ENVIRONMENTAL SUPPLEMENTARY PLANNING DOCUMENT

Adopted 2022

City of Westminster

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INTRODUCTION

This Supplementary Planning Document (SPD) provides guidance for developers on how they can meet the environmental policies within Westminster's City Plan 2019 – 2040. This SPD does not introduce new planning policies into the development plan, it is however, a material planning consideration. Regulations 11 to 16 of the Town and Country Planning (Local Planning) (England) Regulations 2012 are relevant in production of a Supplementary Planning Document. This document aims to help applicants understand how to make successful planning applications without adding unnecessarily to the financial burdens of development in line with the requirements of the National Planning Policy Framework (NPPF).

The Environmental SPD (ESPD) sits within a wider suite of policies, strategies and action plans to address local, national and global environmental issues. The ESPD takes account of these, ranging from the Climate Change Commission's 6th Carbon Budget to Westminster's Climate Emergency Action Plan. The Climate Emergency Action Plan provides details of how the council will address the climate emergency by accelerating the reduction of carbon emissions and associated improvements in air quality across the city, through efficient buildings, clean and affordable energy, sustainable travel and transport, reduced consumption and waste and greening the city.

The ESPD has a specific planning role to play in delivering the council's environmental objectives, and it should be read together with the council's City Plan, Code of Construction Practice, Validation Checklist, Freight, Servicing and Deliveries Strategy and other SPDs. The London Plan and associated guidance published by the Greater London Authority (GLA) should also be considered when devising or assessing development proposals.The ESPD, alongside the City Plan policies, represents a significant shift in the council's narrative on the environment and an uplift in the standards the council expects developers to adhere to. It gives much more prominence and weight to environmental issues than the previous planning framework and represents a game changer on issues such as sustainable retrofitting of historic properties or protection of tranquil spaces from noise pollution for which the council has only had informal guidance on previously.

Westminster has declared a climate emergency and committed to becoming a carbon neutral council by 2030 and a carbon neutral city by 2040. Both the City Plan and this ESPD are reflective of this commitment and show a change of direction for environmental policy for the council. The ESPD shows the council's ambitions for the future of the built environment and shines a spotlight on the issues that all businesses must collectively work together to resolve to address the climate emergency. The ESPD will act as a catalyst for wider adoption of measures and technologies (such as carbon reduction) and encourages their adoption even where planning permission is not required (e.g. due to permitted development rights, or in building refurbishments, office fit outs etc.).

Tackling climate change and reducing carbon emissions is a high priority for the council and the ESPD will set out ways to ensure that developments are environmentally sound and carbon emissions are reduced. Westminster City Council is ambitious in this area of work and the ESPD will be built upon as further advances in environmental policy and innovation are made.

The ESPD covers seven environmental topics as described below.

The SPD covers seven environmental topics as shown below:

Air Quality

Westminster was the first local authority in the United Kingdom to recognise air quality as a serious issue and develop an air quality plan. Today, with the health impacts better-known, air quality is one of the top concerns amongst residents. Positioned at the heart of a global capital, our city suffers from some of the worst pollution in the country. With over a million people moving into and travelling around our neighbourhoods each day, it is crucial that we make more strides to clean up our air and tackle poor air quality for residents and visitors alike. Westminster City Council have produced an Air Quality Manifesto 2018 and an Air Quality Action Plan 2019 – 2024 that shows the council's dedication to tackling air pollution by setting out to find new ways of reducing pollution and identifying clear steps to improve air quality. This ESPD builds upon the ambitions of these documents and the City Plan by providing further planning-related guidance and standards to improve air quality in the city. This chapter supports City Plan policy 32 on Air Quality.

Local Environmental Impacts

Westminster is a vibrant area with a wide variety of day and night activities; in the wrong locations or at the wrong time however, these activities can be of nuisance. We aim to maintain high standards of life in the city and protect health and well-being, particularly of vulnerable groups. We therefore seek to manage impacts that negatively affect the local environment. Detrimental effects on the surrounding local environment can occur in relation to light pollution, noise, vibration and odour. The guidance within this document illustrates how to carefully consider and manage development to ensure that the effects of certain land use activities are occurring at acceptable levels. This chapter supports City Plan policy 33 on Local Environmental Impacts.

Green Infrastructure

Green infrastructure includes open space, waterways, trees, green roofs and walls, rain gardens and other green features which contribute to biodiversity and access to nature. All developments have opportunities to contribute to the further greening of the city and secure net gains for biodiversity. The Royal Parks are a huge asset, and they cover 19% of the city, however, there is still an open space deficiency in Westminster that means that not every resident has good access to public open space. As set out in the City Plan, we want every resident to be within a five-minute walk of an open space, so they have the benefits of a healthier life on their doorstep. Opportunities for enhancing the benefits of existing spaces at ground level and at roof level will also be optimised. This chapter supports City Plan policy 34 on Green Infrastructure.

Flood Risk

Westminster is a Lead Local Flood Authority and has a strategic role in overseeing the management of local flood risks in the city. These risks include flooding from surface water, ground water and smaller watercourses. Due to the heavily urbanised nature of Westminster, and the predominantly Victorian drainage infrastructure, there is a widespread risk of surface water flooding. This SPD provides guidance on requirements for Flood Risk Assessments (FRAs) and how to manage the effects and impacts of flooding. This chapter supports City Plan policy 35 on Flood Risk.

Energy

Improving energy efficiency across the city is key to achieving carbon neutrality by 2040. The reduction of carbon dioxide and other greenhouse gas emissions to the atmosphere is the central pillar in the council's Climate Emergency declaration. The carbon neutral target (2030 for council activity and 2040 for the city) will ensure that we play our part in limiting the increase in global temperatures to 1.5°C.

The planning system is a key lever for carbon reduction in new buildings, refurbished and retrofitted buildings. The council has a new focused approach to carbon reduction which is reflected in this SPD. This chapter supports City Plan policy 36 on Energy.

Waste Management

As we move to a resource-efficient Westminster, we will be looking for more opportunities to implement the waste hierarchy and move from a linear to a circular economy. The council expects development to contribute to this by ensuring that opportunities for refurbishment are considered before demolition occurs, 95% of construction and demolition waste is reused, recycled or recovered, and sufficient space is provided for the separate storage of dry recycling, food waste and residual waste in residential and commercial buildings. This chapter supports City Plan policy 37 on Waste Management.

Retrofitting and Sustainable Design

Refurbishment and retrofit projects provide an excellent opportunity to improve the energy and water efficiency of existing buildings and reduce emissions, which is key to achieving carbon neutrality by 2040.
A large proportion of the building stock in Westminster has a heritage designation, so finding sensitive and effective ways to improve energy efficiency of historic buildings is of vital importance. Given the extent of its heritage assets, Westminster is uniquely placed to lead in work on the area of sensitively retrofitting historic buildings and this will be a priority in order to tackle climate change. This SPD will promote the most effective retrofit solutions, which will optimise energy efficiency and give guidance on which solutions are appropriate depending on the heritage asset. This chapter supports City Plan policies 36 on Energy, 38 on Design Principles and 39 on Westminster's Heritage. While the focus of the final chapter is retrofit of existing buildings, the overarching sustainable design principles in policy 38 seek to ensure both new and existing buildings are designed to be durable, adaptable and limit long-term resource use. This cuts across all the topics in this SPD and guidance on designing for sustainability is therefore integrated throughout each chapter.

OBJECTIVES

City Plan

The objectives of this document align with the environmental objectives of the City Plan 2019 – 2040. The SPD will particularly contribute to the delivery of the City Plan objectives that seek to:

- **Improve quality of life, climate resilience and tackle environmental challenges by protecting, enhancing, expanding our valuable network of parks and open spaces; and**
- **Improve air quality, minimise noise and other polluting impacts, and reduce carbon and water demands by minimising detrimental impacts from development.**

City for All

These objectives also contribute to the delivery of three key themes in the council's ambition to make Westminster a City for All: homes and communities, a healthier and greener city, and opportunities for growth. The success of the City Plan will be monitored against these objectives.

The City for All Strategy contains a commitment to adopt an Environment Supplementary Planning Document that details how the environment policies in our City Plan can be implemented, including supporting sensitive retrofit of historic buildings with secondary or new energy efficient glazing, where appropriate.

A healthy environment created by everyone, for everyone. Our environment is crucial to how we perform as a city. Tackling climate change head on is the only way we can continue to grow and prosper as a healthy and resilient city.

By taking measures to lower our environmental footprint, we give people in our city the highest quality of life.

HOW TO USE THIS DOCUMENT

This SPD is primarily for the use of applicants, council officers and developers. Each chapter within the SPD covers a different topic and each topic contains the following sections within it for your information.

Policy Overview

The key national, regional and local policies are set out at the beginning of each chapter that need to be referred to when assembling a planning application.

