do not appear to offer suitable capacity to significantly lower the amount of waste exported from the district. In relation to the composting facility, unsurprisingly nearly 80% of inputs were classed as 'Animal and Mixed Food Wastes'.

Treatment Capacity

7.13 A similar assessment of treatment capacity considered to offer the greatest potential in terms of the MSW and C&I waste stream is presented below. The following table shows that of the approximate 80% maximum operational capacity of 62,000 tonnes per annum, there was 43,962

tonnes spare capacity against 2014 inputs. The Physico-chemical facility was recently awarded permission for improvements to the existing site, and can therefore be considered to offer a relatively long term consistent capacity.

Table 7.5 Capacity of Treatment Facilities 2007-2014

Inputs and Capacity (1)	Physical Treatment Facility	Physico-chemical Treatment Facility	TOTAL
Permitted Maximum Capacity per Annum (tonnes)	2,500	75,000	77,500
80% of Maximum Permitted Capacity (tonnes)	2,000	60,000	62,000
Recorded Inputs 2014 (tonnes)	226	17,812	18,038
Capacity Surplus (+) or Shortfall (-) 2014 v 2014 80% Capacity figure (tonnes)	+1,774	+42,188	+43,962
Recorded Inputs 2013 (tonnes)	135	20,377	20,512
Capacity Surplus (+) or Shortfall (-) 2013 v 2013 80% Capacity figure (tonnes)	+1,865	+39,623	+41,488
Recorded Inputs 2012 (tonnes)	0	10,664	10,664
Capacity Surplus (+) or Shortfall (-) 2012 v 80% Capacity figure (tonnes)	0	+49,336	+49,336
Recorded Inputs 2011 (tonnes)	0	25,334	25,334
Capacity Surplus (+) or Shortfall (-) 2011 v 80% Capacity figure (tonnes)	0	+34,666	+34,666
Recorded Inputs 2010 (tonnes)	0	30,263	30,263
Capacity Surplus (+) or Shortfall (-) 2010 v 80% Capacity figure (tonnes)	0	+29,737	+29,737
Recorded Inputs 2009 (tonnes)	0	30,185	30,185
Capacity Surplus (+) or Shortfall (-) 2009 v 80% Capacity figure (tonnes)	0	+29,815	+29,815
Recorded Inputs 2008 (tonnes)	0	58,806	58,806
Capacity Surplus (+) or Shortfall (-) 2008 v 80% Capacity figure (tonnes)	0	+1,194	+1,194
Recorded Inputs 2007(tonnes)	0	55,881	55,881
Capacity Surplus (+) or Shortfall (-) 2007 v 80% Capacity figure (tonnes)	0	+4,119	+4,119

1. The capacity surplus or shortfalls reflect the capacity that existed at the time, apart from the 2014 data, which is compared to the latest capacity data from the Environment Agency (December 2015).

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

Types of Waste Input to Treatment Facilities

7.14 The most common type of waste recorded as being input to treatment facilities in 2014 was classed as ''Household and Similar wastes' (93%).

Suggested Recycling, Recovery and Treatment Operational Capacity for Local Plan Assessment

7.15 It is proposed to apply the following Recycling and Treatment capacities for the Local Plan:

- **Recycling & Composting**
  - 98,600 tonnes per annum;
    - Represented by 20,000 tonnes per annum Material Recycling Facility ; and
    - 78,600 tonnes per annum Composting
- **Treatment**
  - 62,000 tonnes per annum;
    - Split between the following:
      - 2,000 tonnes per annum Physical Treatment Facility; and
      - 60,000 tonnes per annum Physico-Chemical Treatment Facility;

Transfer Capacity

Bulking Up Stations

7.16 In recognition of the pressures placed on the Bulking Up sites, especially Halifax, as a result of the increased recycling levels since 2009, an additional council waste facility on Battinson Road, Halifax commenced operations in 2013. However, this site is classed as a 'Material Recycling Facility' and therefore that capacity is considered in the recycling analysis. Until 2013, the 'Bulking Up' Waste Transfer capacity within Calderdale was focused at two sites - Halifax and Eastwood, although since 2014 the Eastwood site now offers a Household Waste Recycling Site service only, and is therefore not included in the 2014 Bulk Transfer inputs. In addition, the Halifax Bulk Transfer station capacity has increased to 120,000 tonnes per annum according to the Environment Agency.

7.17 The table below shows that the Bulk Transfer site had a maximum permitted capacity of 120,000 tonnes per annum in 2014. Applying the same theory as for the recycling and treatment facilities, an 80% operational capacity has been applied. This equates to an estimated operational capacity of 96,000 tonnes per annum.

Table 7.6 Waste Transfer Bulking Up Station Inputs and Capacities 2007-2014

Inputs and Capacity [1]	Halifax Bulk Transfer Station	Total
Max Permitted Capacity per annum (tonnes)	120,000	120,000
80% of Max Permitted Capacity (tonnes)	96,000	96,000

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Inputs and Capacity [1]	Halifax Bulk Transfer Station	Total
Recorded Inputs 2014 (tonnes)	57,783	57,783
Capacity Surplus (+) or Shortfall (-) 2014 v 80% Capacity Figure (tonnes)	38,217	38,217
Recorded Inputs 2013 (tonnes)	69,626	69,626
Capacity Surplus (+) or Shortfall (-) 2013 v 80% Capacity Figure (tonnes)	26,374	26,374
Recorded Inputs 2012 (tonnes)	79,343	79,343
Capacity Surplus (+) or Shortfall (-) 2012 v 80% Capacity Figure (tonnes)	16,657	16,657
Recorded Inputs 2011 (tonnes)	71,889	71,889
Capacity Surplus (+) or Shortfall (-) 2011 v 80% 2011 Capacity Figure (tonnes)	-11,889	-11,889
Recorded Inputs 2010 (tonnes)	71,240	71,240
Capacity Surplus (+) or Shortfall (-) 2010 v 80% 2011 Capacity Figure (tonnes)	-11,240	-11,240
Recorded Inputs 2009 (tonnes)	68,654	68,654
Capacity Surplus (+) or Shortfall (-) 2009 v 80% 2011 Capacity Figure (tonnes)	-8,654	-8,654
Recorded Inputs 2008 (tonnes)	64,956	64,956
Capacity Surplus (+) or Shortfall (-) 2008 v 80% 2011 Capacity Figure (tonnes)	-4,956	-4,956
Recorded Inputs 2007 (tonnes)	69,903	69,903
Capacity Surplus (+) or Shortfall (-) 2007 v 80% 2011 Capacity Figure (tonnes)	-9,903	-9,903

1. The capacity surplus or shortfalls reflect the capacity that existed at the time, apart from the 2014 data, which is compared to the latest capacity data from the Environment Agency (December 2015).

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

Type of Waste Input to Bulk Transfer Stations

7.18 The majority of inputs to bulking up transfer stations in 2007 to 2014 were classed as 'Household or Similar Wastes', in 2014 they accounted for 84% of deposits to bulk transfer facilities.

Local Authority Household Waste Recycling Sites

7.19 The following table shows there are five Household Waste Recycling Sites (HWRS) in the district, three of which appear to be close to capacity when compared to recorded inputs during 2007-2014. It is important to know that there have been a number of periods where sites have been closed temporarily in order to allow improvement works to be carried out, which have allowed recycling rates of up to 60%[(24)] Comments received during the Core Strategy Waste Policy Options suggested that over time the existing HWRS capacity will not meet demand and expansions to existing HWRS or new facilities will be required.

