Cheshire West and Chester

Waste Needs Assessment Update 2016

December 2016

Anthesis

Disclaimer

This report has been produced by Anthesis Consulting Group PLC within the terms of the contract with the client and taking account of the resources devoted to it by agreement with the client. Anthesis disclaims any responsibility to the client and others in respect of any matters outside the scope of the above. Anthesis has taken due care in the preparation of this report to ensure that all facts and analysis presented are as accurate as possible, within the scope of the project. However, no guarantee is provided in respect of the information presented and Anthesis is not responsible for decisions or actions taken on the basis of the content of this report.

Waste Needs Assessment Report Update 2016

Cheshire West and Chester Council

Prepared for:

The Planning Policy Team
Cheshire West and Chester Council
Nicholas House
Nicholas Street
Chester
CH1 2NP

Email:
rosie.morgan@cheshirewestandchester.gov.uk
Website: cheshirewestandchester.gov.uk
Tel: 01244 973884

Report written by:
Hannah Dick, Deborah Sacks, Peter Scholes

Analysts:
Hannah Dick, Polly Stebbings

Quality Assurance
Analysis:
Peter Scholes, 3rd October 2016
Report approved by:
Peter Scholes, 7th October 2016, 17th November

Prepared by:

Anthesis UK Ltd.,
Unit 12.2.1, The Leathermarket,
11-13 Weston Street,
London, SE1 3ER

E-mail: mail@anthesisgroup.com
Website: www.anthesisgroup.com

Tel: 01865 250818
Fax: 01865 794586

Company Registration 08425819

Anthesis

Anthesis Consulting Group

Anthesis is a global yet specialist consultancy which believes that commercial success and sustainability go hand in hand. We offer financially driven sustainability strategy, underpinned by technical experience and delivered by innovative collaborative teams across the world.

The company combines the reach of big consultancies with the deep expertise of the boutiques. We take our name from the Greek word “anthesis”, the stage of a plant’s lifecycle when it is most productive. Sustainability is now at that exciting stage of flourishing; it has grown up and grown into the mainstream.

Anthesis has clients across industry sectors, from corporate multinationals like Coca-Cola, Tesco, ArjoWiggins and Reckitt Benckiser to world class events like London 2012, 34th America’s Cup and Sochi 2014.

The company brings together expertise from countries around the world and has offices in the US, the UK, Germany, China and the Philippines. It has a track record of pioneering new approaches to sustainability and has won numerous awards.

Abbreviations

Acronym	Definition
ABP	Animal By-Products
AD	Anaerobic Digestion
C&I	Commercial and Industrial Waste
CD&E	Construction, Demolition and Excavation Waste
CWaC	Cheshire West and Chester Council
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EIA	Environmental Impact Assessment
EWC	European Waste Code
HWDI	Hazardous Waste Data Interrogator
ILW	Intermediate Level Radioactive Waste
IVC	In-Vessel Composting
K tpa	Thousands of tonnes per annum
LACW	Local Authority Collected Waste
LDF	Local Development Framework
LLW	Low Level Radioactive Waste
MBT	Mechanical Biological Treatment
MHT	Mechanical Heat Treatment
MRF	Materials Recycling Facility
MSW	Municipal Solid Waste
SOC	Substance Oriented Classification
tpa	Tonnes Per Annum
VLLW	Very Low Level Radioactive Waste
WDI	Waste Data Interrogator
WEEE	Waste Electrical and Electronic Equipment
WPA	Waste Planning Authority

Glossary

Term	Definition
Agricultural Waste	Waste from a farm or market garden, consisting of matter such as manure, slurry and crop residues.
Anaerobic Digestion	Organic matter broken down by bacteria in the absence of air, producing a gas (methane) and solid (digestate). The by-products can be useful, for example biogas can be used in a furnace, gas engine, turbine or gas-powered vehicles, and digestates can be re-used on farms as a fertiliser
Commercial Waste	Controlled waste arising from trade premises.
Construction, Demolition & Excavation Waste	Controlled waste arising from the construction, repair, maintenance and demolition of buildings and structures.
DEFRA – Department for Environment, Food and Rural Affairs	Defra is a UK Government department. Its mission is to enable everyone to live within our environmental means. This is most clearly exemplified by the need to tackle climate change internationally, through domestic action to reduce greenhouse gas emissions, and to secure a healthy and diverse natural environment.
Energy from Waste	The conversion of waste into a useable form of energy, often heat or electricity.
Environment Agency	A government body that aims to prevent or minimise the effects of pollution on the environment and issues permits to monitor and control activities that handle or produce waste. It also provides up-to-date information on waste management matters and deals with other matters such as water issues including flood protection advice.
Hazardous Landfill	Sites where hazardous waste is landfilled. This can be a dedicated site or a single cell within a non-hazardous landfill, which has been specifically designed and designated for depositing hazardous waste.
Hazardous Treatment	Sites where hazardous waste is treated so that it can be landfilled.
Hazardous Waste	Waste that poses substantial or potential threats to public health or the environment (when improperly treated, stored, transported or disposed). This can be due to the quantity, concentration, or characteristics of the waste.
Household Waste	Refuse from household collection rounds, waste from street sweepings, public litter bins, bulky items collected from households and wastes which householders themselves take to household waste recovery centres and "bring sites".
Incineration	The controlled burning of waste. Energy may also be recovered in the form of heat (see Energy from Waste).
Industrial Waste	Waste from a factory or industrial process.
Inert waste	Waste not undergoing significant physical, chemical or biological changes following disposal, as it does not adversely affect other matter that it may come into contact with, and does not endanger surface or groundwater.
Inert Landfill	A landfill site that is licensed to accept inert waste for disposal.
In-Vessel Composting	A system that ensures composting takes place in an enclosed but aerobic environment, with accurate temperature control and monitoring. There are many different systems, but they can be broadly categorised into six types: containers, silos, agitated bays, tunnels, rotating drums and enclosed halls.

Term	Definition
ILW - Intermediate level radioactive waste	Radioactive wastes exceeding the upper activity boundaries for LLW but which do not need heat to be taken into account in the design of storage or disposal facilities.
Local Authority Collected Waste (LACW)	Household waste and any other waste collected by a waste collection authority such as municipal parks and gardens waste, beach cleansing waste and waste resulting from the clearance of fly-tipped materials.
Landfill	The permanent disposal of waste into the ground, by the filling of man-made voids or similar features.
Landfill Directive	European Union requirements on landfill to ensure high standards for disposal and to stimulate waste minimisation.
LLW – low level radioactive waste	Lightly contaminated miscellaneous scrap, including metals, soil, building rubble, paper towels, clothing and laboratory equipment.
Materials Recycling Facility (MRF)	A facility for sorting and packing recyclable waste.
Mechanical Biological Treatment (MBT)	The treatment of residual waste using a combination of mechanical separation and biological treatment.
Non Hazardous Landfill	A landfill which is licensed to accept non-inert (biodegradable) wastes e.g. municipal and commercial and industrial waste and other non-hazardous wastes (including inert) that meet the relevant waste acceptance criteria.
Non Inert	Waste that is potentially biodegradable or may undergo significant physical, chemical or biological change once landfilled.
Organic Waste	Biodegradable waste from gardening and landscaping activities, as well as food preparation and catering activities. This can be composed of garden or park waste, such as grass or flower cuttings and hedge trimmings, as well as domestic and commercial food waste.
Open Windrow Composting	A managed biological process in which biodegradable waste (such as green waste and kitchen waste) is broken down in an open air environment (aerobic conditions) by naturally occurring micro-organisms to produce a stabilised residue.
Proximity Principle	Requires that waste should be managed as near as possible to its place of production, reducing travel impacts.
Recovery	Value can be recovered from waste by recovering materials through recycling, composting or recovery of energy.
Recycled Aggregates	Aggregates produced from recycled construction waste such as crushed concrete and planings from tarmac roads.
Recyclate	Raw material sent to, and processed in, a waste recycling plant or materials recovery facility (e.g. plastics, metals, glass, paper/card).
Recycling	The reprocessing of waste either into the same product or a different one.
Residual Waste	Waste remaining after materials for re-use, recycling and composting have been removed.
Waste Electrical and Electronic Equipment (WEEE)	Sites for the depollution, disassembly, shredding, recovery or preparation for disposal, and any other operation carried out for the recovery or disposal of Waste Electrical and Electronic Equipment.

Term	Definition
Waste Hierarchy	A framework for securing a sustainable approach to waste management. Waste should be minimised wherever possible. If waste cannot be avoided, then it should be re-used; after this it should be prepared for recycling, value recovered by recycling or composting or waste to energy; and finally disposal.
Waste Local Plan	A statutory development plan prepared (or saved) by the waste planning authority, under transitional arrangements, setting out polices in relation to waste management and related developments.
Waste Minimisation / Reduction	The most desirable way of managing waste, by avoiding the production of waste in the first place.
Waste Planning Authority (WPA)	The local authority responsible for waste development planning and control. They are unitary authorities, including London Boroughs, National Park Authorities, and county councils in two-tier areas.
Waste Regulation Authority	The Environment Agency has responsibility for authorising waste management licenses for disposal facilities, and for monitoring sites.
Waste Transfer Station	A site to which waste is delivered for sorting or baling prior to transfer to another place for recycling, treatment or disposal.

Sources: Planning Portal, SEPA, Anthesis

Executive summary

ES1 Introduction

ES1-1 Cheshire West and Chester Council (CWaC) is a waste planning authority (WPA) and as such, has a statutory duty to prepare a waste local plan in line with Article 28 of the Waste Framework Directive (2008). This is being fulfilled through the inclusion of waste policies in the Local Plan.

ES1-2 The Local Plan relating to waste should identify sufficient opportunities to meet the identified needs of an area for the management of waste, aiming to drive waste management up the waste hierarchy (see Figure 1). It should ensure that suitable sites and areas for the provision of waste management facilities are identified in appropriate locations.

ES1-3 Cheshire West and Chester became a Unitary Authority in 2009 and at this time took over the Waste Planning Authority functions from the former Cheshire County Council. The Cheshire Replacement Waste Local Plan (CRWLP) adopted by Cheshire County Council in 12th July 2007, represented the main policy document for waste at that time, containing the conclusions from a Waste Needs Assessment from 2003.

ES1-4 This has been superseded as the main policy document for waste by policy ENV8 in the "Cheshire West and Chester Local Plan (Part One) – Strategic Policies" (December 2013), with a small number of retained policies in the CRWLP. The Local Plan (Part Two) is currently being prepared and this will provide more detailed policies and, where necessary, specific site allocations.

ES1-5 The WPA require updating of the evidence base to check that the assumptions underpinning the Local Plan (Part One) policy ENV8 are still valid, and to inform the preparation of policies in the emerging Local Plan (Part Two) – Land Allocations and Detailed Policies. The updated evidence is based upon new data available, on both arisings and waste management capacities, and on any changes in population, economy, waste management practises and infrastructure, to ensure a clear and robust evidence base is presented. This study therefore considers:

- Existing waste arisings;
- Future waste projections;
- Waste movements into and out of the authority area;
- Available and planned waste management capacity; and
- Identification of any waste management capacity gaps within CWaC to deal with the forecast amounts and types of waste.

ES1-6 To ensure continuity, this study applies the same waste arisings forecasting methodologies and preferred growth scenario (updated to reflect waste management services performance and updated population and economic growth forecasts) as applied in the original Urban Mines study[1] (2011) which provided the basis for the Local Plan Part One.

ES2 Waste arisings estimates, destinations and forecasts

ES2-1 This study considers different types of waste generated within the borough. A variety of data sources have been used to ascertain waste arisings and their current destinations for treatment and/or disposal.

[1] "Cheshire East and Cheshire West and Chester Councils – Waste Needs Assessment Report", Urban Mines, 2011; Urban Mines is now part of the Anthesis group.

These include that provided by the CWaC Waste Management team and from publically available datasets published by Defra and the Environment Agency.

Local Authority Collected Waste (LACW)

ES2-2 CWaC recycled 57.67% of LACW in 2015/16. In 2015/16, 173kt was generated of which 69kt was residual waste, which was sent to Ferrybridge Multi-Fuel Energy from Waste (EfW) in West Yorkshire, and a smaller proportion to Viridor's EfW facility in Runcorn. Food waste comprised 8kt and was sent to Staffordshire and Northamptonshire, and garden waste was 37kt, the majority of which was treated within the WPA with a small proportion composted in Stoke-on-Trent. Dry recyclate materials are collected already segregated by the authority and therefore require minimal additional separation. Therefore a Materials Recovery Facility (MRF) is not required and these materials are sent to directly to reprocessors around England and Wales.

Commercial and Industrial waste (C&I)

ES2-3 The CWaC 2014 C&I waste arisings were estimated by extrapolating the grossed survey results of the North West commercial and industrial waste arisings survey (2009) using 2014 data on the business structure and population within CWaC (Inter-Departmental Business Register (IDBR) maintained by the Office of National Statistics). There is no more recent survey data available which can be used for this exercise. Using this methodology it was estimated that 457.3kt of C&I waste were generated in 2014.

ES2-4 Application of the data from the survey also shows that the majority of the waste produced by commercial and industrial businesses was sent for recycling or reuse, with an additional 3% sent to organic treatment. This means, taking changes in the CWaC business economy since 2009 into account, there was an overall recycling/composting rate of around 66%. This does not take into account any changes in local waste management practises since the original survey in 2009. Forecasts were generated using the same assumptions as applied in the original Urban Mines study, with updated economic growth factors.

ES2-5 Waste movements data using site returns information from permitted waste facilities from the Environment Agency for 2014 for household, industrial and commercial wastes shows that:

- 36% of the waste (by weight) was processed or disposed of in CWaC.
- 20% of the waste was handled within Cheshire East.
- Another 31% of the waste was handled within the North West region, meaning that in total 87% of the waste was handled within the North West region with 13% travelling to facilities in Wales or the West Midlands.

Construction, demolition and excavation (CD&E) waste

ES2-6 The Environment Agency's (EA) Waste Data Integrator (WDI) reports around 335kt[2] of CD&E waste (i.e. Chapter 17 in the European Waste Catalogue) was produced in CWaC in 2014 and subsequently handled by a licensed waste facility.

ES2-7 Of CD&E managed through permitted facilities, data from the WDI show 9% went to landfill and 35% was sent to some kind of treatment. An additional 14% was reused or recycled and 9% was sent to composting and/or land recovery. The fate of the remaining 33% was listed as "unknown".

[2] This includes 26.5kt which was directly attributed in the WDI to CWaC and a further 308kt which were reported as originating from 'Cheshire' i.e. was not coded to either CWaC or Cheshire East. The employment figures in the construction sector have been used to break down this non-codeable element into estimates for CWaC or Cheshire East, on which the CWaC figure reported is based.

ES2-8 The main destination of this CD&E waste i.e. 40%, was handled in Cheshire East, with the majority being transferred through a waste transfer station and/or treated. In addition, 15% of the waste was treated within CWaC itself. In total over 99% of the CD&E waste was handled within the North West region.

Low level radioactive waste (LLW)

ES2-9 The EA's Pollution Inventory Dataset reports production of LLW and was used to estimate arisings. This identifies one site which produced approximately 6 megabecquerels[3] (at most 0.5Kg dry weight assuming at the limit of LLW activity) of material disposed of through 'controlled waters' and 'air' and therefore does not have an impact on any of CWaC's waste management infrastructure or that of other WPAs where LLW is managed.

Agricultural waste

ES2-10 It was estimated that 608kt of agricultural waste was generated in 2014. However, the vast majority of this waste was used for land recovery and treatment and therefore not impacting upon waste management capacities in the CWaC WPA area.

Hazardous waste

ES2-11 The EA's WDI includes hazardous waste arisings from both municipal and commercial and industrial sources, therefore this was used to estimate hazardous waste arisings. This identified approx. 56kt were generated in CWaC in 2014.

ES2-12 Movements data for 2014 shows that approximately 9% of the hazardous waste generated within CWaC was treated with the WPA. The remaining arisings were transported to other WPAs to specialist facilities.

Sewage sludge

ES2-13 United Utilities and Dwr Cymru Welsh Water (DCWW) are the two water companies operational in CWaC and therefore responsible for wastewater and sewage sludge treatment. United Utilities are the larger company and responsible for a greater proportion of the wastewater than DCWW. Both companies were asked to provide information in relation to quantities treated, any future projections and infrastructure plans, however no response was received from United Utilities.

ES2-14 DCWW's Sludge Treatment Centre caters for the catchment of Chester, which equates to a population of 130,000. In 2014, 2,741 tonnes of dry solids (tDS) were produced and treated by DCWW. The forecasted average throughput at their facility is estimated to be 2,788 tDS in 2019.

ES2-15 In order to improve quality of processes and maximise energy production, DCWW are considering modifying Chester's Sludge Treatment Centre from a conventional digestion facility to raw cake export facility. Potentially, this cake would be exported off-site for treatment at another advanced treatment facility. The peak capacity of this proposal would be 2,928 tDS/year.

ES3 Waste arisings forecasts

ES3-1 Scenarios consistent to those applied in the original Urban Mines study, were developed for each of LACW, C&I, CD&E, agricultural and hazardous waste streams, and the table below shows these projections. These take account of employment and population projections. The scenarios used are explained in more detail in the body of this report.

[3] A megabecquerel (MBq) is a decimal multiple of the SI derived unit of radiation activity. The Bq is defined as the activity of a quantity of radioactive material in which one nucleus decays per second.

Waste type	2015	2020	2025	2030
Local authority collected	173,000	177,000	182,000	187,000
Commercial & Industrial	452,000	475,000	473,000	465,000
Construction, Demolition & Excavation	335,000	350,000	354,000	358,000
Total	**960,000**	**1,002,000**	**1,009,000**	**1,010,000**
Agricultural	568,000	568,000	527,000	487,000
Hazardous*	55,600	59,200	59,500	60,600
Low level radioactive	0	0	0	0
Wastewater	No data			

Source: Anthesis. * hazardous waste is not included in the total as this data is included within the C&I and CD&E totals.

ES3-2 The table below shows the total waste streams (i.e. residual, dry recycling and organics) from both LACW and C&I sources, to give an indication of the likely scale of treatment capacity required for these types of wastes arising within CWaC.

Waste type	2015	2020	2025	2030
Residual waste	194,000	159,000	160,000	160,000
Dry Recycling	343,000	402,000	403,000	400,000
Organics	59,000	61,000	61,000	62,000
Unknown waste type	29,000	30,000	31,000	31,000
Total	**625,000**	**652,000**	**655,000**	**653,000**

Source: Anthesis

ES4 Waste management capacity

ES4-1 Using details of permitted waste management facilities, a list of operating and planned waste management facilities in CWaC has been developed. The expected future commencement date of planned facilities and the expected closure of existing facilities have been used to generate capacity estimates per waste management type from now to 2030. Comparison of these capacity estimates to forecast arisings has identified gaps in the local waste management provision.

Facility Type	2015	2020	2025	2030
Biomass	0	170,000	170,000	170,000
Hazardous incinerator	100,000	100,000	100,000	100,000
Hazardous landfill	100,000	100,000	100,000	100,000
Hazardous transfer	50,000	50,000	50,000	50,000
HWRC/Non-hazardous transfer	737,099	726,500	726,500	726,500
In-Vessel Composting	0	40,000	40,000	40,000
MBT	0	100,000	100,000	100,000
MBT & anaerobic digestion	0	144,000	144,000	144,000
MBT & pyrolysis	0	200,000	200,000	200,000
MRF	532,999	592,999	592,999	592,999
Non-hazardous EfW	0	600,000	600,000	600,000
non-hazardous landfill	250,000	550,000	300,000	300,000
Open Air Windrow composting	45,871	45,871	34,936	34,936
RDF EfW	0	350,000	350,000	350,000
Specialist treatment	0	80,000	80,000	80,000

Facility Type	2015	2020	2025	2030
Total	**1,815,969**	**3,849,370**	**3,588,435**	**3,588,435**

ES5 Capacity gap analysis

Organic waste treatment capacity

ES5-1 A number of facilities to process organic wastes have been identified within the CWaC WPA area. There is AD capacity with planning permission, however this capacity is solely to treat agricultural waste and therefore not available for externally generated wastes. These sites have therefore been excluded from the capacity analysis.

Therefore a comparison of arisings requirements with the currently available waste management capacity shows that there is potentially insufficient capacity for the management of organic wastes with maximum arisings (including CD&E organic wastes) of approximately 90k tpa and capacity of potentially only 46k tpa (gap 44ktpa), although this capacity gap declines to 6k tpa in 2020, up to 18ktpa by 2030.

Waste type	2015	2020	2025	2030
LACW & C&I organic arisings	59,000	61,000	61,000	62,000
CD&E organic arisings	31,000	31,000	31,000	31,000
Total organic arisings	90,000	92,000	92,000	93,000
Total organic capacity	45,871	85,871	74,936	74,936
Capacity gap (all types)	**44,129**	**6,129**	**17,064**	**18,064**
Capacity gap (LACW & C&I only)	**13,129**	**-24,871**	**-13,936**	**-12,936**

(negative figures indicate a capacity surplus)

ES5-2 The comparison of arisings to capacity suggests that there is potentially insufficient organic recycling capacity in CWaC to deal with local arisings to 2030. If facilities located in other Waste Planning Authority areas turn out not to be available, then sites should be sought for the development of new capacity within CWaC.

ES5-3 Additional capacity for the treatment of organic waste is required of 18k tpa by 2030, although if only LACW and C&I arisings are considered, there is a 13ktpa surplus in capacity by 2030. However, it should also be noted that according to the Environment Agency there are currently 45 T23 aerobic composting exempt sites in CWaC (at up to 400tpa per site = 18,000tpa) and 4 T25 anaerobic digestion exempt sites (at max. 1,000tpa per site = 4,000tpa) and significant permitted capacity in WDAs proximate to CWaC[4], suggesting that any capacity shortfall is likely to be absorbed by the local and regional market.

