North Yorkshire Sub Region
Waste Arisings and Capacity Evidence

Waste Arisings and Capacity Requirements

Final Report

4Resources

urbanvision

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CONTENTS

GLOSSARY OF TERMS

AD	Anaerobic Digestion
AWRP	Allerton Waste Recovery Park
C&I Waste	Commercial and Industrial Waste
CDEW/CD&E	Construction Demolition and Excavation Waste
EfW	Energy from Waste
ELV	End of Life Vehicle
GVA	Gross Value Added
LA	Local Authority
LACW	Local Authority Collected Waste
MBT	Mechanical Biological Treatment
NYCC	North Yorkshire County Council
ROCs	Renewable Obligations Certificates
RSS	Regional Spatial Strategy
WDA	Waste Disposal Authority
WEEE	Waste Electrical and Electronic Equipment

1. INTRODUCTION

This report presents a detailed assessment of need for future waste management facilities over the plan period up to 2030 for North Yorkshire County Council, Yorkshire Dales National Park (YDNP), North York Moors National Park (NYMNP) and City of York Council. The report addresses the following waste streams:

- Commercial and Industrial (C&I);
- Local Authority Collected Waste (LACW);
- Hazardous Waste;
- Construction, Demolition and Excavation Waste (CDEW);
- Agricultural;
- Low Level Non-Nuclear Radioactive Wastes (LLW); and
- Water Waste/Sewage Sludge.

As part of this study a detailed review of the robustness and limitations of currently available information on current and expected arisings of waste in the North Yorkshire Sub-region was carried out for a range of waste streams, the detailed findings of which are presented in the Interim Report.

This final report presents the modelling options used to identify the potential future waste requirements for the North Yorkshire Sub-region up to 2030. A number of scenarios have been modelled and the findings of each are summarised. Each scenario presents a different option for modelling waste based on a range of recycling and recovery targets and growth levels being achieved. The final result of this work is to identify the capacity gap for each waste stream.

1.1 Future Waste Management Requirements

1.1.1 Waste is generated by a vast range of processes although people are most familiar with waste collected from their households, such as packaging and food. However, these wastes (officially named Local Authority Collected Waste or LACW) only account for part of the overall waste arisings. Much larger quantities of other waste from the construction industry, such as broken bricks and cables, and wastes from the commercial sector, such as food from restaurants, make up the total amount of waste produced within North Yorkshire, City of York, North York Moors National Park and the Yorkshire Dales National Park, however it is important to note the majority of waste (with the exclusion of agricultural) is likely to arise within the more urban areas of the Sub-region and this is likely to be where facilities

are required to managed it. The majority of waste is produced as a result of consumer demand for products and an important aspect of reducing the overall production of waste is through behavioural changes in how individuals consume goods and services.

1.1.2 The need for waste management facilities to deal with the wastes in a more sustainable way will form an integral part of any Minerals and Waste Plan. This section considers two key issues: How much waste will need to be managed over the Plan period (to 2030) and what additional capacity will be required to manage this waste?

1.2 Future Waste Capacity Requirements

1.2.1 To identify any requirements for new waste management facilities, it is important to gain as accurate a picture as possible of current waste arisings and the capacity of existing permitted waste management facilities. Economic and waste trends can then be used to forecast future waste growth and subsequently the need for new facilities can be projected based on the capacity gap identified.

1.2.2 This study has been undertaken by Urban Vision and 4Resources on behalf of the North Yorkshire Sub-region. The North Yorkshire Sub-region is defined in this study as comprising the North Yorkshire County Council Waste Planning Authority boundary, the National Parks (Yorkshire Dales National Park (YDNP) and North York Moors National Park (NYMNP)) and City of York Council.

1.2.3 Previously the level of waste capacity to be provided by Waste Planning Authorities of the North Yorkshire Sub-region would be set by the Regional Spatial Strategy (RSS). The Yorkshire and Humber RSS was revoked in February 2013 and in any case the data on which the RSS was based is now out of date.

1.2.4 To enable future planning for waste, the North Yorkshire Sub-region commissioned Urban Vision Partnership Ltd and 4Resources to produce a detailed projection of future waste capacity requirements. This Report is the final of a two stage reporting process to enable the North Yorkshire Sub-region Waste Planning Authorities to plan for future waste management requirements. The Interim Report[1] set out information relating to the arisings for the waste streams in the Sub-region and this final report should be considered in conjunction with the interim report.

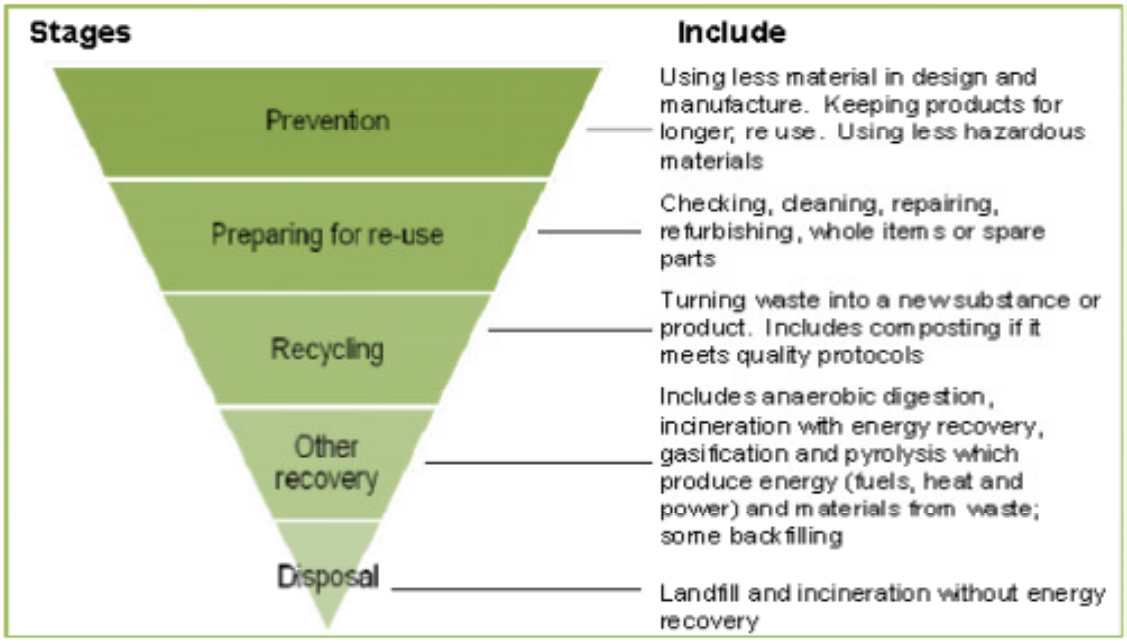
[1] Prepared by Urban Vision and 4Resources, October 2013

1.2.5 This Final Report provides information on waste arisings for the principal waste streams namely: C&I, CDEW, LACW, agricultural, waste water and sewage, and low level radioactive waste, and identifies where there may be a capacity gap up until 2030. This report provides a level of detail and consistency that has not previously been available. Not only does the projection of future waste capacity requirements look at waste arisings and their management but also the potential for recycling or energy recovery with the aim of managing waste more sustainably and moving up the waste hierarchy.

1.2.6 This approach is consistent with the Government's sustainable development agenda generally and their approach to sustainable waste management in particular. Planning Policy Statement 10: 'Planning for Sustainable Waste Management' refers to a key planning objective of *"helping to deliver sustainable development through driving waste management up the waste hierarchy, addressing waste as a resource and looking to disposal as the last option, but one that must be adequately catered for".* The Waste Hierarchy has been transposed into UK law through the Waste (England and Wales) Regulations 2011. An updated version of *Planning for Sustainable Waste Management* was issued by Government for consultation in July 2013.

1.2.7 The need to decouple waste growth from economic growth has its roots in the need for sustainable development in the UK, particularly the idea of sustainable production and consumption of resources. By implementing the principles of the waste hierarchy, there will be a move towards reducing the amount of waste produced in the first place, thus helping to break the link. The options used for modelling waste consider the implications of growth in waste arisings and population growth. In addition, depending on which scenario is chosen, there is potential for the North Yorkshire Sub-region to encourage the movement of waste up the hierarchy by supporting the provision of new waste facilities. This together with economic forces encouraging the more efficient use of waste as a resource will work together to help break this link. It is expected that any increase in arisings will be as a result of either population increase or economic activity or a combination of both; however it is likely that population growth will be the main factor influencing this. The effect of the landfill tax on diverting waste from landfill has already been seen and this effect is expected to continue.

Figure 1 The Waste Hierarchy



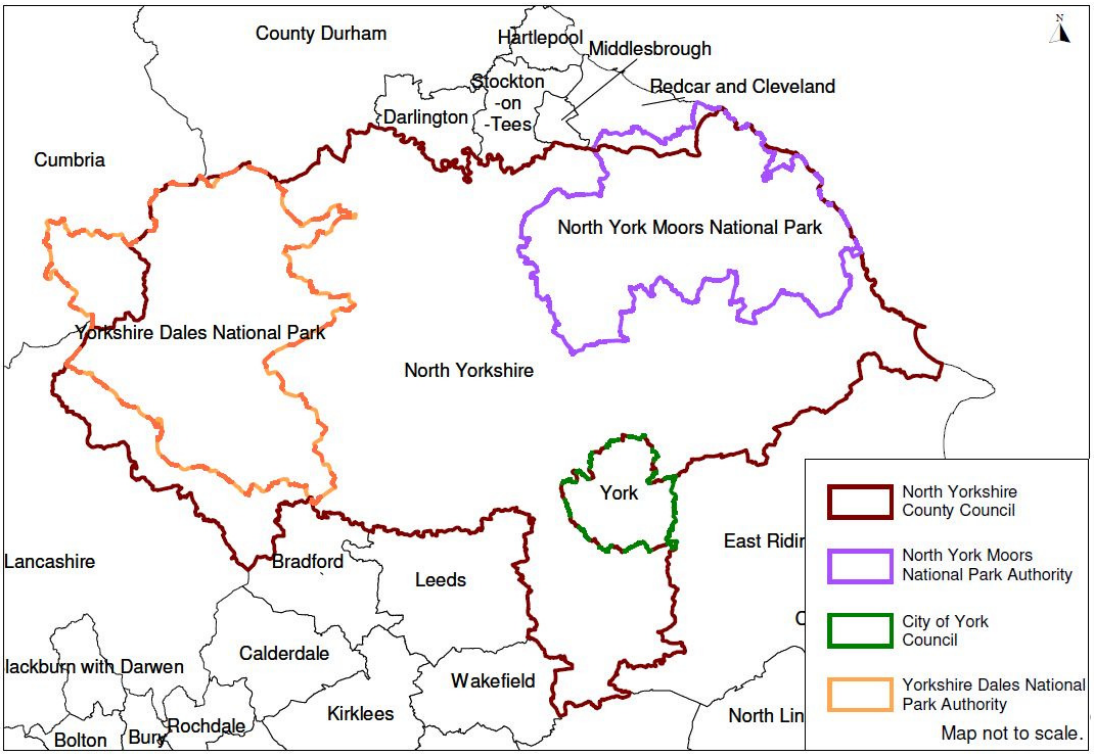
Source: www.Defra.gov.uk

1.3 Principal Waste Streams

1.3.1 The North Yorkshire Sub-region is made up of North Yorkshire County Council, The City of York Unitary Authority, the Yorkshire Dales National Park Authority (YDNPA) and the North York Moors National Park Authority (NYMNPA). For the purposes of this study, the NY Sub-region is taken to include the whole of the NP areas including the parts of the Parks within Cumbria and Redcar and Cleveland. A map of the North Yorkshire Sub-region is shown at Figure 2.

1.3.2 Parts of the Yorkshire Dales National Park fall within the geographical boundaries of Cumbria (Waste Disposal Authority (WDA)) and South Lakeland District Council (Waste Collection Authority). Therefore, whilst the area is included within the North Yorkshire Sub-region, the responsibility for Local Authority Collected Waste (LACW) lies with the Cumbria WDA and with South Lakeland District Council as the collection authority. Similarly, parts of the NYMNPA fall within the boundary of Redcar and Cleveland Borough Council which has responsibility to manage LACW as unitary authority. LACW waste arisings from these parts of the National Parks have been provided for by Cumbria County Council's Waste Management Strategy and through the Tees Valley Minerals and Waste Plan.

Figure 2 Map of North Yorkshire Sub-region



1.3.3 Figures 3a, 3b and Table 1 below show the proportion of the principal waste streams in the North Yorkshire Sub-Region (Data: 2011 Arisings from Interim Report 2013). This does not include agricultural, waste water and sewage and low level radioactive wastes as their inclusion will distort the quantities for which planned provision is required. The provision for agricultural, waste water and sewage and low level radioactive wastes requires specialist facilities and these are detailed later in this report.

1.3.4 There are two principal data sources which can be used to estimate commercial and industrial (C&I) waste arisings within the Sub-region and both are presented in this report. There is no data on C&I waste specific to the North Yorkshire Sub–region to use as a base for this work, therefore extrapolation from other sources is necessary. The basis of the C&I data sources for the North Yorkshire Sub-region are from the Yorkshire and Humberside Region and North Yorkshire and York and those parts of the NYMNP and YDNP that lie within NYCC[2]. Separate estimates have been made for C&I arisings for the four WPA areas in the North Yorkshire Sub-region and have been included in the Interim Report. The National Defra C&I survey

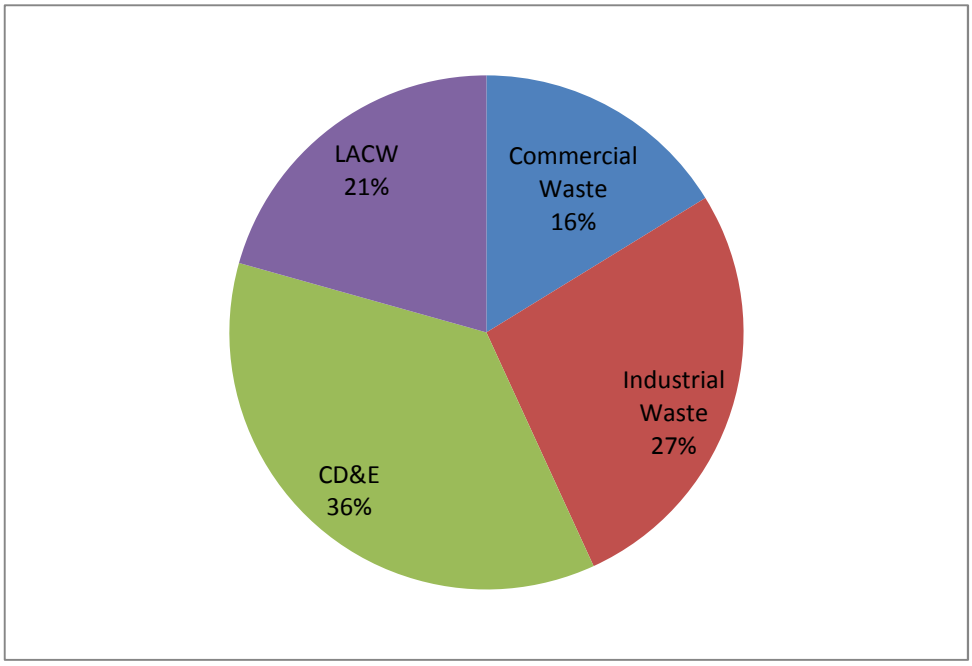
[2] C&I Waste Arisings within parts of the National Parks lying outside of NYCC are estimated to be very low and below statistical significance.

(2009/10) only reports data at the level of the Yorkshire and Humberside region. Using the National Defra C&I survey (2009/10) (Yorkshire and Humberside region), a total for the North Yorkshire Sub-region of 916,208 tonnes of C&I waste arisings (not including arisings from the Power and Utilities sector) was identified in 2009/10. Using extrapolated figures from the 2009 North West C&I Survey, a total of 745,179 tonnes was identified (not including arisings from the Power and Utilities sector). Further information regarding the two sources of C&I data can be found in the Interim report.

1.3.5 Figures 3a and 3b show the proportion of waste streams using the two principal different sources of C&I data.

1.3.6 The analysis of waste deposited at existing waste management facilities (from the Environment Agency Interrogator see Section 2.3) suggests that the 2009 extrapolated NW C&I survey is the nearer to observable data within the Sub-region[3]. The modelling of capacity gaps and future requirements in this report is based on C&I arisings from the NW extrapolated survey, unless the Defra National survey is otherwise shown for comparison.

