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Solihull Metropolitan Borough Council

WASTE NEEDS ASSESSMENT FOR SOLIHULL

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Contents Page

APPENDICES

Executive Summary

Solihull Metropolitan Borough Council (the Council) is undertaking a review of the adopted Solihull Local Plan, 2013. The Council requires a Waste Needs Assessment to provide a sound evidence base to support the development of waste management policies as part of the Local Plan Review.

An assessment of the existing waste management facilities and permitted capacity operating in Solihull indicates that:

- There are only a small number of permitted facilities within Solihull, with the wastes received being predominantly construction and demolition type wastes, either from the construction and demolition sector, or soil and stones from the municipal sector.
- Whilst there is composting capacity in Solihull, which could increase with Beechwood Recycling IVC facility proposal, there is no residual waste treatment or disposal capacity such as mechanical biological treatment (MBT), refuse derived fuel (RDF) production, incineration (with or without energy recovery) or non-inert landfill. This means there is a reliance on such facilities outside the area, which includes a significant proportion of strategic capacity that is used to manage LACW.
- There is also limited transfer capacity, with the permitted transfer capacity within Solihull all related to local authority activities (Solihull Community Housing and Solihull MBC transfer stations and Bickenhill HWRC). This means there is no transfer capacity for C&I waste.
- The opening of NRS Waste Management Services inert landfill site at Meriden Quarry has resulted in a significant increase in the quantity of waste managed in Solihull. This means Solihull is a net importer of waste, with the quantity effectively trebling from 364,000 tonnes in 2015 to 1,032,000 tonnes in 2017.
- Only 13% of the waste deposited at permitted facilities in Solihull, originated in Solihull.
- Solihull provides significant inert waste disposal and wood processing capacity for the West Midlands, with just over 90% of the waste deposited in Solihull originating in the West Midlands, of which approximately 65% came from Birmingham and Coventry. In addition, the planning application for an aggregate recycling facility could further increase the provision for construction and demolition wastes.

The estimated arisings for the baseline year of the assessment, 2017 and the waste forecasts for Solihull for years 2020, 2025, 2030 and 2035 summarised in Table ES1.

Table ES1 Summary of waste forecasts for years 2020, 2025, 2030 and 2035

Waste Stream		Tonnes				
		Baseline	Forecast			
		2017	2020	2025	2030	2035
Local authority collected waste		99,250	100,000 to 106,100	103,200 to 113,000	106,600 to 119,100	110,000 to 122,700
Commercial and industrial waste		39,600 to 48,400	42,000 to 51,000	46,000 to 57,000	50,000 to 62,000	55,000 to 68,000
Construction, demolition and excavation waste	Total	447,000 to 513,000	497,000 to 542,000	583,000 to 592,000	625,000 to 680,000	657,000 to 792,000
	Non-hazardous C&D	163,000 to 173,000	227,000 to 248,000	254,000 to 282,00	268,000 to 329,000	282,000 to 384,000
Agricultural waste (non-natural)		300 to 500	300 to 500			
Hazardous waste		9,400	7,000 to 11,000			

The forecast waste estimates have been compared against the existing waste management facilities and the stated permitted capacity (which is recognised as potentially higher than actual capacity). This enables a conclusion to be drawn, estimating the future waste capacity needs in Solihull by waste stream, these are set out in Table ES2.

Table ES2 Key points on capacity needs for Solihull

Waste Stream	Capacity Need Assessment – Key Points
Local authority collected waste	Permitted capacity within Solihull is limited to facilities that offer transfer or provide biological treatment; there is no residual waste treatment or disposal capacity such as MBT, RDF production, incineration (with or without energy recovery) or landfill. Solihull MBC has historically worked with Coventry City Council to manage effectively the authorities' residual LACW. This collaboration has resulted in the joint procurement of strategic waste management capacity (the CSWDC Incinerator). Whilst the residual treatment capacity is not located in Solihull, long term capacity is available to manage Solihull's residual LACW. However, Solihull MBC is reliant on recycling capacity outside the Council's administrative area, with co-mingled recyclables currently being handled through a facility Birmingham. Whilst the provision of sorting/treatment capacity for Solihull's co-mingled recyclables is subject to a competitive procurement process, consideration could be given to allocating land for the processing of recyclable material, which would allow the waste industry to bring forward proposals. Such provision could also potentially support C&I waste recycling (see below). In addition, if the separate collection of bio-waste, including food waste, for recycling becomes a requirement, capacity would be necessary to handle separately collected food and garden waste. There is currently garden waste composting capacity but there is currently no capacity for food waste treatment in Solihull. This would suggest there could be insufficient capacity in Solihull to handle an increase in bio-waste which contains food. However, there are proposals for the development of IVC capacity at Meriden Quarry, which should (if approved) provide sufficient capacity to treatment mixed food and garden waste, this capacity could also support C&I food waste recycling (see below). The Bickenhill HWRC is operating close to its physical capacity. Therefore, additional HWRC capacity will potentially be needed to support the forecasted increase in the population and number of households. The additional capacity could be delivered through an expansion of the capacity at Bickenhill or the development of a new facility elsewhere in Solihull.
Commercial and industrial waste	There is limited capacity in Solihull for the transfer, treatment or disposal of C&I waste. There is no residual waste treatment or disposal capacity such as MBT, RDF production, energy from waste or landfill facilities, which means that the treatment/disposal of residual C&I waste is reliant on facilities outside Solihull. The assessment suggests that by 2035, • 35,000 to 45,000 tonnes of recycling and composting capacity will be required; • 15,000 to 25,000 tonnes of residual treatment capacity will be required; and • 5,000 to 7,000 tonnes of landfill capacity. The capacity need for residual C&I waste treatment/disposal is unlikely to be sufficient to be economically viable to develop dedicated capacity solely for Solihull's C&I waste. One option is for C&I waste recycling and composting capacity to be achieved through

Waste Stream	Capacity Need Assessment – Key Points
	capacity developed for LACW. This would be a topic relevant for Solihull to consider cooperating with neighbouring authorities to ensure there is sufficient sub-regional/regional capacity for treatment/disposal of residual C&I waste. However, there is a notable degree of uncertainty in the C&I waste estimates and forecasts that makes assessing the future capacity need for C&I waste particularly difficult.
Construction, demolition and excavation waste	Again, there is a notable degree of uncertainty in the CD&E waste estimates. This is recognised by Defra, not least in the December 2016 Statistics on Waste Notice, which states '*Accurately quantifying C&D waste is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, there is not a significant impact on the final recovery rate*.' The assessment suggests that Solihull is a net importer of C&D waste and provides significant inert landfill capacity which is utilised for wastes from across the West Midland, particularly from Birmingham City and Coventry. There is recycling and recovery capacity available for handling CD&E waste, with annual permitted capacity (in 2017) of: • approximately 250,000 tonnes for wood processing; • 350,000 tonnes of the deposit of waste to land (recovery); • 156,000 tonnes of physical treatment capacity, with a further 49,000 tonnes under consideration. The landfill capacity of over 1,000,000 tonnes per annum provided within Solihull far exceeds the calculated maximum (and potential over-estimation) need of around 115,000 tonnes in 2035; which drops sharply if the current UK recovery rate of 90% for non-hazardous C&D is maintained, to between 30,000 to 40,0000 tonnes. Therefore, there is sufficient capacity to meet Solihull's need and the potential to cooperate with neighbouring authorities to ensure there is sufficient sub-regional/regional capacity. The regular monitoring required of development plan documents can be used to ensure there is sufficient landfill and deposit of waste to land (recovery) capacity towards the end of the plan period.
Agricultural waste (non-natural)	It is estimated that small quantities of non-natural agricultural waste are generated in Solihull, between 300 to 500 tonnes per annum. Based on this level of generation, non-natural agricultural wastes should continue to be appropriately managed by the private sector; the Local Plan Review does not need to identify strategic locations for its management.
Hazardous waste	Small quantities of hazardous waste are generated within Solihull, 7,000 to 11,000 tonnes, which is a very small fraction of the 4 million tonnes consigned in England. In general, hazardous waste treatment and disposal facilities are considered at a national level because of the need to account for economies of scale. This is reflected in the Hazardous Waste NPS which requires final recovery/disposal hazardous waste facilities with capacity in excess of 30,000 tonnes per annum to be considered as nationally significant infrastructure projects. Therefore, based on the small quantities generated in Solihull, there would not appear to be a need for the Local Plan Review to identify strategic locations for the management of hazardous waste within Solihull. However, smaller facilities should be capable of being accommodated on industrial estates and similar locations.

1 Introduction

1.1 Background and Purpose of Document

Solihull Metropolitan Borough Council (the Council) is undertaking a review of the adopted Solihull Local Plan, 2013. The Council requires a Waste Needs Assessment to provide a sound evidence base to support the development of waste management policies as part of the Local Plan Review.

A first step in preparing policy for waste is to understand key factors such as the amount and type of waste management infrastructure currently operating within the Borough and future demands for it - this is achieved through an assessment of the need for waste management facilities within Solihull, set out within this report.

1.1.1 Plan making context

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

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

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

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

The Local Plan Review will be applicable across all of Solihull and is intended to have a plan period to 2035. Once adopted, it will sit with the Solihull Core Strategy and be part of the development plan.

1.2 Structure

This report is structured as follows:

- Section 1 - Introduction;
- Section 2 - Context: repeats the key definitions for waste and the sources of data used;
- Section 3 - Permitted facilities in Solihull: details the current waste management infrastructure operating within the borough;
- Section 4 - Waste Arisings: estimates waste arisings for year 2017 where data is available and drawing comparisons with 2015 and 2016 data;
- Section 5 - Waste Forecasts: estimates future waste arisings, up to 2035; and
- Section 6 - Capacity Needs: considers the need for new waste management capacity.

2 Context

2.1 Explanations for Waste Terminology

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

2.1.1 Municipal waste, local authority collected waste and household waste

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

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

Within this report, LACW is further categorised as:

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

2.1.2 Commercial and industrial waste

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

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

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

2.1.3 Construction, demolition and excavation waste

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

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

2.1.4 Agricultural waste

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

2.1.5 Hazardous waste

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

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

2.1.6 Radioactive waste

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

2.1.7 Waste management hierarchy

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

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

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

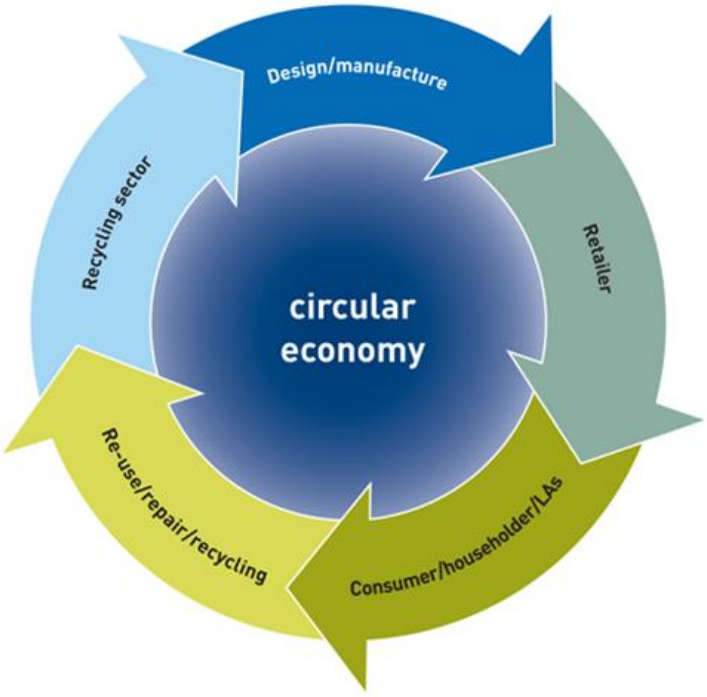
2.1.8 Waste technology and future trends

To help understand likely future need, it can be useful to have a broad appreciation of waste management facilities and technologies and the technical direction in which the industry is moving. Both Defra and WRAP provide useful reference information.

In June 2011, Defra published report titled ‘Guidance on applying the Waste Hierarchy’. This provides information on dealing with waste in line with the hierarchy. Over the past 10 years or so waste management in the UK has already shifted significantly toward recycling and recovery treatments for wastes and away from its disposal to landfill; this is likely to continue into the future. Looking forward there is likely to be a focus on those wastes that would have greatest impact on carbon emissions, primarily plastics and biodegradable wastes (e.g. food waste).

However, there is also a greater focus on the circular economy, an alternative approach to a traditional linear economy (make, use, dispose) in which resources are kept in use for as long as possible, with the maximum value extracted from them whilst in use, with materials and products recovered and regenerated at the end of each service life. Figure 1 is taken from the WRAP website.

Figure 1 Graphic representation of the circular economy



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

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

2.2 Data Sources

2.2.1 Arisings data

In 2014, the last Eurostat return, the UK generated an estimated 210 million tonnes of waste across various sectors. However, there are notable gaps in our knowledge and we cannot be certain about the total amount of C&I, CD&E or agricultural wastes generated because current data are not captured from all waste management facilities or about all waste producing sectors.

The only waste stream for which the total waste generation, and management route, is accurately known is LACW. This is as a result of the detailed data set collected through WasteDataFlow (WDF).

WDF is the web-based system for municipal waste data reporting by UK local authorities to central government. The system went live almost fifteen years ago on 30 April 2004 and validated information held on WDF can be downloaded by the general public.

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

Both the WDI and HWI are updated annually and are publicly available, although the data they contain is not always straightforward to interpret.

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

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

2.2.2 Facility data

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

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

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

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

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

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

In addition, the WDI contains details of the 'origins' of waste received at permitted facilities. Operators of permitted waste facilities are asked to provide information on the 'origins' of the waste accepted at

their sites. Where data is supplied, the entry is normally completed showing the local authority or county where the waste came from.

However, where operators do not provide accurate information on the origin of waste, the WDI reports the origin as “Not Codeable”. If possible “Not Codeable” wastes are assigned to the region of origin. The method requires that, after the waste with Solihull as the origin has been assessed, there is a need to consider the potential for “Not Codeable” from the West Midlands waste arising in Solihull.

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

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

3 Waste Management Facilities in Solihull

3.1 Facilities Operating under an Environmental Permit

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

Whilst 2017 is the base year for this assessment, Table 1 summarises the type and number of waste management facilities permitted in Solihull over the years 2015 to 2017, providing some context to the changes in the number of facilities permitted.

3.1.1 Number and type of permitted facilities

Table 1 shows that in 2017 there were 13 permitted facilities operating in Solihull, a decrease of one from 2015. Whilst the number of permitted facilities has stayed constant over the three years there are some points to note:

- Whilst there was one additional A11 Waste Transfer Station permitted in 2017, this is not an additional facility. The site with a '*S0805: HCI Waste TS + asbestos*' permit changed to a '*A11: Household, Commercial & Industrial Waste T Stn*' permit.
- There was a reduction in the number of '*A22: Composting Facility / Composting installation*' permits from 2 to 1 between 2016 and 2017. However, this appears to be a consolidation of the permits rather than a loss of capacity, as all permits relate to composting activities at Berkswell Quarry.
- '*A25: Deposit of waste to land as a recovery operation*' permits are often related to the restoration of old quarries and mineral workings. The two active permits in 2015 related to activities at Meriden Quarry with the active permits in 2017 relating to activities at both Meriden Quarry and Berkswell Quarry.

Table 1 also demonstrates that whilst there is a range of transfer, re-use, recycling and recovery capacity permitted in Solihull addressing a variety of wastes, there are no residual waste management facilities such as an energy from waste plant, neither is there any landfill facility for non-inert wastes.

3.1.2 Capacity and waste input at permitted facilities

0 provides a summary of the permitted capacity and actual throughput by waste management facility category in recent years.

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

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

Table 1 Number of permitted facilities in Solihull, 2015 to 2017

Permit type	Site Category	Facility Type	2015	2016	2017
A11: Household, Commercial & Industrial Waste Transfer Stn	Transfer	Non-Haz Waste Transfer	1	1	2
A13: Household Waste Amenity Site	Transfer	CA Site	1	1	1
A16: Physical Treatment Facility	Treatment	Physical Treatment	2	3	3
A19a: ELV Facility	Metal recycling site (MRS)	Car Breaker	1	1	1
A22: Composting Facility / Composting installation[a]	Treatment	Composting	2	2	1
A25: Deposit of waste to land as a recovery operation	On/In Land	Deposit of waste to land (recovery)	2	n/r	2
L05: Inert LF	Inert Landfill	Landfill	n/r	1	1
S0805: HCl Waste TS + asbestos[b]	Transfer	Haz Waste Transfer	1	1	n/r
S0814: Materials Recycling Facility	Treatment	Material Recycling Facility	1	1	1
SR2010 No13: Use of waste to manufacture timber <75ktpa	Use of Waste	Timber Manufacturing	1	1	1
SR2010 No8: Use of waste in construction <100ktps	Use of Waste	Construction	1	n/r	n/r
SR2011 No4: Treatment of waste wood <75ktps	Treatment	Physical Treatment	1	n/r	n/r
		Total	**14**	**12**	**13**

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

Notes:

a: In 2017 WDI Permit Type A22: Composting Facility changed to Composting Installation

b: The site with a S0805: HCl Waste TS + asbestos permit changed to a A11: Household, Commercial & Industrial Waste T Stn Permit

Table 2 presents both the permitted capacity and the annual input for each operational site over years 2015 to 2017, with Figure 2 showing the locations of permitted facilities in Solihull.

Table 2 Summary of permitted capacity and waste input by site category and facility type in Solihull, 2015-2017

Category	Facility Type	2015 (tonnes)		2016 (tonnes)		2017 (tonnes)	
		Capacity	Input	Capacity	Input	Capacity	Input
Transfer	Non-Haz Waste Transfer	39,000	8,910	39,000	8,253	39,000	7,575
	CA Site	74,999	30,933	74,999	23,940	74,999	20,485
Metal Recycling Site	Car Breaker	2,499	271	2,499	295	2,499	313
Treatment	Physical Treatment	254,399	115,746	329,400	173,376	329,400	171,749
	Composting	100,000	42,831	149,999	36,860	74,999	36,208
	Material Recycling Facility	75,000	1,176	75,000	585	75,000	1,529
Recovery in/on land and use in construction	Deposit of waste to land (recovery)	198,000	119,990	n/r	n/r	348,999	41,496
	Timber Manufacturing	74,999	33,173	74,999	33,940	74,999	29,499
	Use of waste in construction	99,999	10,525	n/r	n/r	n/r	n/r
Landfill	Inert Landfill	n/r	n/r	1,150,000	501,380	1,150,000	722,989
Total		**918,895**	**363,555**	**1,895,896**	**778,629**	**2,169,895**	**1,031,843**

Capacity: EP capacity Input: Waste input n/r: no reported tonnage

Figure 2 shows that the permitted facilities are predominantly located within the north of Solihull. The two transfer stations and CA Site are located within the urban area of Solihull. Most physical treatment and landfill capacity are focussed around the Meriden and Berkswell Quarries**.** The single car breaker is the only facility located to the south of the Borough, at Earlswood.

Table 3 shows that in 2017, just over 1 million tonnes of waste were managed at permitted facilities located in Solihull, compared to 360k tonnes in 2016. This increase over the last two years is as a result of the Inert Landfill at Meriden Quarry.

Some key points to note from the information in Figure 2 :

- The permitted transfer capacity within Solihull is all related to local authority activities (Solihull Community Housing and Solihull MBC transfer stations and Bickenhill HWRC). This means there is no transfer capacity for C&I waste.
- The only Material Recycling Facility is a small-scale facility serving the National Exhibition Centre (OCS Group UK).
- Of the remaining 9 active permits in 2017, the majority of the capacity and input is centred around two locations:
  - Meriden Quarry, with four permits covering wood waste recycling (A&A Recycling Services), C&D waste recycling (Coleman & Company), recovery of waste on-land (NRS Waste Care) and inert waste landfill (NRS Waste Management Services); and
  - Berkswell Quarry, with three permits covering wood waste recycling and composting (both Berkswell Recycling) and recovery of waste on-land (Cemex UK Materials).

Figure 2 Location of Active Permitted Waste Facilities in Solihull in 2017 (Source Environment Agency WDI)

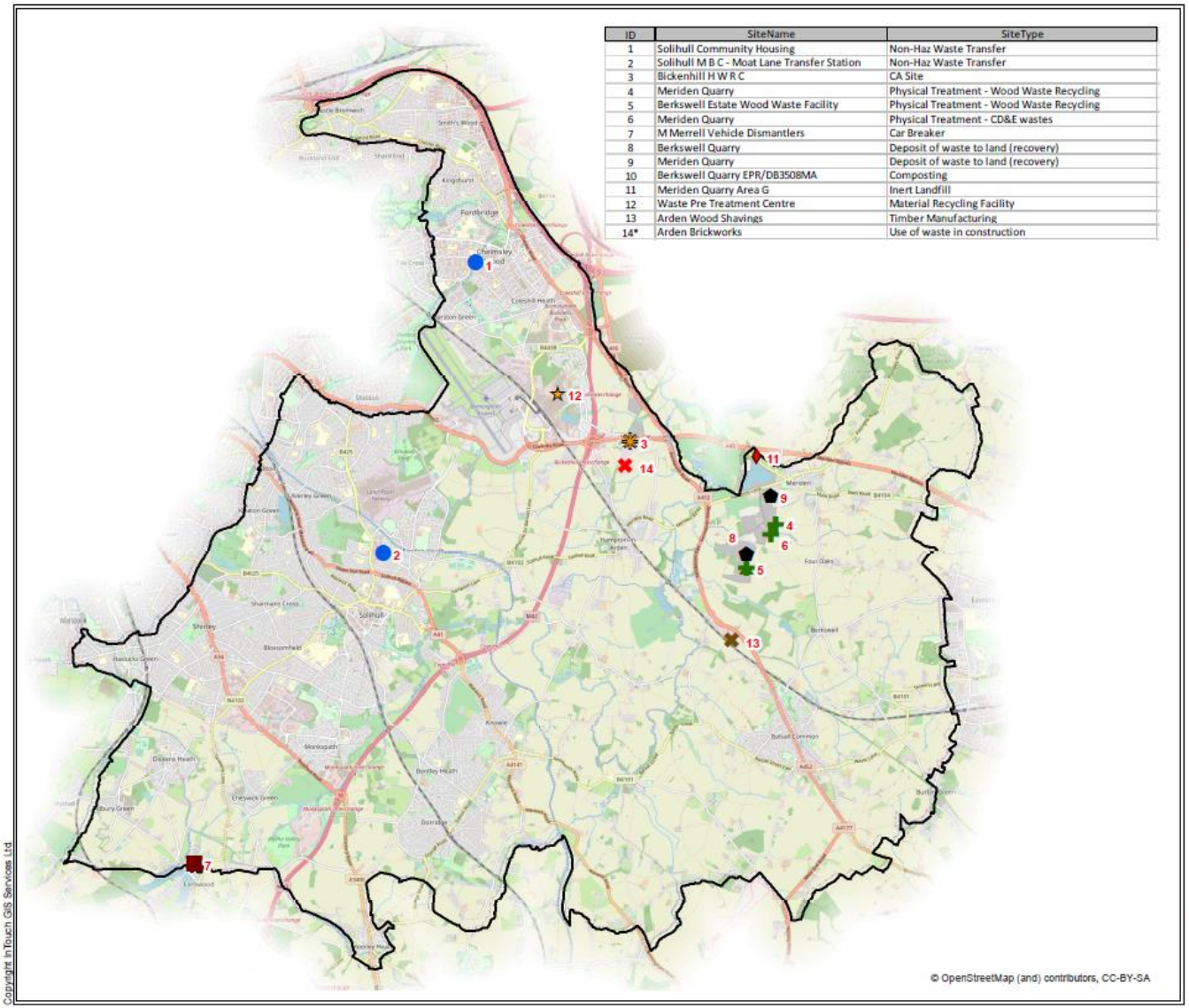


Table 3 Permitted capacity and waste input by facilities in Solihull, 2015-2017

Operator	Site Name (permit number if applicable)	Facility Type	Annual Permitted Capacity[a]	2015 Input	2016 Input	2017 Input
			Tonnes			
Solihull Community Housing[b]	Chapelhouse Road Depot	Non-Haz Waste Transfer[c]	25,000	1,779	2,055	1,747
Solihull MBC	Moat Lane Transfer Station	Non-Haz Waste Transfer	14,000	7,131	6,198	5,828
Enterprise Managed Services Ltd	Bickenhill HWRC	CA Site	74,999	30,933	23,940	20,485
A&A Recycling Services Ltd	Meriden Quarry	Physical Treatment[d]	150,000	90,944	113,406	126,820
Berkswell Recycling Limited	Berkswell Estate Wood Waste Facility	Physical Treatment	23,400	1,602	20,790	26,588
Coleman & Company Ltd[e]	Meriden Quarry	Physical Treatment	156,000	23,200	39,180	18,341
Michael Merrell	M Merrell Vehicle Dismantlers	Car Breaker	2,499	271	295	313
Berkswell Recycling Limited	Berkswell Quarry (DB3508MA)	Composting	75,000	33,975	3,886	n/r
	Berkswell Quarry (VP3032WG)	Composting	74,999	n/r	32,974	36,208
Veolia E S Landfill Ltd	Berkswell Composting Site	Composting	25,000	8,856	n/r	n/r
NRS Waste Care Ltd	Meriden Quarry (EB3930AS)	Deposit of waste to land (recovery)	99,000	2,180	n/r	24,000
	Meriden Quarry (LB3235RJ)	Deposit of waste to land (recovery)	99,000	117,810	n/r	n/r
Cemex UK Materials Ltd	Berkswell Quarry	Deposit of waste to land (recovery)	249,999	n/r	n/r	17,496
OCS Group UK Limited	NEC Waste Pre-treatment Centre	Material Recycling Facility	75,000	1,176	585	1,529
Arden Wood Shavings Limited	Arden Wood Shavings	Timber Manufacturing	74,999	33,173	33,940	29,499
Armac Demolition Limited	Arden Brickworks	Use of waste in construction	99,999	10,525	n/r	n/r
NRS Waste Management Services Ltd	Meriden Quarry Landfill Site Area G	Inert Landfill	1,150,000	n/r	501,380	722,989
			Total	**363,555**	**778,629**	**1,031,843**

n/r: no reported tonnage

Notes:

a: Permited capacity in 2017, except where the site was not active. Where a site was inactive the capacity presented is for the last active year.

b: Changed from Solihull MBC in 2016.

c: Site changed from a 'S0805: *HCI Waste TS + asbestos*' permit to a '*A11: Household, Commercial & Industrial Waste T Stn*' permit in 2017.

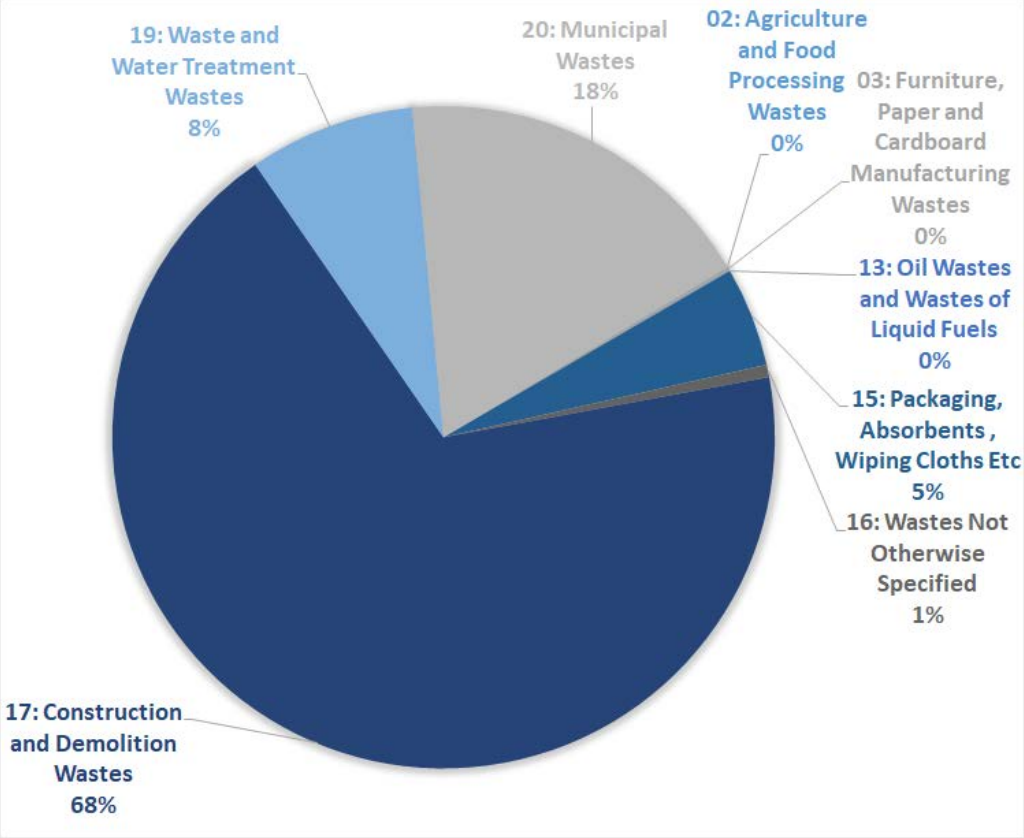
d: Permit type changed in 2016 from '*SR2011 No4: Treatment of waste wood <75000 tps*' to '*A16: Physical Treatment Facility*' with capacity increase from 74,999tpa to 150,000tpa.

e: Coleman & Company Ltd closed in 2018, however Solihull MBC understand that it has be purchased by NRS Waste Management Services for waste activities.

f: Although there were no reported tonnages at Armac Demolition's Arden Brickworks site in 2016 and 2017, Solihull MBC understand that the facility is still operating.

Table 4 summarises the types and quantities of waste accepted at the permitted facilities in Solihull in 2017. The waste types are categorised using the List of Wastes[1] (LoW) chapter headings (see Appendix A). Figure 3 shows the overall breakdown of waste received at permitted facilities in Solihull in 2017 by LoW chapter headings.

Figure 3 Breakdown of waste received at permitted facilities in Solihull by LoW chapter headings, 2017



The single largest tonnage is wastes from the construction and demolition sector followed by municipal waste; together these comprise 86% of the waste received at the permitted facilities.

Further analysis of the municipal wastes received at non-local authority related sites shows that:

- At A&A Recycling Services' Wood Recycling Facility at Meriden Quarry, of the municipal waste received, 20,114 tonnes was separately collected wood waste (LoW code 20 01 38) with the remainder being separately collected hazardous wood waste (LoW code 20 01 37*).
- At Berkswell Recycling's Composting Facility at Berkswell Quarry, 36,042 tonnes of the 36,099 tonnes of municipal waste received was biodegradable garden waste (LoW code 20 02 01).
- At NRS Waste Management Services' Inert Landfill Site at Meriden Quarry, all of the 105,100 tonnes of municipal waste received was inert soil and stone (LoW code 20 02 02).

This highlights the limited quantity of general municipal and C&I waste managed at facilities in Solihull.