Recycling capacity

ES5-4 Assessing the capacity requirements for recycling waste can be problematic as in general much of the recyclate segregated by businesses for recycling is transported directly to the recycler without passing through a transfer station or other licensed waste management facility. This means that MRF capacity is not necessarily required in order to increase the quantity of materials that is recycled. CWaC operate a multi-

[4] Current LACW organic wastes sent to ReFood UK Limited (Widnes), Lower Reule Farm (Stafford) and Biogen (Denbigshire, Wales).

stream, kerbside sort collection system, where the collection crew separates different materials into different parts of the collection vehicle, meaning the requirement for further sorting is minimal.

ES5-5 Current MRF permitted capacity is 533k tpa, however, 125k tpa of this is to separate recyclates from residual waste, rather than dry recycling streams. Nevertheless, the remaining 408k tpa is sufficient to sort the estimated 343k tpa which is anticipated to arise, and it is understood that not all of the dry recycling arising actually requires sorting capacity. By 2030, capacity is forecast to increase to 468ktpa with arisings of 400ktpa. There appears to be more than enough capacity to deal with dry recycling waste generated within CWaC, with a capacity surplus of between 65ktpa (2015) and 68ktpa (2030).

Residual waste management capacity

ES5-6 On the whole, there is more than sufficient capacity for residual waste treatment in CWaC. While many of the facilities included in this capacity assessment are not yet operational, there are clearly sufficient sites with planning permission to manage the forecast waste arisings over the Plan Period.

Capacity type	2015	2020	2025	2030
MBT	0	100,000	100,000	100,000
MBT & anaerobic digestion	0	144,000	144,000	144,000
MBT & pyrolysis	0	200,000	200,000	200,000
Non-haz EfW (RDF input)	0	350,000	350,000	350,000
Non-haz EfW	0	600,000	600,000	600,000
non-haz landfill	250,000	550,000	300,000	300,000
Total Residual Waste Capacity	250,000	1,944,000	1,694,000	1,694,000
Estimated Residual Waste Arisings	194,000	159,000	160,000	160,000
Capacity Gap (negative figure indicates a capacity surplus)	**-56,000**	**-1,785,000**	**-1,534,000**	**-1,534,000**

ES5-7 However, consideration should be made to the fact that there will be no non-hazardous landfill capacity after 2022, so whilst there is sufficient energy recovery capacity assuming planned facilities are financed and built, not all residual waste can be treated this way, and some landfill will be required. Note there is planning permission for a mineral extraction and restoration by waste disposal at Kinderton Lodge which can potentially fill this gap. In addition, there is significant capacity in non-hazardous landfill sites that lie in close proximity to CWaC.

ES5-8 Recent LACW residual waste collection data does suggest that collected volumes in 2016 could be higher than the volumes forecast. However, with the considerable over capacity of residual waste disposal and treatment locally, and the shipping of CWaC residual LACW for energy recovery in Yorkshire, any increase will not impact on the overall conclusions of this study.

CD&E wastes management

ES5-9 In CWaC, approximately half of the recorded CD&E which is disposed to landfill, is disposed of at landfill sites within the authority boundary. Some of this material will be required as cover for non-hazardous landfill sites or for restoration purposes. Sites for the treatment of inert wastes are often based at quarries or landfill sites and for this reason will ultimately be time-limited due to the temporary nature of quarries and landfill sites.

ES5-10 Because the data on this waste stream is poor, the approach from organisations such as WRAP (the Government's Waste and Resources Action Programme) is to look at ways of reducing waste arisings from this source. Qualitative approaches to reducing waste generated from construction activities have therefore

been developed which significantly reduce the amount of waste arising and provide solutions to the management of this waste stream. The use of waste management plans and on-site reuse of construction wastes, should therefore be encouraged for new construction projects seeking planning permission.

Hazardous waste

ES5-11 It is anticipated that between 55k and 60k tonnes of hazardous wastes will be generated annually in CWaC. There are two existing sites, one incinerator and the other a landfill, both of which can accept up to 100,000 tonnes per year. These are expected to remain operational throughout the period until 2030, and therefore provide enough capacity for the waste generated by CWaC.

Radioactive waste

ES5-12 Most of this material is Low Level Waste or Very Low Level Waste and can therefore be managed at non-hazardous waste management sites unless there is a specific prohibition against doing so. The quantities of radioactive waste are small and not sufficient to justify the development of new waste management facilities. Advice from the Planning Inspectorate is that policies on the management of this waste stream are unlikely to be needed unless there is specific interest in the development of facilities from operators in the area.

ES6 Conclusions & Recommendations

ES6-1 CWaC currently has sufficient operational (or likely to become operational) capacity to treat most of the different types of wastes within the WPA. However, this assumes that those facilities with planning consent are financed and built.

ES6-2 The approach in the Local Plan (Part One) of safeguarding sites at Ince Park, Lostock and Kinderton is still appropriate as it provides for adequate sites to meet anticipated needs to 2030. Ince Park has planning permission for a range of waste uses as a 'resource recovery park'. The site is now starting to come forward and has the scope to meet a range of waste uses – to meet future needs/demands and respond to changing technology. A summary of planning permissions for the Ince Park site is attached as Appendix 5.

Table of contents

Table of tables

1 Introduction

1.1 Background

1.1-1 Cheshire West and Chester (CWaC) is a Unitary Council and a waste planning authority (WPA). As such, it has a statutory duty to prepare a waste local plan in line with Article 28 of the Waste Framework Directive (2008). This is being fulfilled through the inclusion of waste policies in the Local Plan.

1.1-2 The Local Plan relating to waste should identify sufficient opportunities to meet the identified needs of an area for the management of waste, aiming to drive waste management up the waste hierarchy (see Figure 1). It should ensure that suitable sites and areas for the provision of waste management facilities are identified in appropriate locations.

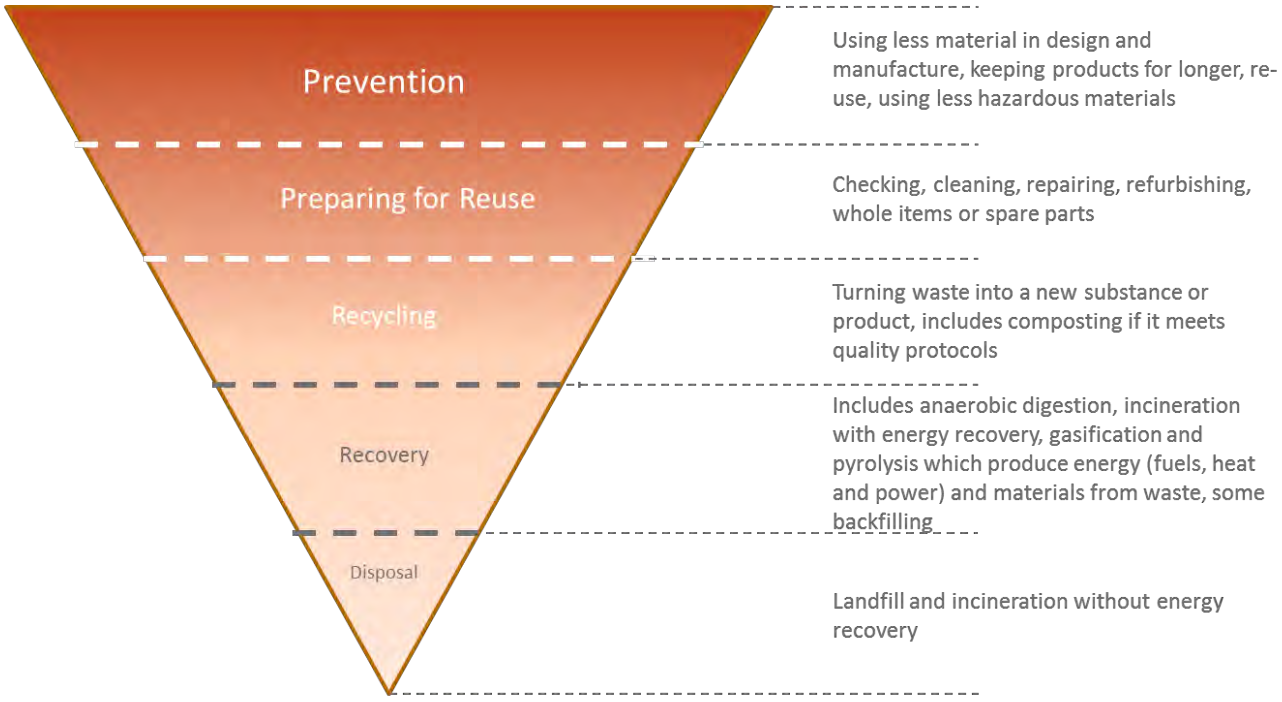


Figure 1: The Waste Hierarchy (Anthesis)

The existing waste policies under which applications for planning permission are currently determined are contained in national policy, policies of the "Cheshire West and Chester Local Plan (Part One) – Strategic Policies" (2015) in particular ENV8 – managing waste and in a small number of retained policies in the Cheshire Replacement Waste Local Plan which was adopted in 2007. Work is currently underway on preparing the Local Plan (Part Two) – Land Allocations and Detailed Policies. Once adopted, this plan will replace the remaining policies in the Cheshire Replacement Waste Local Plan and provide further detailed policy to support strategic policies in the Local Plan (Part One).

1.1-3 However, planning for waste management is a strategic issue and all WPAs must look beyond their own boundaries to understand the flows of waste between authorities and identify sites that are most appropriate for waste management uses. Following the abolition of regional planning in the Localism Act of 2011, strategic planning must be carried out through liaison between planning authorities. This involves each planning authority identifying their own needs for housing, transport and all types of infrastructure, and working in conjunction with other authorities to ensure that this is delivered in a coherent fashion.

1.1-4 This is confirmed by the "National Planning Policy for Waste" (published 16th October, 2014), which also states that in preparing Local Plans, waste planning authorities should:

- "take into account any need for waste management, including for disposal of the residues from treated wastes, arising in more than one waste planning authority area but where only a limited number of facilities would be required;
- work collaboratively in groups with other waste planning authorities, and in two-tier areas with district authorities, through the statutory duty to cooperate, to provide a suitable network of facilities to deliver sustainable waste management;
- consider the extent to which the capacity of existing operational facilities would satisfy any identified need."

1.1-5 And "In preparing their plans, waste planning authorities should plan for the disposal of waste and the recovery of mixed municipal waste in line with the proximity principle, recognising that new facilities will need to serve catchment areas large enough to secure the economic viability of the plant."

1.2 Scope of this work

1.2-1 This study is intended to provide a clear and transparent evidence base to check whether the requirements of policy ENV8 are still valid and to inform development of policies in the Local Plan (Part Two) – Land Allocations and Detailed Policies., and as such needs to be robust and defendable at Examination. The policies in the waste plan should follow directly from the evidence and lead to the most sustainable pattern of waste management facilities for the area. The number and type of sites that need to be identified will depend on this evidence.

1.2-2 ENV8 of the Local Plan (Part One) is based on evidence in the Cheshire Waste Needs Assessment (Urban Mines, 2011) and the Waste Needs Assessment Update (2013). The policy recognizes the need to identify sufficient land to meet predicted waste requirements for the borough, supports the co-location of waste facilities and the integration of new waste facilities into the existing network of waste management sites in the borough and looks to safeguard Ince Park Resource Recovery Park, Ellesmere Port (now known as Protos), the Lostock Works at Northwich and Kinderton Lodge, near Middlewich with planning permission for waste uses against alternative development. The evidence from the Waste Needs Assessment 2010 and 2013 showed that existing operational sites and sites with planning permission together provided sufficient capacity to meet projected needs. The plan therefore does not allocate any additional sites for waste management purposes. The purpose of the study is to check that this approach is still appropriate in light of updated capacity and forecasting information.

1.2-3 The original Waste Needs Assessment study carried out by Urban Mines (now part of Anthesis Group) in 2011 modelled a range of growth scenarios relevant at that time, to test the likely impact upon demand for waste management capacity in Cheshire county and the two unitary council areas individually. The 3 scenarios employed examined the likely impact of the PFI procurement of municipal waste management services which was in process at the time. For instance, Scenario 1 examined an "Optimum" situation with landfill diversion and recycling targets employed assuming the PFI was delivered and targets achieved; Scenario 2 looked at "Worst Case" assuming the PFI abandoned and residual waste continuing to go to landfill; Scenario 3 examined alternative collection options assuming the PFI was abandoned. Scenario 1 was selected as the preferred option for the capacity gap analysis and developing overall conclusions in the original study. This 2016 update provides continuity by using the same modelling methodology as the original study, and uses the assumptions as employed with the original Scenario 1, as this scenario best reflects the actual situation in 2016. These assumptions have been updated to reflect current municipal waste performance in terms of

recycling rate and residual waste landfill diversion rate and current population and economic growth forecastsThe following stages have therefore been undertaken in development of this study.

Existing waste arisings

1.2-4 In developing an evidence base for CWaC, the first key stage is to gain an understanding of how much waste requires management, and where it comes from. Baselines for each of the waste types shown in Table 1: Waste types and data sources have been developed using a variety of data sources of varying quality:

Table 1: Waste types and data sources

Waste stream	Data sources
Municipal/household (MSW) or Local Authority Collected Waste (LACW)	WasteDataFlow & CWaC's waste management team
Commercial & Industrial waste (C&I)	North West C&I Waste Arisings Survey of 2009[5] & Waste Data Interrogator (EA)
Construction, Demolition & Excavation waste (CD&E)	Waste Data Interrogator (EA)
Low level radioactive waste	EA dataset
Agricultural waste	Waste Data Interrogator (EA)
Hazardous waste	Waste Data Interrogator and Hazardous Waste Data Interrogator (EA)
Wastewater	Information sought from water companies

Source: Anthesis

Future waste projections

1.2-5 Forecasting how much waste will be generated in the future is a process that involves estimating future behaviour of individuals and businesses and the markets within which they operate. Baseline waste arisings and forecast arisings to 2030 and projections for interim years are presented. These are calculated based on differing data depending on the waste type e.g. population predictions and employment projections.

Waste movements

1.2-6 This study ascertains current routes and destinations for further management and/or disposal of each of the waste streams using information from the Environment Agency Waste Data Interrogator (2014).

Waste management capacity

1.2-7 The next stage of this study aggregated data on waste management facilities within the CWaC WPA area, both those currently operating and those not operating but with planning permission granted. Using planning and permit data, forecast capacities were produced for each facility and facility type to 2030.

1.2-8 This was supplemented with data from CWAC's Annual Monitoring Report and Planning Portal, the EA's Waste Data Interrogator and information was also sought from the EA with regards to exempt sites operating within the WPA.

[5] Delivered by Urban Mines Ltd, now part of the Anthesis Group

Capacity gap analysis

1.2-9 Finally this study identified the gap between forecast arisings and current and planned capacity in the WPA area. This included identifying how much waste could be managed by existing capacity and how much would need to be treated by new capacity.

2 Policy Context

2.1 Policy context background

2.1-1 Waste management in the UK has been significantly driven by European policy in recent years. The waste management policies in the Local Plan will need to comply with EU and Government policy as follows:

- Revised European Waste Framework Directive 2008;
- EU Review of Waste Policy and Legislation 2014;
- Planning Act 2008;
- Localism Act 2011;
- National Planning Policy Framework (2012);
- Waste Management Plan for England 2013 (and predecessor documents); and
- National Planning Policy for Waste.

2.1-2 In addition, on 2 December 2015, the European Commission adopted a new Circular Economy Package which, according to the Commission, will help European businesses and consumers adopt more sustainable practices. The circular economy aims to reduce waste and protect the environment, and it is hoped that there will be a transition towards a market where resources are fully exploited to make use of all their economic value. The circular economy package set out specific proposals for waste management, which include a common EU target for recycling 65 percent of municipal waste and 75 percent of packaging waste by 2030 and a binding landfill target to reduce landfill to a maximum of 10 percent of all waste by 2030 and a ban on landfilling separately collected waste. This legislation has yet to be adopted in the UK.

2.1-3 The impact of the UK leaving the European Union is yet to be fully understood, but in the medium term it is likely that existing EU policy will remain a key force in UK waste policy and development plans will need to be consistent with it. To this end, many of the articles of the Waste Framework Directive are delivered by planning policy, as stipulated in Planning Practice Guidance, and the waste hierarchy and recycling targets are already enshrined within UK planning policy and waste regulations. It is not clear, however, whether any upcoming EU legislation or currently un-adopted EU legislation in this area, will be adopted in the UK in the future.

2.1-4 There are also a number of National Policy Statements (NPS) that will need to be taken into account such as the NPS on Hazardous Waste.

2.2 Revised European Waste Framework Directive 2008 and Review of Waste Policy

2.2-1 Article 28 of the Waste Framework Directive 2008 sets out the requirement for each Member State to produce a Waste Management Plan. This Plan must set out an analysis of the current waste management situation and sufficient information on the locational criteria for site identification and on the capacity of future disposal or major recovery installations. These locational criteria are contained in the Local Plans or Waste Plans of local authorities in the UK.

2.2-2 As mentioned above, the recently published Review of Waste Policy and Legislation by the EU (as part of the proposed Circular Economy Package) has the potential to introduce a range of higher targets for recycling and the phasing out of landfilling organic and recyclable materials. If adopted in the UK, this Review means that facilities for the management of waste in accordance with these new targets will be required and will need to be planned for as part of the Local Plan. However, due to the uncertainty of adoption at this time, these new targets have not been used for the modelling carried out for this study.

2.3 Localism Act 2011

2.3-1 The Localism Act 2011 gave the responsibility for strategic planning back to local authorities acting individually. However, section 110 of the Localism Act prescribes the "Duty to Co-operate" between local authorities in order to ensure that they work together on strategic issues such as waste planning. The duty is "to engage constructively, actively and on an on-going basis" and must "maximise the effectiveness" of all authorities concerned with plan-making. For matters such as waste planning, it is therefore important that local authorities can show that they have worked together in exchanging information on where waste will be managed.

2.3-2 However, engagement is not an end in itself. The objective is to develop a Local Plan that is deliverable for all parties. In the context of planning for waste management, it is necessary to understand waste flows between local authority areas and to ensure that all local plans take account of these flows. If a facility in one Waste Planning Authority Area can easily manage imports from another WPA Area, then neither Waste Plan is destabilised by such imports. If however, a facility that has historically been used by another WPA Area, which does not have capacity to handle continuing imports, or is closing, then alternative provision must be sought.

2.3-3 In practical terms, this means that CWaC must liaise with other waste planning authorities to identify the impacts that policies in the CWaC Local Plan may have on the strategy of those authorities. A detailed record of communications between planning authorities should be maintained as part of the evidence to be provided at the Examination in Public.

2.4 Regional Context

2.4-1 Regional planning was abolished by the Localism Act 2011. However, the Regional Spatial Strategy for the North West was published in 2008 and a useful evidence base was developed at this time. The North West Waste Network comprises officers from all the Waste Planning Authorities in the North West and continues to meet and exchange information to support joint working.

2.4-2 In particular, a survey of Commercial & Industrial Waste Arisings was commissioned by the North West Regional Technical Advisory Body on Waste in 2007 and by the Environment Agency for the same area in 2010. Together these two studies, delivered by Urban Mines Ltd now part of the Anthesis Group, provide important pieces of evidence on C&I waste arisings in the North West Region, to a level that is not available in other parts of England.

2.4-3 CWaC as a WPA forms part of a wider grouping of authorities and exchanges of waste amongst them must be taken into account when planning for new facilities. This is because new facilities over a certain size will not be economic to develop if sufficient waste is not available to ensure that they are viable. Planning for new facilities and making land available for such facilities will therefore be ineffective.

2.5 Local Context

2.5-1 Cheshire West and Chester became a Unitary Authority in 2009 and at this time took over the Waste Planning Authority functions from the former Cheshire County Council. The Cheshire Replacement Waste Local Plan (CRWLP) adopted by Cheshire County Council in 12th July 2007, represented the main policy document for waste at that time, containing the conclusions from a Waste Needs Assessment from 2003.

2.5-2 This has been superseded as the main policy document for waste by policy ENV8 in the "Cheshire West and Chester Local Plan (Part One) – Strategic Policies" (January 2015), with a small number of retained policies in the CRWLP. The Local Plan (Part Two) is currently being prepared and this will provide more detailed policies and, where necessary, specific site allocations.

2.5-3 The Local Plan (Part 1, Policy ENV 8) specifies that the waste management needs of the borough will be met by:

- managing waste as a resource
- promoting waste minimisation and increasing waste awareness
- delivering sustainable waste management
- providing waste management infrastructure

This will be achieved by (abridged list):

- the identification of sufficient land to meet predicted waste requirements for the borough up to 2030;
- ensuring proposals for waste management are consistent with the principles of national policy and local waste strategies, including net self-sufficiency, allowing for cross boundary flows and managing waste at one of the most appropriate installations;
- supporting the co-location of waste facilities and the integration of new waste facilities into the existing network of waste management sites in the borough;
- safeguarding the following sites with planning permission for waste uses against alternative development:
    - Ince Park Resource Recovery Park, Ellesmere Port (now known as Protos);
    - Lostock Works, Northwich;
    - Kinderton Lodge, near Middlewich.
- only supporting other proposals for sustainable waste management facilities after the sites with planning permission but not yet operational, have either:
    - been brought into operational use;
    - are demonstrated as no longer deliverable; or
    - where the new proposal can be shown to deliver greater resource efficiency for communities and businesses.

2.5-4 CWaC require a review to the Needs Assessment carried out in 2011 to ensure that the evidence base underpinning the Local Plan (Part One) remains up to date, and to inform policies in the emerging Local Plan (Part Two).

3 Waste arisings estimates, destinations and forecasts

3.1 Waste arisings background

3.1-1 The first stage of this study is to review the available data on waste arisings from a variety of sources, and then use this data, along with factors which are likely to influence arisings in the future, to generate arisings estimates per waste type to 2030.

