

Central and Eastern Berkshire

Joint Minerals & Waste Plan

Waste: Background Study

July 2020

(Proposed Submission Plan)



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Executive Summary

Introduction

Bracknell Forest Council, Reading Borough Council, Royal Borough of Windsor and Maidenhead and Wokingham Borough Council (collectively referred to as the 'Central & Eastern Berkshire Authorities') in collaboration with Hampshire Services are preparing the *Central and Eastern Berkshire - Joint Minerals and Waste Plan* (JMWP).

Current waste planning policy for Central & Eastern Berkshire is set out in the Waste Local Plan for Berkshire adopted in 1998¹ (including saved policies²). A review was undertaken between 2007 and 2009, however the resulting Minerals and Waste Core Strategy was withdrawn from public examination in January 2010.

This waste evidence report will help to inform the policy approach taken in the JMWP.

Waste Management in Central and Eastern Berkshire

How do we know how much waste arises in Central and Eastern Berkshire?

In order to estimate how much waste is produced in Central and Eastern Berkshire, data up to 2018 from Environment Agency records is used, particularly the Waste Data Interrogator. While it has a number of caveats, this is considered the most up-to-date and robust source of waste data in England. Data on waste received throughout England, listed as coming from the Central and Eastern Berkshire authorities, is used as an approximation for the waste that has been produced in the area. The baseline figure for current waste arisings is considered to be 1.9 million tonnes, this is summarised in Table 1a below.

¹ Waste Local Plan for Berkshire, 1998 - <https://www.bracknell-forest.gov.uk/planning-and-building-control/planning/planning-policy/development-plan/minerals-and-waste>

² Waste Local Plan Saved Policies, 1998 - <https://www.bracknell-forest.gov.uk/planning-and-building-control/planning/planning-policy/development-plan/minerals-and-waste>

Table 1a - Waste arisings (tonnes) from the Central & Eastern Berkshire Authorities 2018

Source Authority	Non-hazardous waste	Inert waste	Hazardous waste	Total
Bracknell Forest UA	84,744	118,422	3,217	206,383
Reading UA	179,605	243,927	5,928	429,460
RBWM UA	196,958	140,901	8,377	346,236
Wokingham UA	74,023	138,574	3,547	216,144
Berkshire share*	59,058	156,006	0	215,064
Non-codeable South East share**	132,763	371,201	0	503,964
Total	727,151	1,169,031	21,069	1,917,251

How do we know how much waste management capacity is available in Central and Eastern Berkshire?

A methodology for estimating waste management capacity has been undertaken which indicates a current treatment capacity within the plan area of 0.72 million tonnes. This includes the Lakeside Energy Recovery Facility in Slough, but excludes other facilities outside of the plan area which provide capacity for identified long term waste movements.

Assessment of need for new facilities in Central and Eastern Berkshire

Developing waste growth scenarios

In order to determine what capacity for managing waste will be needed in the future, local demand factors, past trends, housing growth and other influences have been considered for each waste source. A growth rate of 1.0% per annum was therefore applied to Local Authority Collected Waste and Commercial and Industrial waste and 0.75% per annum to Hazardous waste. It was considered most appropriate to apply a '0%' per annum (no growth) to Construction, Demolition and Excavation waste.

These rates of growth then informed a growth rate for each of the various properties of waste (non-hazardous, inert and hazardous) which were used in the determination of the capacity gap.

Current estimated capacity gap

Considering the estimated current treatment capacity and forecasted growth rate over the plan period (to 2036), an estimated capacity gap for the Central and Eastern Berkshire Authorities has been identified. This is summarised in Table 2a below. The technical workings supporting this summary are provided in Annex 4.

Table 2a - Current estimated treatment capacity gap (tpa) (based on most recent 2018 data)

Waste Properties	2018	2022	2026	2030	2036
Non-hazardous	400,682	430,207	460,931	492,903	543,311
Inert	571,286	571,815	572,365	572,938	573,841
Hazardous	-3,473	-2,834	-2,175	-1,497	-440

Meeting the future waste management needs of Central and Eastern Berkshire's waste

Addressing the capacity gap

It is considered necessary to have policy provisions for non-hazardous recycling, non-hazardous recovery and inert (recycling or recovery) capacity requirements. The small over-provision in hazardous waste capacity means that no specific requirement needs to be set, though policies are needed to enable appropriate hazardous waste facilities to come forward due to the specialist nature of this waste.

Table 3a - Identified non-hazardous total treatment capacity requirement

Capacity type	Total minimum provision requirement in 2036 (tpa)
Non-hazardous recycling capacity	300,000
Non-hazardous recovery capacity	245,000
Inert recycling or recovery capacity	575,000
Total	1,120,000

List of Abbreviations

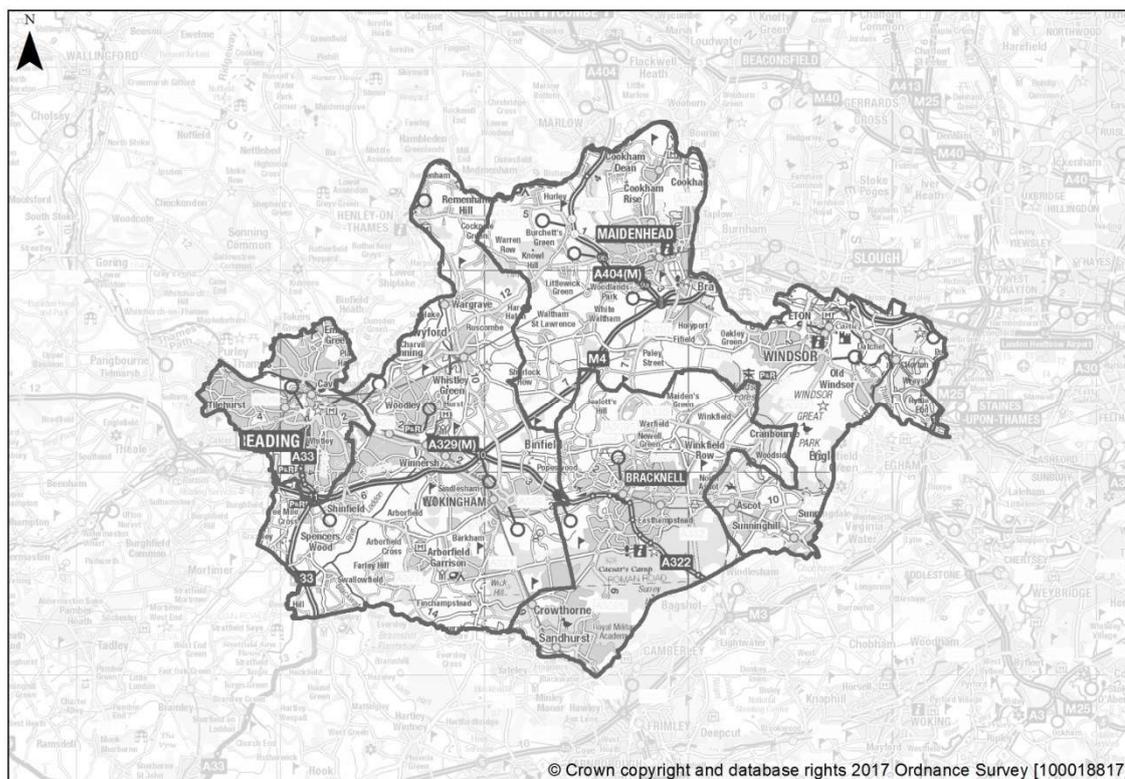
CD&E	Construction, Demolition & Excavation (waste)
CEB	Central and Eastern Berkshire
C&I	Commercial & Industrial (waste)
CHP	Combined Heat & Power
DEFRA	Department for Environment, Food & Rural Affairs
EA	Environment Agency
EfW	Energy from Waste
ELV	End of Life Vehicle
EP	Environmental Permit
ERF	Energy Recovery Facility
EWC	European Waste Catalogue
HWRCs	Household Waste Recycling Centres
IBA	Incinerator Bottom Ash
LACW	Local Authority Collected Waste
LAPPC	Local Authority Pollution Prevention & Control
MAF	Materials Analysis Facility
MBT	Mechanical Biological Treatment
MHT	Mechanical Heat Treatment
MRF	Material Recovery Facility
MRS	Metal Recycling Site
MSW	Municipal Solid Waste
mt / mtpa	Million tonnes / million tonnes per annum (tpa - tonnes per annum)
RDF	Residual Derived Fuel
SEWPAG	South East Waste Planning Advisory Group

SRF	Solid Recovered Fuel
TPP	Temporary Planning Permission
WEEE	Waste Electrical & Electronic Equipment
WDI	Waste Data Interrogator
WDF	Waste Data Flow
WPA	Waste Planning Authority
WTS	Waste Transfer Station

1. Introduction

1.1 Bracknell Forest Council, Reading Borough Council, the Royal Borough of Windsor and Maidenhead and Wokingham Borough Council (collectively referred to as the 'Central & Eastern Berkshire Authorities') are responsible for the planning of waste (and minerals development) within the respective authority areas. These authorities are working jointly to prepare a Joint Minerals and Waste Plan (JMWP). Figure 1 highlights the administrative area of the JMWP.

Figure 1 - Administrative areas of Central & Eastern Berkshire Authorities

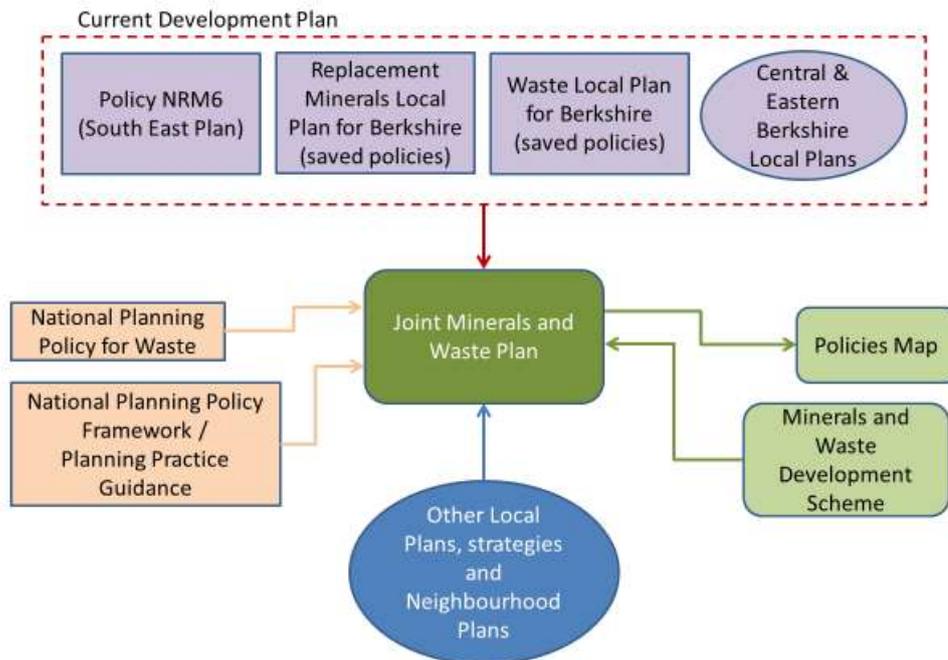


1.2 The Central & Eastern Berkshire Authorities are required to provide a plan to ensure there are sufficient opportunities to meet the needs of the Plan area for the management of waste streams³.

1.3 The components of the JMWP are set out in Figure 2.

³ National Planning Policy for Waste, 2014 - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/364759/141015_National_Planning_Policy_for_Waste.pdf

Figure 2 - Central and Eastern Berkshire - Joint Minerals & Waste Plan



- 1.4 The JMWP will indicate what waste management is required, where this may be located; when it will need to be provided and how it will be delivered during the Plan period.

Study preparation

- 1.5 The information, data and analysis contained within this Study is required to inform the preparation of the JMWP. Therefore, the Study attempts to answer the following key questions:

- What is the national waste planning context and what requirements does it impose?
- How much waste is currently generated in Central and Eastern Berkshire?
- What waste management facilities are currently available to manage the waste produced in Central and Eastern Berkshire?
- How much waste are the existing waste management facilities able to manage?
- How much is waste predicted to increase / decrease until 2036 in Central and Eastern Berkshire?
- How many and which types of new facilities are likely to be required to manage waste in future, if any, in Central and Eastern Berkshire?

Study structure

- 1.6 This report firstly considers the policy context. It then looks at current overall waste arisings and waste management data and figures. Following that, it looks at future waste management needs and the waste capacity that is currently available to meet them. Finally, it concludes what waste capacity may be needed in the future and what forms it might take.
- 1.7 Various technical terms are referred to throughout this report and key definitions are provided where necessary. A glossary is also provided at the end of this report.

Waste data

- 1.8 The planned provision of additional infrastructure capacity and its spatial distribution should be based on robust analysis of best available data and information, and an appraisal of options⁴. Any quantified assessment of 'need' for additional future waste infrastructure should therefore be underpinned by an analysis of the existing baseline and how this is likely to change in future. For instance, will the amount of waste generated in the future exceed the waste management capacity? Or, will future planned provision be adequate to accommodate changing waste management requirements?
- 1.9 It is widely acknowledged that assessing waste management requirements is an area of considerable uncertainty, and any predictions can only be based on the best available data. A common approach to assessing need⁵ is to firstly establish a baseline - i.e. 'what is happening now'. Then, drawing on informed assumptions about how waste generation may change in the future, it is possible to project what may happen in the future and compare the change to the baseline. Coupled with what is known about how and where waste is currently managed in an area, it is then possible to begin to predict what additional waste management capacity could be required in future. This approach to assessing 'need' has been adopted for the purposes of this report.
- 1.10 Assessing future need, based on the collection and analysis of data, and projecting it into the future, is important to inform locally-derived 'targets' for waste management. Such targets can be useful to help monitor the performance of the JMWP. More specifically, targets can help indicate 'where we need to be' by the end of the plan period. Data gathering is also necessary

⁴ National Planning Policy for Waste, 2014 - www.gov.uk/government/publications/national-planning-policy-for-waste

⁵ National Planning Policy Guidance for Waste, 2015 - <https://www.gov.uk/guidance/waste>

to help monitor performance against established targets, such as those set nationally by the current Waste Management Plan (2013)⁶.

- 1.11 Local waste management targets may also need to be considered. Comparing locally-derived 'needs' against established targets is a useful way to test and review the data findings by way of 'benchmarking'. It should be recognised that locally-derived targets may be different to other targets because of differences in the methodologies used; the scope for refinement of data at the local level (based on local knowledge of operations etc.); and the different definitions or categories used to present the data.
- 1.12 This Study will provide the key technical evidence to justify the need for additional waste management infrastructure until 2036. The Study seeks to collate and verify such data in a format appropriate to inform the plan preparation process and summarise the main findings and discuss the implications of these data findings.

⁶ Waste Management Plan for England, 2013 - www.gov.uk/government/publications/waste-management-plan-for-england

2. Policy Context and Legislation

Relevant Legislation

- 2.1 The European Union (EU) has adopted a number of Directives aimed at harmonising waste management and disposal policies throughout Europe and guaranteeing environmental protection. These Directives are currently implemented through UK legislation. Their future transposition into UK legislation is unknown due to Brexit – while it is expected that most existing provisions will be transposed, considerable uncertainty remains.

Waste Framework Directive

- 2.2 The key current European Directive relating to waste is termed the EU Waste Framework Directive. “*The EU Waste Framework Directive (Directive 2008/98/EC)*⁷ provides the legislative framework for the collection, transport, recovery and disposal of waste, and includes a common definition of waste. The directive requires all member states to take the necessary measures to ensure waste is recovered or disposed of without endangering human health or causing harm to the environment and includes permitting, registration and inspection requirements.” (From the UK Government website on waste regulation and legislation, 2014)⁸. Article 28 of the Waste Framework Directive⁹ obligates Member States to develop waste management plans, who can request this of either regional or local authorities.

Landfill Directive

- 2.3 The EU Landfill Directive (1999/31/EC of on the landfill of waste)¹⁰ aims to prevent, or reduce as much as possible, any negative impact from landfilling on surface water, groundwater, soil, air or human health. This includes applying stringent technical requirements on location, management, engineering, closure and monitoring for landfills. The EU Council Decision 2003/33/EC¹¹ outlines the criteria and procedures for the acceptance of waste at landfills. In April 2014, EU legislation was adopted to strengthen the quality of the environment impact procedure set out by Directive 2011/92/EU¹². This ensures coherence and

⁷ EU Waste Framework Directive, 2008 - www.gov.uk/government/uploads/system/uploads/attachment_data/file/218586/l_31220081122en0003003_0.pdf

⁸ UK Government page on waste regulation and legislation, 2013 - www.gov.uk/guidance/waste-legislation-and-regulations

⁹ EU Waste Framework Directive, 2008 - <http://ec.europa.eu/environment/waste/plans/index.htm>

¹⁰ EU Landfill Directive, 1999 - eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31999L0031

¹¹ EU Council Decision, 2003/33/EC - eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32003D0033

¹² EU Environmental Impact Assessment rules, 2011 - eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:ev0032

synergy with other areas of EU legislation and policy. The Directive (and subsequent amendments) also provide definitions of waste types based on the nature of their composition and chemical constituents. It is the interpretation of these definitions along with guidance provided by the EA on waste classification and assessment of waste¹³ which have influenced the classification of waste arisings used to inform the current and projected capacity gap addressed further within this report.

The Industrial Emissions Directive

- 2.4 In 2010 The Industrial Emissions Directive (Directive 2010/75/EU)¹⁴ was adopted. It is based upon seven previously existing directives, including the Integrated Pollution Prevention and Control Directive. The Industrial Emissions Directive aims to achieve a high level of protection of human health and the environment by reducing harmful industrial emissions across the EU, utilising Best Available Techniques (BAT). This legislation prevents and controls pollution into air, water and land to avoid generating waste from large industrial installations.

Mining Waste Directive

- 2.5 The Mining Waste Directive (Directive 2006/21/EC)¹⁵ introduces measures for safe management of waste resulting from the extraction, treatment and storage of mineral resources and the working of quarries. It outlines a number of requirements to ensure protection of the environment and human health, depending on the risks posed by the type of waste. All waste producers regulated by the Directive are required to submit a waste management plan with aims to prevent or reduce waste generation or encourage waste recovery and safe waste disposal.

Hazardous Waste Directive

- 2.6 The European Hazardous Waste Directive (91/689/EEC) was replaced by the revised European Waste Framework Directive (2008/98/EC)¹⁶. Within this Directive, there is a need for additional record keeping, monitoring and control obligations when managing hazardous waste. Mixing of hazardous substances is banned in order to prevent risks for the environment and human health.

¹³ Technical Guidance WM3, 2014 - <https://www.gov.uk/government/publications/waste-classification-technical-guidance>

¹⁴ EU Industrial Emission Directive, 2010 - <eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0075>

¹⁵ EU Mining Waste Directive, 2006 - <eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32006L0021>

¹⁶ EU Waste Framework Directive, 2008 - www.gov.uk/government/uploads/system/uploads/attachment_data/file/218586/l_31220081122en0003003_0.pdf

Environmental Protection Legislation

2.7 The *Environmental Protection Act 1990*, Part II¹⁷ provides the basis for licensing controls and other provisions aimed at ensuring that waste handling, disposal and recovery options do not harm the environment. It also states that responsibility for waste rests on all parties involved in its management; from the original producer to everybody who handles it up until its full recovery or disposal. To this end it introduced the 'Duty of Care'. The *Waste Management (England and Wales) Regulations 2006* (SI 2006 No. 937)¹⁸ introduced amendments to the Act, including an extension of the definition of industrial waste to include agricultural and mining and quarrying waste, which therefore become controlled wastes.

National Planning Policy, Strategy and Circulars

2.8 The National Planning Policy for Waste sets out detailed waste planning policies. It should be read in conjunction with the National Planning Policy Framework¹⁹, the National Waste Management Plan for England and national policy statements for waste water and hazardous waste;

- *National Planning Policy for Waste* (October 2014)²⁰;
- *Waste Management Plan for England* (December 2013)²¹;
- *Waste Prevention Programme for England* (December 2013)²²;
- *Resource and Waste Strategy* (December 2018)²³
- *25 Year Environment Plan* (February, 2018)
- *National Policy Statements*²⁴; and
- *All Waste Development Plan Documents*²⁵.

2.9 New national guidance becomes available on an on-going basis, as and when new issues arise or are considered. For example, there have been some recent

¹⁷ EPA, 1990 Part II - www.legislation.gov.uk/ukpga/1990/43/part/II

¹⁸ Waste Management Regulations, 2006 - www.legislation.gov.uk/uksi/2006/937/contents/made

¹⁹ National Planning Policy Framework, 2012 - www.gov.uk/guidance/national-planning-policy-framework

²⁰ National Planning Policy for Waste, 2014 - www.gov.uk/government/publications/national-planning-policy-for-waste

²¹ Waste Management Plan for England, 2013 - www.gov.uk/government/publications/waste-management-plan-for-england

²² Waste Prevention programme for England, 2013 - www.gov.uk/government/publications/waste-prevention-programme-for-england

²³ <https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england>

²⁴ E.g. National policy statement for waste water, 2012 - www.gov.uk/government/publications/national-policy-statement-for-waste-water and Hazardous waste national policy statement, 2013 - www.gov.uk/government/publications/hazardous-waste-national-policy-statement

²⁵ As they form part of the National Waste Management Plan.

developments on what constitutes recovery, both on land and as part of incineration²⁶.

Local Planning Policy

- 2.10 Current waste planning policy for the Central and Eastern Berkshire Authorities is set out in the Waste Local Plan for Berkshire adopted in 1998²⁷ (including saved policies²⁸). The Waste Local Plan covers the former Berkshire County area and therefore includes Slough and West Berkshire.
- 2.11 While the Waste Local Plan covers the period until 2006, the Secretary of State has directed that a number of policies should be saved indefinitely until replaced by national, regional or local minerals and waste policies. For Central and Eastern Berkshire these saved policies will be replaced by the JMWP, when it is adopted. A full list of the saved policies can be found in Annex 1: Status of waste policies in the Waste Local Plan for Berkshire (1998).
- 2.12 A review of the Waste Local Plan for Berkshire was previously undertaken on behalf of the six Berkshire Unitary Authorities by the Joint Strategic Planning Unit (JSPU). The JSPU published a 'Preferred Options' version of the Joint Minerals and Waste Core Strategy in September 2007 and a Submission Draft version was published in September 2008. The Core Strategy was submitted to the Secretary of State in February 2009. The Minerals and Waste Core Strategy Examination commenced in June 2009. During the hearing concerns were raised regarding the accuracy of the evidence base used to support the waste strategy. As a result of these concerns the Inspector decided to adjourn the Examination and the Secretary of State subsequently formally requested the withdrawal of the Core Strategy in January 2010.
- 2.13 After a review of minerals and waste planning the Central & Eastern Berkshire Authorities decided to progress with a JMWP. While the JMWP does not cover Slough Borough Council²⁹ or the West Berkshire Council³⁰, close coordination of the work between the various Berkshire authorities will continue in order to

²⁶ Waste recovery on land guidance, 2016 - www.gov.uk/government/collections/waste-recovery-on-land-guidance and Municipal waste incinerators (qualifying as a recovery operation), 2016 www.gov.uk/government/publications/applying-to-qualify-as-a-recovery-operation-municipal-waste-incinerators

²⁷ Waste Local Plan for Berkshire, 1998 - <https://www.bracknell-forest.gov.uk/planning-and-building-control/planning/planning-policy/development-plan/minerals-and-waste>

²⁸ Waste Local Plan Saved Policies, 1998 - <https://www.bracknell-forest.gov.uk/planning-and-building-control/planning/planning-policy/development-plan/minerals-and-waste>

²⁹ Slough Borough Council minerals and waste policy - www.slough.gov.uk/council/strategies-plans-and-policies/minerals-and-waste.aspx

³⁰ Emerging West Berkshire Minerals and Waste Local Plan - info.westberks.gov.uk/index.aspx?articleid=29081

plan for minerals and waste strategically and address any cross-border issues that may arise.