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

Table 4 Wastes accepted at permitted facilities in Solihull, 2017

Operator	Site Name	Facility Type	02: Agriculture and Food Processing Wastes	03: Furniture, Paper and Cardboard Manufacturing Wastes	13: Oil Wastes and Wastes of Liquid Fuels	15: Packaging, Absorbents, Wiping Cloths Etc N.O.S.	16: Wastes Not Otherwise Specified	17: Construction and Demolition Wastes	19: Waste and Water Treatment Wastes	20: Municipal Wastes	Total
Solihull Community Housing	Chapelhouse Road Depot	Non-Haz Waste Transfer	-	-	-	-	-	-	-	1,747	1,747
Solihull MBC	Moat Lane Transfer Station	Non-Haz Waste Transfer	-	-	205	-	4	1,107	-	4,512	5,828
Enterprise Managed Services Ltd	Bickenhill HWRC	CA Site	-	-	-	2,810	16	2,589	-	15,070	20,485
A&A Recycling Services Ltd	Meriden Quarry	Physical Treatment	-	2,065	-	23,581	-	4,062	76,503	20,610	126,820
Berkswell Recycling Limited	Berkswell Estate Wood Waste Facility	Physical Treatment	-	16	-	207	-	19,245	7,120	-	26,588
Coleman & Company Ltd	Meriden Quarry	Physical Treatment	-	-	-	-	-	18,341	-	-	18,341
Michael Merrell	M Merrell Vehicle Dismantlers	Car Breaker	-	-	-	-	313	-	-	-	313
Berkswell Recycling Limited	Berkswell Quarry (VP3032WG)	Composting	109	-	-	-	-	-	-	36,099	36,208
NRS Waste Care Ltd	Meriden Quarry (EB3930AS)	Deposit of waste to land (recovery)	-	-	-	-	-	24,000	-	-	24,000
Cemex UK Materials Ltd	Berkswell Quarry	Deposit of waste to land (recovery)	-	-	-	-	-	17,496	-	-	17,496
OCS Group UK Limited	NEC Waste Pre-treatment Centre	Material Recycling Facility	-	-	-	-	-	-	-	1,529	1,529
Arden Wood Shavings Limited	Arden Wood Shavings	Timber Manufacturing	-	-	-	23,532	5,968	-	-	-	29,499
NRS Waste Management Services Ltd	Meriden Quarry Landfill Site Area G	Inert Landfill	-	-	-	-	-	617,889	-	105,100	722,989
		Total	**109**	**2,082**	**205**	**50,130**	**6,301**	**704,729**	**83,623**	**184,666**	**1,031,844**

N.O.S: Not Otherwise Specified

3.1.3 Waste imports and exports to and from permitted facilities

The WDI contains details of the 'origin' of waste received at permitted facilities and this information can be used to estimate the movement of wastes in and out of Solihull. However, it cannot provide a definitive picture because:

- facility operators do not always complete the waste 'origin', as it is not a mandatory reporting requirement;
- the origin of waste is normally recorded at the WPA/Local Authority level, however when the origin of the waste is not known to this level the term "Not Codeable" is used and where possible the origin is attributed to the region of origin; and
- the WDI does not include waste sent to incineration facilities or wastes deposited at facilities exempt from environmental permitting.

Waste Imports

The origin of wastes received at permitted facilities in Solihull were extracted from the WDI 2017. Table 5 summarises the data by waste planning region as used by the Environment Agency, and LoW Chapter Heading. Table 6 provides a breakdown of the data for the West Midlands by WPA and LoW Chapter Heading. Figure 4 provides a graphical presentation of both data sets.

As there are no incineration facilities in Solihull, the data provides a good indication of the origins of waste deposited at permitted facilities in Solihull.

The data shows that:

- approximately 13% of the waste deposited at permitted facilities in Solihull, originated in Solihull;
- just over 90% of the deposited waste originated in the West Midlands;
- almost 45% of the deposited waste originated in Birmingham; and
- just over 20% of the deposited waste originated in Coventry.

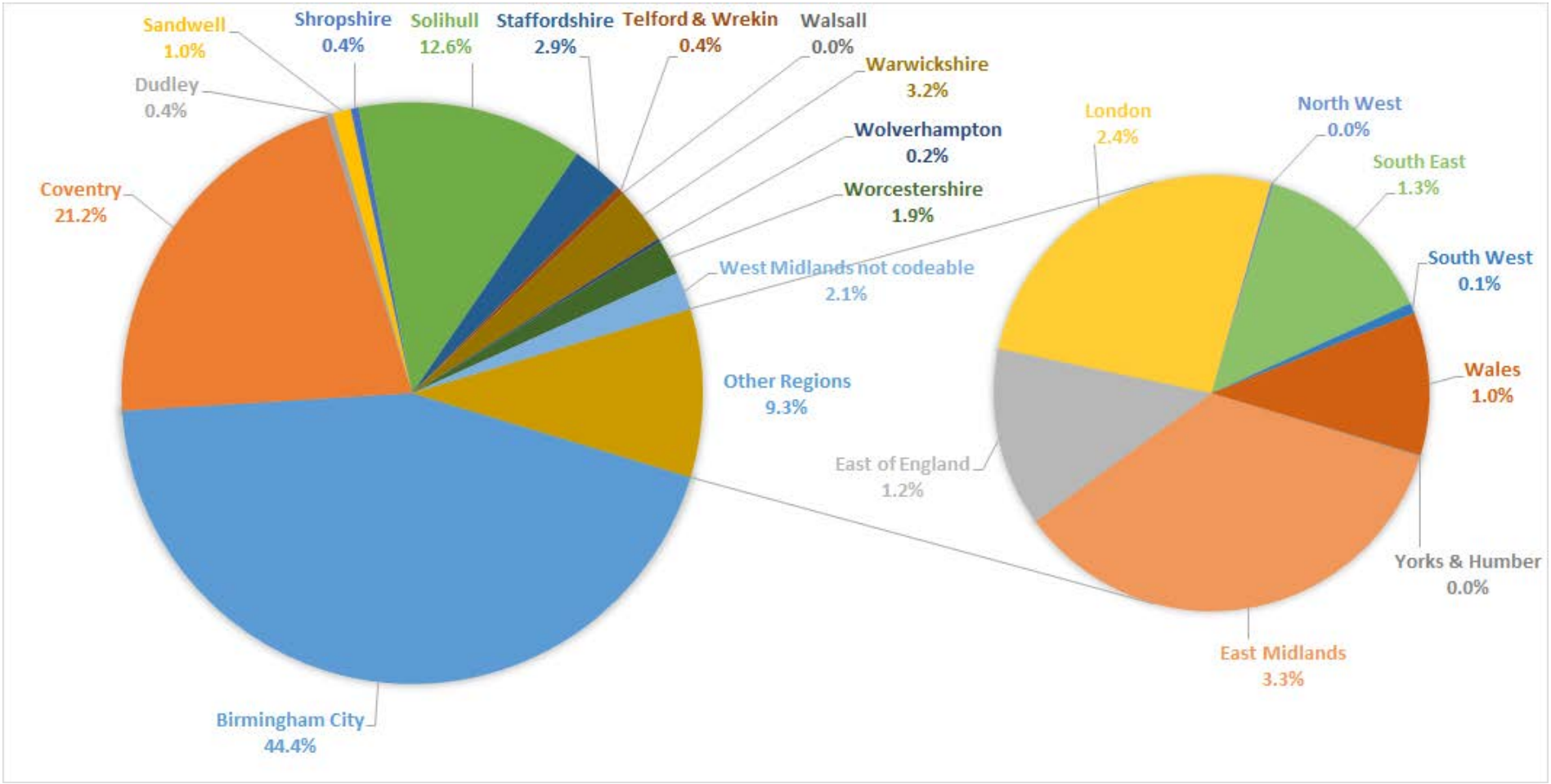
Table 5 Origin of waste received at permitted facilities in Solihull by Waste Planning Region, 2017

LoW Chapter Heading	East Midlands	East of England	London	North West	South East	South West	Wales	West Midlands	Yorks & Humber	Total
02: Agriculture and Food Processing Wastes								109		109
03: Furniture, Paper and Cardboard Manufacturing Wastes						23		2,058		2,082
13: Oil Wastes and Wastes of Liquid Fuels								205		205
15: Packaging, Absorbents, Wiping Cloths Etc N.O.S.	7,705	6,226	15	163	199	85		35,698	38	50,130
16: Wastes Not Otherwise Specified in The List	845	5,081						356	18	6,301
17: Construction and Demolition Wastes	24,130	157	480		1,133	14	4,826	673,989		704,729
19: Waste and Water Treatment Wastes	1,315	1,253	24,664	19	10,652	624	5,369	39,727		83,623
20: Municipal Wastes	19	70			1,166			183,411		184,666
Total	**34,015**	**12,787**	**25,159**	**182**	**13,151**	**747**	**10,194**	**935,553**	**56**	**1,031,844**
Source: Environment Agency WDI 2017.										

Table 6 Origin of waste received at permitted facilities in Solihull by West Midlands WPAs, 2017

LoW Chapter Heading	Birmingham City	Coventry	Dudley	Sandwell	Shropshire	Solihull	Staffordshire	Telford & Wrekin	Walsall	Warwickshire	Wolverhampton	Worcestershire	West Midlands not codeable	Total
02: Agriculture and Food Processing Wastes	20	89												109
03: Furniture, Paper and Cardboard Manufacturing Wastes				16						35	31	1,976		2,058
13: Oil Wastes and Wastes of Liquid Fuels						205								205
15: Packaging, Absorbents, Wiping Cloths Etc N.O.S.	18,383	44		441		5,555	7,118			3,943	34	102	79	35,698
16: Wastes Not Otherwise Specified in The List						20				313		23		356
17: Construction and Demolition Wastes	335,872	184,083	35	27		88,559	11,123	294	5	22,964	25	12,780	18,222	673,989
19: Waste and Water Treatment Wastes	15,326	4,965	2,584	5,653		1	1,276	674	13	3,494	1,902	3,703	137	39,727
20: Municipal Wastes	88,186	29,546	1,119	4,297	4,508	35,303	10,711	3,099		1,784	56	1,529	3,275	183,411
Total	**457,787**	**218,727**	**3,738**	**10,434**	**4,508**	**129,643**	**30,228**	**4,067**	**17**	**32,532**	**2,048**	**20,112**	**21,714**	**935,553**
Source: Environment Agency WDI 2017.														

Figure 4 Origin of waste received at permitted facilities in Solihull by West Midlands WPAs and other Regions, 2017



Source: Environment Agency WDI 2017.

Waste Exports

Data on wastes received at permitted facilities in England with Solihull identified as the origin were extracted from the WDI 2017. Table 7 summarises the data by Environment Agency waste planning region and LoW Chapter Heading.

Table 8 provides a breakdown of the data for the West Midlands by WPA and LoW Chapter Heading; this includes the West Midlands total excluding wastes received at facilities in Solihull with Solihull identified as the origin. This analysis provides an indication of the waste exported from Solihull.

Figure 5 provides a graphical presentation of both data sets including the wastes arising and deposited in Solihull, with Figure 6 showing the data with the wastes arising and deposited in Solihull removed.

However, as some waste is exported from Solihull for incineration, the data does not provide accurate indication of the total quantity exported or where it is exported to.

Over the last two years (2016 and 2017), the Environment Agency has produced a separate data set on the wastes received at incineration facilities in England and like the WDI, the Incinerator Waste Returns provides the 'waste origin'.

In the 2017 Incinerator Waste Returns, there is only one entry where Solihull is identified as the waste origin. The waste is wood waste from the mechanical treatment of waste at a waste management facility (LoW code 19 12 07). It is known that the Council sent 43,400 tonnes of LACW to the Coventry & Solihull Waste Disposal Company (CSWDC) Incinerator in Coventry in 2017 and that the facility also accepts waste from Warwickshire and Leicestershire. However, the 2017 Incinerator Waste Returns data for the CSWDC Incinerator identifies the origin of all waste received as the 'West Midlands'. Whilst the export data can be adjusted to take account of LACW sent to the CSWDC Incinerator, the lack of granularity in the CSWDC Incinerator data means it is not possible to determine if any non-LACW from Solihull was accepted at the facility.

Table 9 and Table 10 provide the export data adjusted to include the 43,400 tonnes of LACW sent to the CSWDC Incinerator in Coventry by Solihull MBC, with Figure 7 and Figure 8 reproducing the earlier figures with adjusted data.

The data shows that:

- almost all waste exported form Solihull is sent to the West Midlands;
- of the waste exported:
  - almost 45% is sent to Coventry;
  - just under 28% is sent Warwickshire; and
  - 18% is sent to Birmingham.

However, this data should be considered as indicative because: it is not possible to determine if any non-LACW from Solihull is sent to the CSWDC Incinerator; and the data cannot confirm the proportion of '*West Midlands Not Codeable*' that could be attributed as arising in Solihull.

Table 7 Wastes received at permitted facilities in England by Waste Planning Region with Solihull identified as the origin, 2017

LoW Chapter Heading	East Midlands	East of England	London	North West	South East	South West	West Midlands[a]	Yorks & Humber	Total
02 - Agriculture and Food Processing Wastes							36		36
05 - Petroleum, Gas and Coal Processing Wastes								0	0
06 - Inorganic Chemical Process Waste							0		0
08 - Paint, Adhesive, Sealant and Ink Manufacturing Waste	22	0		0		111	972		1,105
11 - Chemical Surface Treatment and Metal Coating Wastes							24		24
12 - Shaping and Physical Treatment of Metals and Plastics	1						22		23
13 - Oil Wastes and Wastes of Liquid Fuels		1		35	5	2	383	19	443
15 - Packaging, Absorbents, Wiping Cloths Etc N.O.S.	0	1		1			5,712	0	5,714
16 - Wastes Not Otherwise Specified in The List	34	0		22		9	478	4	546
17 - Construction and Demolition Wastes	142	2	0	0			98,989	1,007	100,140
19 - Waste and Water Treatment Wastes	4	71	0	1,409	2	29	902		2,416
20 - Municipal Wastes	9	4		12	6	87	73,178		73,296
Total	**212**	**79**	**0**	**1,478**	**12**	**238**	**180,695**	**1,030**	**183,745**

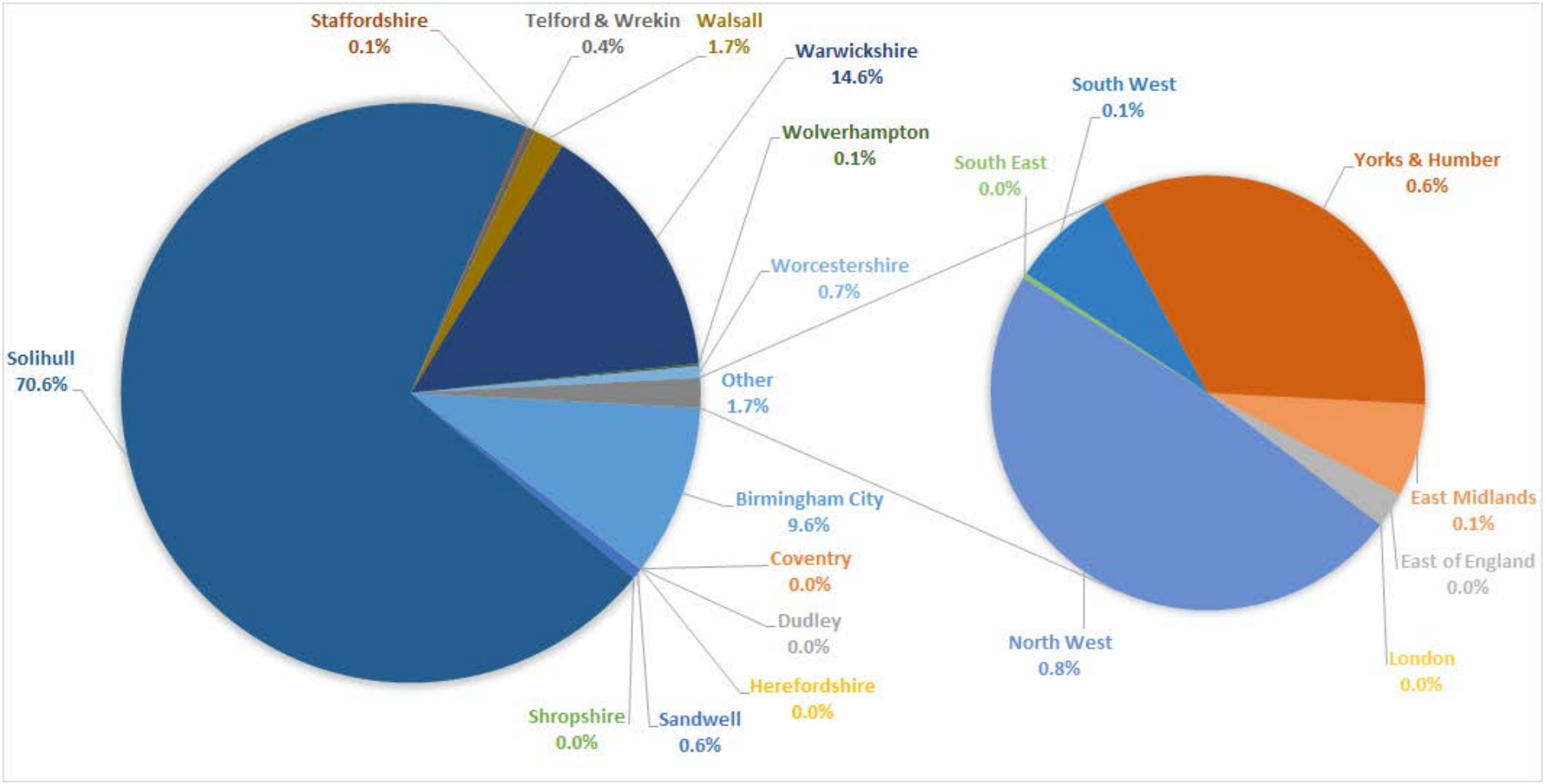
Source: Environment Agency WDI 2017
Notes:
General: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting.
Data
a: Includes waste received at facilities in Solihull with Solihull identified as the origin.

Table 8 Wastes received at permitted facilities in England by West Midlands WPAs with Solihull identified as the origin, 2017

LoW Chapter Heading	Birmingham City	Coventry	Dudley	Herefordshire	Sandwell	Shropshire	Solihull	Staffordshire	Telford & Wrekin	Walsall	Warwickshire	Wolverhampton	Worcestershire	Total[a]	Total excluding Solihull as origin
02: Agriculture and Food Processing Wastes	3								33					36	36
05: Petroleum, Gas and Coal Processing Wastes															-
06: Inorganic Chemical Process Waste										0				0	0
08: Paint, Adhesive, Sealant and Ink Manufacturing Waste					216					612		144		972	1,105
11: Chemical Surface Treatment and Metal Coating Wastes					18					5				24	24
12: Shaping and Physical Treatment of Metals and Plastics					22									22	-
13: Oil Wastes and Wastes of Liquid Fuels					107		205			19		32	20	383	238
15: Packaging, Absorbents, Wiping Cloths Etc N.O.S.	1				41		5,555		58	2		54		5,712	159
16: Wastes Not Otherwise Specified in The List	13		1		26		20	16		5	1	7	388	478	526
17: Construction and Demolition Wastes	526				632	3	88,559	167	245	2,547	5,555		754	98,989	11,581
19: Waste and Water Treatment Wastes	837	0		18	20		1						25	902	2,416
20: Municipal Wastes	16,179		4		43		35,303	11	333	0	21,273	9	24	73,178	37,994
Total	**17,559**	**0**	**6**	**18**	**1,126**	**3**	**129,643**	**194**	**669**	**3,191**	**26,829**	**245**	**1,212**	**180,695**	**54,078**

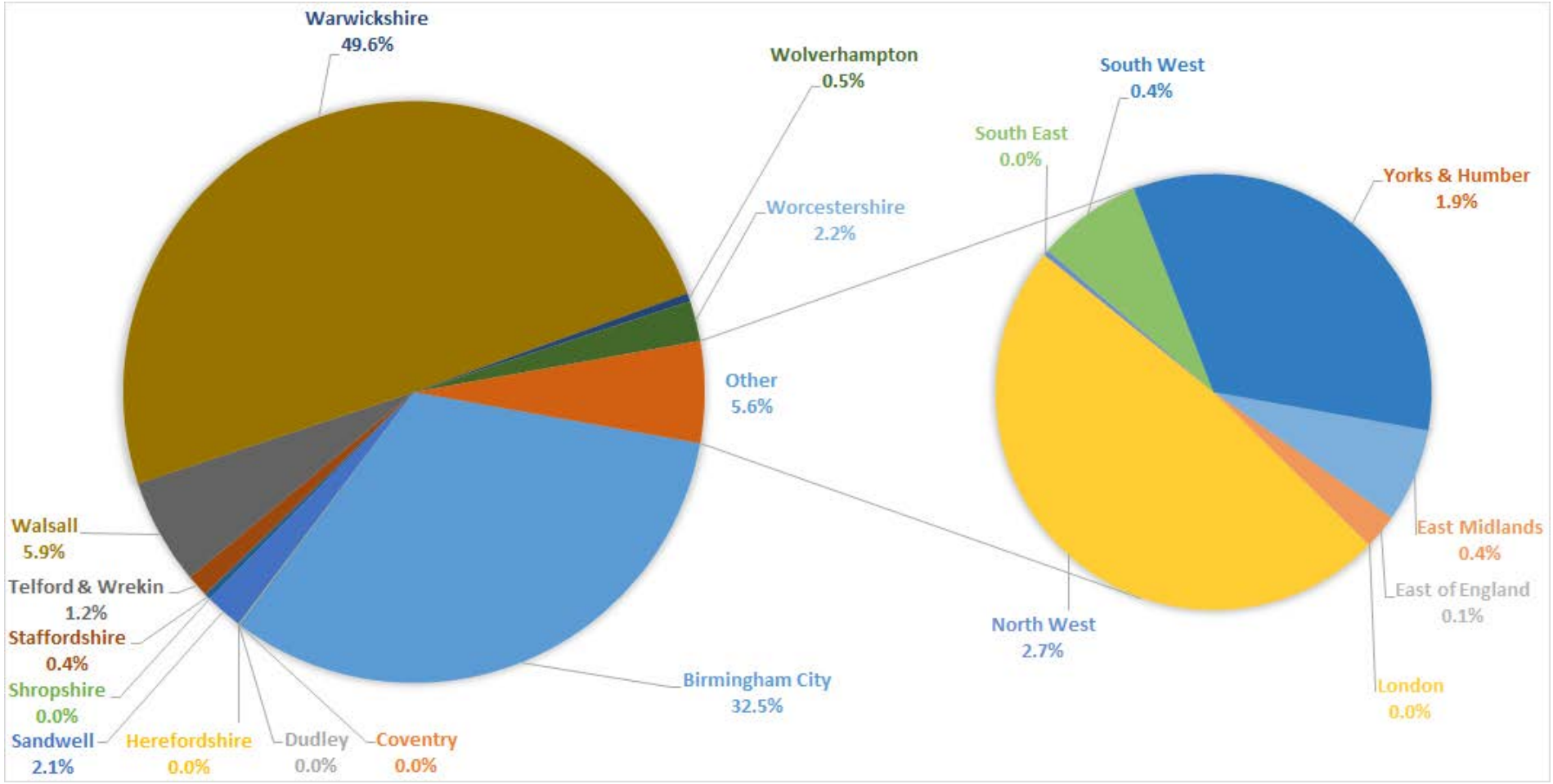
Source: Environment Agency WDI 2017
Notes:
General: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting.
a: Includes waste received at facilities in Solihull with Solihull identified as the origin.

Figure 5 Wastes received at permitted facilities in England by West Midlands WPAs and other Regions with Solihull identified as the origin, 2017



Source: Environment Agency WDI 2017
Notes:
General: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting.
a: Includes waste received at facilities in Solihull with Solihull identified as the origin.

Figure 6 Wastes received at permitted facilities in England by West Midlands WPAs and other Regions with Solihull identified as the origin – excluding waste received at facilities in Solihull with Solihull identified as the origin, 2017



Source: Environment Agency WDI 2017
Note: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting.

Table 9 Adjusted wastes received at permitted facilities in England by Waste Planning Region with Solihull identified as the origin, 2017

LoW Chapter Heading	East Midlands	East of England	London	North West	South East	South West	West Midlands[a]	Yorks & Humber	Total
02 - Agriculture and Food Processing Wastes							36		36
05 - Petroleum, Gas and Coal Processing Wastes								0	0
06 - Inorganic Chemical Process Waste							0		0
08 - Paint, Adhesive, Sealant and Ink Manufacturing Waste	22	0		0		111	972		1,105
11 - Chemical Surface Treatment and Metal Coating Wastes							24		24
12 - Shaping and Physical Treatment of Metals and Plastics	1						22		23
13 - Oil Wastes and Wastes of Liquid Fuels		1		35	5	2	383	19	443
15 - Packaging, Absorbents, Wiping Cloths Etc N.O.S.	0	1		1			5,712	0	5,714
16 - Wastes Not Otherwise Specified in The List	34	0		22		9	478	4	546
17 - Construction and Demolition Wastes	142	2	0	0			98,989	1,007	100,140
19 - Waste and Water Treatment Wastes	4	71	0	1,409	2	29	902		2,416
20 - Municipal Wastes	9	4		12	6	87	116,578		116,696
Total	**212**	**79**	**0**	**1,478**	**12**	**238**	**224,095**	**1,030**	**227,145**

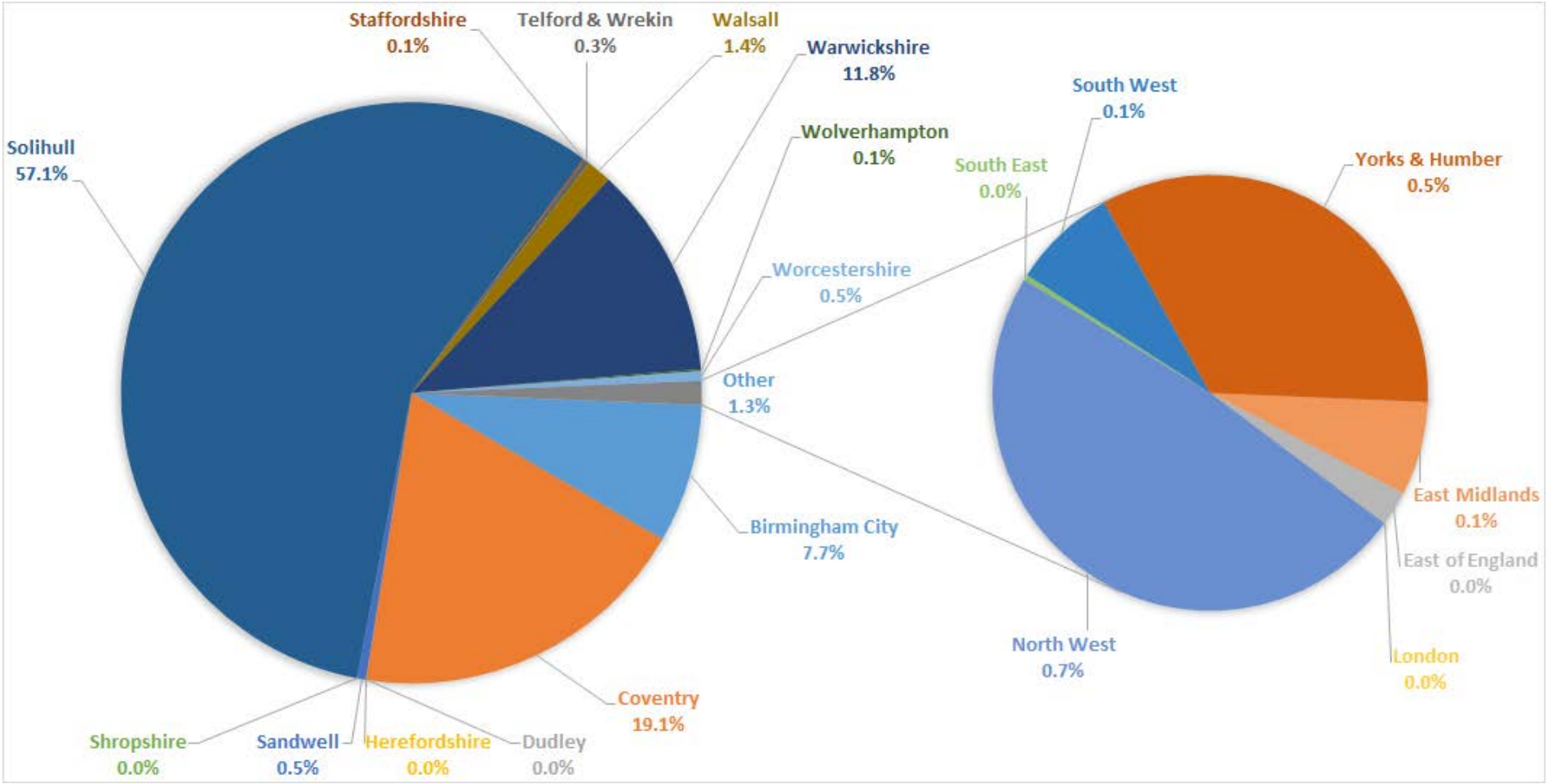
Source: Environment Agency WDI 2017
Notes:
General: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting. Data has been adjusted to include the 43,400 tonnes of municipal waste sent to the CSWDC Incinerator in Coventry.
a: Includes waste received at facilities in Solihull with Solihull identified as the origin.

Table 10 Adjusted wastes received at permitted facilities in England by West Midlands WPAs with Solihull identified as the origin, 2017

LoW Chapter Heading	Birmingham City	Coventry	Dudley	Herefordshire	Sandwell	Shropshire	Solihull	Staffordshire	Telford & Wrekin	Walsall	Warwickshire	Wolverhampton	Worcestershire	Total[a]	Total excluding Solihull as origin
02: Agriculture and Food Processing Wastes	3								33					36	36
05: Petroleum, Gas and Coal Processing Wastes															-
06: Inorganic Chemical Process Waste										0				0	0
08: Paint, Adhesive, Sealant and Ink Manufacturing Waste					216					612		144		972	1,105
11: Chemical Surface Treatment and Metal Coating Wastes					18					5				24	24
12: Shaping and Physical Treatment of Metals and Plastics					22									22	-
13: Oil Wastes and Wastes of Liquid Fuels					107		205			19		32	20	383	238
15: Packaging, Absorbents, Wiping Cloths Etc N.O.S.	1				41		5,555		58	2		54		5,712	159
16: Wastes Not Otherwise Specified in The List	13		1		26		20	16		5	1	7	388	478	526
17: Construction and Demolition Wastes	526				632	3	88,559	167	245	2,547	5,555		754	98,989	11,581
19: Waste and Water Treatment Wastes	837	0		18	20		1						25	902	2,416
20: Municipal Wastes	16,179	43,400	4		43		35,303	11	333	0	21,273	9	24	116,578	81,394
Total	**17,559**	**43,400**	**6**	**18**	**1,126**	**3**	**129,643**	**194**	**669**	**3,191**	**26,829**	**245**	**1,212**	**224,095**	**97,478**

Source: Environment Agency WDI 2017
Notes:
General: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting. Data has been adjusted to include the 43,400 tonnes of municipal waste sent to the CSWDC Incinerator in Coventry.
a: Includes waste received at facilities in Solihull with Solihull identified as the origin.