Introduction and Guidance

Each chapter will provide background information and context to the topic, this will outline the considerations that may need to be thought about when implementing environmental aspects into a development.

Development Requirements

The section of the chapter is colour coded to show:

Amber – Contains aspects or elements of a development that may be considered to show an acceptable proposal.

Red – Shows standards that are expected to be complied with.

Green – Highlights the information that should be included within a particular type of development or assessment.

Policies are cross-referenced throughout, however there are interrelated issues across the chapters which should be considered alongside each other. Applicants should refer to the council's Planning Validation Requirements checklist to ensure the correct supporting information is submitted for the type of development proposed.

Applicants are encouraged to contact the council for **pre-application advice**. In addition to advice from planning officers on how the council's planning policies will be applied to the proposal, pre-application discussions can identify the need for specialist input at an early stage.

Monitoring

City Plan policies are monitored through the **Authority Monitoring Report.** Key Performance Indicators (KPI) are set out in the Implementation and Monitoring section of the City Plan and relevant KPIs are highlighted at the end of each chapter of the ESPD.

Review

This ESPD will be subject to monitoring and periodic review to ensure future developments in evidence can be incorporated into future iterations of the document. This will ensure it is kept relevant, up to date and strengthen its power to influence development.

This SPD is intended to be a dynamic document that can adapt as evidence requires. Further evidence related to the environmental topics covered in this ESPD is currently being scoped and work on these topics will be continuing throughout the next few years.

AIR QUALITY

Policy Overview

National

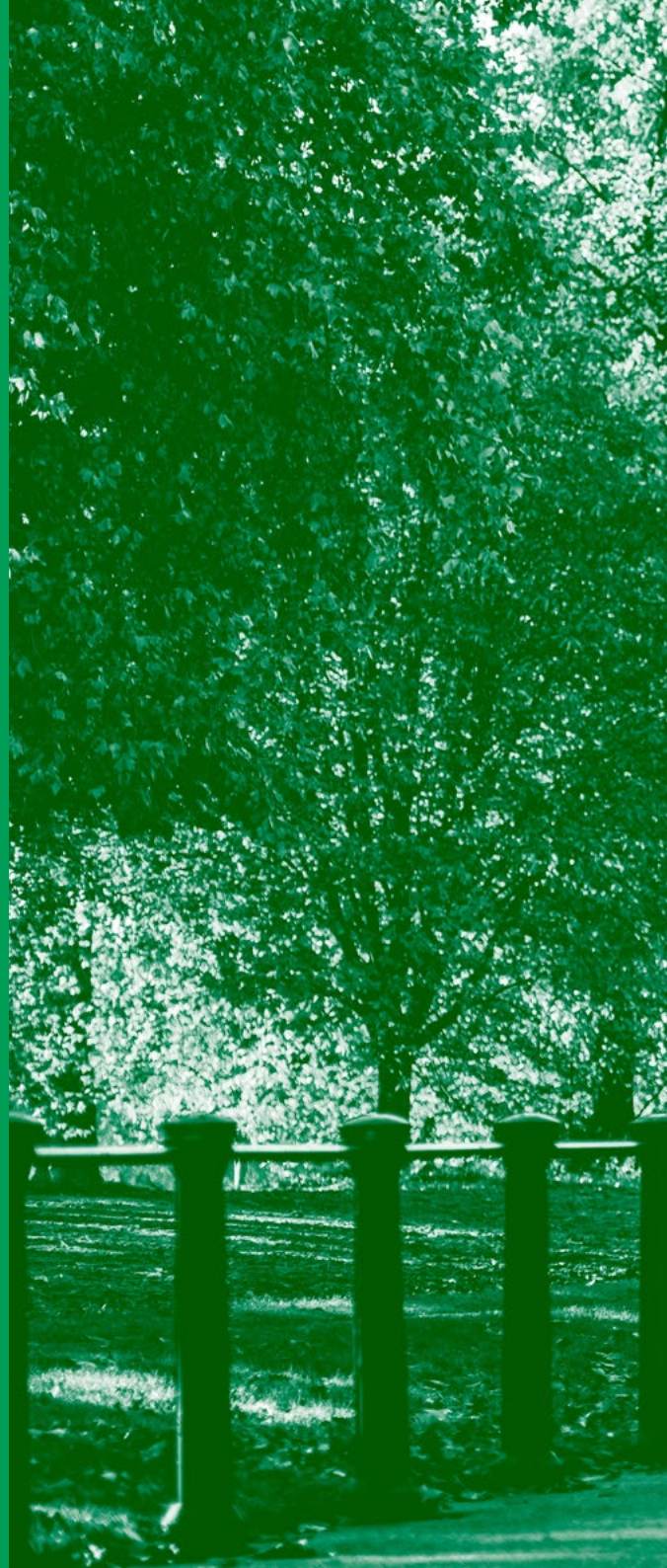
NPPF Para 181
Planning Practice Guidance Air Quality
DEFRA Clean Air Strategy

Regional

London Plan Policy SI 1 Improving air quality
London Plan Policy D13 Agent of Change
Air Quality Neutral London Plan Guidance
Air Quality Positive London Plan Guidance

Local

City Plan Policy 32 Air Quality.
City Plan Policy 29 Freight and servicing
Air Quality Action Plan
Air Quality Manifesto
Freight, Servicing and Deliveries Strategy and Action Plan
Code of Construction Practice



Introduction

Air pollution in Westminster comes from a range of sources which require a range of measures to address the issue, and the planning system plays an important role in this. Policy 32 of the City Plan expects development to reduce exposure to poor air quality and maximise opportunities to improve it locally without detriment to air quality in other areas. This is through requiring certain developments to take an 'air quality neutral' or 'air quality positive' approach and also requiring air quality assessments. The City Plan also encourages a Healthy Streets approach to new development to improve air quality and health. Air pollution causes significant detrimental health, environmental and economic impacts in Westminster. Air quality is among the top environmental concerns for residents and improving it is a particular priority for the council.

Westminster was the first local authority in the UK to recognise air quality as a serious issue and develop an air quality plan. Westminster City Council have more recently produced an Air Quality Manifesto 2018 and an Air Quality Action Plan 2019 – 2024 that show the council's ongoing dedication to tackling air pollution by setting out to find new ways of reducing pollution and identifying clear steps to improve the air quality.

Air pollutants (including NOx and Particulate Matter) have both natural and human-caused sources. When they are released into the atmosphere, they undergo a range of chemical reactions that can have a detrimental impact on both public health and the built environment.

Road transport is the biggest single source of pollutants within Westminster. Most of the policy interventions to address pollution from vehicles falls outside the scope of this ESPD and many fall outside the planning system altogether. In addition to City Plan policy 32. Air Quality, interventions include City Plan policies 24. Sustainable transport, 25. Walking and cycling, 26. Public transport and infrastructure, 27. Parking, 29. Freight and Servicing, and 30. Technological innovation in transport as well as Westminster's Freight, Servicing and Deliveries Strategy, Air Quality Action Plan, Electric Vehicle Charging Infrastructure Strategy and Code of Construction Practice. Existing measures such as the Ultra Low Emission Zone (ULEZ) have already helped to improve air quality in Westminster.

Westminster's Air Quality Action Plan contains more details on how the council intends to reduce emissions from transport, including reducing emissions from the council's own vehicle fleet and contractors' fleets, provision of electric vehicle charging infrastructure, extending the diesel surcharge and calling for more action from government.

Building emissions are the second biggest source of air pollution. Emissions from existing buildings come mainly from heating and energy equipment such as gas boilers and CHP plants. The Energy and Retrofitting sections of the City Plan and this ESPD have more information on how this source of pollution can be addressed. This includes designing and retrofitting buildings to reduce carbon emissions (including a net zero carbon target for major development), be more energy efficient and use more renewable energy.

Emissions from demolition and construction work are also key sources of particulate matter and can cause highly localised spikes in pollution. Where all or part of the existing building can be retained and demolition can be avoided, this will avoid dust and emissions from demolition as well as help conserve resources, reduce embodied carbon and minimise waste. Westminster requires Whole Lifecycle Carbon Assessments

(WLC) for referable applications and major developments[1] involving substantial demolition. Westminster follows the GLA's approach to WLC assessments which requires applicants to consider the retrofit or reuse of any existing built structures before embarking on the design of a new structure or building. See the ESPD section on Energy for more details.

Where demolition does take place, City Plan policy 33. Local environmental impacts, and the council's Code of Construction Practice requires developers to provide mitigation measures for dust and air pollution during the demolition and construction process and the chapter in this ESPD on Local environmental impacts provides further details.

Green Infrastructure can play a part in the improvement of air quality, please see the Green Infrastructure chapter for further guidance.

The behaviour of our communities also has an impact on pollution levels and behaviour change will play a key part in tackling the issue. Further information of what residents, visitors and businesses can do to help can be found in the Air Quality Manifesto and Air Quality Action Plan.