- 2.14 There are also a number of other local policies and strategies that consider waste, as discussed in the section 'Waste management targets'.
- 2.15 Additionally, the Local Plans being prepared by each of the Central & Eastern Berkshire Authorities will have indirect effects on waste management through population and economic growth, infrastructure projects and impacts on potential land uses.

Waste management targets

- 2.16 A number of waste management targets have been set at the international, national and regional level. Since this Study assesses 'local' needs, it is important to consider the relevance of these targets, their potential influence, and their local applicability with regard to the amount and type of waste developments required.

Waste Framework Directive Targets

- 2.17 Member States are required to comply with the Waste Framework Directive³¹ and move towards a European recycling society with a high level of resource efficiency. Action includes putting measures in place to achieve the following targets:
- *'by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight; and*
 - *by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70 % by weight."*

³¹ Waste Framework Directive targets - ec.europa.eu/environment/waste/framework/targets.htm

Circular Economy Package

2.18 The Circular Economy Package³² (also see Section 10.2) seeks to address the whole cycle of waste from production and consumption to waste management and the market for secondary raw material.

2.19 The package, amongst others, also provides revised legislative proposals³³ to the Waste Framework Directive Targets above of:

- A common EU target for recycling 60% of municipal waste by 2025; and
- A common EU target for recycling 65% of municipal waste by 2030.

Clean Growth Strategy

2.20 The UK Government have recently set an ambition³⁴ to work towards zero avoidable food waste by 2050, maximising the value we extract from our resources, and minimising the negative environmental impacts.

25 Year Environment Plan

2.21 The 25 Year Environment Plan³⁵ sets out government action to help the natural world regain and retain good health. It aims to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats. It calls for an approach to agriculture, forestry, land use and fishing that puts the environment first.

2.22 The Environment Plan strives to ensure that communities are 'Using resources from nature more sustainably and efficiently' and 'Minimising waste'. Great emphasis is being placed on 'natural capital'.

2.23 There is a noticeable change in focus to not only protect the natural capital that already exists, but enhance this where possible. This extra step is needed to increase resilience to climate change. Policy DM8 of the JCEB Plan is most closely aligned with this national policy change and may need strengthening to ensure mineral and waste development is aligned with national policy objectives.

³² Circular Economy Package, 2018 - http://ec.europa.eu/environment/circular-economy/index_en.htm

³³ Revised legislative proposals - <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0595>

³⁴ The Clean Growth Strategy, 2017 -

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/651916/BEIS_The_Clean_Growth_online_12.10.17.pdf

³⁵ The 25 Year Environment Plan, 2018 -

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

- 2.24 The detrimental effects of plastic on the environment have been widely covered in the press recently. The 25 Year Environment Plan sets out guidelines on how to transition to materials that can be recycled more easily leading to a reduction in overall waste, with a particular focus on single use plastics. Policy W1, the sustainable waste development strategy will need to ensure it encompasses this change.
- 2.25 The Plan sets clear policy direction on ‘embedding an ‘environmental net gain’ for development, including housing and infrastructure’ this includes action to work with interested parties and streamline environmental processes but to widen environmental gains to include flood protection, recreation and improved water and air quality.

Resources and Waste Strategy

- 2.26 The Resources and Waste Strategy³⁶ sets out Government’s ambition to preserve material resources. It aims to promote resource efficiency and aid the transition towards a circular economy.
- 2.27 The Plan strives to minimise the damage caused to the natural environment by reducing and managing waste safely and carefully, as well as tackling waste crime.
- 2.28 More specific aims, include the elimination of avoidable plastic waste over the lifetime of the 25 Year Environment Plan, doubling resource productivity and eliminating avoidable wastes of all kinds by 2050, as well as strengthening existing legislation where needed in order to achieve the ambitions of the strategy.

Waste Management Plans and local waste targets

- 2.29 Reading Borough Council, Bracknell Forest Council and Wokingham Borough Council have formed a municipal waste management partnership called Re3³⁷. Re3 produced a Joint Municipal Waste Management Strategy for the period 2008 to 2013, which committed to meeting relevant government targets (at the time from the national Waste Strategy 2007).

³⁶ Resources and Waste Strategy, 2018 - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

³⁷ Re3 website - www.fccenvironment.co.uk/re3-about-us.html

2.30 Re3 also produced the re3 Strategy 2016/17³⁸ where, amongst a suite of targets identified for waste management, a target for alignment with the goal of achieving 50% reuse and recycling by 2020 was made, within specific service areas of kerbside recycling collections and non-target and non-recyclable kerbside contamination.

2.31 While work is ongoing regarding an overarching update of this strategy, the three councils have also developed individual sub-strategies.

- Reading – The Reading Borough Council Waste Minimisation Strategy (2015-2020)³⁹ highlights a corporate target to achieve a recycling rate of 50% by 2020.
- Bracknell – The Bracknell Forest Council Climate Change Action Plan (2013 – Updated 2016)⁴⁰ lists a target of 78% participation rate in recycling, which is currently being met.
- Wokingham – The Wokingham Borough Council Sustainable Environment Strategy (2010-2020)⁴¹ includes a measure of success that at least 50% of household waste is recycled or composted. The more recently (January 2020) adopted Climate Emergency Action Plan⁴² has a key priority of reducing waste sent to landfill, including 60% recycling of waste by 2020, and zero waste to landfill and 90% recycling by 2030.

2.32 In relation to the Royal Borough of Windsor and Maidenhead, the most recent waste targets are set out in the ‘Sustainability Strategy for the Royal Borough of Windsor and Maidenhead 2014 – 2018’⁴³. They relate to increasing recycling (and thereby diverting waste from landfill) and increasing composting.

2.33 The Key Four Year Target for waste is set out as follows:

³⁸ Re3 Strategy, 2016/17 - <https://democratic.bracknell-forest.gov.uk/documents/s98109/Annex1re3Strategy201617forJWDB190716.pdf>

³⁹ Reading Borough Council Waste Minimisation Strategy, 2015-2020 - www.reading.gov.uk/media/4418/Waste-Minimisation-Strategy-2015---2020/pdf/Waste_Minimisation_Strategy_2015_-_2020.pdf

⁴⁰ Bracknell Forest Council Climate Change Action Plan, 2013 - Updated 2016 - <https://files.bracknell-forest.gov.uk/sites/bracknell/documents/climate-change-action-plan.pdf?6UtUNAHvSOPapeTK1PCb2XY7lhRr2kaB>

⁴¹ Sustainable Environment Strategy, 2010-2020 - www.wokingham.gov.uk/council-and-meetings/open-data/plans-policies-and-strategies/?categoryesct191f252ff-550d-4cfa-a838-92ef2cb5f83c=7745

⁴² Declaring a Climate Emergency Initial Action Plan, 23 January 2020 - <https://wokingham.moderngov.co.uk/documents/s38823/Declare%20a%20Climate%20Emergency.pdf>

⁴³ Sustainability Strategy for the Royal Borough of Windsor and Maidenhead, 2014-2018 - www3.rbwm.gov.uk/info/200171/energy_and_climate_change/846/sustainability

'Purpose: To increase the amount of waste being recycled. This will help to reduce the amount of waste being sent to landfill & increase the amount of resources being reused. It will also mean the Council is avoiding the costs of sending waste to landfill.'

Outcome: Recycling rates increased to 55% in 2017/18'.

2.34 A further Strategy Aim regarding landfill is also established:

'Purpose: To reduce the amount of organic waste going to landfill. To make use of the organic waste in the borough.'

Aim: Increase the amount of food waste collected to 2500 tonnes per annum by 2017/18'.

3. Waste management in Central and Eastern Berkshire

Waste streams and classifications

Which waste streams do we need to plan for?

- 3.1 Waste Planning Authorities (WPAs) are obliged to prepare Local Plans which identify sufficient development and land use opportunities to meet the needs of their area for the management of all waste streams⁴⁴. Waste can be classified by its 'source' and by its 'properties'.
- 3.2 The principal 'streams' based upon the sources are as follows:
- Municipal – more recently known as Local Authority Collected Waste (LACW)⁴⁵ - mainly from households;
 - Commercial and Industrial (C&I) - from businesses;
 - Construction, Demolition and Excavation (CD&E) - from the construction sector.
- 3.3 The source categories are the most frequently used in planning and are also particularly useful in forecasting growth estimates. They are not however always helpful when describing the types of waste involved (e.g. hazardous waste can come from households as well as businesses). The operators of waste management facilities however may also be interested in the type of waste - the 'feedstock' - and hence its properties.
- 3.4 The principal waste categories (or 'streams') based upon the properties are:
- Non-hazardous waste is produced mainly from both LACW and commercial & industrial waste (C&I);
 - Inert wastes derive mainly from construction, demolition and excavation (CD&E) activities;
 - Hazardous waste is produced from all three waste sources and is considered harmful to humans or the environment.
- 3.5 Both the source and properties of waste have been considered within this study. As more detailed data is available for LACW, this stream has been subdivided into waste categories. As the data on C&I and CD&E waste is less

⁴⁴ National Planning Policy for Waste, 2014 -

www.gov.uk/government/uploads/system/uploads/attachment_data/file/364759/141015_National_Planning_Policy_for_Waste.pdf

⁴⁵ Local Authority Collected Waste – definition of terms, 2011 - <https://www.gov.uk/guidance/local-authority-collected-waste-definition-of-terms>

precise, the CD&E stream has been considered as inert, while the C&I stream has been considered as non-hazardous. While this is an approximation, modelling has shown that it does not make a significant difference to the overall figures.

The 'Waste Hierarchy' and waste management activities

- 3.6 The waste hierarchy is a framework to consider how waste is managed (and should be managed), particularly in relation to the role different facilities play in prioritising the diversion from disposal (i.e. landfilling of waste). Everyone who creates or manages waste - local authorities, businesses, and their contractors - are required by law to apply the waste hierarchy in order to prevent more waste, and deal with waste sustainably⁴⁶.
- 3.7 The Waste (Management) Hierarchy (see Figure 3) has become a cornerstone of sustainable waste management, setting out the order in which options for waste management should be considered based on environmental impact (with disposal as the lowest priority).

Figure 3 - The Waste Management Hierarchy



Source: Waste Framework Directive (Directive 2008/98/EC)

- 3.8 The type of waste treatment facility can be defined by one of the broad processes described in the waste hierarchy (as described in the revised EU Waste Framework Directive). To help continue driving waste up the hierarchy,

⁴⁶ Article 4 of the European Union revised Waste Framework Directive 2008/98/EC sets out 5 steps in dealing with waste - eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF

away from disposal, planning has a key role to play by providing for developments that ensure waste materials, in order of priority can be:

1. **Recovered by reprocessing** (recycled) into products, materials or substances whether for the original or other purposes (includes the reprocessing of organic material). This is known as *recycling*.
2. **Recovered in some other form** e.g. combusted with energy recovery, anaerobic digestion, processes which can produce energy (fuels, heat and power) and materials from waste, etc⁴⁷.

3.9 Whilst planning for these waste streams, it is helpful to group waste facilities under **three broad terms** which describe the processes of waste management: **recycling, recovery and disposal**. While preparing for re-use is considered a waste activity if the process uses materials classified as waste (unlike direct re-use where the material never became waste in the first place), in practice a lot of these facilities will be more related to industrial and business processes, than to waste processes, and may not fall under the waste permitting and waste planning regimes.

1. **Recycling (including composting)** - this identifies facilities that provide a sorting and baling operation of 'pre-sorted waste' or only particular types of waste such as clean paper and card, food and drink cans, etc. such as in a Material Recovery Facility (MRF) where the sorted waste is sent on to a reprocessing facility which will recycle or re-form the waste material into new products.
2. **Recovery** - this term refers to the treatment of waste to extract its 'energy' and encompass facilities that burn waste to generate heat and/or power such as a Energy Recovery Facility (ERF) or a carefully controlled compost type operation (such as Anaerobic Digestion) that traps gases (to burn for energy) and/or produce material to act as a fertilizer or a 'feedstock' for other waste treatment facilities.
3. **Disposal** - this describes landfill facilities that have to deal with wastes that cannot be recycled or recovered as a last resort.

3.10 These terms will be used throughout this Study to describe the broad management of waste and help define the type of facilities and their capacity required in the years ahead.

⁴⁷ The consultation document - *Guidance on applying the Waste Hierarchy, 2011* - stated this category also includes backfilling operations- i.e. infilling with inert construction waste - <https://www.gov.uk/government/publications/guidance-on-applying-the-waste-hierarchy>

3.11 The Waste Framework Directive⁴⁸ also refers to the principles of self-sufficiency and proximity when developing waste disposal facilities. These principles outline that waste disposal facilities, wherever practical, should respect the objective of allowing a community (taken as the Plan area in this instance) to become self-sufficient and that wastes should be disposed of as close to the source as possible.

3.12 It is important to note however, that a number of significant movements of waste generated within the Plan area to treatment facilities outside the Plan area have been identified which are expected to continue throughout much of the Plan period. Therefore, it is not practicable to plan for complete self sufficiency per se but these waste movements will be taken into consideration at the relevant point during the Plan period.

How much waste arises in Central and Eastern Berkshire?

3.13 For data collection purposes it is important to establish an agreed list of waste streams. There are different ways of estimating waste but the only current comprehensive source of waste data is the Environment Agency (EA), which collates waste transfer note data in an annual Waste Data Interrogator (WDI). This is data on waste management, rather than arisings, but due to the regulated nature of the waste sector most waste that is produced will need to be managed by licenced facilities in some way, and so is likely to be recorded in this way.

3.14 This data has a number of caveats (discussed below), but has the advantage of mandatory data collection from the majority of waste operators, consistency (between operators and carriers) and the ability to compare data from year to year. To ensure accuracy, in an initial analysis, transfer tonnes have been discounted to reduce, as far as practicable, the risk of double counting. Based upon feedback received from the Issues and Options consultation from the 9th June 2017 – 21st July 2017, precise European Waste Catalogue (EWC) codes were used to identify specific wastes. However, further methodology work was conducted in 2018, in collaboration with the South East Waste Planning Advisory Group (SEWPAG⁴⁹), in order to seek a more regional approach to waste data.

⁴⁸ EU Waste Framework Directive, 2008 -

www.gov.uk/government/uploads/system/uploads/attachment_data/file/218586/l_31220081122en0003003_0.pdf

⁴⁹ SEWPAG is a group for all the South East waste planning authorities that comes together on a quarterly basis, discusses waste planning matters, shares best practice and works together on waste data projects of relevance to the region. It is also attended by representatives of the Environment Agency, industry and neighbouring regions.

- 3.15 Data from the WDI is used for C&I and CD&E waste, while data from the Hazardous WDI has been used for hazardous waste arisings.
- 3.16 In addition to the WDI, data from Waste Data Flow (WDF) has been used for LACW. In addition, EA Incinerator Returns has also been used to inform energy from waste (EfW) throughputs not included within the WDI. The latest available data for the 2018 calendar year has been used within this study.
- 3.17 The approximate tonnage arisings in Central and Eastern Berkshire is shown in Table 1. The arisings for each waste type (non-hazardous, inert and hazardous) are then discussed in further detail under separate headings in this study. It is important to stress that the tonnages are approximate, due to the varying reliability of the source data.

Table 1 - Waste arisings (tonnes) from the Central & Eastern Berkshire Authorities 2018

Source Authority	Non-hazardous waste	Inert waste	Hazardous waste	Total
Bracknell Forest UA	84,744	118,422	3,217	206,663
Reading UA	179,605	243,927	5,928	429,799
RBWM UA	196,958	140,901	8,377	346,493
Wokingham UA	74,023	138,574	3,547	216,714
Berkshire share*	59,058	156,006	0	215,064
Non-codeable South East share**	132,763	371,201	0	503,964
Total	727,151	1,169,031	21,069	1,918,697

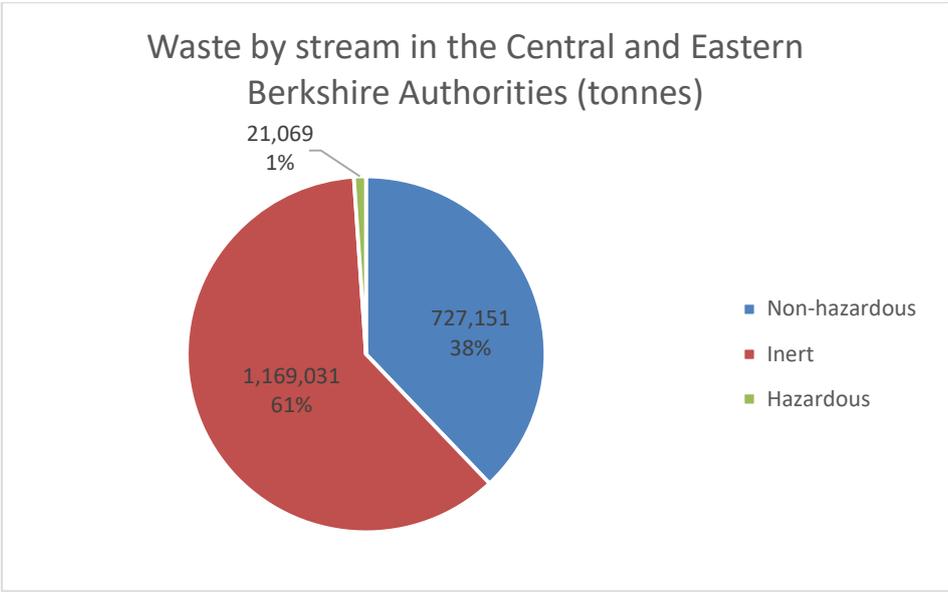
Source: EA WDI, HWDI and IR and WDF, 2018

*Where the source of waste was 'Berkshire', an apportionment based on the ratio of waste collected across all Berkshire authorities was undertaken and applied to waste originating as 'Berkshire' only to estimate the Central and Eastern Berkshire authorities' share.

**Where the source of waste was 'WPA not codeable – South East', an apportionment based on the ratio of waste collected across all South East authorities was undertaken and applied to waste originating as 'WPA not codeable – South East' only to estimate the Central and Eastern Berkshire authorities' share.

- 3.18 Figure 4 illustrates the proportions of each waste stream.

Figure 4 - Waste arisings from the Central & Eastern Berkshire Authorities (tonnes and percentage for each waste stream)



Source: EA WDI, HWDI and IR and WDF, 2018

Environment Agency WDI Limitations

- 3.19 The EA WDI has a number of caveats that need to be considered:
- 3.20 Human error (at the data entry stage) is an issue throughout the data, for example in noting down the source or category of waste. A particular example is the use of 'Berkshire' as a source of waste, even though there is no waste planning authority that covers all of the Berkshire areas. Where possible, this data has been apportioned to one of the six Berkshire unitary authorities, as discussed above. After discussions at SEWPAG, a portion of waste where the source of waste was 'WPA not codeable – South East' was also added to the 2018 data. There is also waste data that does not list a source at all, however the quantities that would come from this are much lower and there is much less certainty about whether any of this waste originates from the Plan area.
- 3.21 The WDI does not include EfW data, however, some information on waste that goes to EfW may still be present due to the waste transfer notes from waste facilities sending waste to EfWs being submitted. As discussed, data from WDF and EA incinerator throughputs have been used to address this issue.
- 3.22 Another key consideration is the potential double counting of waste. This happens because of the presence of waste transfer stations, but also because waste can have many components that may be processed in different facilities at different times. For example, inert waste may have wood fractions removed at one facility and then have the rest of the waste passed on to an aggregate recycling facility for further processing, meaning that the aggregate portion of the waste has been counted twice. To address this issue, transfer tonnages received by waste transfer stations within the Plan area have been discounted as far as practicable to reduce the risk of double counting, while waste tonnages arising from within the Plan area and received by waste transfer stations outside of the Plan area have been included since the second, or onward movement of this waste will show the respective WPA as the origin of the waste. By doing this, a more accurate representation of waste arisings from within the Plan area can be made.
- 3.23 Issues also arise as some facilities have exemptions from the EA and may not be required to submit waste transfer notes, which is particularly the case with inert waste facilities, or sites on farms used to process agricultural waste. Additionally, parts of the CD&E waste stream are dealt with immediately on site and outside the waste permitting and planning system, so never get recorded as waste.

Household Waste

3.24 A separate strand of waste is that from households which is collected by local authorities. Local authorities are required to collect the waste from households (directly, as well as through Civic Amenity Sites) and are subject to the recycling targets from the Waste Framework Directive⁵⁰. Each authority may set its own targets and ambitions, as discussed in the Section 2.

3.25 They also collect other wastes such as street sweepings or can offer waste collection services to businesses. County and Unitary authorities then have a duty to dispose of this waste. Together with household collected waste, this waste is called 'Local Authority Collected Waste' (LACW).

3.26 Table 2 illustrates the LACW data that can be gained from the Waste Data Flow. Furthermore, Figure 5 identifies the trend from 2011 to 2016.

Table 2 - LACW (tonnes) 2018

Authority	LACW
Bracknell Forest UA	48,678
Reading UA	66,911
Windsor & Maidenhead UA	66,160
Wokingham UA	70,814
Total	252,563

Source: Waste Data Flow, 2018

Figure 5 - LACW (tonnes) by Central & Eastern Berkshire Authority, 2011-2018



⁵⁰ EU Waste Framework Directive, 2008 -

www.gov.uk/government/uploads/system/uploads/attachment_data/file/218586/l_31220081122en0003003_0.pdf

Source: Waste Data Flow

3.27 As LACW will largely go through waste management facilities with environmental permits, the data will be included in the figures obtained from the EA WDI, where it is combined with other business waste in the category Household, Industrial and Commercial (HIC) waste, this is identified in Table 3.

Table 3 - Estimated waste arisings (tonnes) per source and property in Central and Eastern Berkshire 2018

Waste source / properties	Non-hazardous	Inert	Hazardous	Total
LACW (Local Authority Collected Waste)	238,089	13,027	1,446	252,562
C&I (Commercial and Industrial Waste)*	489,062	0	12,061	501,123
CD&E (Construction, Demolition and Excavation Waste)*	0	1,156,004	7,562	1,163,566
Total	727,151	1,169,031	21,069	1,917,251

Source: EA RI, WDI and HWDI, and WDF, 2018

- As discussed above, it has been generalised that the C&I waste is non-hazardous and that the CD&E waste is inert.

3.28 To some extent, this data is also reported in Waste Data Flow which is considered to be a robust source of data. Making comparisons however between Waste Data Flow and the EA WDI can be problematic due to different collection methodologies.

How much waste management capacity is available in Central and Eastern Berkshire?