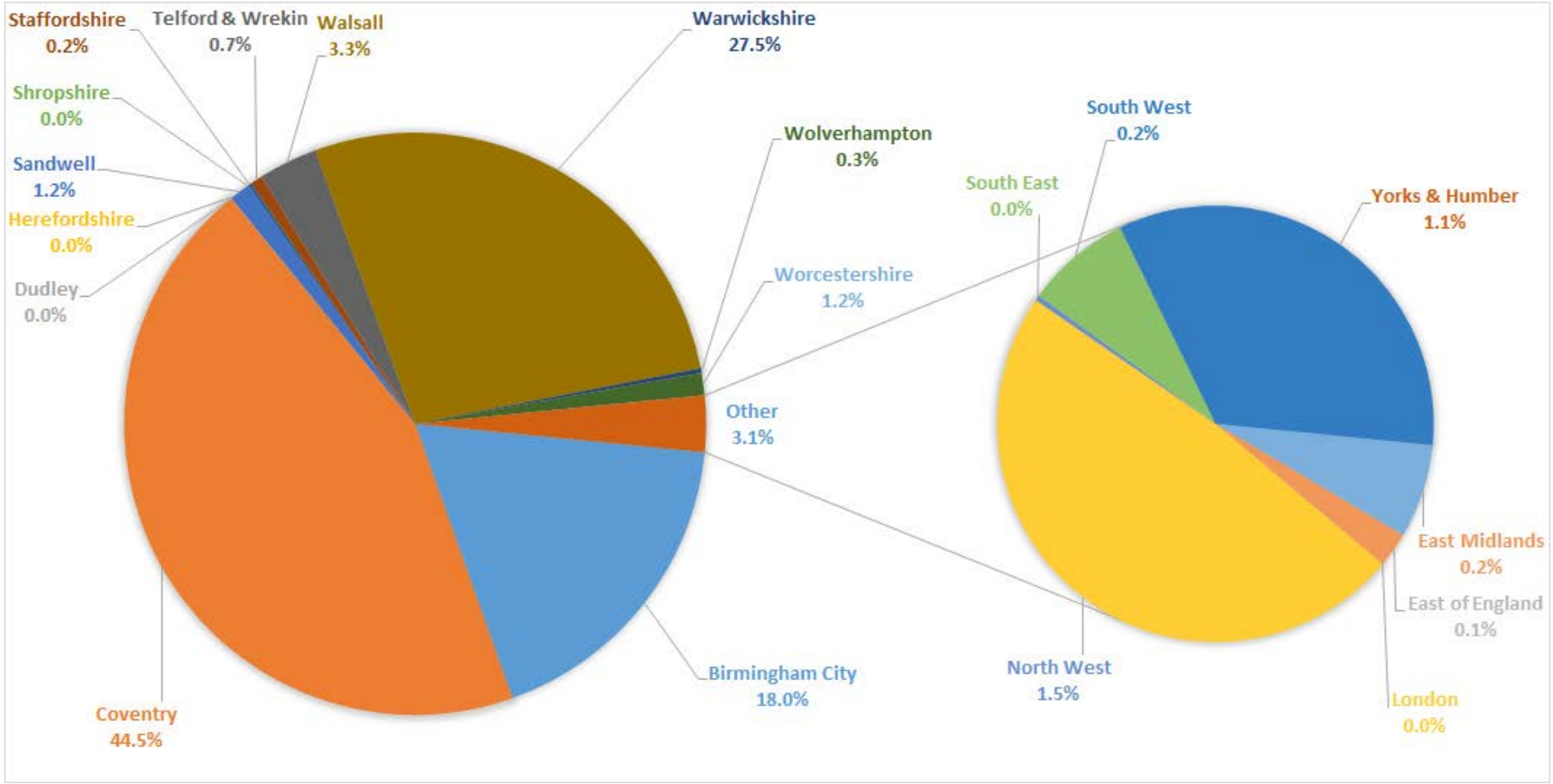
Figure 7 Adjusted wastes received at permitted facilities by West Midlands WPAs and other Regions in England with Solihull identified as the origin, 2017



Source: Environment Agency WDI 2017

Notes: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting. Data has been adjusted to include the 43,400 tonnes of municipal waste sent to the CSWDC Incinerator in Coventry.

Figure 8 Adjusted wastes at permitted facilities by West Midlands WPAs and other Regions in England with Solihull identified as the origin – excluding waste received at facilities in Solihull with Solihull identified as the origin, 2017



Source: Environment Agency WDI 2017

Notes: Data is from the Environment Agency WDI 2017 which covers permitted waste management facilities, however it does not include waste sent to incineration facilities or wastes deposited at facilities exempt from Environmental Permitting. Data has been adjusted to include the 43,400 tonnes of municipal waste sent to the CSWDC Incinerator in Coventry.

3.1.4 Potential Future Permitted Capacity

To fully assess future capacity needs it is useful to consider potential future waste management capacity. To do this current planning applications and variations to existing permissions have been reviewed.

There are currently four planning permissions/variations being considered by Solihull MBC:

- 2015/52078 IVC, biomass & wastewater treatment by Beechwood Recycling;
- 2018/01293 and 2018/03057 MRF at Meriden Quarry by NRS and a commercial / administration / storage building on the ex-Coleman & Company Ltd site; and
- 2018/02477 Physical treatment facility by Cemex UK.

The Beechwood Recycling application[2] consists of a number of elements:

- An IVC facility with an annual capacity of 32,500 tonnes for co-mingled green and food waste;
- A Biomass Energy Facility, which will use an advanced thermal treatment process (fluidised bed) to handle oversize compost material and imported wood waste with an 80/20 ratio, respectively. The facility will treat up to 30,000 tonnes per annum, based on the stated ratio which equates to 24,000 tonnes of oversize compost material and 6,000 tonnes of wood waste; and
- Wastewater treatment plant, which can handle up to 44,000 tonnes per annum.

The Planning Statement indicates that the facility will have the capacity to process up to 45,000 tonnes of co-mingled green and food waste and wood waste per annum. However, this appears to be greater than the individual tonnes set out in the Planning Statement and summarised above (32,000 tonnes of co-mingled green and food waste and 6,000 tonnes of wood waste).

The NRS applications relates to a physical treatment facility at Meriden Quarry plus a commercial / administration / storage building on the ex-Coleman & Company Ltd site which NRS took on this year (see Figure 3 Table 3).

Cemex UK's application[3] is for an aggregate recycling operation at Berkswell Quarry. Cemex are currently restoring the minerals extraction area at Berkswell Quarry and has an environmental permit (BB3333RH) that allows the deposit of up to 250,000 tonnes of waste on land as a recovery operation. The proposed facility will recover re-usable aggregate materials from the inert demolition and construction materials brought into the site to infill and restore the quarry. It is proposed that the site will handle up to 49,000 tonnes per annum.

3.2 Facilities Exempt from Environmental Permitting

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

[2] Applicant's Planning Statement: Proposed construction of an in-vessel composting facility (IVC), biomass energy facility and waste water treatment plant

[3] Applicant's Planning Statement: Planning application for a recycled aggregate processing facility

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

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

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

Exempt activities are split into four categories:

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

However not all exempt activities are important to this Waste Needs Assessment on the basis that:

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

A summary of all exemptions is provided in Appendix 2 along with comments and assumptions about which exemptions need to be considered in terms of waste arisings and capacity estimates.

The Environment Agency's EP exemptions database[4] can now be downloaded from the Data.gov website. The currently available data covers active exemptions as of March 2018 and provides the details of each exemption registered at a site. Data was extracted for the Environment Agency Area Staffordshire, Warwickshire and West Midlands, which covers the administrative area of Solihull. However, whilst there is field to identify the local authority for each entry, for the majority of entries this field is blank.

Therefore, the data in the database needed to be analysed and cleansed to:

- Identify exemptions within Solihull where the local authority was not identified. This has been, achieved by using GIS to locate exemptions based in Solihull by the grid reference given in the database, as shown at Figure 9 .
- Split the exemptions into: non-farm, non-agricultural waste only; both agricultural and non-agricultural waste; agricultural waste only; and on-farm exemptions[5]. The latter three exemption

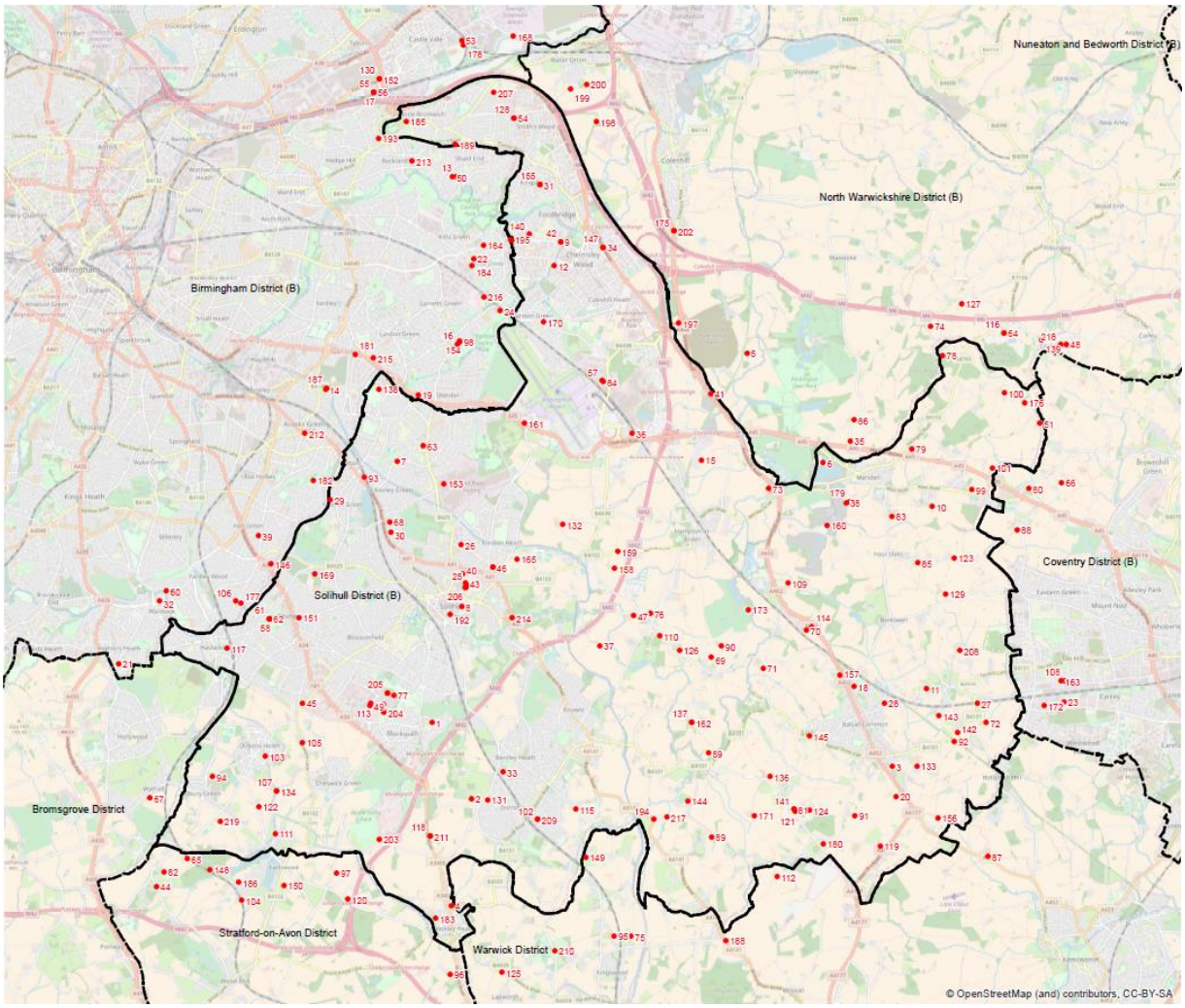
[4] https://ea.sharefile.com/share/view/s42c58b585e1442fb

[5] The Environment Agency EP exemptions database uses inconsistent terminology with regards to the type of exemption. 'Non-farm' and 'non-agricultural waste only' exemptions are assumed to be the same; as are 'on-farm' and 'agricultural waste only' exemptions; and 'both agricultural and non-agricultural waste' are generally activities on farms where waste is brought onto a farm e.g. CD&E wastes such as rubble to repair farm roads/tracks.

types are unlikely to affect overall capacity or have a significant impact on C&I and CD&E waste estimates.

- Remove duplicate registrations.

Figure 9 Locations of exempt activities in Solihull and within 1km of the borough boundary



3.2.1 Non-farm exemptions

Within Solihull there are 70 non-farm organisation/locations with registered exemptions in the Environment Agency EP exemptions database, with a total of 110 exemptions registered across these organisations/locations (see Appendix 3).

However, when this data set is rationalised, there remains just 32 organisations/locations covering 50 exempt activities that should be considered in arisings estimates and/or capacity estimates. Rationalisation is achieved by the removal of:

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

Table 11 presents a summary of the relevant data.

Table 11 Relevant non-farm exempt activities, Solihull, March 2018

Exemption	Description	Number
D7	Burning waste in the open	2
T4	Preparatory treatments (baling, sorting, shredding etc	7
T5	Screening and blending of waste	3
T6	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising	4
T9	Recovery of scrap metal	1
T10	Sorting mixed waste	2
T12	Manual treatment of waste	2
T23	Aerobic composting and associated prior treatment	1
U1	Use of waste in construction	16
U3	Use of waste in the construction of entertainment or educational installations etc	1
U4	Burning of waste as a fuel in a small appliance	2
U8	Use of waste for a specified purpose	3
U11	Use of mulch	1
U12	Spreading of plant matter to confer benefit	4
U13	Spreading of plant matter to confer benefit	1
Total		50
Note: It should be noted that some of these exemptions could be on-farm activities based on the address provided for certain exemptions.		

The detail of these exempt activities has been reviewed so as to estimate the waste tonnages that should be used within this Waste Needs Assessment. Table 12 shows how the exemptions have been considered and are proposed to be used within the assessment.

In addition, there are a further 27 organisations/locations within 1km of the Solihull administrative boundary with relevant non-farm exempt activities, with a total of 38 exempt activities registered at these organisations/locations. This means there are a number of exempt activities close to Solihull boundary, which could be used to handle waste arising in Solihull.

Table 12 Assumptions for non-farm exempt activities

Code	Explanation	Assumption
D7	Allows organisations such as landscape gardeners to burn hedge trimmings, branches, etc on a bonfire at the place of production. It does not provide capacity to manage other wastes.	The annual tonnage assumed through each D7 exemption is 10 tonnes. Added to C&I waste stream.
T4	Relates to the baling, sorting, shredding of recyclable materials as preparatory treatment often as part of a transfer process. The maximum annual capacities for different materials can be quite significant. Therefore, each facility using a T4 have been assessed using a combination of the companies' websites and satellite images on Google Maps (See Appendix 3).	Although significant quantities of waste can be handled through T4 exemptions, the assessment of the organisations holding T4 exemptions suggests that the exemption is being used for handling the organisations own waste prior to onward transfer to other facilities, with materials captured further down the waste management chain.
T5	Allows the temporary small-scale screening and blending of wastes to produce an aggregate or a soil.	An assumed maximum throughput of 1,750 tonnes per annum. Considered in the capacity for CD&E wastes.
T6	Allows waste wood and waste plant matter to be chipped, shredded, cut or pulverised to make it easier to store and transport, or to convert it into a suitable form for use. The maximum throughput under the exemption is 500 tonnes of plant tissue waste, wood and untreated wooden packaging in any 7-day period.	Two of the exemptions are for sites which hold EP (A & A Recycling Services and Arden Wood Shavings) and it has been assumed the tonnages handle at these facilities are captured in their EP returns. One of the other two T4 exemptions is registered at Solihull Hospital and is assumed to be being used for handling the organisations own waste prior to onward transfer to other facilities, with materials captured further down the waste management chain. The final T4 exemption is registered to the Castle Bromwich Hall Gardens Trust, which also has U3, U8, U12, U13 and T23 exemptions, which are assumed to be used to composts and use the plant matter produced on site and so not contribute to the C&I waste stream.

Code	Explanation	Assumption
T9	Relates to the small-scale recovery of metals only, and the quantity of material is likely to be captured when the material is deposited at larger MRS. T6 exemptions do provide treatment capacity.	Not considered further as tonnage captured elsewhere.
T10	Allows small organisations, such as charities, to sort out separate recyclable packaging wastes so that they can be recovered.	The majority of this waste is likely to have been generated from household sources and captured in the LACW data.
T12	Allows sorting, repairing or refurbishment of a range of waste streams including bicycles, furniture, windows, tools, clothing. Most operations are unlikely to deal with multiple waste types given the waste types and the nature of the exemption. Therefore, throughputs are likely to be limited. In addition, a reasonable proportion of the wastes involved are likely to have been generated from household sources and captured in the LACW data.	The annual tonnage assumed through each T12 exemption is 60 tonnes.
T23	Allows composting of small volumes of vegetation, cardboard and food wastes to produce a compost that can be spread on land to provide benefit.	The annual tonnages assumed through each T23 exemption is 400 tonnes. Added to C&I waste stream.
U1	Allows the use of suitable wastes for small scale construction instead of using virgin raw materials. Suitable wastes include: up to 5,000 tonnes of mainly inert materials for general construction; up to 1,000 tonnes of soil; up to 1,000 tonnes of wood chip for paths, bridleways or car parks; and 50,000 tonnes soil, stone and road planings for road construction. This exemption can therefore provide a notable outlet for CD&E wastes and exemption needs to be considered in CD&E waste capacity. However, it cannot be considered as a guaranteed capacity to manage CD&E wastes.	The annual tonnages assumed through each U1 exemption is between 100 to 1,000 tonnes. Considered in the capacity for CD&E wastes.
U3	Allows the use of waste in the construction of entertainment or educational installations and primarily covers waste from CD&E activity but is unlikely to be widely used or significantly affect the C&I and CD&E waste estimates and so is excluded.	Not considered further.
U4	Relates to the burning of plant tissue waste, wood and untreated wooden packaging in appliances with a net rated thermal input of less than 0.4 megawatts.	The annual tonnage assumed through each U4 exemption is 10 tonnes. Added to C&I waste stream.
U8	Allows a range of direct uses for waste without treatment, the most relevant being: untreated wood and paper from paper manufacturing; and end of life tyres, used for horse ménages, ornamental purposes, animal bedding, weighting cover sheeting on agricultural premises. Varying quantities apply for the different specific uses e.g. use in horse ménages 1,000 tonnes; use in animal bedding 100 tonnes; end of life tyres 40 tonnes.	The annual tonnage assumed through each U8 exemption could be up to is 250 tonnes. However, one of the exemptions is held by Bromwich Hall Gardens Trust, as mentioned under T6, so not considered further.

Code	Explanation	Assumption
		Another is registered to A & A Recycling Services and it has been assumed the tonnages handle at these facilities are captured in the EP returns. The final exemption is registers to Balfour Beatty Living Places at Solihull's Depot Moat Lane and is assumed to relate to highways maintenance, street lighting and public realm services and be captured further down the waste management chain.
U11	Allows the spreading of a number of different wastes, mainly for waste from food production and arising from other treatment exemption, on non-agricultural land to replace manufactured fertilisers or virgin materials.	The annual tonnage assumed through each U11 exemption is 200 tonnes. Added to C&I waste stream.
U12	Allows landscapers and farmers to spread mulch as a protective covering onto land around trees, bushes, or plants. The maximum throughput under the exemption is 100 tonnes of untreated wood and plant matter per month.	The annual tonnage assumed through each U12 exemption could be up to is 200 tonnes. However, one of the exemptions is held by Bromwich Hall Gardens Trust, as mentioned under T6, so not considered further. Two are registered at Solihull Hospital and is assumed to be being used for spreading small quantities of the landscaping wastes, so not considered further. The final T4 exemption is registered to Laing O'Rourke, which is assumed to be a temporary exemption used during construction activities at Park Hall Academy, so does contribute to the C&I waste stream.
U13	Allows the spreading of plant matter at the place of production to confer benefit, with a limit of 50 tonnes per hectare in a 12-month period. Given the waste type allowed, the exemption is likely to be used to manage on-farm generated waste which would be captured in agricultural waste estimates.	Assumed within agricultural waste.

3.2.2 On-farm exemptions

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

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

This means that most farms have to register for numerous exemptions. In Solihull, 65 farms/locations on farms have registered exemptions, with multiple exemptions registered at many farms.

Table 13 lists the top 10 most registered exemptions by farms in Solihull. Table 13 highlights that the majority of registered exemptions relate to handling wastes generated on-farm, which would be captured within agricultural waste estimates.

Table 13 Top 10 on-farm exemptions, Solihull, March 2018

Exemption	Description	Number
D7	Burning waste in the open	48
U1	Use of waste in construction	40
U10	Spreading waste on agricultural land to confer benefit	36
D1	Deposit of waste from dredging of inland waters	33
U8	Use of waste for a specified purpose	32
T6	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising	29
U14	Incorporation of ash into soil	18
U13	Spreading of plant matter to confer benefit	17
U4	Burning of waste as a fuel in a small appliance	15
D4	Deposit of agricultural waste consisting of plant tissue under a Plant Health Notice	14

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

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

3.3 Summary

There are a number of key points about the permitted capacity operating in Solihull that should be considered within this needs assessment:

- There are only a small number of permitted facilities within Solihull, with the wastes received being predominantly construction and demolition type wastes, either from the construction and demolition sector, or soil and stones from the municipal sector.
- Whilst there is composting capacity in Solihull, which could increase with the Beechwood Recycling IVC facility proposal, there is no residual waste treatment or disposal capacity such as mechanical biological treatment (MBT), refuse derived fuel (RDF) production, incineration (with or without energy recovery) or non-inert landfill. This means there is a reliance on such facilities outside the area, which includes a significant proportion of strategic capacity that is used to manage LACW.
- There is also limited transfer capacity, with the permitted transfer capacity within Solihull all related to local authority activities (Solihull Community Housing and Solihull MBC transfer stations and Bickenhill HWRC). This means there is no transfer capacity for C&I waste.
- The opening of NRS Waste Management Services inert landfill site as Meriden Quarry has resulted in a significant increase in the quantity of waste managed in Solihull. This means Solihull is a net importer of waste, with the quantity effectively trebling from 364,000 tonnes in 2015 to 1,032,000 tonnes in 2017.
- Only 13% of the waste deposited at permitted facilities in Solihull, originated in Solihull.
- Solihull provides significant inert waste disposal and wood processing capacity for the West Midlands, with just over 90% of the waste deposited in Solihull originating in the West Midlands, of which approximately 65% came from Birmingham and Coventry. In addition, the planning application for an aggregate recycling facility could further enhance the provision for construction and demolition wastes.

Whilst there are a significant number (approximately 500) of exemption activities across 125 locations in Solihull;

- The majority are on-farm exemptions that cover many everyday on-farm activities, such as burning waste in the open, spreading waste on agricultural land to confer benefit, deposit of waste from dredging of inland waters etc;
- there are a small number of non-farm exemptions, which provide some treatment capacity for C&I and CD&E wastes; and
- there are over 16 locations with U1 exemptions (use of waste in construction); these do provide important capacity for CD&E wastes but cannot be considered as guaranteed capacity.

4 Waste Arisings

4.1 Introduction

The baseline year for the Waste Needs Assessment is 2017, however for LACW the assessment is based on the most recently published data from Defra, which covers the financial year 2016/17.

4.2 Local Authority Collected Waste (LACW)

Defra collates LACW data, provided by each local authority within WDF on an annual basis, and publishes a series of data tables presenting a range of information on LACW and associated performance indicators.

Data has been extracted from the most recent data release, along with comparable data from earlier statistical releases, to provide a breakdown of the LACW produced in Solihull between 2010/11 and 2016/17. The data are shown in Figure 10 and Table 14.

Figure 10 LACW produced in Solihull 2010/11 to 2016/17 and household waste per household

The data also summarises the number of households using Ministry of Housing, Communities and Local Government (MHCLG formerly DCLG) housing data[6] and waste generation rates for those years, which is important information when forecasting future arisings.

The data show that whilst there has been some small fluctuation in the overall LACW arisings, the household waste per household has effectively remained static around 1.05 tonnes per household per year since 2011/12. Whilst economic factors can affect waste generation levels, the static waste per household figures would suggest that the growth in household waste in Solihull has been driven by the changes in the number of households. The variation in overall LACW arisings has been caused by the small variations in the amounts of non-household waste collected, which ranges from 3,000 to 7,000 tonnes.

[6] Table 406 of the Household Projections Published Tables spreadsheet published in July 2016. https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Table 14 Tonnes of LACW produced in Solihull 2010/11 to 2016/17

Elements of LACW	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Household dry recycling/reuse	21,941	24,727	20,702	17,863	17,015	20,985	20,896
Household green recycling/reuse	20,005	17,207	19,310	18,426	19,623	18,465	18,608
Household - waste sent for recycling/composting/reuse	**41,946**	**41,934**	**40,011**	**36,289**	**36,638**	**39,450**	**39,504**
Household - regular collection (not recycled)	40,419	36,864	40,573	41,482	41,246	40,758	41,502
Household - civic amenity sites (not recycled)	7,992	6,455	5,105	6,184	5,724	5,691	5,948
Household - other sources (not recycled)	3,946	5,686	5,335	5,376	4,823	5,125	4,953
Household - estimated rejects	26	116	113	2,424	3,571	1,071	1,182
Household - waste not sent for recycling	**52,356**	**49,005**	**51,125**	**55,466**	**55,364**	**52,645**	**53,585**
Household - total waste	**94,302**	**90,939**	**91,137**	**91,755**	**92,002**	**92,095**	**93,089**
Non-household - waste sent for recycling/composting/reuse	3,176	3,169	7,202	2,270	6,761	5,241	5,945
Non-household - waste not sent for recycling	-	26	184	1,923	-2,155	447	212
Non-household - total waste	**3,176**	**3,195**	**7,386**	**4,193**	**4,606**	**5,688**	**6,157**
Local authority collected waste - sent for recycling/composting/reuse	45,122	45,103	47,214	38,558	43,399	44,691	45,449
Local authority collected waste - not sent for recycling	52,356	49,031	51,309	57,389	53,209	53,092	53,797
Total local authority collected waste	**97,478**	**94,134**	**98,523**	**95,948**	**96,608**	**97,783**	**99,246**
MHCLG - No. of households	85,744	86,160	86,409	87,111	87,587	88,102	88,664
Household waste per household (tonnes per household)	1.100	1.055	1.055	1.053	1.050	1.045	1.050
LACW per household (tonnes per household)	1.137	1.093	1.140	1.101	1.103	1.110	1.119
Non-household LACW per household (tonnes per household)	0.037	0.037	0.085	0.048	0.053	0.065	0.069
Year on year trend in household waste per household		-4.0%	-0.1%	-0.1%	-0.3%	-0.5%	0.4%
Annual average change in household waste per household since 2012/13							-0.11%
Annual average change in household waste per household since 2014/15							-0.02%
Annual average change in LACW since 2012/13							0.18%
Annual average change in LACW since 2014/15							1.36%

Notes: Source: Department for Environment, Food & Rural Affairs
MHCLG: Ministry of Housing, Communities and Local Government (formerly DCLG)
Not additive, figures included in 'Local authority collected waste - not sent for recycling'

Further analysis of the waste generation levels has been carried out using housing numbers based on the housing trajectories in the Solihull Draft Plan. The analysis showed the same trend with waste from households in the range 1.044 to 1.050 tonnes per household.

In addition, monthly data provided by Solihull has been used to assess the trends in waste generation. Based on the monthly data, rolling 12-month tonnages can be used to take account of seasonal variations and provide a clearer understanding of trends. In addition, using the 12 month rolling tonnages means that it is possible to look beyond the nationally published annual data set by using the most up-to-date data held by Solihull Council, which covers the period up to March 2018.

Figure 11 provides the rolling 12-month tonnage data[7] for total household waste arisings using monthly data from January 2012 to March 2018. The figure highlights the static nature of the household waste arisings.

Figure 11 Total household waste, rolling 12-month tonnage, January 2012 to March 2018

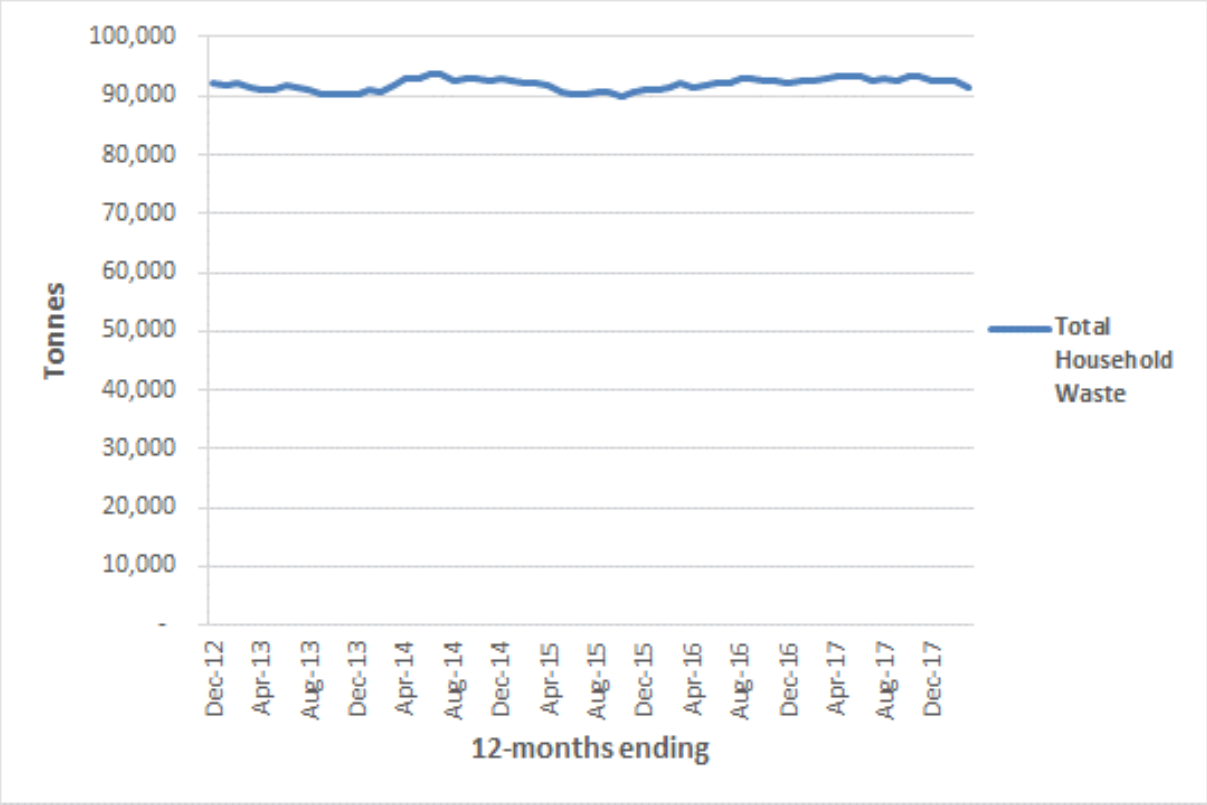
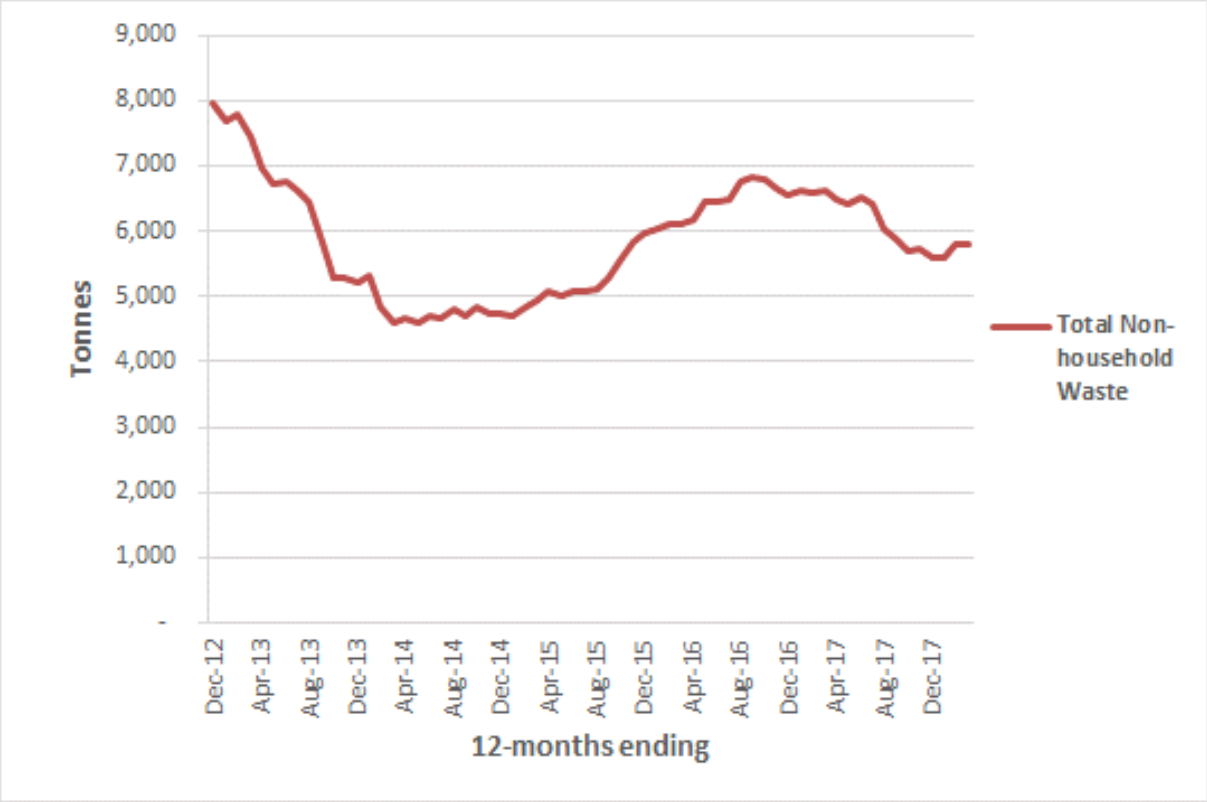


Figure 12 shows the rolling 12-month tonnage data for total non-household waste arisings using monthly data from January 2012 to March 2018. The figure shows the relatively small variation in the non-household waste faction which has contributed to the variation in the total LACW.