It is important to note that carbon dioxide is not considered to be an air pollutant, although it is a greenhouse gas. However, there are synergies between carbon emissions reduction and air quality improvements, and these will be prioritised.

1 Development of 150 residential units or more and/or development over 30 metres in height referable to the Mayor. Major development is greater than or equal to 10 residential units; or 0.5 hectares site area (residential) or 1 hectare (non-residential); or gross floorspace of 1,000 sq m (GIA).

Air Quality Neutral and Air Quality Positive

Air quality neutral' and 'air quality positive' approaches to development have been adopted by City Plan Policy 32 parts B and C.

An air quality neutral development is one that meets, or improves upon, the air quality neutral benchmarks published in guidance from the GLA. The benchmarks set out the maximum allowable emissions of NOx and Particulate Matter based on the size and use class of the proposed development. There are two sets of benchmarks, which cover the two main sources of air pollution from new developments:

- Building Emissions Benchmark (BEB) – emissions from equipment used to supply heat and energy to the buildings; and
- Transport Emissions Benchmark (TEB) – emissions from private vehicles travelling to and from the development.

A development must meet both benchmarks separately in order to be Air Quality Neutral. In Westminster major developments and developments incorporating Combined Heat and Power (CHP) should be at least Air Quality Neutral.

An Air quality positive approach maximises the benefits to local air quality in and around a development site or masterplan area and minimises exposure to existing sources of poor air quality. This approach goes beyond compliance with the Air Quality Neutral benchmarks. Measures that contribute to the delivery of an Air Quality Positive scheme include:

- **Better design and reducing exposure;**
- **Building emissions;**
- **Transport emissions; and**
- **Innovation and futureproofing.**

Major developments in Opportunity Areas and Housing Renewal Areas and those subject to an Environmental Impact Assessment should be air quality positive. Development in the Central Activities Zone (CAZ) should take practical measures to improve air quality, using an air quality positive approach where possible.[2]

Both of these concepts relate to completed development and supplement the assessments that are required for the construction phase.

The Mayor has published consultation documents that provide further guidance and advice on achieving **Air Quality Neutral** and **Air Quality Positive** standards, including where air quality offsetting will be considered. These are expected to be finalised in Spring 2022.

Air Quality Assessments are required to quantify the impacts of the development to local air quality, or assess the impacts of introducing new receptors to an area of existing poor air quality, and assess future exposure.

2 London Plan Policy SD4.D: The Central Activities Zone (CAZ)

Development Requirements

Information Required

The City Plan requires air quality assessments to be submitted with applications for the following proposals,

- Major developments;
- Proposals that include potentially air pollution generating uses or combustion-based technologies;
- Proposals incorporating sensitive uses; and
- All residential developments within Air Quality Focus Areas.

Even where not required, all applicants are encouraged to think about the potential air quality impacts of their development and avoid or mitigate these where they can. A summary of when Air Quality Assessments are required and which developments should meet Air Quality Neutral and Air Quality Positive standards is provided in Table 1 below. Further information can be found in the **Local Validation Checklist.**

Table 1: Air Quality Assessment Requirements

	EIA Development	Major development	Residential Development	Development Incorporating Combustion technology	Development incorporating Sensitive uses
Air Quality Assessment	✓	✓	When located in an AQFA ✓	✓	✓
Air Quality Neutral	✓	✓	✗	When CHP is proposed ✓	✗
Air Quality Positive Statement	✓	When located in an opportunity area/housing renewal area ✓	✗	✗	✗

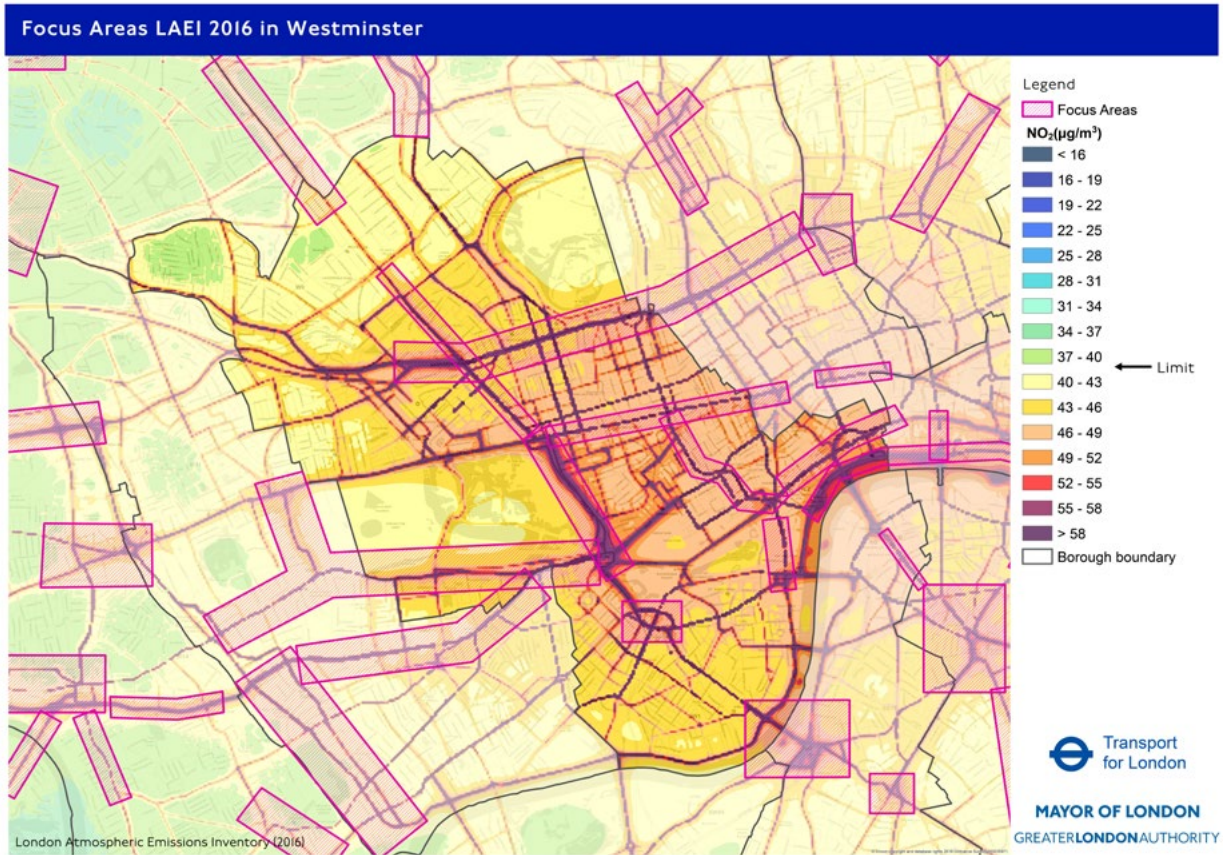


Figure 1 above shows Air Quality Focus Areas (AQFA) in Westminster City. Please refer to the interactive Policies Map[3] for a larger scale version. Annual air pollution data can be found on the London Air website

3 Interactive Policies Map

Required Standards

Major developments in Opportunity Areas and Housing Renewal Areas and those subject to an Environmental Impact Assessment are required to demonstrate how they are air quality positive for the local area as set out in part B of policy 32. This statement should confirm how an air quality positive approach has been accounted for in the design of the development and how the development improves the existing air quality position.

Applicants will be expected to follow the GLA's Air Quality Positive London Plan Guidance.

Policy 32C, requires major developments and developments incorporating Combined Heat and Power (CHP) to be air quality neutral. These developments must meet both the Building Emissions Benchmark (BEB) and the Transport Emissions Benchmark (TEB) separately in order to be Air Quality Neutral.

Applicants will be expected to follow the GLA's Air Quality Neutral London Plan Guidance.

Key Considerations

AIR QUALITY NEUTRAL

If the AQN assessment shows that the development fails to meet one or both benchmarks, the first step is to amend the details of the development to meet the benchmarks. This could include changes to the energy or transport strategies, or changes to the overall design of the development. Measures should relate to the type of excess emissions, for example measures to reduce building emissions cannot be used to compensate for excess transport emissions. As the benchmarks are based on evidence and are designed to be challenging but achievable, off-site mitigation or offsetting provisions should be the exception.

AIR QUALITY POSITIVE

Examples of mitigation that could be implemented include:

- Taking action to reduce levels of pollutants through good design; optimising site layout, locating the most sensitive land uses, such as schools, nurseries and residential dwellings, in less polluted parts of a site;
- Maintaining adequate separation distances between sources of air pollution and receptors, avoiding the creation of street canyons and encouraging air flow where possible and using building form to improve dispersion of pollution;
- Locating parks and public spaces in areas where there will be low pollutant;
- Concentrations, using green infrastructure (to absorb or trap pollutants and create a barrier or maintain separation between sources of pollution and receptors;
- Good management of energy demand within the building, and measures to ensure that energy systems will achieve low or zero-emissions of air pollutants;
- Appropriate means of filtration and ventilation;
- Providing opportunities to deliver a modal shift toward sustainable transport such as direct and attractive routes to access and move around the site on foot and by cycle that are more convenient than using a private vehicle;
- Contributing to the implementation of Westminster's Freight, Servicing and Deliveries Strategy; and
- Controlling dust and emissions from demolition, construction and operation.

