

West London Waste Plan

Climate Change Topic Paper

Final

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Abbreviations and Glossary

Abbreviations

CfD	Contracts for Difference
CBDP	Carbon Budget Delivery Plan
CCC	Climate Change Committee
LPA	Local Planning Authority
NAP	National Adaptation Programme
NPPF	National Planning Policy Framework
NPPW	National Planning Policy for Waste
NPS	National Policy Statement
SFRA	Strategic Flood Risk Assessment
SA	Sustainability Appraisal
SuDS	Sustainable Urban Drainage Systems
UKCP	United Kingdom Climate Projections

Glossary

Biogenic	Material within the waste stream that has been generated by the bio-cycle and was growing in the last hundred or so years. Examples include food, paper, garden waste, wood.
Carbon Offsetting	Carbon offsetting is a method of funding equivalent carbon dioxide saving elsewhere to compensate for emissions.
Carbon Sequestration	Carbon sequestration is the long-term storage of carbon dioxide. Sometimes called carbon dioxide removal (CDR), the practice involves capturing carbon dioxide from the atmosphere.
Circular Economy	The circular economy means decoupling economic activity from the consumption of resources. It is based on three principles: Design out waste and pollution; keep products and materials in use; regenerate natural systems.
Climate change adaptation	Adjustments made to natural or human systems in response to the actual or anticipated impacts of climate change, to mitigate harm or exploit beneficial opportunities.

Climate change mitigation	Action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions.
Combined Heat and Power (CHP)	The harnessing of both electricity and heat from power generating plants.
Greenhouse Gases	A greenhouse gas is a gas which absorbs reflected solar energy. This has the effect of making the Earth's atmosphere warmer. Solar energy enters the Earth's atmosphere and reaches its surface. Some of that energy is reflected back into space, however greenhouse gases absorb this reflected energy back to the Earth. Carbon dioxide, methane and nitrous oxide are all greenhouse gases.
Life Cycle Assessment (LCA)	Life Cycle Assessment involves an analysis of the impact a product or service may have on the world around it. It provides a framework for measuring the relative impact of different options and facilitating decision making.
Local Plans	Prepared by local planning authorities, Local Plans guide decisions on future development proposals for an area. They set out policies to be used in decision making which are supported by a vision for how the local planning authority would like the area to develop.
Marine Plans	Marine plans manage the seas around England by setting out the priorities and direction for future development within the plan area.
Municipal Solid Waste (MSW)	Commonly known as refuse or rubbish and is a waste type consisting of everyday items that are discarded by the public. It covers household waste and household-like commercial and industrial waste (e.g. from offices or hotels).
'R1' Recovery status	The definition in the revised Waste Framework Directive for a 'recovery' operation. For municipal waste incinerators this is based on a calculation of a plant's efficiency in converting tonnages of municipal waste to energy. Plants operating at or above the stipulated thresholds can be classified as 'recovery operations' for the purposes of the waste hierarchy. Incinerators operating below the threshold are classed as 'disposal'.
Strategic Flood Risk Assessment (SFRA)	Strategic Flood Risk Assessments help inform development decisions by considering the flood risk in a particular location. They identify opportunities to reduce the cause and impact of flooding and areas where development may be restricted, or additional management may be required to reduce the risk of flooding.
Sustainability Appraisal (SA)	Sustainability Appraisals assess whether planning policy documents promote sustainable development. SAs consider the social, environmental and economic aspects of sustainability.

1. Executive Summary

- 1.1 This topic paper sets out background information, legislation, policy and guidance on climate change to ensure that this is properly considered in preparation of the proposed policies in the Regulation 18 West London Waste Plan (WLWP).
- 1.2 Legislation and planning policy provides a framework within which local authorities are expected to respond to the challenges of climate change. Local planning authorities have a statutory duty to take climate change into account through the formulation and implementation of planning policy in Local Plans. The National Planning Policy Framework (NPPF) also requires that land use planning contributes to mitigating and adapting to climate change and the move to a low carbon economy. Plans are to take a proactive approach to mitigating and adapting to climate change taking account of the long-term implications for flood risk, coastal change, water supply, biodiversity & landscapes, and the risk of overheating from rising temperatures. Policies should ensure resilience of infrastructure.
- 1.3 Like the rest of the country, West London is expected to be affected by increases in the incidence and severity of drought, heatwaves, flood risk, water stress and pressures on existing infrastructure caused by climate change.
- 1.4 The management of waste results in emissions of greenhouse gases which vary depending on the type of waste, how it is managed and transported. Changing approaches to waste management by a shift towards resource management and the circular economy is expected to result in reductions in greenhouse gas emissions.
- 1.5 The management of waste also needs to adapt to the impacts of climate change. Climate resilience can be built into waste infrastructure, for example by considering flood risk and water management, when identifying suitable sites. By reviewing the evidence of predicted climate change effects, it has been possible to identify the most likely impacts on waste management in West London.
- 1.6 The principal aim of this topic paper is to provide information that ensures that climate change is fully taken into account when planning for waste in West London, satisfying the requirements of national planning policy and taking account of the 'Climate Emergency' declared by the majority of the planning authorities in West London. This topic paper therefore underpins the Vision, Strategic Objectives and Policies related to adaptation to, and mitigation of, climate change in the Draft (Regulation 18) WLWP.

2. Introduction

- 2.1 Climate change refers to a large-scale, long-term shift in the planet's weather patterns and average temperatures.¹ There is scientific consensus that the release of carbon dioxide and other greenhouse gases into the atmosphere contributes towards rising global temperatures which results in long term changes to the climate. These rising temperatures impact on seasonal variations in weather patterns and broadly in the UK this is resulting in warmer, wetter winters and dryer, hotter summers along with more extreme events².
- 2.2 The planning system has a statutory role in responding to these challenges. Section 19 of the Planning and Compulsory Purchase Act 2004 requires local planning authorities to ensure that, taken as a whole, their Local Plans contribute to the mitigation of, and adaptation to, climate change. The National Planning Policy Framework reinforces this duty by requiring plans to take a proactive approach to reducing greenhouse gas emissions, supporting the transition to a low carbon economy and ensuring that development is made resilient to the impacts of a changing climate. National Planning Policy for Waste considers these matters insofar as they relate to waste management, including the need to drive waste up the waste hierarchy and to consider locational criteria such as flood risk, transport and design when planning for new or intensified waste facilities.
- 2.3 This topic paper is also, in part, a response to the 'Climate Emergency' as recognised by the councils in West London. Consensus on the urgency of climate change and the need to act promptly and collaboratively led to London Councils adopting the Joint Statement on Climate Change in December 2019. They agreed to:
- “act ambitiously to meet the climate challenge that the science sets out, and find political and practical solutions to delivering carbon reductions that also secure the wellbeing of Londoners.”*
- 2.4 This topic paper provides an overview of likely climate change impacts in West London and how the management of waste can mitigate and adapt to these. It is intended to underpin the development of updated planning policy on the management of waste in West London so that climate change is taken into account in future planning policy and decision making on planning applications.

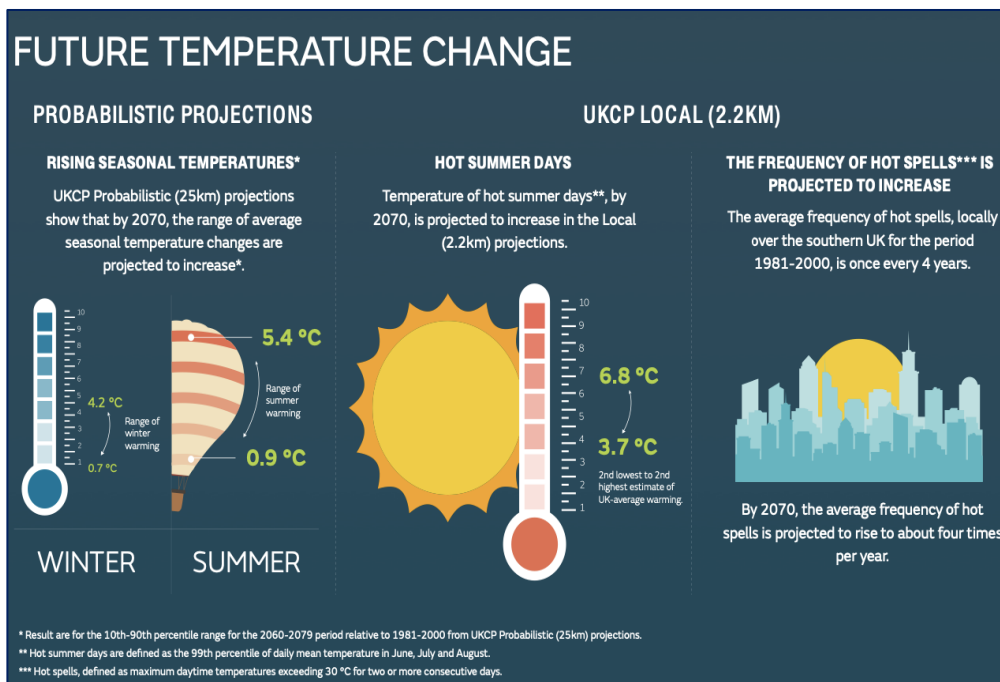
1 Met Office. 2020. *What is climate change?* <https://www.metoffice.gov.uk/weather/climate-change/what-is-climate-change>

2 Met Office Hadley Centre, Environment Agency, Department for Environment, Food & Rural Affairs and Department for Business, Energy and Industrial Strategy. 2019. *UK Climate Projections: Headline Findings*. Crown copyright, Met Office. Available at: <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp-headline-findings-v2.pdf>.

3. Context

How the climate is changing and expected to change in the future and the resulting impacts

- 3.1 Since the industrial revolution the average temperature of our planet has risen by around 1°C. This is considered to represent a rapid change. The effects of this change are already being felt. 2022 was the warmest year in the UK since 1884, 0.9°C above the 1991–2020 average. 2022 was the first year to record a UK annual mean temperature above 10°C³. The decade 2015–2024 was on average 0.4°C warmer than the 1991–2020 average and 1.2°C warmer than 1961–1990; every one of the UK’s ten warmest years has occurred since 2002. The decade 2015–2024 was 2% wetter than 1991–2020 and 16% wetter than 1961–1990 for the UK overall. Over the 32-year period 1993–2024 sea level has risen by 13.4 cm and the rate of UK sea-level rise is increasing faster than the global average⁴.
- 3.2 General climate change trends projected over the UK for the 21st century show an increasing pace of change to warmer, wetter winters and hotter, drier summers with an increase in the frequency and intensity of extreme events. The infographic below shows probable future climate outcomes for the UK.



3 State of the UK Climate 2022, <https://www.metoffice.gov.uk/research/climate/maps-and-data/about/state-of-climate>

4 RMetS, 2025 State of the UK Climate in 2024
<https://rmets.onlinelibrary.wiley.com/doi/10.1002/joc.70010>

[Figure 1⁵](#): Future UK Temperature Change projections

3.3 Table 1 sets out anticipated climate outcomes under a low and high emissions scenario.

[Table 1](#): Summer and Winter Changes by the 2070's in central England

	Summer Rainfall Change	Winter Precipitation Change	Summer Temperature Change	Winter Temperature Change
Low Emission Scenario	41% drier to 9% wetter	3% drier to 22% wetter	No change to 3.3°C warmer	-0.1°C cooler to 2.4°C warmer
High Emission Scenario	57% drier to 3% wetter	2% drier to 33% wetter	1.1°C warmer to 5.8°C warmer	0.7°C warmer to 4.2°C warmer

Source: Met Office⁶

3.4 Figure 2 shows the correlation between atmospheric carbon dioxide and global average surface temperatures. This graph is based on data collected from Met Office, NASA and the US National Centres for the Environmental Information.

5 Defra, BEIS, Met Office and Environment Agency (August 2022) *UK Climate Projections – Headline Findings*

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v4_aug22.pdf and

<https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-infographic-headline-findings-land.pdf>

6 Met Office. 2022. *UKCP18 Climate change over land*. Available from: chrome- April 2024 www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-infographic-headline-findings-land.pdf April 2024

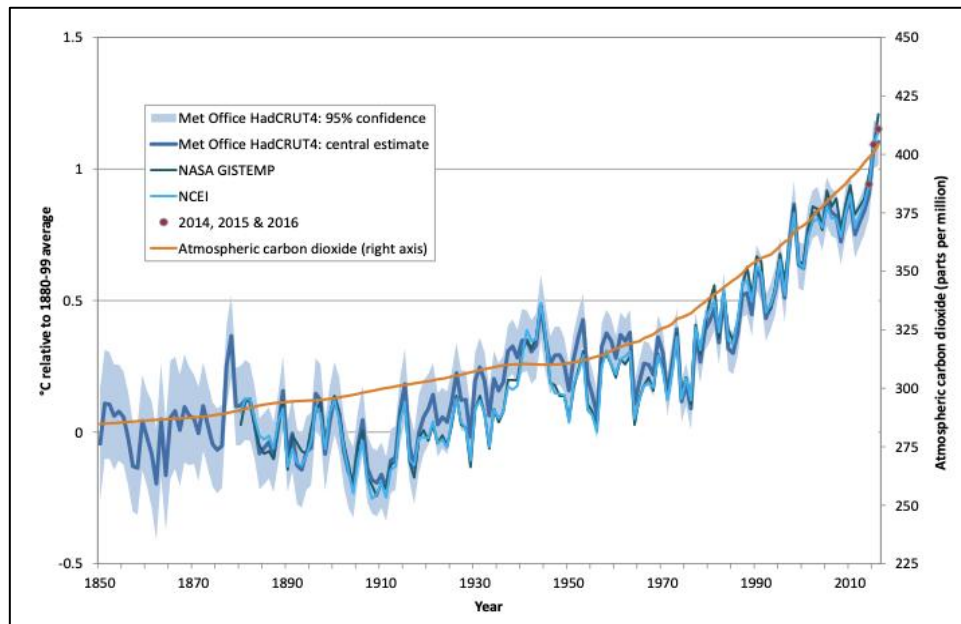


Figure 27: Atmospheric carbon dioxide and global average surface temperatures 1850-2016

West London

- 3.5 Greater London's GHG emissions were 28.4 MtCO₂e in 2022, which was a small increase on emissions in 2021 (28.37 MtCO₂e). Around 90% of London's emissions come from buildings and transport.
- 3.6 West London can be expected to be affected by increases in the occurrence and severity of drought, heatwaves, water stress, flooding and flood risk, and pressures on existing infrastructure caused by rising temperatures.
- 3.7 As shown by the Strategic Flood Risk Assessment⁸ prepared to support the updated West London Waste Plan, a large area of West London is covered by Environment Agency Flood Zone 2 and 3 designations (medium and high probability of fluvial flooding)⁹ due to its low-lying nature, particularly proximate to the Thames and tributaries. The Thames is a tidal river that is sensitive to future sea level rises and requires a complex system of barriers, defences and other measures to manage and prevent flooding. The latest UK Climate Projections (UKCP18)¹⁰ show London is facing a probable sea level rise of 0.29m – 1.15m by 2100. In addition, reduced summer rainfall is leading to more regular drought warnings and heatwaves are becoming more frequent¹¹

8 *West London Waste Plan Strategic Flood Risk Assessment v1.0* Metis Consultants Ltd (2025)

9 <https://flood-map-for-planning.service.gov.uk/map?cz=506216.5,176158.3,11.289107>

10 <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp>

11 www.london.gov.uk/sites/default/files/london_city_resilience_strategy_2020_digital_0.pdf

while increased incidence of extreme events, including intense rainfall, will increase surface water flooding.

Legislative and policy context regarding climate change that is relevant to the management of waste

- 3.8 International commitments on climate change have been transposed into national legislation and implementation of this has been enshrined into national, and, in turn, local policy. This section reviews the current policy position in relation to climate change, and waste management in particular.