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

Figure 12 Total non-household waste, rolling 12-month tonnage, January 2012 to March 2018



4.2.1 Management Methods for LACW

Table 15 provides a summary of the management methods used to handle the LACW generated in Solihull between 2010/11 to 2016/17. Figure 13 presents the LACW management methods graphically and highlights that the proportion of waste landfilled has remained relatively constant, around 10%, with the remaining 90% in general being split equally between Recycling/Composting and Incineration with EfW.

Table 15 Management Methods for LACW generated in Solihull (tonnes) 2010/11 to 2016/17

Management Method	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Landfilled	10,750	7,635	8,619	11,038	8,659	8,393	8,969
Incineration with EfW	41,560	41,396	42,701	46,346	44,532	44,699	44,803
Incineration without EfW	45	-	-	-	-	-	-
Recycled/Composted	45,122	45,103	47,214	38,558	43,399	44,691	45,448
Other[1]	-	-	-11	3	-	-	9
Total[2]	97,478	94,134	98,523	95,946	96,590	97,783	99,229
Input to intermediate plants[3]				3,635	3,138	3,545	3,378

Notes: Source: Department for Environment, Food & Rural Affairs
There have be some minor changes to the data set reported with increase granularity since 2014/15

1. Other includes waste treated/disposed through other unspecified treatment processes as well as process and moisture loss.
2. Total LACW managed may not match total LACW collected due to stockpiling of waste between reporting periods.
3. Refers to input to MBT, Residual MRFs, RDF and other plants prior to treatment and disposal.

Figure 13 Management Methods for LACW generated in Solihull (tonnes) 2010/11 to 2016/17

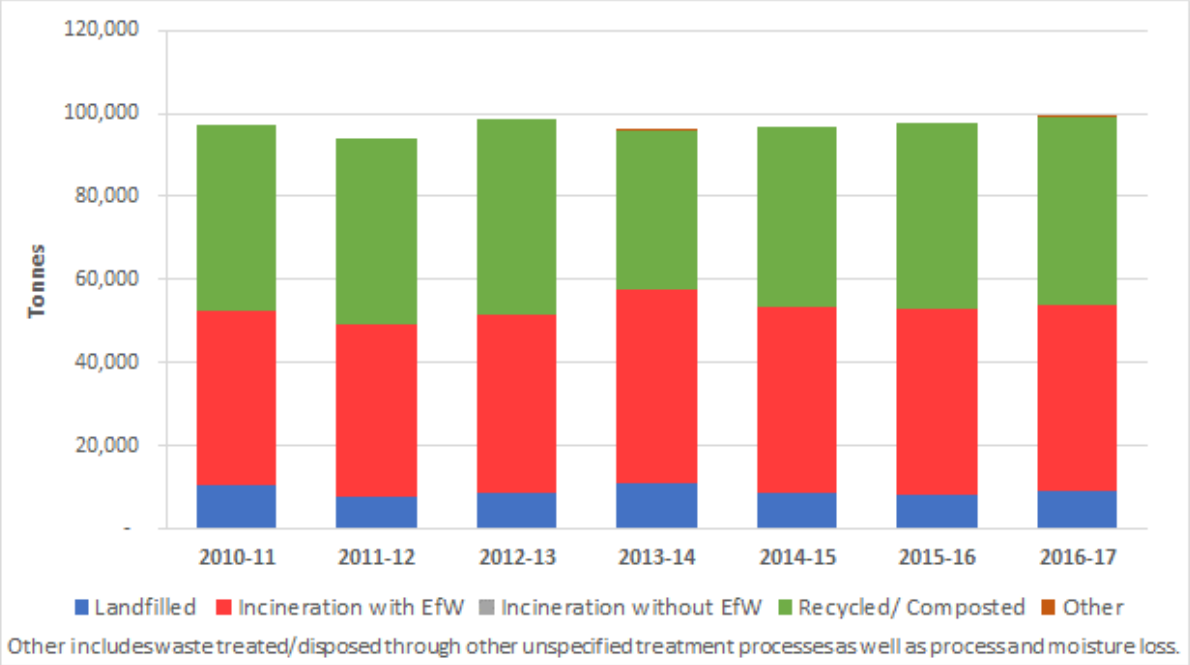


Table 16 shows the key national performance indicators for Solihull between 2010/11 and 2016/17 and England for 2016/17(as reported in Defra's LA_and_Regional_Spreadsheet_201617, Table 3). The data how that Solihull is just worse than the national average for Residual household waste per household and household waste recycling rate, but better than the national average in terms of percentage of LACW sent to landfill

Table 16 Key national performance indicators for Solihull 2010/11 to 2016/17

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	England 2016/17
Residual household waste per household (kg/household) (Ex NI191)	591	552	574	622	620	586	593	557
Percentage of household waste sent for reuse, recycling or composting (Ex NI192)	44.4%	46.1%	43.9%	39.5%	39.8%	42.8%	42.4%	43.7%
Percentage of municipal (LACW) waste sent to landfill (Ex NI193)	11.8%	8.1%	8.7%	11.5%	9.0%	8.6%	9.1%	15.9%
Collected household waste per person (kg) (Ex BVPI 84a)	461	441	440	441	440	437	439	Not reported

4.3 Commercial and Industrial (C&I) Waste

4.3.1 Introduction

The most recent C&I waste arisings estimates (2016) were made at the national level and were not broken down to the regional or individual WPA level. Therefore, local C&I waste arisings need to be estimated using a number of datasets. The approach used in this report is based on the methodology developed by Defra in 2014.

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

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

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

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

4.3.2 Inputs to permitted facilities

Operators of permitted waste facilities are asked to provide information on the 'origins' of the waste accepted at their sites. Where data is supplied, the entry is normally completed showing the local authority or county where the waste came from.

However, where operators do not provide accurate information on the origin of waste, the WDI reports the origin as "Not Codeable". If possible "Not Codeable" waste is assigned to the region of origin. Therefore, after the waste with Solihull as the origin has been assessed, there is a need to consider the potential for "Not Codeable" waste arising in Solihull.

The WDIs for 2014 to 2017 were used to identify wastes received at permitted facilities where the origin is identified as Solihull. The data was extracted by LoW 6-digit waste code (i.e. the classification codes for individual wastes) and by receiving site. The extracts from the WDI for the quantities of waste received by sites in England with the origin of identified as Solihull are summarised in Table 17 by LoW Chapter heading.

Table 17 Waste received at permitted facilities in England with Solihull origin 2014 to 2017 by LoW Chapter heading (tonnes)

LoW Chapter Heading	2014	2015	2016	2017
02: Agriculture and Food Processing Wastes	14,794	4	6,962	36
03: Furniture, Paper and Cardboard Manufacturing Wastes	72	10	29	
05: Petroleum, Gas and Coal Processing Wastes				<1
06: Inorganic Chemical Process Waste	<1	<1	<1	<1
07: Organic Chemical Process Waste	1			
08: Paint, Adhesive, Sealant and Ink Manufacturing Waste	387	342	541	1,105
09: Photographic Industry Wastes	>0.1			
11: Chemical Surface Treatment and Metal Coating Wastes	261	12	5	24
12: Shaping and Physical Treatment of Metals and Plastics	646	2,897	10	23
13: Oil Wastes and Wastes of Liquid Fuels	1,119	961	364	443
14: Organic Solvent, Refrigerant and Propellant Waste	1	<1	<1	
15: Packaging, Absorbents, Wiping Cloths Etc N.O.S.	7,931	10,404	8,434	5,714
16: Wastes Not Otherwise Specified in The List	139	508	626	546
17: Construction and Demolition Wastes	74,199	40,320	106,607	100,140
18: Human and Animal Health Care Waste	152	93		
19: Waste and Water Treatment Wastes	4,903	15,429	5,778	2,416
20: Municipal Wastes	79,448	71,906	78,837	73,296
Total	**184,054**	**142,885**	**208,192**	**183,745**

The next step was to start to isolate the C&I waste fraction, filtering the data to remove:

- Waste coded under LoW sub-chapter 02 01 'Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing', to exclude agricultural waste.
- Waste coded under LoW Chapter 17 'Construction and demolition wastes (including excavated soil from contaminated sites)' to exclude CD&E waste. It should be noted that this could also exclude some LACW.
- Waste coded under LoW Chapter 19 'Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use' to prevent the double counting of wastes handled at waste management facilities.

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

This is not a significant issue when considering arisings in Solihull, as the only transfer station capacity relates to the management of LACW: filtering the data to remove waste deposited at Bickenhill HWRC, Moat Lane Transfer Station and Solihull Community Housing's Chapelhouse Road Depot would prevent the double counting of these wastes at other waste management facilities following their transfer. However, it should be noted that waste received at the Chapelhouse Road Depot would not be included in the data for waste with Solihull as the origin because the site coded the source as "West Midlands'. This highlights a general issue of operators not providing accurate information on the origin of waste.

The final step was to subtract LACW, the primary destinations for Solihull's LACW are known and the inputs into these primary destinations have been assessed to eliminate the LACW from the wastes that have the origin as Solihull. The analysis of the data showed that a significant amount of the LACW was not captured in the wastes received at permitted facilities with Solihull identified as the origin. Table 18 summarises the assessment of the destinations for Solihull's LACW and the assumption regarding the waste that need to be excluded from the dataset.

Table 19 draws together the analysis above to provide an estimate of the C&I waste arisings managed through permitted facilities in England with Solihull identified as origin. The analysis estimates that the annual quantities of C&I wastes identified with Solihull as origin, between 2014 and 2017, range between 30,000 and 37,000 tonnes. However, this excludes waste that that did not have its origin coded as Solihull in the WDI, which from the analysis of the coding of LACW can be seen to be quite significant.

Table 18 Assessment of Solihull's LACW destinations

Waste stream	Facility Name	Process	Comment
Residual	CSWDC Incinerator	Incineration	Inputs to incineration facilities are recorded in the Environment Agency Waste Incineration Returns and not included in the WDI. Therefore, there is no LACW tonnage within the data to subtract.
Residual	Bubbenhall Landfill Site, Warwick	Landfill	In the Environment Agency WDI, no waste received at the Bubbenhall Landfill Site was identified as having its origin in Solihull. Therefore, there is no LACW tonnage within the data to subtract. The contract for the disposal of waste at the Bubbenhall Landfill Site is let through Coventry City Council and therefore, Solihull's LACW sent to Bubbenhall Landfill Site is likely to have its reported origin as either Coventry or '*WPA not codeable (West Midlands)*'
Co-mingled	Landor Street Integrated Resource Facility, Birmingham	MRF	Since 2015, Solihull MBC has sent around 13,000 tonnes of co-mingled recyclable materials to the Landor Street Facility each year. However, over the same period only the annual tonnes of mixed municipal waste identified with an origin of Solihull were; 2015 – 6,731 tonnes; 2016 – 6,853 tonnes; and 2017 – 6,614 tonnes. Therefore, it is likely that some or all of the co-mingled materials are being coded in under '*WPA not codeable (West Midlands)*' or under a different LoW code. This means that the waste identified with an origin of Solihull could be either LACW or C&I, so to avoid the risk of under-estimating C&I waste arisings the tonnages received Landor Street Facility have not been subtracted from the data.
Green Waste	Packington Composting Facility	Composting	The tonnage of garden waste, with Solihull identified as the origin, received at the Packington Composting Facility correlate closely with the tonnages sent by Solihull MBC (+/- 200 tonnes). Therefore, waste received at Packington Composting Facility has been subtracted from the data.
WEEE	S Norton, Liverpool	Recycling	No waste received at the S Norton facility had Solihull identified as the origin, although in 2017 over 20,000 tonnes were recorded under '*WPA not codeable (West Midlands)*'. Therefore, there is no LACW tonnage within the data to subtract.
	EMR, Darlaston		All waste deposited at the Darlaston Fridge Destruction Unit are recorded under '*WPA not codeable (West Midlands)*'. Therefore, there is no LACW tonnage within the data to subtract.
	Mekatek, South Wales		Waste deposited in Wales are not included in the WDI. Therefore, there is no LACW tonnage within the data to subtract.
Rubble	K S D Recycled Aggregates, Dunton Recycling Centre	Recycling	All wastes received are coded under LoW Chapter 17, Construction and Demolition Wastes. Therefore, any LACW received at the facility will have been excluded from the data, by the step that filtered out LoW Chapter 17 wastes.
	Parkway Recycling, Birmingham		All waste deposited at the facility are recorded under '*WPA not codeable (West Midlands)*'. Therefore, there is no LACW tonnage within the data to subtract.

Waste stream	Facility Name	Process	Comment
Wood	A & A Recycling Services, Meriden Quarry	Recycling	In 2016 and 2017, the waste received coded under LoW code 20 01 38 (non-hazardous waste waste) correlate closely with the tonnages sent by Solihull MBC, so for those years all waste coded under LoW code 20 01 38 received at Meriden Quarry has been subtracted from the data. In 2015, Solihull MBC sent 1,818 tonnes of LoW code 20 01 38 waste to Meriden Quarry, this quantity has been subtracted from the total received at Meriden Quarry in 2015. In 2014, the majority of wood waste from Solihull MBC was sent the Packington Wood Recycling Facility, where all inputs were recorded under '*WPA not codeable (West Midlands)*'. Therefore, there is no LACW tonnage within the data to subtract in 2014.
Glass	Reuse Glass (URM), West Yorkshire	Recycling	In 2017, no waste received was identified as having its origin in Solihull. Therefore, there is no LACW tonnages within the data to subtract in 2017. Again, significant tonnages where recorded under '*WPA not codeable (West Midlands)*'. Between 2014 and 2016 the following tonnages were identified with Solihull as the origin: • 2014: 3,220 tonnes • 2015: 2,942 tonnes • 2016: 1,888 tonnes Over these years Solihull MBC sent between 3,600 and 4,000 tonnes per annum of glass for recycling. Therefore, it has been assumed that the tonnages received from Solihull were LACW and subtracted from the data.
	Suez, Montague Street, Birmingham		In 2015 and 2017, no waste received at the facility had Solihull identified as the origin. Therefore, in these years, there is no LACW tonnages within the data to subtract. In 2016, the facility received 247 tonnes of waste with Solihull as the origin however the waste was coded as LoW 20 03 01 (mixed municipal waste). In 2016, Solihull MBC sent 1,255 tonnes of mixed glass to the facility. Given the inconsistency between the classification and the quantity of the waste, it has been assumed that the waste was not LACW and so not subtracted from the data.
Card and mixed paper/ card	Smurfit Kappa, Birmingham	Recycling	The Smurfit Kappa facility operated under an exemption and not included in the WDI. Therefore, there is no LACW tonnage within the data to subtract.
Scrap metal	EMR, Birmingham	Recycling	All waste deposited at the facility are recorded under '*WPA not codeable (West Midlands)*'. Therefore, there is no LACW tonnage within the data to subtract.
Sweepings	Go Waste, Birmingham	Recovery	Solihull MBC send their street sweepings waste to Go Waste, therefore waste coded under LoW code 20 03 03 (street-cleansing residues) have been subtracted from the data.

Table 19 Estimated C&I Waste received at permitted facilities in England with Solihull origin 2014 to 2017 by LoW Chapter heading (tonnes)

LoW Chapter Heading	2014	2015	2016	2017
02: Agriculture and Food Processing Wastes	14	3	43	
03: Furniture, Paper and Cardboard Manufacturing Wastes	72	10	29	
05: Petroleum, Gas and Coal Processing Wastes				<1
06: Inorganic Chemical Process Waste	<1	<1	<1	<1
07: Organic Chemical Process Waste	1			
08: Paint, Adhesive, Sealant and Ink Manufacturing Waste	387	342	541	1,105
09: Photographic Industry Wastes	<1			
11: Chemical Surface Treatment and Metal Coating Wastes	261	12	5	24
12: Shaping and Physical Treatment of Metals and Plastics	646	2,897	10	23
13: Oil Wastes and Wastes of Liquid Fuels	1,119	961	364	238
14: Organic Solvent, Refrigerant and Propellant Waste	<1	<1	<1	
15: Packaging, Absorbents, Wiping Cloths Etc N.O.S.	5,929	4,252	3,224	2,904
16: Wastes Not Otherwise Specified in The List	118	483	608	526
18: Human and Animal Health Care Waste	152	93		
20: Municipal Wastes	28,175	21,408	32,039	29,047
Total	36,876	30,460	36,862	33,867

"Not Codeable" waste

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

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

Table 20 presents the tonnage of waste with the origin identified as the West Midlands, along with the tonnage from the West Midlands that could not be further coded to the sub-region or WPA levels.

Table 20 Quantity of Not Codeable waste in West Midlands, 2014 to 2017

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

The figures show that 25% to 31% of the waste with the origin identified as the West Midlands cannot be attributed to the sub-region or WPA level. Therefore, if Solihull is typical of the region as a whole in this regard, C&I, waste estimates for Solihull could be 25% to 31% higher as a result of the "Not Codeable" data at the West Midlands level within the WDI. This is equivalent to 9,000 to 11,500 tonnes, depending on which year is being considered.

4.3.3 Inputs to incineration facilities

As highlighted in Section 3.1.3, the Environment Agency now produces a separate data set on the wastes received at incineration facilities in England and like the WDI, the Incinerator Waste Returns provides the 'waste origin'.

The CSWDC Incinerator in Coventry received 282,849 tonnes of waste in 2016 and 292,989 tonnes of waste in 2017, which is predominantly LACW. However, in both the 2016 and 2017 Incinerator Waste Returns, the inputs to the CSWDC Incinerator are all identified as originating at the 'West Midlands'; the WPA is not identified.

Therefore, to understand the relative portions of LACW and non-LACW received at the CSWDC Incinerator, WDF was used to compare the LACW input with the total input to the facility. The comparison was made using the 2016 Incinerator Waste Returns and the data report in WDF by local authorities for 2016; this is because the data for April to December 2017 is still to be released by Defra.

The data show that of the 282,849 tonnes received in 2016, 281,863 tonnes was LACW (99.7%). Therefore, it can be assumed that no significant tonnages of C&I waste were received at the CSWDC Incinerator.

In the Incinerator Waste Returns, the principal wastes identified with an origin of Solihull, in both 2016 and 2017, were wood based wastes being sent to the Birmingham Bio Power facility at Yardley:

- 17,964 tonnes in 2016, under LoW codes 03 01 05 (non-hazardous sawdust, shavings, cuttings, wood, particle board and veneer from wood processing) and 19 12 07 (non-hazardous wood from waste management facilities);
- 23,652 tonnes in 2017, under LoW code 19 12 07 (non-hazardous wood from waste management facilities);

These waste streams are likely to arise from the processing of wood waste by A&A Recycling Services Berkswell Recycling Limited.

The only other waste reported with an origin of Solihull in the 2016 Incinerator Waste Returns was 0.15 tonnes of agrochemical waste sent to Fawley HT Incinerator in Hampshire.

Overall the available data on waste received at incineration facilities does not highlight any significant tonnages of C&I waste with a reported origin of Solihull.

4.3.4 Waste handled at exempt facilities

Section 3.1.4 summarises the exempt activities registered in Solihull and the potential contribution to the C&I waste estimates is shown in Table 21. The data suggests a very limited contribution to the C&I waste stream for the waste handled under exemptions in Solihull.

However, there is a significant number of exemptions across the surrounding local authority areas, at which waste from Solihull is likely to be handled. For example, Smurfit Kappa in Birmingham are known to handle cardboard from Solihull MBC and it is highly likely that cardboard for the retail sector is also handled through this facility.

Therefore, the quantity of C&I waste origin in Solihull and handled through exempt activities is likely to be higher that the quantity managed at exemptions with in Solihull,

Table 21 Potential C&I waste quantities handled through exempt facilities

Exemption	Contribution to the C&I waste estimates	Number of Exemptions	Estimate C&I waste managed through exemption
D7 - Burning waste in the open	10 tonnes annum per exemption	2	20
U4 - Burning of waste as a fuel in a small appliance	10 tonnes annum per exemption	2	20
U11 - Use of mulch	200 tonnes per annum per exemption	1	200
Total			**240**

4.3.5 Total estimated C&I waste arisings

Based on the method set out above, Table 22 summarises the estimated C&I waste arisings for Solihull for years 2014 to 2017.

Table 22 Estimated C&I waste arisings for Solihull, 2014 to 2017

Element	Tonnes			
	2014	2015	2016	2017
Estimated C&I waste arisings managed through permitted facilities in England with Solihull identified as origin	36,900	30,500	36,900	33,900
"Not Codeable" Waste	0 to 9,300	0 to 8,900	0 to 11,300	0 to 10,400
Waste handled at Exemption Facilities	240	240	240	240
Total (rounded to nearest 100 tonnes)	**37,100 to 46,400**	**30,700 to 39,600**	**37,100to 48,400**	**34,100 to 44,500**

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

The estimated C&I waste arisings for England in 2012 was 43.8 million tonnes.[8] However, in December 2016, Defra[9] published a statistical notice to summarise waste estimates for the UK which have been calculated for European reporting purposes (the December 2016 Notice).

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

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

However, in February 2018, Defra published[10] revised estimates for C&I waste generation England between 2010 and 2016, with an estimate 32.2 million tonnes of C&I waste being produced in England 2016. The February 2018 Statistics Notice highlights that the figures are provisional and subject to

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

[9] Defra, UK Statistics on Waste Notice, December 2016

[10] Defra, UK Statistics on Waste Notice, February 2018

change following review by Eurostat after submission in June 2018 (the outcome of the Eurostat submission is still to be published).

The Office for National Statistics (ONS) holds data[11] on enterprises/local units[12] by SIC, employment size band and local authority, which can be used to give a broad indication of the number of enterprise/local units in Solihull compared to England.

The ONS data indicates that 0.38% of local units in England are in Solihull in 2016; if it is assumed that C&I waste is directly proportional to the number of local units, arisings in Solihull would equate to approximately 120,000 tonnes, which is notably higher than the Solihull-specific analysis above. There could be a number of potential reasons for the difference in the figures:

- The types of businesses within Solihull, with a higher proportion of commercial-type businesses than the national average and a lower proportion of production/industrial-type businesses, which normally product greater quantities of waste. In addition, the balance of the commercial-type businesses in Solihull is towards sectors which generally produce less waste, e.g. professional, scientific & technical, finance & insurance, information & communication etc, as opposed to sectors such as wholesale, retail and accommodation & food services which can generate higher levels of waste.
- The proportion of “Not Codeable” Waste for Solihull in the WDI is higher than the West Midland’s average.
- Given the small number of exempt activities with Solihull, exempt activities outside Solihull are handling significant amounts of the waste generated in Solihull

Therefore, given the uncertainty over the national C&I waste estimates and the lack of granularity at a region or WPA level, the estimates based on the Solihull-specific analysis above provide a range of 39,600 to 48,400 tonnes on which to base the forecasts for future C&I waste arisings.

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

4.4.1 Introduction

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

4.4.2 Historical CD&E waste arisings in Solihull

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

[11] https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/datasets/ukbusinessactivitysizeandlocation

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

The report provided an estimate of the CD&E waste arisings in Warwickshire, Coventry and Solihull for 2005, which is summarised in Table 23. Unfortunately, the estimates were not disaggregated to the Solihull level.

Table 23 CD&E waste arisings in Warwickshire, Coventry and Solihull, 2005

Component	Tonnes
Estimated production of recycled graded aggregate	384,599
Estimated production of recycled ungraded aggregate	193,137
Estimated production of recycled soil (excl. topsoil)	72,495
Estimated tonnage of unprocessed CDEW entering licensed landfills for engineering, capping, disposal	227,727
Estimated weight of waste materials (mainly excavation waste) used on registered exempt sites	378,290
Total	**1,256,248**
Source: Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005 Construction, Demolition and Excavation Waste, CLG (February 2007).	

A report prepared for the West Midlands Regional Assembly, West Midlands Waste Facilities Phase 2: Future Capacity Requirements[13] in 2004, did provide an estimate for C&D wastes in Solihull of 179,000 tonnes per annum of the period up to 2007. The estimate was based on the relative levels of housing development in the West Midlands region.

A further report for the West Midlands Regional Assembly, A Study into Future Landfill Capacity in the West Midlands[14] in 2007, provided estimates for the cumulative construction and demolition waste arisings for the period 2002/03 to 2025/26. The cumulative estimates for Solihull ranged from 5,112,523 tonnes to 5,480,205 tonnes for the period, which is equivalent to an average annual tonnage of between 213,000 and 228,000 tonnes.

4.4.3 Defra, Digest of Waste and Resources Statistics

The Digest of Waste and Resources Statistics is an annual publication by Defra. It is a compendium of statistics on a range of waste and resource areas, based on data published mainly by Defra, WRAP, the Environment Agency, the Office for National Statistics and Eurostat, and collated into a single document for ease of use.

January 2015 and March 2016 Editions

The March 2016 Digest of Waste and Resources Statistics (at Figure 2.1) provides an estimate of all waste arisings in the UK between 2004 and 2012, with CD&E waste estimated to be in the region of 100 million tonnes in 2012. The data behind Figure 2.1 are summarised in Table 24.

Table 24 UK CD&E waste arisings, Digest of Waste and Resources Statistics, March 2016

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

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

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

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

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

In mid-December 2016 Defra published an updated UK Statistics on Waste Notice (see Section 4.4.4), that again revised the method used to estimate CD&E waste arisings, which resulted in new estimates for CD&E waste arisings in the UK.

March 2017 Edition

Defra released the 2017 Digest of Waste and Resource Statistics in March 2017, it included 2014 estimates for CD&E waste arisings in the UK in Figure 2.1 of the Digest, which summarises waste arisings by broad sector. The figure indicates a UK CD&E arising of approximately 120 million tonnes in 2014. However, the actual tonnage figure is not provided.

May 2018 Edition

Defra released the 2018 Digest of Waste and Resource Statistics in May 2018. The data on waste arisings presented in this edition repeats the data presented in the 2017 edition. However, it is highlighted that the 2016 arising estimates will be provided following the submission and approval of the 2016 Waste Statistics Regulation (Eurostat) Return during 2018.

4.4.4 Defra, UK Statistics on Waste Notices

Defra Statistics on Waste Notices provide details and the methods used to estimates waste management data for EU reporting requirements (e.g. Eurostat)

August 2016

In August 2016, Defra published a Statistics on Waste Notice to summarise waste estimates for the UK calculated for European reporting purposes; this data is reproduced in Table 25. It provides data on non-hazardous construction and demolition waste for both the UK and England for 2010 to 2012. These figures exclude excavation waste and dredging spoils, so are a subset of the data reported in the Digest of Waste and Resources Statistics.

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

Table 25 Non-hazardous Construction and Demolition Waste, UK and England, 2010 to 2012, Statistics on Waste Notice, August 2016

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

December 2016

In December 2016, a Statistics on Waste Notice was published, presenting a revised set of estimates for 2010 to 2012, along with estimates for 2013 and 2014 calculated using a revised method. This data is reproduced in Table 26.

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

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

Table 26 Non-hazardous Construction and Demolition Waste, UK and England, 2010 to 2014, Statistics on Waste Notice, December 2016

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

February 2018

As with the 2018 Digest of Waste and Resources Statistics, this Statistics Notice repeats the previously reported data and indicates that updated figures will be provided following the submission and approval of the 2016 Waste Statistics Regulation (Eurostat) Return during 2018.

4.4.5 Summary of Defra CD&E waste estimates

Table 27 presents the collation of the Defra CD&E waste estimates for England and UK between 2010 and 2014 and provides an estimate of waste generation per capita for each element: non-hazardous C&D waste; hazardous C&D waste; and excavation waste and dredging spoils.

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

Table 27 Summary of Defra CD&E waste data, England and UK, 2010 to 2014

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

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

4.4.6 CD&E waste arisings estimates for Solihull

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

Solihull's population in 2014 was 210,227[15] which would give an estimated CD&E waste arising of:

- 416,000 tonnes (rounded) in 2014, based on the England CD&E waste per capita estimates of 1,980kg/capita; or
- 392,000 tonnes (rounded) in 2014, based on the UK CD&E waste per capita estimates of 1,864kg/capita.

Table 28 provides a breakdown of these estimates by the headline CD&E waste streams.

[15] http://www.solihull.gov.uk/About-the-Council/Statistics-data/aboutsolihull

Table 28 CD&E waste generation estimates, Solihull, 2014 (rounded to nearest 1,000 tonnes)

CD&E waste streams	England kg/capita	Estimate arisings (tonnes)	UK kg/capita	Estimate arisings (tonnes)
Non-hazardous C&D	904	190,000	851	179,000
Hazardous C&D	11	2,000	12	3,000
Excavation waste/ dredging spoils	1,065	224,000	1001	210,000
Total	1,980	416,000	1864	392,000
Based on a population of 210,227 in 2014 for Solihull.				

Whilst Table 28 relies upon national averages, the estimates can be related back to Solihull by using population data. The estimates could still overestimate the CD&E waste generated in Solihull in 2014, which may be below the national average particularly in relation to the excavation waste and dredging spoils due to main infrastructure projects such as Crossrail and Thames Tideway Tunnel.

Historically arisings of CD&E waste have been assumed to be strongly related to the level of construction outputs or economic growth in the construction sector. Table 29 shows the Office of National Statistics (ONS) financial outputs for construction and compares them against the most recent national CD&E wastes estimates, i.e. 2012 to 2014. Table 29 shows there appears to be a correlation between financial outputs for construction and CD&E waste estimates.

Table 29 Comparison of construction outputs and national CD&E waste estimates

Year	2012	2013	2014
UK ONS construction outputs[1], £(millions)	126,534	128,373	139,678
Annual growth	-6.9%	1.5%	8.8%
Average growth between 2012 and 2014			5.1%
UK CD&E waste estimate2, tonnes (millions)	108,838		120,394
Average growth between 2012 and 2014			5.2%
UK C&D waste estimate2, tonnes (millions)3	51,178	51,930	54,960
Annual growth		1.5%	5.8%
Average growth between 2012 and 2014			3.6%

1. ONS Output in the Construction Industry: June 2018, Table 13, Construction Output: All Work Summary - Chained volume measure, seasonally adjusted, 2016 prices.
2. Defra, UK Statistics on Waste Notice, December 2016
3. Figures exclude excavation waste

Therefore, reference was made to the ONS historical construction outputs and construction sector and GVA growth to update the 2014 estimate and provide an estimate for the Waste Needs Assessment baseline year of 2017.

The average annual percentage growth in construction GVA outputs for the West Midlands region between 2014 and 2017 was 8.3%[16], which was driven by a 24% increase between 2016 and 2017. However, construction outputs data is not presented to Solihull level.

Therefore, Solihull specific GVA data[17] was reviewed. Two GVA datasets were available:

[16] ONS Output in the Construction Industry: June 2018 - Table 6: Construction output: Value non-seasonally adjusted current prices by region

[17] Source: Solihull MBC

- Solihull MBC data from 2015, which showed an average annual increase of 4.5% in GVA for the construction sector between 2014 and 2017. and
- Oxford Economics West Midlands Combined Authority Forecasts prepared in 2017, which showed an average annual increase of 7.2% in GVA for the construction sector between 2014 and 2017.