Information Required: The below outlines expected content of air quality assessments submitted as part of a planning application.

Category	Notes
Introduction and Description of Development	Ensure consistency with submitted application description
Authors name and qualifications. Date of assessment.	Recent date / Appropriate level of competency of report author
Maps / Plans included	Note whether development is within an AQFA
Photo of site and surroundings	
Relevant guidance / Standards referenced	E.g. EPUK guidance; London Councils guidance
For the operational assessment	
Evidenced statement on whether a detailed AQ assessment required	Utilise triggers in table 6.2 of EPUK guidance / Ensure traffic data is consistent with approved transport statement
Baseline assessment	Relevant data used from appropriate monitoring stations, diffusion tubes / Defra background maps, LAEI
Modelling methodology	Inputs to be appropriate
Receptors evaluated	Note whether any proposed receptors will be sensitive / Suitable spread of receptor types and location including receptor height
Pollutants assessed	Appropriate to the pollutant source e.g. NO_2 and PM for most road traffic assessments
Model verification	Explanation of any disparity – Check model inputs and appropriate adjustment factor

For construction assessment	
Construction traffic inclusion	Refer to GLA SPG on control of dust and emissions from demolition and construction
Dust risk assessment	Refer to GLA SPG on control of dust and emissions from demolition and construction / Site sensitivity and dust emission magnitude
Significance criteria	Post mitigation assessment most relevant / Recommend use of London council's guidance.
Mitigation	Any mitigation recommended to be justified and to be appropriate to the development type
Conclusion	

MONITORING

City Plan Key Performance Indicator 21: Reduction of NOx and particulate matter (PM2.5 and PM10) concentration against national and regional Air Quality targets

LOCAL ENVIRONMENTAL IMPACTS

National

NPPF Para 180
Public Health England UK National Radon Action Plan

Regional

London Plan Policy D8 Public realm
London Plan Policy D13 Agent of Change
London Plan Policy D14 Noise

Local

City Plan Policy 33 local environmental impacts
City Plan Policy 16 food, drink and entertainment
Code of Construction Practice
Westminster's Contaminated Land Guidance
Planning and Pollution Control – *Prevention of odour, smoke and fume nuisance from commercial kitchen exhaust systems guidance (March 2021 – or any subsequent update)*
- WCC Lighting Design Guide (May 2020)
- **Westminster Lighting Master Plan 2020 – 2040** (July 2020)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Introduction

Westminster is a vibrant city with a wide variety of day and night activities. Detrimental effects on the surrounding local environment can occur in relation to light pollution, noise, vibration and odour. These effects have to be carefully considered and managed to ensure that certain land use activities are occurring at acceptable levels.

We apply the agent of change principle to manage impacts. It requires that the mitigation for environmental impacts is placed on the proposed new development and does not require surrounding uses to curtail their activities due to the proposed development.

Developments falling within Use Class E should provide appropriate mitigation for all types of development within this use class. Changes between uses within Class E may be restricted in exceptional circumstances where demonstrable harm would be caused contrary to development plan policies. Where harm would occur as a result of an unrestricted Class E use being granted, the council will use conditions to mitigate this, which will be considered on a case-by-case basis.

This ESPD should be read in conjunction with the **Code of Construction Practice** which deals with impacts resulting from the construction phase of development. This includes liaising with the public, general site operations, traffic, transport and the use of the public highway, noise and vibration, dust and air pollution, waste management, water pollution and flood risk, ecology, heritage assets and protection of existing installations.

Light Pollution

City Plan policy 33B, requires development to be designed to minimise the detrimental impact of glare and light spill on local amenity, biodiversity, highway and waterway users.

Artificial lighting is used in the evenings and at night to illuminate our city for a wide range of reasons, including:

- Safety – when travelling during the evening and at night, pavements, cycle lanes and roads need to be appropriately lit to be safe and accessible to all;
- Activity – from sports pitches to restaurants and buildings, lighting helps to extend the number of hours in which an activity can be enjoyed; and
- Celebration – parts of the city are illuminated seasonally to celebrate Christmas, Diwali and other festivities.

Excessive and poorly designed lighting can pollute the night sky and waterways, disrupting biodiversity and illuminating residential areas and buildings inappropriately, changing the character of the area and wasting energy. Domestic lighting accounts for almost 50% of environmental complaints received by the council.

The Institution of Lighting Professionals (ILP) sets out current best practice[4] to reduce light pollution and to provide the right light, at the right time, in the right place, controlled by the right system. Based on this, we have divided the city into three lighting zones.

4 Guidance Note 01/21: The Reduction of Obtrusive Light

Area Covered	Standard
Within the Central Activities Zone except for the Royal Parks and The Thames	ILE Zone 4 Standard
Outside the Central Activities Zones except for the Royal Parks and the Thames	ILE Zone 3 Standard
Within the Royal Parks, canals and the Thames, including the embankment	ILE Zone 2 Standard

The Royal Parks, canals and the Thames, including the embankment, have the lowest level of illumination to protect biodiversity. This is commensurate with their priority habitat designation as Sites of Importance for Nature Conservation (SINCs). SINCs provide important habitats for a range of species and make it possible for residents and visitors to access nature. Light pollution can disrupt the flight paths of bats, disorientate night-flying insects and birds, and affect the ability of wildlife to breed or feed successfully. Developers are required to undertake a site-specific ecology report for any development including artificial light which would impact on a priority species or habitat.

The highest level of illumination is within the Central Activities Zone (CAZ) where the commercial and cultural offer is highest. This area also has a large resident community and disruption to their evenings must be minimised.

The environmental impact of lighting, both internally and externally, must also be considered. It should not prevent appropriate levels of illumination for safety, navigation and accessibility. Westminster's street lighting uses LED light sources which use less energy than incandescent, halogen and compact fluorescent lamps. We have a central management system which ensures that the right level of lighting is provided at the time that it is needed and in the right location.

Development Requirements

Required Standards

Types of lighting installations that are subject to planning:

- Lighting for listed buildings – very tightly controlled, particularly in relation to changes to the building fabric;
- Lighting that changes the material appearance of a building;
- Lighting for new developments (inc. sports grounds and new lighting installations); and
- Illuminated Advertising Signage.

Information Required

Westminster's Lighting Design Guide and Lighting Master Plan documents should be consulted for definitive application requirements.

Where planning permission for lighting schemes is required, applicants should provide the following details as applicable:

- The purpose of the lighting;
- The design of light infrastructure, e.g. height of light columns;
- Plans showing the lit area and the layout of lights and orientation of light beams;
- The number of lights, lighting levels, lux and lumen details, lamp types; and
- Times lighting will be on and the control systems (types and location of sensors).

Key Considerations

External lighting must:

- Be in line with the ILP Zone Standards;
- Be designed to minimise glare and light spill, and to avoid conflict with traffic lighting, road and/or river users;
- Take into account priority habitat designations;
- Use illumination levels that are no more than required for the purpose;
- Be energy efficient;
- Be visually unobtrusive, using discrete fittings and cabling; and
- Be appropriate to the character of the area in design and intensity.

Where lighting is attached to buildings and their facades, downward facing light fittings will reduce wasted light and help to prevent pollution of the night sky.

Required Standards

All external lighting (excluding floodlighting) will meet the criteria of the Institution of Lighting Professionals' (ILP) Guidance Notes for the Reduction of Obtrusive Light GN011, or more recent version as appropriate for the relevant ILP Zone in which the development is proposed, as set out in the table above.

Floodlighting, architectural lighting and schemes which require the deliberate use of upward light will minimise upward waste light by proper application of appropriate directional luminaires and light controlling attachments. External light spill and glare from internal lighting will be minimised, energy efficient, and subject to curfew hours when internal lighting will be substantially reduced or switched off.

Relevant professional standards will be used as a guide to assessing light impacts.

Applications for physical activity, leisure, sport and/or play facilities should follow Sport England's Artificial Lighting Guidance

Noise and Vibration

Part C of City Plan policy 33, Noise and Vibration is relevant for the next two SPD topics. The City Plan seeks to prevent adverse effects of noise and vibration and improve the noise environment in compliance with the council's Noise Thresholds. Noise thresholds are outlined below in development requirements.