3.29 In order to plan for future waste management capacity within the Plan area, a sound understanding of current annual treatment capacity is required (please note that this does not include transfer (i.e. transfer station) capacity, although this has been determined for completeness).

3.30 Waste capacity can be interpreted differently, but for the purposes of this study, waste capacity has been interpreted to mean the maximum tonnage of waste that a site is considered to be capable of treating in a year, bearing in mind restrictions such as permit, planning permission and conditions, physical and other properties of the site.

3.31 Waste capacity data has been sourced in a number of different ways. These are summarised in Table 4 below together with the relative positives and limitations for each approach.

Table 4 - Methodologies for estimating waste site capacity

Method	Description	Positives	Limitations
Waste Operator Survey	Waste Operators in Central and Eastern Berkshire were contacted directly from the 21 st June to 21 st August 2019 to ascertain site capacity	Direct engagement with waste operators likely to result in the most up to date information	Questions may be subject to interpretation and not all operators may respond. Only 25% responded in this case (6 out of 24)
Planning Permissions	Planning conditions and supporting information may provide capacity information	All relevant waste management facilities should have planning permission	May not always contain information on the waste capacity of a site and conditions and operations may change over time
Environmental Permits	Most waste facilities in England have EA waste permits which limit the amount of waste that can be processed	A full data set from all waste facilities which also take operational restrictions into account	Permits based on a banding system and therefore might indicate a quantity that the site could not realistically reach

Source: Adapted and based on the proposed Surrey County Council methodology, 2016⁵¹

3.32 A combination of approaches have been undertaken to ascertain the estimated current treatment capacity for Central and Eastern Berkshire. Wherever possible, data from waste operator surveys and planning permissions were used.

Waste Operator Survey

3.33 Existing waste operators active within the Plan area were provided with surveys in the form of questionnaires, these were intended to be completed and returned to provide up to date and accurate information relating to the capacity of the waste sites. This unfortunately attained a low response rate of only 25%. However, the information which was provided by waste operators was still factored into the overall capacity estimate.

⁵¹ Surrey County Council Capacity Estimate Scoping Statement, 2016 - www.surreycc.gov.uk/data/assets/pdf_file/0008/97442/2016-08-16-Background-Paper-4-Capacity.pdf

Planning Permissions and application documents

- 3.34 Planning permissions were also reviewed for all waste sites within the Plan area. This is since capacity restrictions relating to annual throughput may be included as a planning condition to manage site operations with consideration towards surrounding amenity interests.
- 3.35 If no such condition was included by the planning authority when granting permission, the supporting statements provided by the applicant (usually the operator or agent on behalf) as part of the planning application were reviewed. The supporting statements are likely to include the proposed level of contribution in terms of waste management would need to be demonstrated to justify the proposal.
- 3.36 All findings from reviewing planning history associated with the sites were taken into account to inform the overall waste management capacity provision within the Plan area.

Environmental Permits

- 3.37 For completeness, and to fill any information gaps relating to capacity, Environmental Permits for all permitted sites within the Plan area were requested and later received from the Environment Agency. These permits include restrictions set by the Environment Agency as the regulatory authority on how much waste the respective waste facilities can receive. Restrictions on throughput and capacity are commonly subject to variations, therefore, along with reviewing permits, all associated variation notices accompanying permits were also reviewed. The findings of which were again used to inform the overall level of waste management capacity.

Applying estimated capacity to existing waste sites

- 3.38 Most sites accept a range of waste materials categorised by nature (non-hazardous, inert or hazardous). The information regarding restrictions on throughput do not generally provide a split between these material types. As such, the capacity level of an existing site was factored against the sites level of throughput of the different waste types received in 2018. This provided a more realistic position of the amount of waste by type the waste site could manage and is a preferred method to splitting the known capacity level equally across each of the three waste types.
- 3.39 Table 5 below provides a representation of available capacity across the Plan area. Landfill void capacity is excluded, while capacity provided by developments which require inert input as part of restoration was distributed

across the plan period for calculation purposes. The estimated year on year situation is illustrated later on in Figure 8.

3.40 A site list detailing the capacity calculation is provided in Annex 5.

Table 5 – Estimated and rounded waste capacity in Central and Eastern Berkshire (tonnes per annum)

Treatment capacity	Non-hazardous	Inert	Hazardous	Total
Bracknell Forest	12,050	11,765	0	212,050
Reading	3,100	63,465	0	254,800
Windsor and Maidenhead	148,400	423,090	259	571,749
Wokingham	41,544	99,426	24,283	165,253
Lakeside ERF	71,375	-	-	71,375
Total	276,469	597,745	24,542	898,756
Transfer capacity				
Bracknell Forest	100,000	15,000	10,000	84,300
Reading	175,581	10,750	5,644	191,975
Windsor and Maidenhead	89,646	129,671	1,686	221,003
Wokingham	4,999	0	0	4,999
Total	370,226	155,421	17,330	542,977
Total management capacity				
Bracknell Forest	112,050	26,765	10,000	148,815
Reading	178,681	74,215	5,644	258,540
Windsor and Maidenhead	238,046	552,761	1,945	792,752
Wokingham	46,543	99,426	24,283	170,252
Lakeside ERF	71,375	-	-	71,375
Total	646,695	753,166	41,872	1,441,733

4. Non-Hazardous waste

How much non-hazardous waste is generated in Central and Eastern Berkshire?

- 4.1 Table 6 looks at the non-hazardous waste arisings figure, based on the methodology discussed below.

Table 6 - Non-hazardous waste arisings in Central and Eastern Berkshire (tonnes and percentage for each authority)

Authority	Total	Percent	Energy from Waste [†] (included)	Percent
Bracknell Forest UA	84,744	12%	38,494	35%
Reading UA	179,605	25%	42,799	38%
Windsor & Maidenhead UA	196,958	27%	18,215	16%
Wokingham UA	74,023	10%	2,357	2%
Berkshire share*	59,058	8%	9,520	9%
Non-codeable South East share**	132,763	18%	0	0%
Total	727,151	100%	111,385	100%

Source: EA WDI, IR and WDF 2018

*Where the source of waste was 'Berkshire', an apportionment based on the ratio of waste collected across all Berkshire authorities was undertaken and applied to waste originating as 'Berkshire' only to estimate the Central and Eastern Berkshire authorities' share

**Where the source of waste was 'WPA not codeable – South East', an apportionment based on the ratio of waste collected across all South East authorities was undertaken and applied to waste originating as 'WPA not codeable – South East' only to estimate the Central and Eastern Berkshire authorities' share.

† Energy from Waste inputs are based on EA Incinerator Returns for 2018

Sources of non-hazardous waste data

- 4.2 Non-hazardous waste data is likely to be the most reliable element of the EA Waste Data Interrogator, as most waste operators will be covered and they are required to make yearly waste transfer note submissions. Other sources of non-hazardous waste data arisings include data on Local Authority Collected Municipal Waste (LACMW) from the local authority managed Waste Data Flow system which includes waste incineration data.
- 4.3 While WDF is considered to provide robust data due to the requirements placed on local authorities, other estimates of Commercial & Industrial (C&I) waste arisings are known to be a lot less reliable and can be considered less reliable than the EA WDI data. The reason is the last comprehensive survey of C&I waste arisings was conducted in 2009 by Jacobs on behalf of DEFRA, so any

models using this data are likely to be looking at a historic snapshot of waste production, as well as contain within them the caveats associated with this survey.

- 4.4 Some further estimates have been produced on C&I data for 2012 and 2014⁵², but with less detail and availability of data at a regional or sub-regional level. No new survey of this scale is currently planned, and a survey of Central and Eastern Berkshire is outside the scope for the preparation of the Plan.

Commercial and Industrial waste arisings estimation methodologies

- 4.5 Due to a lack of central data recording the quantity and composition of the C&I waste stream, calculating estimates of C&I waste arisings within individual WPAs is challenging.
- 4.6 The EA records tonnages of waste managed under Environmental Permits within the annual WDI. The EA also publishes data that is managed by Energy from Waste (EfW) facilities that is not captured fully within the WDI.
- 4.7 The 2009 Commercial and Industrial Waste Survey completed by DEFRA⁵³ is another source of C&I waste data. However, due to the age of the survey, the data should be used with caution.
- 4.8 C&I waste can also be processed under an EA permit exemption, meaning an environmental permit is not required. There is no requirement for waste processed under such an exemption to be recorded.
- 4.9 Given the potential inaccuracies and uncertainties involved in the estimation of C&I waste arisings, several methodologies have been considered in order to calculate estimated C&I arisings.
- 4.10 The methodologies considered were:
- Population proportion
 - LACW proportion
 - Modified DEFRA Reconcile
 - WDI based

- 4.11 These methodologies were explored through SEWPAG and, though a regional C&I methodology has not yet been agreed, useful feedback was received and

⁵² UK statistics on waste, 2014 - www.gov.uk/government/statistics/uk-waste-data

⁵³ DEFRA, 2011 – *Commercial and Industrial Waste Survey 2009 Final Report*.
<https://webarchive.nationalarchives.gov.uk/20130125163914/http://www.defra.gov.uk/statistics/files/ci-project-report.pdf>

the advantages and limitations of each methodology were confirmed and the WDI based methodology was selected as preferred.

Population proportion

- 4.12 This methodology utilises population data to estimate the arisings of C&I waste from within the Central and Eastern Berkshire area.
- 4.13 The most up-to-date national and Plan area population figures are taken from the Office of National Statistics (ONS) data⁵⁴. A Plan area population proportion is calculated utilising the population of England, this is due to national C&I waste arisings data being reported for England rather than the UK.
- 4.14 This population proportion is then applied to the DEFRA reported⁵⁵ C&I waste generated in England. The results for 2014 – 2018 are given in Table 7.

Table 7 - Population proportion C&I waste arisings estimate

Population Area	2014	2015	2016	2017	2018
Bracknell Forest UA	118,000	119,000	119,700	120,600	121,676
Reading UA	161,000	163,000	162,700	164,100	163,203
Windsor and Maidenhead UA	147,000	148,000	149,700	150,100	150,906
Wokingham UA	159,000	161,000	163,100	164,500	167,979
CEBA Total	585,000	591,000	595,200	599,300	603,764
England Total	54,316,618	54,786,327	55,268,067	55,619,430	55,977,178
CEBA Population Proportion of England	1.08%	1.08%	1.08%	1.08%	1.08%
Arisings estimate	2014	2015	2016	2017	2018
C&I waste arising in England (tonnes)	31,700,000	31,900,000	33,100,000	36,100,000	37,200,000
C&I waste arising in CEBA (tonnes)	341,000	344,000	356,000	389,000	401,000

Source: ONS 2018 and DEFRA 2020.

N.B. Final tonnage rounded to nearest thousand tonnes.

- 4.15 This methodology is simple and quick to undertake, can be explored as far back as the national data extends, relies on national data which should have a robust methodology and if adopted regionally or nationally would produce comparable and compatible figures. However, it does not offer a break down of the data or granularity and does not account for any differing distribution of businesses and industry compared to population.

⁵⁴ ONS Population estimates, 2018

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>

⁵⁵ DEFRA, 2020 – UK Statistics on Waste.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/874265/UK_Statistics_on_Waste_statistical_notice_March_2020_accessible_FINAL_rev_v0.5.pdf

LACW proportion

- 4.16 This methodology follows a similar principle to the Population Proportion method, whereby the Plan area Local Authority Collected Waste (LACW) arisings are compared to the national arisings.
- 4.17 LACW arisings for the Plan area are obtained through the Waste Data Flow (WDF) system. A Plan area proportion is then calculated using the governments statistical dataset ENV18⁵⁶. The LACW arisings proportion is then applied to the national figure for C&I waste arisings, as published by DEFRA. The arisings for 2017 and 2018 are summarised in Table 8.

Table 8 - LACW proportion C&I waste arisings estimate

LACW (tonnes)	2017	2018
Bracknell Forest	50,512	48,678
Reading	69,615	66,911
Windsor and Maidenhead	69,128	66,160
Wokingham	74,060	70,814
CEBA Total	263,316	252,563
England Total	22,437,000	22,033,000
CEBA Proportion of England	1.17%	1.15%
Arisings estimate	2017	2018
C&I waste arising in England (tonnes)	36,100,000	37,200,000
C&I waste arising in CEBA (tonnes)	424,000	426,000

Source: WDF 2018, ENV18 and DEFRA 2020.

N.B. Final tonnage rounded to nearest thousand tonnes.

This methodology relies on proportionality between LACW and C&I waste, which has been established under certain circumstances. It is subject to very similar advantages and limitations as the Population proportion method.

Modified DEFRA Reconcile Methodology

- 4.15 DEFRA published a new methodology for estimating C&I waste arisings in England in 2014, following the discontinuation of the 2009 C&I sector surveys. This method is referred to as the 'Reconcile' methodology.

⁵⁶ DEFRA, 2019. *ENV18 – Local Authority Collected Waste: Annual Results Tables*.

<https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables>

- 4.16 The methodology published in 2014 was updated in October 2018 with a statistical note published by DEFRA⁵⁷ to outline the changes. This update removed the use of permit exemption data and so may 'underestimate the 'true' tonnages of C&I waste arisings, but are the best estimate we can produce from the available data'.
- 4.17 This methodology is particularly difficult to replicate at a WPA level, due to a number of the data sources, such as waste packaging and RDF exports, only being reported at a national level. For this method, we chose to apply the Plan area population proportion (for the year corresponding to the waste data in question) to all national level data points.
- 4.18 The methodology is based upon European Waste Catalogue (EWC) codes as well as utilising data from the EA WDI, WDF and national level publications, such as the National Packaging Waste Database (NPWD) and Wood Recycling Association (WRA). The modified methodology aims to avoid the double-counting of transfer station waste by excluding inputs to these sites. This is due to an investigation finding that 'mixed municipal waste' (EWC code 20 03 01) was largely being reclassified as secondary waste (mostly EWC code 19 12 12), before being sent for treatment.
- 4.19 The method is completed in two sections, firstly the data to be included in the sum is totalled, then three subtractions are made to avoid double-counting and to remove the Local Authority Collected Waste from Households (WfH).
- 4.20 It was found that the WfH subtraction can be interpreted in a number of ways, as the methodology notes describe assigning waste types an EWC code and then removing certain waste tonnages from the section 2 subtracted amount. Table 9 below shows different interpretation scenarios for the Central and Eastern Berkshire Authorities.

⁵⁷ DEFRA, 2018. *Commercial and Industrial Waste Arisings Methodology Revisions for England*.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873328/Commercial_and_Industrial_Waste_Arisings_Methodology_Revisions_Oct_2018_contact_details_update_v0.2.pdf

Table 9 – Modified DEFRA Reconcile Methodology C&I waste arisings estimate for 2018

Methodology Section	All WfH deducted	All non-household LACW removed from sum	National C&I proportion removed from WfH	WfH not deducted
Section 1 additions (tonnes)	437,000	437,000	437,000	437,000
Section 2 subtractions (tonnes)	284,000	275,000	270,000	32,000
CEBA Total (tonnes)	153,000	162,000	167,000	405,000

Source: EA WDI, EA Incineration Data, WDF, NPWD, WRA and EA Export data 2018.
N.B. Final tonnage rounded to nearest 1,000 tonnes.

4.21 This methodology should produce locally relevant results, but the issues discussed above make it difficult to apply and the low results (not matching other methodologies or reasonable expectations) make the outcomes circumspect.

WDI based

4.22 This methodology looked at Household, Industrial and Commercial waste received in the WDI, rather than waste fates⁵⁸ as in the DEFRA reconcile methodology does. This data is known to be more robust, though less detailed in terms of what then happens to the waste in each facility.

4.23 Double counting is partially avoided by removing transfer facilities within the Plan area. Some double counting remains, but it is considered that the data at an individual authority level is not accurate enough to be used in this way. Waste going to transfer facilities outside the area can reasonably be assumed to then be coded by waste operators with the region of the transfer facility in any further movements, so still needs to be counted.

4.24 Refinement down to Commercial and Industrial (C&I) waste is achieved by removing local authority waste from the figures.

4.25 A variant of this methodology had been used for the previous waste background studies, subject to Regulation 18 engagement. Two main changes have been made.

4.26 Firstly, what may be assumed is inert waste, based on EWC, is no longer removed, as the CD&E methodology (see below, as agreed with SEWPAG) is

⁵⁸ Waste fates provide information on the ultimate waste management fate (such as treatment or recovery) of the waste, but are less reliable than waste received.

not compatible and figures cannot easily be transferred from one section to the other.

4.27 Secondly waste data from the WDI where the source of waste was 'WPA not codeable – South East' has been added in. An apportionment was made based on the ratio of waste collected across all South East authorities and applied to waste originating as 'WPA not codeable – South East' to estimate the Central and Eastern Berkshire authorities' share. This represented a significant tonnage that needed to be added.

4.28 Table 10 summarises the findings from this methodology.

Table 10 – WDI based Methodology C&I waste arisings estimate for 2018

Waste type	Tonnes
HIC waste - treatment (Treatment within and outside the Plan area, where the source of waste is one of CEBA authorities)	443,000
HIC waste - transfer (Transfer outside of the Plan area, where the source of waste is one of the CEBA authorities)	5,000
HIC waste - incinerated	102,000
CEBA share of waste coded as 'Berkshire'	59,000
CEBA share of waste coded as 'WPA not codeable – South East'	133,000
Local Authority Collected Waste	253,000
C&I waste (estimated as HIC waste and CEBA share, with LACW excluded)	489,000
Total non-hazardous waste (HIC waste and non-hazardous LACW)	727,000

Source: EA WDI, EA Incineration Data, WDF 2018.

N.B. Final tonnage rounded to nearest 1,000 tonnes.

4.29 This methodology is more simple than the Reconcile methodology and can realistically be repeated on a yearly basis, including using data from previous years should changes be required. It uses relatively robust sources of data and concentrates on a few sources rather than requiring extensive inputs. It has also already been extensively consulted upon through previous engagement and consultations in 2017 and 2018 (albeit without the two modifications listed above).

Method comparison and selection

4.30 A comparison of the estimates of C&I waste arisings within the Central and Eastern Berkshire Plan area using the three methodologies is given in Table 11.

Table 11 – Comparison of estimated C&I waste arisings

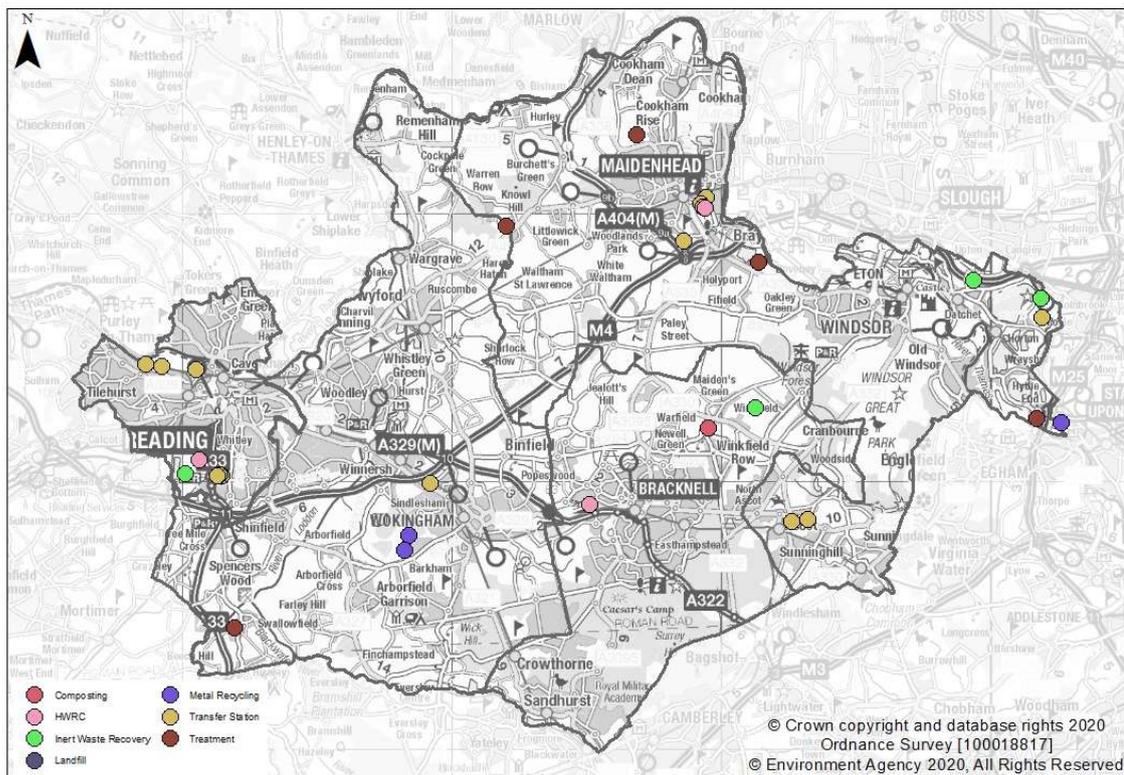
Methodology		2016	2017	2018
Population Proportion		356,000	389,000	401,000
LACW Proportion		-	424,000	426,000
Modified DEFRA Reconcile	WfH deducted	-	-	153,000
	Non-WfH deducted	-	-	162,000
	National Proportion	-	-	167,000
	WfH not deducted	-	-	405,000
WDI based		-	-	489,000

4.31 Based on discussions at SEWPAG, comments from neighbouring authorities and the adoption of a ‘worst case’ scenario, the WDI based methodology was selected. This methodology benefits from previous engagement, robust sources of data and can be more easily repeated. With the addition of the South East waste component it represents the ‘worst case’ scenario, while not being so far off the results from other methodologies to make it unrealistic. This means it is most likely to result in ensuring net self-sufficiency, without a significant risk of capacity over-provision.

How is non-hazardous waste managed in Central and Eastern Berkshire?

4.32 The facilities managing non-hazardous waste in Central and Eastern Berkshire are shown on Figure 6 - and listed in Annex 2: Location of existing waste management facilities. These include civic amenity sites, waste transfer stations (some of which serve a recycling function as well), a material recycling facility, various recycling and treatment facilities, one composting site, one landfill and one energy from waste facility.

Figure 6 - Location of waste management facilities in Central and Eastern Berkshire



Energy from Waste

4.33 Currently, a significant quantity of waste from the Central & Eastern Berkshire Authorities goes to the Lakeside Energy from Waste (EfW) facility in Colnbrook, Slough. This facility has a capacity of 450,000 tonnes per annum⁵⁹ and received 73,294 tonnes of waste from Central and Eastern Berkshire in 2018, although it should be noted that during this period, no LACW originating from Wokingham or Windsor and Maidenhead was noted as sent to the facility. This represents more than 10% of the estimated non-hazardous waste arisings from Central and Eastern Berkshire. Additionally, the Colnbrook facility also hosts other forms of waste management such as a high-temperature incinerator and a Materials Recovery Facility.

4.34 The Government has recently indicated that it prefers the proposed additional runway at Heathrow airport as an airport expansion option⁶⁰ that would likely require land currently in use for the Colnbrook Lakeside EfW and rail depot.