3.2 Introduction to arisings, destinations, and forecasts

3.2-1 The term 'municipal waste' has historically been used in waste policy to describe all waste which is managed by or on behalf of a local authority.

3.2-2 However, the Landfill Directive defines municipal waste as waste from households as well as other waste that, because of its nature or composition, is similar to waste from households. This includes a significant amount of waste that is generated by businesses and which is not collected by local authorities.

3.2-3 For planning purposes, it is important to know how much waste in total requires management. Local authorities have established systems for measuring the quantities of waste that they manage and this is reported to Defra through the WasteDataFlow reporting system which has been established since 2004. Due to this reporting mechanism, robust data are held by local authorities, which they then use to report on WasteDataFlow.

3.2-4 The remainder of waste arisings, whether similar to household waste or more homogeneous, is not measured through a systematic or robust system, but in periodic surveys that have been carried out to understand the quantities arising.

3.2-5 To ensure consistency with the terminology used by National Government, the term 'Local Authority Collected Waste' (LACW) will be used for the waste recorded by CWaC, and the remainder of the non-hazardous waste which is collected from business will be referred to as commercial & industrial (C&I) waste. This terminology originates from Defra's response to the consultation on meeting the EU Landfill Diversion Targets in England in 2010 and ensures that LACW data is consistent with data on LACW in previous work.

3.3 Local Authority Collected Waste (LACW)

What is this waste?

3.3-1 LACW waste consists of waste which comes into the possession of, or is under the control of, the local authority. It can be subdivided into a number of components:

- Household waste (the main component) consists primarily of waste collected directly from households;
- Household waste (with the exception of inert construction waste) which is accepted and collected at household waste recycling centres/civic amenity sites;
- Other household waste (smaller components) such as litter and street cleaning waste; and
- Non-household waste. The main components of municipal waste classified as non-household include commercial waste collected by local authorities (commonly termed "trade waste") and inert construction materials accepted at household waste recycling centres.

3.3-2 Local authorities are required to make detailed returns to Defra of the quantity of waste arisings collected from municipal sources and how the materials are subsequently managed. The accuracy of this data is therefore high.

How much is produced?

3.3-3 CWaC collects waste from its residents using:

- Grey box for plastics and cans;
- Green box for paper, card, glass, textiles and shoes, batteries, small WEEE, spectacles, empty printer cartridges and mobile phones;
- Green bin for garden waste;
- Brown caddy for food waste; and
- Black bin for residual waste.

3.3-4 CWaC is currently one of the top performing authorities in England in terms of recycling, with a LACW recycling rate of 59.1% in 2014/15. Waste quantities for 2014 are presented in Table2 below to enable a total for 2014 to be established. However, the latest quantities for 2015/16 also presented and are used as the baseline for the projections.

Table2: LACW tonnages 2014 and 2015/16

Waste Type	2014	2015/16
Green waste	39,437	37,004
Food waste	8,416	8,155
Dry Recycling	56,093	58,740
Residual Waste	70,338	69,308
Total Waste	**174,284**	**173,207**

Source: Defra's WasteDataFlow

What happens to this waste?

3.3-5 The different streams which make up the LACW undergo different management routes:

- Residual waste: The majority is sent to Ferrybridge Multi Fuel Energy from Waste (EfW) facility, West Yorkshire. However a small proportion is also sent to Viridor's EfW facility in Runcorn.
- Dry recycling: multiple destinations see Table3.
- Food waste: Lower Reule Bioenergy Ltd, Staffordshire County Council and Biogen, Northamptonshire County Council.
- Green waste: George Whittaker & Sons Ltd and Cotton Abbots composting facility, both in Cheshire West and Chester, and a small proportion (5% in 2015/16) to Higher Smallwood Farm in Stoke-on-Trent.

3.3-6 These were the destinations waste was being sent to at the time of writing. However waste management routes used are subject to market forces and therefore they can change, depending on contractual agreements and other commercial drivers.

Table3: Destinations of CWaC's recycling streams, 2015/16 (tonnes)

Destination WPA	Paper & card	Rubble	Glass	Wood	Plastics	Other scrap metal	WEEE	Steel cans	Textiles & footwear	Aluminium cans	Others	Total
Cheshire East	18	10,677	-	-	-	1,720	86	-	-	-	845.30	13,345
Lancashire	3,039	-	-	6,921	370	-	5	-	-	-	-	10,335
Wakefield	-	-	9,443	-	-	-	-	-	-	-	-	9,443
Flintshire	6,219	-	-	-	-	-	-	-	-	-	-	6,219
Powys	3,662	-	-	-	37	-	-	-	-	-	-	3,699
Liverpool	-	-	-	-	252	1,000	1,179	7	-	8	30.60	2,476
Manchester	-	-	-	-	1,923	13	-	-	-	-	-	1,936
Leicestershire	-	-	-	-	1,570	-	-	-	-	-	-	1,570
Kent	1,316	-	-	-	-	-	-	-	-	-	-	1,316
Doncaster	-	-	-	-	21	-	-	1,230	-	-	-	1,251
St Helens	-	-	-	-	-	-	949	-	-	-	-	949
West Midlands	-	-	-	-	-	-	-	-	785	-	62.90	848
Birmingham	390	-	-	-	-	-	-	-	-	-	-	390
Outside EU	388	-	-	-	-	-	-	-	-	-	-	388
Warrington	-	-	-	-	-	-	-	-	-	382	-	382
Barnsley	-	-	331	-	-	-	-	-	-	-	-	331
Nottingham	-	-	-	-	-	2	106	49	-	-	14.56	171
Shropshire	-	-	-	-	-	-	-	-	-	-	137.46	137
Sheffield	-	-	-	-	-	-	-	127	-	-	-	127
Derbyshire	-	-	-	-	54	34	-	-	-	-	-	88
Essex	-	-	-	-	82	-	-	-	-	-	-	82
CWaC	-	-	-	-	-	2	-	-	-	-	70.53	73
Stockport	72	-	-	-	-	-	-	-	-	-	-	72
Bolton	-	-	-	-	40	-	-	-	-	-	-	40
Halton	-	-	-	-	-	37	-	-	-	-	-	37

Destination WPA	Paper & card	Rubble	Glass	Wood	Plastics	Other scrap metal	WEEE	Steel cans	Textiles & footwear	Aluminium cans	Others	Total
Southampton	-	-	-	-	-	-	-	-	17	-	7.57	25
Wrexham	-	-	16	-	-	-	-	-	-	-	2.80	19
North East Lincolnshire	-	-	-	-	12	-	-	-	-	-	-	12
Newport	-	-	-	-	-	-	-	-	-	-	8.44	8
Croydon	-	-	-	-	-	-	-	-	7	-	-	7
Barnet	-	-	-	-	-	-	-	-	5	-	-	5
Surrey	-	-	-	-	-	-	-	-	-	-	1.85	2
Total	**15,104**	**10,677**	**9,790**	**6,921**	**4,360**	**2,809**	**2,324**	**1,413**	**814**	**390**	**1,182**	**55,783**

Source: CWaC waste management team (Note, dry recyclables do not necessarily total those in above sections, due to potential contamination and some going to unrecorded sites)

How much LACW is forecast to be produced?

3.3-7 Table4 and Figure 2 both show the trends in LACW in England since 2006. Figure 2 also shows the trends for CWaC, since CWaC was designated a unitary authority.

Table4: Household Waste Collection Quantities (in tonnes) for England

Year	LACW Collected for Recycling, Composting and Reuse	LACW sent directly for Energy Recovery	LACW sent directly to Landfill	LACW sent to other disposal routes	Total LACW Arisings
2006-7	9,028,301	3,015,510	16,345,302	788,121	29,177,233
2007-8	9,818,809	2,895,987	14,337,083	1,515,449	28,567,328
2008-9	10,209,421	2,962,706	12,593,639	1,629,252	27,395,018
2009-10	10,342,359	3,343,546	11,022,695	1,882,223	26,590,823
2010-11	10,618,382	3,550,296	9,840,539	2,268,556	26,277,772
2011-12	10,648,807	4,074,688	8,096,958	2,673,773	25,494,226
2012-13	10,465,216	4,346,383	7,260,304	2,996,321	25,068,223
2013-14	10,930,642	6,203,876	7,932,858	577,938	25,645,314
2014-15	11,067,323	7,772,995	6,361,332	614,790	25,816,440

Source: Defra, WasteDataFlow, Local Authority Collected Waste Statistics - Local Authority data

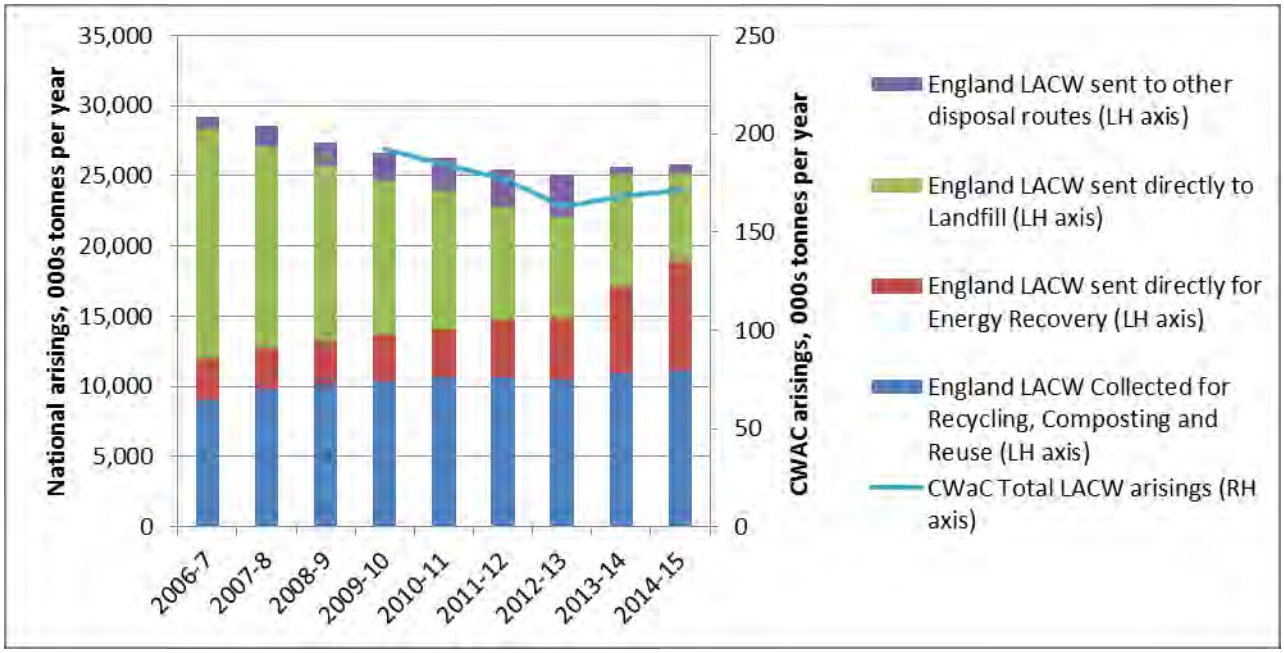


Figure 2: Trends over time in LACW arisings for England and CWaC, Source: Defra (Note Left hand axis is for national arisings, right hand axis for CWaC arisings)

3.3-8 For England, the initial trend from 2006/07 until 2012/13 was one of reduction. This is thought to be because of multiple reasons, including reducing the frequency of residual waste collections by Local Authorities, the use of education initiatives to produce greater public awareness of waste reduction and reuse,

"light-weighting" of packaging[6] and other measures taken by manufacturers of consumer goods, and also the impact of the economic recession. Conversely there has been an increase in arisings in the last two years of data, potentially due to the improving economic situation coupled with population increase, suggesting that the impact of other factors has weakened, potentially as a result of reduced Local Authority funding and intervention.

3.3-9 CWaC's waste generation has followed the same pattern as England overall, for the years which data is available, supported by the CWaC waste management team who report strong growth. Although it is true that predicting future trends in waste arisings is not an exact science and that trends in waste arisings do not track one factor alone, it is also recognised[7] that changes in the underlying drivers of waste, such growth in the resident population and housing provision, do have impacts and therefore have been used for modelling future arisings as a "worst case" or high waste arisings scenario in this study.

3.3-10 The authority is currently in the process of revising the existing waste strategy, from which the 60% recycling target was derived. As a result of this there are no agreed waste minimisation or additional recycling targets, and therefore the projections below have been based on assumed population growth, as per demographic modelling carried out for the Local Plan i.e. requirement to build 1,100 new dwellings each year between 2010 and 2030 which equates to approximately a 0.5% increase in population per year (see Appendix 1)[8]. This assumes therefore that the waste arising per resident remains constant.

3.3-11 Based upon this methodology, estimated waste tonnages by each major stream (residual, dry recycling, organics) at key years for the selected scenarios are given in Table5 and Figure 3 below.

Table5: Estimated LACW tonnages by stream for all scenarios in key years, based upon population growth estimates

Stream	2020/21	2025/26	2030/31
Residual	71,000	73,000	75,000
Dry Recycling	60,000	62,000	63,000
Organics	46,000	47,000	49,000
Total Waste	**177,000**	**182,000**	**187,000**

Source: Anthesis

[6] Source: INCPEN, The Industry Council for Packaging and the Environment

[7] National Planning Policy Framework Planning Practise Guidance (DCLG)

[8] Model 6, KSD2 Demographic Modelling. Used population increase rather than household increase, assuming that generation per person remains the same over time.

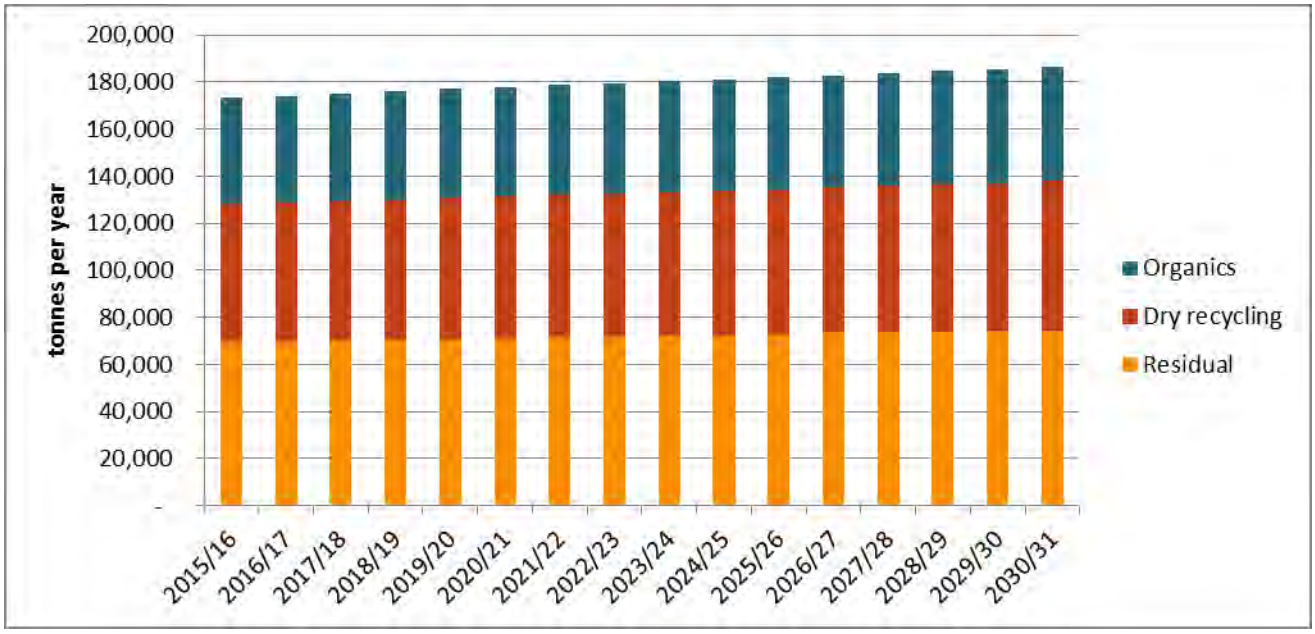


Figure 3: Anticipated growth in LACW arisings and the constituent waste streams

3.3-12 It should be recognised that this has been taken as the only projection scenario as it is considered the most likely. However there is likely to be some variation to the figures expressed in this scenario, so it should be taken as a best estimate only. Anticipated population growth has been taken into account, but other factors such as consumer behaviour, retailer behaviour, product design, and national policies could have significant impacts on waste and recycling arisings, and may change over time.

3.4 Commercial and Industrial waste

What is this waste?

3.4-1 Commercial and industrial (C&I) waste is waste generated from the following activities:

- Industrial Sectors
    - Food, drink and tobacco manufacturing businesses
    - Textiles/wood/paper/publishing businesses
    - Power and utilities companies
    - Chemical/non-metallic minerals manufacturing businesses
    - Metal manufacturing businesses
    - Machinery & equipment (other manufacturing) businesses
- Commercial Sectors
    - Retail and wholesale
    - Hotels and catering
    - Public administration and social work
    - Education
    - Transport and storage
    - Other services

3.4-2 C&I waste does not include waste produced by agriculture or quarrying and mining activities. It also specifically excludes waste management and recycling businesses to avoid double counting.

3.4-3 The most recent surveys of C&I waste have recorded waste type produced by businesses using the Substance Orientated Classification (SOC) of waste type. These are based upon the chemical and physical nature of the waste and can be summarised as follows:

- Animal and vegetable wastes
- Chemical waste
- Common sludges
- Discarded equipment
- Health care waste
- Metallic waste
- Mineral waste
- Mixed (ordinary) waste
- Non-metallic waste

How much is produced?

Data Sources

3.4-4 The key sources of data on C&I waste arisings are the various national and regional commercial and industrial waste surveys which have been delivered for the Environment Agency, Defra and other bodies since 1998/99. The main English national surveys delivered in 1998/99, 2002/3 and 2009 have surveyed businesses throughout the nation at a sampling rate which produces robust estimations of total arisings at both national and regional level. Businesses within North West England have been involved in these surveys, at a sampling rate appropriate to calculating a regional arising estimate.

3.4-5 In addition in 2010 Urban Mines Ltd (now part of Anthesis) delivered a detailed C&I waste arisings survey in the North West region for the Environment Agency. This robust survey involved the face to face survey of over 1,000 businesses in the region, selected in a statistically valid manner, so that the data collected could be extrapolated to produce a regional total. The survey revealed a 2009 waste arisings figure of 7.1 million tonnes for the whole of the North West region (results are presented in Appendix 2), with the commercial sectors such as retail and wholesale and other services, producing the most waste.

Arisings Estimates

3.4-6 Although there has not been a direct survey of the waste produced by businesses in the North West region since the last North West C&I waste arisings survey of 2009, because this survey was carried out with a high level of statistical precision at a North West regional level, we consider it robust enough to be used to update the arisings estimates for this study. Using this data also replicates the methodology used in the original 2011needs assessment study. Because of the lack of up to date survey data, the methodology employed to produce arisings estimates for CWaC uses waste arisings averages per business by business sector and business size from the North West survey and applies these to the latest business profile data for CWaC.

3.4-7 This business profile is obtained using business population data from the Inter-Departmental Business Register (IDBR) maintained by the Office of National Statistics. This methodology assumes that for instance a retail company employing 50 people surveyed in the North West region, as a whole, is likely to produce the same types and amounts of waste as a retail company employing 50 people at a local authority level in North West, in this case CWaC.

3.4-8 The CWaC 2014 C&I waste arisings were therefore estimated by extrapolating the grossed survey results of the North West waste arisings survey (given in Appendix 2) to the 2014 (latest data available) business population in CWaC (given in Appendix 3), sourced from the Office of National Statistics (ONS).

3.4-9 The North West survey was conducted via face to face interviews from a total of 1,000 companies throughout the region (stratified by 9 sectors and 6 company size bands) to gather data on waste production and disposal for these premises. The survey ensured that the sample used for the survey statistically representative of the total number of businesses, i.e. 71,270 companies in the region (with 5 or more employees). The extrapolation involved using 2014 business population data for the North West region and CWaC, which was obtained from the Office of National Statistics. Business population data by sector and size (as “local units”), was obtained for both CWaC and the North West region for 2014 from ONS, and are presented in Appendix 2.

3.4-10 The 2014 C&I waste arisings estimates for the North West region were produced by applying the average waste arisings per company, by sector and business size, from the 2009 North West survey data (by business sector and business size) to the March 2014 business population data (by sector and business size) based on the assumption that the average waste arisings per company in 2009 in the Northwest is the same as that in 2014.

3.4-11 The proportions of businesses in Cheshire West & Chester compared to the totals in the North West region (by sector and business size using 2014 data) were estimated and then applied to the 2014 waste estimates for the North West region to provide an estimate of the CWaC 2014 C&I waste arisings. In this case, total estimated C&I arisings for 2014 were 457kt, as shown by sector in Table6.

Table6: C&I waste arisings for CWaC by sector and size, 2014 (tonnes)

Sector Group	Employee sizebands							Total
	0-4	5-9	10-19	20-49	50-99	100-249	250+	
Food, drink and tobacco	63	46	206	6,510	0	8,745	0	**15,570**
Textiles/wood/paper/publishing	106	60	962	0	0	0	0	**1,128**
Power & utilities	43	52	0	1,322	0	0	139,318	**140,734**
Chemical/non-metallic minerals manufacturing	213	329	0	1,757	4,852	7,007	23,850	**38,009**
Metal manufacturing	1,456	915	272	1,968	4,715	0	0	**9,327**
Machinery and equipment (other manufacturing)	225	169	1,108	1,019	0	6,309	0	**8,831**
Retail and wholesale	9,457	14,619	20,969	26,176	10,638	11,313	16,718	**109,890**
Hotels and catering	18,035	8,490	14,715	21,102	17,807	6,893	11,337	**98,378**
Public administration and social work	1,016	1,217	1,990	6,591	6,275	7,690	10,687	**35,465**
Total	**30,615**	**25,897**	**40,222**	**66,444**	**44,287**	**47,957**	**201,909**	**457,331**

Source: Calculated by Anthesis from “North West of England Commercial and Industrial Waste Survey 2009” Urban Mines for The Environment Agency, March 2010 & IDBR Business population data (2014) from the Office of National Statistics

What happens to this waste?