Table 7.7 Household Waste Recycling Sites (HWRS) Inputs and Capacities 2007-2013

Inputs and Capacity (1)	Ainleys HWRS	Atlas Mills Road HWRS	Eastwood HWRS	Halifax HWRS	Milner Royd HWRS	Total
Max Permitted Capacity per annum (tonnes)	25,000	7,500	25,000	10,000	7,500	75,000
80% of Max Permitted Capacity (tonnes)	20,000	6,000	20,000	8,000	6,000	60,000
Recorded Inputs 2014 (tonnes)	5,010	6,917	2,267	8,560	5,738	28,492
Capacity Surplus (+) or Shortfall (-) 2014 v 80% Capacity Figure (tonnes)	14,990	-917	+3,733	-560	+262	+31,508
Recorded Inputs 2013 (tonnes)	4,909	6,478	3,486	7,451	5,266	27,590
Capacity Surplus (+) or Shortfall (-) 2013 v 80% Capacity Figure (tonnes)	15,091	-478	+2514	+549	+734	+18,410
Recorded Inputs 2012 (tonnes)	4,974	6,341	5,160	6,629	4,916	28,020
Capacity Surplus (+) or Shortfall (-) 2012 v 80% Capacity Figure (tonnes)	15,026	-341	+840	+1371	+1,084	+17,980
Recorded Inputs 2011 (tonnes)	5,305	7,024	5,349	3,639	6,432	27,748
Capacity Surplus (+) or Shortfall (-) 2011 v 80% Capacity Figure (tonnes)	14,695	-1,024	+651	+4,361	-432	+18,252
Recorded Inputs 2010 (tonnes)	4,754	6,427	5,275	7,278	5,241	28,975
Capacity Surplus (+) or Shortfall (-) 2010 v 80% Capacity Figure (tonnes)	15,246	-427	+725	+722	+759	+17,025
Recorded Inputs 2009 (tonnes)	4,989	6,155	5,808	7,844	5,695	30,491
Capacity Surplus (+) or Shortfall (-) 2009 v 80% Capacity Figure (tonnes)	15,011	-155	+192	+156	+305	+15,509
Recorded Inputs 2008 (tonnes)	2,897	2,706	3,461	6,217	4,048	19,329
Capacity Surplus (+) or Shortfall (-) 2008 v 80% Capacity Figure (tonnes)	17,103	+3294	+2,539	+1783	+1952	+26,671
Recorded Inputs 2007 (tonnes)	2,985	6,581	3,658	7,651	7,234	28,109
Capacity Surplus (+) or Shortfall (-) 2007 v 80% Capacity Figure (tonnes)	17,105	-581	+2342	+349	-1234	+17,891

1. The capacity surplus or shortfalls reflect the capacity that existed at the time of the inputs, apart from the 2014 data, which is compared to the latest capacity data from the Environment Agency (December 2015).

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

Types of Waste Input to Local Authority Household Waste Recycling Sites.

7.20 In terms of 2014 inputs, all wastes deposited into the above Household Waste Recycling Sites was classed as were classed as 'Household and Similar Wastes', which repeated the previous reporting years.

Household, Commercial and Industrial Waste Transfer Sites

7.21 In 2014, new data from the Environment Agency indicated there were 8 facilities of this kind, however further analysis showed that 2 of these have either not recorded any inputs during the reporting period or have not recorded inputs since 2012; in addition one is the Halifax Bulk Transfer facility considered in Table 7.6, therefore 5 HCI waste transfer facilities are considered as part of the capacity analysis. From information provided by the EA it is estimated that there is a maximum permitted capacity of 203,000 tonnes per annum, with a maximum operational capacity of 162,400 tonnes per annum. As with the other analysis of individual site categories, the table below compares the recorded inputs against the estimated operational capacity that existed at that time. Although overall there was significant spare capacity, comments made during the previous rounds of Core Strategy consultations referred to the need to consider increased storage space within transfer sites as more items are required to be separated into more detailed groups. 85% of waste input to the HCI sites were classes as 'Household and Similar Wastes' in 2014.

Table 7.8 Household, Commercial & Industrial (HCI) Waste Transfer Sites Inputs and Capacities 2007-2014

	A11: Household Commercial & Industrial Waste Transfer Station
Number of Facilities Permitted December 15	5
Inputs and Capacity (1)	
Max Permitted Capacity per annum 2014 (tonnes) (2)	203,000
80% of Max Permitted Capacity (tonnes)	162,400
Recorded Inputs 2014 (tonnes)	35,383
Capacity Surplus (+) or Shortfall (-) 2014 v 80% 2013 Capacity Figure (tonnes)	127,017
Recorded Inputs 2013 (tonnes)	50,240
Capacity Surplus (+) or Shortfall (-) 2013 v 80% 2013 Capacity Figure (tonnes)	156,160
Recorded Inputs 2012 (tonnes)	58,911
Capacity Surplus (+) or Shortfall (-) 2012 v 80% 2012 Capacity Figure (tonnes)	113,089
Recorded Inputs 2011 (tonnes)	70,782
Capacity Surplus (+) or Shortfall (-) 2011 v 80% 2011 Capacity Figure (tonnes)	221,218
Recorded Inputs 2010 (tonnes)	76,455

	A11: Household Commercial & Industrial Waste Transfer Station
Capacity Surplus (+) or Shortfall (-) 2010 v 80% 2010 Capacity Figure (tonnes)	231,545
Recorded Inputs 2009 (tonnes)	66,709
Capacity Surplus (+) or Shortfall (-) 2009 v 80% 2010 Capacity Figure (tonnes)	241,291
Recorded Inputs 2008 (tonnes)	66,939
Capacity Surplus (+) or Shortfall (-) 2008 v 80% 2010 Capacity Figure (tonnes)	241,061
Recorded Inputs 2007 (tonnes)	37,417
Capacity Surplus (+) or Shortfall (-) 2007 v 80% 2010 Capacity Figure (tonnes)	270,583

1. The capacity surplus or shortfalls reflect the capacity that existed at the time, apart from the 2014 data, which is compared to the latest capacity data from the Environment Agency (December 2015).
2. The overall Maximum Permitted Capacity in 2007-2010 was 385,000tpa, therefore the 80% figure was 308,000tpa; in 2011 it was 365,000 therefore the 80% figure was 292,000; in 2012 the capacity was 215,000tpa and an 80% figure of 172,000. In 2013 the capacity was 258,000 therefore the 80% figure was 206,400

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2013. Figures may not sum due to rounding.

Other Transfer Capacity

7.22 Alongside Bulking Up facilities, HWRS, and HCI transfer sites, there are a number of 'other' transfer sites, such as transfer sites permitted to accept non biodegradable waste (predominantly inert CD&E) for transfer. Various categories of site during the reporting period have had different numbers of sites and associated capacity totals; this is reflected in the inputs and capacity analysis from 2007 to 2014 in the following table. The majority of wastes received at these 'other' waste transfer facilities was C&D wastes. Although there is a 'A9: Special Waste Transfer Station' and 2 'A14 Transfer Stations taking Non-biodegradable wastes' listed on the overall permitted capacity, neither have recorded inputs since 2011 and are therefore not considered in the assessment of existing capacity. One of the 'S0803: HCI Waste Transfer Station & Treatment Facilities' did not record any inputs post 2010 and is therefore taken out of the analysis.

Table 7.9 Other Waste Transfer Station Inputs and Capacities 2007-2014

	S0801: HCI Waste Transfer Station	S0803:HCI Waste Transfer Station & Treatment Facility	S0811: Inert & Excavation Waste Transfer Station & Treatment Facility	Total
Number of Facilities End Dec 2014	2 [1]	3 [2]	3	8
Inputs and Capacity [3]				
Max Permitted Capacity per annum (tonnes)	150,000	225,000	225,000	600,000
80% of Max Permitted Capacity (tonnes)	120,000	180,000	180,000	480,000
Recorded Inputs 2014	170	16,603	34,466	51,239
Capacity Surplus (+) or Shortfall (-) 2014 v 80% Capacity Figures (tonnes)	+119,830	+163,397	+145,534	+428,761
Recorded Inputs 2013 (tonnes)	716	1,487	47,294	49,717
Capacity Surplus (+) or Shortfall (-) 2013 v 80% Capacity Figures (tonnes)	+119,284	+238,513	+132,706	+502,283
Recorded Inputs 2012 (tonnes)	473	1,661	38,715	40,849
Capacity Surplus (+) or Shortfall (-) 2012 v 80% Capacity Figures (tonnes)	+119,527	+238,339	+141285	+511,151
Recorded Inputs 2011 (tonnes)	1,123	3,432	20,888	25,841
Capacity Surplus (+) or Shortfall (-) 2011 v 80% Capacity Figures (tonnes)	+58,877	+236,568	+159,113	+462,672
Recorded Inputs 2010 (tonnes)	674	2,048	2,858	7,252

	S0801: HCI Waste Transfer Station	S0803:HCI Waste Transfer Station & Treatment Facility	S0811: Inert & Excavation Waste Transfer Station & Treatment Facility	Total
Capacity Surplus (+) or Shortfall (-) 2010 v 80% Capacity Figures (tonnes)	+59,326	+237,952	+177,142	+484,748
Recorded Inputs 2009 (tonnes)	155	1,596	0	3,305
Capacity Surplus (+) or Shortfall (-) 2009 v 80% Capacity Figures (tonnes)	+59,845	+238,404	+180,000	+488,695
Recorded Inputs 2008 (tonnes)	0	1,454	0	4,003
Capacity Surplus (+) or Shortfall (-) 2008 v 80% Capacity Figures (tonnes)	+60,000	+238,546	+180,000	+487,997
Recorded Inputs 2007 (tonnes)	0	1,389	0	6,235
Capacity Surplus (+) or Shortfall (-) 2007 v 80% Capacity Figures (tonnes)	+60,000	+238,611	+180,000	+485,766

1. Only 1 site from 2007-2011 with a Operational Capacity of 60,000
2. 2 of the sites were A11 sites until 2014 therefore inputs from these are against the A11 category. Prior to 2014 capacity was considered to be 300000 tpa, with an operational capacity of 240,000
3. The capacity surplus or shortfalls reflect the capacity that existed at the time, apart from the 2014 data, which is compared to the latest capacity data from the Environment Agency (December 2015).