Westminster is a noisy city within a global city. The intensity of road traffic, commercial trade, business and residential noise impacts are experienced twenty-four hours a day. Ambient noise levels in the city exceed those of the rest of the UK and World Health Organisation guidelines. As a result of the proximity of a wide range of uses to each other, more than 20,000 noise complaints are received annually, including issues related air conditioning/plant noise, building sites, deliveries and collections, noise from licensed premises and traffic noise.

The impact of continuous unwanted sounds can be detrimental to both residents by disturbing sleep and wider quality of life impacts as well as to sensitive biodiversity systems. Therefore, acoustic design in the built environment is a key environmental consideration. In Westminster residential areas are mixed with commercial areas and our expansive road network means that only a few properties are a significant distance from noisy activity such as freight, servicing and delivery. In addition to this ESPD, the Code of Construction Practice addresses noise from construction, and the Public Realm SPD and Freight, Servicing and Deliveries Strategy also seek to address noise issues from road users.

Despite the serious problems of noise pollution affecting the city, many of the open spaces within the city are relatively quiet and tranquil places. From the royal parks to a rich variety of smaller spaces, Westminster has open spaces that perform many functions. City Plan policy 33, C 4, recognises the importance of protecting the relative tranquillity in and around open spaces.

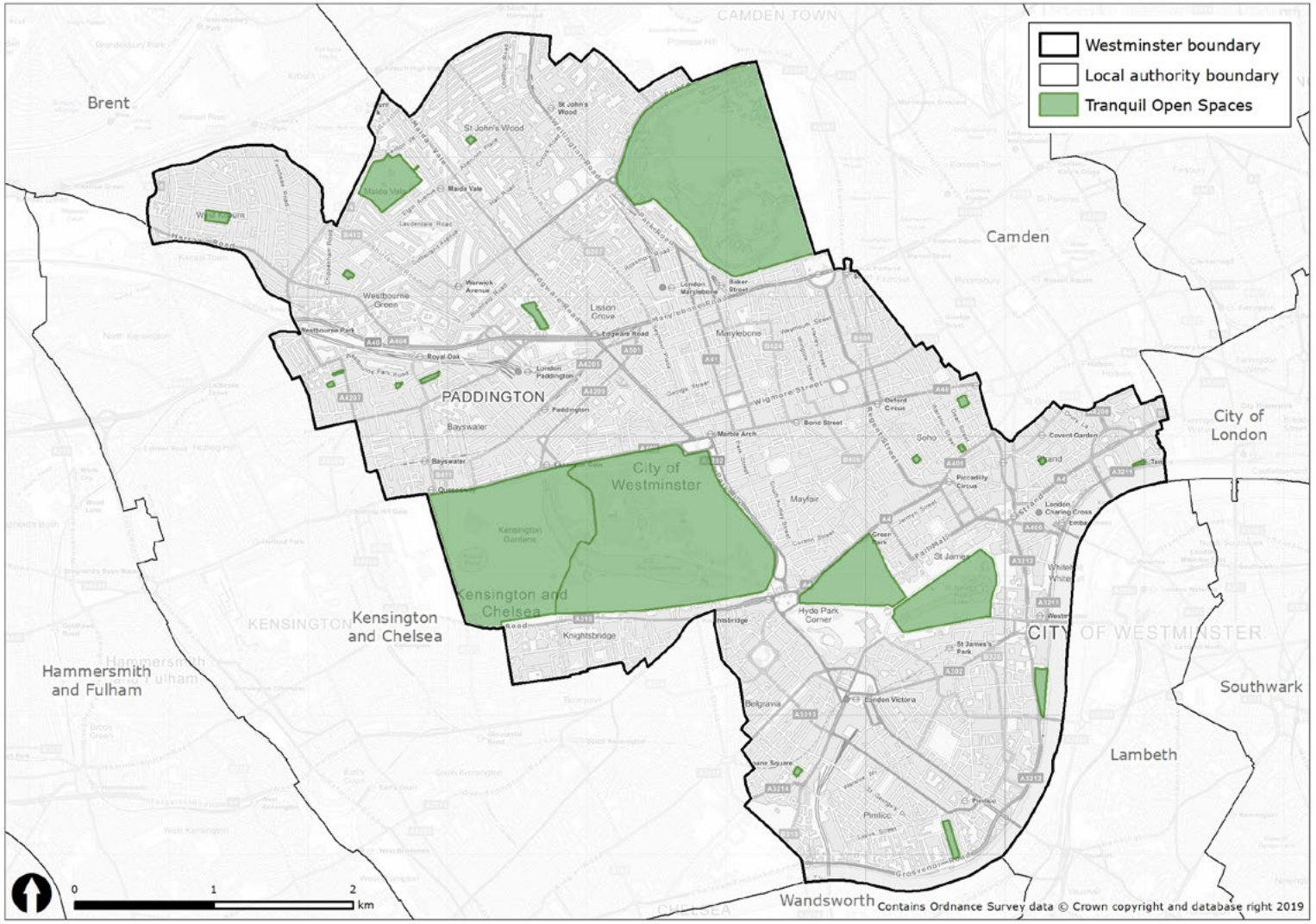

Figure 2: Tranquil open spaces in Westminster

In considering the noise impacts of the built environment there are clear crossovers with Air Quality and Green Infrastructure sections of this document.

Information Required

A Noise Impact Assessment (Acoustic Report) is required where development, including change of use, could affect noise sensitive receptors (as defined in the City Plan), or introduce a noise sensitive receptor into an area of existing high ambient noise.

Noise Impact Assessments should:

- Set out how any noise and vibration impacts will be mitigated;
- Highlight any noise and vibration generated by a development and how this affects existing external background noise levels;
- Identify where the nearest noise sensitive property is located, and what noise level from the development will occur outside the nearest noise sensitive window over a 24-hour period as a minimum;
- Demonstrate what measures will be taken to mitigate noise and vibration to meet the council's requirements; and
- Be carried out by a suitably qualified and experienced acoustic consultant (consultants must be registered members of the Institute of Acoustics (IOA) or Association of Noise Consultants (ANC)).

Required Standards

This section presents the Noise Thresholds for different types of developments, which are derived from BS8233:2014 and WHO Community Noise Guidelines.

New residential development / conversions

Standards are:

- Indoors 35 dB LAeq, 16 hours day-time (7am–11pm);
- Inside bedrooms 30 dB LAeq, 8 hours night-time (11pm–7am); and
- Inside bedrooms 45 dB LAFmax to be exceeded no more than 15 times per night-time from sources other than emergency sirens.

Noise sensitive development in proximity to underground train lines

NOISE

Where development is likely to be affected by existing ground-borne noise from underground train operations, for instance resulting from basement development, there should be no increase in ground borne noise within neighbouring properties and the following standards should be met within new habitable spaces:
Indoors 35 dB L_{ASmax} minimum standard day and night.

VIBRATION

The design and structure of the development should protect future occupiers from any vibration arising from underground train operations in any part of a residential property and meet the following standards (as defined by BS 6472-1:2008):
0.2 VDV $m/s^{-1.75}$ day-time (7am–11pm)
0.1 VDV $m/s^{-1.75}$ night-time (11pm–7am)

Required Standards

Noise generating commercial uses including music and entertainment uses (e.g. restaurants, clubs, pubs) and gyms

Where noise generating commercial uses are proposed, either as part of new development, conversion or change of use, the standards in Table 2 apply. These noise standards also apply to proposals for extended operating hours or intensification of the existing use. Any additional plant or equipment required for the new use must also meet the criteria in Table 3.

The design and construction of the separating building structure should be such that any received noise in adjoining residential habitable spaces or other noise sensitive properties does not exceed the standards in Table 2.

Where existing residential units or other noise sensitive receptors could be affected the design of the development must ensure that there will be no increase of noise above existing levels. This factor must be considered in designs which include large areas of openable windows and/or fully openable shopfronts.

Table 2: Design criteria to be achieved in adjoining residential habitable spaces.

Typical use	Noise Criteria	Noise Parameter: (measured in 5 min increments)
Music and entertainment (e.g. restaurants, clubs, pubs)	10 dB below measured/assessed background in adjoining residential habitable space	L_{eq} & L_{Fmax} in 63 Hz and 125 Hz octave bands
	Fixed criteria	Day: NR30 L_{eq}, NR35 L_{Fmax} Night: NR25 L_{eq}, NR30 L_{Fmax}
Gym facilities and other similar uses	10 dB below measured/assessed background in adjoining residential habitable spaces	L_{eq} & L_{Fmax} in 63 Hz and 125 Hz octave bands
	Fixed criteria[2]	Day: NR20 L_{eq} (Airborne noise), NR25 L_{Fmax} (Impact noise) Night: NR15 L_{eq} (Airborne noise), NR20 L_{Fmax} ([Impact noise)

Required Standards

Minimising noise from plant machinery and internal/external activities

Development including plant or machinery, or proposed uses that cause noise from amplified/unamplified music or human voices both internally and externally, even when windows and doorways are open, should achieve the following standards:

Table 3: Noise and vibration criteria for plant machinery and internal/external activities.