3.4-12 Application of the data from the 2009 survey to 2014 shows that the majority of the waste produced by commercial and industrial businesses is sent for recycling or reuse, with an additional 3% sent to organic treatment. This means there is an overall recycling/composting rate of around 66%.

3.4-13 The majority of the residual waste (80%) is sent to landfill rather than energy recovery or other incineration. Waste arisings by waste management fate are summarised in Table7.

Table7: Summary of estimated C&I Waste arisings in CWaC in 2014 by fate (in tonnes to nearest 500)[9]

Waste Management Fate	Tonnes (2014)	Proportion
Recycling & Reuse	288,000	63%
Composting, AD and land spread	13,500	3%
Energy Recovery/Landfill/Treatment	127,000	28%
Don't know	29,000	6%
Total	**457,500**	**100%**

Source: Anthesis

3.4-14 The original study in 2011 reported C&I arisings of 345,000 tonnes in 2009. This has been 32% increase in the C&I waste arisings since the last waste needs assessment in 2009. The overall recycling/composting rate has also increased from 58% to 66%. These changes do not reflect changes in business practises such as initiatives to increaser recycling (as no new data is available since 2009) but rather can be explained by changes in the North West regional and Cheshire West & Chester local economies, as evidenced by the IDBR business population data from ONS. Between 2009 and 2014:

- At the North West regional level, the overall number of businesses, measured as "local units" i.e. local branches or individual sites, increased by 19% from around 207,000 to 247,000. Of these, the number of commercial businesses (as local units) increased by 22% from around 189,000 to 231,000. In the same period, the number of industrial businesses (as local units) decreased by 11% from around 17,500 to 15,600. This move from industrial to commercial businesses favours those business types that tend to recycle more of the waste they produce, making the overall recycling rate increase.
- These changes between industrial and commercial local units were reflected at CWaC local level too. Despite the overall reduction in the number of industrial local units in CWaC, according to the ONS data, those reported for the sector "energy & utilities" i.e. electricity, gas and water companies[10], increased by 14%. As the waste production per employee is particularly high for such businesses, this increase had a disproportional impact on the overall estimated arisings for 2014, thus increasing overall waste weight estimates.

[9] Verifying C&I arisings estimates by comparing estimated arisings from the updated C&I survey with more up to date "actual" data from WDI is not straight forward, as WDI does not include waste inputs into key waste management facilities such as recyclate reprocessors, energy from waste plants and exempt waste facilities, does not separate LACW and C&I waste sources, and does not clearly categorise origins of waste between CWaC and the old Cheshire County. Nevertheless, adjusted landfill/residual input for 2014 from WDI is 128,543t compared to 127,000t estimated from the C&I survey, suggesting reasonable agreement.

[10] Note the original survey specifically excluded waste management companies to avoid double counting

- Therefore, increases in waste arisings and overall recycling rate in CWaC C&I arisings are caused by growth in sectors which recycle more (relatively) and produce more waste per employee (relatively) rather than actual changes in business practises regarding waste management.
- Note also that to protect the identity of individual companies in the data ONS provides, i.e. "disclosure", reported "local units" counts are rounded to the nearest 5. This means that differences between 2009 and 2014 local unit populations can be exaggerated, especially in sectors where the total number of local units is already low, such as the sector "energy & utilities".

How much C&I waste is forecast to be produced?

3.4-15 To be in-line with the methodology applied in the original Urban Mine study, CWaC C&I waste arisings were forecast to 2030 based on the employment forecasts from the Cheshire West & Chester demographic and economic forecasts produced (in-house) for the authority's Local Plan (presented as appendix 4, employment per C&I sector), with performance targets of 75% C&I recycled/composted by 2020 and 25% to landfill.

3.4-16 In order to apply the employment forecasts from the Cheshire & Warrington Econometric Model (CWEM) to the C&I baseline estimates for Cheshire West and Chester, the sectors in the CWEM were restructured to fit the nine sectors on which the C&I arisings are based. This is possible because both sets of sector classifications are part of the Standard Industrial Classification system. As can be seen in the tables presented as Appendix 3, these employment forecasts do not necessarily follow a linear pattern, and therefore the waste arisings also do not.

3.4-17 Results from the C&I surveys delivered since 1998/99 have shown a gradual increase in recycling levels. The last survey delivered in 2009 showed a recycling rate of ca. 58% for CWaC which through the update of the figures to 2014, produced a further overall increase to 66%. However, as previously explained, this increase is through a changing profile of commercial and industrial activity, rather than recycling increasing within these businesses over time. There is no evidence published since 2009 which could be used to support further increases in recycling rate. Therefore, for the purposes of this study and to ensure continuity, arisings forecasts per waste management fate has been generated using the recycling rate assumption used in the Urban Mines study in 2011 ie. 75% by 2020[11].

3.4-18 Table8 and Figure 4 therefore show the C&I waste arisings by waste management type, as modelled using the employment forecasts and assuming a recycling rate target of 75% by 2020, over the period until 2030.

Table8: Summary of forecasts of C&I Waste arisings in CWaC by waste management fate (in tonnes to nearest 1,000)

Waste Management Fate (*)	2014	2015	2020	2025	2030
Recycling & Reuse	288,000	284,570	341,890	341,131	336,516
Composting, AD and land spread	14,000	13,553	15,204	14,053	13,017
Energy Recovery/Landfill/Treatment	127,000	125,102	87,821	86,734	85,082
Don't know	29,000	28,996	30,215	30,564	31,068

[11] From "Cheshire East and Cheshire West and Chester Councils – Waste Needs Assessment Report" Urban Mines, 2011: "The preferred "optimum" scenario, Scenario 1, represents a successful outcome in that recycling potential identified within the mixed waste of the commercial waste stream through analysis of the Northwest Regional Commercial and Industrial Waste survey 2009 is achieved (75% diversion of mixed waste stream by 2020)".

Waste Management Fate (*)	2014	2015	2020	2025	2030
Total	458,000	452,221	475,130	472,482	465,683
Recycling & Reuse	66%	66%	75%	75%	75%
(*) Classifications from the 2009 survey					

Source: Anthesis

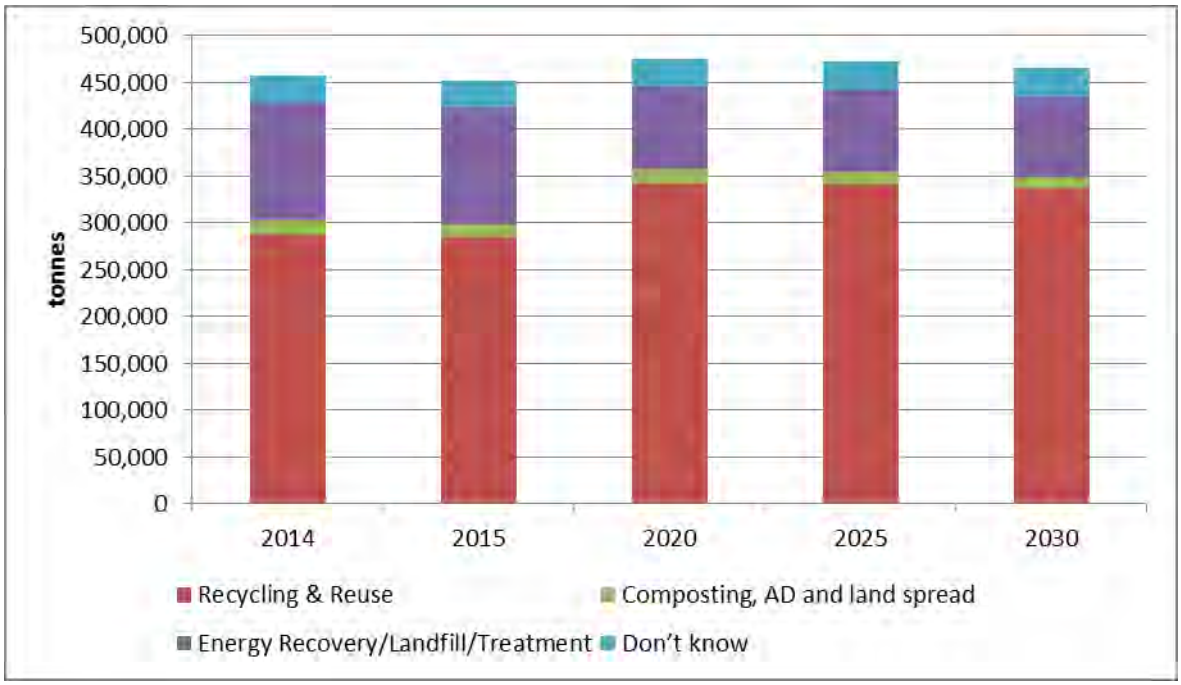


Figure 4: Anticipated C&I waste arisings by waste management fate, Source: Anthesis

How much waste is imported to/exported from CWaC?

3.4-19 Waste movements data using site returns information from permitted waste facilities from the Environment Agency for 2014[12] for household, industrial and commercial wastes shows that:

- 36% of the waste (by weight) appears to be processed or disposed of in CWaC.
- 20% of the waste is handled within Cheshire East.
- Another 31% of the waste is handled within the North West region, meaning that in total 87% of the waste is handled within the North West region with only 13% travelling to facilities further away, although all key destinations are relative close to CWaC.

3.4-20 Table 9 identifies the authorities receiving more than 1,000 tonnes per year from CWaC. However this does not include the recyclate material that is either delivered directly to reprocessors, waste to energy from waste facilities, or sent through exempt sites.

[12] A high proportion of waste in WDI was attributed to 'Cheshire', rather than either CWaC or Cheshire East. This was broken down using Employment by Industry figures produced by ONS in 2015. This reported for 2014, out of total employment figure in Cheshire of 348,700, 46% of the employees were in CWaC, and 54% were in Cheshire East, therefore these proportions have been taken as a direct proxy to break down the waste arisings.

Table9: Destinations for household and C&I waste

Waste Planning Authority	Total Cheshire West	Proportion of HH/C&I waste
Cheshire West and Chester WPA	271,040	36%
Cheshire East WPA	149,234	20%
Trafford WPA	58,985	7.9%
Warrington WPA	48,691	6.5%
Liverpool WPA	34,960	4.7%
Halton WPA	32,169	4.3%
Staffordshire WPA	22,170	3.0%
Shropshire WPA	21,686	2.9%
Bury WPA	12,902	1.7%
Lancashire WPA	10,435	1.4%
Stoke-on-Trent City WPA	9,210	1.2%
Knowsley WPA	8,417	1.1%
Manchester WPA	8,090	1.1%
Bolton WPA	7,954	1.1%
St Helens WPA	5,367	0.7%
Wakefield WPA	4,657	0.6%
Wigan WPA	4,310	0.6%
Sandwell WPA	4,272	0.6%
Doncaster WPA	3,967	0.5%
Bristol City WPA	3,167	0.4%
Leicestershire WPA	2,629	0.4%
Kingston Upon Hull City WPA	2,526	0.3%
Rotherham WPA	2,444	0.3%
Leeds WPA	1,764	0.2%
Bexley WPA	1,734	0.2%
Stockport WPA	1,698	0.2%
Walsall WPA	1,268	0.2%
Sheffield WPA	1,072	0.1%
North Lincolnshire WPA	1,028	0.1%

Source: Environment Agency's WDI, 2014

3.5 Construction, demolition and excavation waste

What is this waste?

3.5-1 CD&E waste comprises of waste arising from the construction and demolition industries, including excavation during construction activities, and is made up of mainly inert materials such as soils, stone, concrete, brick and tile. However, there are also non-inert elements in this waste stream such as wood,

metals, plastics, cardboard, and residual household-like wastes. Due to their weight, the inert elements make up the majority of the total tonnage.

How much is produced?

3.5-2 Establishing the current waste arisings of CD&E waste is challenging due to the lack of data sources for this type of waste material. There is also normally a time lag for data to become available, and therefore 2014 were seen to be the most appropriate year to focus on for a baseline.

3.5-3 Quantities of waste arising from the construction, demolition and excavation industries are notoriously difficult to measure. This is because of:

- On-Site Reuse: Due to the weight and considerable transport costs associated with these waste streams, significant quantities of materials are recycled and re-used on the site where they arise and, therefore, do not enter the recorded waste stream.
- The Use of Exempt Waste facilities: For the material removed from site, a significant proportion is managed at nearby smaller scale facilities where the waste management activity is exempt from the environmental permitting system, and there is no obligation to report annual throughput. Operations carried out at these facilities are considered to be low risk activities and, therefore, do not require significant monitoring by the Environment Agency.

3.5-4 This means that data is only available for the rest of the material leaving site which is managed through permitted waste facilities. For such sites, including landfills, critical data such as throughputs and waste material types are recorded in the National Waste Data Interrogator (NWDI), which is the main source of information on operational permitted waste management facilities.

3.5-5 It is therefore possible to obtain data on how much CD&E waste is disposed at landfills and other permitted facilities, by extracting data for either 'Construction and Demolition wastes (including excavated soil from contaminated sites)' or 'Chapter 17' waste. Chapter 17 refers to the List of Wastes derived from the European Waste Catalogue.

3.5-6 WDI reports around 335kt of CD&E waste (Chapter 17) produced in CWaC in 2014, which were subsequently handled by a licensed waste facility. This includes 26.5kt which was directly attributed to CWaC and a further 308kt which were reported in WDI as 'Cheshire' but was not codeable to either CWaC or Cheshire East. The employment figures in the construction sector have been used to break down this non codeable element.[13]

3.5-7 The CD&E estimates are some 120ktpa higher than those reported in the original Urban Mines study. This can reflect a number of factors, including the tentative nature of the breakdown between Cheshire West and Cheshire East, and the likelihood of individual large scale construction projects, such as a large development or road building projects, which can produce significant changes in reported year-to-year arisings.

[13] This was broken down using Employment by Industry figures produced by ONS in 2015. This reported for 2014, 47% of those employed in the construction sector were employed in CWaC, and 53% were employed in Cheshire East, therefore these proportions have been taken as a direct proxy to break down the waste arisings.

What happens to this waste?

3.5-8 One of the main drivers behind the sustainable management of CD&E waste is the geographical proximity of suitable sites to which it can be taken. Because the material is bulky and has a low value, it is not economic to transport it over any significant distances. If there is a landfill site where the material can be deposited closer than a facility where it can be treated, the landfill site is likely to be used in preference.

3.5-9 The only data on quantities of inert wastes that is systematically collected is that which is sent to landfill, although the material that is used for engineering purposes at non-hazardous landfill sites are not necessarily recorded as inert. It is thought that non-hazardous landfill sites typically require between 10% and 20% of their inputs to be inert material for engineering and capping non-inert material. Inert material can also be used for landscaping and land spreading.

3.5-10 There has been a shortage of this type of material in recent years, and that this has implications regarding the need for any additional inert landfill capacity to come forward. This view seems to be corroborated by the industry. Inert waste that is treated on site and re-used, either on the same site, or elsewhere, is not recorded in any single database.

3.5-11 Of CD&E managed through permitted facilities, Chapter 17 wastes data from the WDI show 9% goes to landfill and 35% is sent to some kind of treatment. An additional 14% is reused or recycled and 9% is sent to composting and/or land recovery. This is summarised in Table10 below.

Based on data from WDI 2014, over as shown in Source: Environment Agency Waste Data Interrogator, 2014

3.5-12 Table11, 40% of the CD&E waste is handled in Cheshire East, with the majority being transferred and/or treated. 15% of the waste is treated within CWaC itself. However, over 99% of the CD&E waste is handled within the North West region.

Table10: Waste management method (fate) of Chapter 17 CD&E waste, CWaC 2014

Waste Management Fate	Tonnes (2014)	Proportion
Recycling & Reuse	48,025	14%
Composting, AD and land spread	30,973	9%
Energy Recovery /Landfill /Treatment	148,738	44%
Don't know	106,970	32%
Total	**334,706**	**100%**

Source: Environment Agency Waste Data Interrogator, 2014

Table11: Destination WPAs of CD&E waste (tonnes)

Facility WPA	Quantity (tonnes)	% of Total	Waste management Fate
Cheshire East	134,974	40%	Transfer and treatment
Warrington	58,898	18%	Treatment and transfer
Halton	55,384	17%	Treatment and metal recycling
CWaC	50,001	15%	Use of waste and transfer
Knowsley	8,936	3%	Landfill
Trafford	8,769	3%	Transfer

Facility WPA	Quantity (tonnes)	% of Total	Waste management Fate
Lancashire	3,904	1%	Landfill
Liverpool	3,562	1%	Metal recycling
Stockport	3,018	1%	Treatment
Total	327,446	99%	

Source: Environment Agency Waste Data Interrogator, 2014. *Due to rounding, not all columns/rows total precisely

How much CD&E waste is forecast to be produced?

3.5-13 CWaC CD&E waste arisings were forecast to 2030 based on the employment forecasts for the construction sector, from the Cheshire & Warrington Econometric Model (CWEM), and, consistent with the scenarios used in the Urban Mines study, 75% recycling by 2020.

3.5-14 The output arisings are summarised in Table12 below.

Table12: Modelled CD&E waste projections by management fate (to nearest 1000)

Waste management fate	2014	2015	2020	2025	2030
Recycling & Reuse	48,000	69,562	169,531	171,469	173,406
Composting, AD and land spread	31,000	38,147	92,969	94,031	95,094
Energy Recovery/Landfill/Treatment	149,000	163,223	62,836	63,554	64,272
Don't know/not relevant	107,000	64,069	24,664	24,946	25,228
Total	**335,000**	**335,000**	**350,000**	**354,000**	**358,000**

Source: Anthesis

3.5-15 The forecast shows an increase in CD&E waste arisings from 335k to 358k tpa by 2030 (also shown in Figure 5).

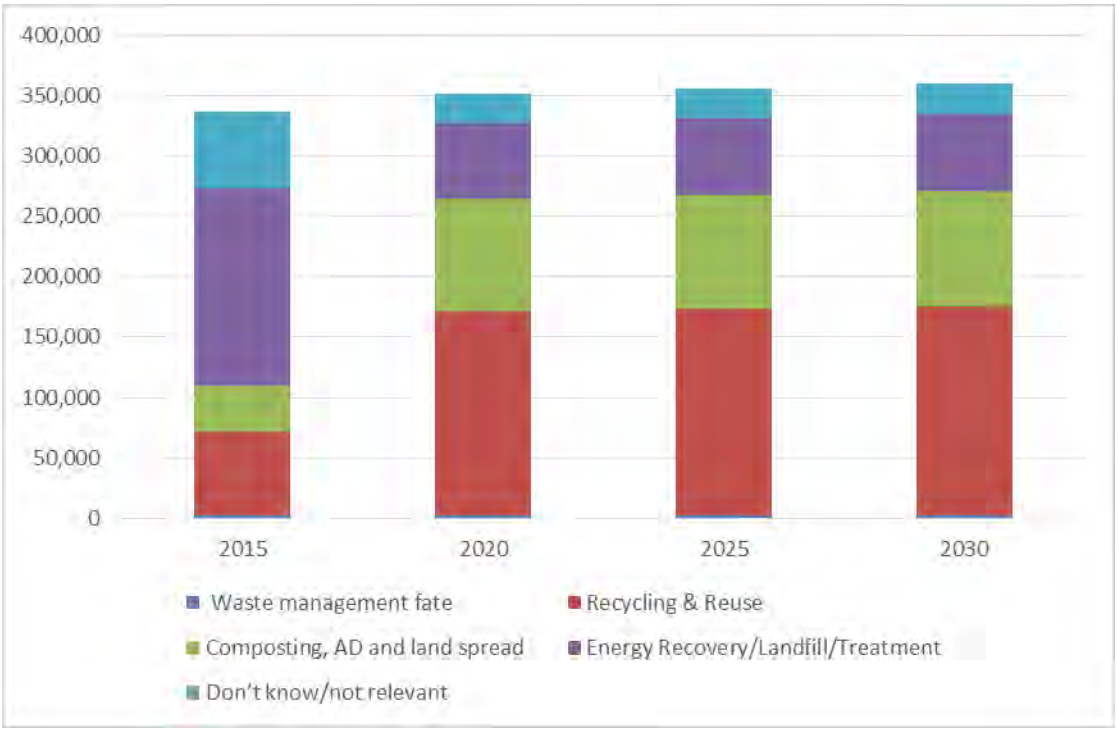


Figure 5: Anticipated growth in CD&E arisings by waste management fate, Source: Anthesis

3.6 Low level radioactive waste

What is this waste?

3.6-1 Radioactive waste is any material that is either radioactive itself or is contaminated by radioactivity and for which no further use is envisaged. Most radioactive waste is produced from nuclear power stations and the manufacture of fuel for these power stations. This is referred to as "nuclear waste." Radioactive waste is not included in the definition of hazardous waste.

3.6-2 Radioactive waste also arises from nuclear research and development sites. Some also arises from Ministry of Defence sites and medical, industrial and educational establishments. This is sometimes referred to as "non-nuclear waste".