International

UNFCCC Paris Agreement – December 2015

- 3.9 The UK played a central role in securing the [2015 Paris Agreement](#), in which, for the first time, countries representing over 90% of global economic activity agreed stretching national emission reduction targets in a global effort to tackle climate change. The central aim of the Paris Agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. Article 2(b) states that the Agreement aims to strengthen the global response to the threat of climate change by “increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development.”
- 3.10 The Glasgow Climate Pact adopted at COP26 in 2021 included a package of agreements including to build resilience to climate change, curb greenhouse gas emissions and provide the necessary finance for this. Collectively parties agreed to work to reduce the gap between existing emission reduction plans and that required to limit global temperature rise to 1.5 degrees.
- 3.11 At COP29 in 2024 the UK government announced a new target to reduce greenhouse emissions by at least 81% on 1990 levels (which builds on the previous 78% by 2035 goal).

UN Sustainable Development Goals

- 3.12 The 2030 Agenda for Sustainable Development¹², adopted by all United Nations Members States in 2015, provides a shared blueprint with 17 Sustainable Development Goals (SDGs). These recognise that ending poverty and other deprivations must go alongside strategies that improve health and education, reduce inequality, and spur economic growth whilst also tackling climate change.

12 United Nations, 2020. *Sustainable Development Goals: Sustainable Development Knowledge Platform*. <https://sustainabledevelopment.un.org/?menu=1300>

- 3.13 SDGs concerned specifically with waste management and climate change are:
- *SDG 12. Responsible consumption and production: ensure sustainable consumption and production patterns*
 - *SDG 13. Climate action: take urgent action to combat climate change and its impacts*
- 3.14 The link between the SDGs and waste management is expressly recognised in the government's Resources and Waste Strategy (see below).

United Nations Environment Programme - Emissions Gap Report 2023

- 3.15 The United Nations [Emissions Gap Report](#) is the 14th edition in a series that brings together many of the world's top climate scientists to look at future trends in greenhouse gas emissions and provide potential solutions to the challenge of global warming. The report finds that there has been progress since the Paris Agreement was signed in 2015. Greenhouse gas emissions in 2030, based on policies in place, were projected to increase by 16 per cent at the time of the agreement's adoption. Today, the projected increase is 3 per cent. However, predicted 2030 greenhouse gas emissions still must fall by 28 per cent for the Paris Agreement 2°C pathway and 42 per cent for the 1.5°C pathway.
- 3.16 Fully implementing unconditional Nationally Determined Contributions (NDCs) made under the Paris Agreement is modelled as putting the world on track for limiting temperature rise to 2.9°C above pre-industrial levels this century. Fully implementing conditional NDCs would lower this to 2.5°C.
- 3.17 The report calls for all nations to accelerate economy-wide, low-carbon development transformations. Countries with greater capacity and responsibility for emissions will need to take more ambitious action and support developing nations as they pursue low-emissions development growth.

EU Waste Framework Directive

- 3.18 The retained Waste Framework Directive (WFD) sets requirements for the management of waste including application of the 'waste hierarchy'. The Waste Hierarchy is explained in more detail below.

Waste hierarchy

- 3.19 The waste hierarchy ranks waste management options according to what is considered to deliver the best environmental outcome. National and international policy emphasises the importance of the waste hierarchy in guiding decisions on the sustainable management of waste and of driving the management of waste up the hierarchy unless life cycle assessment shows it not to deliver the best environmental outcome. The waste hierarchy is therefore central to informing decisions on waste management options, and is illustrated in Figure 3 below.

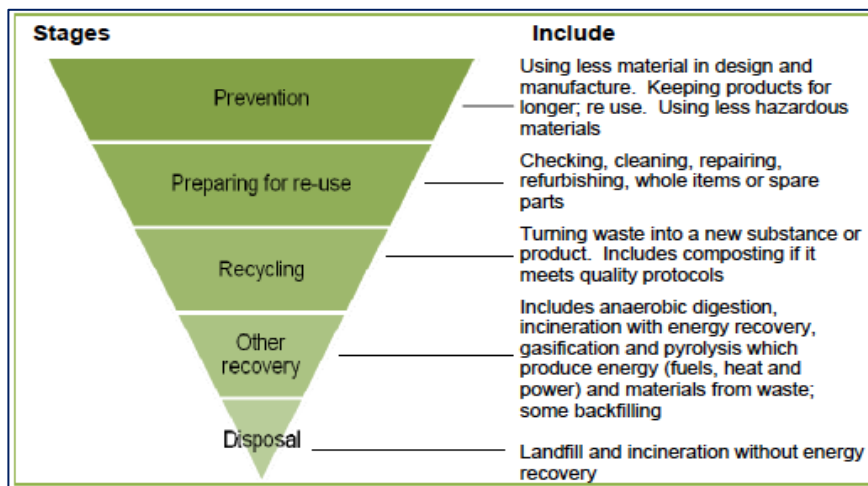


Figure 3: The Waste Hierarchy¹³

EU Landfill Directive

- 3.20 The retained EU Landfill Directive sets out requirements for the location, management, engineering, closure and monitoring of landfills. The Landfill Directive includes national targets for the reduction in the landfilling of biodegradable municipal waste.

National

Climate Change Act 2008

- 3.21 The UK was the first country to introduce long-term, [legally-binding national legislation](#) to tackle climate change through the [2008 Climate Change Act](#). The Act provides the UK with a legal framework including a 2050 target for emissions reductions, five-yearly ‘carbon budgets’ (limits on emissions over a set time period which act as stepping stones towards the 2050 target), and the development of a climate change adaptation plan.
- 3.22 The Act also introduced a requirement that the Government regularly assess the risks to the UK of the current and predicted impact of climate change every five years (Section 57(3) of Climate Change Act 2008); to set out climate adaptation objectives and to set out proposals and policies for meeting these objectives.

Planning and Compulsory Purchase Act 2004 (as amended)

- 3.23 Local planning authorities are bound by the legal duty set out in Section 19 of the 2004 Planning and Compulsory Purchase Act, as amended by the 2008 Planning Act, to ensure that, taken as whole, plan policy contributes to the

13 Defra, 2011. *Guidance on applying the Waste Hierarchy*.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf

mitigation of, and adaptation to, climate change. This is a matter that is specifically tested at the independent examination of Local Plans.

The Waste (England and Wales) Regulations 2011

- 3.24 The Waste (England and Wales) Regulations 2011 transposed the obligation to comply with the waste hierarchy, included in the WFD, into English law. It places an obligation on any entity which has control of waste to take "all such measures available to it as are reasonable in the circumstances to apply the waste hierarchy as a priority order." However, they may depart from the priority order where this is justified by life-cycle thinking on the overall impacts of the generation and management of the waste so as to achieve the best overall environmental outcome.
- 3.25 When considering the overall impacts, the following considerations must be taken into account:
- a) the general environmental protection principles of precaution and sustainability;
 - b) technical feasibility and economic viability;
 - c) protection of resources;
 - d) the overall environmental, human health, economic and social impacts.

National Planning Policy Framework

- 3.26 The [National Planning Policy Framework](#) (NPPF) (December 2024) includes specific policy on climate change which relates to all forms of development. It is a key mechanism by which the government seeks to meet its obligations under the Climate Change Act at a local level. While the NPPF does not specifically relate to waste (which is instead addressed specifically by the stand-alone policy document National Planning Policy for Waste – see below) the policies on climate change do apply to development associated with waste management.
- 3.27 The NPPF requires that local plans are to take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. It requires that "...policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts..." (paragraph 162).
- 3.28 The NPPF requires developments to be planned in ways that:
- a. avoid increased vulnerability to the range and impacts arising from climate change,
 - b. can help to reduce greenhouse gas emissions, such as through location, orientation and design.
- 3.29 In determining planning applications, local planning authorities should expect new developments to:

- a. Comply with any new development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant that this is not feasible or viable; and
 - b. take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.
- 3.30 In relation to flood risk, the NPPF requires that “...*inappropriate development in areas of flooding should be avoided*” (paragraph 170) and “...*strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources*” (paragraph 171).
- 3.31 Plans should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas and not exacerbating the impacts of physical change to the coast. In coastal areas, planning policies and decisions should take account of the UK Marine Policy Statement and marine plans¹⁴ as well.

National Planning Policy for Waste

- 3.32 The [National Planning Policy for Waste](#) (NPPW) was published in 2014. It is to be read in conjunction with the NPPF, the Waste Management Plan for England (2013) and National Policy Statements for Waste Water (2012) and Hazardous Waste (2013). All local authorities are expected to have regard to its policies when planning for waste management. It is also a material consideration in planning decisions for waste management facilities.
- 3.33 The NPPW considers that positive planning will deliver sustainable development and resource efficiency, including provision of modern infrastructure, local employment opportunities and wider climate change benefits, by driving waste management up the waste hierarchy.
- 3.34 When identifying suitable sites and areas for new or enhanced waste management facilities, the NPPW requires local authorities to recognise the need for a mix of types and scale of facilities, and that adequate provision must then be made for waste disposal (Section 4 – identifying suitable sites and areas).
- 3.35 When determining planning applications, the NPPW (Section 7) expects planning authorities to:
- only expect need to be demonstrated if proposals are not consistent with the Local Plan;
 - ensure proposals will not undermine the objectives of the Local Plan including hindering movement up the waste hierarchy;
 - consider the potential impacts on the local environment and amenity;

¹⁴ See South East Inshore Marine Plan which extends to cover the whole of the tidal Thames <https://www.gov.uk/government/collections/south-east-marine-plan#south-east-inshore-marine-plan-area>

- ensure facilities are well designed/

3.36 On energy production from waste NPPW states:

“Where a low carbon energy recovery facility is considered as an appropriate type of development, waste planning authorities should consider the suitable siting of such facilities to enable the utilisation of heat produced as an energy source in close proximity to suitable potential heat customers.” (Section 4 – Identifying suitable sites and areas)

National Planning Practice Guidance

3.37 The Planning Practice Guidance (PPG) chapter on climate change (paragraphs 001 - 012) provides additional guidance on the operation of the NPPF and NPPW.

3.38 Local Plans are to address climate change and enable the delivery of sustainable development in accordance with policies in the NPPF. These include the requirement for local authorities to adopt proactive strategies to mitigate and adapt to climate change (NPPF paragraphs 162 – 182) in line with the provisions and objectives of the Climate Change Act 2008.

National Agenda for Carbon Reduction

- 3.39 The Committee on Climate Change (the CCC) is an independent statutory body established under the Climate Change Act 2008. Its purpose is to advise the UK Government and Devolved Administrations on emissions targets and report to Parliament on progress made in reducing greenhouse gas emissions and preparing for climate change against the Climate Change Act obligations.
- 3.40 In May 2019 it published [Net Zero – The UK’s contribution to stopping global warming](#). The CCC recommended a new emissions target for the UK of net-zero greenhouse gases by 2050. In relation to waste this means:
- Eliminate food waste from households as far as possible and separate food waste collections to be provided wherever possible in addition to reducing, reusing and recycling other waste.
 - After 2025 no biodegradable waste should be sent to landfill. This will require regulation and enforcement, with supporting actions through the waste chain, including for example mandatory separation of biodegradable waste from remaining waste.

Second National Infrastructure Assessment 2023

- 3.41 The [Second National Infrastructure Assessment \(NIA\) 2023](#) was prepared by the National Infrastructure Commission and makes recommendations to government on the UK’s infrastructure needs. Key areas for improvement identified includes the following:
- *without further delay, implement and provide clear guidance on how the collection reforms, known as ‘simpler recycling’, packaging extended producer responsibility scheme and deposit return scheme will work,*
 - *by 2026, develop individual recycling targets for all local authorities and provide financial support for transitional costs,*
 - *expand the single use plastics ban to cover a wider range of hard to recycle plastic items,*
 - *introduce a measurement system, from 2025, on the composition and waste treatment destinations for commercial and industrial waste in England. Where the market is not likely to deliver improved recycling of this waste, government should develop future policies to increase recycling rates further,*
 - *with immediate effect, local authorities should not sign or renew long term contracts for waste services relying on energy from waste without credible plans for carbon capture and storage,*
 - *local authorities with existing long term contracts should transition away from unabated energy from waste at end of contract, or at break clauses where possible,*
 - *government should deliver its commitment to bring energy from waste into the Emissions Trading Scheme in 2028.*
- 3.42 The most beneficial waste infrastructure pathway options to reduce GHG emissions arising from waste management include increasing organic waste recycling through the segregation of food and other biodegradable waste; increased plastics recycling via kerbside collection; and higher recycling of a variety of organic and dry recyclable materials.

A Green Future: Our 25 Year Plan to Improve the Environment (2018)

- 3.43 The [25 Year Environment Plan](#), amongst other matters, sets out how the UK is to tackle the effect of climate change. A key target is mitigating and adapting to climate change. The Plan sets out how the government will go about its goal of mitigating and adapting to climate change. Three key areas are identified:
- *Continuing to cut greenhouse gas emissions including from land use, land use change, the agricultural and waste sectors and the use of fluorinated gas;*
 - *Making sure that all policies, programmes and investment decisions take into account the possible extent of climate change over the century; and*
 - *Implementing a sustainable and effective second National Adaptation Programme.*
- 3.44 Chapter 4 sets out the Plan’s strategy for increasing resource efficiency and reducing pollution and waste. Resource efficiency is important for mitigating and adapting to climate change because it reduces the amount of carbon dioxide and other greenhouse gases released into the atmosphere as a consequence of manufacturing and supply chains, and associated uses of resources.
- 3.45 In 2024, UK territorial GHG emissions were 371 million tonnes of carbon equivalent (MtCO₂e), of which waste management accounted for 5% ¹⁵. Increasing resource efficiency can help reduce the greenhouse gases released through business, manufacturing, supply chains and transport and support the move towards a circular economy. The Environment Plan identifies the need to look at the whole life-cycle of products from production to usage as well as end of life. i.e. how they are managed as waste.
- 3.46 A key goal and target of the Plan is increasing resource efficiency and reducing pollution and waste (Chapter 4). This is to be achieved by:
- Working towards zero avoidable waste by 2050.
 - Working towards eliminating avoidable plastic waste by end of 2042.
 - Meeting all existing waste targets – including those on landfill, reuse and recycling – and developing ambitious new future targets and milestones.
 - Seek to eliminate waste crime and illegal waste sites over the lifetime of the Plan, prioritising those of highest risk. Delivering a substantial reduction in litter and littering behaviour.
 - Significantly reducing and, where possible, preventing all kinds of marine plastic pollution – in particular material from land.

15 Department for Energy Security and Net Zero (March 2025) *Provisional UK Greenhouse Gas emissions statistics 2024* <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-statistics-2024>

Environmental Improvement Plan 2023

- 3.47 The Environmental Improvement Plan¹⁶ (EIP) is the first revision of the 25 Year Environment Plan and sets out measures and commitments on resource efficiency and climate change including:
- work with business to implement packaging extended producer responsibility from 2024 so that polluters pay to recycle packaging,
 - introduce a deposit return scheme for plastic and metal drinks containers from October 2025 to drive higher recycling rates,
 - implement consistent recycling between different councils, to boost recycling rates,
 - ban the supply of single-use plastics like plastic plates and cutlery from October 2023. It will also explore options further, including with stakeholders, for the potential for technological innovation in the production of coffee cups, and behavioural science in how they are used.
 - update on progress and plans to reach net zero,
 - publish a Land Use Framework in 2023, setting out how multiple demands on our land, including climate mitigation and adaptation, will be balanced,
 - publish the third National Adaptation Programme (NAP3) in 2023 that will set out a 5 year strategy to build the UK's climate resilience,
 - continue the UK's role as a global leader in tackling climate change, biodiversity loss and land degradation and push for an integrated approach to international action.
- 3.48 The 2024 annual review of progress¹⁷ identified the introduction of the [statutory waste prevention programme](#) which brings together a range of measures backed by funding which will help to keep products and materials in circulation for as long as possible and at their highest value. It also highlights that in 2023, UK territorial emissions:
- reduced 5.4% in terms of total greenhouse gas emissions relative to 2022, amounting to a 52.7% reduction relative to 1990,
 - reduced 6.6% in terms of CO₂ only emissions relative to 2022, amounting to a 49.8% reduction relative to 1990.