Capacity and Input Source: Environment Agency Waste Permit Data & Waste Data Interrogator 2007-2014. Figures may not sum due to rounding.

Types of Waste Input to 'Other' Waste Transfer Facilities.

7.23 In terms of the types of wastes input to 'other' waste transfer facilities, the most common types have varied from year to year. The latest data from 2014 suggests that around two thirds of wastes were classed as 'Construction and Demolition Wastes', with 'Household and Similar Wastes (22%) representing the only other significant category of wastes.

Summary of Waste Transfer Capacity Needs

7.24 In summary, the Waste Transfer capacity needs are as follows:

- Bulking Up Transfer Stations
  - Halifax is the only 'Bulk Transfer' site since Eastwood returned to solely being HWRS since 2013;
- Local Authority Household Waste Recycling Sites (HWRS)
  - Overall there is spare capacity;
  - Programme of improvements is continuing;
  - Some sites are operating in excess of the estimated operational capacity;
  - Over time the existing HWRS capacity will not meet demand and expansions to existing HWRS or new facilities will be required.
- Private Household, Commercial and Industrial Waste Transfer Stations
  - Need to consider increased storage space to accommodate increased waste separation into specific groups of waste types.

Landfill Capacity

7.25 As mentioned earlier, at present the MSW that is not separated for recycling (termed 'residual waste') is sent to waste and sorting facilities outside of the district. The waste is mechanically sorted to remove further recyclable material leaving a refuse derived fuel for export to Europe. There is a small amount of reject which is sent to Landfill. There are no landfill sites in Calderdale which accept general waste, and according to Environment Agency data, the main landfill site in Calderdale is Clock Face Quarry, which only accepts inert waste (for example soil and rubble) and has a permitted tonnage of 350,000 tonnes per annum. Overall, the Environment Agency estimated that Clock Face Quarry has 1,080,000 tonnes capacity remaining as at December 2010. Taking the inputs from 2011 to 2014 into account, this leaves an estimated capacity of 755,827 tonnes. The last eight years of inputs to landfill sites in Calderdale are given below; in 2014, 77% of the inputs were accounted for by Clock Face Quarry. Of the other sites, the Cromwell Wood Quarry site accounted for 17% of recorded inputs. From the following table it is apparent that of those sites that were active in 2014, all but Clock Face Quarry were classed as some form of reclamation or part of a construction scheme; neither of these types of site are considered as offering a long term landfill facility.

7.26 The following table also includes those former or current quarries that are allocated as 'waste disposal sites' in the Replacement Calderdale Unitary Development Plan; sites such as these generally require some form of landfilling in order for the site restoration to take place. The following table provides a summary of the inputs to Landfill during 2007 to 2014.

Table 7.10 Inputs to Landfill 2007-2014

Site Name	Permit Type	Tonnes 2007	Tonnes 2008	Tonnes 2009	Tonnes 2010	Tonnes 2011	Tonnes 2012	Tonnes 2013	Tonnes 2014
Beacon Lodge Quarry	Landfill Taking Non Biodegradable Wastes	7,847							
Clock Face Quarry	Inert Landfill	63,160		70,170	94,323	69,398	82,539	76,236	96,000
Cromwell Quarries	Household Commercial & Industrial Waste Landfill	16,284	19,501	3,769					
Delf Hill Quarry	Landfill Taking Non Biodegradable Wastes	1,205	1,320	990	175				
Former Atlas Works (South-eastern Extension)	Household Commercial & Industrial Waste Landfill	16,612							
Holden Gate, Bacup Road	Use of waste for reclamation <50,000 tps	2,964							
Cromwell Bottom Landfill Site	Household Commercial & Industrial Waste Landfill		810						
Sunny Bank Quarry	Landfill Taking Non Biodegradable Wastes		210						
Cromwell Wood Quarry	Use of waste for reclamation <100,000 tps			2,212		5,970	35,040	60,540	2,000
Railway Cutting Holmfield	Deposit of Waste to land as a recovery operation			101,128	9,880	18,520	6,680		
Railway Cutting Holmfield	Use of Waste in Construction						23,400	29,440	

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Site Name	Permit Type	Tonnes 2007	Tonnes 2008	Tonnes 2009	Tonnes 2010	Tonnes 2011	Tonnes 2012	Tonnes 2013	Tonnes 2014
Corporal Lane Quarry	Use of waste for reclamation <100,000 tps						9,528	200	4,407
Gibb Lane Quarry	Use of waste for reclamation <100,000 tps							5,725	22,190
Totals		108,072	21,842	178,269	104,378	93,888	157,187	172,141	124,597

Source: Environment Agency Waste Data Interrogator 2007 -2014

Waste Water Treatment Capacity

7.27 The treatment works in Copley accepted approximately 23,497 tonnes of waste water treatment sludges in 2014. According to the Environment Agency this has a maximum permitted capacity of 50,000 tonnes per annum, therefore it appears there is sufficient capacity.

7.28 Yorkshire Water also operate a waste water treatment facility at Cooper Bridge near Brighouse. The Environment Agency figures recorded inputs of 246,427 tonnes in 2014; this compares to a maximum permitted capacity of 500,000tpa. Further details on the Waste Water Treatment capacity will be addressed through the Council's Infrastructure Delivery Plan.

Summary of Capacity as at March 2014

7.29 Based on an operational capacity at 80% of the maximum permitted capacities, the following is a summary of existing capacity:

- **Recycling and Composting:**
  - 98,600 tonnes per annum;
    - Split between the following:
      - 20,000 tonnes per annum Material Recycling Facility ; and
      - 78,600 tonnes per annum Composting.

- **Treatment:**
  - 62,000 tonnes per annum;
    - Split between the following:
      - 2,000 tonnes Physical Treatment Facility; and
      - 60,000 tonnes Physico-Chemical Treatment Facility;

- **Waste Transfer:**
  - 96,000 tonnes capacity per annum at Bulking Up Waste Transfer Stations[25]

25 Change in capacity from 2013 due to the Eastwood site becoming a HWRS

- 60,000 tonnes capacity per annum at Local Authority Household Waste Transfer Sites;
- 162,400 tonnes capacity per annum at Household, Commercial & Industrial Waste Transfer Sites;
- 480,000 tonnes capacity per annum at 'other' Waste Transfer Sites.

- **Landfill**

  - Approximately 755,827 tonnes inert capacity in total.

8 Future Waste Capacity Requirements

8.1 In simplistic terms, in order to establish and estimate for future waste capacity requirements the report will need to calculate the following:

- Future waste projections / existing capacity = Future waste capacity surplus or shortfall.

8.2 However, arriving at an estimated capacity requirement is more complex, since an understanding needs to be gained as to the current waste capacity and it's suitability to contribute to the waste hierarchy. In Chapter 7, the analysis of the existing capacity is provided in order to gain such an understanding, which concluded that the following existing capacities existed:

- **Recycling and Composting**[26]
  - 98,600 tonnes per annum;
    - Split between the following:
    - 20,000 tonnes per annum Material Recycling Facility; and
    - 78,600 tonnes per annum Composting
- **Treatment**
  - 62,000 tonnes per annum;
    - Split between the following:
    - 2,000 tonnes Physical Treatment Facility; and
    - 60,000 tonnes Physico-Chemical Treatment Facility;
- **Waste Transfer:**
  - 96,000 tonnes capacity per annum at Bulking Up Waste Transfer Stations[27]
  - 60,000 tonnes capacity per annum at Local Authority Household Waste Transfer Sites;
  - 162,400 tonnes capacity per annum at Household, Commercial & Industrial Waste Transfer Sites;
  - 480,000 tonnes capacity per annum at 'other' Waste Transfer Sites.
- **Landfill**
  - Approximately 755,827 tonnes inert capacity in total.