3.6-3 This waste stream is divided into four categories as follows:

1. High Level Wastes (HLW): These are highly radioactive materials that generate substantial amounts of heat. HLW is the product from reprocessing spent nuclear fuel at Sellafield in Cumbria. It arises as highly radioactive nitric acid, which is converted into glass within stainless steel containers in a process called vitrification which is carried out at Sellafield. If declared a waste, spent fuel can also be categorised as HLW.
2. Intermediate Level Wastes (ILW): These are wastes with radioactivity levels that are higher than for Low Level Waste, but which do not require heating to be taken into account in the design of management facilities. ILW is sufficiently radioactive to require shielding and containment. It arises mainly from the reprocessing of spent fuel and from operations and maintenance at nuclear sites, including fuel casing and reactor components, moderator graphite from reactor cores, and sludges from the treatment of radioactive effluents.
3. Low Level Waste (LLW): These are radioactive wastes other than that suitable for disposal with ordinary refuse. Radiation levels do not exceed 4 gigabecquerels per tonne of alpha activity, or 12 gigabecquerels per tonne of beta or gamma activity. (A Becquerel is the unit of radioactivity, representing one disintegration per second.) Unlike HLW and ILW, LLW does not normally require shielding during handling or transport. LLW consists largely of paper, plastics and scrap metal items that have been used in hospitals, research establishments and the nuclear industry. As nuclear plants are decommissioned, there will also be large volumes of this type of waste arisings in the form of soils, concrete and steel. LLW represents about 90% by volume of UK radioactive wastes but contains less than 0.0003% of the radioactivity.
4. Very Low Level Waste (VLLW): This is a sub-category of LLW, consisting of the same sorts of materials, and divided into Low Volume ("dustbin loads") and High Volume ("bulk disposal"). Low volume VLLW can be disposed of to unspecified destinations with municipal, commercial or industrial waste. High volume VLLW can be disposed of to specified landfill sites and controlled as specified by the environmental regulators.

3.6-4 Categories 3 and 4 are those of interest in this Plan. Most material can be disposed of at non-hazardous waste management facilities, such as landfill or thermal treatment facilities. Unfortunately, at present, waste producers of low volume VLLW do not have to identify which landfill site or incinerator is used for disposal of this material.

3.7 How much is produced?

3.7-1 The EA's Pollution Inventory Dataset reports production of LLW and was used to estimate arisings. This identifies one site which produced approximately 6 Mbq. This material is disposed of through 'controlled

waters' and 'air' and therefore does not have an impact on any of CWaC's waste management infrastructure or that of other WPAs where LLW is managed.

How much LLW is forecast to be produced in the future?

3.7-2 This waste has not been forecast as it is being produced in very small amounts and the disposal methods not impact upon the authority's waste management infrastructure.

3.8 Agricultural Waste

What is this waste?

3.8-1 The Environment Agency website describes agricultural waste as any substance or object from premises used for agriculture or horticulture, which the holder discards, intends to discard or is required to discard. It is waste specifically generated by agricultural activities. However, waste which comes from a farm shop or a vegetable packing plant, for example, would not be agricultural waste and would be classed as commercial and industrial waste (a farm shop is "Retail and Wholesale" sector and a vegetable packing is "Food and Drink manufacture" sector). Some examples of agricultural waste are:

- empty pesticide containers;
- old silage wrap;
- out of date medicines and wormers;
- used tyres;
- surplus milk.

3.8-2 Since 2006, most agricultural waste has been subject to the same controls that have applied to other sectors for many years (with the exception of natural wastes including slurries and manures used as fertiliser on agricultural premises).

How much is produced?

3.8-3 The latest available agricultural waste survey was conducted by Defra and the Environment Agency in 2003[14]. Because of the lack of up to date survey data, the methodology employed applies waste arisings averages per agricultural holding from the 2003 England survey to the number of holdings in CWaC in 2003 (sourced from Defra) to provide estimates of the 2003 agricultural waste arisings for CWaC. This assumes that the average waste produced per holding at a national and regional level is the same as the average waste per holding at the local authority level.

3.8-4 The latest available data in relation to the number of farms in England is from 2012 but does not provide any regional or authority breakdown. Therefore 2012 agricultural waste arisings for England were obtained by applying the average waste per holding from the 2003 England survey to the number of holdings in 2012 in England. Since data and information for 2012 number of holdings in CWaC was not available, data and information on number of holdings in England and CWaC for 2010 were used to estimate the proportion of number of holdings in the North West of those in England and the proportion of CWaC holdings of those in

[14] "Agricultural waste survey 2003", Biffaward, Defra, Environment Agency, October 2003

the North West to use to estimate the agriculture waste arisings in 2012. This method assumes that the proportion of number of holdings at a regional level of those at a National level and the proportion of number of holdings of those at the regional level is the same in 2014 as it was in 2010. This 2012 estimate was then taken as a baseline on which employment in the agricultural sector between 2012 and 2014 was used to estimate the recent change.

3.8-5 Using this methodology, an estimate of 608kt agricultural waste arising was generated in CWaC in 2014.

What happens to this waste?

Using the data from the original 2003 survey, the waste management routes for agricultural waste are summarised in the Table13 with the vast majority used for land recovery and treatment and therefore not impacting upon waste management capacities in the CWaC WPA area.

Table13: Waste Management method (Fate) agricultural waste, CWaC 2014

Treatment Method	Quantity (tonnes)
Land recovery/treatment - on site	598,118
Composting – on site	9,056
Treatment plant	150
Landfill	943
Hazardous Landfill	32
Total	**608,298**

Source: Anthesis

3.8-6 As there has been no relevant data generated since 2003, it has been assumed that the original pattern of reuse and disposal has not changed in the intervening period.

How much agricultural waste is forecast to be produced in the future?

3.8-7 Estimated quantities of agricultural waste generated in the future, by waste management fate, have been produced by applying the employment forecasts from the CWEM model. These are summarised in Table14 below. This forecast assumes that the same waste quantity is produced per agricultural employee throughout the forecast period, and therefore will not take into account any productivity improvements due to changes in working practises, which cannot be adequately evidenced.

Table14: Forecast arisings and fate, agricultural wastes, CWaC 2015 to 2030 (in tonnes to nearest 1,000)

Fate	2015	2020	2025	2030
Land recovery/treatment - on site	558,000	558,000	518,000	478,000
Composting – on site	8,000	8,000	8,000	7,000
Treatment plant	0	0	0	0
Landfill	1,000	1,000	1,000	1,000
Hazardous Landfill	0	0	0	0
Total CWaC	**568,000**	**568,000**	**527,000**	**487,000**

3.8-8 Given that the vast majority of the agricultural waste is treated on-site, there are limited requirements for CWaC to consider treatment capacity within the WPA region.

3.9 Hazardous Waste

What is this waste?

3.9-1 Waste is classified in the European Union Hazardous Waste Directive as "Hazardous Waste" if it has characteristics that make it harmful to human health, or to the environment, either immediately or over an extended period of time. The Directive gives an extensive list of these wastes drawn up by the European Commission, because they possess one or more of the hazardous properties. This Directive has been implemented in UK national legislations by the Hazardous Waste Regulations 2005.

3.9-2 Hazardous waste is a sub-category of municipal waste, commercial and industrial waste and construction, demolition and excavation waste classed materials, as wastes within these categories can contain wastes that are hazardous.

3.9-3 Clinical waste can also be classified as a hazardous waste. There is very limited data on clinical waste arisings as it is not specifically identified through the last commercial and industrial waste surveys for England or North West England (2009).

How much is produced?

3.9-4 Although the North West England Commercial and Industrial Waste Survey 2009 recorded which wastes produced by businesses were classified as hazardous, because the survey was designed to estimate total arisings from businesses rather than specifically hazardous waste production, the sample of hazardous waste producers was not large and significant enough to produce robust hazardous waste arisings forecasts for businesses in the region.

3.9-5 However, the Environment Agency, through their control of the movements and disposal or recovery of hazardous waste, has detailed records of hazardous waste arisings which can be accessed by the publication of their annual Hazardous Waste Interrogator dataset. For the purposes of this work, the 2014 figures, the latest available, were used.

3.9-6 The interrogator includes hazardous waste arisings from both municipal and commercial and industrial sources. Arisings figures for 2014 were therefore generated using the interrogator. This identified approx. 56kt were generated in CWaC in 2014. This is a significant increase since 2009, where 25kt were generated. However in the intervening period, hazardous waste arisings have not followed a linear trend, increasing to 45kt in 2011, falling to 41kt in 2012 and rising significantly to 77kt in 2013.

What happens to this waste?

3.9-7 The hazardous waste interrogator also provides details of fate (i.e. waste management method) for those wastes reported. The waste management methods applied to the approx. 56kt of hazardous wastes collected and processed in 2014 are summarised in Table15.

Table15: Hazardous Waste Management 2014 (tonnes)

Fate	Quantity (tonnes)
Recovery	13,567
Incineration with Energy Recovery	1
Incineration without Energy Recovery	3,438

Fate	Quantity (tonnes)
Landfill	21,189
Treatment	10,477
Don't know	7,640
Total	**56,313**

Source: Environment Agency's Hazardous Waste Data Interrogator

3.9-8 Movements data for 2014 displayed in Table16 shows that approximately 9% of the hazardous waste generated within CWaC were treated within the WPA. However the remaining arisings were transported to other WPAs to specialist facilities.

Table16: Hazardous Waste Destinations, 2014

Deposit District	Quantity (tonnes)	%of Total	Main Process Type
Lancashire	23,589	42%	Landfill
Cheshire West and Chester	4,843	9%	Recovery, Incineration without energy recovery
Knowsley	4,233	8%	Transfer
Trafford	3,367	6%	Treatment
Liverpool	3,031	4%	Treatment
Salford	2,212	4%	Treatment
Staffordshire	1,708	3%	Recovery
Sefton	1,640	3%	Recovery
Rotherham	1,436	3%	Transfer
Hampshire	1,379	2%	Incineration without energy recovery
Kirklees	1,249	2%	Landfill, recovery, treatment
St. Helens	1,158	2%	Recovery
Halton	1,062	2%	Transfer

Source: Environment Agency's Hazardous Waste Data Interrogator

How much hazardous waste is forecast to be produced in the future?

3.9-9 To produce forward forecasts of hazardous waste arisings, the employment projections from the CWEM were applied to the 2014 hazardous waste figures to produce the baseline. The output arisings are summarised in Table18. It was assumed that the breakdown of tonnages by waste management fate i.e. the proportion of the total tonnage by waste management fate, was the same as 2014 throughout this period.

Table17: Projected hazardous waste

Waste management fate	2014	2015	2020	2025	2030
Recovery	13,600	13,600	14,200	14,300	14,600
Incineration with Energy Recovery	-	-	-	-	-
Incineration without Energy Recovery	3,000	3,000	4,000	3,600	3,700
Landfill	21,000	21,000	22,000	22,400	22,800
Treatment	10,000	10,000	11,000	11,100	11,300

Don't know	8,000	8,000	8,000	8,100	8,200
Total	**55,600**	**55,600**	**59,200**	**59,500**	**60,600**

Source: Anthesis

3.10 Sewage sludge

3.10-1 United Utilities and Dwr Cymru Welsh Water (DCWW) are the two water companies operational in CWaC and therefore responsible for waste water and sewage sludge treatment. United Utilities are the larger company and responsible for a greater proportion of the wastewater than DCWW. Both companies were asked to provide information in relation to quantities treated, any future projections and infrastructure plans, however no response was received from United Utilities.

3.10-2 DCWW's Sludge Treatment Centre caters for the catchment of Chester, which equates to a population of 130,000. In 2014, 2,741 tonnes of dry solids (tDS) were produced and treated by DCWW. The forecasted average throughput at their facility is estimated to be 2,788 tDS in 2019.

3.10-3 In order to improve quality of processes and maximise energy production, DCWW are considering modifying Chester's Sludge Treatment Centre from a conventional digestion facility to raw cake export facility. Potentially, this cake would be exported off-site for treatment at another advanced treatment facility. The peak capacity of this proposal would be 2,928 tDS/year.

3.10-4 Unfortunately this does not build the complete picture of the sewage sludge arisings and infrastructure, so further engagement with United Utilities may be required.

3.11 Summary of current and future waste arisings

3.11-1 All current waste arisings and projections have been summarised below in Table18. Some key points are:

- Agricultural waste is the single largest waste type generated with CWaC. However very little of this waste requires off-farm treatment, as nearly 98% of it is managed on-sites by the farms themselves;
- Of those waste with a significant impact on local waste management capacity, C&I waste made up 47% of the waste stream in 2014.
- CD&E waste made up 35% of the overall waste generated within CWaC and impacting upon local waste management capacity, in 2014. This is anticipated to increase over the life the projected period;
- LACW comprised 18% of the overall waste stream in 2014, increasing to 18.5% in the overall stream by 2030; and
- Hazardous waste is approximately 5.7% of the waste stream in 2014 and has been estimated to grow to around 6% of the waste stream by 2030.

Table18: Current waste arisings and projections generated in CWaC (tonnes)

Waste type	2014 (baseline)	2015	2020	2025	2030
Local authority collected	174,000	173,000	177,000	182,000	187,000
Commercial & Industrial	458,000	452,000	475,000	473,000	465,000

Waste type	2014 (baseline)	2015	2020	2025	2030
Construction, Demolition & Excavation	335,000	335,000	350,000	354,000	358,000
Total	**967,000**	**960,000**	**1,002,000**	**1,009,000**	**1,010,000**
Agricultural	608,000	568,000	568,000	527,000	487,000
Hazardous*	55,600	55,600	59,200	59,500	60,600
Low level radioactive	0	0	0	0	0
Wastewater	Incomplete data				

Source: Anthesis. * hazardous waste is not included in the total as this data is included within the C&I and CD&E totals.

3.11-2 Table19 shows the total waste streams (i.e. residual, dry recycling and organics) from both LACW and C&I sources, to give an indication of the likely scale of treatment capacity required for these types of wastes arising within CWaC.

Table19: LACW and C&I waste totals by waste type (tonnes)

Waste type	2015	2020	2025	2030
Residual waste	194,000	159,000	160,000	160,000
Dry Recycling	343,000	402,000	403,000	400,000
Organics	59,000	61,000	61,000	62,000
Unknown waste type	29,000	30,000	31,000	31,000
Total	**625,000**	**652,000**	**655,000**	**653,000**

Source: Anthesis

3.11-3 CD&E waste has not been added to these totals, as they require different treatment and disposal methods given the difference in materials disposed. However, organics from construction are likely to be very similar to green waste generated from C&I activity, and households, and therefore would require very similar treatment methods (i.e. composting). This could be added to the 'organics' row in the table above, taking the approximate organic estimate to around to 90,000 per year, and will be considered in the capacity gap assessment.

4 Waste management capacity

4.1 Introduction

4.1-1 The capacity of waste management facilities in CWaC has been compiled using information from planning consents and applications, supported by permit data supplied by the Environment Agency.

4.1-2 This data includes both existing operational and non-operational facilities, as well as significant facilities in planning, and covered the following main facility types, i.e.:

- Landfill;
- Incineration and energy recovery;
- Other residual waste technologies (e.g. mechanical biological treatment (MBT) and autoclaves);
- Waste Transfer Stations (WTS);
- Materials Recycling Facilities (MRF); and

- Composting and other organic recycling plants (e.g. anaerobic digestion).

4.1-3 Note that facilities of waste recyclate reprocessors such as glass recyclers, paper recyclers (i.e. B1 users from a planning perspective) which are also exempt from waste licensing, are not included in this evaluation.

4.2 Data Sources and Assumptions Made

Sources of Capacity Data

4.2-1 Key data on waste facilities within CWaC were supplied by the WPA with supporting permitting and waste input data from the Environment Agency (EA) the CWaC Planning Portal, and other public domain sources. This included, where available, details of existing and proposed facilities and their operational or planned capacities.

Problems with permitted capacity data

4.2-2 Using EA permitted capacity data to assess overall capacity of individual sites can be problematic. This is because permitted capacities are based on capacity bands into which Permits are divided rather than the operating annual capacity of the site, and, therefore, the capacity detailed in the licence tends to be at the top end of the charging bands. Therefore, many sites give permitted capacities of 74,999 tonnes, 24,999 tonnes and 4,999 tonnes and it is likely that such figures used are over estimates of actual operational capacities.

4.2-3 Therefore, where possible, via additional datasets and discussions with the site operator, operating or working capacity figures have been used.

Converting void space to tonnes

4.2-4 Converting volume capacities into tonnage is not a trivial matter, as there can be considerable variance in the types of material landfilled, its intrinsic density, and whether compaction was used or not. For instance, each cubic metre of inert waste (such as construction rubble) will weigh significantly more than a cubic metre of typical un-compacted household residual waste. A conversion factor for inert waste of 1.5 tonnes per cubic metre has been used for this study, 0.85 tonnes per cubic metre for mixed municipal and similar wastes. These figures are recommended by the PPS10 Companion Guide.

4.3 Regional and CWaC Capacities

Landfill

4.3-1 Environment Agency landfill summary data for 2014, published on their website, shows a North West regional landfill capacity of some 55 million cubic metres (equivalent to 47 million tonnes at an average bulk density of 0.85 tonnes/cubic metre), with the most significant holdings in the Cheshire sub-region, i.e. Warrington, Cheshire West & Chester and Cheshire East WPA areas.

Table20: Total Landfill Capacities (in cubic metres x 1,000) for the North West England region, as of 2014 (Source: Environment Agency)

Landfill Type	Sub-Region					NORTH WEST
	Cheshire	Cumbria	Greater Manchester	Lancashire	Merseyside	
Hazardous Merchant	1,624			30	3,102	4,756
Hazardous Restricted				150		150
Non Hazardous with SNRHW cell*		3,029	6,008	1,927		10,964
Non Hazardous	15,426	1,542	3,714	7,239	244	28,166
Non Hazardous Restricted	1,612		1,600			3,212
Inert	1,400	769	3,742	1,189	1,177	8,276
Total	**20,062**	**5,341**	**15,064**	**10,535**	**4,522**	**55,524**

(*)SNRHW is Stable Non-Reactive Hazardous Waste

4.3-2 Merchant landfill sites are open for use by any business or local authority that wishes to purchase the service. Restricted landfill sites can only take waste from specified sources. In common with the rest of the UK, the availability of landfill capacity has decreased significantly in the North West region, as evidenced by the figure below. This amounts to a third reduction in available landfill void of 32 million cubic metres since 2006.

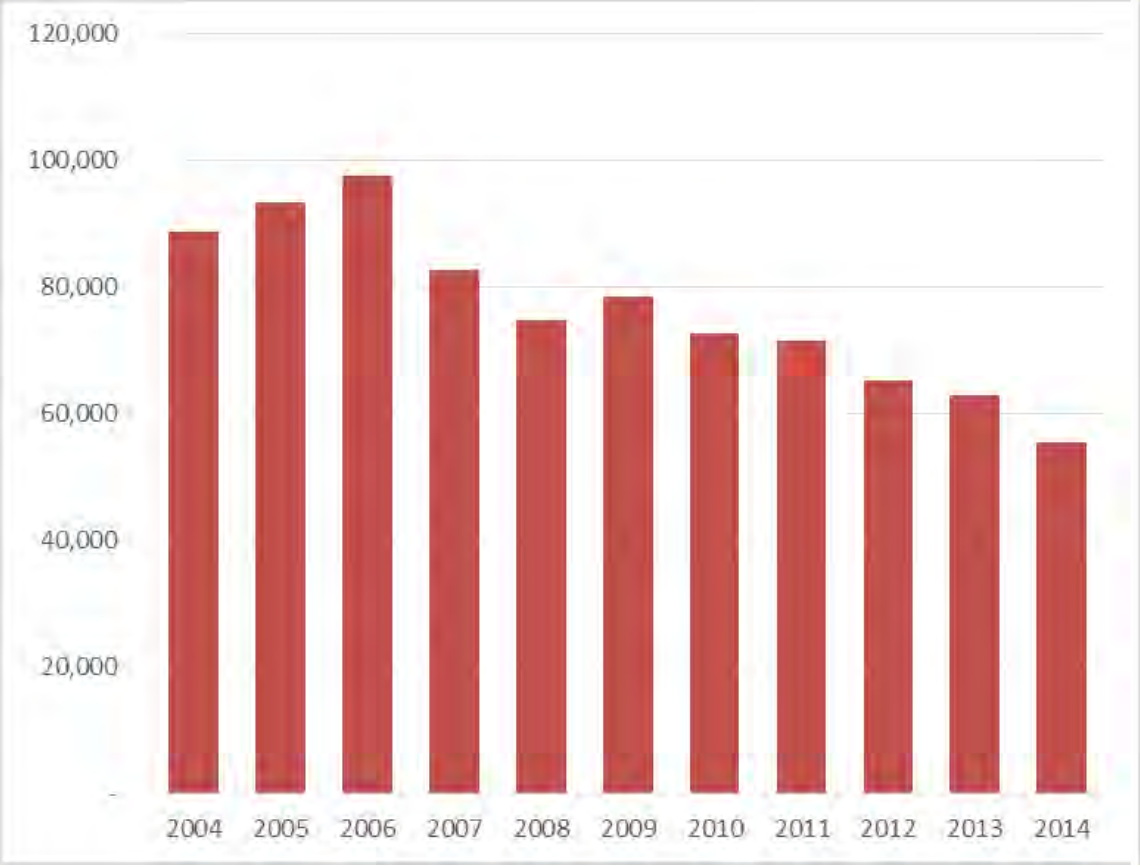


Figure 6: Landfill Capacity in the North West England 2004-2014 (thousands of cubic metres)

4.3-3 In 2012 the inputs to landfills in North West England amounted to 5.2 million tonnes (from a peak of 10.9 million tonnes in 2004/5). At this 2012 input rate, the available void in the region would be filled in around 10 years.

4.3-4 Studying the available data in more detail shows that of the 30.5 million cubic metres available in the Cheshire sub-region, 17.3 million cubic metres is located in Warrington, 8.9 million cubic metres in Cheshire West & Chester and 1.62 million cubic metres in Cheshire East. This data is summarised by landfill type in the following table.