Mission Zero- Independent review of net zero

- 3.49 An [Independent Review of Net Zero](#) was commissioned in September 2022, to consider how the UK could better meet its net zero commitments, taking account of global changes. It was also commissioned to consider how the UK might deliver its own net zero targets in a manner that is both more affordable, more efficient, and in a 'pro-business' and 'pro-enterprise' way.

16 <https://assets.publishing.service.gov.uk/media/64a6d9c1c531eb000c64ffa/environmental-improvement-plan-2023.pdf>

17 <https://www.gov.uk/government/publications/environmental-improvement-plan-annual-progress-report-2023-to-2024/environmental-improvement-plan-annual-progress-report-2023-to-2024#improving-our-use-of-resources>

3.50 The following key points were identified in relation to products and waste:

- A circular economy can benefit in multiple ways.
- Many people are taking action to reduce greenhouse gas emissions from the things they consume.
- People need to understand the benefits of moving to a circular economy and need clear advice to inform their purchasing decisions.
- A proposed public engagement strategy should be used to communicate the value of a circular economy and consumers' roles in it.
- Reducing waste saves people money and reduces emissions.
- Repairing products should be affordable.
- Accessing repairs should be easy.
- Clear, nationwide collection and recycling is key.

Committee on Climate Change- Progress Reports to Parliament

3.51 The [Progress in reducing UK emissions- 2023 report to Parliament](#) noted that the continued growth in the use of Energy from Waste (EfW) plants is undermining efforts to reduce emissions within the waste sector. In addition, incoming reforms to recycling collections and packaging should improve recycling rates and divert waste from EfW and landfill, but stronger signals and policies to limit further EfW growth, divert biodegradable waste from landfill and prioritise waste prevention, are needed. This is largely unchanged from their 2022 assessment as they continue to wait for key waste policies to be implemented.

3.52 The key messages are:

- *Energy from Waste:* EfW emissions are already higher than the Government's Carbon Budget Delivery Plan (CBDP) anticipates and EfW capacity is set to increase in the coming years. A comprehensive systems approach to control and reduce EfW emissions is urgently needed, including a moratorium on additional EfW capacity until a review of capacity needs has been completed.
- *Recycling:* Improving England and Scotland's stalled recycling rates is key to reducing dependence on EfW and landfill – implementation of planned reforms to recycling and packaging must not be delayed.
- *Landfill:* The Government has indicated that additional policies will be needed to meet the aim of preventing biodegradable waste from going to landfill, still the largest source of emissions in the sector. Clarity on these policies is needed urgently.
- *Carbon capture and storage:* Good progress has been made in developing plans to support the first EfW facilities to install carbon capture technology as part of the industrial carbon capture and storage (CCS) cluster

programme – but a more strategic approach to decarbonising the fleet is needed.

- *Overall strategy:* More generally, greater strategic coordination of plans to decarbonise the waste sector is needed, including much greater emphasis on waste prevention, clarity on future residual waste capacity needs, the suitability of incentives and interactions with other sectors such as waste as a feedstock for Sustainable Aviation Fuels.

3.53 The Climate Change Committee 2024 report to Parliament on progress in reducing emissions¹⁸ identifies that the waste sector saw good initial progress in reducing emissions from 41.9 million tonnes of carbon dioxide equivalent (MtCO_{2e}) in 2008 to 25.9 MtCO_{2e} in 2013, almost exclusively from reduced methane emissions from landfill as a result of the introduction of the Landfill Tax in 1996. However, it also highlights that landfill methane capture has been lower than expected and there has been insufficient progress on recycling and composting, and energy from waste emissions have substantially increased, meaning progress on reducing waste emissions has stalled more recently.

Waste Management Plan for England (2021)

- 3.54 The [Waste Management Plan for England](#) sets out the government will preserve material resources by minimising waste, promoting resource efficiency and moving towards a circular economy in England. It sets out the government will minimise the damage caused to our natural environment by reducing and managing waste safely and carefully, and by tackling waste crime.
- 3.55 The Plan considers current and future actions in line with the 25 Year Environment Plan including eliminating avoidable plastic waste over the lifetime of the 25 Year Environment Plan, doubling resource productivity, and eliminating avoidable waste of all kinds by 2050.
- 3.56 The Plan works towards eliminating food waste to landfill by 2030. This Plan builds on the [Resource and Waste Strategy for England \(2018\)](#) by exploring policies to eliminate all biodegradable waste from entering landfill by 2030.

Environmental Permitting legislation

- 3.57 The Environment Agency has updated their Environment Permit application forms to incorporate consideration of climate change adaptation. The Environment Agency has also issued more general guidance on climate

18 Climate Change Committee (July 2024) *Progress in reducing emissions – 2024 Report to Parliament* <https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2024-report-to-parliament/>

change adaptation in environmental permitting and water resources planning¹⁹.

Environmental Services Association – A net-zero greenhouse gas emissions strategy for the UK recycling and waste sector

- 3.58 The ESA is the trade association for the waste industry. Its strategy identifies how to achieve net zero as a sector by 2040. It identifies key priorities for the sector as: investing in recycling infrastructure to make recycling more efficient; decarbonising non-recyclable waste treatment by removing organics from landfill by 2030 and plastics from energy recovery facilities and deploying carbon capture utilisation and storage; and transitioning vehicles and fuel use to zero emission sources.

Local & Regional

London Plan, 2021

- 3.59 The Mayor of London has set a target for London to be net zero by 2030. The Mayor's London Plan, 2021, forms part of the adopted Development Plan in London and includes a number of policies relating to climate change mitigation and adaptation, including:

- Policy GG6 Increasing efficiency and resilience:
 - *Seeks to improve energy efficiency & low carbon circular economy;*
 - *Ensure building and infrastructure are designed to adapt to climate change through water efficiency, reduce impacts from flooding, and avoid urban heat island effect;*
 - *Create environment resilient to impact of emergencies.*

- Policy SI2 Minimising greenhouse gas emissions:
 - *Major development should be zero carbon – be efficient, use local energy, maximise renewable energy;*
 - *Major development proposals to include detailed energy strategy to demonstrate how zero carbon target will be met;*
 - *Minimum on-site reduction of at least 35% beyond Building Regulations, including through offsetting if cannot be delivered on-site;*
 - *Major development should minimise carbon emissions from any part of the development including plant or equipment;*
 - *Development referable to the Mayor should calculate whole-life cycle carbon emissions.*

- Policy SI3 Energy infrastructure:
 - *Energy masterplans for large-scale development*

19 <https://www.gov.uk/government/collections/environment-agency-and-climate-change-adaptation>

- Policy SI4 Managing heat risk:
 - *Minimise urban heat island effect*
 - *Major development to demonstrate through energy strategy how potential for over-heating will be achieved following 'cooling hierarchy'.*

- Policy SI5 Water infrastructure
 - *Development should achieve water consumption reduction targets and incorporate water saving & recycling measures*

- Policy SI7 Reducing waste and supporting the circular economy
 - *Requires resource conservation, waste reduction, increasing re-use and recycling, and reduction in waste for disposal to be achieved through:*
 - *Promoting a more circular economy;*
 - *Encouraging waste minimisation and prevention;*
 - *Zero biodegradable waste to landfill by 2026;*
 - *Meeting or exceeding 65% municipal waste recycling by 2030;*
 - *Meeting or exceeding 95% C&D waste re-use, recycling or recovery, and 95% excavation waste put to beneficial use;*
 - *Designing developments with adequate space for storage and collection of recyclable waste;*
 - *Referable applications to include Circular Economy Statement demonstrating: how materials will be re-used and recycled; how demand for materials will be reduced and buildings designed for disassembly and re-use; opportunities for on-site waste management; adequate space for storage and collection; and how and where the management of waste will be achieved in line with the waste hierarchy.*

- Policy SI 12 Flood risk management:
 - *Development plans to use London Regional Flood Risk Appraisal, Strategic Flood Risk Assessments and Local Flood Risk Management Strategies to identify where risk exists and seek to reduce these;*
 - *Development to ensure flood risk minimised and mitigated;*
 - *Contribute to delivery of Thames Estuary 2100 Plan;*
 - *Utilities to be designed to remain operational under flood conditions and buildings designed for quick recovery following a flood;*
 - *Protect flood defences;*
 - *Deploy natural flood management methods.*

- Policy SI 13 Sustainable drainage:
 - *Identify areas with surface water management issues and reduce risks;*
 - *Development to achieve greenfield run-off rates and manage water as close to source as possible;*
 - *Apply drainage hierarchy – use rainwater as resource, rainwater infiltration to ground, rainwater attenuation in green infrastructure, rainwater discharge to watercourse, controlled discharge to sewer or drain, controlled discharge to combined sewer;*
 - *Resist proposals for impermeable surfacing;*
 - *Drainage to deliver multiple benefits.*

3.60 The London Plan is currently under review and the new London Plan is programmed for adoption by the Mayor in 2027.

London Council's 'Resilient and Green' Action Plan

3.61 In June 2020, London Councils established the 'Resilient and Green' Working Group to develop an Action Plan²⁰.

3.62 In developing the action plan, the group have addressed each of the main adaptation risks to the UK, namely overheating, flooding, water scarcity, trade and food security, pests and diseases and loss of natural capital. This has shaped the action plans with the following understanding of LPAs' role within each area:

- *Overheating*: address overheating in building and public realm through Local Plans and planning decisions/ development control, management of social housing and housing for vulnerable residents, management and/ or control of green and blue infrastructure, management and/ or control over highways;
- *Flooding*: statutory duty to complete a Strategic Flood Risk Assessment and to avoid development in flood-prone areas, and to prepare a Flood Risk Management Plan, delivery of flood risk projects, working collaboratively to manage increasing tidal flood risk due to rising sea levels, management and/ or control of green and blue infrastructure, management and/ or control over highways;
- *Water scarcity*: reducing water demand through Local Plans and planning decisions/ development control, community water saving projects and leadership, liaison with water companies over water supply and demand management;
- *Loss of natural capital*: statutory duty to conserve and enhance biodiversity and the natural environment through Local Plans and planning decisions/ development control, management and/ or control of green and blue infrastructure, Local Nature Recovery Strategies which will include planning for biodiversity net gain and green infrastructure more generally.

West London Councils Climate Declarations and Action Plans

3.63 The London Boroughs of Brent, Ealing, Harrow, Hillingdon, Hounslow, Richmond upon Thames, and the Old Oak and Park Royal Development Corporation (OPDC) have each outlined ambitions to achieve net-zero carbon emissions. Below is a summary of their targets and commitments.

²⁰ https://www.londoncouncils.gov.uk/sites/default/files/2024-06/resilient_and_green_governance_guide_june_2024.pdf

LB Brent²¹:

- *Target: See aspiration below.*
- *Commitment: In July 2019, Brent Council declared a climate and ecological emergency, committing to do all reasonable in its gift to aim for carbon neutrality as a borough by 2030.*

Commitments made by Brent Council:

In 2021 Brent adopted a Climate & Ecological Emergency Strategy (2021-2030) and continues to deliver rolling biennial action plans focused on the following themes:

- *Consumption, resources and waste,*
- *Sustainable Travel,*
- *Homes, buildings and the built environment,*
- *Nature and green space,*
- *Supporting communities.*

LB Ealing²²:

- *Target: Become carbon neutral as a borough and an organization by 2030.*
- *Commitment: Ealing's Climate and Ecological Emergency Strategy, published in 2021, sets out the plan to achieve this goal, focusing on five key areas: Energy, Food Systems, Nature, Travel, and Waste.*

Specific targets for waste include:

- *Reduce household waste produced per head by 5Kgs by 2030.*
- *Increase the recycling rate of local authority collected waste to 50% by 2025.*
- *To divert 30% of household bulky waste to reuse, repair, or recycling by 2025.*
- *Reduce the amount of food waste in the residual waste stream by 75% by 2025.*
- *By 2030 reduce emissions from operations associated with local authority collected waste by 15% from 2020 baseline 3.05mtCO₂.*

LB Harrow²³:

- *Target: Aim to make the London Borough of Harrow carbon neutral by 2030.*
- *Commitment: On 18th July 2019, Harrow Council declared a Climate Emergency, resolving to achieve carbon neutrality by 2030.*

21 <https://www.brent.gov.uk/neighbourhoods-and-communities/community-priorities/climate-emergency/our-response-to-the-climate-emergency#climatestrategy>

22

https://www.ealing.gov.uk/info/201304/climate_action/2691/ealing_s_climate_and_ecological_strategy

23 <https://www.harrow.gov.uk/environment-parks/climate-change>

Aims to achieve the target:

- *Scaling-up of heat pump technology at operational buildings and maintained schools.*
- *Programme to move towards full electrification of the Council's fleet of vehicles by 2030.*
- *An aim to meet at least an average Energy Performance Certificate (EPC) of 'C' across the Council's housing portfolio by 2027/28.*
- *Introduction of a Low Carbon procurement policy to ensure that carbon reduction and the promotion of the circular economy is at the heart of new contract arrangements.*

LB Hillingdon²⁴

- *Target: To achieve carbon neutrality for council operations by 2030 and achieve 100% clean energy across the Council's services by 2030. The council has also committed to lead and inspire residents, businesses and schools in the borough to reduce their own carbon emissions.*
- *Commitment: The council's Climate Change Declaration 2030 was adopted unanimously in January 2020 and, along with the Strategic Climate Action Plan, sets out commitments, strategic objectives and the strategic plan for implementation.*

The Strategic Action Plan contains 9 Strategic Objectives, including Strategic Objective C5: Waste Management, which states that the council will:

C5.1 Lead by example with a clear waste collection and sorting strategy with year on year targets for improvement.

C5.2 Support the West London Waste Authority on waste reduction campaigns.

C5.3 Provide an online resource for educational facilities to develop and implement waste reduction strategies. Monitor, record, and report on progress.

C5.4 Work with businesses to reduce waste productivity and to provide more opportunities to customers to reduce and recycle their waste.

C5.5 Encourage and support residents and communities to avoid, reduce, reuse, and recycle waste in that order.

C5.6 Develop a community campaign to manage waste more sustainability and explore the potential to lead or support reuse and repair workshops for residents.

C5.7 Promote the importance and value of growing food, either individually or through community groups.

C5.8 To ensure all waste is managed sustainably and there is transparency and information on processes the council utilises and destination of waste.

LB Hounslow²⁵

- *Target: Achieve net-zero carbon emissions across council operations by 2030, with a separate commitment to influence a reduction in wider*

24 <https://www.hillingdon.gov.uk/article/8237/Our-vision-declaration-and-plan-to-tackle-the-climate-emergency>

25 <https://www.hounslow.gov.uk/environment/climate-emergency>

borough emissions and to make the borough resilient to the impacts of climate change.