8.3 Having established the estimated capacities of the recycling and treatment facilities in Calderdale, the next stage is to estimate the levels of waste that will be required to be diverted from landfill during the lifetime of the Local Plan, based on the national recycling targets as a minimum.

26 The EU Waste Framework Directive describes Recycling as any recovery operation by which waste materials are reprocessed into products, materials or substances, whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels, or for backfilling operations.

27 Change in capacity from 2013 due to the Eastwood site becoming a HWRS

Local Authority Collected Waste (LACW)

8.4 The National Waste Management Plan (December 2013) repeats the **EU Waste Framework Directive** measures that need to be taken to ensure at least 50%[28] of waste from households is recycled by 2020[29]

8.5 The EU Waste Framework Directive and the associated 'Waste Hierarchy' which is discussed in Chapter 1 requires a greater diversion of waste from landfill, representing a significant change to waste management, where landfill was the most common form of disposal. This relates to the second directive of importance, the **EU Landfill Directive**. This requires member states to reduce the amount of Biodegradable Municipal Waste (BMW)[30] landfilled to 35% of the 1995 level by 2020.

8.6 Environmentally, landfill has a number of impacts, for example creating greenhouse gases such as Methane, as well as the potential contamination of groundwater. Social impacts can arise from the day to day operations of landfill sites, such as noise and odours. Alongside the environmental and social costs of Landfill, economically this method of disposal is becoming ever more challenging, as a result of the Landfill Tax which currently stands at £80 per tonne. An associated economic aspect to landfill disposal is that in reducing the levels of waste landfilled, waste can be seen more as a resource and something from which value can be recovered as opposed to actually resulting in a cost to be disposed of.

Commercial and Industrial Waste

8.7 In terms of recovering value from C&I waste, information published by the government[31] stated that according to the latest statistics 24% of C&I waste was sent to landfill. There are no official government targets set out for C&I waste; given the comments received during previous consultations, the government statistics concerning landfill disposal rates, and the increasing landfill tax, it is proposed to present a number of different scenarios in relation to the overall recovery targets for C&I, ranging from 75% to 85%.

Construction, Demolition & Excavation Waste

8.8 As with household waste, CD&E waste is subject to a statutory recycling and recovery target. The National Waste Management Plan states that at least 70% by weight of construction and demolition waste is subjected to material recovery.

Future Waste Capacity Scenarios

8.9 Given the environmental, economic and social impacts of landfill, alongside the National Waste Management targets, it is increasingly common to estimate the capacities required to achieve a minimal level of waste disposed of in landfill, due to the costs involved. With all this in mind, for the purposes of the Waste Data Report, there are a number of scenarios presented which address the potential recovery requirements of LACW and C&I combined. The LACW targets for recycling are

28 In July 2014 the European Commission adopted a proposal to review recycling and other waste related targets in the EU Waste Framework Directive 2008/98/EC, the Landfill Directive 1999//31/EC and the Packaging Waste Directive 94/62/EC. These proposals included recycling and preparing for reuse of municipal waste to be increased to 70% by 2030. However these targets are not adopted as yet.

29 The EU Directive defines 'Wastes from Households' as a narrower version of 'household waste' in that it excludes local authority collected waste types not considered to have come directly from households, such as street bins, street sweepings, parks and grounds waste and compost like output (CLO) from Mechanical Biological Treatment (MBT) plants

30 Waste collected by the Waste Collection Authority, including trade wastes and Civic Amenity wastes. Material that can be broken down usually by micro-organisms into basic elements. The Government has declared that municipal waste is 68% biodegradable. Calderdale MBC Waste Strategy 2006.

31 Government Review of Waste Policy in England 2011, Defra 2011, p17

constant across the three scenarios as these are related to both the National Waste Strategy and the recently awarded waste management contract. The higher levels of C&I recycling in scenarios 2 and 3 reflect the national estimates of recycling levels[32] which suggested that recycling of C&I was approaching 48%. The following summarises the three proposed scenarios:

- Scenario 1 -
  - Meeting the National Waste Strategy household waste targets as a minimum (50% recycling of Household waste by 2020);
  - Reaching an overall LACW landfill diversion of 75% through 25% treatment rates;
  - Applying an equivalent C&I Waste 50% recycling rate;
  - Applying an equivalent C&I landfill diversion rate of 75% through 25% treatment rates
- Scenario 2 -
  - Meeting the National Waste Strategy household waste targets as a minimum (50% recycling of Household waste by 2020);
  - Reaching an overall LACW landfill diversion of 80% through 30% treatment rates;
  - C&I Waste
    - 80% recovery rate split between 55% Recycling and 25% Treatment;
- Scenario 3 -
  - Meeting the National Waste Strategy household waste targets as a minimum (50% recycling of Household waste by 2020);
  - Reaching an overall LACW landfill diversion of 85% through 35% treatment rates;
  - C&I Waste
    - 85% recovery rate split between 60% recycling and 25% treatment

8.10 Each of the household and C&I scenarios and the related levels of waste are presented in the following section, they present a picture as to the capacity required if Calderdale were entirely self sufficient in recycling and treating its waste; in reality the market decides where waste is dealt with as a result of waste operator contracts, however, for the Local Plan it is considered prudent to consider the potential capacity required and allocate land or areas to accommodate future waste arisings within the district.

Scenario 1

8.11 This scenario assumes the following:

- Meeting the National Waste Strategy household waste targets as a minimum (50% recycling of Household waste by 2020);
- Reaching an overall LACW landfill diversion of 75% through 25% treatment rates;
- Applying an equivalent C&I Waste 50% recycling rate;
- Applying an overall C&I landfill diversion rate of 75% through 25% treatment rates

8.12 To estimate the future capacity requirements for Calderdale's recyclable and compostable wastes under Scenario 1, the following table indicates the tonnages of recovery and recycling that will be required to meet such targets. As discussed in Section 6, it is projected there will be zero growth in LACW apart from waste arisings from new households; the basis for the other waste streams

32 Commercial and Industrial Waste Survey 2009, Final report, May 2011, Defra and Jacobs

projections are given in Section 6. It is estimated that by 2031, under Scenario 1 the district will need to recycle approximately 44,369 tonnes pa of LACW.

Table 8.1 Future Capacity Requirements - Scenario 1 LACW

Year	Total Household Projected Arisings (tonnes per annum)	Total Recycling Required %	Total Recovery Required* (tonnes per annum)
2016	80,598	50%	37,799
2021	84,978	50%	39,989
2026	89,358	50%	42,179
2031	93,738	50%	44,369

Projected arisings source: CMBC 2016, Total recovery required following removal of 5,000 tonnes of inert waste from the predicted arisings total.

Scenario 1 - Future Waste Capacity Requirements - Commercial and Industrial (C&I)

8.13 The estimated levels of recovery for C&I waste by 2021 are 131,136 tonnes per annum. By 2031, this figure has reduced slightly to 126,722 tonnes per annum.

Table 8.2 Future Capacity Requirements - Scenario 1 C&I

Year	Total Projected C&I Arisings (tonnes pa)	Total Recovery Required %	Total Recovery Required (tonnes per annum)
2016	262,362	50%	**131,181**
2021	262,272	50%	**131,136**
2026	258,316	50%	**129,158**
2031	253,444	50%	**126,722**

Projected Arisings Source: CMBC 2015 Figures may not sum due to rounding.

Scenario 1 - Future Waste Capacity Requirements - LACW and C&I combined

8.14 Having established projected levels of both household waste and C&I recovery required, the next stage is to compare these estimates against the existing capacity to arrive at a capacity shortfall or surplus. Firstly, the following table sets out the joint future capacity requirements for household and C&I waste, based on the Scenario 1 targets set out above. The figures indicate that by 2021, some 171,125 tonnes per annum will be required to be diverted from landfill; by 2026 this is predicted to have increased slightly to 171,337 tonnes per annum, and by 2031 the projections are a requirement for 171,091 tonnes per annum capacity.

Table 8.3 Future Capacity Requirements MSW and C&I - Scenario 1

Year	LACW Recycling Required (tonnes pa)	C&I Recycling Required (tonnes pa)	Total Household Waste and C&I Recovery Required (tonnes pa)
2016	37,799	131,181	**168,980**

Year	LACW Recycling Required (tonnes pa)	C&I Recycling Required (tonnes pa)	Total Household Waste and C&I Recovery Required (tonnes pa)
2021	39,989	131,136	**171,125**
2026	42,179	129,158	**171,337**
2031	44,369	126,722	**171,091**

Scenario 1 - LACW and C&I combined Recycling Capacity Surplus or Shortfall

8.15 As set out in the previous chapter, at present there is estimated 98,600 tonnes capacity. When comparing the capacity against the estimated tonnages that would require recycling to meet the targets, it can be seen that there is a capacity shortfall of 70,380 tonnes in 2016, rising to 72,737 tonnes by 2026. By the end of the plan period the shortfall is estimated to be approximately 72,491 tonnes per annum.