⁵⁹ Lakeside Energy from Waste facility website - www.lakesideefw.co.uk/

⁶⁰ Government announcement regarding Heathrow expansion, 2016 - www.gov.uk/government/news/government-decides-on-new-runway-at-heathrow

- 4.35 Some of the proposed plans for the additional runway offer a nearby alternative location for the EfW, however relocating such a facility is a complex project that is still subject to negotiation, as well as planning consents and other permits. While the current Waste Local Plan⁶¹ for the Berkshire area does provide possible alternative for EfW facilities, these have not been implemented. There is only limited possibility that a replacement facility would be delivered in the timescale predicted for the Heathrow expansion, due to the timescales usually associated with obtaining planning permission and building a new EfW of this scale.
- 4.36 The potential loss of this facility would have a significant impact on waste management in the region as waste would need to travel further and there may be a need to consider increasing landfill deposits if other facilities are not available.

⁶¹ Waste Local Plan for Berkshire, 1998 - <https://www.bracknell-forest.gov.uk/planning-and-building-control/planning/planning-policy/development-plan/minerals-and-waste>

5. Inert waste

How much inert waste is generated in Central and Eastern Berkshire?

- 5.1 Inert waste is generated primarily from construction, demolition and excavation (CD&E) wastes that are produced mainly from civil engineering activities such as the construction and demolition of buildings and roads. Therefore, considerable quantities will be produced from the regeneration of urban areas. Due to the nature of the waste, much of the arisings can be re-used on construction sites in footings, as an aggregate or fill material, or landscaping, and thus does not need to leave the site (although it is unknown what proportion is 'lost').
- 5.2 CD&E waste however also moves from construction/demolition sites to be disposed. Alternatively, the hard material may be suitable for use in aggregate recycling processes and the soft material such as soils/clays can be recovered and used in projects such as landscaping elsewhere.

Table 12 - Inert waste arisings in Central and Eastern Berkshire (tonnes and percentage for each authority, includes CD&E waste and inert LACW)

Authority	Waste	Percentage
Bracknell Forest UA	118,422	10%
Reading UA	243,927	21%
Windsor & Maidenhead UA	140,901	12%
Wokingham UA	138,574	12%
Berkshire share*	156,006	13%
Non-codeable South East share**	371,201	32%
Total	1,169,031	100%

Source: WDI, WDF 2018

*Where the source of waste was 'Berkshire', an apportionment based on the ratio of waste collected across all Berkshire authorities was undertaken and applied to waste originating as 'Berkshire' only to estimate the Central and Eastern Berkshire authorities' share.

**Where the source of waste was 'WPA not codeable – South East', an apportionment based on the ratio of waste collected across all South East authorities was undertaken and applied to waste originating as 'WPA not codeable – South East' only to estimate the Central and Eastern Berkshire authorities' share.

Sources of inert waste data

- 5.3 Obtaining up-to-date and accurate tonnages for CD&E waste arisings is challenging due to the nature of how this waste is generated and the wide range of possible end uses. The Environment Agency record the waste tonnages when the site has an Environmental Permit and the CD&E waste is

taken off site. However it is estimated that in the past significant volumes of CD&E waste has moved under an Exemption (to an Environmental Permit) and thus the tonnages are not recorded.

- 5.4 A potential source of some of this data is the annual aggregate monitoring surveys, which include data from aggregate recycling facilities. Another option is estimating CD&E waste, which is largely inert, based on the level of construction activity in an area. A disadvantage of trying to estimate the total volume of CD&E waste, besides the poor availability of data, is that not all of it will require facilities permitted through the waste planning regime.
- 5.5 Owing to these uncertainties, forecasting facility requirements is unreliable. Previous versions of the Waste Background Study had proposed an input based methodology for estimating CD&E waste. However, a common output based methodology has been agreed through SEWPAG in 2020 and if applied throughout the region this will enable consistency between different waste Plans and should account for the majority of this waste stream. Therefore the agreed methodology has been adopted in preference and is further explained below.

Construction, Demolition and Excavation Waste Arisings Methodology

- 5.6 The SEWPAG agreed CD&E waste arisings methodology is a modified version of the DEFRA methodology for calculating CD&E waste for Waste Statistics and Waste Framework Directive reporting purposes⁶².
- 5.7 The DEFRA method has been modified to include an estimation of waste dealt with under Environment Agency exemptions within the Plan area as well as waste that has been converted to recycled aggregates based upon the yearly Local Aggregate Assessment (LAA). These two changes allow the methodology to be applied to more local circumstances.
- 5.8 The CD&E methodology applies the following equation to calculate arisings in the Plan area.

CD&E arisings = Inputs to permitted facilities (corrected to avoid double counting) + sales of recycled aggregates + EA exemptions

⁶² DEFRA, 2012 – Methodology for estimating annual waste generation from the Construction, Demolition & Excavation (CD&E) Sectors in England.

Inputs to permitted facilities

5.9 The methodology assumes that CD&E waste arisings fall within the following European Waste Catalogue (EWC) codes:

- Chapter 17 (Construction & Demolition Waste);
- Chapter 19 12 09 (minerals such as sand, stones); and,
- Chapter 20 02 02 (soils and stones).

5.10 The EA Waste Data Interrogator (WDI) is used to extract the arisings of the above chapters and splits them into Plan area arisings that are managed within the Plan area, and Plan area arisings that are managed outside of the Plan area. These are further split into site category for Landfill, 'Recovery to Land', Transfer, Treatment and Metal Recycling Sites. No hazardous waste is included in the calculation.

5.11 To avoid double counting of arisings the use of the 'final fate' of the waste is employed. For example, waste managed at Landfills and through 'Recovery to Land' involve the permanent deposition of the waste and is regarded as its final fate, the values for these are taken as final. The values for waste managed outside of the Plan area are also taken as final.

5.12 Once all final fate arisings and waste leaving the Plan area is calculated the waste being received at 'intermediate facilities' is accounted for. This is to eliminate any double counting of wastes that will subsequently get managed at another site as waste from the Plan area. The methodology removes the tonnages from the 'intermediate facilities' (transfer, treatment and metal recycling) and instead aims to calculate the amount of CD&E waste that is not accounted for.

5.13 EWC Chapter 19 waste is material that has been processed as a waste and has been reclassified as a waste from a waste management process. The methodology identifies each intermediate site that has accepted waste from the Plan area and that also reported outputting Chapter 19 waste. The proportion of Plan area waste inputted into each site is calculated and then applied to the Chapter 19 outputs to determine how much should be attributed to the Plan area. The outputs are then added to the final CD&E arisings.

5.14 Occasionally, waste movements are not recorded correctly, this has led to large tonnages of waste being non-codeable within the WDI. Although the waste can be attributed to the South East region, no waste planning authority can be given to it. A proportion of the South East non-codeable waste is calculated for the Plan area based upon the totals calculated above and added into the total waste arisings.

Recycled Aggregates

5.15 The annual Local Aggregate Assessment (LAA) for the Plan area reports the total tonnage of aggregate produced and sold within Central and Eastern Berkshire. As part of this, a survey is conducted of aggregate producers for the quantity of CD&E waste received and recycled aggregate sold. The value for CD&E waste reported from this survey is included in the overall CD&E arisings.

Environment Agency Exemptions

5.16 The national Planning Practice Guidance (nPPG) advises that ‘...when forecasting construction and demolition waste arisings, the following may be relevant:

- The fact that a sizeable proportion of construction and demolition waste arisings are managed or re-used on-site, or exempt site, so it is critical that some provision is made for unseen capacity in this way.’

Paragraph: 033 Reference ID: 28-033-20141016

5.17 Activities registered with the EA under Paragraph U1 (use of waste in construction) can account for the management of significant quantities of CD&E waste by exempt activities. The methodology utilises the findings of a report, produced for WRAP⁶³, that estimates the quantity of waste managed under a U1 exemption activity to be, on average, 600 tonnes.

5.18 The exemptions registered with the EA, within the year of the calculation, are counted and the 600-tonne average is applied to produce a final exemption CD&E waste tonnage.

5.19 The totals of each stage of the methodology are inputted into the equation and the final CD&E arisings figure is achieved.

5.20 This methodology follows an established national methodology and produces figures that could be expected. It can also be locally applied and considers the different flows of CD&E waste and attempts to capture appropriate ones, while reducing double counting. It relies on the WDI which is relatively robust⁶⁴, though in order to explore waste flows it uses waste fate figures which are known to be less reliable than waste input figures. It is moderately complicated, but could be run on a yearly basis.

⁶³ WRAP, 2013 – Review of the Factors Causing Waste Soil To Be Sent To Landfill; 2007 to 2011.

⁶⁴ The WDI is considered to be the most accurate and reliable source for waste data in England, however please see sections earlier in this document for caveats associated with it.

How is inert waste managed in Central and Eastern Berkshire?

- 5.21 The facilities managing inert waste in Central and Eastern Berkshire are shown on Figure 6 - and listed in 'Annex 2: Location of existing waste management facilities'. These include aggregate recycling facilities, land recovery and inert landfill operations.
- 5.22 A proportion of inert waste recycling is for aggregate recycling that can then be used instead of primary aggregates, such as sand and gravel extracted from the land or the sea. Accordingly, aggregate recycling facilities are considered in the Mineral: Background Study⁶⁵. Capacity requirements for the treatment of this waste are considered in Section 11 below.
- 5.23 Unlike with non-hazardous waste, the recovery of inert waste does not involve an energy component, but usually means that the inert waste has been 'recovered' or put to a beneficial use, e.g. for landscaping, restoration etc. The EA has recently changed the criteria that are used to determine whether an operation is considered recovery or landfill⁶⁶, which may mean that fewer operations are classified as recovery.

⁶⁵ Minerals: Background Study - www.hants.gov.uk/berksconsult

⁶⁶ Waste recovery on land guidance, 2016 - www.gov.uk/government/collections/waste-recovery-on-land-guidance

6. Hazardous waste

How much hazardous waste is generated in Central and Eastern Berkshire?

Sources of hazardous waste data

6.1 Hazardous waste is produced in all three principal waste stream sources. The largest amount is produced from the commercial and industrial sector with minor amounts from municipal and construction/demolition sources. Hazardous waste comes in a number of sub-streams of its own, as different types of waste can require highly specialised facilities. Sometimes it is grouped with other types of specialist wastes that require highly specific waste management.

Table 13 - Hazardous waste arisings in Central and Eastern Berkshire (tonnes and percentage for each authority)

Authority	Waste	Percentage
Bracknell Forest	3,200	15%
Reading	5,900	28%
Windsor & Maidenhead	8,400	40%
Wokingham	3,500	16%
Berkshire share*	0	0%
Total	21,000	100%

Source: HWDI, 2018

*The HWDI is considered more precise than the WDI and does not contain a 'Berkshire' source category, numbers are rounded.

6.2 The hazardous waste arisings from the Central & Eastern Berkshire Authorities are shown in Table 13 - these arisings include the following key hazardous waste types:

- C&D Waste and Asbestos from all authorities
- Healthcare from Windsor and Maidenhead
- Oil and Oil/Water Mixtures from all authorities
- Municipal and Similar Commercial Wastes from all authorities
- Solvents from Bracknell Forest
- Organic Chemical Processes from Bracknell Forest.

Hazardous waste methodology

6.3 The hazardous waste methodology is similar to the non-hazardous waste WDI methodology, as waste received is considered. Transfer within the Plan area is excluded to avoid double counting.

6.4 All waste with a source listed as one of the CEB Authorities is included (except for transfer within the Plan area). The HWDI does not have data where the source is listed as 'Berkshire' or 'South East' so it has not been necessary to add these apportionments.

6.5 This methodology relies on a robust data source, the HWDI, though the absence of site level data makes double checking of information difficult. It uses input data which should be more reliable than output data, though more prone to double counting (see above regarding the exclusion of transfer within the Plan area to attempt to counteract this issue).

How is hazardous waste managed in Central and Eastern Berkshire?

6.6 The specialist nature of hazardous waste and the facilities required to manage it mean that these facilities are often of a regional or national nature, as the quantities of waste from each local authority are too small to justify a greater number of facilities. This waste travels further than other types of waste and each authority is not expected to provide a full range of hazardous waste management facilities.

6.7 Key hazardous waste management capacity facilities within the Central & Eastern Berkshire Authorities include:

- Healthcare wastes in Windsor and Maidenhead and Reading; and
- Packaging, Cloths, Filter Materials in Windsor and Maidenhead.

6.8 A review of the 2016 UK radioactive wastes data from the UK Radioactive Waste Inventory⁶⁷ indicates that there are no sites generating radioactive wastes within Central and Eastern Berkshire. There are however two licenced nuclear sites in West Berkshire: Atomic Weapons Establishment (AWE) Aldermaston and AWE Burghfield⁶⁸.

6.9 The Nuclear Legacy Advisory Forum (NuLeAF) is undertaking a review of UK radioactive waste policy⁶⁹ and infrastructure to consolidate understanding and

⁶⁷ UK Radioactive Waste Inventory, 2016 - <https://ukinventory.nda.gov.uk/the-2016-inventory/2016-uk-data/>

⁶⁸ AWE, *Our Locations* - <http://www.awe.co.uk/about-us/our-locations/>

⁶⁹ NuLeAF Steering Group, 2017 -

http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwj_n pP5wolZAhUsK8AKHWeQB5EQFghEMAM&url=http%3A%2F%2Fwww.nuleaf.org.uk%2Fwp-content%2Fuploads%2F2017%2F07%2F19-July-2017-Item-4-BEIS-reviewfinal.doc&usg=AOvVaw0I43IQv9-7vzuERMJxE_cd

to consider what opportunities exist for infrastructure and policy improvement.

7. Specialist waste

7.1 Specialist waste facilities deal with waste that requires specialist treatment technologies or handling facilities. These facilities often treat waste from a wide geographical area, due to their specialist nature. The WDI was used to identify the following types of specialist waste relevant to Central and Eastern Berkshire:

- Clinical;
- Equine (manure);
- Waste Electrical and Electronic Equipment (WEEE);
- Lighting;
- Fridges;
- Asbestos;
- End of Life Vehicles (ELV);
- Pesticides and Agrochemicals;
- Batteries;
- Oils;
- Paints and varnishes;
- Chemicals; and
- Metals.

7.2 Table 14 below identifies the tonnage of each specialist waste generated in 2016 in Central and Eastern Berkshire and the number of facilities and capacity currently available to process it.

Table 14 - Specialist waste management in Central and Eastern Berkshire, 2016

Category	Approximate Tonnes 2016	Notes on treatment facilities, capacity and transfer
Clinical	1,700	Star Works treatment facility treated around 1,000 tonnes of these arisings in 2016. Around a further 500 tonnes was sent to the Vetspeed site in Cambridgeshire for onward transfer.
Equine/animal wastes	2,500	A small amount of this arising was treated within the Plan area, and just under 2,500 tonnes treated outside of the Plan area, with approximately 1,500 tonnes treated at Harrington & Jessup Ltd site (Surrey Heath). Further detail on Equine waste is provided from Section 7.3 below.
WEEE	250	Approximately 70 tonnes of this arising is treated within the Plan area at the R3 Environmental – Swallowfield site in Wokingham. A further 170 tonnes is treated at the Computer Salvage Specialists sites in West Berkshire and Merseyside as well as the Sims Group site in Greater Manchester.

Lighting	20	Half of these arisings were treated at the Stewartby Waste Management Facility in Bedford, Bedfordshire. None of the arising was treated within the Plan area, although a small amount was received by the Smallmead Waste Management Centre in Reading for onward transfer.
Fridges	650	The majority of waste fridges arisings or received by transfer stations or treatment facilities outside of the plan area with the Computer Salvage Specialists site in West Berkshire receiving just over 500 tonnes of this amount. The R3 Environmental – Swallowfield site in Wokingham treated around 20 tonnes of waste fridges arising from the plan area during 2016.
Asbestos	2,000	The majority waste asbestos arisings are landfilled at a number of landfill sites outside of the plan area. The Parkgate Farm Hazardous waste landfill site in Wiltshire alone received around 1,700 tonnes of this arising.
Vehicles	13,500	Just over 13,000 tonnes of End-of-Life Vehicles (ELV) and related waste components arose from the plan area throughout 2016. Approximately 8,000 tonnes of this arising was treated at the 'Scrapyard Site' (now A1 Wokingham Car Spares) in Wokingham, the remaining amount largely treated by Sims Group U K Ltd in Bristol.
Pesticides	5	This is not a significant arising, although the majority of this arising was treated at the Star Works Treatment Facility in Wokingham.
Batteries	400	No treatment capacity for waste batteries exists within the plan area, although there is transfer capacity available with just over 200 tonnes of waste batteries being received by waste transfer stations within the plan area during 2016. Computer Salvage Specialists in West Berkshire treats a limited amount of battery waste arisings from the plan area, although the majority is treated at a number of sites within the east and west midlands.
Oils	100	Comprising absorbents, filter materials, wiping cloths and protective clothing, this waste arising was treated at a number of facilities across England. The plan area did not treat and transfer any amount of this arising throughout 2016. The majority of this material was treated at the Cannock Treatment Facility in Staffordshire and the Stewartby Waste Management Facility in Bedfordshire.
Paints	600	Of the 600 tonnes of paint waste arising throughout 2016 - none were treated within the plan area. The majority of this arising (400 tonnes) was treated at the Blackburn Meadows Landfill Site.
Chemicals	50	No treatment or transfer capacity exists within the plan area. Approximately just over half of the arisings of lab chemicals are sent to the Stewartby Waste Management Facility operated by Veolia ES in Bedford.

Metals	30,000	<p>Of the 30,000 tonnes of metal waste arisings, 19,000 tonnes is received by sites outside the plan area. Of note, approximately 10,000 tonnes is received both by the Iver Recycling Facility in Bucks and Richards and Jerrom site in Sandwell.</p> <p>Of the remaining 11,000 tonnes of metal waste treated within the plan area, The Scrapyard site in Wokingham treats almost all of this arising at 10,800 tonnes.</p>
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7.3 It is recognised that in Central and Eastern Berkshire there is a significant horse population due to the presence of both the racehorse industry (Ascot and Windsor) and the recreational equine industry. Farmers who keep, produce, carry, treat, recover or dispose of horse manure as a waste product, must adhere to various guidelines.

7.4 Where horse manure is being used as a fertiliser on any land (such as grazing, agricultural farms, allotments or private gardens etc.) for benefit, it is not treated as controlled waste and a permit or exemption under the Environmental Permitting Regulations is not required, although proper management is still required.

7.5 Where manure produced at private, agricultural or commercial stables is disposed of by burning, tipping or burial it is considered to be waste and as such, the Environmental Protection Act 1990 and Environmental Permitting Regulation 2007 would apply.

7.6 The capacity gap for dealing with the significant movements of identified specialist vehicle and metal wastes is considered in Section 11.

8. Landfill

- 8.1 Landfill involves the controlled infilling of voids in the ground with waste, with such voids usually created through mineral extraction. Landfill requires planning consent from the Waste Planning Authority, along with an Environmental Permit from the Environment Agency.
- 8.2 There are three types of landfill:
- *Inert waste* typically is non-biodegradable, will not react chemically and unlikely to give rise to environmental pollution or harm to humans;
 - *Non-hazardous waste* is the residual waste left from household and commercial/industrial sources once all the materials that can be re-used, recycled or recovered have been removed; and
 - *Hazardous waste* requires specially licenced landfill operations to take waste such as clinical, asbestos, organic and inorganic chemicals, oils, paints, adhesives and contaminated soils.
- 8.3 The need for landfill stems primarily from the need to deal with wastes which could not be processed through other sections of the waste hierarchy.
- 8.4 Based on WDI data from 2016, around 85,000 tpa of non-hazardous waste arising from Central and Eastern Berkshire was sent to landfill, dropping to 82,000tpa in 2017.
- 8.5 There is currently one operational landfill site within Central and Eastern Berkshire which can accept non-hazardous waste; this is the Star Works landfill site at Knowl Hill near Maidenhead. This operation has planning permission which allows 70,000 tonnes of waste per annum to be imported, and is required to cease operations in January 2019 for non-inert waste and January 2020 for inert waste.
- 8.6 In October 2015 it was estimated that the remaining void space could accommodate a further 107,676 tonnes of waste to the end of 2018, with a further 135,000 tonnes of engineering/restoration inputs required to enable restoration by 2021.
- 8.7 Looking to neighbouring waste planning authorities, Table 15 provides the estimated landfill capacity available for non-hazardous waste.

Table 15 - Non-hazardous landfill in neighbouring authorities to Central and Eastern Berkshire

Authority	Date of Estimate	Permitted capacity (million tonnes)	Estimated End Date
Buckinghamshire ⁷⁰	2016	7.95	Beyond 2036
Hampshire ⁷¹ (including Portsmouth, Southampton, New Forest National Park and part of the South Downs National Park)	2010	2.5	2018/19
Oxfordshire ⁷²	2016	5.085	Up to 2035
Surrey	2017	8.4	Up to 2030

- 8.8 Historically, landfill capacity in the South East has been tied to the number of mineral workings in the region and the need to restore these mineral workings. Traditional restoration schemes have required large amounts of material to fill the void which has resulted once the mineral is extracted.
- 8.9 More recently, there has been a decline in landfill capacity due to a number of sites being restored and closed. There are also fewer mineral sites coming forward and changes in restoration schemes to include no-fill or low-fill restoration. Landfill, as a method of waste management, is now seen as an option of last resort. Landfill tax has significantly increased the costs of landfill and resulted in waste being increasingly managed through recycling and recovery.
- 8.10 The result is that there is a 'finite' capacity for disposal (and demand) of both hazardous and non-hazardous waste to landfill in the South East. This issue has led the South East Waste Planning Authorities to prepare a Statement of Common Ground on the subject⁷³.
- 8.11 There are opportunities for the re-working of former landfill sites to either remove existing landfilled materials in order to reuse the materials or void or to exploit benefits from the in-situ material itself. Such materials may be valuable and therefore the re-working of such sites would enable the value to be recovered in addition to providing additional landfill capacity if needed.
- 8.12 One former landfill site within Central and Eastern Berkshire has already been successfully reworked, albeit to enable the delivery of residential development rather than the reuse for waste. The former Badnell's Pit in Maidenhead was

⁷⁰ Buckinghamshire Minerals and Waste Local Plan 2016 - 2036, Preferred Options Consultation, August 2017

⁷¹ Hampshire Minerals and Waste Plan, Adopted October 2013

⁷² Annual Monitoring Report 2016, Appendix 5 - <https://www.oxfordshire.gov.uk/cms/content/new-minerals-and-waste-local-plan>

⁷³ SEWPAG Draft Statement of Common Ground: Non-hazardous landfill in the South East v0.2, July 2017

given permission by the Planning Inspectorate⁷⁴ in March 2006 for the removal of landfill waste and replacement with clean fill.

8.13 Having been subject to unregulated landfill activities between the 1940s and 1960s, the site was heavily contaminated and there were concerns that removal of the material would cause a serious risk to health. However, the Planning Inspectorate concluded that, subject to conditions, the benefits of the proposed development were sufficient to outweigh the harm that might be caused. The site is now known as Boulders Meadow and is a residential development with over 400 homes⁷⁵.