- *Commitment: Following the declaration of a Climate Emergency on 18 June 2019, Hounslow Council published its Climate Emergency Action Plan in July 2020, detailing programs such as Retrofit Hounslow, Sustainable Travel Promotion, and Greening the Borough.*

Hounslow Council has outlined 7 key programmes to reduce the councils direct carbon emissions:

- *Energy efficiency*
- *Renewable energy*
- *Electrify vehicle fleet*
- *Reducing employee transport*
- *Waste management*
- *Culture change and governance*
- *Sustainable investment and funding*

Hounslow Council also outline the following 6 programmes as part of a high-level action plan to influence the reduction of wider borough emissions: Retrofit Hounslow and deliver zero carbon housing

- *Sustainable travel promotion*
- *A transition to Electric Mobility for vehicular trips*
- *A greener and more resilient Hounslow*
- *Develop net zero lifestyles.*
- *Stimulate a Local green economy*

Richmond upon Thames²⁶

- *Target: Achieve carbon neutrality for council operations by 2030 and a net-zero borough by 2043.*

Richmond's **Climate and Nature Strategy (2025–2030)** sets out an integrated approach to tackling the climate and ecological emergencies, building on the 2019 Climate Emergency Strategy. It focuses on five priority areas:

- *Decarbonise council buildings and generate renewable energy.*
- *Promote active travel and reduce transport emissions.*
- *Protect biodiversity and enhance green spaces.*
- *Move towards a zero-waste economy and eliminate single-use plastics.*
- *Embed sustainability in procurement and spending decisions.*
- *Build resilience to flooding, heatwaves, and other climate risks.*

Old Oak and Park Royal Development Corporation (OPDC)²⁷

26 https://www.richmond.gov.uk/news/press_office/campaigns_and_events/climate_emergency

27 <https://www.london.gov.uk/sites/default/files/2025-04/OPDC%20Sustainability%20Charter%20-%20FINAL%2008-04-25.pdf>

- *Target: Work towards net-zero carbon emissions in alignment with the Mayor of London's target for net zero by 2030.*
- *Commitment: OPDC's Sustainability Charter emphasizes leading on climate action by collaborating with partners to tackle emissions and reduce, share and circulate resources.*

Specific circular economy objectives are:

- *Deliver best practice circular design in new construction and refurbishment by ensuring flexibility, longevity and potential for dis-assembly*
- *Minimise waste as a priority, manage and connect waste streams effectively, repurpose resources and promote sustainable food practices*
- *Capitalise on the inherent opportunity in Park Royal to be a leader in material optimisation and sharing between local businesses and communities.*

Local Plans

- 3.64 All of the Local Planning Authorities in West London have an adopted Local Plan, although some are dated. A summary of the policies most relevant to climate change adaptation and mitigation is included in Appendix A.

4. How Waste Management Contributes Towards Climate Change

Emissions from waste management

Overview

- 4.1 National statistics²⁸ indicate that greenhouse gas emissions from waste management in 2024 in the UK were (provisional value) 19.5 MtCO_{2e}. In 2022 emissions from waste management represented c.5% of total emissions. This has declined from 70.3MtCO_{2e} in 1990 (c.9% of total emissions) mainly due to reduced landfilling of biodegradable waste and methane recovery from landfills.
- 4.2 In 2020, the majority of greenhouse emissions were from landfill (12.8 MtCO_{2e}, 73%), wastewater treatment (2.7 MtCO_{2e}, 15%), incineration (0.3 MtCO_{2e}, 1.7%), composting (0.9 MtCO_{2e}, 5%), Mechanical Biological Treatment (MBT) (0.8 MtCO_{2e}, 4.5%) and anaerobic digestion (0.2 MtCO_{2e}, 1.1%). See Figure 4 below:

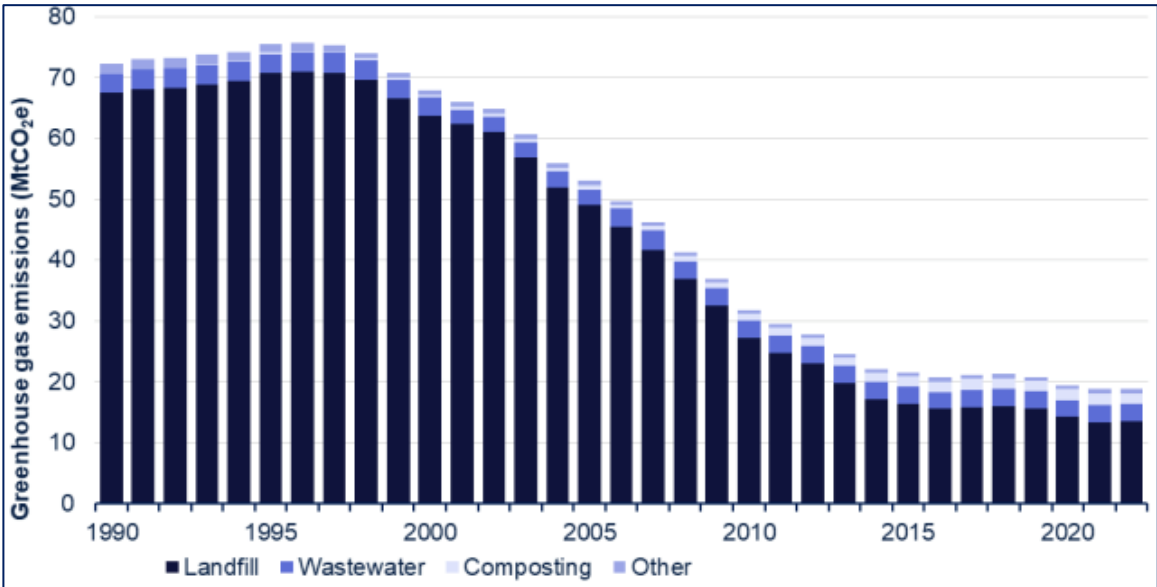


Figure 4 Greenhouse gas emission from waste 1990 to 2022(MtCO_{2e})

Source: DESNZ (2025)²⁹

- 4.3 The Climate Change Committee’s 2024 report³⁰ found that after landfill methane reductions, progress has stalled as recycling has plateaued and energy-from-waste emissions have grown, with incineration now a leading emissions source.

28 <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-statistics-2024>

29 <https://assets.publishing.service.gov.uk/media/67a30e4f7da1f1ac64e5feb1/2023-final-greenhouse-gas-emissions-statistical-release.pdf>

30 <https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2024-report-to-parliament/>

Waste re-use

- 4.4 After prevention of waste generation in the first place (the top priority in the waste hierarchy) the preparation for re-use of products and materials, such as domestic appliances and clothing arising from household waste stream and bricks and timber from construction and demolition, can also be effective in reducing greenhouse gas emissions by reducing the demand for new raw materials to be extracted, transported, processed, and used in manufacture of new products, and in turn treated or processed when the products and materials become waste.
- 4.5 Re-use also includes repair of existing goods and infrastructure such as roads and buildings.
- 4.6 Land-use associated with re-use includes the following:
 - o Storage and distribution e.g. reclamation yards and depots
 - o Light industrial e.g. vehicle repair workshops
 - o Retail e.g. second-hand clothes shops

Recycling and composting

- 4.7 Recycling reduces the demand for and need for the extraction of virgin materials, and the associated carbon emission burden. Recycling still normally requires an energy input to convert waste materials into different products e.g. smelting old cans to produce steel, and if this energy comes from burning fossil fuels carbon dioxide will be generated. However, on balance recycling generally reduces greenhouse gas emissions. This is illustrated in the table below.

Table 2: An indication of energy and resource savings that can be achieved by recycling waste³¹

Recycled material	Greenhouse gas	Energy	Water	Air	Materials
Paper/card	Recycling 1 tonne newspaper saves 900kg of CO2 equivalent	Consumes up to 70% less energy compared to use of new pulp (depending on transport distances)	Saves at least 300,000 litres of water	Reduces emissions to air by up to 95%	Avoids the need to fell 7 mature spruce trees

31 Adapted from 'More from Less', Hampshire County Council

Recycled material	Greenhouse gas	Energy	Water	Air	Materials
Glass	Recycling halves the CO2 emissions. Recycling 1 tonne saves 300kg CO2 equivalent	Saves 50% of the energy over new glass	Reduces water discharges by 50%	Reduces emissions to air by 20%	Saves raw materials (saves 1.2 tonnes per tonne recycled)
Steel	Recycling 1 tonne saves 1800kg CO2 equivalent	Uses up to 74% less energy	Uses 40% less water	Reduces emissions to air by about 30%	Saves raw materials (each tonne recycled saves 1.5 tonnes of iron ore)
Aluminium	Recycling 1 tonne saves 9800kg CO2 equivalent	Uses 95% less energy compared to new aluminium	Reduces water discharges by 97%	Reduces emissions to air about 95%	Saves raw materials (each tonne recycled saves 8 tonnes of bauxite and 4 tonnes of chemical products)

4.8 The composting of garden and kitchen waste produces carbon dioxide as part of the aerobic decomposition process. At a commercial scale, in-vessel composting, and anaerobic digestion of biodegradable waste (including sewage) produces methane and carbon dioxide, however because the digesters or vessels are sealed and enclosed, the 'biogas' (methane and carbon dioxide) can be collected, treated, and then used as a fuel. This may displace the use of fossil fuels to produce electricity and/or heat, and also means that only carbon dioxide, which is a less potent greenhouse gas than methane, is released after combustion of the biogas. National guidance includes specific support for anaerobic digestion.

'Other Recovery'

4.9 Where waste cannot be practicably recycled, composted or re-used, it may be subject to treatment through a range of technologies that primarily focus on utilising the energy value of the residual waste stream. To be classed as 'other recovery', the production of energy using waste must achieve a minimum efficiency to ensure that the calorific value of the waste is being harnessed effectively rather than the waste simply being disposed by incineration with minimal energy recovery. London Plan Policy SI8(E3) also requires a minimum performance of energy-from-waste facilities of 400gCO₂e per kWh of electricity produced.

4.10 Incineration of mixed waste with energy recovery is an established technology; normally this involves capturing the heat and converting it into electricity. Sometimes such plants also capture the surplus heat following power production and distribute this offsite for use as space heating; this type of plant is referred to as combined heat and power plant (CHP).

4.11 Supply of electricity from a waste recovery facility can displace electricity generated using fossil fuels, and where the feedstock to the EfW plant is of

biogenic origin the carbon emissions that might have arisen from the displaced source may be deemed to have been avoided. However, where the feedstock is of fossil origin, such as non-biodegradable plastic, then the avoided emission benefit is not gained. Where such plants supply heat for space heating purposes, it too may result in avoided emissions if the displaced heat source was of fossil origin, such as gas.

- 4.12 Incineration of biodegradable waste materials prevents the release of methane into the atmosphere that would occur if that waste was sent to landfill and the gas was not captured effectively. However, the management of biodegradable waste by anaerobic digestion to produce a useable biogas is a more effective carbon reduction route.
- 4.13 Advanced thermal treatment technologies, including pyrolysis and gasification, are used to convert the calorific value of waste into a gas (syngas) which may then be used as a flexible fuel. While carbon dioxide will be released upon combustion of the syngas, an avoided carbon benefit may be gained if fossil fuels are displaced.
- 4.14 Certain energy recovery technologies qualify under the UK Government's Contracts for Difference (CfD) scheme which is the main mechanism for supporting low-carbon electricity generation replacing the Renewable Obligation Certificate support system. The CfD scheme has stricter qualifying criteria so a more limited range of energy from waste technologies may benefit, with a focus on advanced thermal technologies, biomass with CHP and anaerobic digestion.
- 4.15 A recent government review of residual waste management infrastructure capacity and needs³², particularly energy from waste, has concluded that further developments must be able to demonstrate that making use of the heat they produce is viable and that they can be built carbon capture ready, in accordance with the government's 'decarbonisation readiness' requirements once they come into force. While not planning policy, the statement of intent by government will be given weight in planning decisions.

Landfill

- 4.16 Waste produced by most households and many businesses contains organic matter such as kitchen and garden waste, and paper and card which biodegrade. When organic matter biodegrades in the presence of air, carbon dioxide is released. Under certain conditions when organic matter biodegrades in the absence of air, the greenhouse gas methane is produced. Weight for

32 <https://www.gov.uk/government/publications/residual-waste-infrastructure-capacity-note/residual-waste-infrastructure-capacity-note>

weight, methane is 25 times more damaging than carbon dioxide as a greenhouse gas³³.

4.17 Currently around 21% of total waste in England is landfilled³⁴, the majority of which comprises 'soils' (57%), with household waste representing 7% of the total (2.9mt). However, 40% of the UK's 14.8 million tonnes of food waste ends up in landfill³⁵. This generates a significant proportion of UK methane emissions. Methane emissions from landfill are not directly measured, however it is estimated emissions from landfill account for 35% of all UK methane emissions³⁶, which equals about 3% of UK greenhouse gas emissions³⁷.

4.18 Figure 5 below is taken from the Committee on Climate Change's factsheet on Waste and shows projected reductions in greenhouse gas emissions from reducing biodegradable waste sent to landfill in accordance with targets in the retained EU Landfill Directive plus some further potential reductions if more waste is diverted. This shows that by 2030, emissions from waste management could fall to 10 million tonnes of CO₂ equivalent.

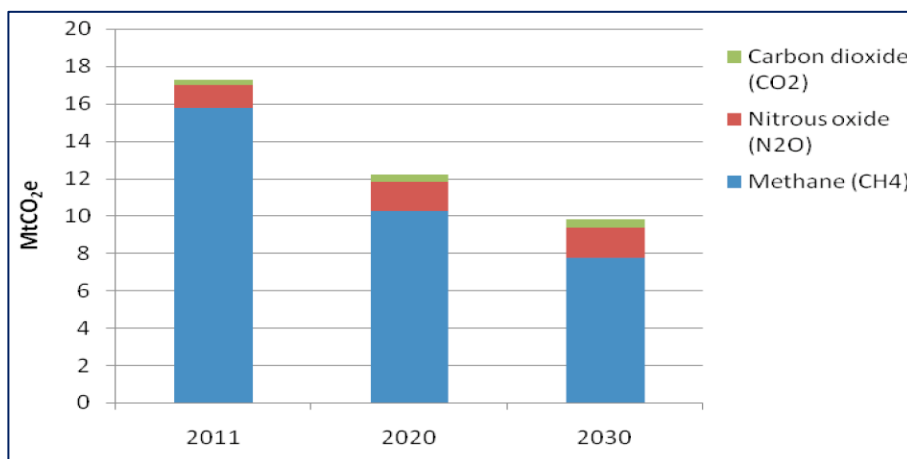


Figure 5. Projected emissions from waste management 2011 – 2030

33 HM Government, 2018. *Our Waste, Our Resources: A Strategy For England*. Page 19. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

34 <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#total-waste-generation-and-final-treatment-of-all-waste> (2022 data, and see data for Defra Statistics Table 13)

35 Vision 2020, 2019. *UK Roadmap To Zero Food Waste To Landfill*. Available at: https://www.vision2020.info/assets/pdf/Vision_2020_roadmap.pdf

36 Assets.publishing.service.gov.uk. 2020. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48424/5556-methane-factsheet.pdf

37 Theccc.org.uk. 2020. Available at: <https://www.theccc.org.uk/wp-content/uploads/2013/04/Waste-factsheet.pdf>

Landfill Gas Utilisation

- 4.19 Well managed and regulated landfills, which accept biodegradable wastes, are engineered to control the release of methane, enabling its capture and use as a fuel. Most commonly this is in the form of electricity production using gas engines located on the landfill site. Captured methane may also be converted into a gaseous fuel used for road vehicles. However, the Climate Change Committee recently has highlighted that capture of landfill methane has not been as high and effective as anticipated and so continues to contribute a large proportion of greenhouse gas emissions from the waste sector.
- 4.20 The landfilling of non-biodegradable waste, such as plastic, does not result in the generation of greenhouse gases as those materials do not decompose to produce methane. However proper management of such wastes provides an opportunity to mitigate indirect emissions because if they are recycled, new primary resources do not have to be extracted and new materials produced which results in the avoidance of the use of additional energy associated with these activities³⁹.