Figure 3a Proportion of principal waste streams in the North Yorkshire Sub-region (including the National Parks (Data Source for C&I Arisings: National Defra C&I survey (2009/10)



[3] The "sub-region" here refers mainly to North Yorkshire County Council and the City of York and those areas of Yorkshire Dales National Park which fall under Cumbria

Figure 3b Proportion of principal waste streams in the North Yorkshire Sub-region (Data Source for C&I Arisings: extrapolated figures from 2009 North West C&I Survey)

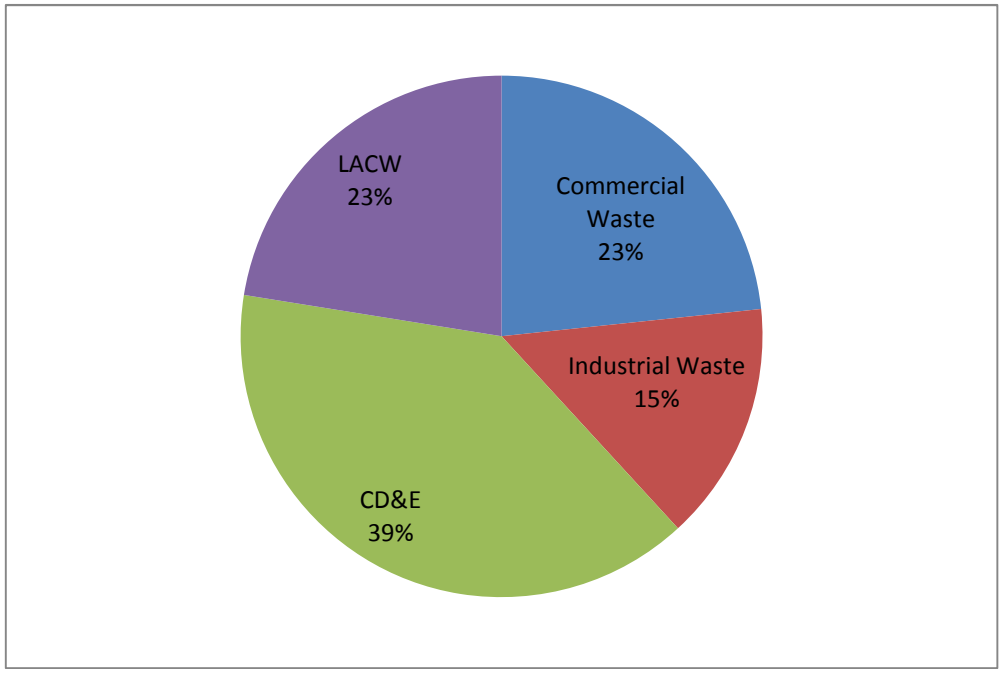


Table 1 North Yorkshire Sub-region Waste Arisings in Tonnes (rounded)

Principal Waste Arisings Year 2011	**Tonnes (rounded)**	
	Source of C&I Figures: National Defra C&I survey (2009/10)	Source of C&I Figures: extrapolated figures from 2009 North West C&I Survey
Commercial Waste	344,717	455,622
Industrial Waste	571,491	289,559
CD&E	768,765	768,765
LACW	438,535	438,535
Total arisings	**2,123,508**	**1,952,481**

1.4 Predicting Future Requirements

1.4.1 As part of the forecast of future waste capacity requirements, a number of scenarios were considered that reflected a realistic range of possibilities that could be implemented. In developing the scenarios certain assumptions were made, in particular how, in general terms, the various categories of waste arisings would be managed in the future.

1.4.2 The initial modelling considered three waste management scenarios:

- Scenario 1 – baseline, which reflects the current status and forward planning position.
- Scenario 2 – maximised recycling and recovery of C&I and CD&E wastes.
- Scenario 3 – a median level of increased recycling and recovery of C&I and CD&E wastes.

1.4.3 In addition to the 3 scenarios, modifier factors have been selected as shown in Table 2 to reflect future uncertainties and their scale that could influence the future quantity of waste arisings and their subsequent management. These factors seek to reflect future economic activity (using historic trends[4] and projections on Gross Value Added [GVA] outcomes, fiscal/financial/legislative factors (landfill tax charges driving waste away from landfill and financial incentives such as ROCs [Renewable Obligations Certificates] increasing the competitiveness of energy recovery). The use of 33% estimated GVA growth projections, which is approximately 0.8% per annum, is based on an analysis of historic trends for growth in industrial, commercial waste and construction, demolition and excavation wastes. The model has also used Yorkshire Regional Econometric data growth projections as the basis for growth projections in the model. Use of this data in the study allows for a more local perspective of data to be achieved and provides a more robust waste needs assessment model.

1.4.4 Due to the advanced stage reached by the York and North Yorkshire Waste Partnership with procurement of a new long term waste service contract for the management of residual LACW, an assumption has been made that future arisings of LACW will be in line with projections used to inform the procurement. LA collected commercial waste is

[4] Environment Agency national surveys 1998 & 2003, NW survey 2006 & 2009 and Defra national Surveys 2009/10

included in C&I waste totals for waste growth modelling in all scenarios[5]. There are separate arrangements for managing the waste collected for the small areas of the 2 national parks which for LACW purposes only, are excluded from this study; information on how this is managed is set out in paragraph 1.3.2.

Table 2 Modifier Factors

Growth Value	Modifier Value
NO GROWTH	All wastes no growth
GROWTH	Industrial wastes – growth @ 33% estimated GVA Commercial wastes (including LA collected commercial waste) – growth @ 33% estimated GVA[6] CD&E wastes – growth @ 33% estimated GVA Agricultural wastes – no growth LA Collected Household Waste – growth projections as defined by the WDA
MINIMISED GROWTH	Industrial wastes – arisings declining at 1% per annum Commercial wastes – no growth[7] CD&E wastes – no growth Agricultural wastes – no growth LA Collected Household Waste – growth at projections as defined by the WDA

1.4.5 Modelling the change of practice in the management of waste arisings must also take account of the increasing recycling potential with changes in practice of waste collection, processing and treatment, particularly for commercial and industrial waste. There are increasing opportunities for recycling or energy recovery from commercial and industrial mixed waste which is not currently source segregated. A series of three factors has therefore been chosen to reflect the potential changes in recycling and energy recovery as shown in Table 3. 75% as modifier factor has been chosen[8] as it represents a high level of recycling but also reflects the practicality that not all mixed waste can be recycled, with 25% of mixed waste to energy recovery[9].

[5] LA collected commercial waste accounts for less than 4% of C&I waste arisings.
[6] This figure includes trade waste from LACW. LACW commercial waste is assumed to grow at the same rate as commercial waste rates.
[7] Under minimised growth it was agreed by project partners to apply no growth to commercial waste, CD&E waste and Agricultural waste to reflect the implementation of effective waste growth controls such as minimisation initiatives
[8] Extrapolated NW Survey 2009 shows 62% recycling
[9] Extrapolated NW Survey 2009 shows 2% energy recovery

50% as modifier factor has been chosen to reflect a lower level of source segregation and recycling with 50% energy recovery. These modifiers are estimates and can be amended and re-modelled to meet any future changes in projections.

Table 3 Change in Practice Modifiers

Behaviour change	Modifier Value
BASELINE	All wastes no change, recycling and recovery as defined by the WDA for long term waste contract for LACW
MAXIMISED RECYCLING AND RECOVERY	75% Commercial waste recycling, 75% Industrial waste recycling, 75% CD&E recycling, 25% mixed ordinary Commercial waste and 25% Industrial waste to energy recovery, LACW as defined by the WDA for long term waste contract
MEDIAN RECYCLING AND RECOVERY	50% Commercial waste recycling, 50% Industrial waste recycling, 50% CD&E recycling, 50% mixed ordinary Commercial waste & Industrial waste energy recovery, LACW as defined by the WDA for long term waste contract

1.4.6 Scenarios have therefore been modelled using the 3 sets of modifier factors (no growth, growth and minimised growth) with the 3 changes in practice modifiers (Baseline, Maximised and Median recycling and recovery) to produce 9 outcomes with a range of different capacity requirements depending on how waste is managed within the waste management hierarchy.

1.4.7 The capacity of all the available sites with planning permission for waste management are included in the model, together with information on annual capacity of the site and duration of activity according to the planning permissions[10]. Also included is information from the Sub-region partners on the projected capacities for waste management to be provided by the authorities to 2030. The model developed has assumed, for purposes of predicting future need, that

[10] The capacity information on existing permitted waste sites has been developed using information from Planning Permissions, EA Permits and EA WDI throughputs to establish the best estimate for available capacity.

consented capacity within the Sub-region will be built and will come on stream to provide for future waste requirements. The main assumption for this is the provision of a new facility to manage the areas' LACW along with a Anaerobic Digestion (AD) plant which is likely to manage commercial waste, the latter of which is expected to come on stream within the next 5 years. However, should a change to this position come forward, this capacity can be easily removed and a new estimate of future need generated. Please note that the capacity gap presented here is correct based at the time of production and will be subject to change following this date.

1.4.8 A comparison of the capacity gap at year 2030 across the three scenarios using the two alternative sources of C&I data is shown below:

Table 4 Comparison of the capacity gap at year 2030 across the 3 scenarios, assuming NO GROWTH (Negative figures indicates no gap), all wastes (except Sewage and Low Level Radioactive waste) (tonnes)

Waste Management	Scenario 1 Baseline (C&I source Defra)	Scenario 1 Baseline (C&I source Extrapolated NW))	Scenario 2 Maximised Recycling (C&I source Defra)	Scenario 2 Maximised Recycling (C&I source Extrapolated NW)	Scenario 3 Median Recycling (C&I source Defra)	Scenario 3 Median Recycling (C&I source Extrapolated NW)
Landfill (non-hazardous)	95,582	47,710	-136,409	-147,625	-136,409	-147,625
Landfill (hazardous)	7,216	7,216	7,216	7,216	7,216	7,216
Landfill (CD&E) [11]	305,614	305,614	62,626	62,626	143,622	143,622
Energy recovery[12]	-154,548	-162,801	-96,550	-113,967	-38,551	-65,133
Incineration (Specialist High Temp)	13,480	13,480	13,480	13,480	13,480	13,480
Recycling	523,645	449,359	697,638	595,860	639,642	547,027
Recycling (aggregates CD&E)	4,156	4,156	247,144	247,144	166,148	166,148
Recycling (specialist materials– including metal recycling, End of Life Vehicles and	-91,162	-91,162	-91,162	-91,162	-91,162	-91,162

[11] Assumes Barnsdale Bar Quarry and Long lane Quarry are inactive over the plan period
[12] Assumes Allerton Park EFW in operation from 2015

WEEE						
Composting	-65,058	-66,709	-65,058	-66,709	-65,058	-66,709
Treatment Plant (including Anaerobic Digestion, specialised treatment of biodegradable liquids and wastes, organic waste treatment by distillation)	-20,523	-28,776	-20,523	-28,776	-20,523	-28,776

Table 5 Comparison of the capacity gap at year 2030 across the 3 scenarios, assuming GROWTH (negative figures indicates no gap) All wastes (except Sewage and Low Level Radio Active wastes) (tonnes)

Waste Management	Scenario 1 Baseline (C&I source Defra)	Scenario 1 Baseline (C&I source Extrapolated NW))	Scenario 2 Maximised (C&I source Defra)	Scenario 2 Maximised (C&I source Extrapolated NW)	Scenario 3 Median (C&I source Defra)	Scenario 3 Median (C&I source Extrapolated NW)
Landfill (non-hazardous)	180,870	113,720	-105,446	-120,505	-105,446	-120,505
Landfill (hazardous)	7,985	7,985	7,985	7,985	7,985	7,985

Landfill (CD&E) [13]	346,791	346,791	72,920	72,920	164,211	164,211
Energy recovery[14]	-93,860	-105,428	-22,282	-46,873	49,298	11,684
Incineration (Specialist High Temp)	13,480	13,480	13,480	13,480	13,480	13,480
Recycling	682,714	578,514	897,452	754,184	825,872	695,626
Recycling (aggregates CD&E)	12,312	12,312	286,183	286,183	194,892	194,892
Recycling (specialist materials– including metal recycling, End of Life Vehicles and WEEE	-91,162	-91,162	-91,162	-91,162	-91,162	-91,162
Composting	-62,390	-64,699	-62,390	-64,699	-62,390	-64,699
Treatment Plant (including Anaerobic digestion, specialised treatment of biodegradable liquids and wastes, organic waste	-4,980	-16,544	-4,980	-16,544	-4,980	-16,544

[13] Assumes Barnsdale Bar Quarry and Long lane Quarry are inactive over the plan period
[14] Assumes Allerton Park EFW plant operation 2015

treatment by distillation)						

Table 6 A comparison of the capacity gap at year 2030 across the 3 scenarios, assuming MINIMISED GROWTH (negative figures indicates no gap) All Wastes (except Sewage and Low Level Radio Active wastes)

Waste Management	Scenario 1 Baseline (C&I source Defra)	Scenario 1 Baseline (C&I source Extrapolated NW))	Scenario 2 Maximised (C&I source Defra)	Scenario 2 Maximised (C&I source Extrapolated NW)	Scenario 3 Median (C&I source Defra)	Scenario 3 Median (C&I source Extrapolated NW)
Landfill (non-hazardous)	64,848	30,877	-142,003	-150,689	-142,003	-150,689
Landfill (hazardous)	7,216	7,216	7,216	7,216	7,216	72,16
Landfill (CD&E) [15]	305,614	305,614	62,626	62,626	143,622	143,622
Energy recovery[16]	-110,336	-116,197	-58,622	-70,805	-6,908	-25414
Incineration (Specialist High	13,480	13,480	13,480	13,480	13,480	13,480

[15] Assumes Barnsdale Bar Quarry and Long lane Quarry are inactive over the plan period
[16] Assumes Allerton Park EFW plant operational from 2015

Temp)						
Recycling	530,898	478,181	686,035	614,355	634,326	568,964
Recycling (aggregates CD&E)	4,156	4,156	247,144	247,144	166,148	166148
Recycling (specialist materials– including metal recycling, End of Life Vehicles and WEEE	-91,162	-91,162	-91,162	-91,162	-91,162	-91,162
Composting	-66,106	-67,287	-66,106	-67,287	-66,106	-67,287
Treatment Plant (including Anaerobic digestion, specialised treatment of biodegradable liquids and wastes, organic waste treatment by distillation)	-25,817	-31,678	-25,817	-31,678	-25,817	-31,678

1.4.9 The full projected capacity gaps across each of the scenarios for the period 2013-2030 are set out in Appendix 1; the tables identify the annual capacity requirements for each waste management type and can be used to identify pinch points when policies or allocations are likely to be required to prevent under-capacity issues. Appendix 3 sets out cumulative capacity gaps under each scenario throughout the period 2013-2030 to assist the identification of the level of capacity required throughout the entire period.

1.4.10 In order to ensure that sufficient opportunities are provided for new waste management facilities of the right type, in the right place and at the right time it is recommended that Waste Plans take a flexible approach to meeting future waste management requirements. Waste technologies are still developing and new methods of managing waste are coming on the market, therefore as any plans develop they need to be flexible enough to adapt to this dynamic. Furthermore, increasing energy costs and non fossil fuel incentives could also result in an increased demand for energy recovery including in the form of smaller scale embedded combined heat and power sources. Therefore it will be important for any Plans to provide a flexible approach in meeting future waste management requirements and the selection of suitable sites/areas.

1.4.11 Utilising the latest data (collected July 2013), existing capacity information was assembled and collated into a Waste Facility Capacity Database and used to inform the future waste capacity requirements. The capacity database represents the best available information as supplied by the authority partners.

1.4.12 It is recommended that the North Yorkshire Sub-region partners consider the implications and requirements of each of the proposed scenarios and select one set for the purposes of planning for future waste facilities across the Sub-region. In principle it is possible to utilise different scenarios for the individual waste streams, however significant modification will be required to the accompanying model supporting this report and justification would be required as to why alternative scenarios have been chosen from those agreed in preparation of this report.

1.4.13 It is recommended that the North Yorkshire Sub-region Partnership includes, within their Waste Local Plans, an indication of the number, scale and location of any facilities shown as being required to meet future capacity needs as informed by this Report.

2. FUTURE CAPACITY REQUIREMENTS

2.1 Introduction

2.1.1 This section of the report deals with each of the principal waste streams in turn, setting out:

- Current arisings and capacity of existing facilities;
- Future Arisings; and
- Capacity of required facilities.

2.2 LOCAL AUTHORITY COLLECTED WASTE (LACW)

2.2.1 LACW across the Sub-region is the joint responsibility of NYCC and City of York Council as both are designated Waste Disposal Authorities. NYCC also has the responsibility for LACW within both the national parks except those geographical areas falling outside of the North Yorkshire county boundary. The authorities are working together in order to treat residual waste arisings across the Sub-region and meet obligations to divert waste away from landfill.

Current Arisings and Capacity of Existing Facilities

2.2.2 A total of 438,535[17] tonnes of LACW was produced in 2011/12 in the Sub-region (Waste Arisings and Capacity Requirements Interim Report 2013).

2.2.3 The Sub-region currently relies on landfill as the primary method of disposing of waste that cannot be recycled or reused. The two main landfill sites serving the Sub-region in the next few years are expected to be Allerton Park in North Yorkshire and Harewood Whin within York's authority boundary.

2.2.4 Green waste composting takes place at open windrow sites, most of which are currently operating under exemptions. Green waste is also taken to the Harewood Whin site for composting.

2.2.5 LACW materials sent for recycling are managed through a wide variety of outlets. A large proportion (58**%)** of LACW recyclate managed by North

[17] This figure includes a small amount of waste arising within that part of the YDNP which falls within Cumbria (based in data provided by South Lakeland DC) but not an equivalent figure for the amount arising within that part of the NYMNP falling within Redcar and Cleveland (for which no estimate is available) - provision for waste arising in this part of the NYMNP has been provided for in the Tees Valley Minerals and Waste Plan

Yorkshire County Council is exported from the county or is managed through facilities that are exempt from permitting.