Applying the two GVA growth figure to the 2014 estimates in Table 28 result in the following ranges for 2017 depending on whether the England or UK estimates of kg/capita are used:

- 447,000 to 475,000 tonnes based on the Solihull MBC GVA data; and
- 482,000 to 513,000 tonnes based on the Oxford Economics GVA data.

However, as highlighted above, this could be an overestimate of the CD&E waste in Solihull.

4.5 Agricultural Waste

4.5.1 Published agricultural waste data

There is limited published data on agricultural waste, although Defra does estimate the amount of agricultural waste generated for reporting under the EC Waste Framework Directive and EC Waste Statistics Regulations.

Table 30 shows the Defra estimates of the waste produced by the agriculture, forestry and fishing sector for 2010, 2012 and 2014. However, there is no breakdown by the three sectors or below the England level. In addition, these estimates relate to non-natural agricultural waste. There are no published estimates of naturally occurring agricultural waste managed on farms.

Table 30 Estimates of waste produced by the agriculture, forestry and fishing sector in England, 2010, 2012 and 2014

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

Source: Defra, UK Statistics on Waste, February 2018
https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management

Defra also publishes information on the number of commercial agricultural holdings and the area farmed by County/Unitary Authority, which can be used as a means of proportioning the estimated arisings to a County/Unitary Authority level.

However, for some metropolitan areas the data are presented by individual unitary authorities. This is the case for Solihull, for which the data are provided as a combined figure with Birmingham. Table 31 presents commercial agricultural holdings and the area farmed for Birmingham & Solihull.

Table 31 Commercial agricultural holdings and the area farmed for Birmingham & Solihull and England 2010, 2013 and 2016

	2010			2013			2016		
	England	Birmingham & Solihull	%	England	Birmingham & Solihull	%	England	Birmingham & Solihull	%
Number of holdings	105,449	160	0.15%	102,836	143	0.14%	106,853	147	0.14%
Farmed area (hectares)	8,887,289	10,083	0.11%	9,086,480	9,596	0.11%	9,120,623	8,806	0.10%
Source: Defra, Structure of the agricultural industry August 2017 https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june									

If it is assumed that the amount of waste generated is proportional to the number of commercial agricultural holdings or area farmed, it would mean that between 0.10% and 0.15% of the England non-natural agricultural waste would be produced in Birmingham & Solihull. This equates to 300 to 500 tonnes of non-natural agricultural waste.

Waste coded under LoW sub-chapter 02 01 “Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing” which is handled at permitted facilities can be extracted from the WDI. The data was extracted by LoW 6-digit waste code (i.e. the classification codes for individual wastes) and by receiving site. The extracts from the WDI for the quantities of waste coded under LoW sub-chapter 02 01 received at sites in England with the origin identified as Solihull are summarised in Table 32.

Table 32 Waste coded under LoW sub-chapter 02 01 received at permitted facilities in England with Solihull origin, 2013 to 2017

LoW code	Description	Tonnes		
		2015	2016	2017
02 01 03	Plant-tissue waste	0.30	6,900.66	33.02
02 01 04	Waste plastics (except packaging)		17.98	
02 01 06	Animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site		1.04	
02 01 08*	Agrochemical waste containing hazardous substances		0.005	
02 01 10	Waste metal			3.34
Total		**0.30**	**6,919.69**	**36.36**
For hazardous wastes the six-digit codes in the LoW have an asterisk (*) next to them.				

The data shows that there has been a significant variation in the quantities of LoW sub-chapter 02 01 wastes received at permitted facilities. The data for 2016 show that 6,781 tonnes of plant-tissue waste was sent to Berkswell Estate Wood Waste Facility for physical treatment, this is potentially an arising from the forestry sector and not representative of agricultural waste arisings in Solihull, especially given the size of the agricultural sector in Solihull.

It should also be noted that wastes such as packaging, discarded vehicles and oils etc. would be captured under LoW Chapters 13, 15 and 16 and included in the C&I wastes estimates from which it is not possible to identify the generating sector.

4.6 Hazardous Waste

The Environment Agency has a requirement to monitor movements of hazardous waste in England and the data obtained from the hazardous tracking system is made available through the Environment Agency's HWI), which is a Microsoft Access database.

Hazardous waste may move between facilities and these movements are recorded separately; therefore, there is some double counting of hazardous waste in the database that needs to be taken into account when using this data. However, as there is limited transfer capacity within Solihull the potential for double counting should be reduced.

4.6.1 Hazardous waste arisings

The HWI for 2014 to 2017 were used to identify the hazardous waste that arose in Solihull. Table 33 summarises the hazardous waste arisings by LoW Chapter heading.

Table 33 Hazardous waste arising in Solihull 2014 to 2017 (including transfer stations)

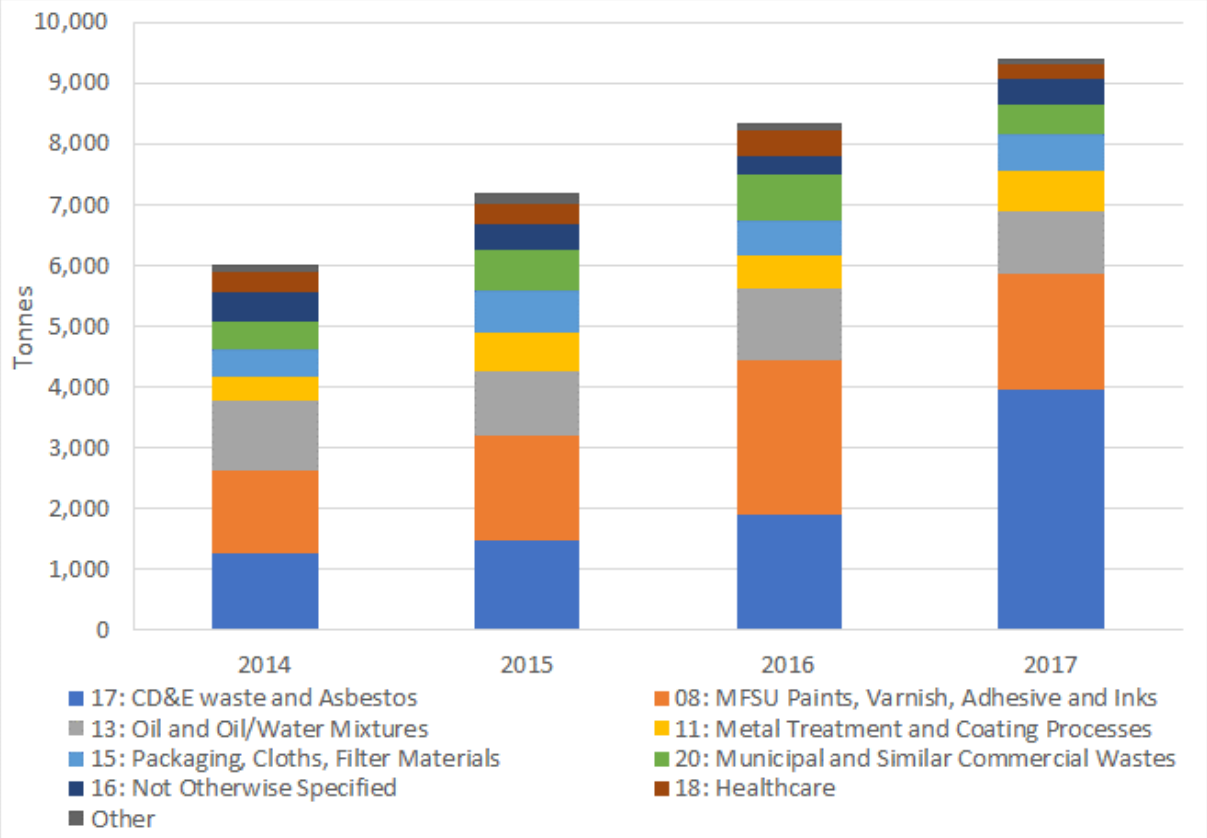
LoW Chapter	Tonnes			
	2014	2015	2016	2017
01: Mining and Minerals	-	0.2	-	-
02: Agricultural and Food Production	-	-	0.2	-
03: Wood and Paper Production	-	-	-	0.2
06: Inorganic Chemical Processes	0.1	9.8	2.3	0.9
07: Organic Chemical Processes	1.0	0.1	-	-
08: Manufacture, Formulation, Supply and Use (MFSU) Paints, Varnish, Adhesive and Inks	1,370.1	1,738.0	2,554.5	1,905.9
09: Photographic Industry	13.8	11.4	10.0	5.0
10: Thermal Process Waste (inorganic)	5.4	-	-	-
11: Metal Treatment and Coating Processes	386.3	650.9	557.5	662.0
12: Shaping/Treatment of Metals and Plastics	91.9	123.4	107.2	81.1
13: Oil and Oil/Water Mixtures	1,147.2	1,050.4	1,168.0	1,034.6
14: Solvents	13.2	38.7	23.8	9.3
15: Packaging, Cloths, Filter Materials	436.3	677.2	571.9	602.2
16: Not Otherwise Specified	514.9	404.9	299.8	404.4
17: CD&E waste and Asbestos	1,271.2	1,464.7	1,897.6	3,953.6
18: Healthcare	310.7	355.9	414.3	250.9
19: Waste/Water Treatment Industry	0.2	0.2	-	0.02
20: Municipal and Similar Commercial Wastes	457.5	683.5	753.7	495.2
Total	**6,019.9**	**7,209.4**	**8,360.7**	**9,405.4**

The figures need to be adjusted to take account of waste handled through transfer stations in Solihull. However, the tonnages transferred through facilities in Solihull are insignificant, with 10 tonnes or less being transfer in any year between 2014 and 2017. Table 34 presents the hazardous waste arisings for Solihull from 2014 to 2017, excluding waste arising and deposited at transfer stations in Solihull, and this is presented graphically in Figure 14 .

Table 34 Hazardous waste arising in Solihull 2014 to 2017 (excluding waste arising in Solihull and deposited at transfer stations in Solihull)

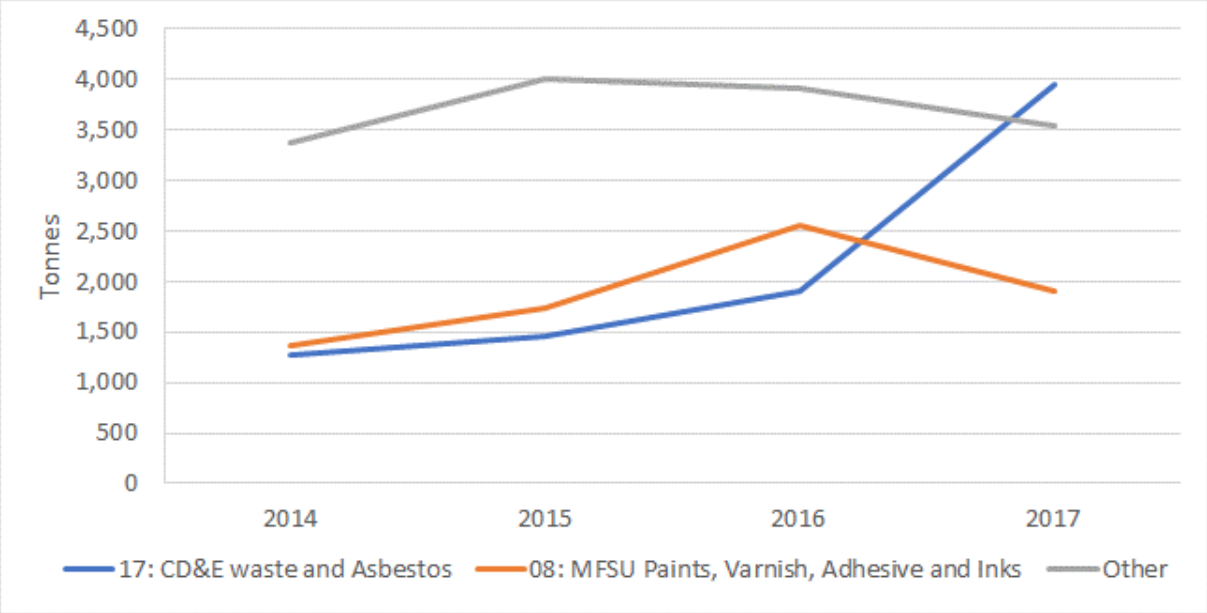
LoW Chapter	Tonnes			
	2014	2015	2016	2017
01: Mining and Minerals	-	0.2	-	-
02: Agricultural and Food Production	-	-	0.2	-
05: Wastes from Petroleum Refining, Natural Gas Purification and Pyrolytic Treatment of Coal	-	-	-	0.2
06: Inorganic Chemical Processes	0.1	9.8	2.3	0.9
07: Organic Chemical Processes	1.0	0.1	-	-
08: MFSU Paints, Varnish, Adhesive and Inks	1,370.1	1,738.0	2,554.5	1,905.9
09: Photographic Industry	13.8	11.4	10.0	5.0
10: Thermal Process Waste (inorganic)	5.4	-	-	-
11: Metal Treatment and Coating Processes	386.3	650.9	557.5	662.0
12: Shaping/Treatment of Metals and Plastics	91.9	123.4	107.2	81.1
13: Oil and Oil/Water Mixtures	1,147.2	1,050.4	1,168.0	1,034.6
14: Solvents	13.2	38.7	23.8	9.3
15: Packaging, Cloths, Filter Materials	436.3	677.2	571.7	601.9
16: Not Otherwise Specified	505.8	404.9	299.6	403.9
17: CD&E waste and Asbestos	1,271.2	1,464.7	1,897.6	3,953.6
18: Healthcare	310.7	355.9	414.3	250.9
19: Waste/Water Treatment Industry	0.2	0.2	-	0.02
20: Municipal and Similar Commercial Wastes	456.5	676.9	745.7	488.3
Total	**6,009.8**	**7,202.8**	**8,352.2**	**9,397.7**

Figure 14 Hazardous waste arising in Solihull, 2014 to 2017



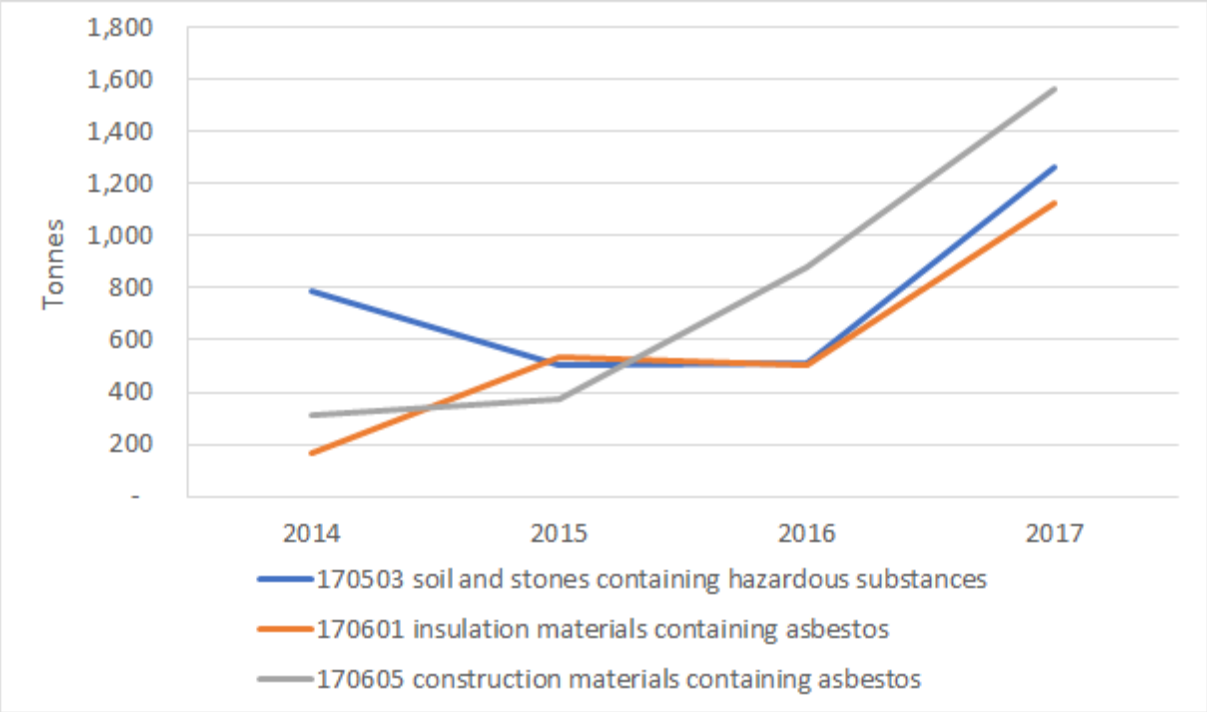
The data show that hazardous waste arisings have increased notably from 6,000 tonnes in 2014 to over 9,000 tonnes by 2017. The increases since 2014 have been driven by two waste streams: LoW Chapter 17: CD&E waste and Asbestos; and LoW Chapter 08: MFSU Paints, Varnish, Adhesive and Inks. Figure 15 illustrates these changes.

Figure 15 Change in LoW Chapters 8 and 17 hazardous wastes compared to all other hazardous waste arisings, 2014 to 2017



A more detailed analysis of specific CD&E wastes streams highlights that the increase in the hazardous CD&E waste arisings is predominately due to an increase in the quantity of asbestos containing wastes, Figure 16

Figure 16 Changes in principal hazardous CD&E wastes, 2014 to 2017



With regard to the LoW Chapter 08 hazardous waste arisings, the tonnages are dominated by the arisings from LoW Sub-chapter 0801: Wastes from MFSU and removal of paint and varnish, as shown in Table 35. The wastes classified under LoW Sub-chapter 0801 are likely to be as a result of the painting of vehicles at the major motor manufacturer located within Solihull.

Table 35 Breakdown of LoW Chapter 08 hazardous waste arisings, 2014 to 2017

LoW Sub-chapter	Tonnes			
	2014	2015	2016	2017
08 01: Wastes from MFSU and removal of paint and varnish	1,229	1,659	2,541	1,896
08 03: Wastes from MFSU of printing inks	0.1	0.03	0.1	0.2
08 04: Wastes from MFSU of adhesives and sealants)	43.3	79.3	13.2	9.4
08 05: Wastes not otherwise specified in Chapter 08	98.1	0.1	0.4	-
Total	1,370	1,738	2,555	1,906

The hazardous waste arisings data also highlight potential origin or waste coding errors within the WDI, as the quantities of waste recorded in the HWI, which is based on actual movements, are higher than the total figures reported in the WDI. There are four LoW Chapters where there are notable differences (HWI figure more than 100 tonnes high than the WDI figure), as summarised in Table 36

Table 36 Differences between HWI and WDI data for certain LoW Chapters

LoW Chapter	Tonnes			
	2014	2015	2016	2017
08: MFSU Paints, Varnish, Adhesive and Inks				
HWI data	1,370	1,738	2,555	1,906
WDI data	387	342	541	1,105
Difference	**983**	**1,396**	**2,014**	**801**
11: Metal Treatment and Coating Processes				
HWI data	386	651	558	662
WDI data	261	12	5	24
Difference	**125**	**639**	**553**	**638**
13: Oil and Oil/Water Mixtures				
HWI data	1,147	1,050	1,168	1,035
WDI data	1,119	961	364	443
Difference	**28**	**89**	**804**	**592**
18: Healthcare				
HWI data	311	356	414	251
WDI data	152	93		
Difference	**159**	**263**	**414**	**251**
Total Difference	**1,295**	**2,387**	**3,784**	**2,281**

This again highlights the difficulty in estimating C&I wastes given the underlying weaknesses in the core data sets.

4.6.2 Hazardous wastes management

Figure 17 provides the generic waste management methods used to manage the hazardous waste arisings from Solihull between 2014 and 2017. Table 37 provides the breakdown of waste management methods for 2014 to 2017, with Table 38 providing the breakdown LoW Chapter heading.

Figure 17 Breakdown of generic hazardous waste management methods (tonnes), 2017

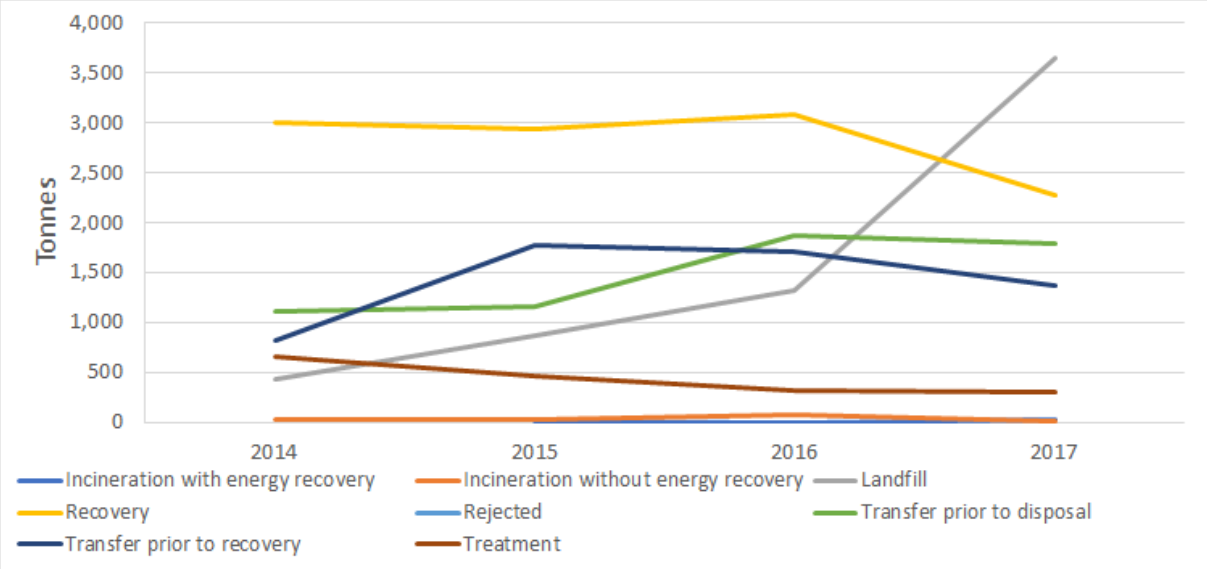


Table 37 Breakdown of waste management methods for 2014 to 2017 (tonnes)

Waste Management Method	2014		2015		2016		2017	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes	%
Incineration with energy recovery			4	0.1%	0	0.0%	25	0.3%
Incineration without energy recovery	33	1%	27	0%	66	1%	9	0.1%
Landfill	425	7%	859	12%	1,321	16%	3,652	39%
Recovery	2,995	50%	2,931	41%	3,076	37%	2,268	24%
Rejected							13	0.1%
Transfer prior to disposal	1,100	18%	1,152	16%	1,866	22%	1,780	19%
Transfer prior to recovery	816	14%	1,772	25%	1,708	20%	1,359	14%
Treatment	651	11%	464	6%	323	4%	298	3%
Total	**6,020**		**7,209**		**8,361**		**9,405**	

Table 38 Breakdown of waste management methods by LoW Chapter heading for 2014 to 2017 (tonnes)

LoW Chapter	2014						2015						
	Incineration without energy recovery	Landfill	Recovery	Transfer prior to disposal	Transfer prior to recovery	Treatment	Incineration with energy recovery	Incineration without energy recovery	Landfill	Recovery	Transfer prior to disposal	Transfer prior to recovery	Treatment
01: Mining and Minerals												<1	
02: Agricultural and Food Production													
05: Wastes from Petroleum Refining, Natural Gas Purification and Pyrolytic Treatment of Coal													
06: Inorganic Chemical Processes				<1	<1						10	<1	
07: Organic Chemical Processes			<1	1							0		
08: MFSU Paints, Varnish, Adhesive and Inks			724	233	83	330				969	139	494	135
09: Photographic Industry			12	2						9	3	<1	
10: Thermal Process Waste (inorganic)				5									
11: Metal Treatment and Coating Processes			<1	369	10	7	4			1	549	97	
12: Shaping/Treatment of Metals and Plastics			45	33	13					51	61	11	
13: Oil and Oil/Water Mixtures			881	54	158	54				609	17	306	118
14: Solvents			1	4	8					16	1	21	
15: Packaging, Cloths, Filter Materials			98	118	219	1				168	121	388	
16: Not Otherwise Specified			309	58	148					201	42	161	
17: CD&E waste and Asbestos		425	627	112	1	106			859	388	98	113	7
18: Healthcare	33		13	110	2	152	<1	27		14	109	2	204
19: Waste/Water Treatment Industry				<1								<1	
20: Municipal and Similar Commercial Wastes			285	1	171	<1				505	2	177	<1
Total	**33**	**425**	**2,995**	**1,100**	**816**	**651**	**4**	**27**	**859**	**2,931**	**1,152**	**1,772**	**464**

LoW Chapter	2016							2017							
	Incineration with energy recovery	Incineration without energy recovery	Landfill	Recovery	Transfer prior to disposal	Transfer prior to recovery	Treatment	Incineration with energy recovery	Incineration without energy recovery	Landfill	Recovery	Rejected	Transfer prior to disposal	Transfer prior to recovery	Treatment
01: Mining and Minerals															
02: Agricultural and Food Production		<1			<1	<1									
05: Wastes from Petroleum Refining, Natural Gas Purification and Pyrolytic Treatment of Coal													<1		
06: Inorganic Chemical Processes					2	<1					<1		1		
07: Organic Chemical Processes															
08: MFSU Paints, Varnish, Adhesive and Inks				1,125	989	277	164				741	13	797	253	102
09: Photographic Industry				8	2	<1					4		1	<1	
10: Thermal Process Waste (inorganic)															
11: Metal Treatment and Coating Processes				<1	513	44					<1		596	61	5
12: Shaping/Treatment of Metals and Plastics				46	41	20					24		54	3	
13: Oil and Oil/Water Mixtures				734	49	289	96				606		30	265	133
14: Solvents				<1	5	19							<1	9	
15: Packaging, Cloths, Filter Materials				121	38	413		25			135		15	427	0
16: Not Otherwise Specified				153	35	110	1				232		43	129	
17: CD&E waste and Asbestos			1,321	160	83	333				3,652	5		159	137	0
18: Healthcare	<1	66		176	108	2	62	<1	9		102		81	2	57
19: Waste/Water Treatment Industry													<1		
20: Municipal and Similar Commercial Wastes				552	2	200	<1				419		2	74	<1
Total	<1	**66**	**1,321**	**3,076**	**1,866**	**1,708**	**323**	**25**	**9**	**3,652**	**2,268**	**13**	**1,780**	**1,359**	**298**

The data shows that the most notable change is the increased use of landfill. This is directly linked to the increase in the hazardous CD&E waste generated and the fact that there has been a significant increase in the quantity of hazardous CD&E waste containing asbestos, which requires landfill disposal.

4.6.3 Hazardous Waste Imports and Exports

Between 2014 and 2017, Solihull has moved from being a net importer of hazardous wastes to a net exporter.

Imports

Apart from small quantities of waste (10 tonnes or less) deposited for transfer, the only hazardous waste deposited in Solihull between 2014 and 2017 was soil and stones containing dangerous substances for recovery. Table 39 summarises the quantities of soil and stones containing dangerous substances deposited in Solihull between 2014 and 2017, along with the quantity arising from within Solihull.

Table 39 Deposits of soil and stones containing dangerous substances in Solihull, 2014 to 2017

Arising Region	2014	2015	2016	2017
East Midlands	13,538	6,811	-	-
East of England	-	-	4	-
South East	254	249	-	-
South West	19	-	-	-
West Midlands	2,042	2,804	-	-
Yorkshire & Humber	37	152	-	-
Total Deposits	**15,890**	**10,015**	**4**	**-**
Arising in Solihull	532	388	-	-
Total Imports	**15,358**	**9,628**	**4**	**-**
Total Hazardous Waste Arisings in Solihull	6,010	7,203	8,352	9,398

Exports

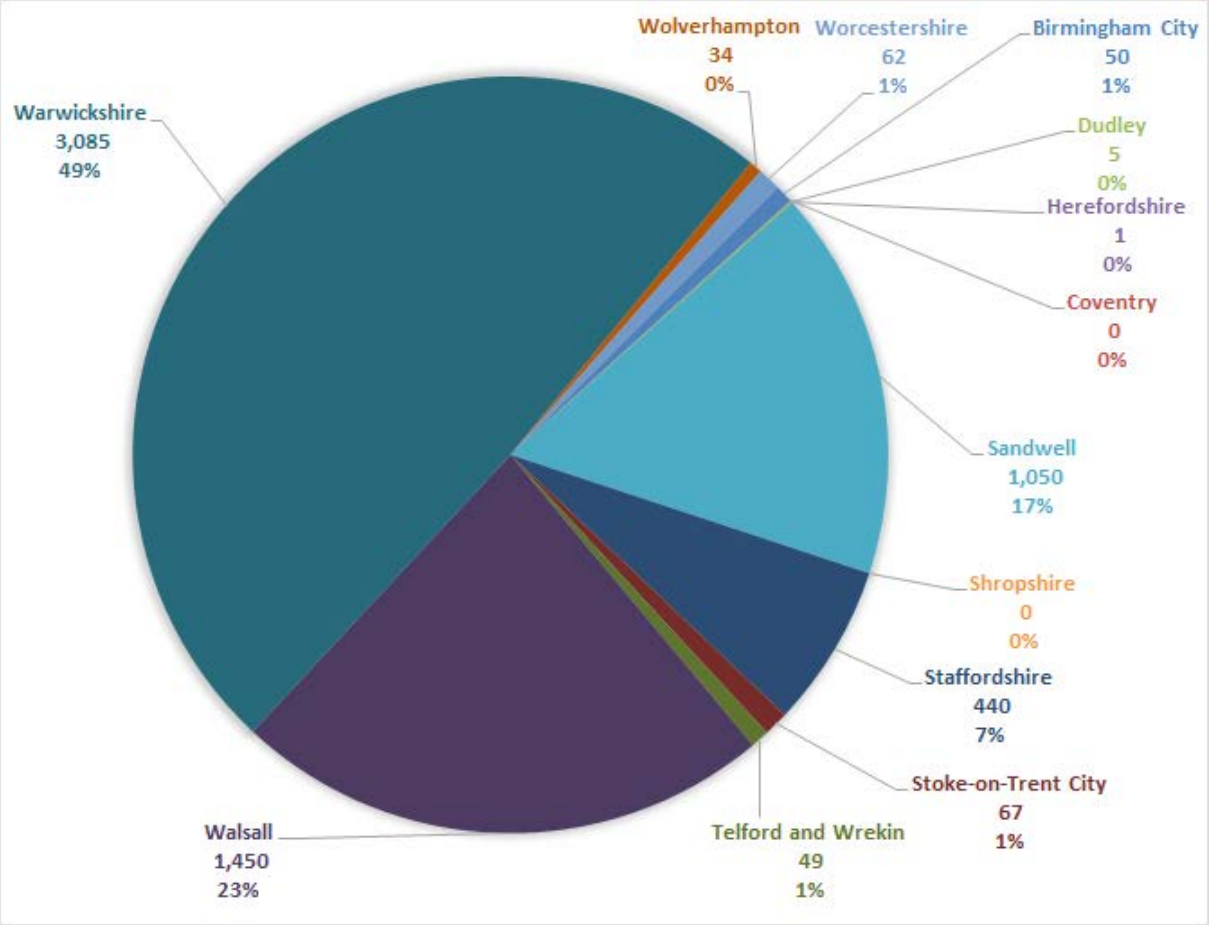
Table 40 summarises the hazardous waste deposited outside Solihull, with the proportion exported increasing from 91% in 2014, to 100% in 2017. The majority of waste is exported to the West Midlands.