8.14 The capacity gap for dealing with waste currently sent to landfill is considered in Section 11.

⁷⁴ Badnell's Pit and Jenkinson's Yard Appeal Decision reference APP/T0355/A/05/1173468

⁷⁵ Former Badnells Pit And Jenkinsons Yard And Spoores Merry Appeal Decision reference APP/T0355/A/08/2073713

9. London Waste

- 9.1 In line with the National Planning Policy for Waste⁷⁶, the need for additional waste management capacity of more than local significance should be considered. As such, consideration has been given to the impacts of London waste within Central and Eastern Berkshire.
- 9.2 The London Plan sets out intent to achieve greater net self-sufficiency⁷⁷. As such, it is expected that any waste that London exports or accepts as an import from the Plan area will gradually decline over time and this should be considered when planning for treatment types and capacity within the Plan area.
- 9.3 2018 WDI and HWDI data was used to assess current imports and exports to and from London and the plan area (see Table 16). Waste movements in 2018 show a net movement of non-hazardous waste, i.e. from the Plan area towards London. However, the majority of this non-hazardous waste comprises mainly waste water arising in the Plan area and processed at the Mogden Sewage Treatment Works, operated by Thames Water in Hillingdon. Since Thames Water have stated that they intend on maintaining current levels of treatment capacity (see Section 11), and ensuring that capacity accommodates increased arisings up until 2036, this net movement is not considered to be a significant issue.

Table 16 - Waste movements (tonnes) between London and Central and Eastern Berkshire

Movement	HIC	Inert	Hazardous
Berkshire to London	3,886	4,603	2,087
London to Berkshire	2,081	536,640	4,940
Net movement (Berkshire position)	1,805	-532,037	-2,853

Source: WDI and HWDI, 2018

- 9.4 The 2018 WDI data shows there to be significant negative net movement of inert waste, i.e. from London to the plan area. This is due to inert waste going to Kingsmead Quarry (526,276 tonnes) which is undergoing restoration.
- 9.5 The 2018 WDI data shows there to be a net flow of hazardous waste, i.e. from London into the Plan area. This likely largely consists of clinical waste from

⁷⁶National Planning Policy for Waste, 2014 -

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/364759/141015_National_Planning_Policy_for_Waste.pdf

⁷⁷ The London Plan, 2016 - policies 5.16-5.19 - <https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan/london-plan-2016-pdf>

authorities across London which is treated at the Star Works treatment facility in Wokingham.

10. Assessment of need for new facilities in Central and Eastern Berkshire

Estimated future waste arisings

10.1 The data on the waste currently generated in Central and Eastern Berkshire usefully provides some of the picture of how much waste management capacity is required. Waste arisings are not 'static' however, and therefore planning for an amount of waste arising in one year does not necessarily provide a robust prediction of future arisings. The JMWP will identify this need up to the year 2036, recognising that the amount of waste requiring management may change over the next twenty years. It is also important to recognise that different types of waste are likely to display different growth trends.

What wider influences may impact future waste arisings?

The Circular Economy

10.2 The European Commission has adopted a Circular Economy Package⁷⁸ which includes proposed actions and revised legislative proposals on waste to stimulate Europe's transition towards a circular economy. The Commission intend to implement the actions below which should reduce the quantities of waste that arise as better use is made of resources, as well as drive waste 'up the waste hierarchy'.

- Simplify definitions and harmonise calculation methods for recycling rates throughout the EU;
- Increase economic incentives for better product design through provisions on extended producer responsibility schemes;
- Increase the 'Preparing for re-use and recycling' target for municipal waste to 60% by weight by 2025 and 65% by weight by 2030;
- Limit the landfilling of municipal waste to 10% by 2030 and a ban on landfilling separately collected waste;
- Increase the 'Preparing for reuse and recycling' targets for all packaging waste to 65% (including 60 % of wood packaging, 75% of paper and cardboard packaging, and 55 % of plastic packaging by 2025) by 2025, and 75% by 2030; and

⁷⁸ Circular Economy Package, 2018 - http://ec.europa.eu/environment/circular-economy/index_en.htm

- Ensure the separate collection of bio-waste (including biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises) where it is technically, environmentally and economically practicable and appropriate.

Leaving the European Union

10.3 Leaving the EU may also create some uncertainties for waste arisings. The Chartered Institution of Waste Management has identified three tiers of potential impact⁷⁹:

1) General economic and political

A change to the sterling exchange rate would directly influence the costs and profits from international trade, including in refuse derived fuel (RDF) and scrap materials for recycling. A change in terms of trading with the EU and other partners could also result in higher tariffs and more border crossing bureaucracy.

2) Movement of waste

During 2016, less than 9.9 million tonnes of waste material was exported from the UK. Although not all of this was destined for the continent, the market in northern Europe for RDF treatment has continued to grow. According to the waste industry⁸⁰, this European market has helped mitigate the extensive capacity gap for recovery treatment in the UK and offered waste producers in the UK alternative cost effective treatment routes. Although the impacts of Brexit are unknown, the potential impact on the value of the pound and unknown trade agreements may impact the UK's future ability to rely on Europe's existing capacity.

Imposed tariffs on waste movements could have numerous implications for waste management projects.

3) Legal and policy impacts

Policy within England is mainly driven by EU waste targets, and most of these have a target date of 2020.

⁷⁹ Policy implications of Brexit, 2017 - <http://ciwm-journal.co.uk/3d/Post-Brexit-Compliance-Report/offline/download.pdf>

⁸⁰ Mind the gap, 2017-2030 - <http://www.sita.co.uk/wp-content/uploads/2017/09/MindTheGap20172030-1709-web.pdf>

- 10.4 The National Infrastructure Plan⁸¹ sets out the Government's plans for economic, housing and social infrastructure over the next five years. The government is committed to investing over £100 billion by 2020-2021 into infrastructure projects such as transport, energy, communications, flooding and coastal, erosion, science and research, water and waste, housing and regeneration and social infrastructure (e.g. school, prisons and hospitals). These projects will impact on waste arisings and management in the short term, through waste created or used during their development, and in the long-term, through the ongoing use and implications of the new infrastructure.
- 10.5 In September 2017, the Government commissioned Anthesis⁸² to prepare and deliver a 'National Infrastructure Assessment: Waste Infrastructure Analysis' study which was published in July 2018⁸³. This study aims to assess the costs and benefits of increasing separation of different waste streams as well as the costs and benefits of directing the separated waste streams down different treatment/disposal pathways. It recommends separating food waste to produce biogas and biofuels from anaerobic digestion and various ways of reducing plastic waste.
- 10.6 The Resources and Waste Strategy⁸⁴ does not transpose EU regulations and directives, but is in many ways aligned with the ambitions of the EU Circular Economy package. Further information on how the strategy will be implemented is expected in 2019/20.

Local Demand Factors

- 10.7 Table 16 shows past housing completions of each of the Central & Eastern Berkshire Authorities and demonstrates that from 2005-06 to 2017-18, an average of 1,966 houses were completed across Central and Eastern Berkshire. This equates to an average percentage change in growth of houses of 6%. Over the last five years however from 2013-14 to 2017-18 the average rate of housing growth was 16%.

⁸¹National Infrastructure Delivery Plan, 2016-2021 - www.gov.uk/government/uploads/system/uploads/attachment_data/file/520086/2904569_nidp_deliveryplan.pdf

⁸² MRW, 2017 - <https://www.mrw.co.uk/latest/science-report-on-waste-and-resources-imminent/10023289.article>

⁸³ National Infrastructure Assessment: Waste Infrastructure Analysis for England , 2018 - <https://www.nic.org.uk/wp-content/uploads/NIC-Anthesis-Report-and-Appendices-FINAL.pdf>

⁸⁴ Resources and Waste Strategy, 2018 - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

Table 17 - Past housing completions in Central and Eastern Berkshire (number of dwellings)

Authority / Year	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Bracknell Forest	267	131	501	467	325	410	264	390	314	376	336	437	416
Reading	656	637	837	782	693	321	312	474	361	635	751	717	700
RBWM	401	359	448	474	351	230	189	243	452	528	602	584	515
Wokingham	655	1018	488	368	226	220	273	401	488	454	638	933	1,509
Total	1,979	2,145	2,274	2,091	1,595	1,181	1,038	1,508	1,615	1,993	2,327	2,671	3,140
Increase per year	-	166	129	-183	-496	-414	-143	470	107	378	334	344	469
% change per year	-	8.34	6.01	-8.05	-23.7	-25.9	-12.1	45.3	7.10	23.4	16.8	14.8	17.6

Source: Central & Eastern Berkshire Monitoring Reports

- 10.8 In terms of future housing projections however, the most recent Strategic Housing Market Assessment⁸⁵ concluded that the Central & Eastern Berkshire Authorities have an overall objectively assessed need (OAN) of 2,902 houses per year from 2013-2036. This is outlined by Waste Planning Authority in Table 17 below.

Table 18 - Projected OAN housing growth in Central and Eastern Berkshire

Waste Planning Authority	OAN Housing Growth Per Annum (2013-2036)
Bracknell Forest	635
Reading	699
RBWM	712
Wokingham	856
TOTAL	2,902

Source: Strategic Housing Market Assessment 2016

- 10.9 The figures take into account demographic projections, migration from London, local economic needs and further adjustments to improve affordability and future household formation rate reductions.
- 10.10 Following the publication of the Housing White Paper⁸⁶, the Government consulted on a standardised local housing need calculation⁸⁷. The government has therefore revised national policy to state that future housing need should be

⁸⁵ Strategic Housing Market Assessment, 2016 - info.westberks.gov.uk/CHttpHandler.ashx?id=40949&p=0

⁸⁶ Housing White Paper: www.gov.uk/government/publications/fixing-our-broken-housing-market

⁸⁷ Planning for the right homes in the right places: consultation proposals: www.gov.uk/government/uploads/system/uploads/attachment_data/file/652888/Planning_for_Homes_Consultation_Document.pdf

calculated by using a standardised methodology, which determines the Local Housing Need (LHN) for each authority. The LHN for each authority forms the starting point for strategic plan making. However, this will only ever be at a specific point in time as LHN will change regularly as new data is published and the government consider making further changes to the methodology.

10.11 Applying a growth of 2,902 houses per annum to the number of dwellings by tenure and district for 2016⁸⁸ indicates that this level of housing growth is, on average, from 2017 to 2036, 1.07% per annum.

10.12 A number of housing led developments are also due to take place. These include four 'Strategic Development Locations' (SDL) in Wokingham Borough⁸⁹.

10.13 A number of town centre developments are also due to take place. These include the following:

- Major redevelopment of Bracknell Town Centre: Following demolition of buildings in the northern sector during 2013 construction of the Lexicon is progressing. Work on the regeneration of Charles Square also started in 2015 which involves the construction of a new street linking different parts of the town centre.
- Various schemes in Reading Town Centre capable of delivering up to 200,000 sq. metres of retail, leisure, office space and new areas of public realm.
- Areas allocated in Maidenhead Town Centre Area Action Plan comprising residential, retail (25,000 sq. m), office (79,000 sq. m), other employment (4,000 sq. m), public transport interchange, other uses including leisure, culture etc.

10.14 Commercial and industrial developments are planned at Arborfield Garrison; Green Park, Reading; Kennet Island, Reading and at Reading Southside. Developments are also planned at Alma Road, Windsor; Shinfield Science Park; Toutley Depot and Worton Grange.

10.15 A Garden Settlement at Grazeley has been submitted to the Government as a bid to accommodate 15,000 homes (10,000 in Wokingham).

⁸⁸ Dwelling stock; England, 2016 -

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/609285/LT_100.xls

⁸⁹Wokingham Major developments - www.wokingham.gov.uk/major-developments/

Developing waste growth scenarios

- 10.16 The Planning Practice Guidance (PPG) for waste gives advice on how to predict waste growth in the future, based on the source and properties of the waste⁹⁰. It states that local authorities should “set out clear assumptions on which they make their forecast, and if necessary forecast on the basis of different assumptions to provide a range of waste to be managed”.
- 10.17 The PPG sets out certain assumptions and factors that it recommends considering and these have been addressed, wherever possible and pragmatic to do so, in developing waste growth scenarios for Central and Eastern Berkshire.

Waste growth by source

Local Authority Collected Waste and Commercial and Industrial Waste

- 10.18 It has been indicated by local operators that Local Authority Collected Waste (LACW) and Commercial and Industrial Waste (C&I) are likely to be similar composition and therefore require similar types of treatment. As such, one growth rate has been determined for both of these types of waste.
- 10.19 OAN household growth (1.07% increase per year from 2017 to 2036) has been used together with the trend 1.19% growth for both LACW and C&I (due to their similarities) from 2014-2016. This gives 1.13%.
- 10.20 This is then rounded, considered appropriate due to the variable nature of waste growth and to account for waste minimisation initiatives, referred to in Planning Practice Guidance, to provide a growth rate figure for both LACW and C&I waste of 1% per annum.

Construction, Demolition and Excavation waste

- 10.21 Construction, Demolition and Excavation (CD&E) waste arisings are largely derived from the development and redevelopment of infrastructure.
- 10.22 Previous arisings from 2011-2016 have been so variable however that it has not been possible to apply a consistent growth rate. As such, it is considered appropriate to assume a 0% ‘growth’ rate. This has also been reiterated by industry.

⁹⁰ Planning practice guidance for waste, 2015- www.gov.uk/guidance/waste

10.23 The PPG also suggests that Waste Planning Authorities should start from the basis that net arisings of construction and demolition waste will remain constant over time.

Table 19 - Projected waste growth against waste source

Waste Source	Annual Growth Rate	Waste Property	2018	2022	2027	2032	2036
LACW	1%	Non-hazardous	238,089	247,756	260,394	273,677	284,789
		Inert	13,027	13,556	14,247	14,974	15,582
		Hazardous	1,446	1,505	1,581	1,662	1,730
		Sub-total	252,562	262,817	276,223	290,314	302,101
C&I	1%	Non-hazardous	489,062	508,920	534,880	562,164	584,990
		Inert	-	-	-	-	-
		Hazardous	-	-	-	-	-
		Sub-total	489,062	508,920	534,880	562,164	584,990
CD&E	0%	Non-hazardous	-	-	-	-	-
		Inert	1,156,004	1,156,004	1,156,004	1,156,004	1,156,004
		Hazardous	-	-	-	-	-
		Sub-total	1,156,004	1,156,004	1,156,004	1,156,004	1,156,004

Waste growth by properties

10.24 Each waste source, as identified in Table 19 above, produces various properties of waste (non-hazardous, inert and hazardous). As such, an additional growth rate for these properties has been determined based on the percentage increase of the total for each property per source identified in Table 19. These growth rates will be used to provide a prediction of waste growth by waste properties and will also be used to inform the capacity gap analysis below.

Table 20 - Projected waste growth against waste source

Waste Property	Annual Growth Rate	2018	2022	2027	2032	2036
Non-haz	1.00%	727,151	756,676	795,274	835,841	869,780
Inert	0.01%	1,169,031	1,169,560	1,170,251	1,170,978	1,171,586
Hazardous	0.75%	21,069	21,078	22,535	23,392	24,102
Total*		1,917,251	1,947,944	1,988,060	2,030,212	2,065,468

10.25 It is identified that an annual increase of 1% and 0.75% is expected for non-hazardous and hazardous respectively. For Inert waste, due to its origin

predominantly being CD&E activities, an annual increase of 0.01% is expected throughout the plan period, this accounts for the increase in inert LACW.

11 Meeting the future waste management needs of Central and Eastern Berkshire

- 11.1 As previously discussed, in order to manage the waste produced in Central and Eastern Berkshire, it is necessary to understand how much waste is generated and what capacity of waste treatment facilities are available in the Plan area to deal with this waste.
- 11.2 In addition, it is also important to establish how much waste generated within the Plan area is sent for treatment outside the Plan area and what long term arrangements may be in place for these movements throughout the Plan period.
- 11.3 Four significant long-term movements of waste arisings within the Plan area, which will continue to be considered, have been identified as moving outside of the Plan area for treatment. In 2016, these movements were approximately: (please note however that these are not contract figures).

Residual household waste

- 36,000 tonnes per annum (tpa) from Royal Borough of Windsor & Maidenhead to the Ardley Energy Recovery Facility (Oxfordshire) to 2030;
- 49,000 tpa from Re3 Authorities to the Sutton Courtenay Landfill (Oxfordshire) to 2030; and
- 70,000 tpa from Re3 Authorities to the Lakeside Energy Recovery Facility (Slough) to 2031.

Waste water/sludge

- 121,500 tpa from Central and Eastern Berkshire to Thames Water facilities (Thames Water Utilities Ltd (TWUL) predominantly in Surrey and Slough) to 2036.
- 11.4 Through two five-year extension periods, the movements of residual household waste to the Ardley Energy Recovery Facility can be extended to 2040. In addition, as discussed in Section 4, should the status of the Lakeside Energy Recovery facility change within the identified timeframe due to the Heathrow expansion, there would be a significant impact on the above movements.
- 11.5 Table 19 demonstrates projected waste arisings until 2036. Subtracting these waste arisings from the existing level of waste management capacity (Table 4, Section 3) within Central and Eastern Berkshire, together with incorporating the long-term movements of waste (to the Lakeside ERF) outside of the plan area,

and factoring in their termination dates, provides a 'capacity gap', an amount which indicatively demonstrates the level of future need within the authorities. This is identified in the Technical Workings in Annex 4.

11.6 In the interests of encouraging waste to be further driven further up the waste hierarchy, capacity provided by non-hazardous landfills has not been included within existing capacity provision.

11.7 The capacity gap, therefore, based on current (December 2018) estimated capacity is identified in Table 21 below.

Table 21 - Current estimated waste treatment capacity gap (tpa), December 2018

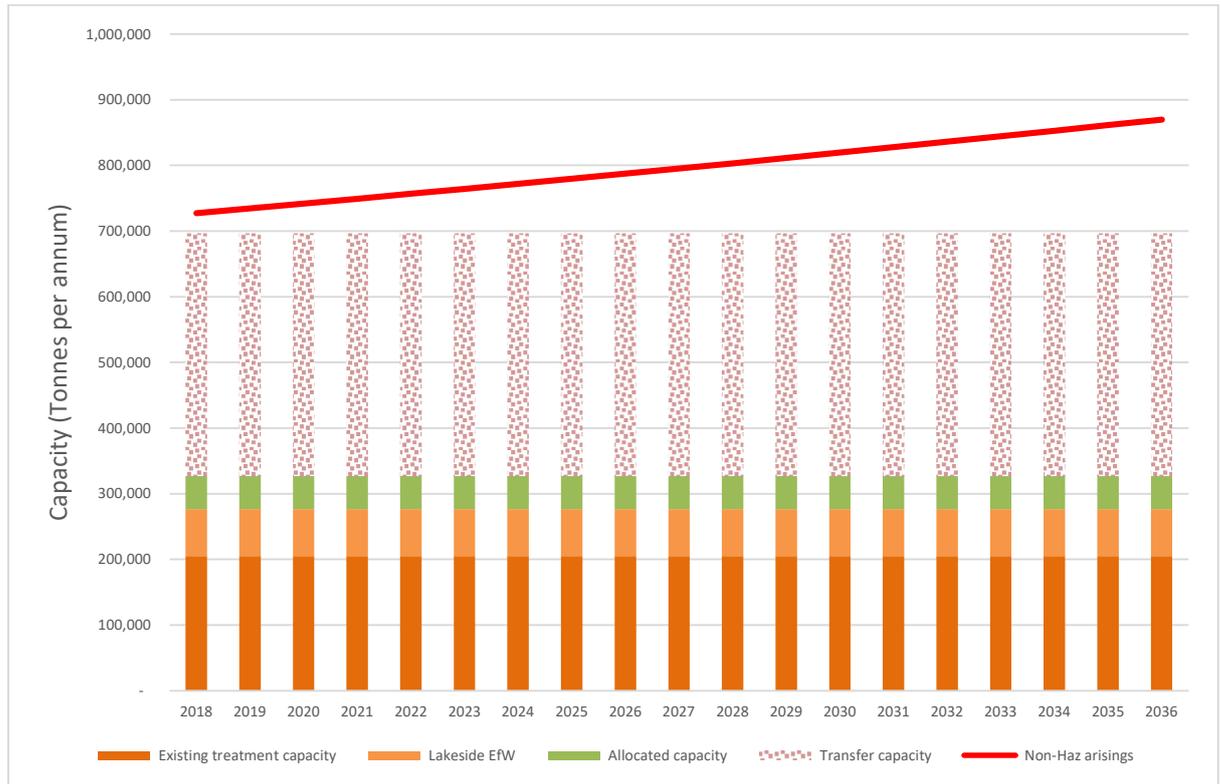
Waste Properties	2018	2022	2026	2030	2036
Non-hazardous	400,682	430,207	460,931	492,903	543,311
Inert	571,286	571,815	572,365	572,938	573,841
Hazardous	-3,473	-2,834	-2,175	-1,497	-440

11.8 Based on the latest available 2018 arisings data, there is a significant capacity gap for the treatment of non-hazardous waste of around 400,000tpa (with an additional 71,000 tonnes waste that is currently going to the Lakeside EfW facility), this is largely derived from LACW and C&I sources.

11.9 The capacity gap for the treatment of non-hazardous waste is set to widen to around 543,000 tpa by the end of the plan period. This capacity gap envisaged at 2036 would be exacerbated to 614,000 by the potential absence of current existing EfW capacity provided by the Lakeside facility.

11.10 Figure 7 below illustrates the current and projected capacity gap for the treatment of non-hazardous waste arisings. Transfer capacity has also been included for completeness.

Figure 7 - Projected capacity gap for non-hazardous waste treatment

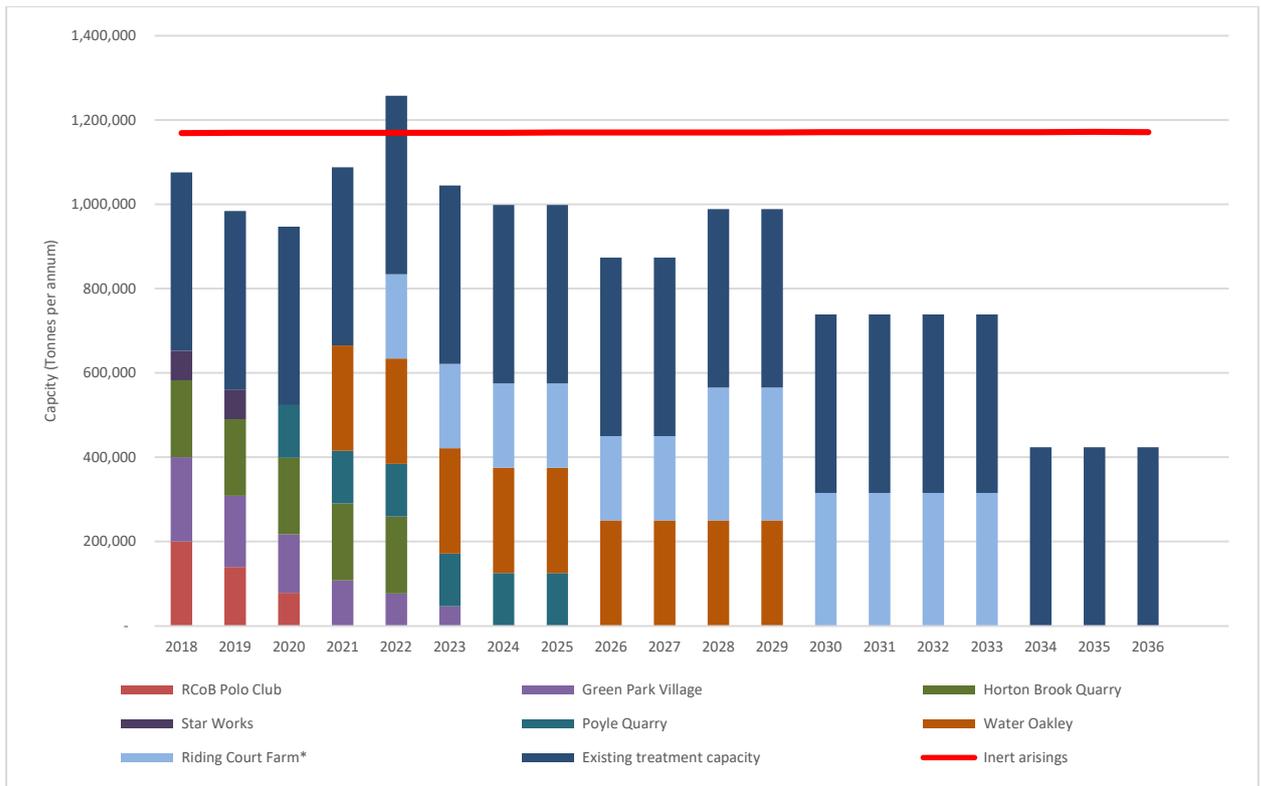


11.11 For inert waste arisings, current capacity provided by Star Works Landfill is discounted from this capacity provision since the site is nearing completion and as this capacity gap analysis will inform the emerging development plan which will conform to the principles of the waste hierarchy and encourage waste movements away from landfill.