Table 8.4 LACW and C&I Waste Capacity Recycling Surplus / Shortfall - Scenario 1

Year	Total LACW and C&I Recovery Required (tonnes per annum)	Total Recycling & Composting Capacity	Overall Recycling Capacity (+) or Shortfall (-) per annum Vs Household and C&I waste targets
2016	168,980	98,600	**-70,380**
2021	171,125	98,600	**-72,525**
2026	171,337	98,600	**-72,737**
2031	171,091	98,600	**-72,491**

8.16 The above scenario deals purely with LACW and C&I Waste in terms of recycling. It is also useful to provide an additional analysis of the treatment capacity. Although the National Waste Management Plan no longer refers to the previous targets concerned with the recovery of Municipal (LACW) waste , which were 67% by 2015, and 75% by 2020. By achieving such targets the Landfill Directive target (65% landfill diversion of Biodegradable LACW compared to 1995 levels) would be achieved by an additional 10% over the former target by the end of the Local Plan. Also, in moving towards a minimal landfill target, it is proposed that such an approach is entirely reasonable and proportionate in relation to the Local Plan and planning for waste facilities. In following the approach set out in earlier versions of the waste data report, the analysis retains the recycling targets as above, but in order to meet the recovery target, adds in the treatment capacity to make up the additional 25% to meet the overall target.

Scenario 1 - LACW and C&I Waste Treatment Capacity Requirements

8.17 The table below indicates the levels of Local Authority Collected Waste (LACW) that would require treatment based on Scenario 1. This shows that if the remaining levels of recovery are to be taken up by treatment of waste, there would be an additional 25% diversion from landfill in addition to the 50% recycling and composting levels. In terms of tonnages, this equates to 22,185 tonnes per annum by the end of the Local Plan.

Table 8.5 Scenario 1 - LACW

Year	Total LACW Arisings	Total Recovery Required	Total Recovery Required (tonnes pa)	Recycling % Required	Recycling Required (tonnes pa)	Remaining Treatment % Required to meet Scenario 1 targets	Remaining LACW Treatment Required (tonnes pa)
2016	80,598	75%	56,699	50%	37,799	25%	18,900
2021	84,978	75%	59,984	50%	39,989	25%	19,995
2026	89,358	75%	63,269	50%	42,179	25%	21,090
2031	93,738	75%	66,554	50%	44,369	25%	22,185

Projected arisings source: CMBC 2016, Total recovery required following removal of 5,000 tonnes of inert waste from the predicted arisings total.

8.18 The additional level of C&I waste treatment required starts at 65,591 tonnes per annum in 2016, rising to 63,361 tonnes per annum by 2031.

Table 8.6 Scenario 1 - C&I Treatment Requirements

Year	Total C&I Waste Arisings	Total Recovery Required	Total Recovery Required (tonnes pa)	Re-cycling % Reqd	Recycling Required (tonnes pa)	Remaining Treatment % Required to meet Scenario 1 targets	Remaining C&I Waste Treatment Required (tonnes pa)
2016	262,362	75%	196,772	50%	131,181	25%	65,591
2021	262,272	75%	196,704	50%	131,136	25%	65,568
2026	258,316	75%	193,737	50%	129,158	25%	64,579
2031	253,444	75%	190,083	50%	126,722	25%	63,361

Scenario 1 - LACW and Commercial and Industrial Waste Treatment Capacity Requirements - Combined totals

8.19 Overall, when the LACW and C&I waste treatment levels are combined, the estimated levels are 84,490 tonnes per annum (2016) and increasing to approximately 85,546 by 2031. When compared against the treatment capacity, this results in an approximate shortfall of 23,546 tonnes per annum by the end of the plan period.

Table 8.7 LACW and C&I Treatment Required

Year	LACW Treatment Required (tonnes pa)	C&I Waste Treatment Required (tonnes pa)	Total LACW and C&I Treatment Required (tonnes pa)
2016	18,900	65,591	**84,490**
2021	19,995	65,568	**85,562**
2026	21,090	64,579	**85,668**

Year	LACW Treatment Required (tonnes pa)	C&I Waste Treatment Required (tonnes pa)	Total LACW and C&I Treatment Required (tonnes pa)
2031	22,185	63,361	**85,546**

Table 8.8 LACW and C&I Treatment Required and Capacity Surplus / Shortfall

Year	Total LACW and C&I Treatment Required (tonnes pa)	Total Treatment Capacity (tonnes pa)	Overall Capacity (+) or Shortfall (-) per annum Vs LACW and C&I waste targets
2015	**84,490**	**62,000**	**-22,490**
2020	**85,562**	**62,000**	**-23,562**
2026	**85,668**	**62,000**	**-23,668**
2031	**85,546**	**62,000**	**-23,546**

Scenario 1 - Summary

8.20 The following summarises the estimated levels of waste requiring diversion from landfill based on Scenario 1, and the resulting capacity shortfall by 2031:

Recycling:

- LACW recycling tonnes per annum:
  - 44,369 tonnes;
- C&I waste recycling tonnes per annum:
  - 126,722 tonnes;
- Total LACW and C&I waste requiring recycling:
  - 171,091 tonnes;
- **Recycling Capacity Shortfall:**
  - **-72,491**

Treatment:

- LACW Treatment Tonnes per annum:
  - 22,185 tonnes
- C&I waste treatment tonnes per annum:
  - 63,361
- Total LACW and C&I waste requiring treatment:

- 85,546 tonnes per annum:

- **Treatment Capacity Shortfall:**

  - **-23,546 tonnes per annum**

Scenario 2

8.21 The second scenario presents the estimated capacity required if the following recycling targets were to be met:

- Meeting the National Waste Strategy household waste targets as a minimum (50% recycling of Household waste by 2020);
- Reaching an overall LACW landfill diversion of 80% through 30% treatment rates;
- C&I Waste

  - 80% recovery rate split between 55% Recycling and 25% Treatment;

Scenario 2 - Future Waste Recycling Capacity Requirements - LACW

8.22 The levels of recycling for LACW remain as in Scenario 1 as these are expected to remain constant at 50% in order to meet the National Waste Strategy Requirements alongside the recently awarded Waste Management contract.

Table 8.9 Future Capacity Requirements - Scenario 2 LACW

Year	Total LACW Projected Arisings (tonnes pa)	Total Recycling / Composting Required %	Total Recycling / Composting Required (tonnes pa)
2016	80,598	50%	**37,799**
2021	84,978	50%	**39,989**
2026	89,358	50%	**42,179**
2031	93,738	50%	**44,369**

Projected arisings source: CMBC 2016, Total recovery required following removal of 5,000 tonnes of inert waste from the predicted arisings total.

Scenario 2 - Future Waste Recycling Capacity Requirements - Commercial and Industrial (C&I)

8.23 Applying the recycling rate of 55% to C&I waste would result in approximately 139,394 tonnes requiring recycling by the end of the Local Plan.

Table 8.10 Future Capacity Requirements -Scenario 2 C&I

Year	Total Projected C&I Arisings (tonnes pa)	Total Recycling Required %	Total Recycling Required (tonnes pa)
2016	262,362	55%	**144,299**
2021	262,272	55%	**144,249**
2026	258,316	55%	**142,074**

Year	Total Projected C&I Arisings (tonnes pa)	Total Recycling Required %	Total Recycling Required (tonnes pa)
2031	253,444	55%	**139,394**

Scenario 2 - Future Waste Recycling Capacity Requirements - LACW and C&I combined

8.24 The following table combines the projected levels of both LACW and C&I waste that will need to be recycled or composted in meeting the targets set out in Scenario 2 (50% LACW, 55% C&I). This shows that when the two waste streams are combined the total tonnage estimated to require recycling or composting by the end of the Local Plan is 183,763 tonnes per annum.

Table 8.11 Future Waste Recycling Capacity Requirements LACW and C&I - Scenario 2

Year	LACW Recycling Required (tonnes per annum)	C&I Recycling Required (tonnes per annum)	Total LACW and C&I Recycling Required (tonnes per annum)
2016	37,799	144,299	**182,098**
2021	39,989	144,249	**184,238**
2026	42,179	142,074	**184,253**
2031	44,369	139,394	**183,763**

Scenario 2 - Future Waste Recycling Capacity Surplus or Shortfall - LACW and C&I

8.25 The following table shows that applying the recycling rates in scenario 2 would result in a shortfall of capacity of approximately 85,163 tonnes per annum by 2031.