Transportation of waste

- 4.21 The relationship between waste and climate change is wider than just the use of different technologies or management methods. The transportation of waste can also generate greenhouse gases. The level of greenhouse gas emissions is largely dependent on the amount of road borne waste movements currently largely driven by fossil fuels.
- 4.22 Measures that may be taken to reduce greenhouse gas emissions from transport include the following:
- Reduced no. and length of vehicle movements. This can be achieved by:
 - Ensuring final fate facilities are proximate to sources of waste
 - Bulking up waste at transfer stations to facilitate a reduced no. of movements
 - Use of non fossil derived energy sources e.g., renewable electricity, biogas;
 - Use of rail transport, particularly where electrically powered and the electricity comes from non fossil fuelled sources.; and

38 Committee on Climate Change, 2013. Waste Factsheet.
<https://www.theccc.org.uk/publication/carbon-footprint-and-competitiveness/waste-factsheet/>

³⁹ It has been suggested that the deposit of plastics, in particular in a landfill, may be preferable from a greenhouse gas emissions mitigation point of view to its immediate conversion to carbon dioxide when burnt as a fuel. However, disposal of such material means that new raw material needs to be extracted and processed to replace the lost materials which will, in themselves, involve the use of energy.

- Use of water transport - offers significant carbon reduction benefits tonne for tonne.

5. How the Management of Waste can Mitigate Climate Change

- 5.1 Climate change mitigation is defined in the NPPF as: “*Action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions.*”
- 5.2 The modes of production of greenhouse gases associated with waste are as follows:
- Production of waste;
 - Treatment and management of waste; and
 - Transport of waste.
- 5.3 Key principles when considering how the management of waste may contribute towards climate change mitigation are:
- The waste hierarchy;
 - Life cycle assessment; and
 - A circular economy approach.

Life Cycle Thinking & Assessment

- 5.4 Generally, applying the waste hierarchy should lead to waste being dealt with in the most beneficial way. However, the Waste Framework Directive allows for the use of Life Cycle Thinking (LCT) to justify deviation from the waste hierarchy on a case-by-case basis.
- 5.5 Within the concept of LCT, Life Cycle Assessment (LCA) is a structured and internationally standardised method that quantifies all relevant emissions, resources consumed/depleted, and the related environmental and health impacts associated with delivery of any good or service. When LCT/LCA are applied to waste management services, typically the assessment focuses on a comparison of different waste management options. So, for example, an LCA considers the direct impacts of the operations on the environment (e.g. stack emissions from an incinerator) and the indirect benefits of recovering materials and energy from the waste (e.g. through combined heat and power and ferrous metal recycling) vs the use of the materials for recycling.
- 5.6 These impacts and benefits are then expressed through indicators for different environmental impact categories – such as climate change, water consumption or toxicity (referred to as environmental burdens).
- 5.7 The UK government has produced guidance to assist in the selection of options for the management of different waste, drawing on the best available LCA research at the time⁴⁰. This concludes that for most materials, the waste hierarchy ranking applies. However, for the materials below, the evidence suggests that certain waste management options which are not consistent with the waste hierarchy order are better for the environment:

40 Guidance on applying the waste hierarchy, DEFRA, 2011
www.gov.uk/government/publications/guidance-on-applying-the-waste-hierarchy

- For food, anaerobic digestion is environmentally better than composting (and other recovery options);
- for garden waste and for mixtures of food waste, anaerobic digestion followed by composting is environmentally better than composting alone;
- for lower grade wood such as particle or chip board, energy recovery options are more suitable than recycling.

5.8 The outcome of the evidence review was summarised in Figure 6 reproduced below.

5.9 It should be noted that the LCAs reviewed were produced a decade or so ago, and there may be more recent studies that indicate other outcomes as technologies evolve and operating conditions change.

5.10 A number of LCA models have been developed to compare waste management options. In the UK the Environment Agency funded the development of one such model known as WRATE (waste and resources assessment tool for the environment) in 2007. WRATE calculates the potential impacts arising from all processes in the waste management system including the collection, transportation, transfer, treatment, disposal and recycling of materials. The model takes account of the construction and operation of infrastructure and vehicles, and offsets this burden against the avoided burdens associated with materials and energy recovery.

Paper and Card	Food	Garden Waste	Textiles	Wood	Glass	Metals	Plastics±	WEEE	Tyres	Residual 'black bag'
Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention
Preparation for re-use			Preparation for re-use	Preparation for re-use	Preparation for re-use	Preparation for re-use	Preparation for re-use	Preparation for re-use	Re-treading	
Recycling	Anaerobic Digestion	Anaerobic Digestion (dry) ²	Recycling	Recycling; energy recovery♦ (preferable to recycling for lower grade materials)	Recycling in a remelt process	Recycling	Closed loop recycling Other recycling	Recycling (esp. suitable for metals and high quality plastic)	Recovery: use in road surfaces Energy recovery in cement kilns Energy recovery through pyrolysis	Solid recovered fuel derived from MHT or MBT, where it replaces coal* Energy Recovery, all technologies (Heat Only) Energy Recovery, all technologies (CHP) Energy Recovery, all technologies (Electricity Only) MBT or MHT outputs used as fuel (but do not replace coal) or *
Energy recovery♦ (esp. suitable for short fibres or contaminated materials)	Composting; other energy recovery technologies	Composting; other energy recovery technologies						Energy recovery♦ (esp. suitable for non-hazardous mixed plastic)	Other recovery (eg drainage fill & sea defences) Gasification/incineration with EfW	
Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Microwave treatment	Disposal

*the impact of CHP technology, which can improve the efficiency of each of these options, is not illustrated here
± the hierarchy may be different for some forms of bio-based plastics
♦ 'energy recovery' covers a range of technologies, some of which will be more environmentally beneficial than others. Future versions will differentiate between technologies as more scientific evidence becomes available.
*2009 AEA – Report to the Welsh Assembly Government: *Modelling of Impacts for Selected Residual Waste Plant Options using WRATE*

Figure 6. Best environmental options for management of different materials

Source: Defra (2011) *Guidance on applying the Waste Hierarchy*

Circular economy

- 5.11 The circular economy aims to redefine growth by decoupling economic activity from the consumption of finite resources, and designing waste out of the system⁴¹. The circular economy model is based on three principles:
- Design out waste and pollution
 - Keep products and materials in use
 - Regenerate natural systems
- 5.12 Approaches such as industrial symbiosis (where synergies between activities can be exploited such as the use of a waste or by-product of an industry by another) can be particularly beneficial.
- 5.13 More information on the circular economy can be found in the separate WLWP Circular Economy Topic Paper.

Management of Waste

- 5.14 As shown above while there are some exceptions, the waste hierarchy offers a guide to reduce the production of greenhouse gases.
- 5.15 Driving waste up the hierarchy should yield the following benefits in terms of emissions reduction:

Diversion from Disposal to Other Recovery or Recycling

- Reducing methane emissions where biodegradable waste is diverted from landfill,
- Gaining some avoided emission benefit from the calorific value of non-biogenic waste where it is diverted from incineration with no or inefficient energy recovery⁴²;

Diversion from Other Recovery to Recycling

- Gaining greater 'avoided emission' benefit by exploiting the material value of biogenic and non-biogenic waste substituting for virgin materials and its associated emission burden, rather than its value being exploited only once as a fuel regardless of the efficiency of energy recovery

Diversion from Recycling to Reuse

- Extending the life of products and hence reducing the need to manufacture new replacement product (avoiding the associated emissions from

41 Ellen MacArthur Foundation. 2020. What is a Circular Economy?. Available from: <https://www.ellenmacarthurfoundation.org/circular-economy/concept> [25 March 2020].

42 Energy recovery that fails to meet the minimum standard required by the R1 formula (see glossary).

production as well as the avoided burden from virgin material extraction)⁴³;
and

Prevention

- Avoid the creation of the waste in the first place through such actions as ‘servitisation’ i.e. replacing products with services. This would avoid emissions of production, and subsequent management, although may carry its own emissions burden if the energy used to support delivery is not sourced from entirely renewable sources.
- 5.16 In reality, maximising the carbon reduction benefits involves moving the management of wastes as close to the top of the hierarchy as possible rather than moving it up on a tier by tier basis. That is to say applying it in priority order from the top down, rather than from the bottom up. The carbon benefits will also vary according to:
- The materials actually under consideration, for example biogenic vs non biogenic materials,
 - the application to which a material is put, for example anaerobic digestion of organic waste to produce a biogas that may substitute for diesel as a fuel in HGVs vs composting to produce a soil enhancer; and
 - the level of waste transportation associated with the management of waste at different levels of the hierarchy e.g. waste management by recycling will likely involve greater transportation than by more local energy from waste.
- 5.17 Given the complexity of the issue a systematic framework is required to allow analysis of options in their local context. This is where lifecycle assessment comes in.

Transportation of waste

- 5.18 While transport of waste is another source of carbon emissions, most LCA models have shown that the transport of waste represents a relatively small contribution to the overall emissions arising from the waste management chain and so may not in itself be a key determinant to the selection of a particular management method. This has been shown to be the case even where long distance transport of recyclate to the Asia involved⁴⁴. However, other effects of transport including local air quality, congestion and road safety are relevant planning considerations.

43 Some of the carbon benefit of reuse may be offset by the poor energy efficiency of domestic appliances that are kept in use vs their early replacement.

44 Gentil, E Boldrin, A, & Potter, A (2008): *Carbon Footprinting of Second-life Materials Using Life Cycle Thinking for the South East England Regional Assembly* <https://waste-management-world.com/a/carbon-footprinting>

Climate Change Committee recommendations

- 5.19 In December 2020, the Climate Change Committee (CCC) published its Sixth Carbon Budget⁴⁵ that considered measures required to achieve the UK Government target net zero carbon emissions by 2050. The UK Government accepted the report's key recommendation of a 78% reduction in UK territorial emissions between 1990 and 2035 which essentially brought the UK's previous target of 80% reduction by 2050 forward by 15 years⁴⁶. At COP29 the UK government announced a new target to reduce greenhouse gas emissions by 81% (on 1990 levels) by 2035⁴⁷.
- 5.20 The Committee's Sixth Carbon Budget noted that emissions associated with waste management accounted for 6% of UK GHG emissions in 2018. While they have fallen to 63% of 1990 levels, due to a reduction in biodegradable waste being landfilled, in recent years emissions have stopped falling due to a plateau in recycling and significant growth in carbon emissions from the fossil sourced component (i.e. oil based plastics) of Energy from Waste plant feedstock.
- 5.21 Broadly, the Committee's Budget concludes that the management of waste in accordance with the waste hierarchy is consistent with the achievement of reductions in carbon emissions and includes the following specific recommendations:
- A ban on landfilling biodegradable waste by 2025;
 - recycling increasing to 70% by 2030;
 - additional focus through the chain from manufacturing to the consumer to reduce the amount of waste; and,
 - All energy from waste facilities plants to be fitted with Carbon Capture and Storage (CCS) by 2040.
- 5.22 In its June 2023 report, 'Progress in reducing emissions: 2023 Report to Parliament'⁴⁸, the CCC summarised its findings in regard to the progress made within the waste management sector to reducing emissions as follows:

'Greater strategic coordination of plans to decarbonise the waste sector is needed including: much greater emphasis on waste prevention, clarity on future residual waste capacity needs, and the suitability of incentives and interactions with other sectors such as waste as a feedstock for Sustainable Aviation Fuels. Energy from Waste (EfW) emissions are

45 *The Sixth Carbon Budget The UK's path to Net Zero Committee on Climate Change* December 2020 Presented to the Secretary of State pursuant to section 34 of the Climate Change Act 2008

46 UK enshrines new target in law to slash emissions by 78% by 2035, Government Press Release, April 2021

47 <https://www.gov.uk/government/news/uk-shows-international-leadership-in-tackling-climate-crisis>

48 <https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/#downloads>

already higher than the Government's CBDP⁴⁹ anticipates and EfW capacity is set to increase in the coming years. A comprehensive systems-approach to control and reduce EfW emissions is urgently needed, including clarity on carbon pricing. We recommend a moratorium on additional EfW capacity until a review of capacity requirements has been completed and an updated assessment of residual waste treatment capacity requirements published.'

- 5.23 The most recent 2024 (18 July) report⁵⁰ includes the following on waste management:

'the waste sector saw good initial progress, with emissions falling from 41.9 MtCO₂e in 2008 to 25.9 MtCO₂e in 2013. This was towards the upper end of our projected reductions and came almost exclusively via a reduction in methane emissions from landfill, caused by the 1996 Landfill Tax. However, when comparing to targets set by the Government in 2012, landfill methane capture rates have been lower than expected, there has been insufficient progress on recycling and composting, and energy from waste emissions have substantially increased, meaning progress in reducing waste emissions has stalled more recently.'

- 5.24 The report recommends addressing rising energy from waste emissions as a priority action.

Environmental Services Association Net Zero Strategy⁵¹

- 5.25 In 2021 the Environmental Services Association published a Net Zero Strategy⁵² that includes the following targets:
- Start fitting Carbon Capture, Utilisation and Storage (CCUS) technologies to EfW facilities from 2025, with all plants fitted with CCUS where feasible by 2040.
 - Ensure that all new EfW plants are built with CCUS fitted or are CCUS-ready from 2025 onwards.

National Infrastructure Commission Recommendations

- 5.26 In May 2024, the National Infrastructure Commission published its latest review of infrastructure in England⁵³. The review summarises the position on waste management as follows:

49 CBDP = Carbon Budget Delivery Plan

50 <https://www.theccc.org.uk/wp-content/uploads/2024/07/Progress-in-reducing-emissions-2024-Report-to-Parliament-Web.pdf>

51 The Environmental Services Association (ESA) is the trade association for the waste management industry in the UK.

52 <http://www.esauk.org/application/files/7316/2496/7294/ESA-Net-Zero-Exec-Summary.pdf>

53 Infrastructure Progress Review 2024

‘...Significant delays to key reforms have created uncertainty and prevented the necessary investment in new and improved recycling capacity. Recent initiatives have provided more clarity, and the government should now sustain this momentum as it moves to implement its collection and packaging reforms. It should also create stronger incentives to invest in recycling infrastructure by sending a clear signal on the future of energy from waste in a circular economy.’

5.27 The following is included amongst the reports' recommended priorities for actions for government: *‘...bans future energy from waste capacity that does not include carbon capture and storage...’...delivers on its commitment to bring energy from waste into the Emissions Trading Scheme from 2028’*

5.28 In relation to the latter recommendation, in June 2024, the Government consulted on how it should expand the UK Emissions Trading Scheme (ETS) to include energy from waste (EfW)⁵⁴. The following four objectives are proposed in relation to the implementation of ETS for EfW:

- Give greater certainty on the delivery of emissions reductions in line with the UK and devolved nation carbon budget and net zero targets.
- Support wider waste policies and drive decarbonisation of waste management, particularly:
 - The extended producer responsibility scheme;
 - increasing higher levels of high-quality recycling; and,
 - investment in technology such as CCS.
- Maintain a level playing field by covering a broad range of thermal treatment technologies (including advanced conversion technologies).
- Reduce the risk of any perverse incentives, particularly related to increases in landfill and waste exports.

5.29 In July 2025, the Government published its response to the consultation⁵⁵ which included the following:

- The waste sector will be included in the scheme from 2028;
- direct emissions from EfW and waste incineration, including advanced thermal / conversion technologies (gasification, pyrolysis) and where those processes are used to produce fuels (e.g., SAF) are in scope; and,
- measures to reduce risk of waste being diverted to landfill to avoid fees are still being considered.

54 UK Emissions Trading Scheme scope expansion: waste

55 <https://assets.publishing.service.gov.uk/media/687de90da8ee0c6e06f452d6/uk-ets-energy-from-waste-interim-authority-response.pdf>

6. How the Management of Waste Can Adapt to Climate Change

Introduction

- 6.1 Even with ambitious measures and actions to reduce greenhouse gas emissions, further climate change is inevitable. Therefore, adaptation to the potential effects of climate change is needed alongside mitigation. The effects of climate change may be physical (weather events and their effects) and behavioural (changes in consumption and waste generation) which may impact on waste management services.
- 6.2 Climate change adaptation is defined in the NPPF as follows: *“Adjustments made to natural or human systems in response to the actual or anticipated impacts of climate change, to mitigate harm or exploit beneficial opportunities.”*
- 6.3 Decision-making on the basis of historic climate is no longer robust as the past is not an indication of future climate. In addition, planned adaptation is likely to be more effective than last minute reactive adaptation.