Existing External Ambient Noise Level	Tonal or Intermittent Noise/Noise Source	Noise level that should not be exceeded at the nearest Noise sensitive Receptor*[1]
Exceeds WHO Guideline levels L_{Aeq} 55 dB over periods of day-time (7am – 11pm) and L_{Aeq} 45 dB at night-time (11pm – 7am)	Does not contain tones or intermittent noise sufficient to attract attention	10 dB below the minimum external background noise level
	Contains tones or intermittent noise sufficient to attract attention	15 dB below the minimum external background noise level
	Noise emitted from emergency plant or an emergency life supporting generator	10 dB above the lowest background noise level within a 24-hour period.
Does not exceed WHO Guideline levels. L_{Aeq} 55 dB over periods of daytime (7am–11pm) and L_{Aeq} 45 dB night-time (11pm–7am).	Does not contain tones or intermittent noise sufficient to attract attention	5 dB below the minimum external background noise level.
	Contains tones or intermittent noise sufficient to attract attention	10 dB below the minimum external background noise level
	Noise emitted from emergency plant or an emergency life supporting generator	10 dB above the lowest background noise level within a 24 hour period
Below 30 dB $L_{A90,15min}$ at the nearest noise sensitive receptors Both day-time (7am–11pm) and night-time (11pm–7am)	Noise contains and/or does not contain tones or intermittent noise	Site specific standards that avoid noise disturbance to nearest noise sensitive receptors may be considered

*[1] Measured at the nearest noise sensitive receptor 1m from the most affected façade, relative to the existing external background noise level in this location and including assessment at the quietest time during which the plant operates or when there is internal activity at the development site. The background noise level should be expressed in terms of the lowest $L_{A90,15min}$ during day time or night time (depending on the hours of use being applied for).

Vibration from plant in all settings	
Vibration dose values must not exceed these limits in any part of a residential or noise sensitive property [BS6472 (2009)]. This includes transmission through adjoining premises and structures and through the building fabric of the development.	0.2 VDV $m/s^{-1.75}$ daytime (7am–11pm) 0.1 VDV $m/s^{-1.75}$ night-time (11pm–7am)

The following tranquil areas shown in Table 4 below have specific protection from noise and should be considered noise sensitive.

Tranquil Open Spaces in Westminster	
Regent's Park	Violet Hill Gardens
Green Park	St Anne's Churchyard
St James's Park	Shrewsbury Road
Kensington Gardens	St Stephen's Gardens
Hyde Park	Paddington Recreation Ground
Westbourne Gardens	St Mary's Churchyard
Porchester Square	Temple Gardens
Golden Square	Inigo Jones Gardens
Soho Square	Victoria Tower Gardens
Ebury Square	Queens Park Gardens
St George's Square	Edbrooke Road Gardens

Table 4: Tranquil Open Spaces in Westminster

Tranquil open spaces are given specific protection from noise and should be considered noise sensitive.

FOR A DEVELOPMENT OUTSIDE A TRANQUIL SPACE

Where noise is emitted from the proposed development, the sound pressure level should not exceed the thresholds set out in Table 3 at the closest edge of the nearest tranquil open space to the proposed development.

FOR A DEVELOPMENT WITHIN A TRANQUIL OPEN SPACE:

Where noise is emitted from the proposed development, the sound pressure level should not exceed the thresholds set out in Table 3 at a distance of 5 m from the proposed noise source.

Standards in Tables 2 and 3 apply at the quietest time of day or night (when the plant operates or when there is internal or external activity at the development) and to all open spaces that have been defined as Tranquil Open Spaces.

It is acknowledged that some developments will enhance the soundscape; in this case, the specified standards above may not need to be met. These developments may include children's play areas, sonic art installations and local amenities such as swimming pools and gyms.


FEVER-TREE
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FEVER-TREE

Construction Impacts

Developments that are subject to an Environmental Impact Assessment (EIA)[5] are required to submit an assessment of potential construction impacts to noise sensitive receptors as part of the Environmental Statement submitted with the planning application.

For development below the EIA threshold, control of noise from construction sites comes after planning permission has been granted through the requirements in the Code of Construction Practice (CoCP). The CoCP deals with impacts resulting from the construction phase of development, including noise and vibration. The CoCP requires all types of development to submit a Noise and Vibration Mitigation Management Plan. Major developments are also required to submit noise and vibration monitoring and risk assessments.

Information Required

NOISE IMPACT ASSESSMENT

A Noise Impact Assessment (acoustic report) is required that sets out the noise and vibration impact from proposed demolition and construction activities on any identified noise sensitive receptors. The Noise Impact Assessment should identify where the nearest noise sensitive properties are located, and predict the noise level from the construction and demolition activities outside the nearest noise sensitive window over the duration of the project and set out any significant impacts.

The report should provide an indication of what mitigation measures are likely to be required to mitigate noise and vibration impacts to meet the council's requirements

Noise Thresholds for Construction Works is defined in BS5228 BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1 Noise

Required Standards

RESIDENTIAL DWELLINGS

When noise generated from construction and demolition activities, rounded to the nearest decibel, exceeds the values set out in Table 5 it indicates the potential significant impacts.

Table 5: Threshold of potential significant effect at dwellings

Assessment category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,\ T}$)		
	Category A	Category B	Category C
Day-time (7am – 7pm) and Saturdays (7am – 1pm)	65	70	75

NOTE 1 A potential significant effect is indicated if the $L_{Aeq,\ T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total L_{AeqT} noise level for the period increases by more than 3 dB due to site noise.

NOTE 3 Applied to residential receptors only.

Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

5 Schedules 1 and 2 of the 2017 EIA Regs (as amended): The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (legislation.gov.uk)

Required Standards

OTHER NOISE SENSITIVE RECEPTORS

Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, $L_{Aeq,\,T}$ from site noise alone, for the daytime and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.

These evaluative criteria are generally applicable to the following receptors:

- Hotels and hostels;
- Buildings in religious use;
- Buildings in educational use;
- Buildings in health and/or community use; and
- Businesses whose activities are particularly sensitive to the impact of external noise, such as recording studios.

Vibration Thresholds Noise Thresholds for Construction Works (as defined in BS5228 BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2 Vibration)

When vibration generated from construction and demolition activities exceeds the values in Table 6 it indicates the potential significant impacts.

Table 6: Noise Thresholds for Construction Works

Vibration Level A), B) and C)	Effect
0.14 $mm{\cdot}s^{-1}$	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 $mm{\cdot}s^{-1}$	Vibration might be just perceptible in residential environments.
1.0 $mm{\cdot}s^{-1}$	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.
10 $mm{\cdot}s^{-1}$	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

A) The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient.

B) A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available.

C) Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472-1 or -2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.

Odour

City Plan Policy 33D, requires development to effectively address the adverse impact of odour through the incorporation of appropriate mitigation measures.

Westminster has large numbers of existing hot food premises which discharge kitchen fumes externally at low level. This can have a significant impact on the amenity of adjoining uses and persons using the footway and can lead to complaints. The council has produced guidance to assist with addressing odour issues associated with hot food use operations. This is "Prevention of odour, smoke and fume nuisance from commercial kitchen exhaust systems," March 2021.

Other sources of odour in Westminster affecting amenity are normally from Shisha Smoking and waste storage and handling.

Policy 16F which relates to Shisha Smoking does not prohibit shisha smoking but requires applicants to demonstrate through the submission and implementation of a management plan how any potential negative health and odour impacts from shisha smoking can be mitigated. The lack of control within the licensing regime means that management of the impacts from shisha smoking need to be applied at the planning stage.

Development Requirements

Information required

Proposals that involve significant sources of odour will require an Odour Assessment.

An Odour Assessment should assess against the following FIDOL factors (Table 7) as advised by the Institute of Air Quality Management in their 'Guidance on the assessment of odour for planning' (July 2018).

Table 7: Description of the FIDOL factors (Institute of Air Quality Management)

Frequency	How often an individual is exposed to odour.
Intensity	The individual's perception of the strength of the odour.
Duration	The overall duration that individuals are exposed to an odour over time.
Odour unpleasantness	Odour unpleasantness describes the character of an odour as it relates to the 'hedonic tone' (which may be pleasant, neutral or unpleasant) at a given odour concentration/intensity. This can be measured in the laboratory as the hedonic tone, and when measured by the standard method and expressed on a standard 9 point scale it is termed the hedonic score.
Location	The type of land use and nature of human activities in the vicinity of an odour source. Tolerance and expectation of receptor. The 'location' factor can be considered to encompass the receptor characteristics, receptor sensitivity, and socio-economic factors.