Table 8.12 LACW and C&I Waste Capacity Surplus / Shortfall - Scenario 2

Year	Total LACW and C&I Recycling Required (tonnes per annum)	Total Recycling Capacity	Overall Capacity (+) or Shortfall (-) per annum Vs LACWand C&I waste targets
2016	182,098	98,600	**-83,498**
2021	184,238	98,600	**-85,638**
2026	184,253	98,600	**-85,653**
2031	183,763	98,600	**-85,163**

Scenario 2 - Future Waste Treatment Capacity Requirements - LACW

8.26 In Scenario 2, the levels of treatment increase for LACW from 25% to 30% in order to meet the 80% diversion from landfill. The following table indicates the levels of LACW that would require treatment based on Scenario 2. This shows that In terms of tonnages, this equates to 26,621 tonnes per annum of LACW requiring treatment by the end of the Local Plan.

Table 8.13 Scenario 2 - LACW Treatment Requirements

Year	Total LACW Arisings	Total Recovery Required	Total Recovery Required (tonnes pa)	Recycling % Required	Recycling Required (tonnes pa)	Remaining Treatment % Required to meet Scenario 2 targets	Remaining LACW Treatment Required (tonnes pa)
2015	80,598	80%	60,478	50%	37,799	30%	22,679
2020	84,978	80%	63,982	50%	39,989	30%	23,993
2026	89,358	80%	67,486	50%	42,179	30%	25,307
2031	93,738	80%	70,990	50%	44,369	30%	26,621

Projected arisings source: CMBC 2016, Total recovery required following removal of 5,000 tonnes of inert waste from the predicted arisings total.

Scenario 2 - Future Waste Treatment Capacity Requirements - C&I

8.27 In terms of C&I waste, the levels of treatment remain the same as those in Scenario 1, that is by the end of the Local Plan the amount of C&I requiring treatment is estimated to be approximately 63,361 tonnes per annum.

Table 8.14 Scenario 2 - C&I Treatment Requirements

Year	Total C&I Waste Arisings	Total Recovery Required (%)	Total Recovery Required (tonnes pa)	Recycling % Required	Recycling Required (tonnes pa)	Remaining Treatment % Required to meet Scenario 2 targets	Remaining C&I Waste Treatment Required (tonnes pa)
2016	262,362	80%	209,890	55%	144,299	25%	65,591
2021	262,272	80%	209,817	55%	144,249	25%	65,568
2026	258,316	80%	206,652	55%	142,074	25%	64,579
2031	253,444	80%	202,756	55%	139,394	25%	63,361

Scenario 2 - Future Waste Treatment Capacity Requirements - LACW and C&I Combined

8.28 Overall, when the LACW and C&I waste treatment levels are combined, the estimated levels reach 89,983 tonnes per annum by 2031. When compared against the treatment capacity of 62,000 tonnes per annum, the shortfall would be approximately 27,983 tonnes per annum.

Table 8.15 Scenario 2 - LACW and C&I Treatment Required

Year	LACW Required (tonnes pa)	C&I Waste Treatment Required (tonnes pa)	Total Household Waste and C&I Recovery Required (tonnes pa)
2016	22,679	65,591	**88,270**
2021	23,993	65,568	**89,561**

Year	LACW Required (tonnes pa)	C&I Waste Treatment Required (tonnes pa)	Total Household Waste and C&I Recovery Required (tonnes pa)
2026	25,307	64,579	**89,886**
2031	26,621	63,361	**89,983**

Table 8.16 Scenario 2 - LACW and C&I Treatment Required and Capacity Surplus / Shortfall

Year	Total LACW and C&I Treatment Required (tonnes pa)	Total Treatment Capacity	Overall Capacity (+) or Shortfall (-) per annum Vs Household and C&I waste targets
2016	88,270	62,000	**-26,270**
2021	89,561	62,000	**-27,561**
2026	89,886	62,000	**-27,886**
2031	89,983	62,000	**-27,983**

Scenario 2 - Summary

8.29 The following summarises the estimated levels of waste requiring diversion from landfill based on Scenario 2, and the resulting capacity shortfall by 2031:

Recycling:

- LACW recycling tonnes per annum:
  - 44,369 tonnes;
- C&I waste recycling tonnes per annum:
  - 139,394 tonnes;
- Total LACW and C&I waste requiring recycling:
  - 183,763 tonnes;
- **Recycling Capacity Shortfall:**
  - **-85,163 tonnes per annum**

Treatment:

- LACW Treatment Tonnes per annum:
  - 26,621 tonnes;
- C&I waste treatment tonnes per annum:
  - 63,361 tonnes;
- Total LACW and C&I waste requiring treatment:

- 89,983 tonnes per annum:

- **Treatment Capacity Shortfall:**
  - **-27,983 tonnes per annum**

Scenario 3

8.30 The final scenario that is considered applies an 85% diversion from landfill rate which assumes the following:

- Meeting the National Waste Strategy household waste targets as a minimum (50% recycling of Household waste by 2020);
- Reaching an overall LACW landfill diversion of 85% through 35% treatment rates;
- C&I Waste
  - 85% recovery rate split between 60% recycling and 25% treatment

8.31 As in the other two scenarios, the levels of LACW recycling remains at 50%. In order therefore to achieve an 85% diversion from landfill the treatment rates are 35%.

Scenario 3 - Future Waste Recycling Capacity Requirements - LACW

8.32 The levels of recycling for LACW remain as in Scenario 1 as these are expected to remain constant at 50% in order to meet the National Waste Strategy Requirements alongside the recently awarded Waste Management contract.

Table 8.17 Future Capacity Requirements - Scenario 3 LACW

Year	Total LACW Projected Arisings (tonnes pa)	Total Recycling / Composting Required %	Total Recycling / Composting Required* (tonnes Pa)
2016	80,598	50%	**37,799**
2021	84,978	50%	**39,989**
2026	89,358	50%	**42,179**
2031	93,738	50%	**44,369**

Projected arisings source: CMBC 2016, Total recovery required following removal of 5,000 tonnes of inert waste from the predicted arisings total.

Scenario 3 - Future Waste Recycling Capacity Requirements - C&I waste

8.33 Applying the recycling rate of 60% to C&I waste would result in approximately 152,067 tonnes per annum requiring recycling by the end of the Local Plan.

Table 8.18 Future Capacity Requirements -Scenario 3 C&I

Year	Total Projected C&I Arisings(tonnes pa	Total Recycling Required %	Total Recycling Required (tonnes pa)
2016	262,362	60%	**157,417**

Year	Total Projected C&I Arisings(tonnes pa	Total Recycling Required %	Total Recycling Required (tonnes pa)
2021	262,272	60%	**157,363**
2026	258,316	60%	**154,989**
2031	253,444	60%	**152,067**

Scenario 3 - Future Waste Recycling Capacity Requirements - LACW and C&I combined

8.34 The following table combines the projected levels of both LACW and C&I waste that will need to be recycled or composted in meeting the targets set out in Scenario 3 (50% LACW, 60% C&I) . This shows that when the two waste streams are combined the total tonnage estimated to require recycling or composting by the end of the Local Plan is 196,436 tonnes per annum.

Table 8.19 Future Waste Recycling Capacity Requirements LACW and C&I - Scenario 3

Year	LACW Recycling Required (tonnes pa)	C&I Recycling Required (tonnes pa)	Total LACW and C&I Recycling Required (tonnes pa)
2016	37,799	157,417	**195,216**
2021	39,989	**157,363**	**197,352**
2026	42,179	**154,989**	**197,168**
2031	44,369	**152067**	**196,436**

Scenario 3 - Future Waste Recycling Capacity Surplus or Shortfall - LACW and C&I

8.35 The following table shows that applying the recycling rates in Scenario 3 would result in a shortfall of capacity of approximately 97,836 tonnes per annum by 2031.

Table 8.20 LACW and C&I Waste Capacity Surplus / Shortfall - Scenario 3

Year	Total LACW and C&I Recycling Required (tonnes pa)	Total Recycling Capacity	Overall Capacity (+) or Shortfall (-) per annum Vs LACWand C&I waste targets
2016	195,216	98,600	**-96,616**
2021	197,352	98,600	**-98,752**
2026	197,168	98,600	**-98,568**
2031	196,436	98,600	**-97,836**

Scenario 3 - Future Waste Treatment Capacity Requirements - LACW

8.36 In Scenario 3, in order to meet the overall 85% diversion from landfill the treatment rates for LACW would be set at 35%. The following table indicates that by the end of the Local Plan period, it would be necessary to deliver approximately 31,058 tonnes of LACW to treatment facilities.