11.12 As detailed in the Technical Workings in Annex 4 and illustrated in Figure 8 below, current void capacity provided by sites accepting inert waste material as part of restoration and treatment capacity are around the level of estimated inert waste arisings, In 2022, presuming Water Oakley and Riding Court Farm begin to accept waste as part of their progressive restoration there will be a small over-provision of capacity. However, from 2023 onwards there is a steady decline in the expected availability of inert waste treatment or recovery capacity, leading to a gap of around 700,000 tpa in 2036. Spread across the Plan period, the capacity gap for inert waste is estimated to be around 575,000 tpa.

11.13 Figure 8 below shows the total capacity by site for recovery and disposal of inert waste arisings within the Plan area.

Figure 8 - Total capacity components for recovery and disposal of inert waste arisings within the Plan area

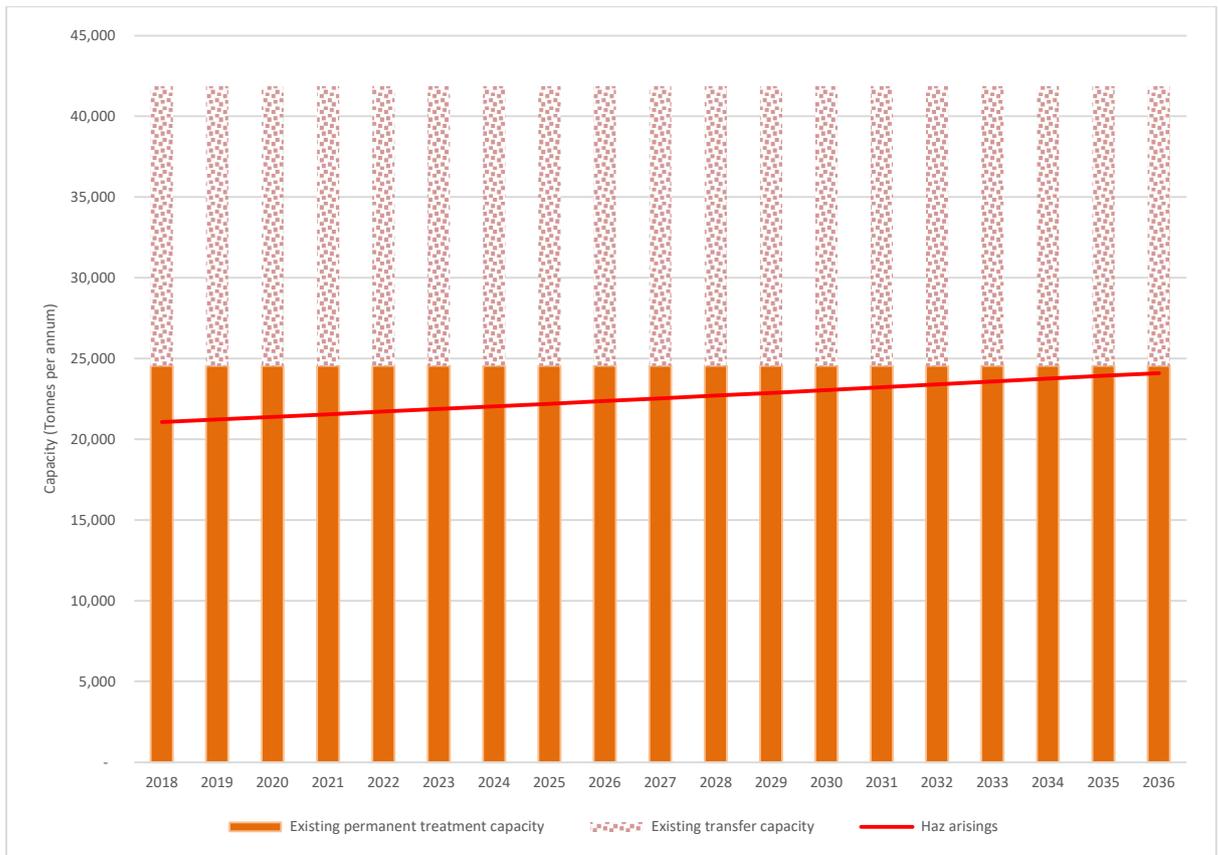


N.B. Capacity for RCoB Polo Club and Green Park Village are based upon the 2018 waste survey responses with a throughput factor applied to estimate yearly reductions in capacity.

* Riding Court Farm has yet to receive an environmental permit for accepting waste, an estimated start date of 2022 has been applied.

11.14 With regards to the treatment of hazardous waste, there no current capacity gap. The total provision of hazardous treatment and transfer capacity against projected hazardous waste arisings is shown in Figure 9 below.

Figure 9 - Projected hazardous waste arisings compared with total existing transfer and treatment capacity



11.15 Hazardous waste management is a complex issue. National Planning Policy Guidance suggests plans should not generally prescribe the waste management techniques or technologies that will be used to deal with specific waste streams in the area. Instead, the type or types of waste management facility that would be appropriately located on the allocated site or in the allocated area should be identified. While some hazardous materials are currently exported from the Plan area, the management capacity is greater than the estimated arisings. However, due to the specialist nature of this waste and the fact that it is transported greater distances, proposals for hazardous waste management facilities may be put forward. These will need to be considered on a case by case basis, as in certain circumstances it may be beneficial to have facilities closer to the source of waste.

Duty to Cooperate

11.16 A number of 'Duty to Co-operate meetings' (a legal test requiring cooperation between local planning authorities to maximise the effectiveness of policies) were undertaken in 2017, 2018 and 2019 with adjoining Waste Planning Authorities; Buckinghamshire County Council, Hampshire County Council, Oxfordshire County Council, Slough Borough Council, Surrey County Council and West Berkshire Council.

11.17 Furthermore, Statements of Common Ground, setting out the areas which the Central & Eastern Berkshire Authorities and the respective Waste Planning Authorities wish to address and work positively together to ensure effective cooperation on cross-boundary issues, are being prepared where necessary. In relation to waste, the Statements of Common Ground will cover the key issues of non-hazardous landfill provision.

11.18 A separate Statement of Common Ground is being prepared with Slough Borough Council, due to the reliance on the Lakeside EfW facility.

11.19 Waste movements through Duty to Cooperate work have been accounted for within the waste movements described in the section below.

Addressing the capacity gap

11.20 As previously identified, the current main waste capacity gap for non-hazardous waste is around 400,000 tpa, growing to 543,000tpa in 2036. The following categories of waste form the largest arisings of (predominantly Household, Industrial and Commercial) non-hazardous waste;

- Mixed Municipal Wastes;
- Compostable wastes;
- Non-hazardous C&I wastes;
- ELV's;
- Metals; and,
- Sludge.

11.21 In 2016, a detailed consideration of the flows of waste was undertaken, with findings that 310,000 tpa of non-hazardous wastes derived from household, commercial and industrial sources are treated outside of the plan area, excluding the identified long term movements of waste being treated outside, throughout the plan period. In order to effectively illustrate the gaps in treatment, it seems appropriate to consider the composition of this waste stream treated outside of the plan area in particular.

Recycling requirement

11.22 In illustrating the capacity gap for additional recycling provision, the following three waste streams, which contribute a significant proportion of wastes treated outside of the plan area, were identified in 2016:

- Municipal wastes;

- Biodegradable wastes; and
- Metals and Vehicles.

Municipal

- 11.23 WDF demonstrates that kerbside collections of Dry-Mixed Recyclables (DMR) generate around 37,500 tpa. This material is accepted via the Smallmead Waste Management Centre in Reading. Information provided courtesy of WRAP suggests this facility has capacity for the treatment of recyclables of up to 58,000 tpa⁹¹. Based on the projection of arisings of this material, kerbside collected DMR is likely to increase to up to 44,000 tpa by the end of the plan period. This facility therefore demonstrates the capacity to treat these projected future arisings.
- 11.24 However, currently 34,000 tpa of mixed municipal wastes arising from within the plan area is treated by MRF's (facilities with A15 Permits) outside the plan area. Due to the nature of these facilities, it is reasonable to assume the content of this arising contains material which is potentially recyclable.
- 11.25 Around a further 7,000 tpa of waste card, cardboard, plastics and paper produced within, and treated outside of the plan area as separate fractions. These materials are easily identifiable and have great potential to be recycled within the plan area.

Composting

- 11.26 Composting is also considered a recycling process. With just over 45,000 tpa of biodegradable waste derived from parks and gardens across Central and Eastern Berkshire being treated outside of the Plan area, there is a demonstrable need to provide treatment for these wastes. This fraction of waste arising is likely increase to around 53,00tpa by 2036.

Metals and vehicle wastes

- 11.27 Specialist non-hazardous arisings such as waste vehicles, also known as 'End-of Life Vehicles and metals also have potential to be recycled at specialist facilities. The Central and Eastern Berkshire Authorities produce around 13,500 tpa of waste vehicles, around 5,300 tpa of this arising is treated outside of the Plan area. The Authorities also collectively produce around 30,000 tpa of metal waste, of which approximately 20,000 tpa is treated outside of the Plan area.

⁹¹ <http://www.wrap.org.uk/sites/files/wrap/Case%20Study%20-%20Smallmead%20MRF.pdf>

11.28 In total the arisings of these wastes streams, which have potential to be recycled, is likely to reach around 131,500 tpa by 2036.

11.29 Table 22 below summarises the arisings and capacity requirements above. The 145,000 estimate originally derived in 2016 falls considerably short of an updated estimate in 2018 of around 300,000 non-hazardous recycling capacity gap. A significant proportion of this is waste noted as ‘South East’, which has recently been added to the methodology, is harder to disaggregate and allocate to a specific stream.

Table 22 – Illustrative recycling treatment capacity requirements (tpa) over the Plan period

		Current arisings (2016)	Arisings at 2020 (+0.85%p/a)	Arisings at 2036 (+0.85%p/a)	Arisings at 2036 (+0.85%p/a +10% headroom)
Municipal	Mixed Municipal' sent to MRFs outside plan area	34,000	35,000	40,000	44,000
	Card, plastics, cardboard and paper outside plan area	7,000	7,000	8,000	8,800
Composting	Biodegradable wastes from parks and gardens treated outside plan area	45,000	46,500	53,500	59,000
Metals and Vehicles	ELV outside plan area	5,300	5,500	6,300	7,000
	Metals treated outside plan area	20,000	20,700	23,700	26,000
Total		111,300	114,700	131,500	145,000
Estimated plan requirements (2018 data, 1% growth)					300,000

Aggregate recovery

Non-hazardous

11.30 Waste material suitable for processing via aggregate recycling facilities usually comprises inert substances such as bricks, tiles and ceramics and uncontaminated soils and stones from the construction sector. Due to the level of uncertainty in classifying certain non-hazardous wastes as inert based on the interpretation of the Landfill Directives inert waste definition (article 2(e)), some potentially inert material, or material which is largely inert but may be contaminated by non-inert fractions may be coded as non-hazardous waste material. This largely refers to waste classified by the EWC code 17-09-04, or ‘mixed construction and demolition wastes’. Around 150,000 tpa of this waste

category is produced by the Central & Eastern Berkshire Authorities, of which 80,000 tpa is treated outside of the Plan area.

Inert

- 11.31 The majority of waste material suitable for use in producing recycled aggregate comprises inert waste material derived from CD&E sources. Around 380,500 tpa of these wastes consisting largely of concrete, bricks, tiles and ceramics and bituminous mixtures are produced from within Central and Eastern Berkshire. During 2016, only around 29,500 tonnes were treated within the Plan area, with the remaining 351,000 tonnes exported to outside of the Plan area.
- 11.32 The deficit in inert waste treatment throughout the plan period could be largely addressed by forthcoming mineral extraction sites within the plan area, up to the estimated requirements for a steady and adequate supply of minerals, depending on restoration proposals. These capacities can be accounted for in future waste monitoring, should they come forward.
- 11.33 The amount recommended is outlined in Table 23 further below. Figure 8, above, illustrates the expected position for inert waste treatment within the plan area over the plan period.

Sludge

- 11.34 A particular waste stream that requires consideration is sludge waste. There is currently very limited capacity for waste water and sludge treatment within the Plan area. The Central & Eastern Berkshire Authorities produce around 147,000 tonnes of sludge, liquid, effluent and waste water per annum. This arising consists of waste materials coded as aqueous sludges containing paints and liquid wastes, landfill leachate, sludges from treatment of urban waste water, street cleaning residues and septic tank sludge. The majority of this arising (121,500 tpa as of 2016) is managed by Thames Water facilities in neighbouring WPA areas, this is predominantly sludge from the treatment of urban waste water and septic tank sludge. Therefore, around 25,500 tpa is currently treated outside the Plan area by other operators.
- 11.35 There is potential for sludge arisings to increase to around 174,000 tpa by 2036. Savills, acting on behalf of Thames Water have stated⁹² that *“Thames Water have a planned strategy that keeps sludge treatment capacity available. Thames Water’s sludge planning horizon is also 2036. Whilst some of the sludge facilities may reach capacity during this timeframe, Thames Water will be looking to upgrade or enhance them in the future”*.

⁹² E-mail received from Thames Water consultants Savills, 21 September 2017

- 11.36 This position has since been further reaffirmed by Thames Water⁹³. It is therefore confidently assumed that Thames Water will aim to maintain and upgrade current facilities, where required, until 2036 (accounting for 144,000 tpa of the projected arisings). Therefore, there could be a need to identify potential capacity for 33,000 tpa (including 10% headroom) of arisings by 2036.
- 11.37 As this is a particular waste stream that is strongly influenced by Thames Water plans and activities, no specific capacity requirement is required, however it highlighted as a potential issue.

Recovery Requirement

- 11.38 Treatment through means of recovery is encouraged in order to drive waste further up the waste hierarchy when options for recycling of material are limited. Furthermore, as highlighted in the National Infrastructure Commission Report⁹⁴, a number of possible routes to improving their efficiency and environmental impact, such as building nearer to sources of demand for heat and pre-sorting plastics, food and other degradable waste should be encouraged.
- 11.39 Although it is recognised from industry reports and the position of the ESA⁹⁵ that there is a current deficit in the provision of energy from waste technology in the UK, it is understood that based on recent remarks by the Environment, Food and Rural Affairs Committee⁹⁶ and responses to the Issues and Options consultation, that there is a risk of channelling materials of value such as plastics where technology to recycle them does not currently exist or is unavailable viable market at this time.
- 11.40 For this reason, as stated above, all waste arisings coded as 'plastics' through their EWC codes, regardless of their physical nature, form part of future recycling capacity provision. This measure incorporates the precautionary principle and seeks to prevent materials of value in the future being needlessly removed through thermal recovery, albeit for the recovery of heat and power.
- 11.41 There is therefore around 77,000 tpa of non-hazardous waste material which does not replicate the fractions of waste accounted for so far in this summary of

⁹³ E-mail received from Thames Water consultants Savills, 17 January 2018

⁹⁴ National Infrastructure Commission - [https://www.nic.org.uk/wp-content/uploads/Congestion-Capacity-Carbon -Priorities-for-national-infrastructure.pdf](https://www.nic.org.uk/wp-content/uploads/Congestion-Capacity-Carbon-Priorities-for-national-infrastructure.pdf)

⁹⁵ ESA Press Statement, 07 August 2017 - http://www.esauk.org/reports_press_releases/press_releases/20170807_EMBARGOED_ESA_UK_sleepwalking_into_waste_treatment_capacity_crisis.pdf

⁹⁶ Environment, Food and rural Affairs committee, 31 January 2018 - <http://www.parliamentlive.tv/Event/Index/9c6b4590-5882-4464-a945-29783d4af339>

need and is sent to non-hazardous landfills. This indicates there is potential to provide capacity for these arisings through thermal recovery. These arisings consist mainly of mixed municipal waste material sent to landfill inside and outside of the plan area. Based on the past average trend in non-hazardous waste arisings and factoring in the requirement for further housing delivery, this amount is likely to rise to around 91,000tpa by 2036. Factoring in the 10% headroom allowance, these materials may need around 100,000 tpa of EfW capacity by the end of the Plan period.

- 11.42 There is also a need to account for the possible scenario that the current long term movements of waste from the Plan area and the Lakeside and Ardley EfW facilities do not continue beyond 2030 (although in the case of the latter, two five-year extensions are possible).
- 11.43 These two facilities currently provide a combined provision of 107,300 tpa of recovery capacity. As such, there may be a potential need to compensate for this loss in the event these existing material movements to these facilities end within the plan period. This would result in a need for around 207,600 tpa (including 10% headroom).
- 11.44 This recovery requirement can be delivered through a range of technologies including anaerobic digestion, combined heat and power, gasification, pyrolysis or through conventional EfW processes.
- 11.45 There is potential for Anaerobic Digestion (AD) as a form of recovery treatment to provide part of this additional capacity requirement. This is since biodegradable kitchen and canteen waste and agricultural and food processing wastes comprise around 20,000 tpa of current non-hazardous arisings, and this arising has potential to rise to around 30,000tpa by 2036. Windsor and Maidenhead and Wokingham currently collect kerbside food waste as a separate waste fraction, and there is scope for the remaining authorities to follow and introduce a similar service at some point within the Plan period, as recommended in waste collection guidance provided by WRAP⁹⁷.

Landfill

- 11.46 Despite the level of effective technology currently available to divert waste away from landfill, there is still a requirement for this option for dealing with wastes which cannot currently be recycled, or which are contrary to the input specification of recovery and pre-recovery treatment facilities such as RDF and SRF technology.

⁹⁷ WRAP, [http://static.wrap.org.uk/consistancy/Read more about the framework.pdf](http://static.wrap.org.uk/consistancy/Read_more_about_the_framework.pdf)

- 11.47 As addressed previously, there is limited current non-hazardous landfill capacity available within the Plan area. A demonstrable need for non-hazardous landfill is identified towards the end of the Plan-period (2030-2036) following the termination of existing movements which enable non-hazardous waste movements to landfill sites outside the Plan area.
- 11.48 SEWPAG has recognised that, with the early closing of landfill sites and the successful diversion of waste from landfill, there is likely to be a move towards regionally strategically landfill sites in the near future⁹⁸.
- 11.49 In line with NPPW, the Waste Framework Directive and the Waste Management Plan for England, in order to drive waste away from landfill, the provision of landfill capacity has been discounted from capacity.

Summary of need

- 11.50 The work undertaken with 2018 data shows there to be a capacity gap of around 545,000 tpa for non-hazardous waste and 575,000 tpa for inert waste by the end of the Plan period in 2036.
- 11.51 The more detailed work with 2016 data shows that a number of significant waste streams that are currently leaving the Plan area need to be considered when addressing the capacity gap, particularly recycling of municipal, compostable and metal waste, as well as non-hazardous waste that cannot be recycled and inert waste. Sludge waste also stands out as potential key waste strand, although in smaller quantities.
- 11.52 As recycling is above recovery in the waste hierarchy, it is helpful to aim for more recycling than recovery capacity. Therefore, a minimum requirement of additional 300,000 tonnes per annum recycling capacity is proposed.
- 11.53 As recovery is above disposal in the waste hierarchy, it may be helpful not to allocate specific landfill provision, while recognising that regional factors may require the siting of landfill facilities in any given area and providing appropriate policy steer to enable such provision to come forward. This means that the remaining 245,000 tonnes per annum of non-hazardous waste capacity requirements should be provided through recovery facilities.
- 11.54 There is a possibility that the inert capacity requirement of 575,000 tonnes per annum will be provided by restoration requirements of mineral sites coming

⁹⁸ SEWPAG Draft Statement of Common Ground: Non-hazardous landfill in the South East v0.2, July 2017

forward, however recycling is higher up the waste hierarchy than recovery and it provides more permanent capacity as restoration schemes are temporary by nature. It is proposed that aggregate recycling is encouraged and that a minimum requirement of 575,000 tonnes per annum inert recycling or recovery capacity is set.

Types of waste facilities and locational requirements

- 11.55 National guidance suggests plans should not generally prescribe the waste management techniques or technologies that will be used to deal with specific waste streams in the Plan area. Rather, the type or types of waste management facility that would be appropriately located on the allocated site or in the allocated area should be identified. Waste planning authorities should consider the size, type and mix of facilities when planning for waste infrastructure.
- 11.56 Summary tables are set out in 'Annex 3: Location Categories' and provide information about seven broad types of waste management development. The information has been collated using the following publications:
- Defra (2010) *Guidance on Applying the Waste Hierarchy*.
 - Enviro Consulting for ODPM (2004) *Planning for Waste Management Research Study*.
 - *National Planning Policy for Waste (2014) Appendix B*
 - Guidance for developments requiring planning permission and environmental permits 2012 (Environment Agency)
- 11.57 For each of the broad types of development, it is necessary to ensure waste is managed at all levels of the waste hierarchy. For instance, facilities are necessary to support activities such as preparing for re-use⁹⁹ and recycling¹⁰⁰, recovery and disposal.
- 11.58 Each of the broad types of development is associated with different potential impacts on the environment and communities which need to be appropriately managed. These planning issues are set out in the tables in 'Annex 3: Location Categories'.
- 11.59 Guidance for both the siting and the locational requirements for waste management facilities are further provided by the following publications:

⁹⁹ May involve checking, cleaning or repairing recovery operations, by which products or components of such products that have become waste are prepared so that they can be re-used without any other pre-processing.

¹⁰⁰ Recycling includes the reprocessing of organic material i.e. composting (so long as it meets PAS/Quality Protocol standards).

- National Planning Policy for Waste (Appendix B) (October 2014); and
- Guidance for developments requiring planning permission and environmental permits (October 2012)

11.60 The NPPW requires waste management infrastructure to demonstrate its suitability in terms of proximity to sensitive receptors, suitable transport infrastructure, the natural and historic environment, water quality and flood risk, landscape considerations and their potential to create nuisance through noise, light and odour emissions.

11.61 Guidance from the Environment Agency (2012) provides a detailed summary of considerations to be addressed when siting both composting and Anaerobic Digestion facilities and ERFs, and that a distance of 250m between the facility and nearby receptors should be demonstrated to address the potential impact relating to bioaerosols, odour, dust, noise.