Future Arisings

2.2.6 The modelling reflects growth forecasts for LACW provided by North Yorkshire and York WDAs.

2.2.7 The waste collection authorities across the Sub-region[18] also collect commercial waste (Trade waste) with a total of **28,314** tonnes[19] (2011/12), which for modelling purposes is included within the commercial and industrial waste sectors. The commercial and industrial waste survey projections do not differentiate between waste collectors and therefore includes both private and LACW. This apparent double counting is taken into account in the modelling projections.

Required Facilities

2.2.8 The proposed long term LACW waste contract technology for the management of residual waste is Mechanical Biological Treatment (MBT) with front end separation of metals, plastics and paper; separation and treatment of the organic fraction through Anaerobic Digestion (AD); and treatment using Energy from Waste (EfW) incineration for the remainder. The facility will be shared between North Yorkshire WDA and York Unitary Authority at a ratio of 79:21. All LACW residual waste will be treated through the long term waste service contract via a facility which has a maximum design capacity of 320,000 tonnes per annum (tpa). The facility would be located on the site of the existing Allerton aggregates quarry and landfill and known as the "Allerton Waste Recovery Park" (AWRP). Planning permission for this facility was granted in 2013.

2.2.9 York and North Yorkshire councils currently recycle or compost about 45% of household waste. It is assumed in the Councils' future waste forecasts that this will improve further as kerbside collection systems are continually improved and become more effective. Current estimates are that Partnership household waste kerbside recycling performance will be in the order of maximum 49% from 2014/15 through to 2031 excluding any contribution from AWRP.

[18] The sub region does not include the parts of the NPs outside NYCC area. Data is not available for trade waste collection for the parts of the NPs outside NYCC area

[19] The 28,314 tonnes of trade waste is included in the 438,535 tonnes given in paragraph 2.2.2 but is classified as commercial waste in the model

2.2.10 The long term waste service contract specifies the following minimum performance levels:

- Recycle a minimum 5% of contract waste, in addition to kerbside recycling and household waste recycling centres which will be unaffected by the contract
- Divert a minimum 90% of contract waste from landfill;
- Divert a minimum 95% of biodegradable municipal waste in contract waste from landfill.

2.2.11 The LACW projections take into account the AWRP impact and future recycling performance.

2.2.12 The waste treatment and energy recovery facilities provided under the programmed long term waste service contract would provide adequate capacity for LACW up to 2030 and beyond. The facilities would also provide some capacity to treat commercial and industrial waste of similar character. Available capacity within the AWRP is reflected in the modelled scenarios. The scenarios show that there is capacity that will be available for commercial and industrial waste to be treated by energy recovery in the medium and long term during the period to 2030. However, the projected growth in household LACW over time will result in progressively diminishing spare capacity for C&I waste within AWRP.

2.2.13 LACW is managed by York and North Yorkshire waste partnership, who are procuring a long term residual waste services contract. The York and North Yorkshire waste partnership's joint Municipal Waste Management Strategy seeks to provide capacity for waste treatment and disposal for LACW throughout and beyond the period to 2030 as confirmed in the modelling outputs. This means that in practice LACW will utilise existing and planned capacity for waste treatment and disposal such that management of LACW will use a combination of the planned capacity to be provided through the AWRP facility, and other arrangements using existing capacity available in the area which together would mean that there is no overall capacity gap for this waste stream. Any gaps in future capacity identified in the modelling scenarios will be for non LACW, principally commercial and industrial waste and construction, demolition and excavation waste. The identified capacity gap may be met through the development of new facilities within the Sub-region or through utilisation of existing capacity outside the area to meet part of the overall requirement.

2.2.14 Recycling capacity for LACW is currently provided by a diverse range of routes and options including transfer and bulking facilities which lie inside

and outside the area. Recycling and reprocessing facilities for the main classes of recyclate (paper and card, glass, metals and plastics) are regionally or nationally strategic facilities and are located outside of the area. The Environment Agency also reports that significant quantities of LACW recyclate are exported from the UK. Some small scale recycling facilities that are exempt from waste permitting requirements are likely to lie within the area. However, permit exemption means that no quantitative information is available.

2.2.15 The WDAs make use of household waste transfer stations and some commercial transfer stations for waste that is subsequently sent for recycling and disposal. The WDAs have indicated that additional transfer stations for LACW are needed in order to provide an adequate overall network in appropriate locations, including new transfer stations to serve York and Ryedale and Selby Districts.

2.2.16 Modelling therefore shows a current and ongoing gap for recycling within the area if the intention is to be self sufficient but this gap is only likely to be an issue if the current arrangements change significantly. As a consequence it is recommended that the Sub-region partners continue to make contact, under the Duty to Cooperate, with other relevant Waste Planning Authorities in order to establish whether they are aware of any foreseeable changes which may affect the position over the expected life of the Plan.

2.2.17 An analysis has taken place to review the situation should the AWRP not become operational to allow for the treatment of residual LACW. The resulting capacity requirements are shown in Appendix 2. Essentially this would result in a capacity gap for energy from waste over the whole plan period. This could be partially offset by continued disposal to landfill although this would be contrary to the policy requirements determined by implementation of the waste hierarchy.

2.3 COMMERCIAL AND INDUSTRIAL (C&I) WASTE

2.3.1 The estimates for C&I waste arisings show that the main waste producing sectors are food and drink and the commercial sectors. This estimate is consistent with the expected profile of business located within the Sub-region. It is likely that there is an uneven distribution of arisings of C&I across the study area, which are generally associated with more urbanised parts of the Sub-region.

Current Arisings and Existing Facilities

2.3.2 C&I data estimates have drawn on two sources of baseline information sources and both are reproduced in this report (see Interim Report October 2013 for detail).

2.3.3 C&I arisings together made up 1,109,101 tonnes (in 2009/10 National Defra C&I survey source) or 774,430 tonnes (in 2009, Extrapolated NW C&I survey).

2.3.4 Using the 2009/10 National Defra C&I survey as the source of C&I waste arisings, and excluding power and utilities waste (fly ash from power stations disposed of at restricted user landfills), a total of 916,208 tonnes of arisings is projected. Of this total, 38% would be from commercial sources and 62% from industrial sources.

2.3.5 Using the 2009 Extrapolated NW C&I survey as the source of C&I waste arisings, and excluding power and utilities waste, a total of 745,179 tonnes of arisings is projected. Of this, 61% would be from commercial sources and 39% from industrial sources. Data from the Environment Agency Waste Data Interrogator (2011) for deposits at waste management sites in the Sub-region (North Yorkshire and City of York) shows that (excluding **both** fly ash from power stations which is managed at restricted user landfills and LACW) some 481,000 tonnes of "Household Industrial and commercial[20]" waste was deposited at permitted waste management sites in the Sub-region. Of this, 64% is described as "household waste" or is indicated to be from commercial sources by the nature of the waste description. However, only 7% of the 481,000 tonnes managed can be identified as industrial waste from EWC waste codes.

2.3.6 Based on landfill deposit data from the 2011 EA Waste Interrogator which indicates total Household, Commercial and Industrial waste landfill deposits (at 2011) as being 398,018 tonnes. By subtraction of LACW quantities recorded as landfilled, it appears that some 168,000 tonnes of C&I waste were deposited at non-hazardous landfills in the Sub-region in 2011. Projections using the 2009/10 National Defra Survey indicate that (excluding power and utilities) some 263,489 tonnes of commercial and industrial waste would be landfilled in the Sub-region. The 2009 extrapolated NW C&I survey projects that 184,341 tonnes of commercial

[20] Records of waste deposits submitted to the Environment Agency group together "Household, Industrial and Commercial" as a high level category of non hazardous waste. Waste classified under the term Household includes LACW but also may include commercial waste that appears to the site operator as being of a similar composition to LACW. The quantity of industrial and commercial waste can be assessed by subtracting the known deposits of LACW waste.

and industrial waste would be landfilled in the Sub-region. On the basis of comparable landfill projections, the NW extrapolated survey provides a closer match with the observed data. However, it should be noted that the quantity of waste landfilled as a national trend has continued to fall (probably influenced by the continuing increase in landfill tax) and therefore the observed quantity landfilled in 2011 would be expected to be less than a projection based of 2009 and 2009/10 data. The EA Interrogator shows the total of Household, Commercial and Industrial waste landfill deposits as 410,894 tonnes in 2010 reducing to 398,018 tonnes in 2011.

2.3.7 The 2009/10 National Defra survey gives a C&I 45% recycling rate, with only 1% managed through transfer facilities. The extrapolated NW survey data indicates a recycling rate of 60%, again with only 1% managed through transfer stations.

2.3.8 However, the EA Interrogator database indicates that a significantly higher proportion of waste in the Sub-region is managed through transfer facilities. The use of transfer stations may be linked to a relatively low population density, large geographic area and thus dispersed arisings in which waste transfer stations play a greater role than may have been the case than in the survey samples. The apparent disparity can be explained by a number of factors. These may include recycled materials which are managed through recycling facilities that lie outside the area; exempt sites regulated by the Environment Agency and not recorded in the interrogator database; and through transfer stations which are sorting materials for subsequent recycling.

2.3.9 Waste transfer operations are increasingly undertaking waste segregation to increase recycling rates and avoid the increasing cost of landfill disposal with 35 out of 40 waste transfer facilities in the Sub-region showing removals of waste materials for recycling. It is also the case that significant quantities of waste sent for recycling will be managed through sites that are exempt from the full permitting requirements and thus data is not captured by the EA Interrogator database. Many recycling locations will be outside of the area and indeed the export of recyclate from the UK is a significant management route.

2.3.10 Recycling potential, particularly for C&I waste, is increasing, with the greatest opportunity for mixed waste which is not currently source segregated. Analysis of the 2009 extrapolated NW C&I survey indicated that 80% of the category of mixed waste would be capable of recycling or use for energy recovery. Commercial mixed ordinary waste arisings are

estimated using the extrapolated survey at 167,110 tonnes[21] per annum. Industrial premises often produce mixed ordinary waste, which may be similar in character to commercial waste, with estimated arisings of 63,949 tonnes per annum.

2.3.11 The C&I arisings projected from the 2009/10 Defra national survey source are compared to the 2009 extrapolated NW C&I survey and data extracted from the Environment Agency Interrogator in Table 7. The Defra Survey-based figures shows a relatively low level of waste assessed as commercial arisings and relatively high levels of management by landfill and treatment plant of C&I waste when compared to EA Interrogator data and the extrapolated NW survey.

Table 7 Comparison of Survey Data Projections and EA Interrogator

Comparator	Indicated by EA Interrogator Data	2009/10 Defra National Survey	2009 Extrapolated NW C&I Survey
Non Hazardous C&I Landfilled 2011	168,000 tonnes	263,489 tonnes	184,341 tonnes
Non Hazardous C&I managed through Treatment plants 2011	21,329 tonnes	53,027 tonnes	25,589 tonnes
Indicative % of Commercial Waste within C&I total	64%	38%	61%

2.3.12 This analysis would suggest that the 2009 extrapolated NW C&I survey is the nearer to observable data within the Sub-region. The following analysis of capacity gaps and capacity is based on C&I arisings from the NW extrapolated survey, unless the Defra National survey is otherwise shown for comparison.

Future Arisings Scenarios and Subsequent Capacity Gap

C&I Required Facilities: Transfer Stations

2.3.13 Waste transfer stations and bulking facilities provide a valuable component in the efficient management of waste materials. In particular they are useful when waste arisings are relatively small in quantity and widely

[21] Table A10 Extrapolation from the NW Survey 2009 showing Business Sector and Material Type

distributed. For this reason transfer stations are seen to be a significant feature of waste management provision within the area.

2.3.14 **Under all growth projections and scenarios modelled there is no gap in transfer station facilities within the period to 2030.** Un-used transfer capacity exceeds 650,000 tonnes throughout the period even with growth and maximised recycling. It should however be noted that due to the important role of transfer station facilities in the area, further development of capacity may be reasonable in order to provide suitable geographical distribution. This may be relevant for household waste facilities for LACW transfer.

C&I Required Facilities: Recycling Facilities

2.3.15 **The Baseline Scenario indicates that currently (2013) there is a gap in available recycling capacity within the area.** The gap is significant for both LAWC and C&I waste streams. Whilst a proportion of recyclate is currently managed through transfer and bulking facilities within the area, final destination recycling and reprocessing facilities lie mainly outside of the Plan area and therefore current provision is met predominantly by export.

2.3.16 Applying growth factors increases the apparent gap, as does increased recycling rates under Scenarios 2 (maximised recycling and recovery) and 3 (median recycling and recovery) as shown in Table 8.

Table 8 Capacity Gap Modelling results comparing Scenarios 1, 2 & 3 applying the 3 Growth modifiers at 2012, 2020 and end of Plan period 2030 for Recycling C&I wastes (tonnes) for capacity within the Plan area (both C&I data sources)

Year	Scenario 1 (Defra C&I)	Scenario 1 (NW C&I)	Scenario 2 (Defra C&I)	Scenario 2 (NW C&I)	Scenario 3 (Defra C&I)	Scenario 3 (NW C&I)
NO GROWTH						
2012	523,645	449,359	558,442	478,660	546,844	468,891
2020	523,645	449,359	697,638	595,860	639,642	547,027
2030	523,645	449,359	697,638	595,860	639,642	547,027
GROWTH						
2012	533,011	456,111	568,544	485,942	556,696	475,999
2020	606,847	518,690	800,031	679,020	735,635	625,576
2030	682,714	578,514	897,452	754,184	825,872	695,626

MINIMISED GROWTH						
2012	518,434	446,504	552,820	552,820	541,358	465,887
2020	532,743	469,782	696,835	696,835	642,139	563,835
2030	530,898	478,181	686,035	686,035	634,326	568,964

2.3.17 The National Waste Strategy is to increase recycling in accordance with the waste hierarchy (Waste Strategy 2007, The Government Review of Waste Policy in England 2011 and the Waste Management Plan for England 2013 consultation). It is likely that increased national recycling provision for bulk recyclate materials such as paper, card, glass, plastics and metals will be met by increased capacity at regionally and nationally significant facilities, through economies of scale. It is therefore likely that provision for final management of increased levels of recyclate generated within the area will be largely provided for by export to recycling and processing facilities outside the area. As a consequence it is recommended that the partners within the Sub-region make contact, under the Duty to Cooperate, with relevant Waste Planning Authorities in order to establish whether they are aware of any foreseeable changes which may affect the position over the period to 2030**.**

C&I Required Facilities: Composting

2.3.18 Aerobic Composting provision within the area is currently in surplus and remains adequate under all growth forecasts and all scenarios modelled until year 2030.

2.3.19 The provision of an Anaerobic Digestion facility within the proposed AWRP facility could provide treatment capacity for food and organic waste that will be unsuitable for open windrow composting. This would be preferentially for LACW but there may be some additional capacity for C&I waste. Anaerobic digestion capacity has been included within the treatment capacity

C&I Required Facilities: Metal Recycling Sites (specialist recycling; End of Life Vehicles, Metals and Waste Electronic and Electrical Equipment [WEEE])

2.3.20 Modelling shows a surplus capacity in the order of 90,000 tonnes under all growth projections and scenarios throughout the period to 2030 therefore no additional ELV, Metals and WEEE processing sites are likely to be required during the period. However, there may still be a benefit in extra provision in order to provide an adequate geographic network as well as providing for material specific capacity as the model is unable to break down the data to material specific requirements, as such a specific need

may arise for example for WEEE facilities whilst there is still a surplus of ELV sites.

C&I Required Facilities: Treatment

2.3.21 Treatment includes a wide range of processes that may be required to deal with specialist materials prior to recycling, energy recovery or final disposal. C&I waste requiring treatment also includes hazardous waste and Environment Agency hazardous waste records for 2011 show that in the order of 22,000 tonnes of hazardous waste were exported mainly for treatment.

2.3.22 A gap or surplus in treatment provision can therefore be strongly influenced by the local absence or provision of specialised treatment facilities which may only be viable at a regional or national level. Included in treatment capacity is a new permission in York (North Selby Mine) which if built would provide 60,000 tonnes capacity per annum. It is expected to be commissioned by 2016 and will be additional to an existing capacity (Mosley Waste Management) of 25,000 tonnes per annum. In the period up to 2015, there is a small gap in capacity in the order of 20,000 tonnes or less. These two facilities would provide almost 85,000 tonnes per annum Anaerobic Digestion treatment capacity with energy recovery, which in total gives a surplus capacity under all scenarios and growth forecasts, which can only be utilised for suitable organic waste materials.

2.3.23 The Baseline Scenario (excluding Anaerobic Digestion facilities) indicates an adequate current provision for waste requiring specialised treatment with a surplus capacity in the order of 90,000 tonnes under all scenarios.