Table 8.21 Scenario 3 - LACW Treatment Requirements

Year	Total LACW Arisings	Total Recovery Required	Total Recovery Required (tonnes pa)	Recycling % Required	Recycling Required (tonnes pa)	Remaining Treatment % Required to meet Scenario 2 targets	Remaining LACW Treatment Required (tonnes pa)
2016	80,598	85%	64,258	50%	37,799	35%	26,459
2021	84,978	85%	67,981	50%	39,989	35%	27,992
2026	89,358	85%	71,704	50%	42,179	35%	29,525
2031	93,738	85%	75,427	50%	44,369	35%	31,058

Projected arisings source: CMBC 2016, Total recovery required following removal of 5,000 tonnes of inert waste from the predicted arisings total.

Scenario 3 - Future Waste Treatment Capacity Requirements - C&I

8.37 In terms of C&I waste, the additional level of treatment required is estimated to be in the region of 63,361 tonnes per annum by 2031.

Table 8.22 Scenario 3 - C&I Treatment Requirements

Year	Total C&I Waste Arisings	Total Recovery Required	Total Recovery Required (tonnes pa)	Recycling % Required	Recycling Required (tonnes pa)	Remaining Treatment % Required to meet Scenario 2 targets	Remaining C&I Waste Treatment Required (tonnes pa)
2016	262,362	85%	223,008	60%	157,417	25%	65,591
2021	262,272	85%	222,931	60%	157,363	25%	65,568
2026	258,316	85%	219,568	60%	154,989	25%	64,579
2031	253,444	85%	215,428	60%	152,067	25%	63,361

Scenario 3 - Future Waste Treatment Capacity Requirements - LACW and C&I Combined

8.38 Overall, when the LACW and C&I waste treatment levels are combined, the estimated levels reach 94,419 tonnes per annum by 2031. When compared against the treatment capacity of 62,000 tonnes per annum, the shortfall would be approximately 32,419 tonnes per annum by the end of the Local Plan.

Table 8.23 Scenario 3 - LACW and C&I Treatment Required

Year	LACW Treatment Required (tonnes pa)	C&I Waste Treatment Required (tonnes pa)	Total Household Waste and C&I Recovery Required (tonnes pa)
2016	26,459	65,591	**92,050**
2021	27,992	65,568	**93,560**

Year	LACW Treatment Required (tonnes pa)	C&I Waste Treatment Required (tonnes pa)	Total Household Waste and C&I Recovery Required (tonnes pa)
2026	29,525	64,579	**94,104**
2031	31,058	63,361	**94,419**

Table 8.24 Scenario 3 - LACW and C&I Treatment Required and Capacity Surplus / Shortfall

Year	Total LACW and C&I Treatment Required (tonnes pa)	Total Treatment Capacity	Overall Capacity (+) or Shortfall (-) per annum Vs Household and C&I waste targets
2016	92,050	62,000	**-30,050**
2021	93,560	62,000	**-31,560**
2026	94,104	62,000	**-32,104**
2031	94,419	62,000	**-32,419**

Scenario 3 - Summary

8.39 The following summarises the estimated levels of waste requiring diversion from landfill based on Scenario 3, and the resulting capacity shortfall by 2031:

Recycling:

- LACW recycling tonnes per annum:
  - 44,369 tonnes;
- C&I waste recycling tonnes per annum:
  - 152,067 tonnes;
- Total LACW and C&I waste requiring recycling:
  - 196,436 tonnes;
- **Recycling Capacity Shortfall:**
  - **-97,836 tonnes per annum**

Treatment:

- LACW Treatment Tonnes per annum:
  - 31,058 tonnes;
- C&I waste treatment tonnes per annum:
  - 63,361 tonnes;
- Total LACW and C&I waste requiring treatment:

- 94,419 tonnes per annum:

- **Treatment Capacity Shortfall:**
  - **-32,419 tonnes per annum**

8.40 The following table illustrates the resulting capacity shortfalls from all three scenarios. It is clear that in order to meet any of the scenarios targets, there is a need for additional waste capacity within the district. In reality, waste companies have contracts with other waste companies which means waste travels across district, county and sometimes countries borders. Therefore commercial decisions will eventually determine whether facilities are built and what types of facilities are delivered. The capacity shortfall in recycling capacity ranges from 72,491 tonnes to 97,836 tonnes per annum, whilst treatment capacity shortfalls range from 23,546 tonnes to 32,419 tonnes per annum. Information on converting capacity shortfalls to land take is scarce. Estimates of land required for different types of facilities were provided back in 2004 by the then Office of the Deputy Prime Minister (ODPM)[33] In terms of allocating any new waste sites, the land take required would be similar for all scenarios.

Table 8.25 Summary of Future Capacity Scenarios for LACW and C&I

Scenario	Recycling / Composting Capacity Shortfall by 2031	Additional Facilities Required - Recycling / Composting	Estimated Land Required (hectares)	Treatment Capacity Shortfall by 2031	Additional Facilities Required - Treatment	Estimated Land Required (hectares)
Scenario 1 - 75% landfill diversion rates	-72,491 tonnes per annum	Composting - 1 or 2 additional facilities with a combined capacity of approximately 25,000 tonnes pa Recycling Facility - Up to 2 additional facilities with a combined capacity of approximately 50,000 tonnes pa	Approx 3ha	-23,546 tonnes per annum	Up to 2 additional treatment facilities with a combined capacity of approximately 25,000 tonnes per annum	Approx 1 ha
Scenario 2 - 80% landfill diversion rates	-85,163 tonnes per annum	Composting - 1 or 2 additional facilities with a combined capacity of approximately 25,000 tonnes pa Recycling Facility - Up to 2 additional facilities of approximately 65,000 tonnes pa	Approx 3.5ha	-27,983 tonnes per annum	Up to 2 additional treatment facilities with a combined capacity of approximately 30,000 tonnes per annum	Approx 1 ha

33 Planning for Waste Management Facilities, A Research Study, ODPM, 2004

Scenario	Recycling / Composting Capacity Shortfall by 2031	Additional Facilities Required - Recycling / Composting	Estimated Land Required (hectares)	Treatment Capacity Shortfall by 2031	Additional Facilities Required - Treatment	Estimated Land Required (hectares)
Scenario 3 - 85% landfill diversion rates	-97,836 tonnes per annum	Composting - 1 or 2 additional facilities with a combined capacity of approximately 25,000 tonnes pa Recycling Facility - Up to 3 additional facilities with a combined capacity of 75,000 tonnes pa	Approx 4ha	-32,419 tonnes per annum	Up to 2 additional treatment facilities with a combined capacity of approximately 35,000 tonnes per annum	Approx 1.5 ha

Existing Capacity v Future Requirements - Construction Demolition & Excavation Waste (CD&E)

8.41 The overall permitted capacity of sites that accepted CD&E waste[34] as of December 2015 was 1,243,000 tonnes pa, which when first viewed against the estimated 2014 CD&E inputs of 207,581 tonnes would appear to suggest a surplus capacity of 1,035,419 tonnes pa.

8.42 On closer inspection, some 65% of all inputs to Calderdale's permitted sites in relation to CD&E waste was classed as 'soils', with 25% classed as 'Concrete - bricks - tiles and ceramics'. It is apparent that a single site (Clockface Inert Landfill) dominates the CD&E inputs and capacity in Calderdale. This facility accounted for approximately 56% of all CD&E related deposits in 2014. The remainder of the CD&E inputs were spread amongst a number of other sites.

8.43 Removing this single site from the analysis, would mean the capacity is reduced to 893,000 tonnes, and the 2014 inputs reducing to 76,918 tonnes. This still leaves a combined overall capacity surplus of 816,082 tonnes at permitted sites that accepted CD&E waste in 2014.

8.44 The projected CD&E arisings as set out in Section 6 are estimated to be 250,003 tonnes by 2030. In terms of landfill requirements, it is estimated that up to 85% of this waste is recovered or used beneficially (including restoration of mineral sites)[35] which would result in approximately 37,500 tonnes ending up in landfill. As discussed in Chapter 7, the estimated remaining capacity at Clock Face Quarry is approximately 755,827. This capacity, along with the restoration of other mineral sites, and recycling of CD&E waste it is considered there is sufficient landfill capacity for the inert type (which accounted for approximately 90% of all CD&E waste deposits in 2014) of CD&E waste. In terms of national requirements, the national waste management plan included a 70% recovery target by 2020 for this type of waste stream. This would require a recovery capacity of 170,600 tonnes, based on arisings of 243,715 in 2020, and 222,633 tonnes by 2031 based on arisings of 318,047 tonnes per annum. Given the non landfill and reclamation capacity in 2014 was 593,000 tonnes, it would appear there is currently spare capacity to deal with this type of waste stream.