11.62 The Guidance also advises the siting of waste facilities should avoid sensitive water bodies, in particular Source Protection Zones, and in relation to ERF technology, there should be consideration for existing Air Quality Management Areas (AQMA) and nearby areas for conservation, in particular Sites of Special Scientific Interest (SSSI) (2km buffer) and European sites (or 'Natura 2000' sites, 10km buffer).

Safeguarding of existing and proposed waste facilities

11.63 A key element of providing sufficient waste management capacity is protecting the capacity that already exists and any that will be allocated through the JMWP. This is done through the safeguarding of existing and proposed waste sites.

11.64 Safeguarding can protect sites from direct impacts, such as competing uses seeking to repurpose the land for non-waste uses, as well as from indirect impacts when inappropriate development is built near existing and proposed waste sites and threatens to prejudice their future working. Many of these potential impacts can be addressed through appropriate mitigation measures. In other situations it may be necessary to consider relocating the capacity or demonstrating that it is no longer needed. In all cases suitable consideration will be required for the balance of need between waste facilities and other land uses.

11.65 National Policy provides the framework for the safeguarding of waste facilities. Safeguarding of waste sites is considered in more detail in '*Safeguarding*

*Minerals & Waste Study*¹⁰¹ which has been produced to support the preparation of the JMWP.

¹⁰¹ Safeguarding Minerals & Waste Study - www.hants.gov.uk/berksconsult

12 Transporting waste

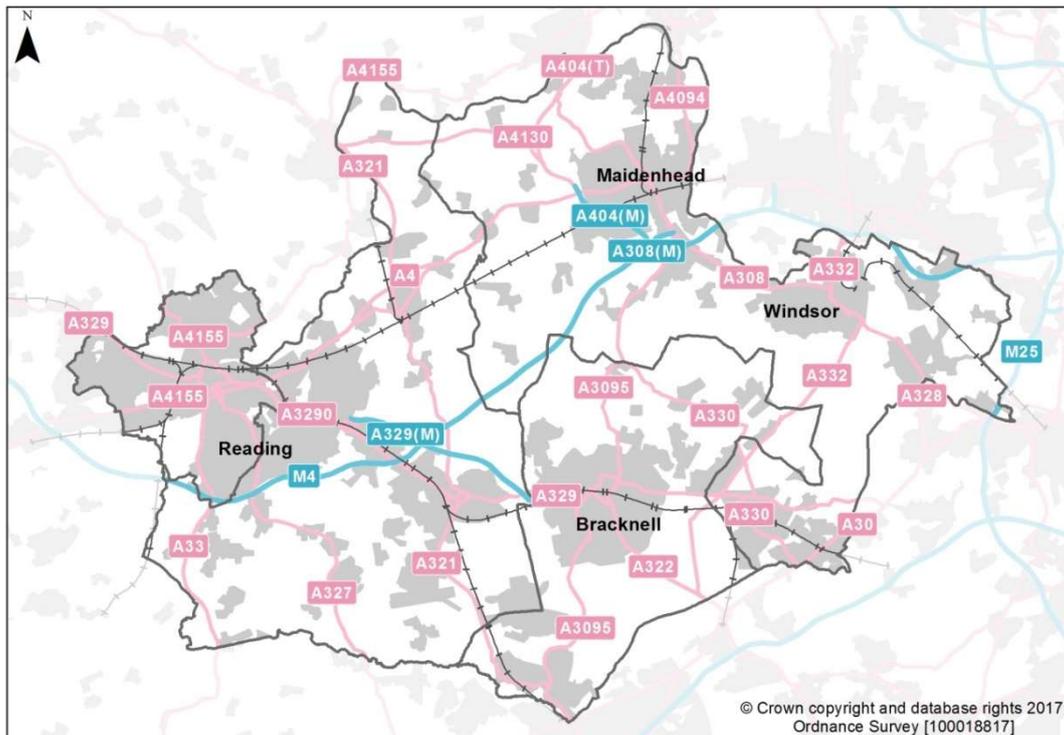
12.1 Central and Eastern Berkshire has many close functional interrelationships with its neighbouring authorities. Waste produced in Central and Eastern Berkshire is not necessarily managed within the Plan area. Some is likely to be transported elsewhere, through transfer stations, as previously referenced throughout the report, and at the same time waste may be brought into the area.

Road

12.2 As there are currently no operational rail depots within Central and Eastern Berkshire, all of the waste within the Plan is transported by road.

12.3 There is an extensive road network within Central and Eastern Berkshire (see Figure 11). Highways England has identified the Strategic Route Network as the M4, A308M and A404M in Central and Eastern Berkshire which link with the M25 and A34. Other key trunk and A-roads within Central and Eastern Berkshire include, in the eastern part of Berkshire, the M4/A4 corridor and the network of routes linking the main centres and their hinterlands. These include the A404, the A332 through Windsor, the A308 through Maidenhead and the A329/A322 through Bracknell and Wokingham and on through Reading.

Figure 10 - Strategic transport routes in Central and Eastern Berkshire



- 12.4 The routes taken will be dependent on the location of the facilities and the markets for the waste which can change over time.
- 12.5 HGV traffic is often regarded as one of the most visible features associated with waste facilities. This may include complaints made to waste planning authorities about the intimidation of large vehicles, danger, use of roads unsuitable for the size of vehicle, damage to verges, dust, spillages, mud from wheels, vibration and noise.
- 12.6 Conditions and legal agreements on transport management and HGV routing can be used to mitigate some of these impacts. Alternatives to road transport such as water and rail should be encouraged where feasible. Planning conditions can be specified relating to:
- site working hours;
 - direction vehicles turn out of the site;
 - routing of HGV's approaching sites
 - provision of signposting;
 - sheeting of HGVs; and
 - wheel / vehicle washing facilities.

Rail

- 12.7 Central and Eastern Berkshire is well connected by rail but does not currently contain any operational rail depots and therefore, is dependent on those located in neighbouring authorities – in particular the rail depots at Theale in West Berkshire.
- 12.8 The Berkshire Replacement Minerals Local Plan included a number of safeguarded rail depot sites including:
- Padworth (Depot Site 1) in West Berkshire
 - Pingewood (Depot Site 2) on the Wokingham/West Berkshire/Reading borders but within the administrative area of Wokingham.
 - Slough Goods Yard (Depot Site 3), Poyle (Depot Site 4) and Colnbrook (Depot Site 5) in Slough.
- 12.9 The site known as Pingewood in the *Replacement Minerals Local Plan for Berkshire (incorporating the alterations adopted in December 1997 and May 2001)* was identified as a location for a new rail depot (Depot Site 2). However, planning permission has been granted for a mixed-use development incorporating a new railway station on the site, now known as Green Park Village, and therefore it is no longer available for a rail depot.

- 12.10 The rail depots located in West Berkshire and Slough are currently used for aggregates.
- 12.11 The South East England Regional Assembly (SEERA) commissioned report of Aggregate Wharves and Rail Depots in South East England dated 2007¹⁰² did not include any detailed information about capacities of either wharves or rail depots for reasons of confidentiality. The report noted that freight path capacity on the mainlines in the South East is likely to be the major factor restricting further supply of aggregates by rail freight into the region but concluded that the existing rail depot capacity in the South East is sufficient to handle the forecast growth in aggregate demands. This is confirmed by the finding that the depots have handled higher throughputs of material in the past than is the case more recently.
- 12.12 On this basis, there may be no further requirement from a regional capacity perspective, to plan for additional rail depots across the South East or in the wider Berkshire area, in particular. The operators of the rail depots at Theale and Colnbrook (except in relation to the Heathrow Expansion plans) show no indication at present of seeking to increase capacity.
- 12.13 Nevertheless, the SEERA report recommended that policy documents should safeguard the current capacity to cater for ongoing demand and adopt suitable measures to permit the development of new rail served depots at suitable locations in the event that proposals are brought forward by operators in the future. This will ensure and enhance the geographic choice across the South East.
- 12.14 The potential for rail connection at waste sites could reduce the need for local road impacts, although the likelihood of this opportunity is dependent on a number of factors including location of the site, access to the rail network and cost. Crossrail is also likely to impact the timetabling of any additional train services including freight, as these lines will be running at virtually full capacity. However, the possibility should be considered within the JMWP should a future opportunity arise.
- 12.15 A rail depot within the Plan area would also reduce the transport of imported waste by road. As such, the potential for a rail depot should also be examined by the Plan or to encourage and enable such a proposal in the future.

¹⁰² The Study of Aggregate Wharves and Rail Depots in South East England Prepared for the South East England Regional Assembly (SEERA) by MDS Transmodal Limited, 2007 - www.iwight.com/azservices/documents/2782-F15-Aggregate-Wharves-and-Rail-Depots-in-South-East-England.pdf

Water

- 12.16 The Kennet & Avon Canal which joins Newbury and Reading is a smaller waterway and is not considered to have significant potential for freight movements by the Inland Waterways Association¹⁰³. It is currently unknown whether the River Thames is suitable for freight from Windsor Bridge to Staines Bridge although large barges are able to use this waterway¹⁰⁴. However, this may be impacted by the fact that the river is non-tidal from Teddington Lock.
- 12.17 Due to the potential for water transportation of waste the JMWP should seek to safeguard and encourage water accessed sites, subject to the consideration of other constraints.
- 12.18 The transportation of waste (and minerals) is considered in more detail in the 'Strategic Traffic & Transport Assessment'¹⁰⁵ which accompanies the JMWP.

¹⁰³IWA Policy on Freight on Inland Waterways, 2012 - www.waterways.org.uk/pdf/freight_policy

¹⁰⁴ [The River Thames and Connecting Waterways, 2013-2014 - www.gov.uk/government/uploads/system/uploads/attachment_data/file/289796/LIT_6689_3e9c5e.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289796/LIT_6689_3e9c5e.pdf)

¹⁰⁵ Strategic Traffic & Transport Assessment - www.hants.gov.uk/berksconsult

Annex 1: Status of waste policies in the Waste Local Plan for Berkshire (1998)¹⁰⁶

Waste Local Plan Policies & Proposals Saved beyond 27 September 2007	
WLP1	Sustainable Development
WLP3	Phasing out putrescible / polluting waste
WLP11	Proposed preferred areas
WLP13	Local facilities
WLP14	Sites for engineered landfill
WLP15	Temporary sites for engineered landfill
WLP16	Waste management facilities – non landfill
WLP17	Green waste composting
WLP18	Sewage works
WLP19	Farm and stable waste
WLP20	Other landfill sites for putrescible / polluting waste
WLP21	Safeguarding sites for waste management
WLP23	Temporary local separation sorting and recycling sites
WLP24	Temporary recycling facilities on inert waste landfill sites
WLP25	Disposal of inert waste by landfilling
WLP26	Controls on landfill permissions to secure inert waste recycling
WLP27	Is development needed
WLP28	Non identified sites for waste management development
WLP29	Non identified sites for waste management development outside preferred areas
WLP30	Assessing the impact of development proposals
WLP31	Information to be provided with application
WLP33	Environmental improvements and wider benefits
WLP34	Land Raising

Waste Local Plan Policies & Proposals Not Saved beyond 27 September 2007	
WLP2	Waste Management Hierarchy
WLP4	Meeting Berkshire's Need
WLP5	Meeting Regional Need
WLP6	Waste as a consideration in new development
WLP7	Waste Minimisation
WLP8	Waste Re-use
WLP9	Recycling facilities in new development
WLP10	Appropriate provision for the recycling of waste
WLP12	Need for waste recycling, sorting and transfer
WLP22	Energy recovery from waste
WLP32	Requirement to provide an ES

¹⁰⁶Waste Local Plan Saved Policies, 1998 - <https://www.bracknell-forest.gov.uk/planning-and-building-control/planning/planning-policy/development-plan/minerals-and-waste>

Annex 2: Location of existing waste management facilities

Civic Amenity Sites

Bracknell Forest Council

- Longshot Lane Household Waste Recycling Centre, Bracknell, RG12 1RL

Reading Borough Council

- Smallmead Waste Management Centre, RG2 0RP

The Royal Borough of Windsor and Maidenhead

- Stafferton Way (HWRC), SL6 1AY

Waste Transfer Stations

Reading Borough Council

- International Technology Products, RG30 6BX
- Select Environmental Services, RG2 0QX
- The Daniels Corporation International Ltd, RG2 0QZ
- Darwin Close Transfer Station, RG2 0SG
- R Collard Limited, RG1 8PQ
- Reynolds Skip Hire, RG30 1NP

The Royal Borough of Windsor and Maidenhead

- Horwoods Yard, SL6 1XZ
- Allwaste (Berkshire) Limited, Foundry Lane, SL3 9PD
- Mini – Skips (Southern) Ltd, SL6 1AY
- Shorts Transfer Station, St Georges Lane, SL5 7ET
- John Horwood, SL6 2QP
- Maidenhead Transfer Station, SL6 1AY

Wokingham Borough Council

- Toutley Depot, Wokingham, RG40 5QP

Aggregate recovery facilities

Bracknell Forest Council

- Longshot Lane
- Planners Farm

Reading Borough Council

- Smallmead (Waste Management Centre)

The Royal Borough of Windsor and Maidenhead

- Fowles Crushed Concrete Ltd, Wraysbury, TW19 5AW
- Shorts Transfer Station, St Georges Lane

- Horwoods Yard, Green Lane
- Kimber Lane Waste Transfer Station
- Bray Recycling Facility

Metal recovery facilities

The Royal Borough of Windsor and Maidenhead

- Wraysbury Car Spares, TW18 4TY

Wokingham Borough Council

- Wokingham Metal Recycling, RG41 1XA
- A1 Wokingham Car Spares, RG41 4SP

Composting Sites

Bracknell Forest Council

- Planners Farm, RG42 6LR

Landfill

Wokingham Borough Council

- Star Works Landfill Site, RG10 9XY

Other Waste Facilities

Inert waste recovery

Bracknell Forest Council

- Royal County of Berkshire Polo Club, SL4 4TH

Reading Borough Council

- Green Park Village, RG30 3UR

The Royal Borough of Windsor and Maidenhead

- Horton Brook Quarry (inert landfill), SL3 0LP
- Riding Court Farm,

Treatment

Reading Borough Council

- Fleetwood Grab Services Ltd, RG30 1NP
- R Collard Limited, RG1 8PQ

The Royal Borough of Windsor and Maidenhead

- Bray Recycling Facility, SL6 2EB

Wokingham Borough Council

- Star Works Treatment Plant, RG10 9XY
- R3 Environmental – Swallowfield, RG7 1PY

Annex 3: Location Categories

A range of different waste management facilities have been classified based on the types of activities involved. These categories should be used to inform the suitability of the proposed allocations for waste activities.

Category 1: Activities requiring open sites or ancillary open areas (possibly involving biological treatment)

Description / overview	<ul style="list-style-type: none"> • Activities requiring space for storage of waste and machinery (e.g. recycling crusher and screener; vehicle dismantlers). Open sites can accommodate processing equipment (e.g. storage containers/skips, loaders for shipment) • Activities similar to some agricultural practices require large open spaces (e.g. composting plants using open air windrows (elongated piles)). Large areas of land are converted to hard-standing areas for the running of machinery, and soil and ground water protection measures • Small proportion of the site may include building (e.g. for staff facilities)
Waste facilities	<ul style="list-style-type: none"> • Open windrow composting (composting sites typically require sites 2-3 hectares) • Aggregate recycling / construction and demolition waste processing (typically require 2 hectares or greater) • Processing incinerator bottom ash (IBA) • End of Life Vehicle (ELV) processing / scrap metal yard • Soil hospital (remediation of contaminated soils) • Household Waste Recycling Centre (HWRC) or Civic Amenity Site (typically approximately 0.8 hectare site required)
Examples of waste streams handled	<ul style="list-style-type: none"> • Unsorted or segregated household waste • Construction waste (soils, rubble etc) • Incinerator bottom ash • Scrap vehicles • Biodegradable municipal solid wastes and industrial wastes converted to composted products (garden type waste collected separately or co-collected with kitchen waste that is suitable for open windrow composting)
Appropriate locations for these activities (including	<ul style="list-style-type: none"> • Typically located in rural or urban fringe sites (where access is good). • Close proximity to development areas (markets) is preferable (it is often not viable to transport

site requirements)	<p>materials such as recycled aggregate long distances).</p> <ul style="list-style-type: none"> • Larger scale centralised composting facilities can be located at selected composting sites but smaller facilities can be located at landfill sites, sewage treatment works, industrial sites and transfer stations. • Small scale composting operations are also located on farms, due to their ability to exploit existing infrastructure, equipment, and labour associated with normal farm activities¹⁰⁷. • Aggregate recycling sites and ELV sites can be located on industrial estates alongside heavier industrial uses (affordable sites of an adequate size can be very difficult to obtain for these uses however). • Aggregate recycling activities (usually temporary operations) can also be located at mineral workings and landfill sites and at demolition and construction sites where the spoil is to be used in the project itself. • Rail sidings can be used for activities whereby materials are loaded for shipment to market (transshipment of waste). • Household Waste Recycling Centres and Civic Amenity sites require good access from the primary road network and sufficient vehicle queuing space.
Locations where activities would be unsuitable	<ul style="list-style-type: none"> • Would not normally be compatible with a business park environment or an urban setting, or close to villages. • An appropriate distance of 'buffer' would be required between operations and sensitive receptors. • Should be located at appropriate distances from sensitive habitats (where there are potential dust and bioaerosol impacts).

¹⁰⁷ Most on-farm facilities possess waste management exemptions, and all community-run sites are exempt and so are restricted in size

Category 2: Activities requiring a mix of enclosed buildings/plant and open ancillary areas (possibly involving biological treatment)

Description / overview	<ul style="list-style-type: none"> • Activities which involve temporary storage of waste usually consist of buildings where vehicles deliver waste either onto the floor, into bays, or into compaction units. Inert wastes in particular may be transferred to such sites and stored in the open. • Facilities may require extensive plant and specialist machinery. • For instance, hard standing areas to site recycling bins, skips and possibly compactors which can be fully / partially enclosed or open. • Unsorted waste may be stored in open bunkers or skips, housed within a building. Facilities may be co-located on sites (e.g. storage alongside a Waste Transfer Station). • Sites usually require a minimum of 0.5 hectares (but size depends on throughput).
Waste facilities	<ul style="list-style-type: none"> • Outdoor Waste Transfer Station (where space required for open storage). • Anaerobic digestion (AD) plant (small scale) (agricultural / rural locations) (unsorted waste, segregated waste and residual waste may be stored in open bunkers, possibly outside). • Enclosed composting systems¹⁰⁸. • MBT (Mechanical Biological Treatment) plant (including biological treatment e.g. AD)¹⁰⁹. • Sites for aggregating waste wood (sorting and processing). • Biological treatment of liquid waste and leachate (can involve enclosed buildings and tanks in open areas). • Wastewater Treatment Works.
Examples of waste streams handled	<ul style="list-style-type: none"> • Unsorted or segregated household or commercial waste • Green waste • Specialist wastes (e.g. liquid waste and leachate)
Appropriate locations for these	<ul style="list-style-type: none"> • Enclosed composting facilities are suited to areas allocated for employment / industrial uses in urban areas, and are compatible with the more intensive

¹⁰⁸ e.g. In-vessel composting (IVC) allows collected food waste to be composted on a large scale. IVC is not considered as environmentally beneficial as anaerobic digestion. For effective waste handling, a covered waste reception area, as well as hard standing for post composting and a covered storage area are needed.

¹⁰⁹ The term 'mechanical and biological treatment' (MBT) is commonly used to describe a hybrid process which combines mechanical and biological techniques used to sort and separate mixed household waste.

<p>activities (including site requirements)</p>	<p>B2 activities under the Use Classes Order.</p> <ul style="list-style-type: none"> • Small scale AD plants (throughput of circa 5000 tonnes per annum) can be located on sites less than 0.5 hectares (Wastewater Treatment Works in particular can provide suitable locations). • Facilities to recycle agricultural waste can be located on farms (digestate from AD plants maybe used by neighbouring farms). • Options for locating wastewater treatment plant are very limited and are typically linked to existing infrastructure.
<p>Locations where activities would be unsuitable</p>	<ul style="list-style-type: none"> • An appropriate distance of 'buffer' would be required between operations producing bioaerosols / odours, and sensitive receptors. • Should be located at appropriate distances from sensitive habitats (where there are potential dust and bioaerosol impacts). • Facilities involving open-air activities with potential to generate noise would not normally be compatible with a business park environment, an urban setting, or close to villages.

Category 3: Activities requiring enclosed industrial premises (small scale)

Description / overview	<ul style="list-style-type: none"> • Waste developments are increasingly enclosed within new or existing structures, often sited on brownfield or industrial land; allowing for a large proportion of the perceived issues / problems to be mitigated for, i.e. dust and noise. • 'Small scale' enclosed premises are typically <1-2 hectares (throughput of approx. 50,000 tonnes per annum). • Usually located on industrial estates. • Enclosing activities helps to mitigate against many noise / odour issues.
Waste facilities	<ul style="list-style-type: none"> • Plant for Refused Derived Fuel production (small scale e.g. Mechanical Heat Treatment / Autoclaving)¹¹⁰. Autoclaving is a pressurised steam treatment process that can produce fuel pellets or pulp (by 'cooking' waste). • Dis-assembly and re-manufacturing plant (Waste Electronic & Electrical Equipment recycling). • Enclosed waste transfer station (designed to process dry, separated recyclables). • Small-scale recyclables processing facility.
Examples of waste streams handled	<ul style="list-style-type: none"> • All types of non-hazardous waste typically handled (e.g. dry mixed recyclables) • Inert waste may also be handled (e.g. sorting of construction waste, glass etc) • Clean waste wood can be handled for recycling • Waste Electronic & Electrical Equipment
Appropriate locations for these activities (including site requirements)	<ul style="list-style-type: none"> • As activities can be similar to other industrial activity, these facilities can be located on land previously used for general (B2) industrial activities or B1 uses (light industry appropriate in a residential area). • The requirement for good transport infrastructure is essential and therefore, where possible, should be located close to the primary road network or have potential access to rail. • Placement of sites near to the source of waste is increasingly important, by limiting movement of waste from source the impact of sites decreases.
Locations where	<ul style="list-style-type: none"> • Sites with existing access issues should be avoided where possible.