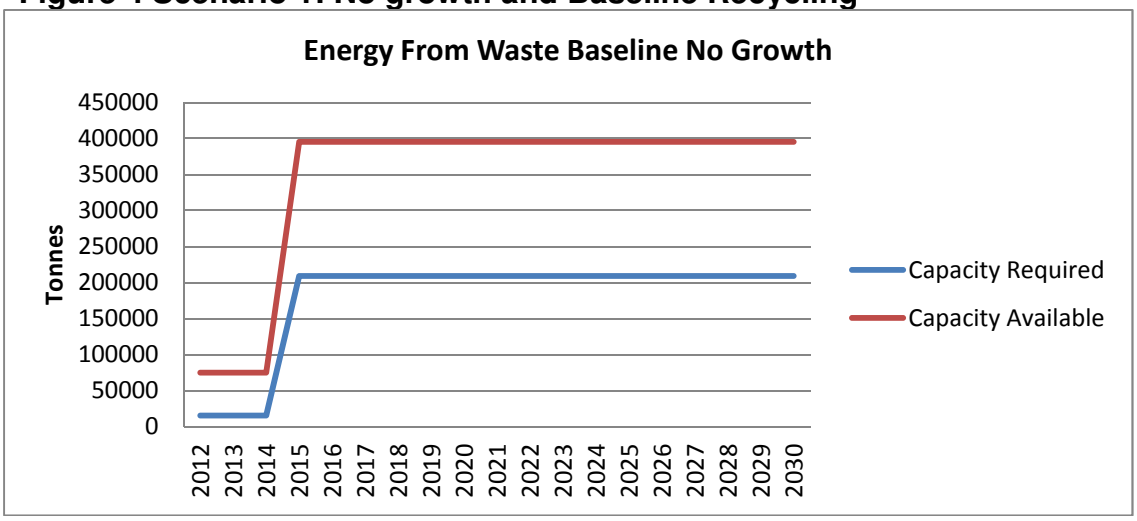
C&I Required Facilities: Energy from Waste

2.3.24 The Baseline Scenario shows no gap in energy recovery provision in Scenarios 1 and 2, although a small gap in provision is seen up to 2015 in Scenario 3. This apparent gap can only be currently met by export from the Plan area. Development of the proposed AWRP facility would provide capacity for energy recovery from 2015 for LACW and compatible C&I waste assuming that the projected growth in household LACW over time will result in progressively diminishing spare capacity for C&I waste within AWRP, see Figure 4 below.

2.3.25 For all graphs shown in figures 4-6 a reflection of market drivers and demand for alternatives to landfill and a shift in attitudes towards this type

of waste management facility is reflected, this results in a dramatic shift in demand in the next 5 years.

Figure 4 Scenario 1: No growth and Baseline Recycling



2.3.26 Within the scenarios modelled, scenario 3 median recycling and energy recovery with growth (Figure 5) would produce the greatest demand for energy recovery facilities. Scenario 3 represents a median level of increased recycling and recovery. In practice this would reflect a high level of energy recovery from C&I waste, whilst LACW is adequately provided for over the period to 2030. The proportions are; 50% mixed ordinary Commercial waste recycling, 50% Industrial waste recycling, 50% CD&E recycling, 50% mixed ordinary Commercial waste & Industrial waste energy recovery, LACW as defined by the proposed LACW waste contract.

2.3.27 Whilst there is no gap in provision, figure 5 illustrates a diminishing capacity for energy recovery for C&I waste assuming that LACW is contracted to be adequately provided for by energy recovery facilities. However, one of the energy recovery facilities is specialised to accept waste wood. If energy recovery facilities able to take residual LACW and similar C&I waste are considered under Scenario 3 then a capacity gap appears for all years except a small period after commissioning of the AWRP facility in 2015 as illustrated in Figure 6.

Figure 5 Scenario 3: Median recycling and energy recovery for C&I and LACW energy recovery requirements combined

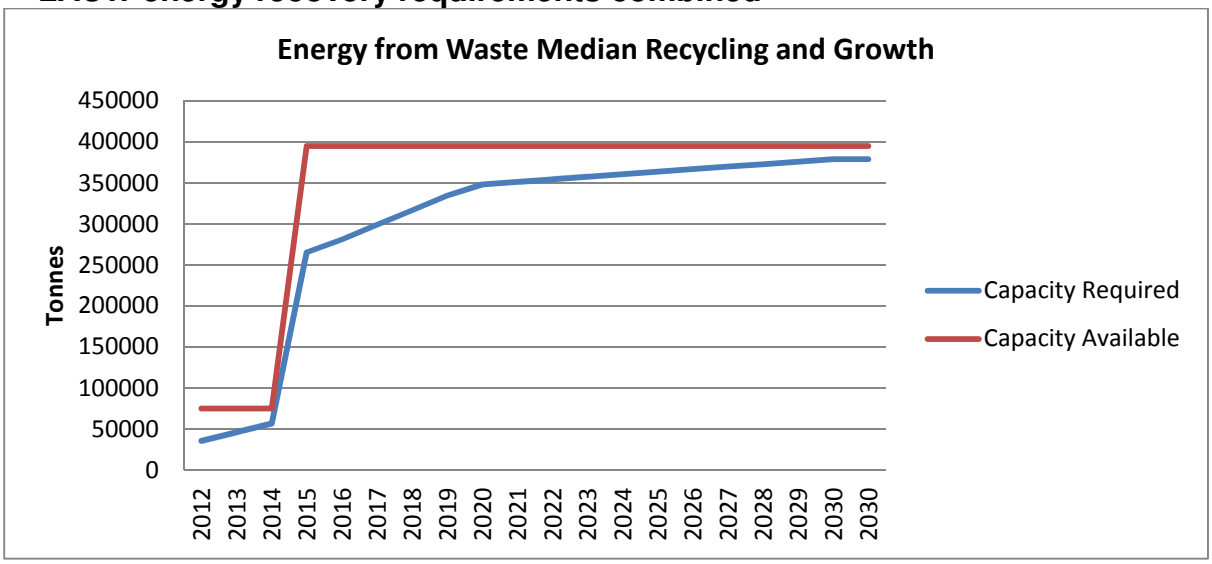
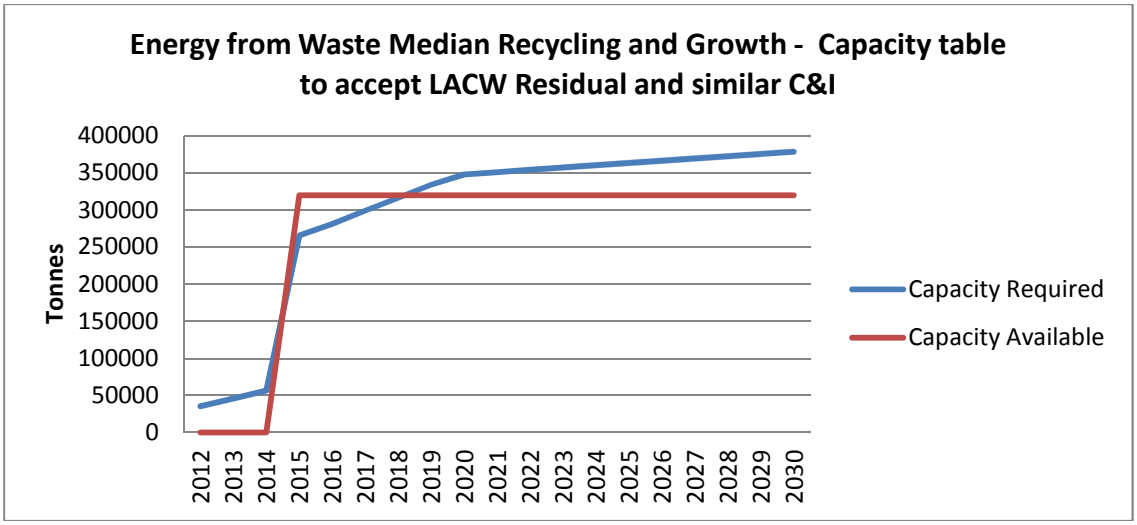


Figure 6 Scenario 3: median recycling and energy recovery for C&I and LACW energy recovery requirements showing capacity that is able to accept residual LACW and similar C&I waste.

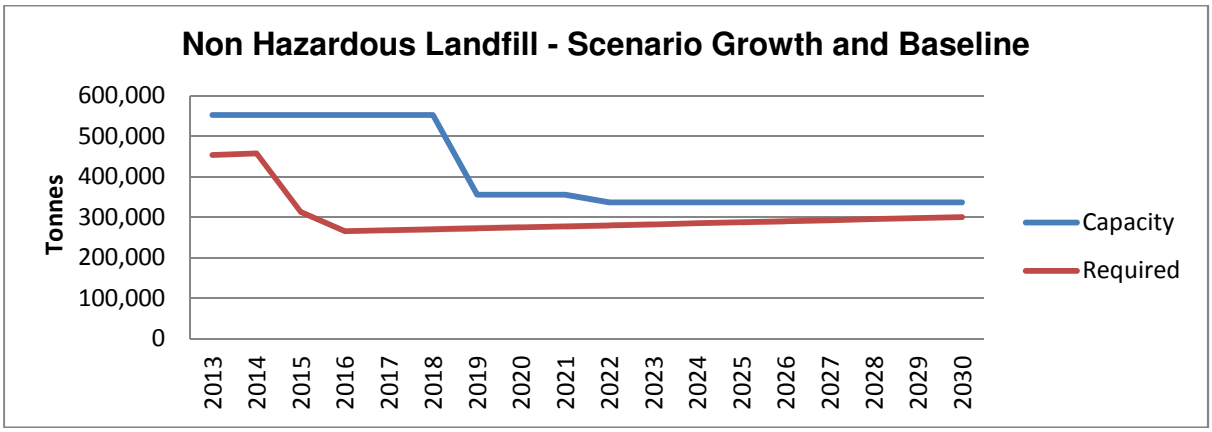


2.3.28 When considering the information displayed in Figures 4-6, it should be noted that prior to the EfW capacity coming on stream, LACW is disposed of to landfill as proposed by the constituent WDA. Therefore the required capacity for EfW only rises as the change in practice occurs and the capacity becomes available. This follows the approach set out in the Municipal Waste Management Strategy for the City of York and North Yorkshire 2006 – 2026.

C&I Required Facilities: Non-Hazardous Landfill

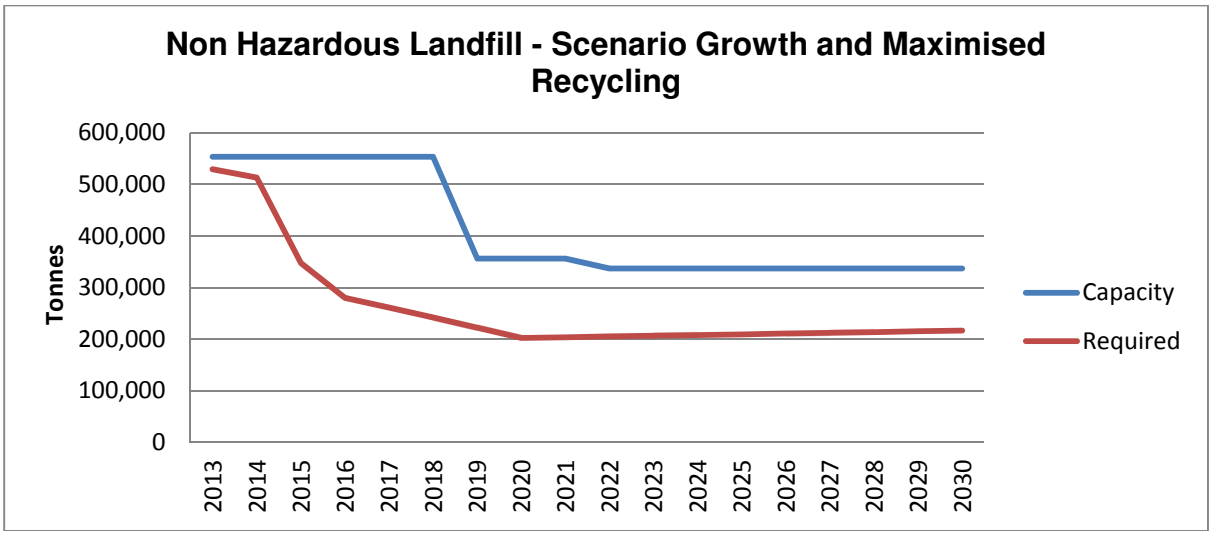
2.3.29 The baseline recycling/energy recovery scenario shows an initial gap in landfill requirements of 25,175 tonnes per annum under no waste growth, rising to 38,495 tonnes per annum in 2014 under projected "growth" during the period. Using no growth and baseline recycling/energy recovery scenario there would be a surplus capacity from 2015 to 2019 when landfill closure would give a gap in capacity increasing to 47,710 tonnes per annum by 2030. This gap would increase to 113,720 tonnes per annum in 2030 under maximised growth. This pattern of capacity provision applies to all baseline recycling scenarios.

Figure 7 C&I Landfill - Growth and base line recycling



2.3.30 Under both median recycling and maximised recycling scenarios landfill provision would remain in surplus throughout the period to 2030, following implementation of the proposed York and North Yorkshire Waste Partnership contracts by the WDA. It may be concluded that landfill capacity is adequate throughout the period except in the unlikely event that there will be significant waste growth and no increase in recycling or energy recovery. Figure 7 illustrates the growth and maximised recycling scenario.

Figure 8 C&I Landfill- Scenario Growth and Maximised Recycling



2.4 CONSTRUCTION, DEMOLITION AND EXCAVATION (CD&E) WASTE

2.4.1 Waste materials generated from Construction, Demolition and Excavation (CD&E) operations include a wide range of surplus waste construction materials as well as materials generated by the demolition of old buildings and soils and sub-soils from excavation. Most of these materials are inert with respect to their pollution potential. However, materials such as wood are biodegradable, plasterboard produces a polluting leachate and asbestos is classified as hazardous.

Current Arisings and Existing Facilities

2.4.2 Accurate data on the quantity of CD&E waste arisings has historically been poor. Between 1999 and 2005 the Department of Communities and Local Government conducted national surveys of arisings and use of alternatives to primary aggregates. The latest national survey in 2005[22] suggested that the production of recycled aggregate in the region had increased slightly since the previous 2003 survey. However, due to the limited level of returns and at +/- 15% confidence level, the apparent changes in the 2003 and 2005 surveys are not statistically significant. The data at a regional level is even less robust.

[22] Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005. *Construction, Demolition and Excavation Waste*, Communities and Local Government.

2.4.3 An estimate of how much CD&E waste is produced in the sub-region can be made with respect to CD&E managed through permitted sites. Data has been published by the Environment Agency for 2011 (EA Interrogator database). This gives quantities of CD&E waste deposited at sites which are subject to Environment Agency permit. This data is an improvement on that available in earlier years in that it now provides some information on origin and waste movements but is incomplete as some CD&E wastes are not fully recorded for all details.

2.4.4 There was in the order of **768,765 tonnes** of CD&E waste under management in 2011 in the Sub-region (Table 9). Some 18% of the total CD&E waste managed in the North Yorkshire Sub-region is imported whilst the quantity shown in the EA interrogator as exported is equivalent to 8% of the total managed in the Sub-region. There is likely to be an uneven geographical distribution of CD&E arisings across the Sub-region with most arisings concentrated in urban areas.

Table 9 CD&E waste in the Sub-region (2011)

Waste Stream	Tonnes
Construction & Demolition wastes	**215,559**
Excavation wastes	**553,205**
Total CD&E	**768,765**

2.4.5 There is no available data covering "Registered Exemptions" for CD&E which would include registered exempted composting sites, burning practices on land, spreading waste on land for reclamation/improvement and/or sites used for the storage of CD&E materials.

Future Arisings and Subsequent Capacity Gap

CD&E Required Facilities: Transfer Stations

2.4.6 Waste transfer stations and bulking facilities often provide a valuable component in the transfer and bulking of CD&E waste materials. Modelling under all scenarios and growth factors shows no gaps in provision over the whole period.

CD&E Required Facilities: Recycling

2.4.7 Whilst current recycling rates are high for C&D wastes there is a shortfall of capacity for recycling of CD&E materials (principally C&D waste) under all

the scenarios and “growth” options over the period to 2030. Whilst the gap is modest under a no growth and baseline recycling scenario when new planned capacity comes on stream in 2014 as is illustrated in figure 9. Increasing recycling rates further will widen the gap, as would growth in waste arisings, as illustrated in figure 10 with figures shown in Table 10. The capacity required curve increase steeply to 2020 in the early years and then at a much slower rate because recycling rates would be expected to increase sharply and then level out as are targets achieved.