Table21: Landfill Void by Landfill facility type, Cheshire, 2012 (in cubic metres, Source: Environment Agency)

Landfill Type	Cheshire East	Cheshire West & Chester	Warrington	Total
Hazardous Merchant	39,000	1,697,990		1,736,990
Inert	0		10,000,000	10,000,000
Non Hazardous	1,577,247	7,219,143	8,283,619	17,080,009
Restricted			1,724,625	1,724,625
Total	**1,616,247**	**8,917,133**	**20,008,244**	**30,541,624**

4.3-5 In order to establish the existing capacity in CWaC by site, primarily information sourced from the Environment Agency (EA) was used regarding sites with relevant permits, with supporting information supplied by the WPA. This identified the following operating landfill sites:

Table22: Operational and Planned Landfills, Cheshire West and Chester

Status	Operator Name	Facility Name	Facility Type Description	Type of waste	2014 Deposits (tonnes)	Landfill void m^3 (2012)	Planning Permission End Date (If Applicable)	Notes
Operational	3C Waste Ltd (FCC)	Gowy Landfill	Non-hazardous landfill	LACW, C&I & CD&E	191,137	1,924,585 (equates to approx. 1.636m tonnes)	2016, application received to extend to 2022	Accepts waste from other WPAs predominantly based in the North West and North Wales.
Operational	Ineos Enterprises Limited	Holford Brinefield Landfill Site	Non-hazardous landfill	C&I	34,533	2,994,558 (equates to approx. 2,545m tonnes)	2030	In-house facility
Operational	Veolia ES (UK) Limited	Winsford Rock Salt Mine Waste	Hazardous merchant landfill	Hazardous	30,838	1,697,990 (equates to approx.	2035	Specialist facility accepting waste from all over the country. Currently

Status	Operator Name	Facility Name	Facility Type Description	Type of waste	2014 Deposits (tonnes)	Landfill void m^3 (2012)	Planning Permission End Date (If Applicable)	Notes
		Disposal Facility				1.443m tonnes)		does not treat waste produced in CWaC. Permitted to receive 100,000 tonnes per year.
Operational	Manchester Ship Canal Co Ltd	Frodsham Marsh Lagoons	Restricted landfill	Hazardous	34,712	N/A	2030	In-house facility for material dredged from the Manchester Ship Canal only
Planned	Cory Environmental	Kinderton Lodge	Non-hazardous landfill	LACW, C&I & CD&E	Not operational	2,100,000 (equates to approx. 1.785m tonnes)		

Source: Anthesis

4.3-6 This summary shows that there is one key facility i.e. Gowy Landfill. This site was initially due to close in 2016 but an application has been received to extend this to 2022.

4.3-7 Although there are three other landfill sites, these are specialist sites, two of which only accept in-house waste from specific operations. The other is a hazardous waste facility which mainly takes wastes from thermal treatment processes, and currently does not take waste generated within CWaC. Note there is also planning permission for a mineral extraction and restoration by waste disposal at Kinderton Lodge, near Middlewich. The planning permission is extant but the site is not operational. This could provide additional capacity in medium term.

Incineration and Energy from Waste

4.3-8 Thermal treatment of waste can consist of simple incineration, typically used for clinical or hazardous wastes or incineration with energy recovery, which has become increasingly prevalent in the recovery of non-hazardous wastes, with the steam produced by the combustion process driving turbines to produce electricity. Advanced technologies are also starting to appear, such as gasification and pyrolysis, which aim to break down residual waste into fuels for either on-site electricity generation or for energy use off site.

4.3-9 The move away from landfilling residual waste in recent years, driven by significant increases in landfill tax, has seen a considerable increase in the amount of available energy from waste capacity, and in volumes of waste recovered using this technology both nationally and regionally. Returns data from the Environment Agency in 2014 (the latest available) shows nearly 12 million tonnes of incineration capacity in England, of which 0.6 million tonnes is in the North West region (see Table23).

Table23: Incineration capacity, 2014 (100,000s tonnes)

Incineration Type	North West	England
Animal By-Product	100	1,418
Clinical	21	199
Co-Incineration of Hazardous Waste	175	814
Co-Incineration of Non Hazardous Waste	-	1,269
Hazardous	100	174
Municipal and/or Industrial & Commercial	127	7,746
Sewage Sludge	100	298
Total	**623**	**11,918**

Source: Environment Agency Waste Management Data

Table24: Operational and Planned Energy from Waste Facilities, Cheshire West and Chester

Status	Site Name	Facility Type	Waste Type	Permitted annual capacity per site (tpa)	2014 Deposits	Notes
Operational	Bridges Road, Ellesmere Port	Incineration without energy recovery	Hazardous	100,000	89,280	
Planned	Ince Park EfW	Energy from waste	Residual waste based RDF (LACW & C&I	350,000	N/A	Original planning permission granted 2009. Application to reduce capacity (the capacity listed) has just been approved.
Planned & in construction	Ince Biomass Energy Plant, CoGen	Energy from waste	Waste wood	170,000	N/A	Under construction – operational early 2017
Planned	Brunner Mond, Lostock Works Site	Energy from waste	Residual waste (LACW & C&I)	600,000	N/A	Planning permission granted 2012 (expires 2017)
Planned	Lostock-Bedminster (Bio-energy plant)	Pyrolysis with MBT	Residual waste, biomass	200,000	N/A	Implemented planning permission by ground works, but no further actions.
Planned	Trinity Research, Ellesmere Port	Pyrolysis with MRF	Recyclate (polymer) separation from mattresses, carpets, household waste	N/A	N/A	Not yet started on site

Source: Anthesis

4.3-10 Table24 shows that the only incineration facility currently operational within CWaC is a hazardous waste facility in Ellesmere Port. However there is significant capacity of EfW facilities with planning permission within CWaC to treat both residual waste from LACW and C&I sources. It is not clear, however, which of these facilities will be financed and built. Only the waste wood facility is currently under construction.

Organic Waste Recycling (Composting, Anaerobic Digestion)

4.3-11 The biodegradation of organic wastes such as discarded food, garden vegetation, crop waste etc., can produce an output for conditioning and fertilising soil for agricultural, horticultural or domestic use via composting or similar facilities. Various types of organic waste recycling facility exist including windrow composting, in-vessel composting and anaerobic digestion. Windrow composting is used primarily for the biodegradation of garden and crop waste and other vegetable based materials, whilst in-vessel composting and anaerobic digestion facilities can also take kitchen and commercial food waste as long as they meet the requirements of the Animal By Products regulations.

4.3-12 Environment Agency returns data for 2014 reports that of inputs of approximately 96kt into composting sites in the North West region, 84.5k of which was to sites in the Cheshire sub-region. From this data, sites identified in CWaC are summarised in Table25 below. Operational annual capacity, which is used for the gap analysis, is derived from waste inputs from the WDI, and reflect the working capacity of the facility, as opposed to permitted capacity which can include storage capacities.

Table25: Organic Waste Processing Capacity, 2014 (tonnes)

Status	Site Name	Facility Type	Waste Type	Permitted annual capacity per site	2014 Deposits	Operational annual capacity (*)
Operational	Cotton Abbotts Composting Facility	Composting	LACW	24,999	12,062	10,754
Operational	Hapsford Composting Site	Composting	LACW	24,999	24,606	24,182
Operational	Gowy Composting Site (scheduled to close 2022)	Composting	LACW	20,000	11,551	10,935
Planned	Stockton Hall Farm	Anaerobic digestion	Agricultural	N/A	N/A	Planning permission approved May 2016
Planned	Old Hall Farm	Anaerobic digestion	Agricultural	N/A	N/A	Planning permission decision pending
Planned	Ince Park (Protos) Plot 5	In-vessel composting (IVC)	LACW/C&I	40,000	N/A	Planning permission approved

(*) operating capacity either based on information from the operator are calculated as an average of the inputs in 2012, 2013 and 2014.

4.3-13 These figures therefore demonstrate a total operational windrow composting capacity in CWaC of some 46,000 tonnes, which can take garden waste and vegetables wastes, but cannot take non-vegetable food waste as input. In addition, planning permission has been given for 40,000 tonnes of IVC capacity at Ince Park (Protos). For anaerobic digestion which can take non-vegetable food wastes, the two facilities available do not have capacity for externally generated, non-agricultural wastes and therefore have not been included in this analysis.

Material Recovery Facilities (MRF)

4.3-14 Where recyclates such as plastics, metals, paper, cardboard, glass are collected as mixed streams, or "co-mingled", material recovery facilities or MRFs, are required to separate the individual material streams so they can be reprocessed and reused. Facilities usually have a degree of automation involved, although manual handling and separation of some materials is also typically practised.

4.3-15 Similarly "dirty MRFs" can be used to separate recyclates from a residual waste stream.

4.3-16 The provision of material recovery facilities, for the separation of recyclates for recycling operations elsewhere, in CWaC is summarised in the Table26 below:

Table26: MRF capacity, 2014 (tonnes)

Status	Site Name	Waste Type	Permitting annual capacity	2014 Deposits
Operational	Manisty Wharf (Recresco)	LACW, C&I	383,000	204,170
Operational	Central Depot, Bumpers Lane (Kier)	LACW	24,999	3,171
Operational	FCC Ellesmere Port	LACW, C&I (residual waste)	125,000	n/a
Planned	Ince Park (Protos) Plot 5	LACW, C&I	60,000	n/a

4.3-17 There is nearly 400kt of operational dry recyclables sorting capacity within CWaC, with a further 60kt of planned capacity. There is also an additional 125kt of dirty MRF capacity which accepts residual waste for further segregation of recyclate materials.

Transfer Stations

4.3-18 Transfer stations provide storage and bulking of wastes to allow cost effective transport of waste collected by collection vehicles to waste management facilities further afield. Transfer stations can receive and bulk both residual waste streams and separated recyclates depending upon the local situation and requirements.

4.3-19 CWaC has considerable provision for transfer and bulking stations as summarised in the Table27. The vast majority of the capacity is for the transfer of LACW and C&I wastes, however there is one facility for hazardous waste with a capacity of 50k tpa. For economic and environmental reasons it is usual that such facilities are used to bulk materials before further transport onto final landfill disposal or energy recovery sites.

In some cases, a degree of separation of recyclates from inputs streams may also take place to further decrease the need for bulked transport and retrieve valuable materials for sales into the recycling markets.

Table27: Transfer Station Capacity, 2014 (tonnes)

Status	Site Name	Site Address	Facility Type	Waste Type	Permitting annual capacity	2014 Deposits
Operational	Winsford Depot	Woodford Park, Leslie Road, Woodford Park Ind Est, Winsford, Cheshire	Non-haz transfer	LACW, C&I	74,999	17,299
Operational	Ash Metal Recycling Limited	Ashfield House, Dunkirk Way, Chester, Cheshire, CH1 6LZ,	Non-haz transfer	LACW, C&I	35,259	4,030
Operational	Cheshire Waste Skip Hire Limited	Land / Premises At, Backford Hill, Backford, Chester, Cheshire, CH1 6PE,	Non-haz transfer	LACW, C&I	45,348	21,981
Operational	Bridges Road Transfer Station	Bridges Road, Ellesmere Port, Cheshire, CH65 4LD,	Non-haz transfer	LACW, C&I	74,999	35,841
Operational	Chapterhouse Transfer Station	Chapterhouse Close, Ellesmere Port, Cheshire, CH65 4EP,	Non-haz transfer	LACW, C&I	74,999	13,141
Operational	Ashworth Contractors (AAA Skip Hire Ltd)	Plot 13, Rear Of Farmers Arms 249 Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DR,	Non-haz transfer	LACW, C&I	5,000	1,134
Operational	Northwich Mini Skips	Unit 4 Rudeath Industrial Estate, 249 Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DR,	Non-haz transfer	LACW, C&I	5,000	1,160
Operational	Guilden Sutton Depot	A55 Expressway, Guilden Sutton, Chester, Cheshire, CH3 7EX,	Non-haz transfer	LACW, C&I	25,000	1,854
Operational	Tattenhall Transfer Station	Tattenhall Road, Tattenhall, Chester, Cheshire, CH3 9QQ,	Non-haz transfer	LACW, C&I	74,999	20,249
Operational	Bridges Road Transfer Station	Hopewell House, Bridges Road, Ellesmere Port, Cheshire, CH65 4LB	Non-haz transfer	LACW, C&I	75,000	9,803
Operational	Davenham Highways Depot	Cheshire West & Chester Council, Davenham, Cheshire, CW9 8EH,	Non-haz transfer	LACW, C&I	25,000	1,450

Status	Site Name	Site Address	Facility Type	Waste Type	Permitting annual capacity	2014 Deposits
Operational	A S H Skip Hire	Land At Brunner Mond, Park Road, Winnington, Northwich, Cheshire, CW8 4EB,	Non-haz transfer	LACW, C&I	25,000	6,869
Operational	Ellesmere Port Municipal Depot	CWaC Transfer Depot, Rossfield Road, Ellesmere Port, Cheshire, CH65 3AW,	Non-haz transfer	LACW, C&I	25,000	1,311
Operational	Cheshire Waste Management Centre	Oil Sites Road, Ellesmere Port, South Wirral, Ch65 4hf,	Haz transfer	LACW, C&I	50,000	2,725
Operational post 2014	Canalside Operations Hub	CWaC, Ellesmere Port	Non-haz transfer	LACW, C&I	N/A	N/A
Planned	Cheshire Oaks Outlet Village	Kinsey Road Ellesmere Port Cheshire	Non-haz transfer	C&I		
Planned	Lostock-Broadthorn	Works Lane, Northwich	Non-haz transfer	LACW, C&I		

In addition there are 7 operational HWRC sites taking exclusively LACW as summaries in Table28.

Table28: HWRC Capacity, 2014 (tonnes)

Status	Site Name	Site Address	Facility Type	Waste Type	Permitting annual capacity	2014 Deposits
Operational	Winsford Household Waste Recycling Centre	Leslie Road Woodford Park Ind. Est., Winsford, Cheshire,	HWRC	LACW	24,999	6,700
Operational	Neston Civic Amenity Site	Land/premises At, Land Off Leighton Road, Neston, Chester, Cheshire, CH1 6PA,	HWRC	LACW	12,499	3,736
Operational	Chester Civic Amenity Site	Land/ Premises At, Bumpers Lane, Sealand Road, Chester, Cheshire, CH1 4LT,	HWRC	LACW	24,999	9,047
Operational	Tattenhall Civic Amenity Site	Land/premise At, Red Lane, Tattenhall, Huxley, Cheshire, CH3 9BD,	HWRC	LACW	5,000	2,397

Status	Site Name	Site Address	Facility Type	Waste Type	Permitting annual capacity	2014 Deposits
Operational	Frodsham Civic Amenity Site	Old Station Yard, Church Street, Frodsham, Cheshire, WA6 6PN,	HWRC	LACW	5,000	3,189
Operational	Ellesmere Port Household Waste Recycling	Land/premises At, Off Bridges Road, Ellesmere Port, Cheshire, CH65 4LB,	HWRC	LACW	24,999	8,516
Operational	Whitton Household Recycling Centre	Old Warrington Road, Northwich, Cheshire, CW9 5LN,	HWRC	LACW	25,000	7,907
Planned	HWRC Bumper lane (relocation of existing HWRC)	29 Bumpers Lane Chester Cheshire	HWRC	LACW		

4.3-20 CWaC has over 700k tpa of operational permitted capacity of LACW and C&I waste transfer, with an additional 50k tpa for hazardous waste.

Other facility types

4.3-21 There are a number of other types of waste facility in CWaC according to permitting and planning data. This includes several wastewater treatment sites, land spread/recovery options and an MBT facility. These are summarised in the following table. Most are specific to particular waste streams or co-located with waste producing facilities.

Table29: Capacity, other facility types in CWaC 2014 (tonnes)

Status	Site Name	Site Address	Facility Type	Waste Type	Permitting annual capacity	2014 Deposits
Operational	Ottersbank Farm	Fishpool Road, Delamere, Northwich, Cheshire, CW8 2HP,	Deposit of waste to land as a recovery operation	CD&E	50,000	5,925
Closed (2015)	Ellesmere Port WEEE Facility	Sims Group Ellesmere Port, South Road, Ellesmere Port, Cheshire	WEEE treatment facility	LACW, C&I	150,000	17,093
Operational	Ellesmere Port Waste Water Treatment Works	Ellesmere Port W W T W, Little Stanney, Nr Chester, Cheshire, CH2 4HZ	Biological Treatment Facility	Industrial	450,000	156,827

Status	Site Name	Site Address	Facility Type	Waste Type	Permitting annual capacity	2014 Deposits
Operational	J H & D J Willis	Holme Farm, Marsh Lane, Ince, Chester, Cheshire, CH2 4NR	Lagoon	Industrial	75,000	4,421
Operational	Northwich Waste Water Treatment Works	Wallescote Avenue, Winnington, Northwich, Cheshire, CW8 4EG	Biological Treatment Facility	Industrial	250,000	4,290
Operational	Lostock Sodium Carbonate Manufacturing Site	Brunner Mond (UK) Ltd, Lostock Gralam, Cheshire, CW9 7TH	Physical Treatment Facility	LACW, C&I	25,000	433
Operational	Stanlow Oil Terminal	Bridges Road, Cheshire, CH65 4EQ	Physico-Chemical Treatment Facility	Industrial	50,000	1,104
Operational	Ellesmere Port Transformer Oil Regeneration Plant	Electrical Oil Services, Bridges Road, Stanlow, Ellesmere Port, Cheshire, CH65 4WD	Physico-Chemical Treatment Facility	Industrial	24,999	10,825
Planned	Ash Road Elton (Encirc Ltd)	Ash Road Elton Chester CH2 4LF	Waste water treatment	Industrial		
Planned	Manor Farm Marston Lane	Marston Lane Marston Northwich Cheshire	Land recovery	CD&E		
Planned	Plot 4	Ince Park (Protos)	IBA Recycling Facility	Output from EfW	250,000	N/A
Planned & in construction	Lostock Works (Dong Energy)	Lostock Works, Works Lane, Northwich	MBT - Anaerobic digestion	Residual LACW	144,000	N/A

4.3-22 These facilities amount to a total operational permitted capacity of approx. 925,000tpa (not including the now closed 150,000tpa WEEE facility at Ellesmere Port) with 144,000tpa in construction.

Exempt Sites

4.3-23 A number of waste management sites in CWaC have exemptions from waste permitting, usually due to the small volumes that they process, or the low environmental risk of the material they process. Exempt sites are particularly prevalent in the processing of construction and demolition wastes, wood wastes or in the operation of small on-farm composting facilities.

4.3-24 Unfortunately, there is little data available nationally and locally on exempt waste sites, both in terms of which sites which have an exemption with the Environment Agency are actually operating, or working capacity is available at such sites, as the operators of such sites have a low reporting requirement. However, Table 30 gives totals for the sites of each exemption type registered in CWAC (as of September 2016). Many reflect the rural nature of parts of the authority area.

Table 30: Exempt Sites in CWAC (number of separate sites by exemption)

Exemption	Exemption Description	No of Exempt Sites
D1	Deposit of waste from dredging of inland waters	160
D2	Deposit of waste from a railway sanitary convenience	1
D3	Deposit of waste from a portable sanitary convenience	21
D4	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice	56
D5	Depositing samples of waste for the purposes of testing or analysing them	2
D6	Disposal by incineration	39
D7	Burning waste in the open	207
D8	Burning waste at a port under a Plant Health notice	1
S1	Storage of waste in secure containers	61
S2	Storage of waste in a secure place	105
S3	Storage of sludge	338
T1	Cleaning, washing, spraying or coating relevant waste	35
T10	Sorting mixed waste	10
T11	Repair or refurbishment of WEEE	7
T12	Manual treatment of waste	8
T13	Treatment of waste food	6
T14	Crushing and emptying waste vehicle oil filters	11
T15	Treatment of waste aerosol cans	8
T16	Treatment of waste toner cartridges by sorting, dismantling, cleaning or refilling	2
T17	Crushing waste fluorescent tubes	6
T18	Dewatering using flocculants	1
T19	Physical treatment of waste edible oil and fat to produce biodiesel	2
T2	Recovery of textiles	2
T20	Treatment of waste at a water treatment works	2
T21	Recovery of waste at a waste water treatment works	4
T23	Aerobic composting and associated prior treatment	45
T24	Anaerobic digestion at premises used for agriculture and burning of resultant biogas	7
T25	Anaerobic digestion at premises not used for agriculture and burning of resultant biogas	4
T26	Treatment of kitchen waste in a wormery	3
T27	Treatment of sheep dip for disposal	3
T28	Sorting and de-naturing of controlled drugs for disposal	18
T29	Treatment of non-hazardous pesticide washings by carbon filtration for disposal	10
T30	Recovery of silver	1
T31	Recovery of monopropylene glycol from aircraft antifreeze fluids	1
T32	Treatment of waste in a biobed or biofilter	8
T33	Recovery of central heating oil by filtration	1

Exemption	Exemption Description	No of Exempt Sites
T4	Preparatory treatments (baling, sorting, shredding etc)	33
T5	Screening and blending of waste	38
T6	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising	108
T8	Mechanical treatment of end-of-life tyres	7
T9	Recovery of scrap metal	27
U1	Use of waste for construction	232
U10	Spreading waste on agricultural land to confer benefit	181
U11	Spreading waste on non-agricultural land to confer benefit	23
U12	Use of mulch	58
U13	Spreading of plant matter to confer benefit	80
U14	Incorporation of ash into soil	36
U15	Pig and poultry ash	5
U16	Use of depolluted end-of-life vehicles for vehicle parts	2
U2	Use of baled tyres in construction	31
U3	Use of construction waste for exhibits etc	2
U4	Burning of waste as a fuel in a small plant	80
U5	Use of biodiesel derived from waste	28
U6	Use of sludge for the purposes of re-seeding a waste water treatment plant	1
U7	Use of effluent to clean a highway gravel bed	1
U8	Use of waste for a specified purpose	180
U9	Use of waste to manufacture finished goods	14
Total		**2,363**

Source: Environment Agency (September 2016)

Waste Movements

4.3-25 Available waste management capacities in CWaC for locally generated waste can also be impacted by wastes from outside the WPA area being imported to take a portion of local capacity, or CWaC generated waste leaving the WPA area to use capacity elsewhere.