¹¹⁰ Refuse-derived fuel, (RDF), is made by refining municipal solid waste in a series of mechanical sorting and shredding stages to separate the combustible portion of the waste. Either a loose fuel, known as fluff, floc or coarse RDF (c-RDF), or a densified pellet or briquette (d-RDF) is produced.

activities would be unsuitable	<ul style="list-style-type: none">• Areas should be avoided where facilities seeking expansion of existing hardstanding would encroach into flood zones.
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Category 4: Activities requiring enclosed industrial premises (large scale)

Description / overview	<ul style="list-style-type: none"> • Large buildings required to process mixed waste primarily via mechanical and / or biological means. • Various physical separation and waste reduction techniques can be used either as stand alone operations or in combination. Such activities are typically housed in an enclosed 'warehouse' type building. • 'Large scale' enclosed premises typically require site of 2-4 hectares (throughput can be up in excess of 100,000 tonnes per annum).
Waste facilities	<ul style="list-style-type: none"> • Materials Recovery Facility (MRF) (for dry recyclables). • Enclosed Anaerobic Digestion (AD) plant (large scale). • Enclosed MBT (Mechanical Biological Treatment) (large scale integrated plant)¹¹¹.
Examples of waste streams handled	<ul style="list-style-type: none"> • Unsorted 'black bag' wastes (AD and MBT) • Residual household waste following doorstep separation of dry recyclables / green waste • Residual waste following separation of recyclables / organics at another facility.
Appropriate locations for these activities (including site requirements)	<ul style="list-style-type: none"> • Large scale processing operations can take place in a range of buildings and at different locations. Preference should be given to industrial or degraded sites or sites on or close to existing waste management facilities. • B1 / B2 and B8 use class designations may potentially be acceptable. • Sites need to be suitable for use by HGVs. • Consideration should be given to the potential for co-location with rail or barge transfer operations.
Locations where activities would be unsuitable	<ul style="list-style-type: none"> • Mixed household waste has the potential to cause additional nuisance from litter, odour and leachate. The planning and siting considerations will therefore be different to dry recyclables processing. • Locating sites close to residential development should be avoided. Some operations which involve mechanical processing and external loading and unloading of material may be inherently noisy which will also affect the choice of site.

¹¹¹ The term 'mechanical and biological treatment' (MBT) is commonly used to describe a hybrid process which combines mechanical and biological techniques used to sort and separate mixed household waste, and produce a Refused Derived Fuel (RDF).

	<ul style="list-style-type: none">• Sites with existing access issues should be avoided where possible.• Areas should be avoided where facilities seeking expansion of existing hardstanding would encroach into flood zones.
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Category 5: Activities requiring enclosed building with stack (small scale)

Description / overview	<ul style="list-style-type: none"> Plants with a throughput of approx. 50,000 tonnes per annum. Smaller scale thermal treatment facilities are often designed to receive a specific component of the waste stream. Can offer a waste management option which is more likely to be accepted by local residents. Energy is generated. Often combustion chambers are fired up according to the need to respond to fluctuations in the supply of waste. Gasification is a thermal process in which carbon is converted to a syngas leaving a solid residue. Pyrolysis takes place either in the complete absence of oxygen or with limited oxygen. Require site of <1-2 hectares.
Waste facilities	<ul style="list-style-type: none"> Pyrolysis and gasification technologies (advanced thermal treatment). Small scale incinerator. Small thermal plants (Combined Heat & Power (CHP) plant)¹¹². Small thermal treatment plants (furnaces or kilns) are also used to treat clinical wastes at hospital sites.
Examples of waste streams handled	<ul style="list-style-type: none"> Capable of handling a wide range of waste materials. Can be specifically designed to take a pre-processed feedstock or refuse derived fuel (RDF) (<i>see categories 3 and 4 above</i>). Can be used to treat clinical wastes at hospital sites. Unburned residue (bottom ash) is produced after combustible material is burnt. There are three products of pyrolysis: gas, liquid and a solid known as char.
Appropriate locations for these activities (including site requirements)	<ul style="list-style-type: none"> Localities which are as close as possible to the source of waste arisings in order to minimise transport. Sites which offer the potential for CHP and export of energy to businesses which would otherwise

¹¹² The revised Waste Framework Directive sets a threshold above which energy efficient municipal waste incinerators can be classified as recovery facilities, and below which they continue to be classified as disposal facilities.

	<p>use fossil fuel sources. May also be considered as part of large scale residential developments.</p> <ul style="list-style-type: none"> • Can be more suited to rural areas and areas of dispersed population centres than large-scale facilities. • Most small thermal plants have been designed to treat specific industrial waste streams as part of combined heat and power (CHP) arrangements. CHP may be connected to existing decentralised energy networks in town and city centres for instance. • Preference should be given to areas allocated for business use or in traditional commercial/industrial urban areas. • Existing waste sites should also be considered. Plants can be located alongside modern industrial buildings or as a part of business parks where CHP potential can be developed. • Pyrolysis and gasification- the scale of individual buildings and process components is likely to be compatible with most small / medium sized industrial activities.
<p>Locations where activities would be unsuitable</p>	<ul style="list-style-type: none"> • Should be located appropriate distances from sensitive habitats and other sensitive receptors (e.g. residential). • Safeguarding zones around aerodromes where building height is restricted should be avoided. • Pyrolysis and gasification facilities should avoid sites closer than 250m of housing etc where possible or demonstrate emission standards can be met where closer.

Category 6: Activities requiring enclosed building with stack (large scale)

Description / overview	<ul style="list-style-type: none"> Plants with a throughput of approx. 200,000 tonnes per annum. Plants typically designed to handle large volumes of mixed waste following the 'mass combustion' approach. Designed to burn waste as efficiently as possible, usually recovering energy. The volume of waste needing disposal following treatment is reduced by approximately 90%, reducing the need for landfill. The whole process is typically contained within a single building. Legislation requires that all new and existing plants operate to extremely high environmental standards. Require site of 2-5 hectares.
Waste facilities	<ul style="list-style-type: none"> Energy Recovery Facility ('mass burn' with energy generation)¹¹³; Fluidised bed incinerators generally require some form of refuse derived fuel (RDF). Biomass plant (including proportion of waste biomass feedstock)
Examples of waste streams handled	<ul style="list-style-type: none"> Can receive between 90,000 and 600,000 tonnes of waste per year. Capable of handling a wide range of waste materials. Contaminated paper (e.g. with grease from food) can be more suited to energy recovery.
Appropriate locations for these activities (including site requirements)	<ul style="list-style-type: none"> Often located in or near urban areas. Compatible with the more intensive Class B2 activities under the Use Classes Order. Existing waste sites should also be considered. Should be located as close as possible to the source of waste arisings in order to minimise transport. Should be located on sites which offer the potential for combined heat and power (CHP) and export of energy to nearby businesses.
Locations where activities would be unsuitable	<ul style="list-style-type: none"> Not normally be compatible with a hi-tech business park environment or a rural/semi rural setting. Should be located appropriate distances from sensitive habitats and other sensitive receptors

¹¹³ The revised Waste Framework Directive sets a threshold above which energy efficient municipal waste incinerators can be classified as recovery facilities, and below which they continue to be classified as disposal facilities

	<p>(e.g. residential).</p> <ul style="list-style-type: none">• Safeguarding zones around aerodromes where building height is restricted should be avoided.
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Category 7: Landfilling

Description / overview	<ul style="list-style-type: none"> • Modern landfill practice requires a significant degree of engineering in order to contain tipped waste, control emissions and minimise potential environmental effects. • The majority of landfills are operated on a phased cell system whereby, as one cell is being filled, another is being prepared, and another is being completed / restored¹¹⁴.
Waste facilities	<ul style="list-style-type: none"> • Waste disposal mainly below ground level (infilling a void). Landraise, also generically referred to as landfill, refers to waste disposal mainly above pre-existing ground levels. • The primary by-products where biodegradable materials are disposed of are landfill gas and leachate (requiring ancillary operations including abstraction systems). • Inert waste can be used to restore minerals workings. • Sites may include a separate protective cell for hazardous materials.
Examples of waste streams handled	<ul style="list-style-type: none"> • Most types of non-hazardous waste may be disposed of via landfill although as disposal is increasingly discouraged, the future role of landfill is likely to be limited to the residues of other waste management operations such as incinerator ashes and materials recovery facility (MRF) rejects etc. • Hazardous wastes (although certain hazardous wastes are banned from landfill disposal). • Inert waste (non-biodegradable) is a restoration material and is not classed as landfilling.
Appropriate locations for these activities (including site requirements)	<ul style="list-style-type: none"> • Landfill sites sited where an existing void is available, such as in existing mineral workings. • The location of land-raise sites is less limited and may include derelict land, or extensions to existing landfills. • Landfill sites tend to be located in rural areas. • Range in size from just a few hectares (Ha) to over 100 Ha. The larger sites are more economically viable.
Locations where activities would be unsuitable	<ul style="list-style-type: none"> • Sites close to housing, commercial or recreational areas etc. should generally be avoided. • Areas overlying principal aquifers or close to potable waters should also be avoided.

¹¹⁴ Cells are holes which are lined with a waterproof liner and contain systems to manage landfill gas and leachate/ liquids. When complete the cells are covered with clay to seal the waste.

	<ul style="list-style-type: none">• Sensitive habitats should be avoided.• Bird strike' zones around aerodromes should be avoided.
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Annex 4: Technical Workings

Non-Hazardous arisings (+1.00% p/a)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
		727,151	734,423	741,767	749,184	756,676	764,243	771,885	779,604	787,400	795,274	803,227	811,259	819,372	827,566	835,841	844,200	852,642	861,168
Existing recovery capacity (Lakeside ERF)	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375	71,375
Existing treatment capacity	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094	205,094
Allocated treatment capacity	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Treatment capacity gap (Assuming continuation of recovery contract)	400,682	407,954	415,298	422,715	430,207	437,774	445,416	453,135	460,931	468,805	476,758	484,790	492,903	501,097	509,372	517,731	526,173	534,699	543,311
Treatment capacity gap (Assuming termination of recovery contract)	400,682	407,954	415,298	422,715	430,207	437,774	445,416	453,135	460,931	468,805	476,758	484,790	492,903	572,472	580,747	589,106	597,548	606,074	614,686
Existing transfer capacity	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226	370,226
Transfer and Treatment capacity gap (Assuming continuation of recovery contract)	30,456	37,728	45,072	52,489	59,981	67,548	75,190	82,909	90,705	98,579	106,532	114,564	122,677	130,871	139,146	147,505	155,947	164,473	173,085
Transfer and Treatment capacity gap (Assuming termination of recovery contract)	30,456	37,728	45,072	52,489	59,981	67,548	75,190	82,909	90,705	98,579	106,532	114,564	122,677	202,246	210,521	218,880	227,322	235,848	244,460
Inert arisings (+0.01% p/a)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	1,169,031	1,169,161	1,169,293	1,169,426	1,169,560	1,169,696	1,169,832	1,169,971	1,170,110	1,170,251	1,170,394	1,170,538	1,170,683	1,170,830	1,170,978	1,171,128	1,171,279	1,171,432	1,171,586
RCoB Polo Club (remaining restoration void)	200,000	139,100	78,200																
Green Park Village (remaining restoration void)	200,000	169,200	138,400	107,600	76,800	46,000													
Horton Brook Quarry (remaining restoration void)	182,160	182,160	182,160	182,160	182,160														
Star Works Landfill	70,000	70,000																	
Poyle Quarry (future infill site as part of restoration)			125,000	125,000	125,000	125,000	125,000	125,000											
Water Oakley (future infill site as part of restoration)				250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000							
Riding Court Farm (future infill site as part of restoration)					200,000	200,000	200,000	200,000	200,000	200,000	315,000	315,000	315,000	315,000	315,000	315,000			
Existing permanent treatment capacity	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208	423,208
Total treatment capacity	1,075,368	983,668	946,968	1,087,968	1,257,168	1,044,208	998,208	998,208	873,208	873,208	988,208	988,208	738,208	738,208	738,208	738,208	423,208	423,208	423,208
Treatment capacity gap	93,663	185,493	222,325	81,458	-87,608	125,488	171,624	171,763	296,902	297,043	182,186	182,330	432,475	432,622	432,770	432,920	748,071	748,224	748,378
Existing transfer capacity	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421	155,421
Transfer and Treatment capacity gap	-61,758	30,072	66,904	-73,963	-243,029	-29,933	16,203	16,342	141,481	141,622	26,765	26,909	277,054	277,201	277,349	277,499	592,650	592,803	592,957

Hazardous arisings (+0.75% p/a)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
		21,069	21,227	21,386	21,547	21,708	21,871	22,035	22,200	22,367	22,535	22,704	22,874	23,045	23,218	23,392	23,568	23,745	23,923
Existing treatment capacity	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542	24,542
Treatment capacity gap	-3,473	-3,315	-3,156	-2,995	-2,834	-2,671	-2,507	-2,342	-2,175	-2,007	-1,838	-1,668	-1,497	-1,324	-1,150	-974	-797	-619	-440
Existing transfer capacity	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330	17,330
Transfer and Treatment capacity gap	-20,803	-20,645	-20,486	-20,325	-20,164	-20,001	-19,837	-19,672	-19,505	-19,337	-19,168	-18,998	-18,827	-18,654	-18,480	-18,304	-18,127	-17,949	-17,770

Annex 5: Current Site Capacities

Treatment Capacity as of 2018

Site name	Operator	Facility type (WDI Source Category)	WPA	Non-Haz	Inert	Haz
Planners Farm	Gary Short	Composting (treatment)	Bracknell Forest	12,050		
Fleetwood Grab Services Ltd	Fleetwood Grab Services Ltd	Physical Treatment (treatment)	Reading		9,350	
R Collard Limited	R Collard Limited	Non-Haz Waste Transfer / Treatment	Reading	3,100	42,360	
Bray Recycling Facility	Summerleaze Ltd	Physical Treatment	RBWM		100,000	
Hindhay Quarry	Summerleaze Ltd	Physical Treatment	RBWM		50,000*	
Hythe End Farm	Fowles Crushed Concrete Limited	Physical Treatment	RBWM	148,400	66,000	
Wraysbury Car Spares	Bansals Hydraulic Ltd	Car breaker (MRS)	RBWM			259
A1 Wokingham Car Spares	A1 Group	Car breaker (MRS)	Wokingham	32,630		12,888
R3 Environmental - Swallowfield	R3 Environmental Solutions Ltd	WEEE treatment facility	Wokingham	252		78
Star Works Treatment Plant	Grundon Waste Management Ltd	Physical Treatment	Wokingham	6,595		9,564
Wokingham Metal Recycling	R Collard Limited	Metal Recycling (MRS)	Wokingham	574	11,006	1,753
Lakeside ERF		Non-Haz ERF	Slough	71,375		
			Total	274,976	278,716	24,542

*Hindhay Quarry recycling operation ceased in 2018

Transfer Capacity as of 2018

Site name	Operator	WPA	Non-Haz	Inert	Haz
Transfer, Recycling & Civic Amenity Site	FCC Environment (Berkshire) Ltd	Bracknell Forest	100,000	15,000	10,000
Darwin Close TS2	Reading Borough Council	Reading			504
Darwin Close Transfer Station	Reading Borough Council	Reading	32,000	1,753	
Reynolds Skip Hire	1st Reynolds Skip Hire Ltd	Reading		6,118	
Select Environmental Services	Select Environmental Services Ltd	Reading	427		220
Smallmead Waste Management Centre	FCC Environment (Berkshire) Ltd	Reading	143,077	2,879	1,774
The Daniels Corporation Int. Ltd	Daniels Corporation Int. Ltd	Reading			3,650
International Technology Products	International Technology Products (UK) Limited	Reading	77		
Allwaste (Berkshire) Limited	Allwaste (Berkshire) Limited	RBWM		4,999	
Braywick Civic Amenity Site	Veolia E S Cleanaway (UK) Ltd	RBWM	6,403	2,202	1,468
Horwoods Yard	Dennis D & John F Horwood	RBWM	1,679	3,768	
John Horwood	John Horwood	RBWM	869	2,748	
Maidenhead Transfer Station	Veolia E S Cleanaway (UK) Ltd	RBWM	66,328	69	73
Mini - Skips (Southern) Ltd	Mini - Skips (Southern) Ltd	RBWM	2,533	11,186	
St. George's Lane	Shorts Group Ltd	RBWM	11,834	104,699	145
Toutley Depot	OCS Group UK Ltd	Wokingham	4,999		
		Total	240,226	155,421	17,834

Glossary

Anaerobic Digestion	A biochemical process by which organic matter is decomposed by bacteria under controlled conditions in the absence of oxygen, producing methane gas and other by-products.
Biological Treatment	Technologies that use bacteria under controlled conditions to break down organic materials and wastes.
Biomass plant	A plant which produces renewable energy sources made of biological material from living, or recently living organisms.
Civic Amenity Site	A site where the public can deliver household waste for reuse, recycling or disposal. Also referred to as Household Waste Recycling Centres.
Commercial Waste	A legal definition relating to waste from premises used for trade, business, sport, recreation or entertainment, etc.
Composting	The controlled biological decomposition of organic material (such as grass cuttings, hedge trimmings and tree loppings) in the presence of air to form a humus-like material.
Construction, Demolition and Excavation (CD&E) Wastes	Wastes from building and civil engineering activities. Legally classified as industrial waste.
Department for Food and Rural Affairs (DEFRA)	The UK Government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities.
Dry Recyclables	Recyclable materials such as paper, metals, glass and plastics excluding garden and food wastes.
ELV	End of Life Vehicle such as an old car disposed of as scrap.
Energy Recovery Facility (ERF)	A facility at which waste material is burned to generate heat and/or electricity
Energy Recovery Incineration (Energy from Waste (EfW))	Burning of waste materials at high temperatures under controlled conditions with the utilisation of the heat produced to supply industrial or domestic users, and/or generate electricity
Environment Agency (EA)	A public organisation with the responsibility for protecting and improving the environment in England and Wales. Its functions include the regulation of industrial processes, the maintenance of flood defences and water resources, water quality and the improvement of wildlife habitats.
Environmental Permit	Permits are required by anyone who proposes to deposit, recover or dispose of waste. The permitting system is separate from, but complementary to, the land use planning system. An Environmental Permit and the conditions attached is to ensure that the waste operation which it authorises is carried out in a way which protects the environment and human health.
European Waste Catalogue (EWC)	The EWC is a hierarchical list of waste descriptions established by Commission Decision 2000/532/EC. It is

	divided into twenty main chapters each of which has a two-digit code between 01 and 20. Most of the chapters relate to industry but some are based on materials and processes.
Feedstock	The type of waste (a term used by waste management operators).
Gasification	A waste treatment process in which waste is heated to produce a gas that is burned to generate heat energy
Green Wastes	Organic plant materials such as grass cuttings, hedge trimmings and tree loppings. From household gardens, local authority parks and gardens and commercial landscaped gardens.
Hazardous Waste	Hazardous waste is waste that contains hazardous properties that may render it harmful to human health or the environment. Hazardous wastes are listed in the European Waste Catalogue.
Hazardous Waste Data Interrogator (HWDI)	Released annually by the Environment Agency and contains information on hazardous waste received, hazardous waste removed and hazardous waste moved between permitted waste operators by local authorities and regional areas.
Household Waste	A legal definition relating to waste from domestic sources such as households, caravans and residential homes, etc.
Household Waste Recycling Centre (HWRC)	A site where the public can deliver household waste for reuse, recycling or disposal. Also referred to as Civic Amenity Sites.
Industrial Waste	A legal definition relating to waste from any factory, industrial process (excluding mines and quarries) or premises used for services such as public transport or utilities, etc. Construction and demolition waste is classified as industrial waste.
Inert Waste	Waste that does not normally undergo any significant physical, chemical or biological changes when deposited at a landfill site. In the context of inert waste, it is materials such as soil, clay, chalk and spoil.
In Vessel Composting (IVC)	Composting within a sealed chamber where environmental parameters are optimised (temperature, moisture, mixing and air flow), resulting in the production of higher quality finished compost within a shorter time.
Landfill	An engineered and controlled waste disposal facility at which waste is placed on or in the land.
Leachate	Water which seeps through a landfill site, extracting substances from the deposited waste to form a pollutant
Low Level Radioactive Waste (LLW)	This is generally protective clothing, tools, equipment rags, filters, etc., that mostly contain short-lived radioactivity. Although it does not need to be shielded, it needs to be disposed of in a different manner than when disposing of every-day rubbish.
Materials Recovery Facility	A plant for separating out recyclable waste streams, either mechanically or manually, prior to reprocessing.

Mechanical Biological Treatment (MBT)	Mechanical sorting and separation to separate out biodegradable materials, which are sent to a biological treatment process.
Mechanical Sorting	Sorting of materials and/or waste using machinery.
Municipal Solid Waste (MSW)	Household waste and any other wastes collected by a Waste Collection Authority, or its agents, such as municipal parks and gardens' waste, street litter, waste from fly-tipping, waste delivered to council recycling points and Civic Amenity site waste.
National Planning Policy Framework (NPPF)	In 2012, the Government streamlined a number of planning policies into one main document – the National Planning Policy Framework (NPPF). This contains the policy framework that Local Plans need to follow and planning decision-making. Local Plans will need to be compliant with the NPPF.
Net Self Sufficiency	Providing enough waste management capacity to manage the equivalent of the waste generated in a given area, while recognising that some imports and exports will continue.
Non-hazardous Landfill	One of the three classifications of landfills made by the Landfill Directive, taking non-hazardous waste.
Non-hazardous Waste	Waste permitted for disposal at a non-hazardous landfill, such waste is neither inert or hazardous and includes the majority of household and commercial wastes.
Non-hazardous Wastes	Wastes which do not pose a threat to human health or the environment if properly regulated, including general household, commercial and industrial wastes. Applies particularly to the categorisation of landfill sites for these waste types.
On / In Land	A waste management category used by the Environment Agency for waste that has been disposed of on or in land, but that classifies as a recovery operation and not as landfill.
Pyrolysis	Thermal decomposition at high temperatures taking place in an inert atmosphere.
Recycled / Recovered Products	Products manufactured from recyclables or the by-products of recovery and treatment processes e.g. secondary aggregates manufactured from incinerator ash.
Recycling	The series of activities by which discarded materials are collected, sorted, processed and converted into raw materials and used in the production of new products.
Residual Waste	Waste which cannot be recycled, has not be captured in a recycling scheme or rejected after sorting/recycling has taken place.
Special Waste	Waste as defined in the Control of Pollution (Special Waste) Regulations 1980, which may be dangerous to life or has a flashpoint of 21 degrees C or less, or is a medicinal product available only on prescription, requiring special care in its transport and disposal. Now superseded by Hazardous Waste.

Transfer Station	A site to which collected waste is delivered and transferred to bulk transport for onward delivery by road, rail or water to a waste processing, reprocessing, recycling, recovery or disposal site.
Void Space	Unused licensed capacity at a landfill site.
Waste	Any substance or object which the producer or the person in possession of it intends to, is required to, or does discard. Defined by the Environmental Protection Act 1990. Waste includes any scrap material, effluent or unwanted surplus substance or article which requires to be disposed of because it is broken, worn out, contaminated or otherwise spoiled. Explosives and radioactive wastes are excluded.
Waste Arisings	The amount of waste generated in a given locality over a given period of time.
Wastewater	Wastewater is a broad term describing a mixed liquid waste which can contain a wide range of contaminants in varying concentrations. It is produced by domestic residences, commerce and industry, and/or agriculture and is often disposed of via a pipe, sewer or similar structure.
Waste Data Interrogator (WDI)	Released annually by the Environment Agency and contains information on waste received, waste removed and waste moved between permitted waste operators by local authorities and regional areas.
Waste Electrical and Electronic Equipment (WEEE)	End of life electrical and electronic equipment. Either classed as household or non household WEEE.
Waste Hierarchy	Preferred waste management options in the following order (most preferable first): reducing waste; reusing waste; recovery (recycling, composting, energy recovery) and only then disposal as a last option.
Waste Planning Authorities	The local planning authority responsible for planning control over waste disposal and other management related development.
Waste Transfer Station (WTS)	A location where waste can be temporarily stored, separated and bulked after being dropped off by domestic waste collection lorries and before being carried off by larger vehicles for subsequent treatment or ultimate disposal.

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