National Risk Assessment and Adaptation Guidance

- 6.4 The 2017 UK Climate Change Risk Assessment (CCRA)⁵⁶ identifies the top areas of inter-related climate change risks for the UK as:
- **Flooding & coastal change** risks to communities, businesses and infrastructure
 - Risks to **health, wellbeing and productivity** from high temperatures
 - Risks of shortages in the **water supply** for, agriculture, energy generation and industry as well as the public
 - Risks to **natural capital**, including ecosystems, soils and biodiversity
 - Risks to domestic and international **food production and trade**
- 6.5 The direct climate change-related threats considered to be of most relevance to waste planning and management are:
- increases in the probability and severity of flooding,
 - exposure to high temperatures and heatwaves and
 - shortages in water.
- 6.6 While the assessment is at UK level, these risks apply equally to West London.
- 6.7 The level of disruption to business will depend on the vulnerability and resilience of infrastructure including energy, telecoms and transport. There may be knock-on effects on supply chains and distribution and on staff (with business and reputational damage) with reduced productivity and potentially reduced access to capital.

⁵⁶ UK Climate Change Risk Assessment, DEFRA, 2017.

<https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017>

- 6.8 Levels of flood risk (fluvial, surface and groundwater) will be location and site specific. Managing risk from flooding may be possible and affordable in some locations, while in some areas risks and costs of management will increase.
- 6.9 The Committee on Climate Change Adaptation Sub-Committee⁵⁷ set out measures that the UK is undertaking by delivering the National Adaptation Programme (NAP). These are fairly high-level and generic, and do not specifically address waste management.
- 6.10 These are summarised in the following table (Table 3).

⁵⁷Committee on Climate Change, 2017. *How the UK is preparing*. <https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/how-the-uk-is-preparing/>

Table 3 Summary of UK Climate Change Risk Assessment and National Adaptation Programme of relevance to waste management

Potential Climate Change effect	CCRA Potential impact	Risks and Impacts for West London Waste Management	NAP (Planning; Business & Industry)
Increased frequency & severity of flooding (fluvial, coastal, surface, groundwater, sewer)	Coastal infrastructure, especially ports, at risk from rising sea levels and storms.	Risk to exports of material [for recycling]	<p>NPPF requirements for local plans and decisions to take account of climate change including ensuring resilience of communities and infrastructure.</p> <p>Assess cumulative impacts of flood risk.</p> <p>Minimise new building in areas at high flood and erosion risk.</p> <p>Invest in flood and coastal defences</p> <p>Ensure land use decisions reflect the level of current and future flood risk.</p> <p>Greater use of natural flood management solutions including Sustainable Urban Drainage Systems (SUDS)</p> <p>Design property and infrastructure to be resilient to withstand flooding and be able to recover quickly</p>
	High waves accelerate erosion	Damage to property	
	Infrastructure near rivers esp. bridges, cables and pipelines will become vulnerable	Disruption to power supply at waste facilities	
	Increased frequency and severity of flooding of buildings/property in risk areas	<p>Disruption to material supply and export from facilities</p> <p>Damage to property and disruption to operations to waste facilities and supply chain in flood prone areas.</p>	
	Disruption to communities and services	<p>Impact on personnel availability & productivity. Also impact on access to waste set out.</p> <p>Generation of waste from flood damaged property</p>	
	Risk of buckling railway track, sagging of electricity cables, softening road tarmac, over	Disruption to material supply and movement to and from waste facilities	

Potential Climate Change effect	CCRA Potential impact	Risks and Impacts for West London Waste Management	NAP (Planning; Business & Industry)
Changes in temperature and rainfall	heating signalling causing disruption to transport		
	Water demand exceeding supply [and implications for permitting and abstraction licensing]	Availability of water for waste treatment processes that require water including that related to dust suppression.	Encourage water saving and reducing wastage Strengthening resilience of supply
	Embankment failures and landslides, resulting in damage and disruption	Disruption to material supply and movement to and from facilities	
	Overheating of buildings and public transport	Productivity of workers – may be reduced through operation design Increased risk of odours from material – may be reduced through building and process design, handling and storage, and sheeting/enclosed transport Increased risk of dust generation – may be reduced through dust management measures	Green infrastructure
	Longer growing season	Increased green and garden waste generation requiring management	
Increased wind speeds and storms	Overhead power cable damage and disruption	Security of power supply to and from waste facilities	

Potential Climate Change effect	CCRA Potential impact	Risks and Impacts for West London Waste Management	NAP (Planning; Business & Industry)
	Transport disruption – fallen trees, high sided vehicles	<p>Disruption to material supply and movement to and from facilities</p> <p>Amenity impacts including increased dust and litter. Enclosure of facilities where practicable, and implementation of management measures to mitigate this.</p>	

Adaptation to climate change by waste management

- 6.11 From April 2023 the Environment Agency has required all applications for Environmental Permits (including those for waste management) to be accompanied by 'Climate Change Adaptation Plans'. Guidance on this requirement can be found here: <https://www.gov.uk/guidance/climate-change-risk-assessment-and-adaptation-planning-in-your-management-system>.
- 6.12 The UK Climate Impacts Programme 'Adaptation Wizard'⁵⁸ provides a step-by-step process through which organisations can assess vulnerability to climate change and potential adaptive responses. This approach provides a logical way of considering vulnerabilities, risks and responses. The key stages are:
- **Assess current vulnerability:**
 - Experience of how previous weather events have affected the organisation (or site, service etc),
 - How it coped
 - Adaptive capacity, and
 - Consideration of thresholds which, if exceeded, would cause unacceptable consequences.
 - **Assess future climate vulnerability:**
 - Considering how the climate is likely to change (as described previously)
 - The main direct and indirect impacts likely,
 - The risks these will pose and
 - What are the priorities that require a response. The types of risks will vary but include those to infrastructure, operations, legal and regulatory changes, and financial. The Wizard provides examples of impacts on business functions⁵⁹ and sectors⁶⁰ which are relevant to waste management both as a function and service.
 - **Adaptation options:**
 - Identifying the range of options (accepting risk, offsetting damage, avoiding or reducing exposure, identifying new opportunities, building capacity to adapt) and whether these are temporary or permanent, managerial or technical, strategic or local
 - Evaluate options on effectiveness, efficiency, flexibility, no/low regrets etc
 - Develop implementation plan and implement selected appropriate adaptation

58UKCIP, 2020. *Getting started*. <https://www.ukcip.org.uk/wizard/getting-started/>

59UKCIP, 2020. *Business functions*. <https://www.ukcip.org.uk/wizard/future-climate-vulnerability/baciat/business-functions/>

60 UKCIP, 2020. *Sector Examples*. <https://www.ukcip.org.uk/wizard/future-climate-vulnerability/baciat/sectoral-examples/>

- 6.13 This Topic Paper does not include a detailed assessment of the current vulnerability to weather events of the waste management service or facilities within West London, which would require detailed input from the operators drawing on their knowledge and experience.
- 6.14 Taking account of the national and regional climate projections, and the national CCRA and NAP, and applying this logical approach, the following general potential impacts on waste management in West London, and potential adaptation responses, have been identified in Table 4 below.
- 6.15 In addition, as identified in the CCRA, there may be ‘cascade’ effects where there are inter-dependencies on other sectors, and a number of vulnerabilities and impacts coincide, which need to be considered. This may include:
- Transport: Damage and disruption to roads and railways (flooding, embankment failures, signage and signalling etc.) which would disrupt waste collection, movement of materials to and from waste management facilities and availability of staff. Contingency plans, including alternative routes, contingency outlets or increased storage, may be required.
 - Energy: Disruptions to power and gas supply if cables and pipelines are damaged, for example by storms. Opportunities to use local heat and power networks, potentially through co-location of facilities, may help improve resilience of supply
 - Water: Shortages in periods of drought or implementation of abstraction licenses may reduce availability for processes and site management. Water efficiency, on-site storage rainwater harvesting and greywater recycling would help to reduce reliance on external supplies.
- 6.16 Waste management should not, therefore, be considered in isolation. Adaptation to climate change requires a multi agency approach including local authorities and other public and private service providers.

Table 4 Risk Assessment & Adaptation Options for waste management

Climate Variable	Likely impacts	Potential effect	Risk & vulnerability	Adaptation Response Options
Temperature	Hotter mean and summer temperatures	Heat stress	<ul style="list-style-type: none"> • Poor working conditions, health & safety of operatives • Increased odour from waste decomposition at households, out for collection, in transit, and on site • Increased dust arising and blow • Demand for water for processes and site management e.g. dust suppression • Reduced efficiency of composting • Increased fire risk from stored materials 	<ul style="list-style-type: none"> • Site layout and design, covering/enclosure of facilities and operations where possible, to reduce effect of heat on processes and personnel, and reduce odour and dust risk • Dust suppression on plant and within site • Source separation of biodegradable waste for home composting or separate collection • Fire Prevention & Response Plans
	Milder winters	Less frost/snow longer growing season	<ul style="list-style-type: none"> • Potential for less disruption to service and transport • Increased vermin and odour into winter • Increased amount of green/garden waste requiring collection & management 	<ul style="list-style-type: none"> • More vigilant controls on site operations especially with regard to controls on vermin and odour • Review of garden waste arisings, management capacity and collection arrangements
Precipitation & humidity	Wetter winters Intense rainfall events	High river & groundwater levels	<ul style="list-style-type: none"> • Flooding (fluvial, groundwater, surface, sewer) of sites, facilities and infrastructure with associated disruption to processes • Flooding and damage to transport infrastructure, disruption to collection, supply, processing and export of materials from facilities 	<ul style="list-style-type: none"> • Avoidance of flood zones 2 & 3 (as per NPPF – see section 6) and for location of new facilities/development • Flood resilient and resistant site and facility design e.g. raising of services and vulnerable uses above flood level. • Flood Management Plans for sites and facilities demonstrating safe

			<ul style="list-style-type: none"> • Increase risk of pollution if site drainage systems get overwhelmed. • Increased waste arising from flood damage • Erosion of caps and bunds, increased leachate(landfill) 	<p>operation, storage and containment of materials in event of flooding</p> <ul style="list-style-type: none"> • Sizing of drainage systems with climate change contingency and retention arrangements if required. • Contingency plans for waste collection, delivery and export including collection routes avoiding flooded areas • Monitoring of site integrity and leachate
	Drier Summers	Water shortages Subsidence	<ul style="list-style-type: none"> • Abstraction licensing reducing supply • Disruption to processes requiring water • Integrity of landfill caps and bunds 	<ul style="list-style-type: none"> • Water efficiency in processes and site management including rainwater harvesting and recycling of greywater for use on site
Storminess	Extreme events	Intense rainfall & surface flooding High winds	<ul style="list-style-type: none"> • Surface water/flash flooding • Increased litter blow from street collection and sites • Increase risk of pollution if site drainage systems get overwhelmed. • Reliability of collection frequency/service 	<ul style="list-style-type: none"> • Incorporation of adequate and sustainable drainage and flood storage on site where feasible • Sizing of drainage systems with climate change contingency and retention arrangements if required. • Enclosure of sites & secure boundary treatment
Sea level rise		Coastal erosion and flooding	<ul style="list-style-type: none"> • Flooding and damage to facilities, infrastructure, communities • Disruption to transport, collections, and export 	<ul style="list-style-type: none"> • Avoid location of facilities in areas that may be at risk of coastal flooding and erosion

Components of the Waste Management system that may be affected and need to adapt

6.17 All components of waste management may be affected by climate change and need to plan to adapt⁶¹. This is outlined in Table 5 below.

Table 5. Climate Adaptation Options for waste management

Waste management component	Vulnerability & Impacts	Adaptation option
Collection <i>(not under control of the planning system)</i>	<ul style="list-style-type: none"> Increased odour from biodegradable waste Increased green waste generation Health & safety of operatives 	<ul style="list-style-type: none"> Increase frequency of collection Increase management capacity from provision of larger wheelie bins through to larger sites noting that composting requires a minimum time period to occur. Timing of collections/Shifts
Civic Amenity / Recycling sites	<ul style="list-style-type: none"> Surface water flooding Changes in types of waste – increased garden waste Increased odour from biodegradable waste Dust nuisance Fire risk 	<ul style="list-style-type: none"> Site layout, access & drainage Containment of materials in skips Frequency of emptying containers Sweeping and dousing Fire Prevention & Response Plans
Built facilities	<ul style="list-style-type: none"> Flood risk – surface, and depending on location fluvial or groundwater Increased odour and dust H&S of operatives Water availability Fire risk – stored materials 	<ul style="list-style-type: none"> Site drainage and layout with built in contingency capacity. Flood resilient design – raising services and vulnerable uses above flood level, Dust suppression Enclose storage and processes Separation and storage of odorous materials Water efficiency & recycling for processes and site management Fire Prevention & Response Plans
Open air facilities (esp. composting)	<ul style="list-style-type: none"> Increased arisings of green waste Efficiency of compost process Increased odour/bioaerosols due to slowing down of processes (if material dries out) so greater exposure time 	<ul style="list-style-type: none"> Monitor & review green waste capacity requirements for composting & AD Separation distances >250m from receptors to be maintained

⁶¹ The various climate change impacts will not necessarily occur at the same time or with the same frequency, although the evidence indicates that the severity and frequency of impacts is likely to increase overall.

Landfill	<ul style="list-style-type: none"> • Erosion of caps and bunds • Changes in leachate volumes and concentrations 	<ul style="list-style-type: none"> • Regular site monitoring • Alternative management solutions
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Adaptation Conclusions

- 6.18 The first stage in considering specific vulnerabilities of the waste management service and specific assets and sites⁶², is a review of recent past experience of impacts of weather events to consider the vulnerability, the effectiveness of responses undertaken, and the capacity to adapt (physical, organisational, financial). This would then inform a more detailed assessment of future vulnerabilities and recommendations for adaptation measures.
- 6.19 However, reviewing the evidence of predicted climate change effects, it has been possible to identify the most likely impacts on waste management in West London. This has also enabled initial consideration of potential vulnerabilities and adaptation options and opportunities.
- 6.20 Adaptation responses will be necessary at various levels. Site specific assessments of vulnerabilities and adaptation options, reflecting the specific site/facility characteristics.
- 6.21 Increased winter rainfall and frequency of extreme weather events, particularly heavy rainfall, is likely to be the most significant potential impact that requires adaptation, as this can have rapid and catastrophic consequences on business activity and infrastructure.
- 6.22 There is a great deal of national and local planning policy and guidance on assessment and avoidance of flood risk. However, existing sites (and services) will also require adaptation and resilience measures. Detailed national guidance⁶³ on measures to improve resilience of buildings tends to focus on residential properties, but the principles can be taken to apply to all built development.
- 6.23 Generic adaptation options are identified above as a basis for considering what may be undertaken. The feasibility and cost (including potential cost of not undertaking them) needs to be considered drawing on local knowledge and experience, in order to determine which may be taken forward.