4.3-26 The Environment Agency Waste Data Interrogator (WDI) provides some data on movements of waste between waste planning authority areas, to give an idea of movements in the local waste markets. Although generally a useful dataset, not all movements give a detailed geographic waste source, and movements to those facilities exempt from waste management licencing are not reported. Therefore the picture provided may be partial in some cases, but still adds value to the evaluation of available capacity in CWaC.

4.3-27 Examining data for the CWaC area shows:

- 70% of all waste generated in CWaC appears to be processed or disposed of in CWaC[15]. Around 61% of this is sent to landfill (mostly C&I waste)[16];

[15] Note this does not take into account any proportion of the waste with origin coded "Cheshire County"

[16] Note that WDI data does not include movements to recycling re-processors, energy from waste facilities and exempt facilities, so conclusions can only be drawn from the data that is available.

- Of that handled outside of CWaC, the main destinations are Cheshire East, other authorities within the North West region, and the Yorkshire and Humber region. Authorities within the West Midlands are also used, although predominantly for their transfer facilities rather than actual treatment or disposal capacity.

4.3-28 Destinations of waste generated in CWaC are presented in Table31, for 2014. Note these tonnages are for those directly coded in WDI as from CWaC, rather than any of the waste identified as being from Cheshire, but not able to be coded to either CWaC or Cheshire East WPA.

Table31: Destination of Waste Generated in CWaC WPA, 2014

Destination	Region	Tonnes into all Facility Types	% of total	Tonnes into all Facility Types excluding transfer	% of total
Cheshire West and Chester WPA	North West	188,357	68%	130,640	70%
Cheshire East WPA	North West	24,394	9%	24,394	13%
Shropshire WPA	West Midlands	20,715	7%	72	0%
Staffordshire WPA	West Midlands	16,615	6%	7,566	4%
Manchester WPA	North West	8,582	3%	8,582	5%
Wakefield WPA	Yorks & Humber	2,967	1%	2,945	2%
Warrington WPA	North West	2,745	1%	2,745	1%
Halton WPA	North West	1,901	1%	1,124	1%
Kirklees WPA	Yorks & Humber	1,606	1%	1,606	1%
Knowsley WPA	North West	1,421	1%	23	0%
Bolton WPA	North West	1,191	0.4%	1,191	1%
Doncaster WPA	Yorks & Humber	1,172	0.4%	1,172	1%
Other WPAs receiving less <1,000 tonnes each		5,047	2%	4,277	2%
Total		**276,714**		**186,339**	

Source: EA WDI 2014

4.3-29 Conversely, 45% of waste inputs into CWaC located waste facilities comes from CWaC itself and the former Cheshire County area, mainly to non-hazardous landfills and treatment facilities. This reduces to 39% if transfer stations are deducted.

4.3-30 A significant proportion of the remainder of the inputs come from the North West region in general and from close neighbours Liverpool, Flintshire, Wirral and Warrington – mostly to treatment facilities and landfill sites. Material received from further afield is mainly inputs to specific waste management facility types e.g. hazardous waste to WEEE treatment facility.

Table32: Source of Household, Industrial & Commercial Waste handled in CWaC WPA, 2014 (source WDI)

Source	Tonnes Received	% of total	Tonnes received (excluding transfer)	% of total
Cheshire West and Chester	188,357	24%	130,640	20%
Cheshire (not classified)	165,103	21%	127,366	19%
North West (not classified)	87,880	11%	71,208	11%
Wales (not classified)	65,961	8%	65,907	10%

Source	Tonnes Received	% of total	Tonnes received (excluding transfer)	% of total
West Midlands (not classified)	46,518	6%	46,514	7%
Liverpool	32,492	4%	32,475	5%
Flintshire UA	29,126	4%	24,939	4%
Wirral	26,286	3%	8,571	1%
Not classified	26,037	3%	26,037	4%
Warrington UA	14,807	2%	14,802	2%
Wrexham UA	13,468	2%	12,655	2%
Bexley	8,926	1%	8,926	1%
WPA Not Codeable (South East)	7,879	1%	7,879	1%
Lancashire	7,145	1%	7,126	1%
WPA not codeable (Yorks & Humber)	7,108	1%	7,091	1%
County Durham UA	6,835	1%	6,833	1%
Wigan	6,576	1%	6,575	1%
Birmingham City	6,396	1%	6,391	1%
Halton UA	5,816	1%	5,816	1%
Blaenau Gwent UA	4,164	1%	4,064	1%
Staffordshire	2,817	0.4%	2,801	0%
Swindon UA	2,536	0.3%	2,536	0%
Newport UA	2,518	0.3%	2,451	0%
Stoke-on-Trent UA	2,155	0.3%	2,153	0%
Sefton	2,021	0.3%	2,021	0%
Tameside	1,541	0.2%	1,541	0%
North Tyneside	1,495	0.2%	1,495	0%
Leicestershire	1,174	0.1%	1,172	0%
Rotherham	1,170	0.1%	1,170	0%
Doncaster	1,109	0.1%	1,109	0%
Other WPAs sending <1000 tpa	16,745	2%	16,099	2%
Total	792,157		656,364	

Source: EA WDI 2014

Capacity Summary and Forecasts

4.3-31 Using the data collected on individual sites operating or planned to operate within CWaC, and forecasting the total capacity per waste management type to 2030 using information obtained on new facility start up dates and existing facility closure dates, Table33 estimates of capacity per year to 2030 have been produced. Using the corresponding arisings estimates, capacity gaps now and in the future are identified in the following section of this report.

Table33: Capacity forecasts for Cheshire West and Chester by waste management type, 2015 to 2030 (to nearest 1,000 tonnes)

Facility Type	2015	2020	2025	2030
Biomass	0	170,000	170,000	170,000
Hazardous incinerator	100,000	100,000	100,000	100,000

Facility Type	2015	2020	2025	2030
Hazardous landfill	100,000	100,000	100,000	100,000
Hazardous transfer	50,000	50,000	50,000	50,000
HWRC/Non-hazardous transfer	737,099	726,500	726,500	726,500
In-Vessel Composting	0	40,000	40,000	40,000
MBT	0	100,000	100,000	100,000
MBT & anaerobic digestion	0	144,000	144,000	144,000
MBT & pyrolysis	0	200,000	200,000	200,000
MRF	532,999	592,999	592,999	592,999
Non-hazardous EfW	0	600,000	600,000	600,000
non-hazardous landfill	250,000	550,000	300,000	300,000
Open Air Windrow composting	45,871	45,871	34,936	34,936
RDF EfW	0	350,000	350,000	350,000
Specialist treatment	0	80,000	80,000	80,000
Total	**1,815,969**	**3,849,370**	**3,588,435**	**3,588,435**

This therefore estimates a current (2015) capacity of 1.8 million tonnes pa, increasing to 3.6 million tonnes by 2030. Capacity forecasts per site are given in Appendix 5.

5 Capacity Gap Analysis

5.1-1 By comparing arisings forecasts with identified capacity in the CWaC WPA area, a gap analysis has been developed for each major waste management facility type as follows.

5.2 Capacity for Organic Waste Management

5.2-1 Organic wastes such as garden wastes, kitchen and commercial food wastes, crop wastes can be recycled using aerobic composting (such as windrow or in-vessel) or anaerobic digestion. There are established land spread reuse routes for organic crop wastes generated by agriculture which do not impact on the waste management requirements for the WPA. Therefore, main sources of organic waste are household collections and commercial and industrial waste, from, for instance, food manufacturers, retailers, caterers etc.

5.2-2 Food waste must be handled in such a way as to comply with the animal by-products regulations. This means it must be kept under cover at all times and processed at a sufficiently high temperatures to ensure that the end digestate is safe for use on the land. These processes, usually anaerobic digestion or in-vessel composting, are more expensive than the treatment required for garden waste which can be composted in open windrows.

5.2-3 A number of facilities to process organic wastes have been identified within the CWaC WPA area. There is AD capacity with planning permission, however this capacity is solely to treat agricultural waste and therefore not available for externally generated wastes. These sites have therefore been excluded from the capacity analysis.

5.2-4 Therefore a comparison of arisings requirements with the currently available waste management capacity shows that there is potentially insufficient capacity for the management of organic wastes with maximum arisings (including CD&E organic wastes) of approximately 90k tpa and capacity of potentially only 46k tpa, declining to 35k tpa from 2025 onwards.

Table34: Organic waste, CWaC arisings and capacity forecasts, 2015 - 2030 (to nearest 1,000 tonnes)

	2015	2020	2025	2030
LACW & C&I organic arisings	59,000	61,000	61,000	62,000
CD&E organic arisings	31,000	31,000	31,000	31,000
Total organic arisings	90,000	92,000	92,000	93,000
Total organic capacity	45,871	85,871	74,936	74,936
Capacity gap (all types)	**44,129**	**6,129**	**17,064**	**18,064**
Capacity gap (LACW & C&I only)	**13,129**	**-24,871**	**-13,936**	**-12,936**

5.2-5 The comparison of arisings to capacity suggests that there is potentially insufficient organic recycling capacity in CWaC to deal with local arisings to 2030. If facilities located in other Waste Planning Authority Areas turn out not to be available, then sites should be sought for the development of new capacity within CWaC.

5.2-6 Additional capacity for the treatment of organic waste is required of 18ktpa in 2030 if the requirement for CD&E organic waste is included. Just examining organic wastes from LACW and C&I sources, there is a capacity surplus in 2030 of 13ktpa. This has been considered separately as it is a more variable waste stream in terms of quantities estimated. However, it should also be noted that according to the Environment Agency there are currently 45 T23 aerobic composting exempt sites in CWaC (at up to 400tpa per site = 18,000tpa) and 4 T25 anaerobic digestion exempt sites (at max. 1,000tpa per site = 4,000tpa) and significant permitted capacity in WDAs proximate to CWaC, suggesting that any capacity shortfall is likely to be absorbed by the local and regional market.

5.2-7 Anaerobic digestion facilities can vary considerably in their capacity, from 1,000 tonnes per annum upwards. Sites of 0.3 hectares can accommodate AD facilities with a capacity of 5k tpa (such as the AD plant at Coder Road, Ludlow Business Park, Ludlow) or a capacity of 18k tpa as at the facility at Rogerstone, Caerphilly.

5.2-8 Composting facilities tend to require more space due to the need for maturation of the compost. However, a significant proportion of the organic waste arisings will be more suited to composting facilities, as opposed to AD e.g. in particular the CD&E waste.

5.2-9 Due to the land take required for such facilities, Ince Park (Protos), as a safeguarded allocated site, could accommodate such developments.

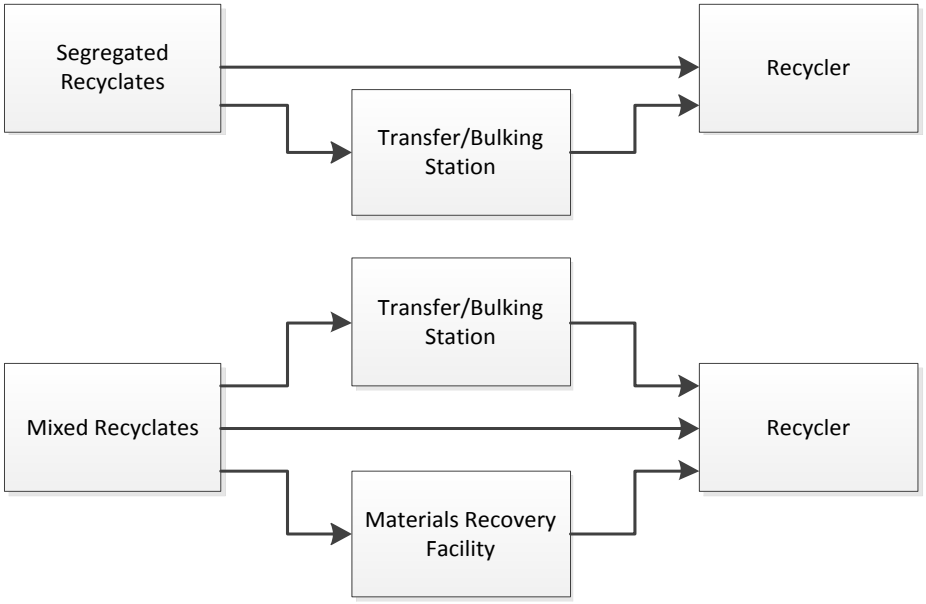
5.2-10 In the selection of a site for waste management, it is important that vehicular access is adequate and that routes to the site are appropriate for industrial traffic and do not conflict with sensitive uses such as housing. The immediate area around a waste management site should also be safeguarded from sensitive development to avoid conflicts of uses and complaints about noise or odour. Industrial sites are generally appropriate for modern waste management facilities, but existing buildings rarely have sufficient eaves height for their development.

5.3 Capacity for Recycling

5.3-1 In general, recyclates such as plastics, metals, paper and cardboard, glass, are collected for recycling either as a segregated single material waste stream, or as a mixture of recyclates i.e.: co-mingled. Co-mingled waste streams therefore need additional processing to segregate the individual recyclates for further processing by material specific recyclers or reprocessors. These types of facility are termed material recovery facilities (MRF).

5.3-2 Assessing the capacity requirements for recycling waste can be problematic as in general much of the recyclate segregated by businesses for recycling is transported directly to the recycler without passing through a transfer station or other licenced waste management facility. As recyclers tend to be exempt from waste management licencing, this means that the data on these arisings, transfers and capacities is lost from the usual Environment Agency waste site returns data. Potential supply routes for collected recyclates are summarised in Figure 7 below:

Figure 7: Potential Routes of Recycling



5.3-3 This means that MRF capacity is not necessarily required in order to increase the quantity of materials that is recycled. It should also be noted that the delineation between facilities described as MRFs and transfer stations is getting increasingly confused, as transfer station operators often separate recyclate materials for recycling from their input streams, rather than just bulking for transport to other facilities.

5.3-4 CWaC operate a multi-stream, kerbside sort collection system, where the collection crew separates different materials into different parts of the collection vehicle, meaning the requirement for further sorting is minimal. However, there is often a requirement to separate out any contamination, and some materials require further sorting before they can actually be reprocessed e.g. plastic into different polymer types, and glass into different colours (depending on whether it is recycled back into container glass or aggregate).

5.3-5 Current MRF capacity is 533k tpa, however, 125k tpa of this is to separate recyclates from residual waste, rather than dry recycling streams. Nevertheless, the remaining 408k tpa is sufficient to sort the estimated 343k tpa which is anticipated to arise, and it is understood that not all of the dry recycling arising actually requires sorting capacity. By 2030, capacity is forecast to increase to 468ktpa with arisings of 400ktpa.

Table35 shows that there is more than enough capacity to deal with dry recycling waste generated within CWaC, with a capacity surplus of between 65ktpa (2015) and 68ktpa (2030).

Table35: Dry recycling waste, CWaC arisings and capacity forecasts, 2015 - 2030 (to nearest 1,000 tonnes)

Capacity Type	2015	2020	2025	2030
Dry recycling MRF capacity	408,000	468,000	468,000	468,000
Residual MRF capacity	125,000	125,000	125,000	125,000
Total MRF capacity	533,000	593,000	593,000	593,000
Dry recycling arisings	343,000	402,000	403,000	400,000
Capacity gap (dry recyclates)	-65,000	-66,000	-65,000	-68,000

5.4 Capacity for Residual Waste Management

5.4-1 Residual waste is that which is left after materials have been removed or segregated for recycling i.e. the residue which cannot economically or physically be recycled. Traditionally this material has been landfilled in non-hazardous facilities, although energy recovery or some other residual waste treatment methodology such as mechanical biological treatment (MBT) are becoming more common as the cost of landfill increases through the imposition of landfill tax.

5.4-2 Comparing forecast arisings (Table36) with likely future capacity suggests there will be more than sufficient capacity in residual treatment capacity in CWaC (up to 1.5 million tpa surplus by 2030). Also of significance is that residual waste collected from households in CWaC is being transported for energy recovery to a facility at Ferrybridge in Yorkshire, some 96 miles away. While many of the facilities included in this capacity assessment are not yet operational, there are clearly sufficient sites with planning permission to manage the forecast waste arisings over the Plan Period.

Table36: Residual waste, CWaC arisings and capacity forecasts, 2015 – 2030 (to nearest 1,000 tonnes)

Capacity type	2015	2020	2025	2030
MBT	0	100,000	100,000	100,000
MBT & anaerobic digestion	0	144,000	144,000	144,000
MBT & pyrolysis	0	200,000	200,000	200,000
Non-haz EfW (RDF input)	0	350,000	350,000	350,000
Non-haz EfW	0	600,000	600,000	600,000
non-haz landfill	250,000	550,000	300,000	300,000
Total Residual Waste Capacity	250,000	1,944,000	1,694,000	1,694,000
Estimated Residual Waste Arisings	194,000	159,000	160,000	160,000
Capacity Gap	**-56,000**	**-1,785,000**	**-1,534,000**	**-1,534,000**

5.4-3 However, consideration should be made to the fact that there will be no non-hazardous landfill capacity after 2022 when Gowy landfill site is scheduled to close (subject to approval of the current planning application), so whilst there is sufficient energy recovery capacity, not all waste may be able to be treated this way, and some landfill will be required. To this end, note there is also planning permission for a mineral extraction and restoration by waste disposal at Kinderton Lodge. In addition, there is significant capacity in non-hazardous landfill sites that lie in close proximity to CWaC.

5.5 Requirements for New facilities

5.5-1 Existing sites with planning permission have sufficient capacity to meet the projected needs. It is necessary to continue to monitor take up of these sites to ensure that this position doesn't change.

5.5-2 Broadly speaking, residual wastes are catered for within the planned operational capacities. However, some landfill capacity, ideally within other WPAs may, may need to be sought, to account for those wastes which are unable to be sent to energy recovery technologies. Kinderton Lodge, may also fill this gap.

5.5-3 As previously stated, in the selection of a site for waste management, it is important that vehicular access is adequate and that routes to the site are appropriate for industrial traffic and do not conflict with sensitive uses such as housing. The immediate area around a waste management site should also be safeguarded from sensitive development to avoid conflicts of uses and complaints about noise or odour. Industrial sites are generally appropriate for modern waste management facilities, but existing buildings rarely have sufficient eaves height for the development of waste management facilities.

5.6 Construction, Demolition and Excavation Wastes

5.6-1 In CWaC, approximately half of the recorded CD&E which is disposed to landfill, is disposed of at landfill sites within the authority boundary. Some of this material will be required as cover for non-hazardous landfill sites or for restoration purposes. Sites for the treatment of inert wastes are often based at quarries or landfill sites and for this reason will ultimately be time-limited due to the temporary nature of quarries and landfill sites.

5.6-2 Because the data on this waste stream is poor, the approach from organisations such as WRAP (the Government's Waste and Resources Action Programme) is to look at ways of reducing waste arisings from this source. Qualitative approaches to reducing waste generated from construction activities have therefore been developed which significantly reduce the amount of waste arising and provide solutions to the management of this waste stream. If processing and disposal sites for CD&E wastes are located a significant distance from the location of the waste arising, it becomes uneconomic to transport the waste there and illegal tipping of these wastes is more likely to occur. The results from studies into construction waste conclude that there is a need to ensure that there is a broad distribution of appropriate sites to support the proper management of this type of waste. Such sites should be able to accommodate storage and processing facilities so that material can be recycled.

5.7 Hazardous waste

5.7-1 It is anticipated that between 55k and 60k tonnes of hazardous wastes will be generated annually in CWaC. There are two existing sites, one incinerator and the other a landfill, both of which can accept up to 100,000 tonnes per year. These are expected to remain operational throughout the period until 2030, and therefore provide enough capacity for the waste generated by CWaC.

5.8 Radioactive waste

5.8-1 Most of this material is Low Level Waste or Very Low Level Waste and can therefore be managed at non-hazardous waste management sites unless there is a specific prohibition against doing so. The quantities of radioactive waste are small and not sufficient to justify the development of new waste management facilities. Advice from the Planning Inspectorate is that policies on the management of this waste stream are unlikely to be needed unless there is specific interest in the development of facilities from operators in the area.

5.8-2 There are no nuclear facilities in CWaC such as power stations or defence installations that produce higher lever radioactive wastes which require more specialist management.

6 Conclusions & Recommendations

6.1-1 CWaC currently has sufficient operational (or likely to become operational) capacity to treat most of the different types of wastes within the WPA.

6.1-2 The approach in the Local Plan (Part One) of safeguarding sites at Ince Park, Lostock and Kinderton is still appropriate as it provides for adequate sites to meet anticipated needs to 2030. Ince Park has planning permission for a range of waste uses as a 'resource recovery park'. The site is now starting to come forward and has the scope to meet a range of waste uses – to meet future needs/demands and respond to changing technology. A summary of planning permissions for the Ince Park site is attached as Appendix 5.