Figure 9 CD&E Recycling Facilities No Growth and Baseline Recycling Scenario

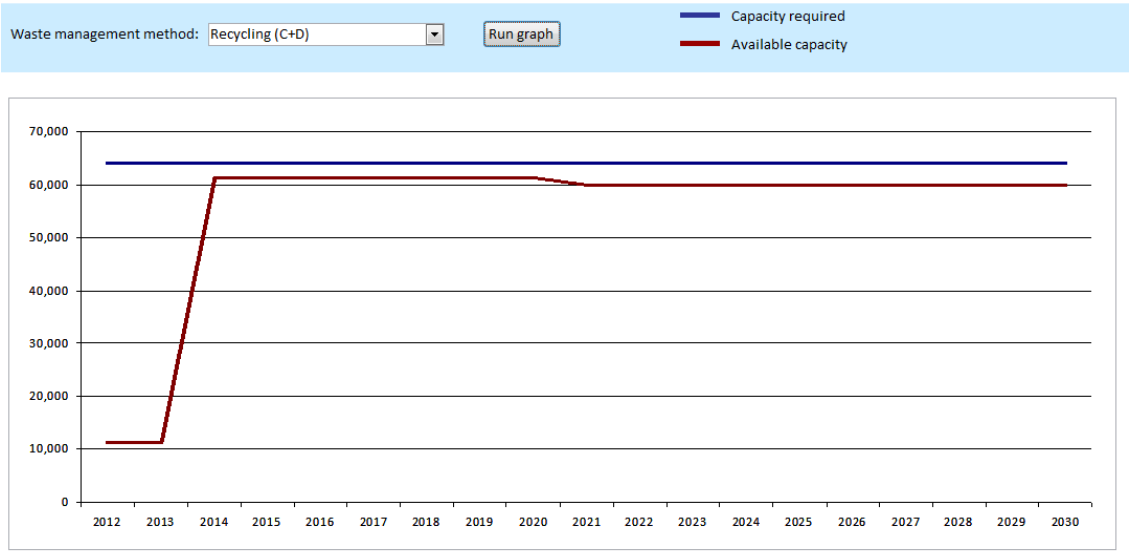


Figure 10 CD&E Recycling Facilities Growth and Maximised Recycling Scenario

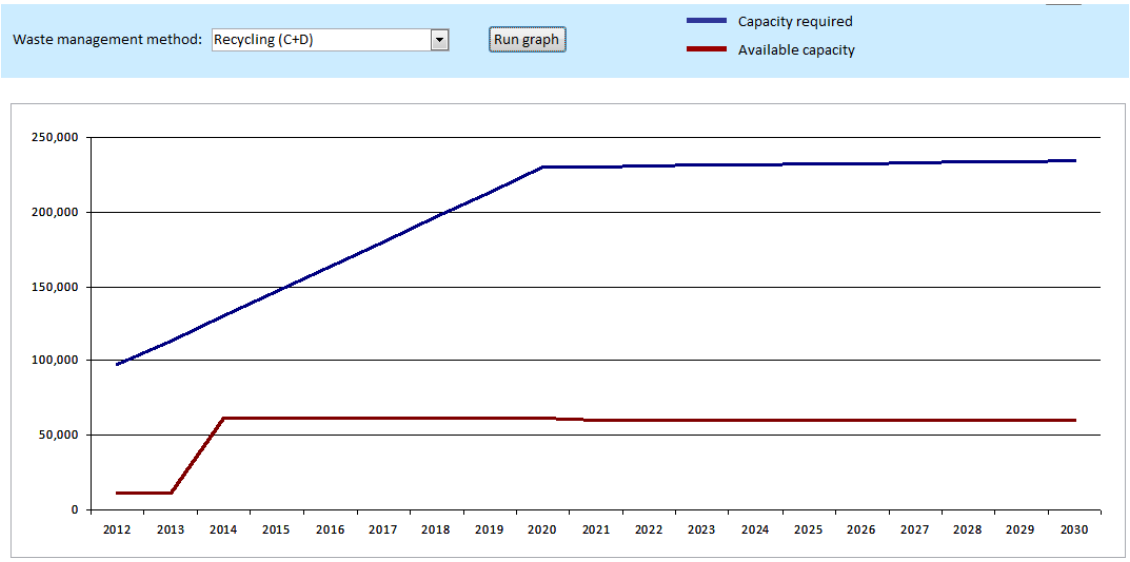


Table 10 CD&E recycling capacity requirements over the plan period

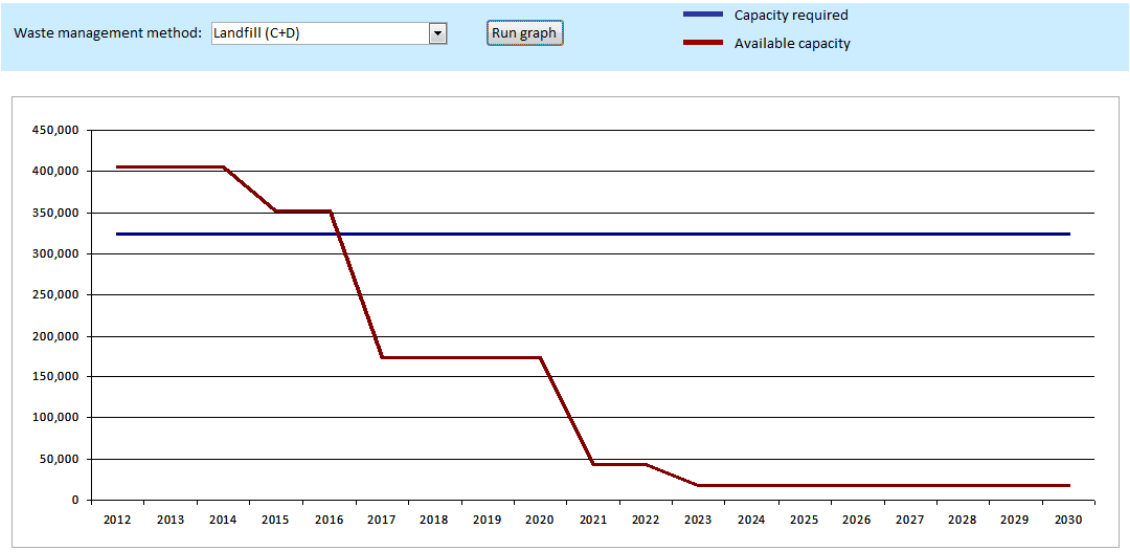
Scenario	Year	No growth	Growth	Minimised Growth
Baseline – Scenario 1	**2012**	52,811	53,584	52,811
	2014	2,811	4,366	2,811
	2020	2,811	6,768	2,811
	2030	4,156	12,312	4,156
Maximised – Scenario 2	**2012**	101,408	102,767	101,408
	2014	100,006	103,915	– 100,006
	2020	245,799	264,735	245,799
	2030	247,144	286,183	247,144
Median – Scenario 3	**2012**	85,210	86,372	85,210
	2014	67,608	70,732	67,608
	2020	164,803	178,746	164,803
	2030	166,148	194,892	166,148

2.4.8 It may be concluded that additional capacity will be required to support higher levels of CD&E recycling early in the Plan period. Recycling of CD&E waste is economically more viable at more localised facilities due to the lower value and costs of transporting lower value higher density wastes and therefore the recycling facilities for this waste stream are more likely to be required within the Plan Area. CD&E recycling can be achieved by mobile plant working at demolitions sites as well as at fixed facilities.

CD&E Required Facilities: Landfill

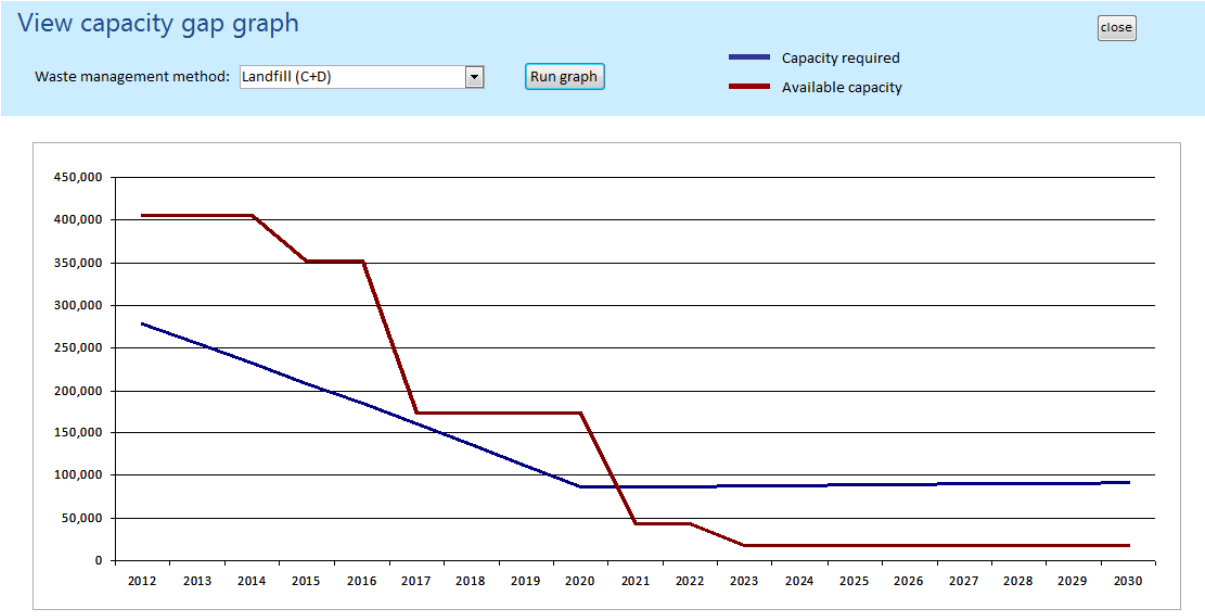
2.4.9 Under the Baseline scenario with no growth, a gap of 150,698 tonnes appears at 2017 and rises to 305,614 tonnes at 2030. Under median and maximised recycling with no growth, a gap in provision appears at 2021 rising to 62,626 tonnes per annum by 2030, and a gap of 143,622 tonnes per annum under the median recycling and growth scenario by 2030. Sites capable of accepting inert CD&E waste show significant closures from 2016 (180,000 tonnes per annum) and in year 2020 annual capacity is reduced by 130,000 tonnes. New capacity will therefore be required from 2017 if there is no increase in recycling and from 2021 with both median and maximised recycling.

Figure 11 CD&E Landfill requirement No Growth and Baseline Recycling Scenario



2.4.10 The scenarios modelled do not take into account potential capacity from two landfill sites that have been identified (Barnsdale Bar Quarry Landfill and Long Lane Quarry Landfill) that are not currently operational but have theoretical capacity.

Figure 12 Scenario - Maximised recycling and growth modifier factors applied - Landfill Capacity for CD&E waste



CD&E Required Facilities: Hazardous Landfill

2.4.11 There is no provision for landfilling of hazardous CD&E waste, namely asbestos and asbestos contaminated waste, within the Sub-region. A gap in landfill provision for hazardous waste (from CD&E) is recorded under all growth factors (5,960 tonnes recorded in 2011) and a gap of this order appears throughout the Plan period. It is therefore recommended that where future capacity is likely to be met outside the area, the authorities engage in early discussions to agree the principle of the continuation of exports under the requirements of Duty to Co-operate.

2.5 HAZARDOUS WASTE

2.5.1 The 2005 Hazardous Waste (England and Wales) Regulations and the List of Wastes (England and Wales) Regulations set out what is defined as hazardous waste. Waste is classified 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.

2.5.2 Hazardous waste is a sub category of LACW, C&I waste and CD&E classed materials. Estimated totals for LACW, C&I waste and CD&E waste are inclusive of waste in the sub-category of hazardous.

Current Arisings and Existing Facilities

2.5.3 A total of **27,014 tonnes** of hazardous waste was recorded as arising in North Yorkshire and the City of York in 2011. The Sub-region is a net exporter of hazardous waste. In 2011 it imported 9,388 tonnes and exported 22,357 tonnes. A total of 2,156 tonnes were managed through transfer stations with 1,951 tonnes recorded as transferred to recycling. There are no hazardous landfill facilities within the Sub-region.

2.5.4 Over half of hazardous waste is managed at recovery facilities, with just 2% sent to transfer facilities prior to final disposal. A total of 6,727 tonnes of hazardous waste was managed through recovery processes, 2,866 tonnes by treatment processes, 1,951 by transfer (recycling) and 754 tonnes by incineration with energy recovery. There was no record of any hazardous waste to landfill within the area and it is assumed that this will continue throughout the period to 2030. As a consequence it is recommended that NYCC make contact, under the Duty to Cooperate, with relevant Waste Planning Authorities in order to establish whether they are aware of any foreseeable changes which may affect the position over the expected life of the Plan.

2.5.5 Hazardous waste management within the Sub-region is confined to waste taken to Waste Electrical and Electronic Equipment (WEEE) treatment facilities. Remaining arisings are deposited at transfer stations for onward movement (for treatment and disposal) or are exported directly from the area.

2.5.6 It is likely that the AWRP, in particular the energy recovery facility, would generate air pollution control residues that will be classed as hazardous. There are no waste management facilities for disposal of these wastes within the Sub-region and thus facilities for management and disposal would have to be found by export.

2.5.7 The future capacity requirement for hazardous waste has already been taken into account under the main classes of waste materials for which hazardous waste is a sub-set. However, hazardous waste facilities for treatment, incineration and landfill are essentially located outside the area and it is anticipated that provision will continue and remain available throughout the period. It should be noted that hazardous waste facilities require economies of scale so that provision of facilities within the area for the small quantities of arisings would be unlikely to be viable unless a new facility were to import significant quantities from outside the area.

2.6 SEWAGE SLUDGE

2.6.1 There are three companies who operate Waste Water Treatment Works (WWTW) within the North Yorkshire Sub-region; United Utilities, Yorkshire Water and Northumbrian Water.

Future Arisings and Subsequent Capacity Gap

2.6.2 The three companies have been contacted in order to gain a broad overview of their future capacity requirements as far into the future as possible. The responses indicated that at this stage they cannot give any indication of what future requirements are likely to be with regard to waste water, especially not for the entire period up to 2030. However, water companies are involved in consultations on Local Plans which would help inform growth requirements. Companies did not anticipate building new WWTW in the Sub-region but would almost certainly be undertaking works at various existing WWTW over the period.

2.6.3 Water companies are regulated on a 5 year cycle through Asset Management Plans (AMPs). The current AMP (AMP 5) will not finish until March 2015. The programme for AMP6 will be driven by water quality

requirements (yet to be finalised by the Environment Agency) for example compliance with the Water Framework Directive, and growth pressures.

Required Facilities[23]

2.6.4 As a general principle, when greater capacity is required, WWTW operators would try and place new plant on existing treatment works, or failing that purchase land from an adjacent land owner. Therefore, it is unlikely that new sites will be required within the area to handle waste water/sewage sludge. However, in some circumstances it may be beneficial to do so, for example if there are site sensitive receptors near to an existing works making expansion unfeasible. The precise location would be dependent on engineering and environmental feasibility studies.

2.6.5 At present it is not envisaged that sites or capacity should be identified within the area for future use as WWTW as there is no current requirement for additional facilities. The three WWTW companies should be kept informed of the plans progress and invited to comment at consultation stages.

2.7 AGRICULTURAL WASTE

2.7.1 Agricultural Waste is waste produced at agricultural premises as a result of agricultural activity. Agricultural premises are defined in the Agriculture Act 1947 as land used for: horticulture, fruit growing, seed growing, dairy farming, livestock breeding and keeping, grazing land, meadow land, osier land (growing willow), market gardens and nursery grounds. It also includes woodlands where that use is ancillary to the use of land for other agricultural purposes. This definition includes all arable farming.

2.7.2 This waste is made up of the following substances, many of which can also be defined as by-products and not necessarily wastes due to the fact they contain important nutrient resources and they are not defined as wastes when applied to the land as fertiliser for the benefit of agriculture:

- Compostable and digestible materials (farm yard manure, slurry, vegetable);
- Combustible materials (straw, silage wrap [plastic], bale twine and net [plastic], fertiliser and seed bags [plastic], animal feed bags [plastic],

[23] The figures associated with waste water treatment capacity have not been included in Appendix 1 (but can be found within the Forecasting Model Access Database) as the future capacity requirements are dependent upon the issues outlined under paragraph 2.6.2 of this report.

animal feed bags [paper & card], horticulture [plastic], tree guards [plastic], paper seed bags [paper & card], and oil);

- Hazardous and Difficult Waste[24]; chemical materials (silage effluent), agrochemical (plastic), agrochemical (paper & card), animal health (plastics), animal health (paper & card), animal health (glass), animal health (rubber/metal), pesticide washings, sheep dip (organic phosphates) and sheep dip (synthetic pyrethroids); and
- Other (milk).

Current Arisings and Existing Facilities

2.7.3 In order to estimate agricultural waste arisings for the North Yorkshire Sub-region, data has been extrapolated using the relationship of agricultural land size and number of farm holdings and associated waste generation. This work is based on the Defra annual agricultural census by region and farm type (published in 2013 for 2010) and the Environment Agency Agricultural Waste and By-Products Survey 2003 and Towards Sustainable Agricultural Waste Management, Environment Agency 2001. Although the EA Agricultural Waste and By-Products survey was carried out in 2003 following the detailed work in 2001, the practice of agricultural waste generation is not likely to have significantly changed since that time. It should be appreciated that the figures presented are estimates at regional level and that the limited precision and availability of some of the data means that the accuracy of the final estimates cannot be guaranteed. In the original survey by the Environment Agency an assessment of the likely accuracy of the estimates was undertaken which were defined as 'High', 'Medium' or 'Low'. Agricultural Waste arisings figures shown at regional level were estimated at predominantly medium accuracy level. All the waste volumes were calculated against surveyed farm holdings and practice of waste management within that farming unit allowing extrapolation against the number of farm holdings within the North Yorkshire Sub-region to be calculated on this basis. Also due to the methodology applied below using farm holding figures the numbers are also likely to be on the slightly lower side.

2.7.4 Farm holding figures are published by DEFRA separately for National Parks and for each of the English Local Authorities. In calculating the figure for North Yorkshire the total figure of 6,500 farm holdings has been reduced to 3458 to subtract the farms within the two National Parks[25].

[24] Difficult waste are those wastes which may be non hazardous but require special handling or treatment requirements

[25] Using this assumption it should be highlighted that this figure may be a bit lower that is actually the case, as the National Park farm holdings numbers include farms within the Redcar and Cleveland and Cumbrian parts of the National Parks.