0provides a breakdown of the exports to the West Midlands by WPA and it highlights that the majority of hazardous waste is exported to Warwickshire, Walsall and Sandwell.

Table 40 Hazardous waste deposited outside Solihull by region for 2014 to 2017

Deposit Region	2014		2015		2016		2017	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes	%
East Midlands	489	8.9%	779	11.4%	707	8.5%	871	9.3%
East of England	40	0.7%	41	0.6%	329	3.9%	275	2.9%
London	2	0.0%	48	0.7%	13	0.2%	13	0.1%
North East	15	0.3%	9	0.1%	2	0.0%	10	0.1%
North West	134	2.5%	443	6.5%	534	6.4%	341	3.6%
South East	702	12.8%	976	14.3%	1,129	13.5%	794	8.4%
South West	16	0.3%	45	0.7%	855	10.2%	673	7.2%
West Midlands	3,984	72.7%	4,319	63.4%	4,670	55.9%	6,294	67.0%
Yorkshire & Humber	95	1.7%	157	2.3%	114	1.4%	128	1.4%
Total	**5,477**		**6,815**		**8,352**		**9,398**	

Figure 18 Exports of hazardous waste to the West Midlands by WPA (tonnes)



4.7 Radioactive Waste

Radioactive waste is not “controlled waste” under UK legislation. However, WPA should make note in their development plan documents that disposal requirements for such wastes may arise from time to time.

The Environment Agency regulates the disposal of radioactive waste. There is currently no organisation within Solihull[18] that holds a permit (known as authorisations) that allows the accumulation and disposal of radioactive waste. The need for future treatment/disposal capacity for radioactive waste is not considered in this report as materials are normally, and most appropriately, managed at the national level.

4.8 Summary

The estimated arisings for the baseline year of the assessment, 2017, are:

- Local authority collected waste: 99,250 tonnes
- Commercial and industrial waste: 39,600 to 48,400 tonnes
- Construction, demolition and excavation waste:
  - 447,000 to 475,000 tonnes based on the Solihull MBC GVA data; and
  - 482,000 to 513,000 tonnes based on the Oxford Economics GVA data.
- Agricultural waste (non-natural): 300 to 500 tonnes
- Hazardous waste: 9,400 tonnes

[18] Environment Agency Public Registers, accessed 11th September 2018 (https://environment.data.gov.uk/public-register/view/search-radioactive-substances-permits)

5 Waste Forecasts

5.1 Introduction

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

5.2 Local Authority Collected Wastes (LACW)

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

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

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

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

Therefore, when selecting long-term growth/reduction rates there is a need to consider:

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

To forecast waste from households up to 2036, the trends in the household waste generated per household have been used to produce waste growth scenarios, which are then combined with different household projections.

The trends in the household waste per household has been effectively static since 2011/12 at around 1.050 tonnes per household per year +/- 0.005 tonnes per household, Table 14. Therefore, the waste growth scenarios for household waste are based on a static amount of household waste per household of 1.050 tonnes per household per year, with the changes in total LACW arisings being driven by the change in the number of households and changes in the non-household fraction of LACW.

Three sets of household projections have been considered following consultation with the Council:

- Ministry of Housing, Communities & Local Government[19] housing projections (MHCLG).
- Solihull Draft Plan housing trajectories;
- Solihull Draft Plan housing trajectories plus additional growth to potentially accommodate housing need from Birmingham.

The resultant household projections are set out in Table 41.

Table 41 Household projections for waste forecasts

Year	MHCLG - No. of households	Solihull Draft Plan Housing Trajectory		Solihull Draft Plan Housing Trajectory plus additional growth	
		Additional households	Solihull Draft Plan - No of households	Additional households	Solihull Draft Plan Plus - No of households
2017	89,205	904	89,503	904	89,503
2018	89,743	1,194	90,407	1,527	90,407
2019	90,329	1,426	91,601	1,759	91,934
2020	90,937	1,067	93,027	1,400	93,693
2021	91,529	957	94,093	1,290	95,092
2022	92,121	912	95,050	1,245	96,382
2023	92,729	1,070	95,963	1,403	97,628
2024	93,376	931	97,033	1,264	99,031
2025	94,006	881	97,964	1,214	100,295
2026	94,655	931	98,846	1,264	101,510
2027	95,308	926	99,777	1,259	102,774
2028	95,948	806	100,703	1,139	104,033
2029	96,615	636	101,509	969	105,172
2030	97,259	486	102,145	819	106,141
2031	97,909	436	102,631	769	106,960
2032	98,567	301	103,067	634	107,729
2033	99,194	627	103,369	627	108,356
2034	99,835	641	103,996	641	108,997
2035	100,442	607	104,637	607	109,604
2036	101,053	611	105,244	611	110,215
Note: the Solihull Draft Plan housing trajectory and Solihull Draft Plan housing trajectory plus additional growth run to 2032, beyond this date MHCLG changes have been applied.					

To forecast the remainder of LACW, future non-household waste generation needs to be factored into the estimates. The non-household waste stream predominantly comprises commercial waste and non-household CD&E waste collected at HWRC. Figure 12 (page 39) shows that whilst over the last two years the non-household waste fraction has been between 5,000 and 7,000 tonnes; since 2012 it has ranged from 4,500 to 8,000 tonnes.

[19] Formerly Department for Communities and Local Government (DCLG)

Table 42 presents the series of waste per household growth scenarios used to provide an estimate of future waste from households, along with assumptions about the non-household waste fraction.

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

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

Due to the number of variables in the above factors and the number that are unknown, it is difficult to forecast any significant increase or decrease in the quantity of non-household waste collected by Solihull. It has therefore been assumed that the tonnage of non-household waste will remain in a range from 4,500 to 8,000 tonnes for each of the housing growth scenarios.

Table 42 LACW growth scenarios

Scen	Waste per household assumptions	Housing forecast	Non-household assumptions
1a	Static waste per household based on the average of annual arisings over the last five year of 1.050 tonnes/household.	MHCLG	Non-household waste remains at 4,500 tonnes per annum.
1b	Static waste per household based on the average of annual arisings over the last five year of 1.050 tonnes/household.	MHCLG	Non-household waste remains at 8,000 tonnes per annum.
2a	Static waste per household based on the average of annual arisings over the last five year of 1.050 tonnes/household.	Solihull Draft Plan Housing Trajectory	Non-household waste remains at 4,500 tonnes per annum.
2b	Static waste per household based on the average of annual arisings over the last five year of 1.050 tonnes/household.	Solihull Draft Plan Housing Trajectory	Non-household waste remains at 8,000 tonnes per annum.
3a	Static waste per household based on the average of annual arisings over the last five year of 1.050 tonnes/household.	Solihull Draft Plan Housing Trajectory plus additional growth	Non-household waste remains at 4,500 tonnes per annum.
3b	Static waste per household based on the average of annual arisings over the last five year of 1.050 tonnes/household.	Solihull Draft Plan Housing Trajectory plus additional growth	Non-household waste remains at 8,000 tonnes per annum.

The resulting LACW forecasts are presented in Table 43 and Figure 19 . Figure 19 includes historical LACW arisings back to 2005/06[20], showing the impact of the recession on LACW and the forecasts in context with previous years.

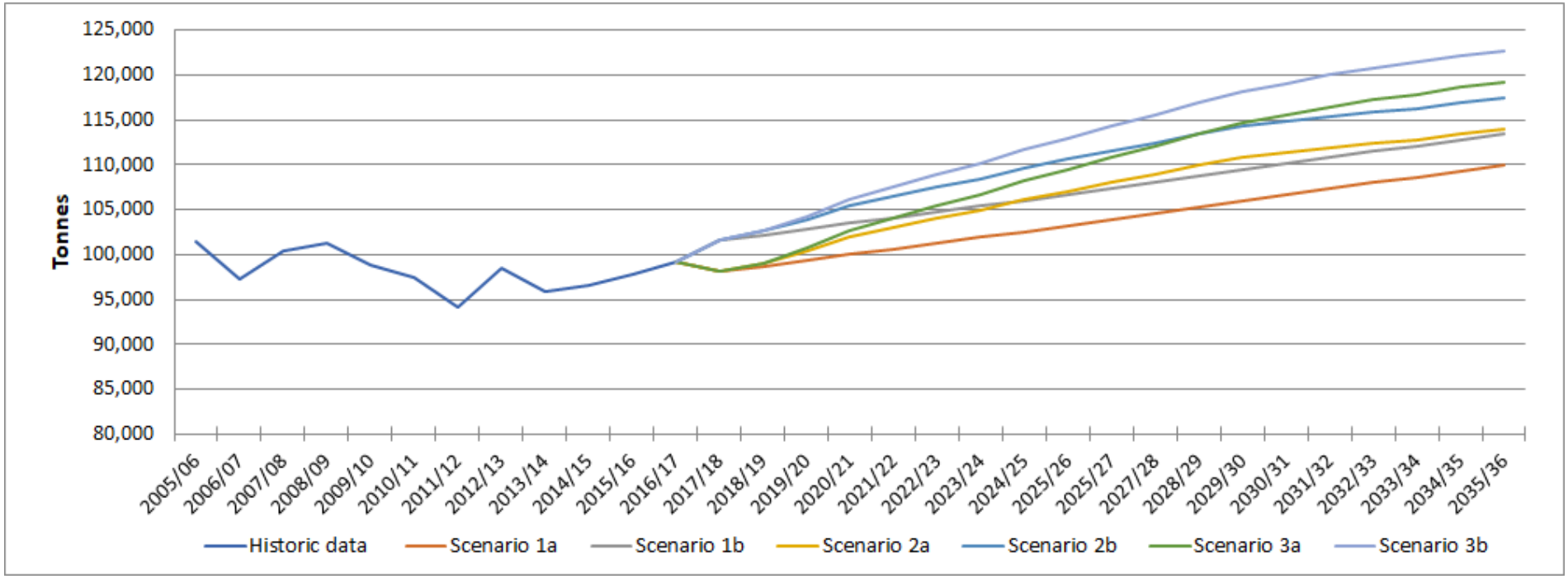
The forecasts show that if generation rates of waste from households do not increase, based on the trend over the last five years, LACW could increase from between 98,000 to 102,000 tonnes per annum to between 110,000 to 123,000 tonnes per annum, driven only by the increasing number of households.

[20] Defra Local Authority Collected and Household Waste Statistics

Table 43 LACW forecast 2016/17 to 2035/36, rounded to nearest 100 tonnes

Scen	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2025/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36
1a	98,200	98,700	99,300	100,000	100,600	101,200	101,900	102,500	103,200	103,900	104,600	105,200	105,900	106,600	107,300	108,000	108,600	109,300	110,000
1b	101,700	102,200	102,800	103,500	104,100	104,700	105,400	106,000	106,700	107,400	108,100	108,700	109,400	110,100	110,800	111,500	112,100	112,800	113,500
2a	98,200	99,100	100,400	101,900	103,000	104,000	105,000	106,100	107,100	108,000	108,900	109,900	110,800	111,400	111,900	112,400	112,700	113,400	114,000
2b	101,700	102,600	103,900	105,400	106,500	107,500	108,500	109,600	110,600	111,500	112,400	113,400	114,300	114,900	115,400	115,900	116,200	116,900	117,500
3a	98,200	99,100	100,700	102,600	104,000	105,400	106,700	108,200	109,500	110,800	112,100	113,400	114,600	115,600	116,500	117,300	117,900	118,600	119,200
3b	101,700	102,600	104,200	106,100	107,500	108,900	110,200	111,700	113,000	114,300	115,600	116,900	118,100	119,100	120,000	120,800	121,400	122,100	122,700

Figure 19 LACW forecast 2016/17 to 2035/36



5.3 Commercial and Industrial (C&I) Waste

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

However, as with any form of forecasting, predicting economic performance over a 15-year period is difficult due to the range external factors that affect economic growth. In addition, as highlighted above, the quality and lack of granularity of C&I waste data means it is not possible to produce estimates for the waste produced by different sectors and businesses, which could then be applied to the business profile of Solihull. This means that any C&I waste forecast needs to be viewed as a broad estimate, which should be reviewed periodically.

5.3.1 Solihull economic growth forecasts

There are no publicly domain economic growth forecasts specifically for Solihull. However, the Council holds two sets of Solihull specific GVA data[21][22]:

- Solihull MBC data from 2015; and
- Oxford Economics West Midlands Combined Authority Forecasts prepared in 2017.

If it is assumed that businesses and therefore C&I waste will grow in line with GVA, these economic growth forecasts can be used to develop scenarios to estimate future C&I waste arisings, as set out in Table 44.

Table 44 C&I waste growth scenarios

Scenario	Description	Forecast Starting Point
1a	C&I waste growth in line Solihull MBC GVA forecast	Lower C&I waste estimate (i.e. 39,600 tonnes)
1b	C&I waste growth in line Oxford Economics West Midlands Combined Authority Forecasts GVA forecast	
2a	C&I waste growth in line Solihull MBC GVA forecast	Higher C&I waste estimate (i.e. 48,400tonnes)
2b	C&I waste growth in line Oxford Economics West Midlands Combined Authority Forecasts GVA forecast	
Note: Solihull MBC and Oxford Economics GVA forecast only run to 2031 and 2030 respectively, for the year beyond these dates the % growth from the final year of forecast data has been applied.		

The resulting C&I waste forecasts are presented in Table 45 and Figure 20 . The forecast estimates reflect the uncertainty in the C&I waste arisings estimates and the impact of differing economic growth forecasts. This degree of uncertainty makes assessing the future capacity need for C&I waste difficult.

For the purposes of assessing future capacity need it is recommended that a range of C&I waste arisings between Scenarios 2a and 2b are assumed (i.e. the highest forecast) which is equivalent to between 68,000 and 69,000 tonnes by 2036. However, it is also recommended that C&I waste forecasts are kept under review as the Local Plan is developed.

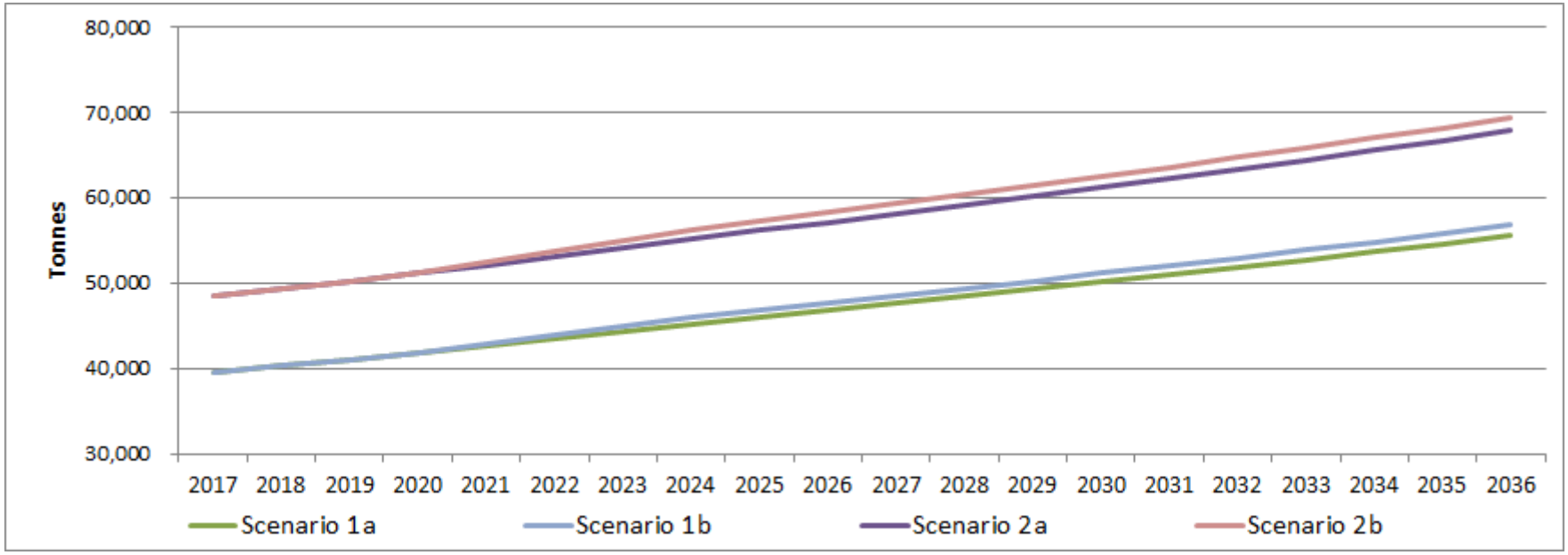
[21] Gross Value Added (GVA) measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom and is a headline measure used to monitor economic performance.

[22] Source: Solihull MBC

Table 45 C&I waste Estimates 2017 to 2036 (rounded to nearest 1,000 tonnes)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Solihull MBC GVA forecast % Growth		1.9%	1.8%	1.8%	1.9%	1.9%	1.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
Oxford Economics GVA forecast % Growth		1.7%	1.8%	2.2%	2.4%	2.5%	2.3%	2.1%	1.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Scenario 1a	39,600	40,000	41,000	42,000	43,000	43,000	44,000	45,000	46,000	47,000	48,000	48,000	49,000	50,000	51,000	52,000	53,000	54,000	55,000	55,000
Scenario 1b	39,600	40,000	41,000	42,000	43,000	44,000	45,000	46,000	47,000	48,000	48,000	49,000	50,000	51,000	52,000	53,000	54,000	55,000	56,000	57,000
Scenario 2a	48,400	49,000	50,000	51,000	52,000	53,000	54,000	55,000	56,000	57,000	58,000	59,000	60,000	61,000	62,000	63,000	64,000	66,000	67,000	68,000
Scenario 2b	48,400	49,000	50,000	51,000	52,000	54,000	55,000	56,000	57,000	58,000	59,000	60,000	61,000	62,000	64,000	65,000	66,000	67,000	68,000	69,000

Figure 20 C&I waste Estimates 2017 to 2036



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

To forecast future CD&E waste arisings, the link between CD&E waste and construction sector growth, based on the Solihull GVA data has been used, with the scenarios using both GVA datasets summarised in Table 46.

Table 46 CD&E waste growth scenarios

Scenario	Description	Forecast Starting Point
1a	Growth based on the construction sector GVA growth from the Solihull MBC data	447,000 tonnes in 2017 (based on UK waste per capita)
1b	Growth based on the construction sector GVA growth from the Solihull MBC data	475,000 tonnes in 2017 (based on England waste per capita)
2a	Growth based on the construction sector GVA growth from the Oxford Economics data	482,000 tonnes in 2017 (based on UK waste per capita)
2b	Growth based on the construction sector GVA growth from the Oxford Economics data	513,000 tonnes in 2017 (based on England waste per capita)
Note: Solihull MBC and Oxford Economics GVA forecast only run to 2031 and 2030 respectively, for the year beyond these dates the % growth from the final year of forecast data has been applied.		

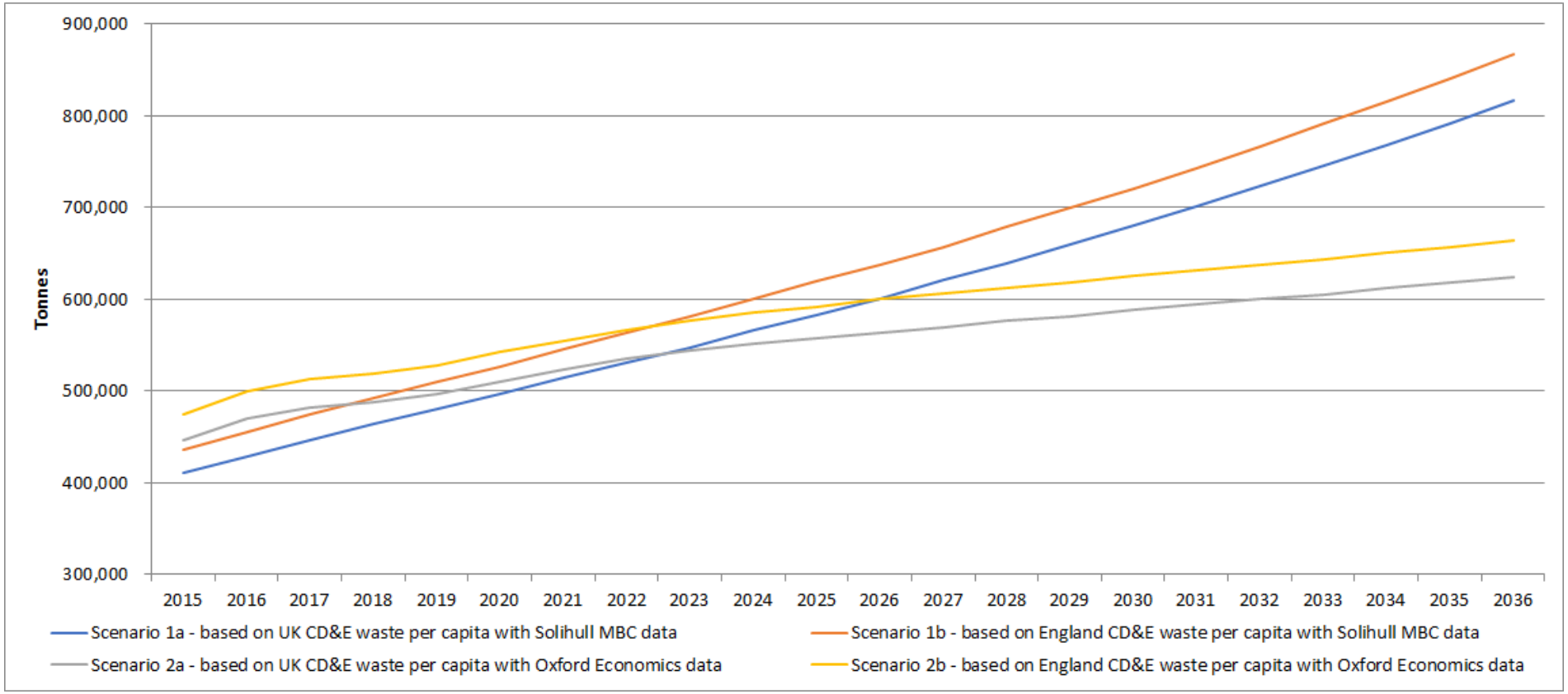
The resulting forecasts are presented in Table 47 and Figure 21 . The forecasts have been broken down into the key elements of the CD&E waste stream based on relative proportions estimated in 2014 and assuming that these remain constant.

As highlighted above, the forecasts could overestimate future CD&E waste generation in Solihull, particularly in relation to excavation waste and dredging spoils. It might be considered unlikely, given the urban/rural nature of Solihull, that approximately 200,000 tonnes of excavation waste (see Table 28) would be produced every year. Therefore, as with the C&I waste forecasts, it is recommended that the CD&E waste forecasts are kept under review as the Local Plan is developed.

Table 47 CD&E waste forecast 2015 to 2036 (thousands of tonnes, rounded to nearest1,000 tonnes)

Year		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Construction sector GVA growth Solihull MBC data		4.9%	4.4%	4.3%	3.8%	3.5%	3.4%	3.4%	3.4%	3.1%	3.3%	3.2%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Scenario 1a	Non-hazardous C&D	188	196	205	212	220	227	235	243	250	259	267	275	284	292	301	311	321	331	341	351	362	374
	Hazardous C&D	3	3	3	3	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6
	Excavation waste/ dredging spoils	220	230	239	249	257	266	275	284	293	303	312	322	332	342	353	364	375	387	399	411	424	437
	Total	**411**	**429**	**447**	**464**	**481**	**497**	**514**	**531**	**547**	**566**	**583**	**601**	**621**	**639**	**659**	**680**	**701**	**723**	**745**	**768**	**792**	**817**
Scenario 1b	Non-hazardous C&D	199	208	217	225	233	241	249	257	265	274	282	291	300	310	319	329	339	350	361	372	384	396
	Hazardous C&D	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4
	Excavation waste/ dredging spoils	235	245	256	265	275	284	294	304	313	323	334	344	354	366	377	389	401	413	426	439	453	467
	Total	**436**	**455**	**475**	**492**	**510**	**527**	**545**	**564**	**581**	**600**	**619**	**638**	**657**	**679**	**699**	**721**	**743**	**767**	**791**	**815**	**841**	**867**
Construction sector GVA growth Oxford Economics data		14.1%	5.2%	2.7%	1.1%	1.8%	2.6%	2.5%	2.1%	1.8%	1.5%	1.2%	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Scenario 2a	Non-hazardous C&D	204	215	220	223	227	233	239	244	248	251	254	257	260	263	265	268	271	274	276	279	282	285
	Hazardous C&D	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Excavation waste/ dredging spoils	240	252	259	262	267	274	281	287	292	296	299	303	306	309	312	316	319	322	325	329	332	335
	Total	**447**	**470**	**482**	**488**	**497**	**510**	**524**	**535**	**544**	**551**	**557**	**564**	**570**	**576**	**581**	**588**	**594**	**600**	**605**	**612**	**618**	**624**
Scenario 2b	Non-hazardous C&D	217	228	234	237	241	248	254	259	264	267	271	274	277	279	282	285	288	291	294	297	300	303
	Hazardous C&D	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3
	Excavation waste/ dredging spoils	256	269	277	280	285	292	299	306	311	316	319	323	326	330	333	337	340	343	347	351	354	358
	Total	**475**	**499**	**513**	**519**	**528**	**542**	**555**	**567**	**577**	**585**	**592**	**600**	**606**	**612**	**618**	**625**	**631**	**637**	**644**	**651**	**657**	**664**

Figure 21 CD&E waste forecast 2015 to 2036

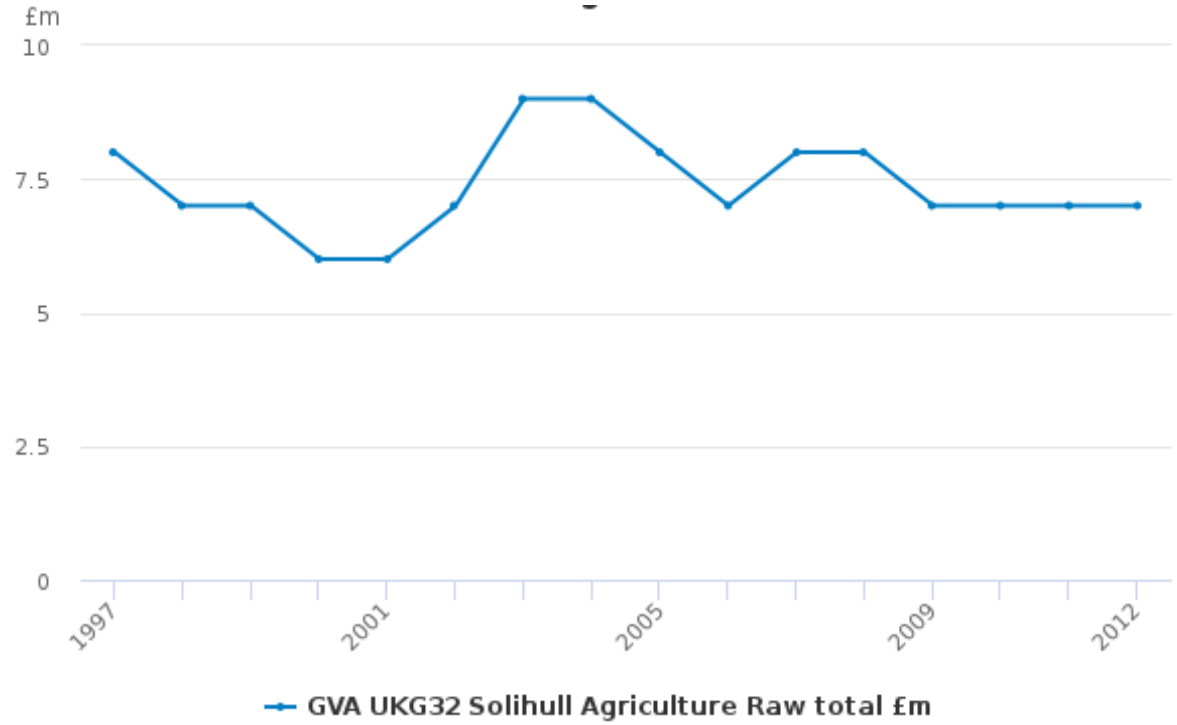


5.5 Agricultural Waste

Future waste arisings will be dictated by the nature of agricultural activity within Solihull, which is quite limited as highlighted by the number of agricultural holdings and the area farmed in Solihull when compared to national figures (see Section 4.5.1 Table 31).

The historical ONS GVA data for the agricultural sector in Solihull shows the value of the sector has been relatively static over the 15-year period up to 2012, Figure 22

Figure 22 ONS GVA UKG32 Solihull Agriculture Raw (total £m)



Source: ONS: Regional Gross Value Added (RAGV), December 2015
https://www.ons.gov.uk/economy/grossvalueaddedgva/timeseries/r8mq/ragv

The Solihull MBC and Oxford Economics GVA forecast data show different trends for the growth in GVA for the Agriculture, Forestry & Fishing sector:

- the Solihull MBC GVA forecast data shows a reduction in GVA equivalent to 1.7% per annum up to 2031; with
- the Oxford Economics GVA forecast shows an increase in GVA equivalent to 0.4% per annum up to 2030.

Therefore, it is assumed that the non-natural agricultural waste will remain at current levels in the range 300 to 500 tonnes.

5.6 Hazardous Waste

The analysis of hazardous waste arisings highlights that over the last four years generation levels of most of the hazardous waste streams have been relatively constant, with the exception of the hazardous waste produced by the construction and demolition sector and to a lesser extent wastes for the MFSU Paints, Varnish, Adhesive and Inks.

Therefore, based on this analysis of the arisings between 2014 and 2017, it is estimated that the annual hazardous waste arising in the future will be in the range 7,000 to 11,000 tonnes. With the actual tonnage being dependent on the quantity of contaminated soil and asbestos containing waste generated by the construction and demolition sector; this in turn will be dependent on the nature of construction and demolition projects undertaken over the coming years.

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

5.7 Summary

Table 48 summaries the wastes forecast for Solihull for years 2020, 2025, 2030 and 2035.

Table 48 Summary of waste forecasts for years 2020, 2025, 2030 and 2035 (rounded to nearest 1000 tonnes)

Waste Stream		Tonnes				
		Baseline	Forecast			
		2017	2020	2025	2030	2035
Local authority collected waste		99,250	100,000 to 106,100	103,200 to 113,000	106,600 to 119,100	110,000 to 122,700
Commercial and industrial waste		39,600 to 48,400	42,000 to 51,000	46,000 to 57,000	50,000 to 62,000	55,000 to 68,000
Construction, demolition and excavation waste	Total	447,000 to 513,000	497,000 to 542,000	583,000 to 592,000	625,000 to 680,000	657,000 to 792,000
	Non-hazardous C&D	163,000 to 173,000	227,000 to 248,000	254,000 to 282,00	268,000 to 329,000	282,000 to 384,000
Agricultural waste (non-natural)		300 to 500	300 to 500			
Hazardous waste		9,400	7,000 to 11,000			

6 Capacity Needs

6.1 Introduction

The different waste streams considered within this report can have quite different management methods and be subject to different policies and pressures, particularly in relation to recycling and recovery targets. This section considers the policies relevant to each waste stream to estimate future waste management capacity requirements.

6.2 Local Authority Collected Waste (LACW)

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

- recycling, composting and reuse of waste from households: 50% by 2020; and
- recovery of municipal waste: 75% by 2020.

These are national targets and are not formally cascaded down to local authorities. The Waste Management Strategy for Solihull does reflect these targets, and seeks to exceed them through achieving more challenging recycling and recovery targets:

- minimum 50% household waste recycling and reuse rate for Solihull by 2020, aspiring to reach 60% by 2020; and
- apply the actions of the Strategy, available technology and procurement to seek to reduce the amount of household waste sent to landfill to 10% of Solihull's waste by 2020 (which is effectively a recovery rate of 90%).