Required standards

HOT FOOD PREMISES

The following hierarchy should be applied for the prevention of odour nuisance from hot food premises (please refer to Prevention of odour, smoke and fume nuisance from commercial kitchen exhaust systems guidance (March 2021) for more information):

'FULL-HEIGHT' SCHEME

The incorporation of full height discharge systems in hot food premises is the most effective way to minimise the detrimental impact of odours and is the preferred option. It gives operators flexibility for a full range of food and cooking styles without the need to adapt ventilation systems. Technology plays an important part in commercial kitchens in both maximising energy efficiency and promoting a safer working environment.

'RECIRCULATION' SYSTEM

Some hot food facilities in Westminster will not be able to incorporate full height extract due to the practical constraints of the building which may include heritage considerations. In such cases the installation of a recirculation extract system without an external discharge may be supported by the council. However, this will only be considered where food is cooked and reheated by electricity only, it can be demonstrated that the recirculation system can adequately contain or neutralise odours and fumes, and an operational management plan has been submitted.

BESPOKE SCHEME

Where a full height or recirculation system cannot be implemented then a 'bespoke' odour reduction system will need to be installed. It must be designed to 'Best Practicable Means', BPM, (i.e. to current industry standards) for the food type proposed at the time of the application. A final assessment as to whether the bespoke scheme will prevent nuisance may have to be carried out after it has been installed and is operating at its most intense use conditions.

If mechanical ventilation is required to maintain a suitable ambient temperature in the kitchen, full details of any proposed external plant and equipment including a Noise Impact Assessment are required. An initial conversation with the council as part of the pre-application process is recommended to ensure that appropriate standards are met.

The whole of Westminster is an Air Quality Management Area (AQMA) under the Clean Air Acts and if there is any intention to employ solid fuel cooking (e.g. wood, charcoal, etc) then these must comply with smoke control area requirements. Emissions from fixed chimneys where solid fuel is used, for example in commercial kitchens, should only be from authorised fuels and/or exempt appliances. For exempt appliances and/or authorised fuels that can used in such areas refer to **gov.uk/smoke-control-area-rules**

Information required

SHISHA SMOKING

A shisha smoking management plan is required to demonstrate how any potential negative health, safety and amenity impacts for local residents and staff/customers can be mitigated.

A Shisha smoking management plan should contain the following information:

- Smoking area shelter compliant with Health Act;
- Location of smoking area (i.e. it should not be below openable windows of upper floors who might be affected by smoke);
- Use of Smoke Control Area 'Authorised Fuels' to minimise impact on local air quality;
- Charcoal Burner Holder located away from where it could cause danger to general public; and
- Arrangements for the safe disposal of hot coal and ashes when finished.

Land Contamination

Applicants are required to carry out contaminated land assessments and take appropriate remediation measures for development on or near a site which is potentially contaminated. The SPD provides detail on assessing land contamination and remediation as required by City Plan policy 33E.

Westminster has a long commercial and industrial history. These activities can leave a legacy of contaminants and pollutants that have a detrimental impact not only on the environment but also on the health of our communities who reside in, work and visit the city. Contamination, in most cases, is likely to arise from a previous use of the site, or an adjacent site, that had an industrial activity on it. Site investigations for contamination will vary on a case-by-case basis depending on site-specific issues, e.g. the past use of the site, the nature and extent of the contamination, and the proposed end use of the site.

The council can carry out an environmental search on the developer's behalf that includes historic maps and a formal letter describing the previous land uses of the site. Full details of the process and payment details can be found **here.**

Development Requirements

To comply with Policy 33, part E and continue to protect the quality of soil and human health, applicants are required to carry out contaminated land assessments and take appropriate remediation measures for development on or near a site which is potentially contaminated or where a basement is included within the proposal.

Required Standards

As a starting point a desktop study should be carried out in order to identify possible areas of contaminated land. The results will be used to determine the necessity for any site investigation works and the scope of such works. The council can carry out an environmental search that includes historic maps and a formal letter describing the previous land uses of the site. Full details of the process and payment details can be found **here**.

Further information on these requirements can be found in the council's Contaminated Land Guidance, and the Code of Construction Practice.

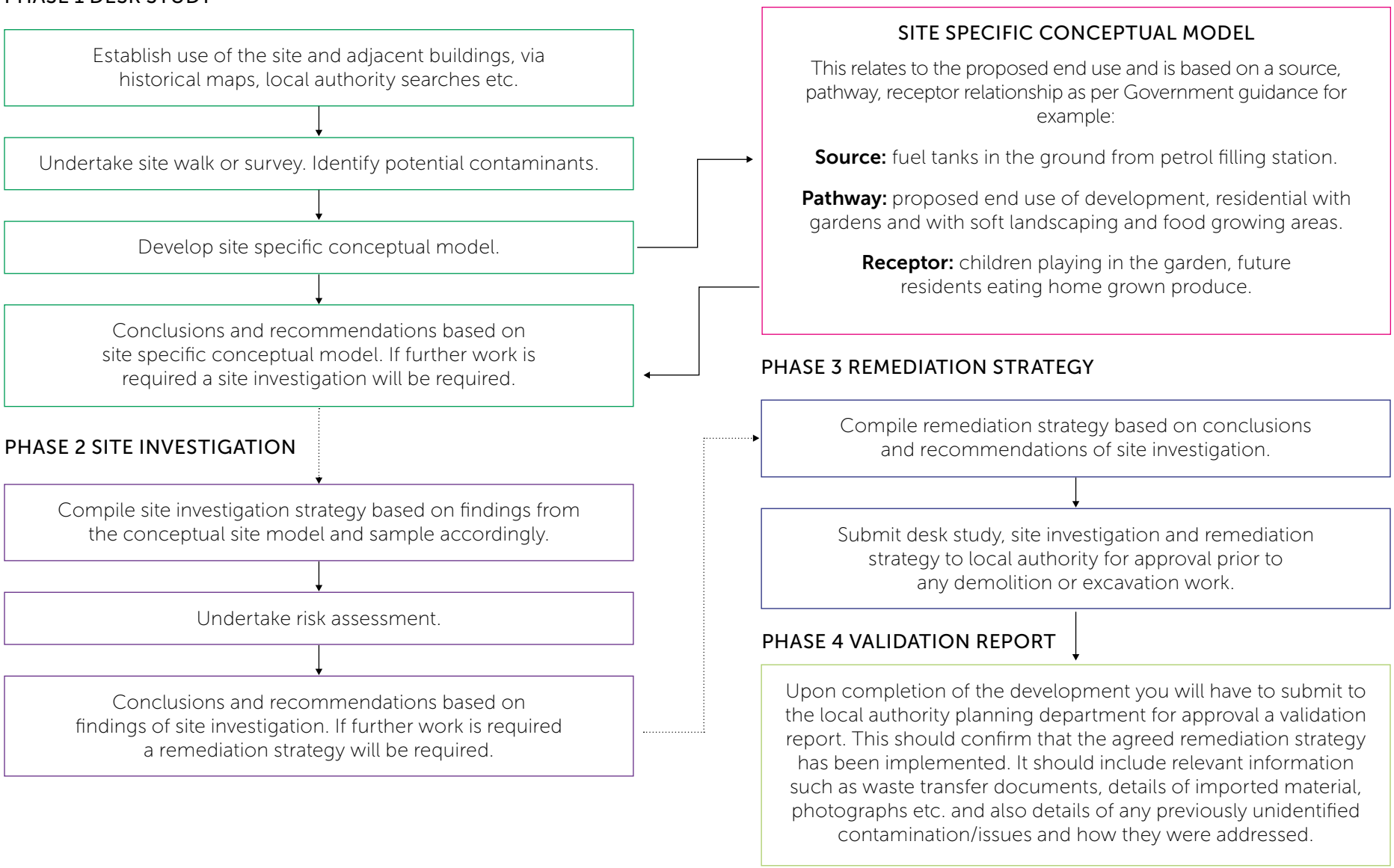
Key Considerations

If remediation is required, appropriate measures might include one or more of the following,

- Reducing or treating the contaminant part of the linkage (e.g. by physically removing contaminants or contaminated soil or water, or by treating the soil or water to reduce levels of contaminants, or by altering the chemical or physical form of the contaminants);
- Breaking, removing or disrupting the pathway parts of the linkage (e.g. a pathway could be disrupted by removing or reducing the chance that receptors might be exposed to contaminants, for example by installing gas membranes in a property, or by sealing land with a material such as clay or concrete); and
- Protecting or removing the receptor. For example, by changing the land use or restricting access to land it may be possible to reduce risks to below an unacceptable level. (DEFRA, Contaminated Land Statutory Guidance).

To ensure that remediation is effectively carried out the process may require a range of treatment, assessment and monitoring actions.

Figure 3: Procedure for dealing with potential land contamination during the planning process. Please note prior to any demolition or excavation work you will have to submit Phase 1 to Phase 3 for approval.



Construction Impacts

Policy 33F requires development complies with Westminster's Code of Construction Practice (CoCP).