There are 1,369 farm holdings in YDNP, 1,673 in NYMNP (Defra June 2009 Agricultural and Horticultural Survey), 3,458 farm holdings in North Yorkshire and 248 farm holdings in York (Defra Local Authority breakdown for key crops areas and livestock numbers on agricultural holdings last update 2012). Together these generate over 4.5 million tonnes of waste, the majority of which is managed within the generating farm holding (Table 11). Within Table 11 it has been assumed that the most sustainable waste management route has been chosen for the waste, with consequently no waste managed by landfill other than hazardous waste, however in reality some of these wastes (plastic packaging, cardboard and paper packaging, metal, glass, wood and rubber packaging and other non-packaging plastics) could continue to go to landfill. As the quantities are very small (if all these materials continued to go to landfill it would involve an additional 5,486 tonnes) and can practically be recycled (the waste materials are very similar to "mixed household waste") the assumption has been made in favour of diversion from landfill.

Table 11 Extrapolated waste arisings and their waste management route for the Sub-region (based on the Towards Sustainable Agricultural Waste Management, Environment Agency 2001 and 2003 Environment Agency Agricultural Waste and By-products Survey) (Assuming that the highest method of management according to the waste hierarchy is chosen (zero landfill)

Waste Management Route	Tonnes
Composting on site/ Land recovery/treatment on site	4,549,257
Management off site	
Recycling	9,523
Treatment plant/Incineration	7,986
Animal By-Products incineration	13,480
Landfill	0
Hazardous Landfill	1199
Sub-total	32,188
Total	**4,581,445**

Future Arisings and Subsequent Capacity Gap

2.7.5 It will be necessary to provide for waste management leaving the farm holdings amounting to approximately just over 32,000 tonnes per annum (assuming no growth in the volume of agricultural waste arisings). It is likely that in the future more waste may be diverted from landfill for

recycling, fulfilling the aspirations of waste management moving up the waste hierarchy, these optimum routes are shown in Table 11.

2.7.6 New legislation came into force in April 2010 amending the existing system of waste exemptions including agricultural waste exemptions currently undertaken by farmers. All farmers will have to re-register their agricultural exemptions covering such practices as land spreading and depositing dredgings cleared from farm ditches along banks from 1st October 2013. In addition to re-registration some of the exemptions are also changing. There are approximately 30 exemptions covering agricultural activities and nearly all exemptions covered at present will still be covered in the new system. However, in some cases there may be slight changes to the limits and conditions within the waste exemption. There are also a number of new exemptions that could be applied to farming.

2.7.7 In addition to any effect of the new exemption regulations, it is likely that in the future more waste could be diverted from landfill to recycling (due to the increasing awareness of the potential to recycle). However, it is expected that the quantities involved will still be small and will be of low significance in the overall waste arisings for the area. It is recommended that the situation be reviewed post-2013 once all the registrations have come into place and reviewed by the Environment Agency. It is likely that the majority of agricultural waste will still be managed within the farm holdings via land treatment/spreading and composting. The quantities involved for management off-site from farm holdings are likely to be so small they will be of low significance in the overall waste arisings for the Sub-region.

Required Facilities

2.7.8 The future arisings are small (in the order of 32,250 tonnes per annum assuming no growth in agricultural activity or significant change in agricultural practice) and any required facilities to cover off farm holding recycling and hazardous landfill would, in practice, be likely to require additional waste materials to make any new facility viable. The capacity allowance should be noted for the specialised treatment requirements for certain types of agricultural waste such as animal by-products incineration and hazardous landfill. The figures reflect the optimum level of treatment according to the waste hierarchy and in reality some of the waste may not be able to be practically or cost effectively recycled and therefore require treatment by other methods such as landfill.

2.7.9 There is no immediate need to provide any new facilities solely to cover agricultural wastes, the small capacity requirements for agricultural wastes

recycling are combined with C&I wastes and capacity gaps and new facility requirements are therefore included within the totals in the section of the report under C&I wastes. The "specialised" wastes generated that require specialist treatment are likely to continue to be treated at such existing specialised facilities over the plan period. It is noted that there are specialist storage plants, processing (rendering) plants, incineration, co-incineration plants and combustion plants all licensed and registered specifically for animal by-products treatment only located across the Sub-region[26] (such as at Knaresborough, Northallerton, York and Thirsk).

2.8 LOW LEVEL RADIOACTIVE WASTE

2.8.1 Most (98%) of Low Level Waste (LLW) in the UK arises from operation of nuclear power stations, nuclear fuel reprocessing facilities and also from the decommissioning and clean-up of nuclear sites. The remaining 2% is produced by non-nuclear industry users of radioactivity. As no nuclear sites are located in the North Yorkshire Sub-region, these non-nuclear industries are the sole producers of LLW for which capacity will need to be planned. Therefore, when compared to the total LLW produced in the UK, the amount produced in North Yorkshire is very small.

Current Arisings and Existing Facilities

2.8.2 A survey of producers of LLW was undertaken by Urban Vision in 2013. Although the response rate was low, it was clear from those organisations that did respond that the levels of LLW produced in the Sub-region are low.

2.8.3 The most recent records suggest that the production of LLW in the Sub-region is below the reporting threshold, which is measured in terms of radioactivity. Volumes of waste are not requested from producers of LLW, however an estimate has been made that the annual arising of LLW in the Sub-region is likely not to exceed 100 m^3.

Future Arisings and Subsequent Capacity Gap

2.8.4 There is no likelihood of a nuclear facility being located in the Sub-region in the next 20 years, which means it is highly unlikely that LLW will increase significantly above current levels. There is currently limited information on LLW arisings from the non–nuclear sector due to the lack of a requirement to record such waste.

[26] http://www.defra.gov.uk/ahvla-en/disease-control/abp/premises/

2.8.5 In March 2012 the UK Government produced 'A Strategy for the Management of Solid Low Level Radioactive Waste from the Non Nuclear Industry'. The Strategy aims to:

- provide guidance and background information on this type of waste to enable planning authorities to make informed decisions on planning applications and to respond to concerns from their elected members and constituents.
- clarify the respective roles of waste producers, the environment agencies, planning authorities and the Nuclear Decommissioning Authority to enable decisions to be made that properly recognize the responsibilities of others.
- ensure that waste producers and regulators are fully aware of how the regulatory framework should be applied to LLW, particularly the need for waste management plans, waste minimisation at source and use of the waste hierarchy.

2.8.6 This Strategy has been produced in conjunction with the Nuclear Decommissioning Authority, under the auspices of the Government's Radioactive Waste Policy Group (RWPG) to ensure appropriate integration with the nuclear industry LLW strategy.

2.8.7 Research undertaken for the Strategy estimated that total UK arisings from the non-nuclear industry are very unlikely to exceed 100,000 m^3 per year. In comparison, total waste arisings in England are around 272 million tonnes. Non-nuclear LLW arisings are therefore very unlikely to exceed 0.1% by volume of conventional waste arisings from the whole of the UK.

2.8.8 However, the document notes that participation in the LLW survey was less than anticipated and therefore the quantification of waste arisings from the non-nuclear industry across the whole of the UK remains very uncertain and is to be treated with caution.

2.8.9 The Strategy concludes that the disposal network available to the non-nuclear industry for radioactive waste is fragile and non-existent in some parts of the country. This means waste can travel some distance from source to disposal location.

Required Facilities

2.8.10 No landfill sites in the Sub-region are permitted for controlled burial of LLW. The nearest landfill to the Sub-region able to accept LLW is Clifton Marsh in the adjacent county of Lancashire, which is permitted until 2015 with likely future capacity subject to permissions. The latest planning

permission relating to Clifton Marsh (Refs: 05090376/ 06090395) restricts the amount of LLW originating from outside the North West Region and imported into the site to not more than 4,000 tonnes per annum. Information from the Environment Agency also suggests that LLW from North Yorkshire is managed via incineration at a facility at Knostrop, within the Leeds City Council area.

2.8.11 Arisings are not expected to change over the plan period and it is expected that arisings will continue to be managed as at present. Following the end date of planning permission at Clifton Marsh in 2015, this situation will need to be reviewed.

2.8.12 It is recommended for the Sub-Region partners to make contact, under the Duty to Cooperate, with relevant authorities in order to establish whether they are aware of any foreseeable changes which may affect the position for LLW over the period to 2030.

3. SUMMARY OF FUTURE WASTE MANAGEMENT REQUIREMENTS AND OVERALL CONCLUSIONS

3.1 This section looks at the future waste management requirements for the Sub-region in line with the waste hierarchy. According to this report on Waste Arisings and Capacity Requirements, the indicative requirements for future waste management facilities in the North Yorkshire Sub-region can be summarised as follows:

3.1.1 Future Capacity Requirements for LACW

- Provision for composting and disposal is adequate throughout the period subject to implementation of the AWRP proposals under all scenarios modelled;
- Outlets for LACW recyclate are largely dependent on export from the area throughout the period;
- The WDAs have indicated that additional transfer stations are needed in order to provide a suitable geographical network
- There is a requirement for landfill for the first 3 years for all scenarios modelled, however the requirement only remains under scenario 1 Baseline with no growth. If median or maximised recycling options are taken forward there is no requirement for additional non-hazardous landfill. This assumption is based on the AWRP proposal being delivered.
- If AWRP is not delivered, the model has assumed a similar option would be delivered to manage LACW and as such additional capacity for energy recovery would be required. This could potentially be met in a number of ways, for example through one large or several smaller facilities to meet the annual capacity requirement from 2015 of 298,238 tonnes per annum to a maximum requirement of 347,304 tonnes per annum in 2030, although a range of factors could impact on the deliverability of any particular approach. If AWRP is not delivered and other means of dealing with residual LACW are identified, such as solutions not involving energy recovery, or solutions involving export to other areas, then this would have a fundamental impact on the nature of future capacity requirements for LACW arising within the area.

3.1.2 Future Capacity Requirements for C&I Waste

- Outlets for recyclate are largely dependent on export from the Plan area throughout the Plan period;
- Waste requiring treatment consists largely of specialist hazardous wastes which are treated outside the area (this includes the capacity requirement identified for Incineration (specialist high temperature) in the model) and it is assumed that this practice will continue for the period to 2030;

- There is no capacity gap for the recovery of energy from suitable C&I waste under baseline recycling provided that the new capacity made available by implementation of the proposed York and North Yorkshire waste partnership LACW contract is implemented from 2015 (assuming the projected growth in household LACW over time will result in progressively diminishing spare capacity for C&I waste within AWRP);
- There would be an increasing capacity gap for the recovery of energy from suitable C&I waste under maximised and median recycling scenarios even with the new capacity which would be made available through implementation of the LACW contract from 2015 due to the increasing demand on the facilities. This reflects a diminishing capacity for C&I provision at the AWRP (assuming the projected growth in household LACW over time will result in progressively diminishing spare capacity for C&I waste within AWRP). If a new facility for energy recovery was to be provided by the authorities to meet the identified gap, under all scenarios only one small facilitiy is likely to be required, however if a maximised recycling scenario based on no growth and the NW C&I survey was taken forward, this requirement is so low that it would not justify investment in such a facility, therefore this requirement would need to be met through facilities outside the area;
- The requirement for non-hazardous landfill only appears if there is no accompanying increase in recycling and recovery. Under all other scenarios following implementation of the proposed York and North Yorkshire Waste Partnership contract by the WDAs non-hazardous landfill capacity remains in surplus throughout the period to 2030. It may be concluded that landfill capacity is adequate throughout the period except in the unlikely event that there will be significant waste growth and no increase in recycling or energy recovery. Under all options modelled there is a requirement for hazardous landfill, however the annual requirement is only between 7,216 and 7,985 tonnes per annum throughout the period and would not justify a landfill to manage this requirement. Hazardous waste landfill can be provided on a regional or wider basis and it is assumed that this requirement would be met that way, as such the authorities are advised to work with relevant WPAs under the requirements of Duty to Co-operate to discuss the ongoing arrangements for hazardous waste.

3.1.3 Future Waste Capacity Requirements for CD&E Waste

- Additional recycling facilities are required under all scenarios. With growth and maximised recycling 286,183 tonnes of capacity per annum would be needed by 2030. As an example this could be met through a maximum of 12 facilities with an average annual throughput of up to 25,000 tonnes per annum[27] or 4 larger facilities up to 75,000 tonnes per annum;

[27] Information taken from '*Planning for Waste Management Facilities: A research Study'* ODPM, 2004

- It appears that in the medium term the provision of additional CD&E facilities will be required within the area if higher levels of recycling are to be achieved;
- New capacity will therefore be required from 2017 if there is no increase in recycling and 2021 with both median and maximised recycling;
- Hazardous landfill for construction and demolition waste; asbestos and asbestos contaminated waste from CD&E is currently exported for landfill which is the only management option for this waste, a gap in the order of 6,000 tonnes per annum appears throughout the period to 2030 and this position will continue unless provision is made for hazardous landfill capacity within the Plan area. Hazardous waste landfill can be provided on a regional or wider basis and it is assumed that this requirement would met that way, as such the authorities are advised to work with relevant WPAs under the requirements of Duty to Co-operate to discuss the ongoing arrangements for hazardous waste;
- Under the baseline position, there is a requirement for landfill of CD&E from 2017 at around 164,000 tonnes and rising to 346,791 tonnes in 2030 applying growth modifiers. With increased recycling under maximised recycling and median scenarios the capacity shortfall does not commence until 2021 (43,136 tonnes maximised recycling/ growth) and peaks applying the median scenario/growth in 2030 at only 164,211 tonnes. Although landfill is identified as a management option for this waste stream, to move the management of this waste up the waste hierarchy the authorities may want to consider how this waste could be better managed in the future through consideration of new infrastructure requirements over the plan period. This waste stream is a recognised resource for engineering projects and/or on site management on demolition sites and therefore it is acceptable to consider this route for future management of this waste stream. C&D waste, due to its nature, does not travel far, therefore it is recognised that this waste would need to be managed within the authorities area during the plan period..

3.1.4 Future Waste Capacity Requirements for Sewage Sludge

- Anticipate adequate provision by the Water Companies;
- Asset management plans to continue throughout the period.

3.1.5 Future Waste Capacity Requirements for Agricultural Waste

- Off-farm disposal is included within C&I waste provision;
- There is no requirement for new facilities over the period.

3.1.6 Future Waste Capacity Requirements for Low Level Radioactive Waste

- Whilst current provision appears to be adequate a medium term review should be anticipated as there is uncertainty about landfill capacity outside the area post-2015.

Overall Conclusions

3.2 It should be noted that the conclusions set out above are subject to the delivery of the new AWRP identified by the York and North Yorkshire Waste Partnership. If AWRP is not brought forward the conclusions and the modelling process should be revisited.

3.3 In conclusion the principal gaps in provision within the area relate to recycling and waste treatment (in particular for hazardous waste). Whilst it is anticipated that recycling will increase, particularly for C&I waste arisings, it is possible that final recycling and reprocessing capacity is provided by exports from the area as currently occurs. This does not preclude the provision of new recycling capacity within the area where such development is environmentally and economically viable and meets all the planning criteria.

3.4 In terms of new facilities within the Sub-region the most likely identified need is for the medium term provision of recycling facilities for CD&E waste arisings. These will be required if higher recycling rates are to be achieved as indicated in Scenarios 2 and 3. Total capacities indicated are in the order of over 100,000 years rising to close to over 280,000 tonnes by 2030 (maximised recycling/growth). These quantities are unlikely to be achieved through a single facility but could be achieved for example by 2 to 6 facilities each with the order of 50,000 tonnes per annum capacity or up to multiple (4-12) smaller facilities with a maximum of 25,000 tonnes per annum.

3.5 In order to meet future needs as identified above, it will be necessary for the Sub-region authorities to develop appropriate policies and identify sites/areas for waste management facilities. Where additional capacity is required and likely to be met outside the area, the authorities are recommended to work closely with such areas under the requirements of Duty to Co-operate.

APPENDIX 1: Projected Capacity Gap across the Scenarios

*The tables contained within this appendix have been taken from the **Waste Needs Assessment Forecasting Model** (an Access database) and cover all waste types excluding data relating to sewage sludge and Low Level Radioactive Wastes. The reasons for these exclusions are explained within the report.

Each Table states whether the Defra national survey source or the extrapolated NW survey source has been used in respect to the C&I wastes. Also all tables include the assumption that the EFW Allerton Park facility goes on stream in 2015.