Table 16 in Section 4.2.1 highlights that Solihull has met the diversion from landfill target in five of the last 7 years. However, the recycling rate is still to exceed 50% and in the Strategy Mid-point Update, in 2015, the Council recognised it will be challenging to reach the target of 60% by 2020 but that the aspiration should be retained.

6.2.1 Future Policy Context

The UK's decision to leave the European Union does create a degree of uncertainty over the future development and implementation of environmental policy and legislation, particularly over the next few years.

However, the 25-Year Environment Plan published by Defra in January 2018 makes a number of statements with regards to future environmental policy and legislation

In the Foreword, the Prime Minister states:

> *'When the United Kingdom leaves the European Union, control of important areas of environmental policy will return to these shores. We will use this opportunity to strengthen and enhance the protections that our countryside, rivers, coastline and wildlife habitats enjoy, and develop new methods of agricultural and fisheries support which put the environment first.'*

Further, in Section 2 on 'Putting the Plan into practice', it states:

> *'The Plan coincides with the once-in-a-generation opportunity presented by our leaving the EU. We will make the most of the chance to improve our environmental policy framework, align it with the ambitious goals we have set, and lead from the front in pursuit of higher standards across the world.*

The European Union (Withdrawal) Bill will ensure that the body of existing EU law, including environmental law, continues to hold sway in the UK. Key underlying principles of existing policy, such as the 'polluter pays' principle and the precautionary principle, are reflected in this legislation and in the historic judgements of the European Court, also covered by the Bill.

We will be consulting on the development of a policy statement on environmental principles to underpin policy-making post-EU Exit. This will provide maximum certainty about environmental regulations as we leave the EU.'

In addition, with regards to minimising waste, the 25-Year Plan makes the commitment:

'meeting all existing waste targets[23] – including those on landfill, reuse and recycling – and developing ambitious new future targets and milestones'.

A new Resources and Waste Strategy is expected to be published by Defra before the end of 2018. Defra's stated ambition is for the UK to *'become a world leader in resource efficiency, resource productivity and increasing competitiveness'*.

This strategy and current national policy are based on the principle of the waste hierarchy. The waste hierarchy is an important approach in waste management and it presents a number of waste management stages in the order of their impact on the environment. It stresses the importance of preventing waste being created in the first instance as the main priority and disposal as the lowest priority option. Producing recyclable material of a high quality is also important so that further treatment and disposal is minimised.

Alongside the waste hierarchy is the concept of the circular economy, in which:

- resources are kept in use for as long as possible;
- the maximum value is extracted from them whilst in use; and
- products and materials are recovered and regenerated at the end of each service life.

To support the delivery of a circular economy the following targets have been agreed in Europe, which the UK is expected to adopt:

- 55% recycling target for municipal waste by 2025;
- 60% recycling target for municipal waste by 2030;
- 65% recycling target for municipal waste by 2035; and
- 10% limit on the landfilling of municipal waste by 2035.

Table 49 presents the potential future capacity required to manage Solihull's LACW based on achieving the EU circular economy targets. Two scenarios are used to consider the residual waste fraction (i.e. that remaining after recycling):

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

[23] EU targets as well as UK

Table 49 Forecast LACW waste management requirement (rounded to nearest 100 tonnes)

	2020	2025	2030	2035
LACW Forecasts				
Minimum (tonnes)	100,000	103,200	106,600	110,000
Maximum (tonnes)	106,100	113,000	119,100	122,700
Recycling and composting				
Potential Recycling and composting level	50%	55%	60%	65%
Recycling and composting capacity				
Minimum (tonnes)	50,000	56,800	64,000	71,500
Maximum (tonnes)	53,100	62,200	71,500	79,800
Landfill				
Landfill - Maximum allowed assuming gradual limitation to 2035 level	25%	20%	15%	10%
Landfill capacity requirement				
Minimum (tonnes)	25,000	20,600	16,000	11,000
Maximum (tonnes)	26,500	22,600	17,900	12,300
Residual treatment				
Minimum assuming maximum allowed landfill is utilised (tonnes)	25,000	25,800	26,600	27,500
Maximum assuming maximum allowed landfill is utilised (tonnes)	26,500	28,200	29,700	30,600
Minimum assuming no LACW direct to landfilled (tonnes)	50,000	46,400	42,600	38,500
Maximum assuming no LACW direct to landfilled (tonnes)	53,000	50,800	47,600	42,900

6.2.2 Potential future LACW management capacity demand

Section 3.3 highlights that in Solihull there is no residual waste treatment or disposal capacity such as MBT, RDF production, incineration or non-inert landfill. This means there is a reliance on such facilities outside the area, which includes a significant proportion of strategic capacity that is used to manage LACW.

However, Solihull has historically worked with Coventry City Council in the delivery of energy from waste (EfW) capacity at the CSWDC Incinerator in Coventry. In addition, the council has contracts for:

- MRF capacity at Suez Recycling and Recovery's Landor Street Integrated Resource Facility; and
- composting capacity for garden waste at Suez Recycling and Recovery's Packington Composting Facility

Consequently, whilst these three facilities are not located in Solihull, there is long term capacity to manage Solihull's LACW at the CSWDC Incinerator beyond the plan period; whilst the MRF and composting contracts run to 2020 and 2021 respectively, at which point new contracts will need to be procured.

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

- **HWRC capacity**: HWRCs play a critical role in providing recycling and reuse capacity, especially for wastes that are not covered by regular kerbside collections (such WEEE, furniture etc). Whilst the Bickenhill HWRC has a permitted capacity of 75,000 tonnes per annum the site is operating close to its physical capacity. Therefore, additional HWRC capacity will potentially be needed to support the forecast increase in the population and number of households. The additional capacity could be delivered through an expansion of the capacity at Bickenhill or the development of a new facility elsewhere in Solihull.

- **MRF capacity**: It is not possible accurately to predict the future composition of LACW, due to the limited data currently available and that composition changes with time. Consequently, the mix of material that will need to be recycled or composted to achieve a 65% recycling and composting target is not clear. If it is assumed that there will a 50:50 split between recycling and composting, by 2035 there could be 36,000 to 40,000 tonnes of material to be recycled, excluding composting.

  - However, it is unlikely that all the material would need to be handled at a MRF as some material is collected separately and sent directly (or via transfer station) to reprocessors, for example the scrap metal, cardboard, timber etc. collected at HWRC. The current, kerbside, co-mingled collections account for approximately 60% of Solihull's dry recycling. If this split is maintained, between 21,000 and 24,000 tonnes of material from Solihull may need to be handled through a MRF by 2035.

  - The current contracts for MRF and composting capacity will be retendered over the next couple of years. The Council will then need to decide whether to continue to rely on the existing capacity provided beyond Solihull, or to utilise new capacity within the Borough.

- **Management of separately collected bio-waste**: Currently, the only form of bio-waste separately collected for composting is the garden waste collected at HWRCs and from kerbside collections. Therefore, if the separate collection of bio-waste for recycling becomes a requirement, capacity would be necessary to handle separately collected food waste. In addition, the Council has committed to explore the benefits of food waste collections.

  - Based on the assumption above of a 50:50 between recycling and composting, by 2035 there could be 36,000 to 40,000 tonnes of bio-waste to manage. The type and size of biological treatment capacity would depend on how the bio-waste is collected e.g. food and garden waste separately or mixed food and garden waste.

  - There is currently no capacity for food waste treatment in Solihull. This would suggest there could be insufficient capacity in Solihull to handle an increase in bio-waste that contains food. However, there are proposals for the development of IVC capacity at Meriden Quarry, which should (if approved) provide sufficient capacity to treat mixed food and garden waste, and potentially provide capacity for some organic C&I wastes.

- **EfW Facility capacity**: The CSWDC Incinerator capacity is 315,000 tonnes per annum and over recent years has operated at around 80%-90% of capacity. If it is assumed that residual treatment capacity equates to 35% of the LACW generated (because 65% of the waste will be recycled or composted by 2035) Solihull would require between 38,000 and 43,0000 tonnes of capacity for no LACW waste to be sent direct to landfill by 2035.

  - Currently, the Council sends approximately 43,000 tonnes per annum to the CSWDC Incinerator. Therefore, there should remain sufficient capacity to handle the residual LACW generated whilst the CSWDC Incinerator is operational.

6.3 Commercial and Industrial (C&I) Waste

There are no specific targets for the management of C&I waste. Beyond 2020, the European Commission proposes to set recycling and recovery targets for municipal waste (see Section 6.2.1). Recognising that the Commission's use of municipal waste includes wastes from other sources that is comparable in nature to waste from households, if the UK continues to meet the requirements of EU Directives, some C&I waste would become subject to these targets.

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

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

It is assumed that hazardous C&I waste will be handled through specialist hazardous waste management facilities (see section 6.6).

Table 50 presents the potential future capacity required to manage Solihull's non-hazardous C&I waste. Again, two scenarios are used to consider the residual waste fraction (i.e. that remaining after recycling):

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

Table 50 Future C&I waste management requirement (rounded to nearest 1,000 tonnes)

	2020	2025	2030	2035
C&I Forecasts				
Minimum (tonnes)	42,000	46,000	50,000	55,000
Maximum (tonnes)	51,000	57,000	62,000	68,000
Recycling and composting				
Potential Recycling and composting level	50%	55%	60%	65%
Recycling and composting capacity				
Minimum (tonnes)	21,000	25,300	32,500	35,800
Maximum (tonnes)	25,500	31,400	40,300	44,200
Landfill				
Maximum allowed landfill assuming 75% C&I waste recovery by 2020 and gradual limitation to 2035 target	25%	20%	15%	10%
Landfill capacity requirement				
Minimum (tonnes)	10,500	9,200	7,500	5,500
Maximum (tonnes)	12,800	11,400	9,300	6,800
Residual treatment				
Minimum assuming maximum allowed landfill is utilised (tonnes)	10,500	11,500	10,000	13,700
Maximum assuming maximum allowed landfill is utilised (tonnes)	12,700	14,200	12,400	17,000
Minimum assuming no C&I waste direct to landfilled (tonnes)	21,000	20,700	17,500	19,200
Maximum assuming no C&I waste direct to landfilled (tonnes)	25,500	25,600	21,700	23,800

6.3.1 Potential future C&I waste management capacity demand

Section 3.3 identifies that there is only a small number of permitted facilities within Solihull, with the wastes received being predominantly construction and demolition type wastes and wood for processing. There is no transfer capacity for C&I waste and no residual waste treatment or disposal capacity such as MBT, RDF production, incineration (with or without energy recovery) or non-inert landfill. Therefore, the treatment/disposal of residual C&I waste is almost totally reliant on facilities outside Solihull.

The assessment suggests that 14,000 to 24,000 tonnes of residual C&I waste treatment/disposal capacity could be required by 2035, if the assumed targets are applied to the whole C&I waste stream. The potential capacity requirement is not particularly large; however, its delivery within Solihull may prove to be difficult. A facility of this scale, just to manage the capacity requirements in Solihull, is unlikely to be economically viable.

As indicated in Section 4.3 there is considerable uncertainty in the C&I waste estimates and forecasts that makes assessing the future capacity need for C&I waste particularly difficult.

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

Article 11(2)(b) of the European Waste Framework Directive[24], sets a target to recover at least 70% of non-hazardous C&D Waste by 2020. This is a national target and it is not formally cascaded down to local authorities. In February 2018, Defra reported that this target was already being met within the UK, with a recovery rate of over 90% for each year between 2010 and 2014[25].

Beyond 2020 recovery targets for CD&E waste are still to be set. The European Commission's current proposals do not make any change to the current recovery target for non-hazardous construction and demolition waste but do require Member States to '*take measures to promote sorting systems for construction and demolition waste and for at least the following: wood, aggregates, metal, glass and plaster'*.

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

- Clean, uncontaminated excavation wastes will predominately be reused, for example, where suitable waste is used for reclamation purposes in excavated areas or for engineering purposes in landscaping or construction instead of other non-waste materials.
- Hazardous C&D waste will be handled through specialist hazardous waste management facilities (see section 6.6).
- At least 70% of non-hazardous C&D waste will be recovered per annum during the plan period.

Based on these assumptions the potential future waste treatment capacity required to handle Solihull's CD&E waste is summarised in Table 51.

[24] Directive 2008/98/EC

[25] UK Statistics on Waste, Defra, February 2018

Table 51 Future waste management capacity required for forecast non-hazardous CD&E waste

	2020	2025	2030	2035
Reuse capacity of excavation waste / dredging spoils				
Minimum	266,000	299,000	316,000	332,000
Maximum	292,000	334000	389,000	453,000
Non-hazardous C&D forecasts				
Minimum	227,000	254,000	268,000	282,000
Maximum	248,000	282,000	329,000	384,000
Non-hazardous C&D recovery				
Assumed recovery target of 70% for non-hazardous C&D waste	70%	70%	70%	70%
Recovery capacity required				
Minimum (tonnes)	158,900	177,800	187,600	197,400
Maximum (tonnes)	173,600	197,400	230,300	268,800
Maximum required if the current UK recovery rate of 90% for non-hazardous C&D is maintained	90%	90%	90%	90%
Recovery capacity required				
Minimum (tonnes)	204,300	228,600	241,200	253,800
Maximum (tonnes)	223,200	253,800	296,100	345,600
Non-hazardous C&D landfill				
Maximum allowed landfill assuming 70% of non-hazardous C&D is recovered	30%	30%	30%	30%
Landfill capacity required				
Minimum (tonnes)	68,100	76,200	80,400	84,600
Maximum (tonnes)	74,400	84,600	98,700	115,200
Maximum required if the current UK recovery rate of 90% for non-hazardous C&D is maintained	10%	10%	10%	10%
Landfill capacity required				
Minimum (tonnes)	22,700	25,400	26,800	28,200
Maximum (tonnes)	24,800	28,200	32,900	38,400
Note: There is a high level of uncertainty associates with CD&E wastes estimates and forecasts. In addition, the estimates could overestimate the CD&E waste generated in Solihull, which may be below the national average particularly in relation to the excavation waste and dredging spoils See Section 4.4 for further explanation.				

Section 3.1 identifies that there is recycling, recovery and disposal capacity available for handling CD&E waste, with annual permitted capacity (in 2017) of:

- approximately 250,000 tonnes for wood processing;
- 350,000 tonnes of the deposit of waste to land (recovery);
- 156,000 tonnes of physical treatment capacity; and
- 1,150,000 tonnes of inert landfill

A live planning application for a further 49,000 tonnes of aggregate recycling is currently being considered.

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

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

In terms of exemption facilities/sites, there are over 56 U1 exemptions (Use of waste in construction) registered in Solihull, which can be an outlet for CD&E wastes. However, these exemptions cannot be considered as a guaranteed capacity to manage CD&E wastes because:

- some exemption could be short-term but remain on the register for 3 years; or
- in terms of on-farm exemptions (which account for around 80% of the U1 exemptions) the need for material may be periodic, e.g. for the repair of farm tracks, and the exemption has been registered just in case material is required.

If it is assumed that half the U1 exemptions are active in any given year and the tonnage received at each exemption ranges from 100 to 1,000 tonnes, the registered exemptions could provide between 5,600 to 56,000 tonnes of recovery capacity. As highlighted in Section 5.4, it is considered unlikely, given the urban/rural nature of Solihull, that forecast arisings of over 250,000 to 450,000 tonnes of excavation waste would be produced every year.

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

- Some additional physical treatment capacity for the recycling of non-wood based CD&E waste, such as concrete, brick, soil and stone. Although the application currently being considered could provide the necessary capacity.
- For any developments that would generate significant quantities of excavation waste, the developer would need to demonstrate that there is sufficient capacity to handle the proposed arisings e.g. through backfilling or quarry restoration.

6.5 Agricultural Waste

It is estimated that small quantities of non-natural agricultural waste are generated in Solihull, (less than 1,000 tonnes per annum). This waste will consist of materials such as used oils, scrap metal, paper, cardboard and plastic wastes etc. much of which will be captured in the C&I waste estimates. These wastes will be coded under LoW Chapters 13, 15 and 16 and consequently the agricultural element cannot be differentiated.

Future waste arisings will be dictated by the nature of agricultural activity within Solihull and the GVA forecasts up to 2030 suggest there is unlikely to be a significant change in the agricultural sector in Solihull.

Therefore, it is assumed that the non-natural agricultural waste will remain at less than 1,000 tonnes per annum. The very low tonnages forecast to arise indicate that agricultural wastes should continue to be appropriately managed by the private sector and is unlikely to make a material difference to available capacity; the revised Local Plan Review does not need to identify strategic locations for its management.

With regards to the management of natural agricultural waste, if manures and slurries are not used appropriately within a farm there is the potential for over-application of nitrogen and other minerals,

and also for potential impacts upon water resources. On-farm anaerobic digestion systems provide a method of managing such materials and the digestate produced has a lower biochemical oxygen demand than the original untreated manure and can be used as a more uniform, easily calibrated fertiliser[26]. The Local Plan Review may consider promoting on-farm anaerobic digestion systems within policy.

6.6 Hazardous Waste

Small quantities of hazardous waste are generated within Solihull: 6,000 tonnes is a very small fraction of the 4.3 million tonnes consigned in the UK in 2014[27].

Whilst there is a legal requirement for the UK to have in place a range of facilities for the recovery of hazardous wastes, this is a national requirement that is not cascaded down to local authorities. The Government considers that the waste industry has the expertise necessary to determine where infrastructure should be located and the most appropriate technologies to use[28]. In part this recognises that there is a need to account for economies of scale, as treatment facilities will only be economically viable above a certain capacity. Whilst this principle holds true across all waste management facilities, it is particularly relevant to hazardous waste as this is normally generated in very small tonnages at any one location. Furthermore, the aggregated environmental effects of a number of smaller facilities, may, in some cases, be greater than those for one large facility[29].

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

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

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

In conclusion, there would not appear to be a need for the revised Local Plan Review to identify strategic locations for the management of hazardous waste within Solihull.

6.7 Summary of Capacity Requirements

Table 52 summarises the key capacity requirements concluded from the assessment for each waste stream and highlights the main options for addressing capacity gaps. Table 52 and the analysis presented within this Waste Needs Assessment indicates that future provision of new waste

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

[27] Defra, Digest of Waste and Resource Statistics, 2018 Edition

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

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

management capacity is limited; however, it is still worth considering what this might mean for future policy.

In August 2004, the Office of the Deputy Prime Minister (ODPM), now the Ministry of Housing, Communities and Local Government) published a document titled 'Planning for Waste Management Facilities – A Research Study' (Planning for Waste Management Facilities). Whilst now rather dated, this document remains a useful reference in its review of a wide range of waste management facilities, identifying potential impacts and development requirements.

Part 2 of Planning for Waste Management Facilities presents site profiles for a range of waste management activities. Those most relevant to the forecast treatment demand for LACW and C&I wastes are:

- Anaerobic digestion, operating at 5,000 to 40,000tpa, requiring site size of 0.15ha to 0.6ha (hereafter rounded up to <1ha);
- Processing of recyclables, operating at 50,000tpa, requiring site size of 1 to 2ha
- Mixed waste processing, operating at 50,000tpa, requiring site size of <1 to 2ha
- Pyrolysis and gasification, operating at 50,000tpa, requiring site size of 1 to 2ha
- Small scale thermal treatment, operating at 50,000tpa, requiring site size of <1 to 2ha
- Large scale thermal treatment, operating at 250,000tpa, requiring site size of 2 to 5ha

This indicates a need for sites in a range of sizes from 0.5 to 5ha.

Within Solihull, there is just one operational HWRC, and it is located to the north east of the area and operating close to its deliverable capacity. Recognising policy drivers to increase both housing stock and recycling levels, it might be beneficial to increase HWRC capacity and for this to be provided at a discrete site. This new development might require a single site of c.1-2ha.

Across the LACW and C&I waste streams, there is a combined need for 105,000 to 125,000 tonnes[30] of dry recyclable and/or composting capacity, some of which could be managed through increased HWRC capacity. Assuming the maximum level of demand (125,000) and splitting this 50:50 across dry recycling and composting would indicate a need for 62,500 tonnes of each.

Table 2 demonstrates that there is already composting capacity operating in Solihull, accepting 36,000 to 42,000 tonnes over the past three years. Section 3.1.4 of this assessment describes current planning applications that would bring forward additional capacity likely to be sufficient to manage the remaining composting demand. The purpose of this Waste Needs Assessment is not to prejudge any such application however, and so concludes that a composting facility providing c.30,000 tonnes capacity might be required in the future, and could be delivered on a site of <1ha.

As has been previously discussed, much of the dry recycling/processing of Solihull's LACW and C&I waste occurs beyond the administration boundary. Providing 62,500 tonnes of such capacity might require a site of <1 to 5ha.

Residual LACW is managed, on a long-term contract, at the CSWDC Incinerator in Coventry. This is not expected to change over the plan period and is not considered as requiring any specific policy provision. Residual C&I wastes are also likely to be managed beyond Solihull, and are forecast to arise in such limited quantities as being unlikely to justify capacity being provided within the Borough.

[30] 35,000 to 45,000 from LACW and 70,000 to 80,000 from C&I waste

A positive approach to providing recycling/composting capacity could be used to balance out the continued export of residual C&I wastes.

Solihull hosts sufficient CD&E recycling and disposal capacity, indeed it is a significant importer for the management of these wastes.

The other waste streams raise very low tonnages and are considered within this discussion.

There is no non-inert landfill in Solihull. However, as identified above, a positive approach to providing recycling/composting capacity, and the ongoing management of CD&E waste could be used to balance out the continued movement of wastes from Solihull.

In simple terms, in order to deliver the forecast additional capacity needs the land use requirements might be recognised as either:

- one site of 1 to 2ha, for the HWRC, or this provision could be made through expanding the existing Bickenhill HWRC, one site of <1 ha for composting capacity; and one site of <1 to 5ha for dry recycling capacity; or
- one site of 1 to 2ha, for the HWRC, or this provision could be made through expanding the existing Bickenhill HWRC, and one site of 2 to 5ha for dry recycling and composting capacity.

If the LACW and C&I wastes are split out, the requirement might be for:

- one site of 1-2ha, to provide the HRWC capacity potential requirement for LACW;
- one site of <1ha for the composting capacity (which may be either LACW or C&I waste); and
- two sites of 1-2ha to manage the dry recycling forecast demand for LACW and C&I.

This analysis indicates a maximum need for four sites, ranging in size from 0.5ha to 5ha. However, it is also likely that a larger parcel of land (e.g. of 4ha+) could accommodate all of the estimated future capacity needs on one site.

Table 52 Summary of key points from capacity need assessment

Waste Stream	Capacity Need Assessment – Key Points
Local authority collected waste	Permitted capacity within Solihull is limited to facilities that offer transfer or provide biological treatment; there is no residual waste treatment or disposal capacity such as MBT, RDF production, incineration (with or without energy recovery) or landfill. Solihull MBC has historically worked with Coventry City Council to manage effectively the authorities' residual LACW. This collaboration has resulted in the joint procurement of strategic waste management capacity (the CSWDC Incinerator). Whilst the residual treatment capacity is not located in Solihull, long term capacity is available to manage Solihull's residual LACW. However, Solihull MBC is reliant of recycling capacity outside the Council's administrative area, with co-mingled recyclables currently being handled through a facility in Birmingham. Whilst the provision of sorting/treatment capacity for Solihull's co-mingled recyclables is subject to a competitive procurement process, consideration could be given to allocating land for the processing of recyclable material, which would allow the waste industry to bring forward proposals. Such provision could also potentially support C&I waste recycling (see below). In addition, if the separate collection of bio-waste, including food waste, for recycling becomes a requirement, capacity would be necessary to handle separately collected food and garden waste. There is currently garden waste composting capacity but there is currently no capacity for food waste treatment in Solihull. This would suggest there could be insufficient capacity in Solihull to handle an increase in bio-waste which contains food. However, there are proposals for the development of IVC capacity at Meriden Quarry, which should (if approved) provide sufficient capacity to treatment mixed food and garden waste, this capacity could also support C&I food waste recycling (see below). The Bickenhill HWRC is operating close to its physical capacity. Therefore, additional HWRC capacity will potentially be needed to support the forecast increase in the population and number of households. The additional capacity could be delivered through an expansion of the capacity at Bickenhill or the development of a new facility elsewhere in Solihull.
Commercial and industrial waste	There is limited capacity in Solihull for the transfer, treatment or disposal of C&I waste. There is no residual waste treatment or disposal capacity such as MBT, RDF production, energy from waste or landfill facilities, which means that the treatment/disposal of residual C&I waste is reliant on facilities outside Solihull.

Waste Stream	Capacity Need Assessment – Key Points
	The assessment suggests that by 2035: • 35,000 to 45,000 tonnes of recycling and composting capacity will be required; • 15,000 to 25,000 tonnes of residual treatment capacity will be required; and • 5,000 to 7,000 tonnes of landfill capacity. The capacity need for residual C&I waste treatment/disposal is unlikely to be sufficient to be economically viable to develop dedicated capacity solely for Solihull's C&I waste. One option is for C&I waste recycling and composting to be achieved through capacity developed for LACW. This would also be a topic relevant for Solihull to consider cooperating with neighbouring authorities to ensure there is sufficient sub-regional/regional capacity for treatment/disposal of residual C&I waste. However, there is a notable degree of uncertainty in the C&I waste estimates and forecasts that makes assessing the future capacity need for C&I waste particularly difficult.
Construction, demolition and excavation waste	Again, there is a notable degree of uncertainty in the CD&E waste estimates. This is recognised by Defra, not least in the December 2016 Statistics on Waste Notice which states '*Accurately quantifying C&D waste is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, there is not a significant impact on the final recovery rate*.' This Waste Needs Assessment suggests that Solihull is a net importer of C&D waste and provides significant inert landfill capacity which is utilised for wastes from across the West Midland, particularly from Birmingham City and Coventry. There is recycling and recovery capacity available for handling CD&E waste, with annual permitted capacity (in 2017) of: • approximately 250,000 tonnes for wood processing; • 350,000 tonnes of the deposit of waste to land (recovery); and • 156,000 tonnes of physical treatment capacity, with a further 49,000 tonnes under consideration. The landfill capacity of over 1,000,000 tonnes per annum provided within Solihull far exceeds the calculated maximum (and potentially over-estimation) need for 115,000 tonnes landfill capacity in 2035; which drops sharply if the current UK recovery rate of 90% for non-hazardous C&D is maintained, to between 30,000 to 40,0000 tonnes.

Waste Stream	Capacity Need Assessment – Key Points
	Therefore, there is sufficient capacity to meet Solihull's need and the potential to cooperate with neighbouring authorities to ensure there is sufficient sub-regional/regional capacity. The regular monitoring required of development plan documents can be used to ensure there remains sufficient landfill and deposit of waste to land (recovery) capacity towards the end of the plan period.
Agricultural waste (non-natural)	It is estimated that small quantities of non-natural agricultural waste are generated in Solihull, between 300 to 500 tonnes per annum. Based on this level of generation, non-natural agricultural wastes should continue to be appropriately managed by the private sector; the Local Plan Review does not need to identify strategic locations for its management.
Hazardous waste	Small quantities of hazardous waste are generated within Solihull, between 7,000 to 11,000 tonnes, which is a very small fraction of the 4 million tonnes consigned in England. In general, hazardous waste treatment and disposal facilities are considered at a national level because of the need to account for economies of scale. This is reflected in the Hazardous Waste NPS which requires final recovery/disposal hazardous waste facilities with capacity in excess of 30,000 tonnes per annum to be considered as nationally significant infrastructure projects. Therefore, based on the small quantities generated in Solihull, there would not appear to be a need for the Local Plan Review to identify strategic locations for the management of hazardous waste within Solihull. However, smaller facilities should be capable of being accommodated on industrial estates and similar locations.

Appendices

Appendix 1 European List of Waste (LoW)

The LoW is meant to provide a common terminology throughout the EU with the purpose to improve the efficiency of waste management activities. It is divided into 20 chapters, some based on the type of industry, process or activity that produced the waste and others based on the type of waste. In the LoW, wastes are classified according to three levels, each representing a different level of detail, as follows:

- Chapters, which are given a two-digit code (numbered 01 to 20);
- Sub-chapters, which divide each chapter into sub- chapters, with each sub-chapter given another two-digit number (creating a four-digit number with the chapter number);
- Within each sub-chapter there are the classification codes for individual wastes. These are given an additional two-digit number, to create a six-digit number with the chapter and subchapter numbers, this is known as the LoW code or EWC code.

In addition, for hazardous wastes the six-digit codes in the LoW have an asterisk (*) next to them.

There are a series of rules for identifying wastes in the LoW and determining whether a waste is covered by a hazardous waste entry. The key element of the rules is the order in which the different chapters of the EWC should be considered to find an appropriate code. This order is:

- Identification by Waste Source: using chapters 01 to 12 and 17 to 20 first. Although six-digit codes ending 99 should not be used at this stage and separately collected packaging should be classified under 15 01 and not 20 01.
- Identification by Waste Type: If no appropriate waste code can be found in Chapters 01 to 12 and 17 to 20, then chapters 13, 14, and 15 should be considered next to identify the type of waste.
- Waste not otherwise specified: If a suitable waste code cannot be found in Chapters 13 to 15, Chapter 16 should be used to codify the waste.
- Waste not otherwise specified in the chapter: Only if no suitable six-digit code can be found in Chapter 16 should the most appropriate six-digit code ending ‘99’ in Chapters 01 to 12 and 17 to 20 be used.

List of Waste chapters

Chapter	Chapter Description
01	Wastes resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing
03	Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard
04	Wastes from the leather, fur and textile industries
05	wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal
06	Wastes from inorganic chemical processes
07	Wastes from organic chemical processes
08	Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks
09	Wastes from the photographic industry
10	Wastes from thermal processes

Chapter	Chapter Description
11	Wastes from chemical surface treatment and coating of metals and other materials, non-ferrous hydro-metallurgy
12	Wastes from shaping and physical and mechanical surface treatment of metals and plastics
13	Oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19)
14	Waste organic solvents, refrigerants and propellants (except 07 and 08)
15	Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
16	Wastes not otherwise specified in the list
17	Construction and demolition wastes (including excavated soil from contaminated sites)
18	Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)
19	Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions

Appendix 2 Exemption Descriptions

Usage Exemptions

Exemption	Maximum Quantity	Period	Comment and assumption
U1 - Use of Waste in Construction This exemption allows the use of suitable wastes for small scale construction instead of using virgin raw materials	5,000 tonnes of mainly inert materials for general construction	In total over any 3-year period	The quantity limit is for the total quantity for all the waste types used or stored. Whilst the majority of waste will come from C&D activity, some waste will come from C&I sources, in particular wood. The amount of total material handled through each exemption could be high; however, wood volumes are likely to be low. Any glass handled will come from other treatment processes and been captured in other datasets This exemption is considered in the CD&E capacity estimates, at an assumed annual average of 100 to 1,000 tonnes per exemption. However, it cannot be considered as a guaranteed capacity to manage CD&E wastes.
	1,000 tonnes of soil, stone etc plus wood chip for paths, bridleways or car parks		
	50,000 tonnes of soil, stone and road planings for road construction		
U2 - Use of baled end-of-life tyres in construction This exemption enables the use a small number of baled end-of-life tyres (tyre bales) in construction projects	50 tonnes of baled end-of-life tyres only	In total	This tonnage will have been captured by another dataset
U3 - Use of waste in the construction of entertainment or educational installations etc	20 tonnes	At any one time	This exemption covers waste primarily from CD&E activity but is unlikely to be widely used or significantly to affect the C&I and CD&E waste estimates and so is excluded
U4 - Burning of waste as a fuel in a small appliance To allow the use of plant tissue waste, wood and untreated wooden packaging as a fuel to produce heat or power	10 tonnes	At any one time	This exemption is considered in the C&I waste estimates, at an assumed annual average of 10 tonnes per exemption
U5 - Use of waste-derived biodiesel as fuel To enable businesses to store and use waste-derived biodiesel as a fuel in portable generators and vehicles	5,000 Litres	At any one time	This tonnage will have been captured by another dataset. Therefore, has been excluded for the C&I waste estimates.
U6 - Use of sludge for the purposes of re-seeding a waste water treatment plant Covers sludge from another WWT plant	1,000 cubic metres	At any one time	This tonnage will have been captured by another dataset. Therefore, has been excluded for the C&I waste estimates.