34 using the CD&E categories in the Environment Agency's Waste Data Modelling Project: Yorkshire and Humber Region, Draft 2010

35 Construction, Demolition and Excavation Waste Arisings, Use and Disposal for England, 2008

8.45 Therefore the future landfill, reclamation ,and recovery capacity for CD&E is as follows:

- Estimated Capacity - inert landfill
  - 350,000 tonnes per annum.
- Estimated Capacity - Reclamation
  - 300,000 tonnes per annum
- Estimated Capacity - Recovery
  - 593,000 tonnes per annum

8.46 Taking an average level of inputs into the landfill site, at approximately 68,978 tonnes per annum there is just under 11 years capacity remaining at this site.

Existing Capacity v Future requirements – Hazardous Wastes

8.47 At present the majority of hazardous waste is exported to Leeds or Kirklees, and the vast majority is diverted from Landfill (only 460 tonnes in 2011). This type of waste requires specialist treatment, and it often travels further distances as a result. Further work as part of the Local Plan Duty to Co-operate will take place to establish future patterns of Hazardous waste disposal (alongside the other waste streams as well).

Appendix 1 Glossary

Anaerobic Digestion

A process where biodegradable material is encouraged to break down in the absence of air. Materials are placed into an enclosed vessel and in controlled conditions the waste breaks down into gas and solids.

Biodegradable Municipal Waste

Waste collected by the Waste Collection Authority, including trade wastes and Civic Amenity wastes. Material that can be broken down usually by micro-organisms into basic elements. The Government has declared that municipal waste is 68% biodegradable.

Biological Treatment

Any biological process that changes the properties of wastes.

Commercial Waste

Waste arising from premises that are used wholly or mainly for trade, business, sport, recreation or entertainment (excluding industrial waste). If a Local Authority has collection arrangements in place, this becomes municipal waste.

Composting

The biological process in which organic wastes, such as garden and kitchen waste are converted into a stable granular material which can be applied to land to improve soil structure and enrich the nutrient content of the soil.

Construction, Demolition & Excavation Waste

Wastes produced as a result of construction or demolition works, typically building infrastructure. Examples include windows, walls, doors, plasterboard, pipework, items that had been part of infrastructure, wastes from exploration for or extraction of mineral resources.

Energy from Waste

The burning of waste under controlled conditions in which the resulting heat is used to generate electricity / thermal energy. Energy from Waste are enclosed facilities and typically resemble a large warehouse with a stack.

Gasification

Carbon based waste is heated in the presence of air or steam to produce fuel rich gases.

Hazardous Waste

Previously known as Special Waste, is controlled waste which is considered so dangerous or difficult to keep, treat or dispose of that special provision needs to be made by regulations.

Incineration

This is the controlled burning of waste, either to reduce its volume or toxicity. Energy recovery from incineration can be made by utilising the calorific value of paper, plastic etc to produce heat or power. Current flue gas emission standards are very high. Some ash can be recycled or landfilled, others require specialist treatment.

Industrial waste

Waste arising from factories and industrial plants.

Inert Waste

Waste, which when deposited into a waste disposal site, does not undergo any significant physical, chemical, or biological transformation, and complies with the criteria set out in Annex III of the EC Directive of the Landfilling of Waste.

Landfill

Landfill is the disposal of waste in disused quarries or aggregate workings, where it is buried. These sites are subject to strict controls to prevent the contamination of water supplies by leachate emanating from the landfill, and to control the emission of greenhouse gases, such as methane, coming from the rubbish as it decomposes.

Landfill Tax

A tax levied by Central government on every tonne of waste disposed of in landfill.

Materials Recycling Facility

Facilities where dry recyclables are taken for secondary sorting and processing prior to being exported to specialist processing facilities.

Municipal Waste

Includes all waste under the control of Local Authorities. It includes all household waste, street litter, waste delivered to Council recycling points, Council office waste, HWRS site waste, and some commercial waste from shops and smaller trading estates where local authority waste collection agreements are in place.

Pyrolysis

A process that involves heating waste in a closed vessel, in the absence of air, to break down the waste into three separate fractions. That is gas , solid and liquid. This technology generally requires a constant waste stream such as tyres or plastics to produce a usable fuel product.

Recycling

Involves the reprocessing of wastes, either into the same product or a different one. Many non-hazardous industrial wastes such as paper, glass, cardboard, plastics and scrap metals can be recycled. Special wastes such as solvents can also be recycled by specialist companies or by in house equipment.

Residual Waste

The remaining waste that cannot be recycled after going through a treatment or transfer process.

Transfer Station

A site which receives waste, for sorting prior to transfer to another place for recycling, treatment or disposal.

Treatment

Involves the chemical or biological processing of certain types of waste for the purposes of rendering them harmless, reducing volumes before landfilling, or recycling certain wastes.

Waste electrical and electronic equipment (WEEE)

A European directive led to legislation concerning the methods of disposal for waste electrical and electronic equipment.

Appendix 2 Waste Treatment Technologies

2.1 The following table presents a description of the various waste management technologies (Taken from Planning for Waste Management Facilities, ODPM, 2004). In line with the waste hierarchy, and in order to reduce potential landfill costs, the technologies that allow waste to be re-used, recycled, composted, or those which provide Energy from Waste (EfW) (including Anaerobic Digestion, Mechanical Biological Treatment, Pyrolysis, Gasification, and Thermal Treatment) will be the likely focus of any future waste facility developments within Calderdale.

Table APX 2.1 Types of Waste Management Technologies

Technology	Key Features
Windrow Composting	The aerobic decomposition of shredded and mixed organic waste using linear heaps known as windrows. The waste is mechanically turned until the desired temperature and residence times are achieved to enable effective degradation, resulting in a bulk reduced, stabilised residue known as compost. The process can take place outdoors or in a large building and takes around 3 months.
In-vessel Composting	Differs from windrow composting as the process is carried out in an enclosed container, where the control systems for material degradation are fully automated. Moisture temperature and odour can be regulated and this process produces a stable compost much quicker than outdoor windrow composting.
Anaerobic Digestion	Biodegradable material is encouraged to break down in the absence of oxygen. Waste is broken down in an enclosed vessel under controlled conditions, resulting in the production of digestate and biogas.
Materials Recycling Facility (MRF)	Facilities where dry recyclables are taken for secondary sorting and processing prior to being exported to specialist processing facilities.
Mechanical Biological Treatment (MBT)	Designed to recover valuable components from unsorted MSW, for recycling, and deliver a stabilised residue for final landfilling or processed to form a refuse derived fuel combustion, co-combustion or another thermal or biological treatment process. A number of standard waste separation operations are used to remove recycled materials such as glass, metals and plastics, followed by composting or anaerobic digestion of the remaining organic materials. Such facilities are known as Mechanical Biological Treatment (MBT) plant, as they commonly include an element of composting to partially stabilise the residual waste. Similar processes, excluding the biological stabilisation process have previously been described as 'dirty MRFs'.
Pyrolysis	Organic waste is heated in the absence of air to produce a mixture of gaseous and liquid fuels and a solid inert residue (mainly carbon). This technology generally requires a consistent waste stream such as tyres or plastics to produce a usable fuel product.
Gasification	Carbon based wastes are heated in the presence of air or steam to produce fuel rich gases. The technology is based on the reforming process to produce gas from coal.
Small Scale Thermal Treatment	Include moving grate systems of less than 100,000 tonnes per annum and rotating kilns, as well as other proprietary combustion processes. Suitable for small scale urban applications and centralised Local Authority facilities.

Technology	Key Features
Large Scale Thermal Treatment	Include large centralised urban facilities, typically receiving between 150,000 to 400,000 tonnes of waste per annum. Techniques used include various moving grate systems and fluidised bed processes.
Landfill	Controlled deposit of waste to land. Often minerals workings and extraction sites are used as landfills, providing a means to restore land. Where such 'holes in the ground are not available' it is possible to deposit waste onto the ground surface and build up a waste disposal site, known as 'landraising'.
Waste Transfer Station	Facility to which waste is delivered for bulking/handling/sorting prior to transfer to another place for recycling, treatment or disposal.