62 UKCIP, 2020. *Current Climate Vulnerability*. <https://www.ukcip.org.uk/wizard/current-climate-vulnerability/>

63 CLG & Environment Agency, 2007. *Improving the Flood Performance of New Buildings – Flood Resilient Construction*
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

7. Role of Waste Planning in Mitigation of, and Adaptation to, Climate Change

Introduction

Mitigation:

- 7.1 Measures include energy efficiency and increasing the use and supply of renewable and low carbon energy and heat, including identifying opportunities for development to draw energy from decentralised systems and co-location of potential heat customers and suppliers⁶⁴.
- 7.2 In terms of transport, the NPPF also expects that planning should manage patterns of growth and focus significant development in locations which are or can be made sustainable through limiting travel or using sustainable modes, to help reduce overall emissions. It recognises that opportunities for sustainable solutions will vary between urban and rural areas⁶⁵.
- 7.3 Application of the Waste Hierarchy and circular economy principles also seek to reduce the generation of waste in the first place and ensuring management methods with the least adverse impacts, including greenhouse gas emissions, are prioritised.
- 7.4 National Planning Policy for Waste requires disposal of waste and recovery of mixed municipal waste in line with the proximity principle (thus reducing the distance material will be transported). It sets out locational criteria to be used in plan preparation and testing site allocations which include relevant factors to climate change mitigation and adaptation including:
- a) *Water quality, resources and flood risk: These are likely to be exacerbated by climate change due to changing rainfall patterns and extreme events and storms (adaptation response);*
 - b) *Land instability: Which may be affected by wetter winters and extreme rainfall events, and hotter drier summers (adaptation response);*
 - f) *Traffic and access: Modes and distance travelled will affect greenhouse gas emissions (mitigation response)*
 - g) *Air emissions including dust: Exacerbated by hotter drier summers and prolonged hot dry periods (adaptation response);*
 - h) *Odours: Exacerbated by hotter drier summers (adaptation response);*
 - i) *Vermin: Potentially exacerbated by milder winters (adaptation response);*
 - k) *Litter: Potentially exacerbated by storms and wind (adaptation response);*

64 NPPF Paragraph 165(c)

65 NPPF Paragraph 110

Adaptation:

- 7.5 Adaptation responses include ensuring future resilience of properties, businesses and infrastructure. New development should be planned for in ways that avoid increased vulnerability to impacts. When new development is planned in vulnerable areas, care should be taken to ensure risks can be managed through suitable adaptation measures⁶⁶.
- 7.6 The NPPF and Planning Practice Guidance set out in some detail how to plan for flood risk⁶⁷, which applies to all development types including waste management. The key principle is to avoid development in areas of high probability of flooding where possible, and if development in these areas is demonstrated to be necessary, to ensure that it is flood resistant and resilient.
- 7.7 Plans are required to take a sequential risk-based approach to location of development in flood risk areas which take into account climate change effects (on probability and severity of flooding). The 'sequential test' steers development to areas at lowest flood risk, informed by Strategic Flood Risk Assessments (SFRAs)⁶⁸. If development has to be located in areas at higher flood risk (Flood Zones 2 and 3), the 'exception test' to demonstrate whether there are wider sustainable development benefits that outweigh the flood risk, and that the development will be safe for its lifetime without increasing risk elsewhere⁶⁹.
- 7.8 In terms of flood risk and its assessment, landfill and sites used for management of hazardous waste are classified as '*more vulnerable*' types of development, and so generally are not compatible with or appropriate in Flood Zone 3a (high probability of flooding) unless it passes the Exception Test. Other waste treatment is considered as '*less vulnerable*' which is generally compatible and appropriate in all areas apart from 3b (functional floodplain).
- 7.9 Planning Practice Guidance (PPG)⁷⁰ sets out examples of adaptation measures as:
- Considering future climate change risks when allocating sites to ensure risks are understood over the development's lifetime
 - Promoting design responses to flood risk and coastal change for the lifetime of the development
 - Considering availability of water and water infrastructure.

66 NPPF Paragraph 164(a)

67 NPPF Paragraphs 170-182

68 *West London Waste Plan Strategic Flood Risk Assessment v1.0* Metis Consultants Ltd (2025)

69 NPPF Paragraphs 172-180

70 PPG Paragraphs ID 6-003 to 6-006-20140306

- 7.10 It advises that mitigation and adaptation measures may be integrated, for example, through designing buildings with natural ventilation, through district heating networks, and provision of green infrastructure. It also recommends adopting low or no-risk options that deliver multiple benefits, and building in flexibility to allow future adaptation.
- 7.11 Further, informal, guidance is provided in the Town & Country Planning Association/RTPI guide on climate change⁷¹ which builds on NPPF and PPG.

The Role of Waste Planning

- 7.12 Land-use planning can address mitigation and adaptation in two main ways – steering the spatial distribution of development, and controlling and influencing its type, design, layout and operation. This applies to all types of development, including for waste. Planning can also control the type, quantity and method of management of waste, at given facilities.

Spatial distribution - mitigation:

- 7.13 The spatial strategy can influence greenhouse gas emissions, for example through:
- Reducing the need for transport of collected waste to treatment facilities, particularly by road, including through location of facilities proximate to major sources of waste (consistent with the proximity principle where it involves the management of mixed municipal waste in particular), and encouraging use of low carbon transport modes through locating development where transport by water or rail may be viable;
 - Encouraging co-location of synergistic waste related developments that offer opportunities to share energy or resources or simply allows waste to be converted to a final product in proximity to its source/point of origin or market;
 - Encouraging synergies between waste management facilities and other existing or planned development, for example through combined heat and power and offtake of heat from energy-from-waste facilities with distribution through local heat networks to serve commercial, leisure or residential demand.

Spatial distribution – adaptation:

- 7.14 The spatial strategy can influence adaptation, for example through:
- Identifying and avoiding inappropriate waste development in areas of current vulnerability particularly to all types of flooding, water resource availability and water quality guided by the sequential approach outlined previously
 - Identifying and avoiding inappropriate waste development in areas of future vulnerability due to climate change, particularly where all types of flooding may be more frequent and severe, where water resource availability may be reduced, and water quality may deteriorate (with implications for abstraction and discharge licensing)

71 TCPA/RTPI, 2018. *Climate Change – A Guide for Local Authorities*.

- Identifying and avoiding waste development in areas vulnerable to other climate change effects, particularly sea level rise and coastal erosion, and unstable land.

Development type, design, layout and operation - mitigation:

7.15 Planning policy provides the basis for development management decisions, with determination of applications to be in accordance with the development plan unless material considerations indicate otherwise. Planning policy can control and influence the type, design, layout and (through conditions) operation of development to some degree, which can help to mitigate climate change, for example:

- Implementing the waste hierarchy, to minimise landfill (and associated emissions of methane in particular from biodegradable waste) and enable greater resource efficiency through maximising recycling and recovery of materials and energy. Promoting low carbon solutions, through identifying and enabling development of appropriate facilities reflecting hierarchy priorities and assessed needs;
- Design and operation of built waste management facilities to maximise energy efficiency of the building, its fabric and operations;
- Encouraging and enabling use of renewable and low carbon energy sources including that produced on-site where relevant and also through development of and connection to district heating/local networks.
- Electric vehicle charging points or biogas production for use in vehicles or supply into the gas grid.

Development type, design, layout and operation – adaptation:

7.16 Planning policy can control and influence the type, design, layout and (through conditions) operation of development to some degree, which can help to adapt to climate change:

- Flood resistance (e.g. barriers) and resilience (e.g. services and floor levels raised above projected flood level; containment of materials within part of site; location of vulnerable uses within site away from areas liable to flood risk),
- Enclosure of processes to reduce escape of odour, dust and litter, and maintain healthy conditions for personnel given predicted extremes
- Incorporation of water efficiency measures including recycling of water in processes and plant, and on-site management e.g. dust suppression
- Incorporation of water storage on site – through sustainable drainage schemes where feasible or through tanks and flow restriction (informed by drainage assessments to reduce run-off to greenfield standards)
- Conditions controlling operation and control of site e.g. dust management plans, flood management plans, emergency evacuation plans.

Application in West London

Adopted West London Waste Plan (2015)

- 7.17 The adopted West London Waste Plan (2015) does not currently incorporate explicit consideration of existing and future vulnerability, and of mitigation and adaptation to climate change. However, it is addressed in the policies of the seven local planning authorities' Local Plans as shown in Appendix A which are equally applicable to proposals for waste management.
- 7.18 Strategic Objective 3 of the adopted WLWP is to *'reduce the impact of waste management on climate change by encouraging the use of sustainable transport and new, clean technologies, whilst seeking to locate waste management facilities close to waste sources as practicable.'*
- 7.19 Strategic Objective 2 (waste hierarchy) and 4 (design) are also relevant.
- 7.20 Policy WLWP4 *Ensuring High Quality Development* requires development proposals to demonstrate measures which will mitigate or adapt to climate change including:
- Consider transport other than road (clause d) and green travel plans (clause k)
 - Meet sustainability ratings (clause g)
 - Avoid significant impact on surface and ground water quality and incorporate sustainable drainage (clause i)
 - Not increase flood risk (clause j)
- 7.21 The adopted Policy WLWP 4 already requires consideration of some issues and ways in which waste development can contribute to mitigation and adaptation in West London. The London Plan and local plans of the local planning authorities also include policies requiring climate change mitigation and adaptation (Appendix A). London Borough of Hounslow recently (August 2025) adopted a [Supplementary Planning Document on 'Climate Change Mitigation and Adaptation in New Development'](#). This document is intended to support developers to address climate change in their development proposals, with a specific focus on the fabric and services of new developments to minimise operational carbon emissions and adapt to the changing climate.

Draft Updated West London Waste Plan (Reg 18, December 2025)

- 7.22 Given the existing waste management capacity in West London, no new sites are proposed to be allocated in the Draft Updated WLWP, with reliance on retaining and enhancing (where appropriate) selected existing waste sites. Thus, while new sites are unlikely to be required, spatial factors such as flood risk, should be considered in assessing the suitability of existing sites for intensification/redevelopment.
- 7.23 The following draft Updated WLWP's Vision and Strategic Objectives have climate change mitigation and adaptation considerations embedded within them, taking account of the national, regional and local context set out in Section 3.0:

Draft Vision:

To contribute to the ambition of being net zero by 2030 across west London, land to be used for waste management over the next 15 years will focus on the efficient and flexible use of safeguarded sites, railheads and wharves for waste. This will allow waste materials to be managed as a valuable resource, keeping them in circulation through innovative re-use, repair, and high-quality recycling for as long as possible in line with circular economy principles.

A zero-waste to disposal approach will exist whereby any waste produced in west London is managed applying the waste hierarchy in priority order, with residual waste being minimised, and maximum value recovered from any remaining unavoidable residual waste through high efficiency low-carbon recovery facilities if needed.

The network of management facilities across west London will continue to ensure that at least an equivalent amount of waste produced within west London is managed within it plus a contribution is made to achieving net self-sufficiency for London as a whole as necessary. There will be sufficient flexibility to manage waste from outside the area where this represents a sustainable option that supports circular economy goals. This, together with sustainable transport options, will minimise adverse impacts on road networks and local air quality.

Through partnerships between local authorities, businesses, and local communities, west London will have established a network of Circular Economy Hubs, that foster innovation in waste prevention, material exchange and reuse, and repair. These hubs will help drive green business growth, sustainable entrepreneurship, and job creation, ensuring the transition to a low-carbon circular economy continues strengthening local prosperity, material security and skills development through education and community engagement.

Carbon emissions from west London's waste management system will have been virtually eliminated through:

- electrification of operations using renewable and other clean/ zero carbon energy sources,*
- use of sustainable waste transport and low-emission collection services, and*
- minimisation of greenhouse gas emissions that may arise from specific types of waste management facilities.*

All waste infrastructure will be resilient to climate change, meet all relevant environmental standards as a minimum and meet evolving operational needs.

Draft Strategic Objectives, particularly:

Strategic Objective 2: Encourage facilities that contribute to the achievement of a Circular Economy to come forward

- *Support local Circular Economy Hubs that facilitate material exchange, re-use and remanufacturing. This may comprise a network of local facilities combined with larger-scale infrastructure that may be outside a waste use.*
- *Provide for waste management capacity that supports production of high-quality material from waste suitable for direct utilisation by material users.*

Strategic Objective 3: Decarbonise Waste Transport and Processing.

- *Utilise and expand sustainable transport options for waste movement, including rail and water freight, to reduce road-miles, by safeguarding railheads and wharves in waste use.*
- *Require waste management facilities to integrate low-carbon technologies.*
- *Require waste-to-energy projects to be integrated with local energy supply from Day 1 of their operation and maximise re-use of any residues produced.*

Strategic Objective 4: Deliver High Quality Facilities (Protect and Enhance the Local Environment and Communities)

- *Ensure all waste infrastructure development implements best practice for protection of the environment and local amenity.*
- *Minimise unacceptable adverse impacts of waste management operations.*
- *Require that waste development contributes to local employment and sustainability objectives.*

7.24 Policies in the Draft Updated WLWP are intended to ensure waste is minimised and managed in accordance with the waste hierarchy. In addition, Draft policy WLWP3 is intended to ensure that the use of energy produced from energy from waste facilities is maximised and carbon emissions are minimised. Draft policy WLWP4 expects new development to be adaptable and resilient to climate change and for greenhouse gas emission to be minimised.

Conclusion and Recommendations

- 7.25 Land-use planning has a critical role in determining the scale, type, and spatial distribution of waste related development. It can also influence the design, layout and operation (in conjunction with environmental permitting) of waste management facilities. In doing so it can require and enable both the mitigation of, and adaptation to, climate change of the sector.
- 7.26 A degree of pragmatism needs to be applied when considering options and what land-use planning can achieve, balanced in particular against commercial and practical realities including the opportunities presented by making best use of existing capacity at existing facilities.
- 7.27 There is strong and clear national planning policy and guidance on climate change mitigation and adaptation, with which development plans need to be consistent.
- 7.28 This Topic Paper identifies some key measures that the land-use planning system, and planning for waste management in West London in particular, can implement to contribute to mitigation of climate change through reducing greenhouse gas emissions, and adaptation to its likely effects.

Appendix A – Summary of Climate Change Related Policies in the Local Plans in West London

The following tables sets out planning policies in the Local Plans in West London which are intended to ensure that development adapts to and/or mitigates climate change. These policies cover matters such as design, the use of energy, transport, flooding, water use and waste management.

Brent Local Plan 2019-2041 (adopted February 2022)

<https://www.brent.gov.uk/-/media/files/resident-documents/planning-and-bc-documents/brent-local-plan-2019-2041-accessible2.pdf?rev=c7a39ead257f4ecf819d3693faca8b3c>

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy BSUI1 – Creating a resilient and efficient Brent	<p>Requires district heat networks in key Growth Areas. Major development must connect to or contribute to these unless using 100% renewable heating.</p> <p>For all major developments, a sustainability statement is required to demonstrate how sustainable design and construction methods have been used to enable the development to mitigate and adapt to climate change over its intended lifetime. All major non-residential development must achieve a BREEAM standard of ‘Excellent’.</p>	<p>Need to connect or contribute to district heating networks.</p> <p>Requirement for statement relating to sustainable construction practices (CE statement)</p>
Policy BSUI3 – Managing Flood Risk	Development must demonstrate that it will be resistant and resilient to all relevant sources of flooding including surface water, and must pass the sequential and exceptions test.	<p>Development must consider flood risk – with specific requirements.</p> <p>(SFRA prepared by Metis)</p>

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
	Proposals must minimise flood risk, avoid increasing flood risk elsewhere, provide a dry escape route, and maintain floor levels at least 300mm above the 1 in 100 year flood level. Basement dwellings are prohibited in high risk areas. The policy encourages redevelopment of sites in functional floodplain (flood zone 3b) to restore the natural function and storage capacity of the floodplain.	Note NPPF Annex 3 ⁷² classifies waste development (other than landfill and hazardous waste facilities) as 'less vulnerable' to flood risk
Policy BSUI4 – On site water management and surface water attenuation	Requires developments to reduce water consumption and achieve greenfield runoff rates where possible. Major developments must include sustainable drainage systems (SuDS), separate surface water and foul water systems, and ensure safe floodwater storage and passage.	Requirements regarding use and management of water also apply to waste management facilities.
Policy BT1 – Sustainable Travel Choice	Require developments to prioritise active and sustainable travel over private vehicles. Developments must enhance the Capital Ring walking route, A5 corridor, and North Circular, while safeguarding land for the West London Orbital overground.	Access to waste management sites must consider sustainable travel. Proposals for waste management facilities must enhance walking routes, A5 corridor, and North Circular, and safeguard land for the West London Orbital overground.