Exemption	Maximum Quantity	Period	Comment and assumption
U7 - Use of effluent to clean a highway gravel bed To allow effluent from water and waste water treatment plants to be used for cleaning highway gravel beds Covers effluent from WWT plants	24 cubic metres	24 hours	This tonnage will have been captured by another dataset. Therefore, has been excluded for the C&I waste estimates.
U8 - Use of waste for a specified purpose To allow waste to be used, where it is suitable for use without treatment Specific uses include horse ménages, ornamental purposes, animal bedding, also construction, treating effluent or water	Varying quantities for specific uses: Use in horse menages (1,000 tonnes) Use in animal bedding (100 tonnes) End of life tyres (40 tonnes) Blast furnace slag and stones (50,000 tonnes)	At any one time	A range of direct uses for waste without treatment, the most relevant include untreated wood, paper from paper manufacturing, end of life tyres Other wastes covered under this exemption will have been captured under other exemptions (T4 & T6) treatment The blast furnace tonnage is high but will be fed from a relatively small number of steel production operations (<10) This exemption is considered in the C&I waste estimates, at an assumed annual average of 250 tonnes per exemption
U9 - Use of waste to manufacture finished goods- To use waste in place of raw materials in the manufacture to produce a finished product	Varying quantities for specific uses: Glass (5,000 tonnes) Paper and cardboard (15,000 tonnes) Textiles (1,000 tonnes) Metal, plastic, ash, gypsum (500 tonnes)	At any one time	This exemption uses waste from multiple sources with varying quantity limits. Glass, paper and card and textiles are potentially the highest volume of material handled There is the possibility for some waste to also be covered under T1, T2 and T4 This exemption would be considered in the C&I waste estimates, at an assumed annual average of 2,500 tonnes per exemption. However, there are no non-farm exemptions registered
U10 - Spreading waste on agricultural land to confer benefit - To allow specified wastes, mainly for waste from food production and arising from other treatment exemption, to be spread on agricultural land to replace manufactured fertilisers or virgin materials **U11 - Spreading waste on non-agricultural land to confer benefit** To allow the spreading of a number of different wastes, mainly for waste from food production and arising from other treatment exemption, on non-	Quantity limits are 50t per hectare in a 12-month period with the exception of: ▪ dredging spoil from habitat maintenance which is 150t per hectare; and	12-month period but with storage at any one-time limitations	Some of the material (e.g. compost) would be captured under other exemptions T23-26 and T32 These exemptions would be considered in the C&I waste estimates, at an assumed annual average of 200 tonnes per exemption.

Exemption	Maximum Quantity	Period	Comment and assumption
agricultural land to replace manufactured fertilisers or virgin materials	▪ ash from wood chip boilers under U4 at 1t per hectare		
U12 - Use of Mulch To allow landscapers and farmers to spread mulch as a protective covering onto land around trees, bushes, or plants	100 tonnes of untreated wood and plant matter	Per month	Maximum annual capacity 1,200 tonnes This exemption would be considered in the C&I waste estimates, at an assumed annual average of 200 tonnes per exemption.
U13 - Spreading of plant matter to confer benefit Allows spread cut plants at the place of production for weed suppression or to provide nutrients to the soil	50 tonnes per hectare	Per 12 months	Given the limited tonnage and the nature of the exemption, this has been excluded from C&I and CD&E waste estimates
U14 - Incorporation of ash into soil Allows ash from the burning of plant tissues to be incorporated back into the soil return of nutrients to the soil	10 tonnes per hectare	Not specified	Given the limited tonnage and the nature of the exemption, this has been excluded from C&I and CD&E waste estimates
U15 - Pig and poultry ash Allow ash to be mixed with slurry and/or manure and spread on farmland to provide the soil with nutrients	150kg per hectare	Per 12 months	The tonnage here would be captured through a different exemption as it is from the incineration of pig and poultry carcases
U16 - Use of depolluted end-of-life vehicles for vehicle parts Allows the parts from depolluted end-of-life vehicles to be re-used in other vehicles	Two depolluted ELVs and 5 cubic metres of non-hazardous components	At any one time	The tonnage here would be captured through a vehicle depolluting facility that already has an environmental permit and is captured in another dataset. Therefore, has been excluded for the C&I waste estimates.

Treatment Exemptions

Exemption	Quantity	Period	Comment and assumption
T1 - Cleaning, washing, spraying or coating relevant waste To treat waste packaging so that it can be reused in its original form	Total of 300 tonnes of packaging materials (glass, paper and card, plastic, textiles)	Over any 7-day period	Maximum annual capacity of 15,600 tonnes This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 1,200 tonnes per exemption.

Exemption	Quantity	Period	Comment and assumption
T2 - Recovery of textiles Laundering or cleaning waste clothes and textiles to recover them for reuse	Total of 20,000 tonnes of textiles and clothes materials	At any one time	This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 2,000 tonnes per exemption
T4 - Preparatory treatments (baling, sorting, shredding etc) Treatment of waste to reduce its volume	Cans and foils (500 tonnes) Food and drink cartons (3,000 tonnes) Glass (5,000 tonnes) Paper and cardboard (excluding food and drink cartons) (3,000 tonnes) Plastic (3,000 tonnes) Textiles and clothes (3,000 tonnes)	Per week	Maximum annual capacity: 26,000 tonnes of cans and foils 156,000 tonnes of food and drink cartons 260,000 tonnes of glass 156,00 tonnes of paper and cardboard) 156,00 tonnes of plastic 156,00 tonnes of textiles and clothes Non-farm exemptions would be considered in the C&I waste estimates and capacity assessment at the following assumed annual average tonnage per exemption. Cans and foil - 3,000 tonnes Food and drink cartons - 5,000 tonnes Glass - 5,000 tonnes Paper and cardboard - 15,000 tonnes Plastic - 10,000 tonnes Textiles and clothes - 5,000 tonnes
T5 - Screening and blending of waste Allows temporary small-scale treatment of wastes to produce an aggregate or a soil	5,000 tonnes of materials for aggregate/soil production Except for manufacture of road stone where limit is 50,000 tonnes	Over 3-year period	An assumed maximum throughput of 1,750 tonnes per annum would be considered in the capacity assessment. However, it cannot be considered as a guaranteed capacity to manage CD&E wastes. Most material is likely to be generated through CD&E activities at a construction site and the use of the material covered under another exemption, so care is needed not to double count tonnages.
T6 - Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising Allows waste wood and waste plant matter to be chipped, shredded, cut or pulverised to make it easier to store and transport, or to convert it into a suitable form for use	500 tonnes of plant tissue waste and wood	Over any 7-day period	Maximum capacity of 26,000 tonnes per annum This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 2,000 tonnes per exemption.
T8 - Mechanical treatment of end-of-life tyres To treat small amounts of waste end-of-life tyres by means of baling, shredding, peeling, shaving or granulating, to ensure they can be recovered	Up to 60 tonnes of tyres	Over any 7-day period	Maximum capacity 3,120 tonnes per annum This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 60 tonnes per exemption.

Exemption	Quantity	Period	Comment and assumption
T9 - Recovery of scrap metal To treat scrap metal by sorting, grading, shearing by manual feed, baling, crushing or cutting it with hand-held equipment to make it easier to handle and to help with its recovery	1,000 tonnes of metal	At any one time	This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 2,500 tonnes per exemption.
T10 - Sorting mixed waste Allows small organisations, such as charities, to sort out separate recyclable wastes so that they can be recovered	10 tonnes of recyclable materials	Over any 7-day period	This exemption would be considered in the capacity assessment at an assumed annual average of 520 tonnes per exemption. The majority of this waste is likely to have been generated from household sources and captured in the LACW data
T11 - Repair or refurbishment of WEEE Allows repair, refurbish or dismantle various types of WEEE so that the whole WEEE item or any dismantled parts can be reused for their original purpose or dismantled parts can go for recovery	1,000 tonnes of WEEE	Over any 12-month period	Maximum capacity 1,000 tonnes per annum. This exemption would be considered in the capacity assessment at an assumed annual average of 500 tonnes per exemption.
T12 - Manual treatment of waste Allows waste to be sorted, repaired or refurbished where possible for reuse and, where this is not possible, to be sorted and dismantled for recovery	Various materials generally up to 100 tonnes Includes bicycles, furniture, windows, tools, clothing	At any one time	Most operations are unlikely to deal with multiple waste types given the waste types and the nature of the exemption. Therefore, throughputs are likely to be limited. In addition, a reasonable proportion of the wastes involved are likely to have been generated from household sources and captured in the LACW data This exemption would be considered in the capacity assessment at an assumed annual average of 60 tonnes per exemption.
T13 - Treatment of waste food Allows the recovery of food waste by decanting it or unwrapping it and recovering the packaging	30 tonnes of food waste	At any one time	Given the nature of the exemption, this tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.
T14 - Crushing and emptying vehicle waste oil filters To recover oil and reduce the size of the oil filters to aid transport for the purpose of recovery	1 tonne of oil filters	At any one time	Only applies at the place of production and this tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.
T15 - Treatment of waste aerosol cans To treat aerosol cans, by puncturing or crushing them using aerosol cans treatment equipment designed for that purpose, so that the metal can be recovered	Up to 3,000 cans	Over any 12-month period	Only applies at the place of production and this tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.

Exemption	Quantity	Period	Comment and assumption
T16 - Treatment of waste toner cartridges and waste ink cartridges by sorting, dismantling, cleaning or refilling To treat waste toner or ink cartridges, by sorting, cleaning, dismantling or refilling	50,000 cartridges	At any one time	This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 50 tonnes per exemption.
T17 - Crushing waste fluorescent tubes Crushing waste fluorescent tubes prior to collection for recovery	3 tonnes fluorescent tubes	Over any 24-hour period	Only applies at the place of production and this tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.
T18 - Dewatering using flocculants To treat waste by using flocculants to dewater it so that clay or water-based paints can be recovered	30,000 litres of clay effluent from manufacture of ceramics and water-based paint wash waters (approximately 30t)	At any one time	Small number of exemptions This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 150 tonnes per exemption.
T19 - Physical and chemical treatment of waste edible oil and fat to produce biodiesel Allows small-scale physical and chemical treatment of waste edible oils and fats to produce a fuel	5,000 litres of edible oil and fat (approximately 4.3t)	At any one time	Small tonnage at any one time. This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 100 tonnes per exemption.
T20 - Treatment of waste at a water treatment works Allows the treatment of certain water treatment works waste at a water treatment works to reduce the volume for transport	10,000 cubic metres of water treatment sludges	Over any 12-month period	Covers small scale intermediate treatment and the resultant tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.
T21 - Recovery of waste at a waste water treatment works - Allows recovery of wastes, such as sludge from a septic tank or cess pool, which need further treatment at a waste water treatment work	100,000 cubic metres water treatment and septic tank sludges	Over any 12-month period	Covers small scale intermediate treatment and the resultant tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.
T23 - Aerobic composting and associated prior treatment Allows composting of small volumes of vegetation, cardboard and food wastes to produce a compost that can be spread on land to provide benefit	60 tonnes of plant tissue and biodegradable waste	At any one time	Maximum throughput assumed to be 400 tonnes per annum (calculated on the basis of a 8 week composting period) This exemption would be considered in the C&I waste and capacity assessment at an assumed annual average of 400 tonnes per exemption.

Exemption	Quantity	Period	Comment and assumption
T24 - Anaerobic digestion at premises used for agriculture and burning of resultant biogas Allows farmers to anaerobically digest manures, slurries and vegetation on their farms to produce digestate that can be used as a fertiliser or soil conditioner	1,250 cubic metres of plant tissue waste and horse and farmyard manure, slurry	At any one time	Agricultural sources only; therefore, the exemption has been excluded from the C&I estimates and capacity assessment
T25 - Anaerobic digestion at premises not used for agriculture and burning of resultant biogas Allows the treatment of food and other biodegradable wastes by anaerobic digestion to produce a digestate which can be used to provide benefit to land The gas produced must be used for generating energy	50 cubic metres of plant tissue waste, horse and farmyard manure, slurry only, biodegradable kitchen and canteen waste etc	At any one time	Maximum throughput assumed to be 1000 tonnes per annum (calculated on the basis of a 3-week digestion period) This exemption would be considered in the C&I waste estimates and capacity assessment at an assumed annual average of 500 tonnes per exemption.
T26 - Treatment of kitchen waste in a wormery Allows very smallscale treatment of waste from kitchens using a wormery to produce a compost	6 tonnes of biodegradable kitchen and canteen waste and paper and cardboard	Over any 12-months period	Small tonnage at any one time; therefore, the exemption has been excluded from the C&I estimates and capacity assessment
T27 - Treatment of sheep dip using organophosphate-degrading enzyme Allows organophosphate (O-P) sheep dip to be treated with an approved O-P degrading enzyme	8,000 litres of sheep dip	Over any 24-hour period	Agricultural waste sources only and exemption applies at the place of production. Therefore, the exemption has been excluded from the C&I waste estimates and capacity assessment
T28 - Sorting and denaturing of controlled drugs for disposal Enables pharmacies and other similar places to comply with the requirements of the Misuse of Drugs Regulations 2001 by denaturing controlled drugs	1 cubic metres of medicines	At any one time	Intermediate treatment prior to disposal and the resultant tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.
T29 - Treatment of non-hazardous pesticide washings by carbon filtration for disposal Allows the treatment of non-hazardous pesticide washings prior to their disposal to land	8,000 litres of pesticide	Over any 24-hour period	Intermediate treatment prior to disposal and the resultant tonnage is likely to be captured at a permitted facility once moved on. Therefore, has been excluded for the C&I waste estimates.
T30 - Recovery of silver To recover silver from waste produced in connection with printing or photographic processes	1,000 litres of photographic wastes (approximately 0.7t)	At any one time	Small tonnage at any one time; therefore, the exemption has been excluded from the C&I waste estimates and capacity assessment

Exemption	Quantity	Period	Comment and assumption
T31 - Recovery of monopropylene glycol from aircraft antifreeze fluids Allows airports to treat waste antifreeze to recover monopropylene glycol	250 cubic metres of antifreeze	Over any 7-day period	Only applies at the place of production and the waste will be treated /disposed of elsewhere and captured in the data at a permitted facility once moved on. Therefore, it has been excluded from the C&I waste estimates
T32 - Treatment of waste in a biobed or biofilter Allows the treatment of non-hazardous pesticides washings where they are generated, for example on farms and other places such as golf courses or parks	15,000 litres of non-hazardous pesticide washings	Over any 12-months period	The majority of these wastes are assumed to come from agricultural sources. Therefore, this exemption has been excluded from the C&I waste estimates.
T33 - Recovery of central heating oil by filtration Allows the filtering of central heating oil so that it can be reused	400 litres of central heating oil	Over any 7-day period	Small limit tonnage at any one time, unlikely to be widely used or significantly affect the C&I and CD&E waste estimates. Therefore, it has been excluded from the C&I and CD&E waste estimates

Disposal of Waste

Exemption	Quantity	Period	Comment and assumption
D1 - Deposit of waste from dredging of inland waters Allows the deposit of dredging spoil (dredgings) on the banks of the waters it was dredged from and to treat it by screening and dewatering	50 cubic metres of dredging spoil per metre of land	Over any 12-month period	The management of a specific waste stream and only applies at the place of production. Therefore. this exemption has been excluded from the CD&E waste estimates.
D2 - Deposit of waste from a railway sanitary convenience Some older rolling stock, for example forming part of a vintage steam train, has not been or cannot be fitted with appropriate collection facilities. This exemption allows those rolling stock to deposit waste onto the track	25 litres per discharge	n/a	Given the limited tonnage and the nature of the exemption, this exemption has been excluded from the C&I waste estimates
D3 - Deposit of waste from a portable sanitary convenience Allows the burying of waste from a portable toilet to avoid small quantities having to be transported long distances to sewage treatment works	1 cubic metre of waste	Over any 12-month period	Given the limited tonnage and the nature of the exemption, this exemption has been excluded from the C&I waste estimates

Exemption	Quantity	Period	Comment and assumption
D4 - Deposit of agricultural waste consisting of plant tissue under a Plant Health Notice Allows the deposit of diseased crops, where they were grown, when a Plant Health Notice has been issued requiring the deposit in order to prevent the spread of plant disease and pests	250 tonnes of plant tissue wasted	n/a	Only applies to agricultural waste and the deposit requires a Public Health notice; exemption has been excluded from the C&I waste estimates
D5 - Depositing samples of waste for the purposes of testing or analysing them Allows the deposit and storage of waste samples, where these are required to comply with or enforce specified regulations, or before testing and analysis for research purposes	10 tonnes	Over any 12-months period	Given the limited tonnage and the nature of the exemption, this exemption has been excluded from the C&I waste estimates
D6 - Disposal by incineration Allows the disposal of small amounts of waste that have been produced on a site in an incinerator	5 tonnes of plant tissue and wood wastes	At any one time	The incineration must be carried out by the person producing the waste e.g. joinery firm produces off-cuts of clean, untreated wood waste. The tonnage handled is likely to be limited This exemption has been excluded from the C&I waste estimates.
D7 - Burning waste in the open Allows the burning of plant tissue and untreated wood wastes in the open	10 tonnes of plant tissue and wood wastes	Over any 24-hour period	Historic exemption allowing organisations such as landscape gardeners to burn hedge trimmings, branches, etc on a bonfire at the places of production Maximum annual tonnage 3,650 tonne This exemption is considered in the C&I waste estimates, at an assumed annual average of 10 tonnes of plant tissue and untreated wood wastes per exemption
D8 - Burning waste at a port under a Plant Health Notice Allows the burning of plant tissue waste and wood packaging and packing materials at a port, when a Plant Health notice has been served to prevent the spread of plant disease	10 tonnes of plant tissue and wood packaging wastes	Over any 24-hour period	Only applies to waste from ships and the deposit requires a Public Health notice The tonnage handled is likely to be limited and there are no ports in Solihull Therefore, this exemption has been excluded from the C&I waste estimate.

Storage of Waste

Exemption	Quantity	Period	Comment and assumption
S1 - Storage of waste in secure containers Allows the storage of specific waste streams in secure containers at a different place to where the waste was produced, before the waste is transported to another site for recovery	400 cubic metres (per material) of the main recyclable materials or 3 cubic metres (per material) of the oil/oil filters or absorbents, filter and wiping clothes recyclable materials	At any one time but number of containers at any location limited to 20	Temporary storage prior to recovery, therefore the tonnage will be captured in other exemptions/permitted facilities once moved on Therefore, excluded from the C&I waste estimates
S2 - Storage of waste in a secure place Allows the storage of specific waste streams at a secure place at a different place to where the waste was produced, before the waste is transported to another site for recovery	Varying quantities for a wide range of materials	Varying periods between 3 and 12 months	Temporary storage prior to recovery, therefore the tonnage will be captured in other exemptions/permitted facilities once moved on Therefore, excluded from the C&I waste estimates
S3 - Storage of sludge Allows the storage of sludge at a place where it is to be used in accordance with the Sludge (Use in Agriculture) Regulations 1989	1250 tonnes of residual sludge from sewage plants and septic tanks	At any one time	Temporary storage prior to recovery, therefore the tonnage will be captured in other exemptions/permitted facilities once moved on Therefore, excluded from the C&I waste estimates

Appendix 3 Non-farm Exemptions

Organisation Name	Organisation Address	Exemption reference	D7	S1	S2	T10	T12	T17	T23	T28	T4	T5	T6	T9	U1	U11	U12	U13	U3	U4	U8	Grand Total
Monkspath Surgery	27 Farmhouse Way Solihull West Midlands B90 4EH	BF0205KG/A001								1												1
Roberts Environmental Ltd	Four Ashes House Four Ashes Road Dorridge West Midlands B93 8NQ	BF0808NM/A001													1							1
Dunton Environmental Ltd	South Fields Kenilworth Road Coventry, CV7 7HB	BF0907ER/A001										1										1
N.R.S. Waste Management Services Ltd	Area G Meriden Quarry Birmingham Road, West Midlands CV7 7PL	DF0509KQ/A001			1																	1
Max Plant (Midlands) Ltd	Solihull Metropolitan Borough Council Olton Jubilee Park B92 8QE	EE5048VX/A001													1							1
JLL 2002	44a Drury Lane SOLIHULL West Midlands B91 3BG	EF0009CX/A001			1																	1
Bam Construction Ltd	BAM Construction Ltd Site Office WMG Academy for Young Engineers Chemsley Road B37 5LA	EF0109TB/A001													1							1
Solihull Metropolitan Borough Council	Maintenance Service Team Chapelhouse Road Solihull West Midlands B37 5HA	GE5844VV/A001		1	1																	2
Arden Landfill Ltd	Arden Brickworks Coventry Road Solihull B92 0DY	JF0307KY/A001			1						1	1			1							4
Ralph Coleman International Limited	Truck Stop 2 Lavender Hall Lane Ballsall Common West Midlands CV7 7BN	KE5247CR/A001		1	1																	2
Heart of England NHS Foundation Trust	Solihull Hospital Lode Lane Solihull West Midlands B91 2JL	LF0508CY/A001								1												1
Balfour Beatty Living Places Ltd	Solihul Depot Moat Lane Solihull West Midlands B91 2LW	LF0906WY/A001		1	1										1						1	4
Balsall Common & Meriden Group Practice	1 Ashley Drive Coventry CV7 7RW	NE5247CJ/A001								1												1
Penthealth Limited	368 Gospel Lane Birmingham West Midlands B27 7AJ	NF0704GQ/A001								1												1
W.M. Brown (Kingshurst) Ltd	351 Warwick Road Solihull West Midlands B91 1BQ	PE5241NQ/A001								1												1
W.M. Brown (Kingshurst) Ltd	15-17 The Parade Birmingham B37 6BA	PE5441NL/A001								1												1
M. Lambe Construction Limited	41 Four Ashes Road Solihull West Midlands B93 8LY	PF0107GR/A001													1							1
TES Environmental.Co.Uk	Unit 6 Walmer Way Solihull B37 7UX	PF0108VC/A001		1	1																	2
Waseem Ulfat	168 Trinity Road Birmingham B6 6HZ	PF0405GY/A001								1												1
N.R.S. Waste Management Services Ltd	1 Hampton Lane Warwickshre CV7 7JR	QF0508VY/A001													1							1
Pure Health Medical Ltd	3 Grove Road Solihull West Midlands B91 2AG	QF0905EX/A001								1												1
Heart of England NHS Foundation Trust	Solihull Hospital Lode Lane Solihull West Midlands B91 2JL	SF0708CK/A001						1														1
Tanworth Lane Surgery	198 Tanworth Lane Solihull West Midlands B90 4DD	TF0808TM/A001								1												1

Organisation Name	Organisation Address	Exemption reference	D7	S1	S2	T10	T12	T17	T23	T28	T4	T5	T6	T9	U1	U11	U12	U13	U3	U4	U8	Grand Total
Late Night Yew Tree Limited	49 Yew Tree Lane Solihull West Midlands B91 2NX	UE5243ZD/A001								1												1
S K Healthcare Ltd	Unit 13 Radway Industrial Estate Radway Road Solihull Solihull B90 4NR	WF0805NR/A001								1												1
Ryans Cleaning Event Specialists Ltd	Unit 18 Bickenhill Lane Birmingham Solihull B37 7HE	YF0608HW/A001			1						1											2
Service Electrical Wholesale Ltd	Elmdon Trading Estate Unit 39 Bickenhill Lane Birmingham B37 7HE	ZF0707ZC/A001			1																	1
Mohammed Ihsan	130, Haslucks Green Road, Shirley, Solihull, B90 2EH	WEX002328								1												1
Sure Health Ltd	130, Haslucks Green Road, Shirley, Solihull, B90 2EH	WEX002871								1												1
Stephen Cowles	Ulleries Road, Solihull, B92 8ED	WEX003338		1	1					1												3
W.M.Brown(Kingshurst)Ltd	351, Warwick Road, Solihull, B91 1BQ	WEX007698								1												1
Arden Wood Shavings Ltd	Arden Wood Shavings Limited, Kenilworth Road, Hampton-In-Arden, Solihull, B92 0LP	WEX013478			1						1		1									3
Wb Timber Innovations	Unit 18, Monkspath Business Park, Highlands Road, Shirley, Solihull, B90 4NY	WEX017764																		1		1
Iac Group Ltd	Unit 26b, Elmdon Trading Estate, Bickenhill Lane, Birmingham, B37 7HE	WEX019985			1						1											2
Dr Simon Watts	3, Avenue Road, Dorridge, Solihull, B93 8LH	WEX029242								1												1
Thomas James Leonard Dalton	114, Main Street, Dickens Heath, Shirley, Solihull, B90 1UA	WEX029314			1					1												2
Patrick Doherty	Baroda House Farm, Tanworth Lane, Shirley, Solihull, B90 4DU	WEX030818	1																			1
Classic Design & Build (Uk) Limited	Radway Industrial Estate, Unit 1, Radway Road, Shirley, Solihull, B90 4NR	WEX041017																		1		1
Braich Ltd	156-158, Green Lane, Castle Bromwich, Birmingham, B36 0BU	WEX062943								1												1
Quadron Services Ltd	No reported	WEX076784														1						1
Norbert Horvath	10, Kew Close, Birmingham, B37 6NY	WEX078307		1	1																	2
War	No reported	WEX079694	1																			1
TES Environmental Services Ltd	Griffin Business Park, Unit 6, Walmer Way, Birmingham, B37 7UX	WEX080871		1																		1
Jhoots Healthcare Ltd	237, Stratford Road, Shirley, Solihull, B90 3AH	WEX082774								1												1
Leadec Limited	Lode Lane, Solihull, B92 8NW	WEX083298		1	1	1	1				1	1		1	1							8
Wmbrown (Kingshurst)Ltd	15-17, The Parade, Kingshurst, Birmingham, B37 6BA	WEX085167								1												1
Jet Plant Hire Ltd	Trevallion Stud, Wootton Green Lane, Balsall Common, Coventry, CV7 7BQ	WEX088916													1							1
A & A Recycling Services Ltd	No reported	WEX089885			1								1		1						1	4

Organisation Name	Organisation Address	Exemption reference	D7	S1	S2	T10	T12	T17	T23	T28	T4	T5	T6	T9	U1	U11	U12	U13	U3	U4	U8	Grand Total
Bonds Worldwide Express Limited	5-6, West Midlands Freeport, Airport Cargo, Birmingham Airport, Birmingham, B26 3QD	WEX092273			1																	1
G J Healthcare Limited	28, Greening Drive, Birmingham, B15 2XA	WEX094165								1												1
Mej Hingley & Co Ltd	560, Green Lane, Small Heath, Birmingham, B9 5QG	WEX094249								1												1
Adam Myers Ltd	84, Raddlebarn Road, Birmingham, B29 6HH	WEX095047								1												1
Adam Myers Ltd	60, Station Road, Marston Green, Birmingham, B37 7BA	WEX095050								1												1
West Midlands Golf Club Limited	West Midlands Golf Club, Marsh House Farm Lane, Barston, Solihull, B92 0LB	WEX096767													1							1
Solihull Hospital	Lode Lane, Solihull, B91 2JL	WEX096906															1					1
NRS Waste Care Ltd	No reported	WEX102306													1							1
Mr John	Honiley Road, Kenilworth, CV8 1NQ	WEX103079													1							1
Ashlane Construction Ltd	84, School Road, Hockley Heath, Solihull, B94 6RB	WEX104383													1							1
Castle Bromwich Hall And Gardens Trust	Chester Road, Castle Bromwich, Birmingham, B36 9BT	WEX104499							1				1				1	1	1		1	6
Rodericks Dental Limited	266, Bradford Road, Birmingham, B36 9AB	WEX106498								1												1
Heart of England NHS Foundation Trust	Lode Lane, Solihull, B91 2JL	WEX107901															1					1
Heart of England Trust	Lode Lane, Solihull, B91 2JL	WEX109766											1									1
WM 101 Ltd	47, Upper Jubilee Walk, Touchwood, Solihull, B91 3QW	WEX110741			1																	1
Jet Plant Hire	Heronfield Cottages, Warwick Road, Knowle, Solihull, B93 0EB	WEX111247													1							1
John Lewis Plc	Solar Park, Unit 500, Highlands Road, Shirley, Solihull, B90 4SH	WEX112316		1	1																	2
Shred-It Limited	Unit 7, Monkspath Business Park, Highlands Road, Shirley, Solihull, B90 4NY	WEX112517			1						1											2
Bloor Homes Ltd	Blythe Valley Park, Solihull, B94 6RX	WEX113567													1							1
John Lewis Partnership	4, Cranbrook Way, Shirley, Solihull, B90 4GT	WEX113612		1	1	1	1				1											5
Laing O'rourke	Park Hall Cottage, Water Orton Road, Birmingham, B36 9HF	WEX115816															1					1
Dr John Davenport	3, Avenue Road, Dorridge, Solihull, B93 8LH	WEX116511								1												1
Marie Curie Hospice, West Midlands	Marsh Lane, Solihull, B91 2PQ	WEX122068		1	1																	2
		Grand Total	**2**	**11**	**22**	**2**	**2**	**1**	**1**	**26**	**7**	**3**	**4**	**1**	**16**	**1**	**4**	**1**	**1**	**2**	**3**	**110**

Appendix 4 Assessment of T4 Exemptions

Exemption Reference	Assessment of activity
EPR/JF0307KY/A001	Arden Landfill Ltd predominantly processes CD&E waste to produce recyclable aggregate materials. Therefore, it is considered in the capacity for CD&E wastes.
EPR/YF0608HW/A001	Ryans Cleaning Event Specialists Ltd supply venue, event & corporate commercial cleaning services. As part of their services they offer tailored recycling & waste management solutions. It is assumed that the T4 exemption utilised to sort and bulk recyclable materials collected at event prior to onward transfer to other facilities. Therefore, it is not considered to contribute to either the C&I waste arisings or capacity, with materials captured further down the waste management chain. http://ryanscleaning.co.uk/
WEX013478	Arden Wood Shavings Ltd manufacture and supply woodshavings and sawdust for animal bedding and a range of industrial uses such as pillage absorbents, fibre board, filtration systems, food smoking, packaging and paint filler. Arden is accredited by the Environment Agency as a re-processor of wood residues. The Arden facility in Solihull is permitted and it is assumed that the majority of the wood received is received under the permit. Therefore, it is not considered to contribute to either the C&I waste arisings or capacity. http://www.ardenwoodshavings.co.uk/
WEX019985	IAC Group Ltd are a leading automotive interiors supplier covering instrument panels and consoles, door systems etc. It is assumed that the T4 exemption utilised to sort and bulk production materials prior to onward transfer to other facilities. Therefore, it is not considered to contribute to either the C&I waste arisings or capacity, with materials captured further down the waste management chain.
WEX083298	Leadec Limited are industrial services specialist covering installation, automation, production maintenance and facility management, primarily in the automotive industry. It is assumed that the T4 exemption utilised to sort and bulk generated from their facilities management services. Therefore, it is not considered to contribute to either the C&I waste arisings or capacity, with materials captured further down the waste management chain. https://www.leadec-services.com/en/page/we-do-at-leadec/
WEX112517	Shred-it Limited specialises in providing a document, hard drive and media destruction services. It is assumed that the T4 exemption utilised for the bulking and baling before transport to a paper mill for recycling. Therefore, it is not considered to contribute to either the C&I waste arisings or capacity, with materials captured further down the waste management chain. https://www.shredit.co.uk/en-gb/home
WEX113612	John Lewis Partnership have a T4 exemption at their warehouse in Shirley. It is assumed that the T4 exemption utilised to sort and bulk materials such as packaging returned from their stores prior to onward transfer to other facilities. Therefore, it is not considered to contribute to either the C&I waste arisings or capacity, with materials captured further down the waste management chain.

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