Numbers highlighted in Blue indicate a waste facility capacity gap for which provision must be made (through land allocations or policies within the Local Plan) if that particular scenario and modifier factors are taken forward by the partners within the Sub-Region

Scenario 1: Baseline Modifier: NO GROWTH (2012 – 2031) (DEFRA source C&I) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	73047	73047	73047	-72061	-120429	-120429	-120429	76835	76835	76835	95582	95582	95582	95582	95582	95582	95582	95582	95582
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-80948	-80948	-80948	-28390	-28390	150698	150698	150698	150698	280615	280615	305614	305614	305614	305614	305614	305614	305614	305614
Energy from waste	-28024	-28024	-28024	-202916	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548	-154548
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645	523645
Recycling (C+D)	52811	52811	2811	2811	2811	2811	2811	2811	2811	4156	4156	4156	4156	4156	4156	4156	4156	4156	4156
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91580	-91580	-91580	-91580	-91580	-78244	-78244	-78244	-78244	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058
Treatment plant	39477	39477	39477	39477	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523

Scenario 1: Baseline Modifier: NO GROWTH (2012 – 2031) (Extrapolated NW survey source C&I) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	25175	25175	25175	-119933	-168301	-168301	-168301	28963	28963	28963	47710	47710	47710	47710	47710	47710	47710	47710	47710
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-80948	-80948	-80948	-28390	-28390	150698	150698	150698	150698	280615	280615	305614	305614	305614	305614	305614	305614	305614	305614
Energy from waste	-36277	-36277	-36277	-211169	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801	-162801
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359	449359
Recycling (C+D)	52811	52811	2811	2811	2811	2811	2811	2811	2811	4156	4156	4156	4156	4156	4156	4156	4156	4156	4156
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93231	-93231	-93231	-93231	-93231	-79895	-79895	-79895	-79895	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709
Treatment plant	31224	31224	31224	31224	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776

Scenario 1: BASELINE Modifier: GROWTH (2012 – 2031 (DEFRA C&I Source) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	80806	86415	91942	-51166	-96667	-92562	-88415	113039	117272	121549	144618	148987	153401	157860	162367	166920	171522	176172	180870
Landfill (Hazardous)	7292	7330	7368	7405	7442	7479	7517	7555	7593	7631	7669	7708	7747	7786	7825	7865	7905	7945	7985
Landfill (C+D)	-77048	-75081	-73102	-18553	-16550	164553	166580	168619	170670	302651	304727	331815	333916	336030	338157	340296	342448	344613	346791
Energy from waste	-27019	-26508	-25992	-196774	-142133	-134637	-127942	-121128	-118523	-115921	-113318	-110931	-108546	-106042	-103537	-101032	-98566	-96099	-93860
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	533011	539630	546167	552776	562755	575470	587348	599408	606847	614337	621880	629237	636645	644244	651898	659611	667338	675122	682714
Recycling (C+D)	53584	53974	4366	4761	5158	5557	5958	6362	6768	8521	8933	9347	9763	10181	10602	11026	11452	11881	12312
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91339	-91216	-91092	-90966	-90839	-77375	-77245	-77113	-76981	-63662	-63527	-63390	-63252	-63112	-62971	-62828	-62683	-62537	-62390
Treatment plant	40905	41630	42361	43093	-16167	-15420	-14666	-13903	-13131	-12353	-11566	-10773	-9971	-9160	-8340	-7513	-6678	-5833	-4980

Scenario 1: BASELINE Modifier: GROWTH (2012 – 2031) (Extrapolated NW C&I source) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	31249	35997	40651	-103345	-149745	-146553	-143332	57183	60462	63773	85861	89233	92635	96069	99535	103032	106562	110125	113720
Landfill (Hazardous)	7292	7330	7368	7405	7442	7479	7517	7555	7593	7631	7669	7708	7747	7786	7825	7865	7905	7945	7985
Landfill (C+D)	-77048	-75081	-73102	-18553	-16550	164553	166580	168619	170670	302651	304727	331815	333916	336030	338157	340296	342448	344613	346791
Energy from waste	-35563	-35201	-34834	-205770	-151284	-143945	-137408	-130756	-128316	-125879	-123444	-121228	-119017	-116689	-114363	-112040	-109759	-107479	-105428
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	456111	461393	466575	471808	480392	491690	502130	512731	518690	524678	530698	536509	542350	548357	554398	560472	566536	572633	578514
Recycling (C+D)	53584	53974	4366	4761	5158	5557	5958	6362	6768	8521	8933	9347	9763	10181	10602	11026	11452	11881	12312
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93046	-92953	-92859	-92764	-92668	-79235	-79138	-79039	-78939	-65652	-65551	-65448	-65344	-65239	-65133	-65026	-64918	-64809	-64699
Treatment plant	32363	32938	33520	34100	-25315	-24724	-24128	-23528	-22920	-22309	-21691	-21068	-20439	-19804	-19163	-18517	-17866	-17208	-16544

Scenario 1: BASELINE Modifier: MINIMISED GROWTH (2012– 2031) (DEFRA source C&I) all Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	69688	69704	69613	-79138	-130307	-131897	-133470	62237	60695	59169	76405	74909	73429	71963	70512	69075	67652	66243	64848
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-80948	-80948	-80948	-28390	-28390	150698	150698	150698	150698	280615	280615	305614	305614	305614	305614	305614	305614	305614	305614
Energy from waste	-28602	-28887	-29168	-200755	-146920	-140234	-134350	-128351	-126568	-124791	-123014	-121459	-119910	-118247	-116587	-114931	-113319	-111712	-110336
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	518434	517720	516896	516114	518671	523932	528322	532860	532743	532640	532554	532243	531946	531797	531664	531546	531399	531267	530898
Recycling (C+D)	52811	52811	2811	2811	2811	2811	2811	2811	2811	4156	4156	4156	4156	4156	4156	4156	4156	4156	4156
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91696	-91753	-91810	-91866	-91921	-78639	-78692	-78745	-78797	-65663	-65714	-65765	-65815	-65864	-65913	-65962	-66010	-66058	-66106
Treatment plant	38898	38613	38330	38051	-22225	-22499	-22770	-23038	-23304	-23567	-23827	-24085	-24340	-24593	-24843	-25090	-25335	-25577	-25817

Scenario 1: BASELINE Modifier: MINIMISED GROWTH (2012 – 2031) (Extrapolated NW C&I source) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	23336	24100	24750	-123268	-173710	-174581	-175443	20968	20123	19287	37206	36386	35575	34772	33977	33190	32411	31640	30877
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-80948	-80948	-80948	-28390	-28390	150698	150698	150698	150698	280615	280615	305614	305614	305614	305614	305614	305614	305614	305614
Energy from waste	-36594	-36750	-36905	-208365	-154405	-147595	-141589	-135469	-133564	-131667	-129774	-128104	-126440	-124662	-122889	-121121	-119398	-117681	-116197
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	446504	446951	447276	447632	451316	457692	463186	468818	469782	470751	471725	472465	473207	474088	474974	475864	476716	477572	478181
Recycling (C+D)	52811	52811	2811	2811	2811	2811	2811	2811	2811	4156	4156	4156	4156	4156	4156	4156	4156	4156	4156
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93295	-93327	-93358	-93389	-93419	-80113	-80142	-80171	-80200	-67042	-67070	-67098	-67126	-67153	-67180	-67207	-67234	-67261	-67287
Treatment plant	30907	30751	30596	30443	-29709	-29859	-30007	-30154	-30300	-30444	-30587	-30728	-30868	-31006	-31143	-31279	-31414	-31547	-31678

Scenario 2: MAXIMISED RECYCLING Modifier: NO GROWTH (2012 – 2031) (C&I source DEFRA) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	26650	3449	-19750	-188056	-259624	-282822	-306023	-131958	-155156	-155156	-136409	-136409	-136409	-136409	-136409	-136409	-136409	-136409	-136409
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-129545	-153844	-178143	-149884	-174183	-19394	-43692	-67991	-92290	37627	37627	62626	62626	62626	62626	62626	62626	62626	62626
Energy from waste	-16424	-10625	-4824	-173919	-119751	-113949	-108151	-102350	-96550	-96550	-96550	-96550	-96550	-96550	-96550	-96550	-96550	-96550	-96550
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	558442	575844	593242	610643	628043	645439	662842	680240	697638	697638	697638	697638	697638	697638	697638	697638	697638	697638	697638
Recycling (C+D)	101408	125707	100006	124305	148604	172903	197201	221500	245799	247144	247144	247144	247144	247144	247144	247144	247144	247144	247144
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91580	-91580	-91580	-91580	-91580	-78244	-78244	-78244	-78244	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058
Treatment plant	39477	39477	39477	39477	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523

Scenario 2: MAXIMISED RECYCLING Modifier: NO GROWTH (2012 – 2031) (Extrapolated NW C&I Source) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-13892	-33426	-52959	-217601	-285502	-305036	-324569	-146839	-166372	-166372	-147625	-147625	-147625	-147625	-147625	-147625	-147625	-147625	-147625
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-129545	-153844	-178143	-149884	-174183	-19394	-43692	-67991	-92290	37627	37627	62626	62626	62626	62626	62626	62626	62626	62626
Energy from waste	-26511	-21627	-16745	-186752	-133500	-128617	-123734	-118850	-113967	-113967	-113967	-113967	-113967	-113967	-113967	-113967	-113967	-113967	-113967
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	478660	493310	507961	522610	537259	551910	566560	581210	595860	595860	595860	595860	595860	595860	595860	595860	595860	595860	595860
Recycling (C+D)	101408	125707	100006	124305	148604	172903	197201	221500	245799	247144	247144	247144	247144	247144	247144	247144	247144	247144	247144
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93231	-93231	-93231	-93231	-93231	-79895	-79895	-79895	-79895	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709
Treatment plant	31224	31224	31224	31224	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776

Scenario 2: MAXIMISED RECYCLING Modifier: GROWTH (2012 – 2031) (Source C&I DEFRA) all Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	33432	14607	-4808	-173375	-244860	-267275	-290193	-116357	-140306	-138752	-118441	-116863	-115272	-113668	-112051	-110419	-108774	-107116	-105446
Landfill (Hazardous)	7292	7330	7368	7405	7442	7479	7517	7555	7593	7631	7669	7708	7747	7786	7825	7865	7905	7945	7985
Landfill (C+D)	-126231	-149298	-172651	-143736	-167671	-12812	-37340	-62167	-87297	43136	43655	69176	69701	70230	70761	71296	71835	72376	72920
Energy from waste	-15178	-8555	-1805	-166221	-105086	-90959	-77497	-63778	-54129	-50846	-47554	-44468	-41379	-38159	-34932	-31696	-28493	-25277	-22282
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	568544	593485	618730	644432	673901	706505	738681	771454	800031	809563	819175	828624	838151	847889	857711	867614	877561	887588	897452
Recycling (C+D)	102767	128191	103915	129944	156279	182922	209878	237148	264735	268036	270005	271986	273978	275981	277998	280026	282065	284118	286183
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91339	-91216	-91092	-90966	-90839	-77375	-77245	-77113	-76981	-63662	-63527	-63390	-63252	-63112	-62971	-62828	-62683	-62537	-62390
Treatment plant	40905	41630	42361	43093	-16167	-15420	-14666	-13903	-13131	-12353	-11566	-10773	-9971	-9160	-8340	-7513	-6678	-5833	-4980

Scenario 2: MAXIMISED RECYCLING Modifier: GROWTH (2012 – 2031) (C&I source extrapolated NW) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-8526	-24204	-40344	-205504	-273446	-292181	-311279	-133476	-153311	-151951	-131835	-130455	-129066	-127665	-126254	-124832	-123401	-121958	-120505
Landfill (Hazardous)	7292	7330	7368	7405	7442	7479	7517	7555	7593	7631	7669	7708	7747	7786	7825	7865	7905	7945	7985
Landfill (C+D)	-126231	-149298	-172651	-143736	-167671	-12812	-37340	-62167	-87297	43136	43655	69176	69701	70230	70761	71296	71835	72376	72920
Energy from waste	-25619	-20150	-14585	-180230	-120359	-107538	-95420	-83091	-74873	-71948	-69020	-66306	-63592	-60755	-57916	-55073	-52267	-49458	-46873
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	485942	506543	527321	548427	573168	600911	628089	655725	679020	686471	693970	701275	708626	716157	723740	731369	739007	746695	754184
Recycling (C+D)	102767	128191	103915	129944	156279	182922	209878	237148	264735	268036	270005	271986	273978	275981	277998	280026	282065	284118	286183
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93046	-92953	-92859	-92764	-92668	-79235	-79138	-79039	-78939	-65652	-65551	-65448	-65344	-65239	-65133	-65026	-64918	-64809	-64699
Treatment plant	32363	32938	33520	34100	-25315	-24724	-24128	-23528	-22920	-22309	-21691	-21068	-20439	-19804	-19163	-18517	-17866	-17208	-16544

Scenario 2: MAXIMISED RECYCLING Modifier: MINIMISED GROWTH (2012 – 2031) (DEFRA source C&I wastes) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	23840	1337	-21006	-191750	-264654	-287723	-310530	-135808	-158095	-158372	-139899	-140172	-140442	-140708	-140972	-141233	-141494	-141749	-142003
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-129545	-153844	-178143	-149884	-174183	-19394	-43692	-67991	-92290	37627	37627	62626	62626	62626	62626	62626	62626	62626	62626
Energy from waste	-17140	-11797	-6512	-172603	-113335	-101277	-90086	-78840	-71870	-70405	-68938	-67688	-66441	-65079	-63717	-62354	-61033	-59715	-58622
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	552820	568997	584859	600574	619433	640801	661118	681394	696835	695795	694782	693553	692348	691300	690278	689277	688259	687262	686035
Recycling (C+D)	101408	125707	100006	124305	148604	172903	197201	221500	245799	247144	247144	247144	247144	247144	247144	247144	247144	247144	247144
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91696	-91753	-91810	-91866	-91921	-78639	-78692	-78745	-78797	-65663	-65714	-65765	-65815	-65864	-65913	-65962	-66010	-66058	-66106
Treatment plant	38898	38613	38330	38051	-22225	-22499	-22770	-23038	-23304	-23567	-23827	-24085	-24340	-24593	-24843	-25090	-25335	-25577	-25817

Scenario 2: MAXIMISED RECYCLING Modifier: MINIMISED GROWTH (2012 – 2031) (Source C&I Extrapolated NW) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-15431	-33827	-52193	-219083	-288257	-307720	-327037	-148949	-167982	-168134	-149537	-149686	-149834	-149980	-150125	-150269	-150410	-150550	-150689
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-129545	-153844	-178143	-149884	-174183	-19394	-43692	-67991	-92290	37627	37627	62626	62626	62626	62626	62626	62626	62626	62626
Energy from waste	-26902	-22268	-17670	-184411	-125767	-114311	-103690	-92989	-86537	-84812	-83087	-81586	-80087	-78473	-76863	-75256	-73692	-72133	-70805
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	475579	490396	504984	519493	537225	557547	576881	596255	610860	611317	611781	612019	612263	612651	613050	613458	613831	614214	614355
Recycling (C+D)	101408	125707	100006	124305	148604	172903	197201	221500	245799	247144	247144	247144	247144	247144	247144	247144	247144	247144	247144
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93295	-93327	-93358	-93389	-93419	-80113	-80142	-80171	-80200	-67042	-67070	-67098	-67126	-67153	-67180	-67207	-67234	-67261	-67287
Treatment plant	30907	30751	30596	30443	-29709	-29859	-30007	-30154	-30300	-30444	-30587	-30728	-30868	-31006	-31143	-31279	-31414	-31547	-31678

Scenario 3: MEDIAN RECYCLING Modifier: NO GROWTH (2012 – 2031) (Source C&I DEFRA) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	26650	3449	-19750	-188056	-259624	-282822	-306023	-131958	-155156	-155156	-136409	-136409	-136409	-136409	-136409	-136409	-136409	-136409	-136409
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-113347	-129545	-145745	-109386	-125585	37304	21104	4905	-11294	118623	118623	143622	143622	143622	143622	143622	143622	143622	143622
Energy from waste	-4825	6773	18374	-144920	-84951	-73351	-61752	-50151	-38551	-38551	-38551	-38551	-38551	-38551	-38551	-38551	-38551	-38551	-38551
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	546844	558442	570043	581641	593242	604842	616441	628042	639642	639642	639642	639642	639642	639642	639642	639642	639642	639642	639642
Recycling (C+D)	85210	101408	67608	83807	100006	116205	132405	148604	164803	166148	166148	166148	166148	166148	166148	166148	166148	166148	166148
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91580	-91580	-91580	-91580	-91580	-78244	-78244	-78244	-78244	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058	-65058
Treatment plant	39477	39477	39477	39477	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523	-20523

Scenario 3: MEDIAN RECYCLING Modifier: NO GROWTH (2012 – 2031) (Source C&I Extrapolated NW) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-13892	-33426	-52959	-217601	-285502	-305036	-324569	-146839	-166372	-166372	-147625	-147625	-147625	-147625	-147625	-147625	-147625	-147625	-147625
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-113347	-129545	-145745	-109386	-125585	37304	21104	4905	-11294	118623	118623	143622	143622	143622	143622	143622	143622	143622	143622
Energy from waste	-16745	-6976	2789	-162335	-104200	-94434	-84666	-74901	-65133	-65133	-65133	-65133	-65133	-65133	-65133	-65133	-65133	-65133	-65133
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	468891	478660	488425	498193	507960	517726	527494	537259	547027	547027	547027	547027	547027	547027	547027	547027	547027	547027	547027
Recycling (C+D)	85210	101408	67608	83807	100006	116205	132405	148604	164803	166148	166148	166148	166148	166148	166148	166148	166148	166148	166148
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93231	-93231	-93231	-93231	-93231	-79895	-79895	-79895	-79895	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709
Treatment plant	31224	31224	31224	31224	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776