⁷² <https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification>

Ealing Core Strategy (adopted 2012) https://www.ealing.gov.uk/downloads/download/7530/development_or_core_strategy_dpd

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy 6.1 Physical Infrastructure	Identify opportunities for sustainable drainage, renewable energy Link waste management with other aspects of infrastructure	Development of new sites/additional capacity to incorporate SuDS and renewable energy.

Ealing Development Management DPD (Adopted 2013)

https://www.ealing.gov.uk/downloads/download/7533/development_management_dpd

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy 5.2 Minimising Carbon Dioxide Emissions	Major non-residential development required to achieve a minimum Very Good BREEAM rating or equivalent and aim to achieve higher ratings	Development of new sites/additional capacity to achieve high sustainability standards
Policy 5.11 Green Roofs and Development Environs	Green roofs strongly encouraged	Development of new sites/additional capacity to incorporate green roofs where feasible
Policy 5.12 Flood Risk Management	Development to ensure it is not vulnerable to surface, sewer and ground water flooding	Development of new sites/additional capacity to be flood resilient

LB Ealing Draft Local Plan (Regulation 19)

<https://ealing.moderngov.co.uk/documents/g6325/Public%20reports%20pack%20Wednesday%2028-Feb-2024%20Ealings%20Draft%20Local%20Plan%20Regulation%2019%20Consultation%20D.pdf?T=10>

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy SP2: Tackling the climate crisis	<p>Ealing is committed to becoming carbon neutral by 2030 through sustainable land use, active travel networks, green infrastructure, and circular economy principles.</p> <p>The policy supports 20 minute neighbourhoods, enhances cycling and walking connectivity, and supports low carbon transport.</p> <p>Developments must prioritise energy efficiency, renewable energy integration, and minimise embodied carbon.</p>	Support in a circular economy will encourage the reuse and the reduction in waste materials.
Policy OEP: Operational Energy Performance	New developments over 500 sqm must be net zero in operation, with compliance measured against absolute energy based targets (space heating demand, Energy Use Intensity & an energy balance).	Net zero operation
Policy ECP: Embodied Carbon	<p>Major developments should not exceed the embodied carbon limits.</p> <p>Embodied carbon limits are defined in table DMP4 (pg. 477) of the LP.</p>	'Major development' undefined but assume it applies to waste management
Policy WLC: Whole Life Cycle Carbon Approach	<p>Major developments must conduct a Whole Life Carbon assessment, and those involving demolition should undertake carbon optioneering* to determine the best approach to building and material reuse.</p> <p><i>*Carbon Optioneering: The holistic consideration of carbon impacts, sustainability outcomes and wider planning objectives to meet climate and sustainability targets (taken from the LP glossary.)</i></p>	Major developments must conduct a Whole Life Carbon assessment, those involving demolition should compare the emissions of different design options.

Harrow Core Strategy (adopted 2012) <https://www.harrow.gov.uk/downloads/file/26426/local-plan-core-strategy.pdf>

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy CS1	<p>F. Open space and green grid will be managed as an interconnected, multifunctional environmental resource, including for adaptation to climate change</p> <p>T. Development Management DPD will establish requirements for sustainable design and construction that maximises energy efficiency of new buildings, minimise use of mains water, minimise carbon dioxide emissions in accordance with London Plan, and seek to promote and secure opportunities for decentralised energy</p> <p>U. Achieve overall reduction in flood risk and increase resilience to flood event</p> <p>X. The Council supports the objectives of sustainable waste management and will:</p> <ul style="list-style-type: none"> - Aim to reduce the amount of waste produced - promote waste as a resource and encourage increased re-use and recycling - Require all new development to address waste management at all stages of its life - Safeguard existing waste sites - Require compensatory capacity for loss of safeguarded site 	New development to incorporate energy efficiency and renewable energy, be water efficient, and be resilient to flood risk

Harrow Development Management Policies (Adopted July 2013)

<https://www.harrow.gov.uk/downloads/file/23258/local-plan-development-management-policies.pdf>

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy DM9 Managing Flood Risk	Design & layout of development requiring a flood risk assessment must contribute to flood risk management and reduction	New development to incorporate sustainable drainage and flood resilience
Policy DM10 On-site Water Management and Surface Water Attenuation	Development required to make provision for installation and management of measures for efficient use of mains water and control and reduction in surface water run-off	New development to incorporate sustainable drainage and water efficiency
Policy DM12 Sustainable Design and Layout	Design and layout of development should utilise natural systems and ventilation, enhance biodiversity, attenuate water, avoid overheating, mitigate noise or air pollution, reduce carbon dioxide emissions	New development to incorporate sustainable drainage, renewable energy, noise and air quality mitigation measures
Policy DM13 Decentralised Energy Systems	Support decentralised energy networks and connect to existing networks	Energy from waste to enable or connect to local heat and power distribution networks where feasible
Policy DM14 Renewable Energy Technology	Development should incorporate renewable energy	New development to incorporate renewable energy

LB Harrow New Local Plan 2021-2041 Proposed Submission (Regulation 19)

https://www.harrow.gov.uk/downloads/file/32505/New_Harrow_Local_Plan_Proposed_Submission_Reg_19_version_FINAL_for_web.pdf

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Strategic Policy 08: Responding to the Climate and Nature Emergency	All developments in Harrow must <ul style="list-style-type: none"> - follow sustainable practices and actively manage natural resources to benefit present and future generations. 	Development must adopt sustainable practices and actively manage natural resources.
Policy CN1: Sustainable Design and Retrofitting	All new developments in Harrow must be net-zero carbon, prioritising energy efficiency, low-carbon heating, and on site renewable energy. They must also limit water consumption to 105 litres per person per day.	Net-zero carbon developments.
Policy CN2: Energy Infrastructure	Developments must be designed on the most energy efficient supply option. Major developments* must follow the London Plan heating hierarchy guidelines and ensure future connections to heat networks. Major developments must, and minor developments should, maximise onsite renewable energy generation. Electric vehicle charging must be provided where there is parking. <i>*Major development: For non-residential development it means additional floor space of 1,000m² or more, or a site of 1 hectare or more, or as otherwise</i>	Major Development must be able to connect to heat networks, maximise onsite renewable energy generation.

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
	<i>provided in the Town and Country Planning (Development Management Procedure) (England) Order 2015. (LP Glossary)</i>	Provide onsite vehicle charging.
Policy CN3: Reducing Flood Risk	<p>Developments must minimise flood risk by following sequential and exception tests where required.</p> <p>Proposals in flood-prone areas must include resilience measures, such as elevated floor levels (300mm above the 1-in-100-year flood level) and flood-resistant materials.</p> <p>Development must not increase flood risk elsewhere and should restore natural floodplains where possible.</p>	Development must consider risk of flooding.
Policy CN4: Sustainable Drainage	<p>All developments must reduce surface water flooding, through</p> <ul style="list-style-type: none"> - separating foul and surface water flows and - incorporating SuDS. - ensure safe floodwater storage, - provide long term management, and - prevent impermeable hardstanding in gardens and open spaces. 	Incorporate flood management measures.

Hillingdon Local Plan

Local Plan: Part 1 – Strategic Policies (2012) https://www.hillingdon.gov.uk/media/3080/Local-Plan-Part-1---Strategic-Policies/pdf/npLocal_Plan_Part_1_Strategic_Policies_15_feb_2013_a_1_1.pdf?m=1598370401647

Local Plan Part 2: Development Management Policies (2020) https://www.hillingdon.gov.uk/media/3084/Hillingdon-Local-Plan-Part-2-Development-Management-Policies/pdf/pdLPP2_Development_Management_Policies_-_ADOPTED_VERSION_JAN_2020_1.pdf?m=1598370641570

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy EM6: Flood Risk Management	<p>New developments must avoid flood zones 2 and 3, except in exceptional circumstances. In such cases, development must demonstrate that flood risk can be mitigated.</p> <p>SuDS are mandatory for all developments unless demonstrated unviable. Council may require contributions for the long term maintenance.</p>	Be mindful of flood risk.
Policy EM6: Flood Risk Management	<p>New developments must avoid flood zones 2 and 3, except in exceptional circumstances. In such cases, development must demonstrate that flood risk can be mitigated.</p> <p>SuDS are mandatory for all developments unless demonstrated unviable. Council may require contributions for the long term maintenance.</p>	Be mindful of flood risk.
Policy DMEI 2: Reducing carbon emissions	<p>All developments must minimise carbon dioxide.</p> <p>All major development proposals must produce an energy assessment showing how these reductions will be achieved.</p> <p>Council may seek an off-site contribution for proposals that cannot meet carbon emission targets</p>	Energy assessment required.

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy DMEI 3: Decentralised Energy	<p>All major developments must be designed to connect to a decentralised energy network (DEN)</p> <p>Major developments within 500 metres of an existing DEN, will be required to connect to that network, including financial contribution to the connection charge.</p> <p>Major developments located within 500 metres of a future DEN, which is likely to be operational within the next 3 years of grant planning permission, will be required to provide a means to connect to that network.</p>	
Policy DMEI 9: Management	<p>Developments in flood zones 2 and 3a must first prove that no safer sites are available. Flood defences should provide protection for the lifetime of the development.</p> <p>Flood risk assessment is required.</p> <p>Development in Flood Zone 3b will be refused unless identified as an appropriate development in Flood Risk Planning Policy Guidance.</p> <p>Developments may be required to make financial contributions to flood improvement works that will benefit the development.</p> <p>Proposals will be refused if they fail to mitigate flood risks or increase risk for others</p>	Requires for flood risk assessment and related mitigation

Hounslow Local Plan 2020-2041 (Regulation 19)

https://lbhounslow.sharepoint.com/:b:/s/InternetLinks/pp/EXIRWoM20wRDkAfeLhbWdM4BFbk_NoZoITS2X9tHjr5PcA?e=AaDBOn&download=1

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy EQ1 – Energy and carbon reduction	Requires developments to support net zero carbon goals by <ul style="list-style-type: none"> - prioritising energy efficiency, renewable energy, and - supporting the delivery of a LPA wide district heat network. 	Energy use and provision in accordance with net zero
Policy EQ2 – Sustainable design and construction	Developments must incorporate <ul style="list-style-type: none"> - passive design, - water efficiency, - SuDS, - urban greening, and - circular economy principles, and - minimise reliance on air conditioning. Major schemes (Major Development) must submit sustainability statements, while all developments must complete a sustainability checklist.	Developments must include urban greening and sustainable design principles. Major development must submit a sustainability statement.
Policy EQ3 – Flood risk and surface water management	Developments must <ul style="list-style-type: none"> - be appropriately located, - incorporate flood resilience measures, and - not increase flood risk elsewhere. Surface water must be managed through sustainable drainage solutions.	Requires for flood risk assessment and related mitigation

Richmond upon Thames - New Local Plan (Adopted 2025)

https://www.richmond.gov.uk/services/planning/planning_policy/local_plan/adopted_local_plan

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy 3 Tackling the Climate Emergency (Strategic Policy)	<p>Developments must reduce greenhouse gas emissions through energy efficiency, renewable energy, and low carbon heating.</p> <p>Proposals should</p> <ul style="list-style-type: none"> - prioritise reuse over demolition, follow circular economy principles, and - be adaptable to climate impacts. <p>Projects must promote low carbon travel.</p>	Climate change mitigation and adaptation
Policy 4: Minimising Greenhouse Gas Emissions and Promoting Energy Efficiency (Strategic Policy)	<p>Developments must reduce greenhouse gas emissions by increasing energy efficiency and using renewable energy.</p> <p>New buildings must be net-zero carbon, with a minimum of 60% on site emission reductions, and no gas boilers from 2024.</p> <p>Roof space should be utilised for solar panels and green infrastructure, and embodied carbon must be minimised.</p> <p>Developers must submit Energy Strategies and mandatory whole –life carbon reporting and disclose energy performance.</p>	<p>Should not feature gas boilers.</p> <p>Developments should incorporate solar panels, use low-carbon material, and reuse materials.</p> <p>Developers of waste management facilities must submit an Energy Strategy and disclose energy performance.</p>
Policy 5: Energy Infrastructure	Developments must maximise on site renewable energy and prepare an Energy Strategy.	Energy Strategy needed.

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
(Strategic Policy)	Major developments must connect to an existing decentralised energy network (DEN) or plan for future connection. If connection is not feasible an assessment for an on-site DEN is needed even in the form of microgeneration. New DENs must prioritise non-combustible, non-fossil fuel energy as the primary heat source.	Facilities must connect to a DEN or plan for future connection.
Policy 6: Sustainable Construction Standards	Developments will be required to achieve the highest standards of sustainable design and construction.	Policy on design standards for facilities.
Policy 8: Flood Risk and Sustainable Drainage	<p>Developments will need to be made safe for their lifetime and must avoid, minimise, or mitigate flood risk from all sources.</p> <p>Major developments in flood prone zones must submit a Flood Emergency Plan.</p> <p>Developments adjacent to flood defences must ensure safe access for maintenance and support flood resilience.</p>	<p>Development must consider flood risk.</p> <p>Flood emergency plan required in flood prone areas.</p> <p>Must ensure flood defences are accessible.</p>

OPDC Local Plan 2018 – 2038

https://www.london.gov.uk/sites/default/files/opdc_local_plan_2022_june_2022_including_appendix_0.pdf

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy EU8: Sustainable materials	Proposals will be supported where they use sustainable materials, including where they are sourced locally where feasible and reduce embodied carbon in the development.	Support for reducing embodied carbon
Policy EU9: Minimising Carbon Emissions and Overheating	<p>Major development will be supported where they:</p> <ul style="list-style-type: none"> - meet or exceed the on-site carbon emissions targets set out in the London Plan Energy hierarchy - they cannot deliver London Plan CO₂ reduction targets on-site, they make a financial contribution towards carbon reduction - design buildings to use low carbon heat sources, and design building services to achieve low flow return temperatures when connecting into heat networks - demonstrate that the risks of overheating have been addressed - provide appropriate smart technologies and guidance to help monitor and manage energy use 	Development to incorporate low carbon and resilient design
Policy EU10: Energy Systems	<p>Major developments should:</p> <ul style="list-style-type: none"> - Support delivery of local smart energy grids including storage and generation - Support/contribute to/deliver low carbon heat networks. - Support/contribute to/deliver low carbon cooling networks. - Demonstrate there is capacity in the network to facilitate their development - Contribute to and/or deliver new heat, cooling and electricity networks and infrastructure 	Support for decentralised energy networks

Policy (no. and title)	Summary of requirement	Implications for the updated WLWP / Waste Management
Policy EU3: Water	<p>Developments will be supported where they:</p> <ul style="list-style-type: none"> - deliver an integrated strategy for managing foul and surface water, as well as supplying potable and non-potable water - Provide sufficient attenuation storage capacity - Enable capacity to be released within the existing combined sewer network to accommodate additional foul water flows - Comply with relevant requirements of the Thames River Basin Management Plan and local authority Surface Water Management Plans - Alleviate localised surface water drainage problems - Demonstrate that areas at risk of fluvial flooding from the River Brent reduces flood risk and improves flood storage in the area - Maximise water efficiency through on-site recycling and achieving the maximum BREEAM score for water use. - Address potential flood risk associated with any changes to topography or hydrology; 	Development to incorporate sustainable water management
EU4: Air Quality	Developments will be supported where they minimise air pollution during the demolition, construction and operational phases of development on the site and on neighbouring sites and make a positive contribution to overall improvement in air quality.	Support to minimise air pollution