Appendices

Appendix 1: Population & household forecasts

Table37: Population and household forecasts

Year	Population	No. of households
2014	336,100	145,000
2015	337,800	146,000
2016	339,600	147,100
2017	341,400	148,100
2018	343,200	149,200
2019	345,200	150,200
2020	347,000	151,300
2021	348,900	152,300
2022	350,200	153,400
2023	351,500	154,500
2024	353,100	155,500
2025	354,800	156,600
2026	356,500	157,600
2027	358,200	158,700
2028	360,100	159,700
2029	361,800	160,800
2030	363,500	161,800

Source: CWaC, Model 6, KSD2 Demographic Modelling

Appendix 2: Commercial & Industrial Waste Survey Results 2009

Table38: C&I waste arisings for North West England by sector and size, 2009 (tonnes, excluding micro (0-4 employees) businesses)[17]

Sector Description	Employee Sizebands						Total
	5 - 9	10 - 19	20 - 49	50 - 99	100 - 249	250 +	
Food, drink and tobacco	2,895	7,006	162,744	38,776	104,941	338,815	655,175
Textiles/wood/paper/publishing	2,862	32,708	98,191	154,157	286,372	42,782	617,072
Power & Utilities	517	2,188	7,269	53,741	65,672	278,635	408,022
Chemical/non-metallic minerals manufacturing	5,354	43,482	54,471	80,065	196,183	214,650	594,206
Metal manufacturing	32,016	11,852	61,998	108,447	51,230	161,304	426,848
Machinery & equipment (other manufacturing)	9,109	43,226	31,595	78,943	157,725	171,345	491,943
Retail & wholesale	224,488	335,806	394,767	226,055	171,965	384,510	1,737,591
Other services	140,717	236,193	302,778	280,455	123,388	324,990	1,408,521
Public sector	25,140	37,534	128,718	115,382	148,672	284,978	740,423
Total	443,098	749,996	1,242,531	1,136,021	1,306,148	2,202,009	7,079,803

[17] From "North West of England Commercial and Industrial Waste Survey 2009" Urban Mines for The Environment Agency, March 2010

Appendix 3: Office of National Statistics Business Population Data (as local units)

North West Region

Sector	Employment Size Band:	0-4	5-9	10-19	20-49	50-99	100-249	250+	Total
Food, drink and tobacco		470	215	155	125	65	55	55	**1,140**
Textiles/wood/paper/publishing		2,035	580	390	265	100	65	10	**3,445**
Power & Utilities		270	100	75	55	35	15	10	**560**
Chemical/non-metallic minerals manufacturing		775	295	260	250	135	110	35	**1,860**
Metal manufacturing		1,820	515	400	280	85	35	15	**3,150**
Machinery & equipment (other manufacturing)		3,335	835	550	400	200	95	45	**5,460**
Retail & wholesale		32,080	11,215	5,910	3,155	805	365	215	**53,745**
Public sector		9,880	4,335	4,390	5,010	1,920	985	375	**26,895**
Other services		108,720	20,500	10,850	6,715	1,980	1,150	525	**150,440**
Total		**159,385**	**38,590**	**22,980**	**16,255**	**5,325**	**2,875**	**1,285**	**246,695**

Cheshire West and Chester

Sector	Employment Size Band:	0-4	5-9	10-19	20-49	50-99	100-249	250+	Total
Food, drink and tobacco		25	5	5	5	0	5	0	**45**
Textiles/wood/paper/publishing		90	15	15	0	0	0	0	**120**
Power & Utilities		15	5	0	10	0	0	5	**35**
Chemical/non-metallic minerals manufacturing		45	20	0	10	10	5	5	**95**
Metal manufacturing		85	15	10	10	5	0	0	**125**
Machinery & equipment (other manufacturing)		70	15	15	15	0	5	0	**120**
Retail & wholesale		1,480	660	340	185	40	25	10	**2,740**
Public sector		585	200	220	245	90	45	15	**1,400**
Other services		5,875	730	490	330	100	50	15	**7,590**
Total		**8,270**	**1,665**	**1,095**	**810**	**245**	**135**	**50**	**12,270**

Source: Office of National Statistics, data year 2014

Appendix 4: Employment Forecasts for Cheshire West and Chester Council area by business sector

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Food, drink and tobacco	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3
Textiles/wood/paper/publishing	1.1	1.1	1.1	1	1	0.9	1	1	1	1	1	1	0.8	0.8	0.8	0.8	0.8
Power & Utilities	2.2	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2
Chemical/non-metallic minerals manufacturing	3.7	3.7	3.6	3.6	3.6	3.6	3.5	3.4	3.3	3.1	3.1	3	3	2.8	2.7	2.7	2.6
Metal manufacturing	1	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6
Machinery & equipment (other manufacturing)	3.9	4.1	4.1	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.1	4.1	4.1	3.9	3.8
Retail & wholesale	25.7	25.7	26.4	26.8	27.2	27.4	27.6	27.7	27.7	27.6	27.7	27.9	28	28.1	28.1	28.2	28.4
Other services	72.6	73.4	74.1	74.7	75.6	76.8	77.7	78.5	78.9	79.3	79.8	80.5	81	81.7	82	82.5	83.1
Public sector	36.7	36.4	35.8	35.7	35.6	35.9	36.4	36.3	36.5	36.3	36.5	36.7	36.8	37.1	37.3	37.4	37.8

Source: Baseline projections from the Cheshire & Warrington Econometric Model (CWEM) aligned with Local Plan forecast of employment growth averaging 0.4% pa. Projections were obtained using Cambridge Econometrics (CE)/IER LEFM software and are consistent with CE's UK Regional Forecast of March 2016. Additional data preparation and aggregation by Cheshire East Council.

Appendix 5: CWaC Waste Management Capacity (operational and planned) and Forecasts

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
N	Ince resource recovery Park (plot 9)	Ince Biomass	Biomass	170,000			0	170,000	170,000	170,000
N	Petty Pool Farm		C&D land recovery				0	0	0	0
Y	Hooton Grange Garage	Robertson Norman	ELV	5,000	17	no data	5,000	5,000	5,000	5,000
Y	Ellesmere Port, Wirral	Veolia ES Cleanaway (UK) Limited	Haz waste incinerator	100,000	89,280		100,000	100,000	100,000	100,000
Y	Winsford Rock Salt Mine Waste Disposal Facility	Veolia ES (UK) Limited	Haz waste landfill	100,000	30,838	Bexley, Birmingham City, Blaenau Gwent UA, Brighton & Hove UA, County Durham UA, East Sussex, Knowsley, Portsmouth UA, Rotherham, Sheffield, Southampton UA, Staffordshire, Walsall, London	100,000	100,000	100,000	100,000

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
Y	Cheshire Waste Management Centre	Tradebe North West Limited	Haz waste transfer	50,000	2,725	Birmingham City, Blackpool UA, Blaenau Gwent UA, Cheshire East, Cumbria, Darlington UA, Dorset, Hampshire, Lancashire, Leeds, Liverpool, Luton UA, Manchester, Newcastle Upon Tyne, Newport UA, Northern Ireland, Northumberland, Peterborough UA, Powys UA, Scottish WPA, Sheffield, Shropshire, Staffordshire, Stockport, Walsall, Warrington UA, Warwickshire, Cheshire, Merseyside, Yorks & Humber	50,000	50,000	50,000	50,000
Y	A S H Skip Hire	A S H Skip Hire Ltd	HWRC/Non-haz transfer	25,000	6,869	NW	25,000	25,000	25,000	25,000
Y	Ash Metal Recycling Limited	Ash Metal Recycling Limited	HWRC/Non-haz transfer	35,259	4,030	Birmingham City, Blackpool UA, Cambridgeshire, Cheshire East, Cheshire West and Chester, Conwy, County Durham UA, Cumbria, Denbighshire UA, Derby UA, Dudley, Flintshire UA, Gwynedd UA, Hampshire, Hartlepool UA, Isle of Wight UA, Lambeth, Lancashire, Leicester UA, Leicestershire, Lincolnshire, Liverpool, Manchester, Middlesbrough UA, Norfolk, Northumberland, Nottingham UA, Nottinghamshire, Oldham, Scottish WPA, Sheffield, Shropshire , South Tyneside, Staffordshire, Stockport, Stockton-on-Tees, Stoke-on-Trent UA, Vale of Glamorgan UAm, Warrington UA, West Sussex, Wigan, Wirral, Worcestershire, Cheshire, Merseyside, North West, Wales, West Midlands, Yorks & Humber, Wrexham UA, York UA	35,259	35,259	35,259	35,259

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
Y	Bridges Road Transfer Station	Alchem Merseyside Ltd	HWRC/Non-haz transfer	75,000	9,803	NW	75,000	75,000	75,000	75,000
Y	Canalside Operations Hub	Kier M G Limited	HWRC/Non-haz transfer	49,000			49,000	49,000	49,000	49,000
Y	Central Depot	Kier M G Limited	MRF	24,999	23,656	Cheshire west and Chester	24,999	24,999	24,999	24,999
Y	Chapterhouse Transfer Station	F C C Waste Services (U K) Ltd	HWRC/Non-haz transfer	74,999	13,141	Cheshire west and Chester, Wrexham UA	74,999	74,999	74,999	74,999
N	Cheshire Oaks Outlet Village	Henderson UK Outlet Mall No	HWRC/Non-haz transfer	n/a			0	1,400	1,400	1,400
Y	Cheshire Waste Skip Hire Limited	Cheshire Waste Skip Hire Limited	HWRC/Non-haz transfer	45,348	21,981	Cheshire west and Chester, Flintshire, Wirral	45,348	45,348	45,348	45,348
Y	Chester Household Waste Recycling Centre[18]	H W Martin Waste Ltd	HWRC/Non-haz transfer	24,999	9,047	Cheshire west and Chester , Cheshire	24,999	13,000	13,000	13,000

[18] This site has planning permission (not yet implemented) to relocate the HWRC to the adjacent site and create a new commercial facility on the site of the existing HWRC. The planning committee report says 'it is expected that the recycling throughput at the site would be 12,000 tonnes per annum with a commercial and industrial throughput of 1,000 tonnes per annum

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
Y	Davenham Highways Depot	Ringway Infrastructure Services Ltd	HWRC/Non-haz transfer	25,000	1,450	Cheshire	25,000	25,000	25,000	25,000
Y	Ellesmere Port Household Waste Recycling Centre	H W Martin Waste Ltd	HWRC/Non-haz transfer	24,999	8,516	Cheshire West and Chester, Cheshire	24,999	24,999	24,999	24,999
Y	Frodsham Household Waste Recycling Centre	H W Martin Waste Ltd	HWRC/Non-haz transfer	5,000	3,189	Cheshire West and Chester, Cheshire	5,000	5,000	5,000	5,000
Y	Guilden Sutton Depot	Ringway Infrastructure Services Ltd	HWRC/Non-haz transfer	25,000	1,854	Cheshire	25,000	25,000	25,000	25,000
N	Lostock-Broadthorn[19]		HWRC/Non-haz transfer				0	0	0	0
Y	Ellesmere Port Municipal Depot	Ringway Infrastructure	HWRC/Non-haz transfer	25,000	1,311	Cheshire West and Chester	25,000	25,000	25,000	25,000

[19] This site has planning permission and the consent has been implemented but is not operational. It is reasonable to assume that it could come forward during the plan period although we do not have a forecast capacity figure.

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
		Services Ltd								
Y	Neston Household Waste Recycling Centre	H W Martin Waste Ltd	HWRC/Non-haz transfer	12,499	3,736	Cheshire west and Chester , Cheshire	12,499	12,499	12,499	12,499
Y	Northwich Mini Skips	Nelson Eric	HWRC/Non-haz transfer	5,000	1,160	Cheshire West and Chester	5,000	5,000	5,000	5,000
Y	Plot 13, Rear Of Farmers Arms, Middlewich Rd, Rudheath	A Skip Hire Ltd	HWRC/Non-haz transfer	5,000	1,134	Cheshire	5,000	5,000	5,000	5,000
Y	Stanlow Works	William Sinclair Horticultu re Limited	HWRC/Non-haz transfer	74,999	35,841	Bedford, Cambridgeshire, Cheshire East, Cheshire West and Chester, City of London, Derby UA, Doncaster, Flintshire UA, Kent, Lancashire, Liverpool, North Somerset UA, Reading UA, Shropshire, Stoke-on-Trent UA, Suffolk, Swindon UA, Warrington UA, Wiltshire, Worcestershire	74,999	74,999	74,999	74,999
Y	Tattenhall Household Waste Recycling Centre	H W Martin Waste Ltd	HWRC/Non-haz transfer	5,000	2,397	Cheshire West and Chester, Cheshire	5,000	5,000	5,000	5,000
Y	Tattenhall Transfer Station	Tudor Griffiths Ltd	HWRC/Non-haz transfer	74,999	20,249	Cheshire, Wirral	74,999	74,999	74,999	74,999

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
Y	Northwich Household Recycling Centre	H W Martin Waste Ltd	HWRC/Non-haz transfer	25,000	7,907	Cheshire West and Chester, Cheshire	25,000	25,000	25,000	25,000
Y	Winsford Depot	Kier M G Limited	HWRC/Non-haz transfer	74,999	17,299	Cheshire West and Chester	74,999	74,999	74,999	74,999
Y	Winsford Household Waste Recycling Centre	H W Martin Waste Ltd	HWRC/Non-haz transfer	24,999	6,700	Cheshire West and Chester	24,999	24,999	24,999	24,999
Y	Frodsham Marsh Lagoons	Manchester Ship Canal Co Ltd	land recovery & lagoons	1,140,000	34,712	Manchester	1,140,000	1,140,000	1,140,000	1,140,000
Y	J H & D J Willis	John & David Willis	land recovery & lagoons	75,000	4,421	Lancashire, Manchester, Oxfordshire, Scottish WPA, Shropshire, Wirral, Cheshire, Merseyside, Wales, Yorks & Humber	75,000	75,000	75,000	75,000
N	Manor Farm Marston Lane		land recovery & lagoons				0	0	0	0
Y	Ottersbank Farm	Dig And Shift Limited	land recovery & lagoons	50,000	5,925	Cheshire West and Chester, Flintshire, Wirral, Cheshire, Merseyside	50,000	50,000	50,000	50,000
N	Lostock Works	Dong Energy	MBT & anaerobic digestion	144,000			0	144,000	144,000	144,000

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
N	Lostock-Bedminster		MBT & pyrolysis	200,000			0	200,000	200,000	200,000
Y	A. Vlies Northwich Metals Limited	A. Vlies Northwich Metals Limited	metals	4,999	1,535	Cheshire West and Chester	4,999	4,999	4,999	4,999
Y	K J Bell Scrapmetal Merchants	Mr Keith Bell	metals	24,999	4,876	NW	24,999	24,999	24,999	24,999
Y	Central Depot, Bumper Lane	Chester City Council	MRF	8,500	3,171	Cheshire west and Chester	8,500	8,500	8,500	8,500
Y	FCC Ellesmere Port	FCC	MRF	125,000			125,000	125,000	125,000	125,000
Y	Manisty Wharf	Recresco Ltd	MRF	383,000	204,170	NW, NE, SE, West Midlands, Wales, Yorks & Humber	383,000	383,000	383,000	383,000
N	Trinity Research		MRF & Pyrolysis				0	0	0	0
N	Lostock- Tata[20]		Non-haz EfW	600,000			0	600,000	600,000	600,000
Y	Gowy Landfill Site	3C Waste Limited	non-haz landfill	250,000	191,137	79,793 from CWaC, and the remaining from Blackburn with Darwen UA, Bristol UA, Cheshire East, Cheshire West and Chester, Conwy UA, Denbighshire UA, Flintshire UA, Halton UA, Kirklees, Liverpool, Manchester, Oldham, Sefton,	250,000	250,000	0	0

[20] Planning permission on this facility expires next year but the site could still be developed for waste uses (safeguarded in the Local Plan)

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
						Shropshire, St Helens, Stoke-on-Trent UA, Warrington UA, Wigan, Wirral, Merseyside, NW, Wrexham				
Y	Holford Brinefield Landfill Site	Ineos Enterprises Limited	non-haz landfill (in house)	220,000	34,533	Cheshire	220,000	220,000	220,000	220,000
Y	Cotton Abbotts Composting Acility	C E & A Walley	OAW	24,999	12,062	Cheshire	10,754	10,754	10,754	10,754
Y	Gowy Landfill Site Composting Facility	3 C Waste Ltd	OAW	20,000	11,551	Wrexham	10,935	10,935	0	0
Y	Hapsford Composting Site	George Whittaker And Sons (Knutsford) Ltd	OAW	24,999	24,606	Cheshire	24,182	24,182	24,182	24,182
Y	Ellesmere Port Transformer Oil Regeneration Plant	Electrical Oil Services Ltd	Physico-Chemical Treatment Facility	24,999	10,825	Birmingham, West Midlands	24,999	24,999	24,999	24,999
Y	Lostock Sodium Carbonate Manufacturing Site	Tata Chemicals Europe Limited	Physico-Chemical Treatment Facility	25,000	433	no data	25,000	25,000	25,000	25,000

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
Y	Stanlow Oil Terminal	ESL Fuels Limited	Physico-Chemical Treatment Facility	50,000	1,104	Sheffield, Cheshire	50,000	50,000	50,000	50,000
N	Ince resource recovery Park (plot 8)	Peel energy	RDF EfW	350,000			0	350,000	350,000	350,000
N	Argent Energy	Argent Energy	Specialist treatment	65000 (from planning application)			0	65,000	65,000	65,000
N	Lostock-Edelchemie		Specialist treatment	15,000			0	15,000	15,000	15,000
Y	Land Off Indigo Road	Dig & Shift Ltd	use of waste	74,999	1,333	Cheshire West and Chester, Flintshire, Wirral, Cheshire, Merseyside	74,999	74,999	74,999	74,999
Y	Town Farm Quarry	P Casey Enviro Ltd	use of waste	99,999	52,055	Cheshire	99,999	99,999	99,999	99,999
N	Ash Road Elton (Encirc Ltd)	Encirc Ltd	waste water				0	0	0	0
Y	Ellesmere Port Waste Water Treatment Works	United Utilities Water Limited	waste water	450,000	156,827	NW, Cheshire	450,000	450,000	450,000	450,000

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
Y	Northwich Waste Water Treatment Works	United Utilities Water Limited	waste water	250,000	4,290	Cheshire West and Chester, Cheshire	250,000	250,000	250,000	250,000
N	Ellesmere Port Weee Facility (CLOSED)	Sims Group U K Ltd	WEEE	150,000	17,093	Bedford,Birmingham City, Blackburn with Darwen UA, Blackpool UA, Calderdale, Cambridgeshire, Ceredigion UA, Cheshire West and Chester, City of Westminster, Conwy UA, Cornwall, Coventry, Cumbria, Denbighshire UA, Derby UA, Derbyshire, Devon, Dudley, Flintshire UA, Gloucestershire, Gwynedd UA, Hounslow, Isle of Anglesey UA, Kirklees, Knowsley, Lancashire, Leicestershire, Lincolnshire, Liverpool, Manchester, Milton Keynes UA, Newport UA, North Lincolnshire UA, North Somerset UA, North Tyneside, North Yorkshire, Northamptonshire, Northern Ireland, Nottingham UA, Nottinghamshire, Outside UK, Peterborough UA, Plymouth UA, Rochdale, Rotherham, Sandwell, Scottish WPA, Sefton, South Gloucestershire UA, Staffordshire, Stockport, Stockton-on-Tees, Stoke-on-Trent UA, Tameside, Trafford, Vale of Glamorgan UA, Wakefield, Walsall, Warrington UA, Warwickshire, Wigan, Wirral, Wolverhampton, Wrexham UA,	0	0	0	0
N	Kinderton Lodge Landfill Site	Cory Environmental	non-haz landfill	300,000			0	300,000	300,000	300,000

Operat-ional?	Site name	Operator	Facility Type	Permitted capacity (tonnes per year)	Actual input (tpa) 2014	Inputs Source as WPA area	Forecast Capacity (for capacity gap analysis)			
							2015	2020	2025	2030
N	Ince resource recovery Park (plot 5)		MRF	60,000			0	60,000	60,000	60,000
N	Ince resource recovery Park (plot 5)		MBT	100,000			0	100,000	100,000	100,000
N	Ince resource recovery Park (plot 5)		IVC	40,000			0	40,000	40,000	40,000
N	Ince resource recovery Park (plot 4)		IBA recycling facility	250,000			0	250,000	250,000	250,000

Appendix 5: Ince Park (Protos) Plots – Planning Status

Plot	Plot Area	Original Use	Detail	Original Capacity	Level of PP Received
1	11.39ha	Canal berth, storage buildings and railhead	Receipt of third party bulk material up to 230,000 tpa	N/A	Full
2	2.95ha	Soils treatment	Would provide output of 90,000 sand and gravel for construction sites	100,000 tpa contaminated	Outline
3	5.27ha	Wood and Timber Recycling Facility	Timber Recycling Facility of a regional scale, with the capacity to recycle 150,000 tpa of post-industrial and post-consumer timber waste, and to create 120,000 tonnes of new timber products per annum	150,000	Outline Permission granted subject to Section 106 Dec 2011
4	5ha	Incinerator Bottom Ash Plant	A 250,000 tpa Incinerator Bottom Ash facility that will comprise the following components: office amenity building, IBA processing plant and associated infrastructure	250,000	Permission granted subject to Section 106 Jan 2012. Decision issued 13 April 2012
5	5ha	Integrated Waste Management Facility	Includes MRF, IVC and MBT plant	60,000 tpa tonnes dry recyclables, 100,000 tpa MBT and 40,000 tpa IVC	Full
6	2.76ha	Plastics Village	Potentially manufactured on-site or used as RDF	100,000 tpa plastics waste	Outline
7	1ha	Water Treatment Plant	Treat all water arising from the processes on-site	N/A	Full
8		Erection of an Energy from Waste Facility (up to 35MW) and associated development		350000 tonnes	PP granted Nov 2016

Plot	Plot Area	Original Use	Detail	Original Capacity	Level of PP Received
9	4ha	Biomass Renewable Energy Plant	Development of 20mw biomass renewable energy plant utilising 176,500 tpa of wood wastes, bulk storage building and associated infrastructure.	176,500 wood wastes	Permission granted subject to S106 Sept 2011.
10a	1.78ha	Resource Recovery Centre	Business centre - office accommodation for academic research, offices and education centre etc	N/A	Outline
10b	0.63ha	Resource Recovery Centre	Business centre - office accommodation for academic research, offices and education centre etc	N/A	Outline
11	1.87ha		The drilling of boreholes for the purpose of coal med methane appraisal and production, the installation of wells, production and power generating facilities, the extraction of coal bedding methane and the subsequent restoration of the site		Permission granted 26/4/2011
12	5ha	Resource Recovery Village		N/A	Outline
13	2.74ha	Resource Recovery Village		N/A	Outline
14	1.77ha	Block making facility		36,000 tpa inert bottom ash	Outline