Scenario 3: MEDIAN RECYCLING Modifier: GROWTH (2012 – 2031) (Source C&I DEFRA) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	33432	14607	-4808	-173375	-244860	-267275	-290193	-116357	-140306	-138752	-118441	-116863	-115272	-113668	-112051	-110419	-108774	-107116	-105446
Landfill (Hazardous)	7292	7330	7368	7405	7442	7479	7517	7555	7593	7631	7669	7708	7747	7786	7825	7865	7905	7945	7985
Landfill (C+D)	-109836	-124559	-139468	-102008	-117298	46309	30634	14762	-1308	129641	130679	156722	157774	158830	159894	160964	162038	163121	164211
Energy from waste	-3334	9396	22382	-135669	-68038	-47280	-27055	-6430	10265	14229	18212	21994	25789	29722	33672	37639	41581	45546	49298
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	556696	575534	594541	613881	636850	662827	688235	714106	735635	744487	753410	762162	770980	780008	789107	798282	807485	816767	825872
Recycling (C+D)	86372	103452	70732	88216	105906	123801	141904	160219	178746	181531	182981	184440	185905	187381	188865	190358	191862	193373	194892
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91339	-91216	-91092	-90966	-90839	-77375	-77245	-77113	-76981	-63662	-63527	-63390	-63252	-63112	-62971	-62828	-62683	-62537	-62390
Treatment plant	40905	41630	42361	43093	-16167	-15420	-14666	-13903	-13131	-12353	-11566	-10773	-99710	-9160	-8340	-75130	-6678	-5833	-4980

Scenario 3: MEDIAN RECYCLING Modifier: GROWTH (2012 – 2031) (source C&I Extrapolated NW) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-8526	-24204	-40344	-205504	-273446	-292181	-311279	-133476	-153311	-151951	-131835	-130455	-129066	-127665	-126254	-124832	-123401	-121958	-120505
Landfill (Hazardous)	7292	7330	7368	7405	7442	7479	7517	7555	7593	7631	7669	7708	7747	7786	7825	7865	7905	7945	7985
Landfill (C+D)	-109836	-124559	-139468	-102008	-117298	46309	30634	14762	-1308	129641	130679	156722	157774	158830	159894	160964	162038	163121	164211
Energy from waste	-15675	-5100	5664	-154690	-89433	-71130	-53435	-35426	-21430	-18017	-14596	-11384	-8167	-4822	-1468	1893	5222	8562	11684
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	475999	491494	507073	522888	542243	564505	586103	608061	625576	632540	639546	646353	653200	660224	667293	674405	681517	688674	695626
Recycling (C+D)	86372	103452	70732	88216	105906	123801	141904	160219	178746	181531	182981	184440	185905	187381	188865	190358	191862	193373	194892
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93046	-92953	-92859	-92764	-92668	-79235	-79138	-79039	-78939	-65652	-65551	-65448	-65344	-65239	-65133	-65026	-64918	-64809	-64699
Treatment plant	32363	32938	33520	34100	-25315	-24724	-24128	-23528	-22920	-22309	-21691	-21068	-20439	-19804	-19163	-18517	-17866	-17208	-16544

Scenario 3: MEDIAN RECYCLING Modifier: MINIMISED GROWTH (2012 – 2031) (Source of C&I DEFRA) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	23840	1337	-21006	-191750	-264654	-287723	-310530	-135808	-158095	-158372	-139899	-140172	-140442	-140708	-140972	-141233	-141494	-141749	-142003
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-113347	-129545	-145745	-109386	-125585	37304	21104	4905	-11294	118623	118623	143622	143622	143622	143622	143622	143622	143622	143622
Energy from waste	-5678	5295	16141	-144452	-79748	-62321	-45821	-29328	-17172	-16018	-14861	-13918	-12972	-11910	-10844	-9776	-8746	-7716	-6908
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	541358	551902	562205	572417	585843	601845	616851	631883	642139	641413	640707	639784	638884	638134	637407	636701	635972	635263	634326
Recycling (C+D)	85210	101408	67608	83807	100006	116205	132405	148604	164803	166148	166148	166148	166148	166148	166148	166148	166148	166148	166148
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-91696	-91753	-91810	-91866	-91921	-78639	-78692	-78745	-78797	-65663	-65714	-65765	-65815	-65864	-65913	-65962	-66010	-66058	-66106
Treatment plant	38898	38613	38330	38051	-22225	-22499	-22770	-23038	-23304	-23567	-23827	-24085	-24340	-24593	-24843	-25090	-25335	-25577	-25817

Scenario 3: MEDIAN RECYCLING Modifier: MINIMISED GROWTH (2012 – 2031) (Source of C&I Extrapolated NW) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-15431	-33827	-52193	-219083	-288257	-307720	-327037	-148949	-167982	-168134	-149537	-149686	-149834	-149980	-150125	-150269	-150410	-150550	-150689
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-113347	-129545	-145745	-109386	-125585	37304	21104	4905	-11294	118623	118623	143622	143622	143622	143622	143622	143622	143622	143622
Energy from waste	-17211	-7785	1567	-160457	-97130	-81027	-65791	-50511	-39511	-37957	-36402	-35068	-33735	-32285	-30838	-29391	-27987	-26586	-25414
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	465887	475916	485748	495540	508591	524260	538984	553776	563835	564461	565097	565501	565912	566465	567025	567594	568127	568667	568964
Recycling (C+D)	85210	101408	67608	83807	100006	116205	132405	148604	164803	166148	166148	166148	166148	166148	166148	166148	166148	166148	166148
Recycling (specialist material)	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-92188	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162	-91162
Composting	-93295	-93327	-93358	-93389	-93419	-80113	-80142	-80171	-80200	-67042	-67070	-67098	-67126	-67153	-67180	-67207	-67234	-67261	-67287
Treatment plant	30907	30751	30596	30443	-29709	-29859	-30007	-30154	-30300	-30444	-30587	-30728	-30868	-31006	-31143	-31279	-31414	-31547	-31678

APPENDIX 2: Projected Capacity Gap Assuming that the EFW Allerton Park facility is not commissioned.

The tables contained within this appendix has been taken from the **Waste Needs Assessment Forecasting Model** (an Access database) and covers all waste types excluding data relating to sewage sludge and Low Level Radioactive Wastes. The reasons for these exclusions are explained within the report.

The extrapolated NW Survey has been used as the source for C&I data with the assumption that the EFW Allerton Park facility does **not** go on stream in 2015. Two scenarios have been included for comparison:

- Scenario 2 Maximised recycling and minimised growth. This scenario has higher levels of recycling and less energy from waste requirement
- Scenario 3 Median recycling and no growth, which has a higher levels of energy from waste requirement.

Under Scenario 3 Median recycling the gap in energy recovery capacity starts in 2014 and rises rapidly to 157,665 tonnes per annum in 2015 and 254,867 tonnes per annum by 2020 through to 2030. Whilst maximising recycling delays the start of the gap to 2015, this becomes significant at 135,589 tonnes per annum and rises to 233,643 tonnes per annum by 2020 and 249,195 per annum by 2030.

Under both scenarios the apparent surplus in landfill capacity is inadequate to offset the gap in energy from waste capacity if used as an alternative disposal option for residual waste.

Numbers highlighted in blue indicate a waste facility capacity gap for which provision must be made (through land allocations or policies within the Local Plan) if that particular scenario and modifier factors are taken forward by the partners within the Sub-Region

Scenario 2 Maximised Recycling Modifier: Minimised Growth (source of C&I Extrapolated NW C&I) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-15431	-33827	-52193	-219083	-288257	-307720	-327037	-148949	-167982	-168134	-149537	-149686	-149834	-149980	-150125	-150269	-150410	-150550	-150689
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-129545	-153844	-178143	-149884	-174183	-19394	-43692	-67991	-92290	37627	37627	62626	62626	62626	62626	62626	62626	62626	62626
Energy from waste	-26902	-22268	-17670	135589	194233	205689	216310	227011	233463	235188	236913	238414	239913	241527	243137	244744	246308	247867	249195
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	475579	490396	504984	519493	537225	557547	576881	596255	610860	611317	611781	612019	612263	612651	613050	613458	613831	614214	614355
Recycling (C+D)	101408	125707	100006	124305	148604	172903	197201	221500	245799	247144	247144	247144	247144	247144	247144	247144	247144	247144	247144
Recycling (specialist material)	-78832	-78832	-78832	-78832	-78832	-78832	-78832	-78832	-78832	-77806	-77806	-77806	-77806	-77806	-77806	-77806	-77806	-77806	-77806
Composting	-93295	-93327	-93358	-93389	-93419	-80113	-80142	-80171	-80200	-67042	-67070	-67098	-67126	-67153	-67180	-67207	-67234	-67261	-67287
Treatment plant	30907	30751	30596	30443	-29709	-29859	-30007	-30154	-30300	-30444	-30587	-30728	-30868	-31006	-31143	-31279	-31414	-31547	-31678

Scenario 3 Median Recycling Modifier: No Growth (source of C&I Extrapolated NW C&I) All Wastes*

WasteManGroup	Gap2012	Gap2013	Gap2014	Gap2015	Gap2016	Gap2017	Gap2018	Gap2019	Gap2020	Gap2021	Gap2022	Gap2023	Gap2024	Gap2025	Gap2026	Gap2027	Gap2028	Gap2029	Gap2030
Landfill (C+I & Municipal)	-13892	-33426	-52959	-217601	-285502	-305036	-324569	-146839	-166372	-166372	-147625	-147625	-147625	-147625	-147625	-147625	-147625	-147625	-147625
Landfill (Hazardous)	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216	7216
Landfill (C+D)	-113347	-129545	-145745	-109386	-125585	37304	21104	4905	-11294	118623	118623	143622	143622	143622	143622	143622	143622	143622	143622
Energy from waste	-16745	-6976	2789	157665	215800	225566	235334	245099	254867	254867	254867	254867	254867	254867	254867	254867	254867	254867	254867
Incineration (Specialist High Temp)	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480	13480
Recycling (C+I & Municipal)	468891	478660	488425	498193	507960	517726	527494	537259	547027	547027	547027	547027	547027	547027	547027	547027	547027	547027	547027
Recycling (C+D)	85210	101408	67608	83807	100006	116205	132405	148604	164803	166148	166148	166148	166148	166148	166148	166148	166148	166148	166148
Recycling (specialist material)	-78832	-78832	-78832	-78832	-78832	-78832	-78832	-78832	-78832	-77806	-77806	-77806	-77806	-77806	-77806	-77806	-77806	-77806	-77806
Composting	-93231	-93231	-93231	-93231	-93231	-79895	-79895	-79895	-79895	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709	-66709
Treatment plant	31224	31224	31224	31224	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776	-28776

APPENDIX 3: Cumulative Capacity Requirements

The tables included in this appendix illustrate the waste facility capacity gap between 2012- 3030, a cumulative indication of the amount of waste capacity for which provision must be considered, through land allocations or policies within the Local Plan, depending on the scenario and modifier factors taken forward by the Waste Planning Authorities.

Table 1: Cumulative Capacity Requirements 2012-2030 Scenario 1: BASELINE (tonnes) (Source of C&I data: National Defra Survey)

Waste Treatment/Disposal Type	Modifier NO GROWTH Cumulative gap over period 2012-2030	Modifier GROWTH Cumulative gap over period 2012-2030	Modifier MINIMISED GROWTH Cumulative gap over period 2012-2030
Landfill (C+I and Municipal)	876,536	1,744,930	551,330
Landfill (Hazardous)	137,104	145,047	137,104
Landfill (C+D)	3,309,310	3,731,532	3,309,310
Energy from waste	No cumulative gap	No cumulative gap	No cumulative gap
Incineration (Specialist High Temp)	256,120	256,120	256,120
Recycling (C+I and Municipal)	9,949,255	11,586,438	10,023,646
Recycling (C+D)	166,859	250,506	166,859
Recycling (specialist material)	No cumulative gap	No cumulative gap	No cumulative gap
Composting	No cumulative gap	No cumulative gap	No cumulative gap
Treatment plant	No cumulative gap	7,535	No cumulative gap

Table 2: Cumulative Capacity Requirements 2012-2030 Scenario 1: BASELINE (tonnes) (Source of C&I data: Extrapolated NW Survey)

Waste Treatment/Disposal Type	Modifier NO GROWTH Cumulative gap over period 2012-2030	Modifier GROWTH Cumulative gap over period 2012-2030	Modifier MINIMISED GROWTH Cumulative gap over period 2012-2030
Landfill (C+I and Municipal)	No cumulative gap	643,112	No cumulative gap
Landfill (Hazardous)	137,104	145,047	137,104
Landfill (C+D)	3,309,310	3,731,532	3,309,310
Energy from waste	No cumulative gap	No cumulative gap	No cumulative gap
Incineration (Specialist High Temp)	256,120	256,120	256,120
Recycling (C+I and Municipal)	8,537,821	9,876,665	8,844,700
Recycling (C+D)	166,859	250,506	166,859

Recycling (specialist material)	No cumulative gap	No cumulative gap	No cumulative gap
Composting	No cumulative gap	No cumulative gap	No cumulative gap
Treatment plant	No cumulative gap	No cumulative gap	No cumulative gap

Table 3: Cumulative Capacity Requirements 2012- 2030 Scenario 2: MAXIMISED RECYCLING (tonnes) (Source of C&I data: National Defra Survey)

Waste Treatment/Disposal Type	Modifier NO GROWTH Cumulative gap over period 2012-2030	Modifier GROWTH Cumulative gap over period 2012-2030	Modifier MINIMISED GROWTH Cumulative gap over period 2012-2030
Landfill (C+I and Municipal)	No cumulative gap	No cumulative gap	No cumulative gap
Landfill (Hazardous)	137,104	145,047	137,104
Landfill (C+D)	No cumulative gap	No cumulative gap	No cumulative gap
Energy from waste	No cumulative gap	No cumulative gap	No cumulative gap
Incineration (Specialist High Temp)	256,120	256,120	256,120
Recycling (C+I and Municipal)	12,628,753	14,647,091	12,515,720
Recycling (C+D)	3,908,873	4,286,155	3,908,873
Recycling (specialist material)	No cumulative gap	No cumulative gap	No cumulative gap
Composting	No cumulative gap	No cumulative gap	No cumulative gap
Treatment plant	No cumulative gap	7,535	No cumulative gap

Table 4: Cumulative Capacity Requirements 2012- 2030 Scenario 2: MAXIMISED RECYCLING (tonnes) (Source of C&I data: Extrapolated NW Survey)

Waste Treatment/Disposal Type	Modifier NO GROWTH Cumulative gap over period 2012-2030	Modifier GROWTH Cumulative gap over period 2012-2030	Modifier MINIMISED GROWTH Cumulative gap over period 2012-2030
Landfill (C+I and Municipal)	No cumulative gap	No cumulative gap	No cumulative gap
Landfill (Hazardous)	137,104	145,047	137,104
Landfill (C+D)	No cumulative gap	No cumulative gap	No cumulative gap
Energy from waste	No cumulative gap	No cumulative gap	No cumulative gap
Incineration (Specialist High Temp)	256,120	256,120	256,120

Recycling (C+I and Municipal)	10,793,940	12,406,640	10,998,159
Recycling (C+D)	3,908,873	4,286,155	3,908,873
Recycling (specialist material)	No cumulative gap	No cumulative gap	No cumulative gap
Composting	No cumulative gap	No cumulative gap	No cumulative gap
Treatment plant	No cumulative gap	No cumulative gap	No cumulative gap

Table 5: Cumulative Capacity Requirements 2012- 2030 Scenario 3: MEDIAN RECYCLING (tonnes) (Source of C&I data: National Defra Survey)

Waste Treatment/Disposal Type	Modifier NO GROWTH Cumulative gap over period 2012-2030	Modifier GROWTH Cumulative gap over period 2012-2030	Modifier MINIMISED GROWTH Cumulative gap over period 2012-2030
Landfill (C+I and Municipal)	No cumulative gap	No cumulative gap	No cumulative gap
Landfill (Hazardous)	137,104	145,047	137,104
Landfill (C+D)	814,633	1,041,102	814,633
Energy from waste	No cumulative gap	71,919	No cumulative gap
Incineration (Specialist High Temp)	256,120	256,120	256,120
Recycling (C+I and Municipal)	11,735,599	13,626,865	11,685,034
Recycling (C+D)	2,661,536	2,940,936	2,661,536
Recycling (specialist material)	No cumulative gap	No cumulative gap	No cumulative gap
Composting	No cumulative gap	No cumulative gap	No cumulative gap
Treatment plant	No cumulative gap	No cumulative gap	No cumulative gap

Table 6: Cumulative Capacity Requirements 2012- 2030 Scenario 3: MEDIAN RECYCLING (tonnes) (Source of C&I data: Extrapolated NW Survey)

Waste Treatment/Disposal Type	Modifier NO GROWTH Cumulative gap over period 2012-2030	Modifier GROWTH Cumulative gap over period 2012-2030	Modifier MINIMISED GROWTH Cumulative gap over period 2012-2030
Landfill (C+I and Municipal)	No cumulative gap	No cumulative gap	No cumulative gap
Landfill (Hazardous)	137,104	145,047	137,104
Landfill (C+D)	814,633	1,041,102	814,633
Energy from waste	No cumulative gap	No cumulative gap	No cumulative gap
Incineration (Specialist High Temp)	256,120	256,120	256,120
Recycling (C+I and Municipal)	10,041,905	11,563,320	10,280,350
Recycling (C+D)	2,661,536	2,940,936	2,661,536
Recycling (specialist material)	No cumulative gap	No cumulative gap	No cumulative gap
Composting	No cumulative gap	No cumulative gap	No cumulative gap
Treatment plant	No cumulative gap	No cumulative gap	No cumulative gap