The construction of new developments or refurbishments anywhere has the potential to result in substantial environmental impacts, many having the potential to cause significant disturbance to local residents and businesses. These impacts will obviously be felt more intensely in Westminster where there are simply more people and businesses likely to be nearby who will experience them. Impacts can include construction traffic, noise and vibration, dust and air pollution.

The Code of Construction Practice sets out the minimum standards and procedures for managing and minimising environmental impacts of construction projects in the city. The Code divides developments into different tiers related to their environmental impact and the flowchart below (figure 4) sets out the application process for the code. For Level 1 and Level 2 projects[6] a Site Environmental Management Plan (SEMP), or, for basements, a Construction Management Plan (CMP) must be produced to demonstrate how the project will comply with the CoCP. Unless the development is subject to an EIA, SEMPs and CMPs will usually be submitted after planning permission is granted. For smaller 'Level 3' projects, a SEMP or CMP is not usually required. However, developers and contractors for these projects will be expected to comply with the relevant legislation covering demolition and construction impacts and to be considerate of the impacts their activities may have on neighbours.

6 Level 1 projects: 'Large/strategic' 1 proposals that involve the creation of 100 or more new or additional residential units or the creation/ change of use of 10,000 sqm or more floorspace, or a comparable refurbishment.Level 2 projects: Developments involving the creation of 10 or more new build residential units, or buildings where the new build floorspace to be created is 1000 sqm or more, or a comparable refurbishment, or any basement developments

Figure 4: Planning and Code of Construction Practice Process Map

Development Requirements

Required Standards

Agreement to sign up to the terms of the Code of Construction Practice will be evidenced via submission of a completed checklist provided in The Code of Construction Practice, secured through planning condition. This includes liaising with the public, site operations, traffic, transport and use of the public highway, noise and vibration, dust and air pollution, waste management, water pollution and flood risk, urban ecology, heritage assets, and protection of existing installations.

EIA development should in addition provide information upfront on construction impacts.

Proactive monitoring of construction impacts during the construction process should be planned for. (Noise and Vibration, and dust and air quality)

MONITORING

City Plan Key Performance Indicator 18: Noise complaints received

Code of Construction Practice monitoring.

GREEN INFRASTRUCTURE

Policy Overview

National

NPPF Chapter 15. Conserving and enhancing the natural environment

Regional

London Plan Policy G1 Green infrastructure
London Plan Policy G4 Open space
London Plan Policy G5 Urban greening
London Plan Policy G6 Biodiversity and access to nature
London Plan Policy G7 Trees and woodlands
London Plan Policy G8 Food Growing
London Plan Policy T2 Healthy Streets
London Plan Policy SI5 Water infrastructure
Urban Greening for Biodiversity Net Gain: A Design Guide
London Urban Forest Plan

Local

City Plan Policy 34 Green infrastructure
City Plan Policy 31 Waterways and waterbodies
City Plan Policy 35 Flood risk
Conservation area audits, maps and guidance
Open Space Audit


DUKE OF YORK

Introduction

The functions and benefits that our green and blue assets bring are diverse and include climate change adaptation, health and wellbeing, improving air quality, sport, leisure, recreation and play, landscape and heritage conservation, education, biodiversity and ecological resilience. An integrated approach is required to get the most out of our green and blue infrastructure network to maximise its benefits. Challenges such as flood risk, poor air quality, and the heat island effect can often effectively be addressed by nature-based solutions, which can bring wider benefits when fully integrated into the green infrastructure network.

City Plan policy 34 will protect and enhance the city's green infrastructure to maximise its environmental, social and economic value. Green infrastructure provides some of the broadest climate resilience co-benefits alongside a range of other benefits, including:

- Managing overheating;
- Microclimate improvements;
- Sustainable drainage;
- Improved air quality;
- Carbon capture;
- Biodiversity conservation;
- Water quality and quantity;
- Local food provision;
- Socio-cultural benefits (e.g. social interactions, recreation, health); and
- Positive return on investment (e.g. energy savings, job creation, reduced health costs, increased property values).

All developments have opportunities to contribute to the further greening of the city. The type and scale of measures that will be suitable will depend on the specific type, scale and context of the development. Examples of greening measures include green roofs and walls, rain gardens, planting, grassland, vegetated sustainable drainage systems (SuDS) and trees.

Green spaces, parks, canals[7] and the River Thames frontages not only provide health and wellbeing benefits and recreational opportunities but contribute to the character and attractiveness of the city and provide access to nature. Waterways and waterbodies are important for fulfilling other environmental functions such as supporting biodiversity, drainage and flood protection, urban cooling, and in some cases supporting sustainable transport.

The Royal Parks are a huge asset, and they cover 19% of the city. However, there is still an open space deficiency in Westminster that means that not every resident has access to public open space. In areas of open space deficiency as shown in Figure 5, the City Plan requires new development to explore every opportunity to increase the supply of open spaces by focused 'small open spaces' and 'pocket parks'.

7 canalrivertrust.org.uk/enjoy-the-waterways

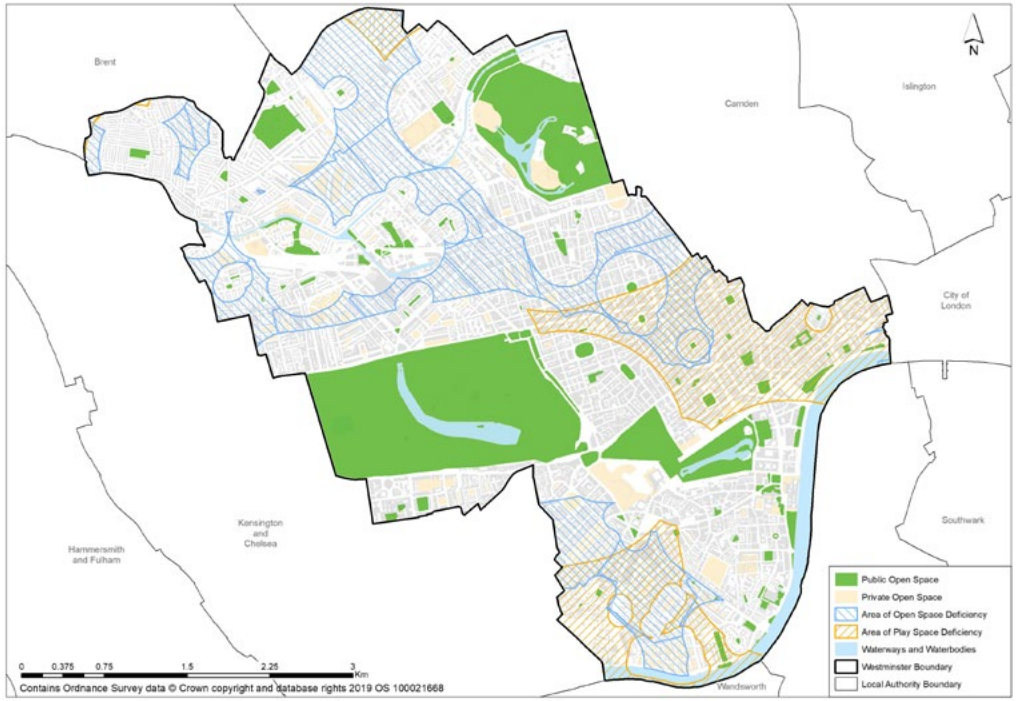


Figure 5: Open Space and Areas of Deficiency Map

As well as seeking opportunities for the creation of new open space, the City Plan protects all existing open spaces. Westminster is a densely populated and highly developed city and the creation of new green spaces will mainly be through the creation of spines and networks as well as enhancing the benefits of existing spaces at ground level and at roof level.

The GLA has developed a quantitative methodology for determining the level of green infrastructure that should be included in development sites. The Urban Greening Factor has a straightforward methodology which can be applied to a range of development sizes and types if sufficient detail on the approach and interventions is provided. The council intends to develop a locally specific UGF based on the Wild West End (WWE) Matrix (See Appendix 1). This will require preparation of a local evidence base, including a Green Infrastructure Strategy. This will be reflected in the next iteration of the City Plan and ESPD. In the meantime, the London Plan's Urban Greening Factor will apply to major development proposals.

See also: **A Partnership Approach to Open Space and Biodiversity in Westminster**. Organisations and individuals are working together to ensure a healthy future for wildlife in Westminster. There are 33 organisations in the partnership.

Biodiversity net gain is an approach to development that leaves biodiversity in a better state than before. The City plan requires developments to achieve biodiversity net gain, wherever feasible and appropriate and Environment Act has introduced a requirement for biodiversity net gain of 10%. Losses of biodiversity through development should be avoided, and biodiversity offsetting is the option of last resort. Where biodiversity is lost as a result of a development, the compensation provided should be of an overall greater biodiversity value than that which is lost.

Development Requirements

Key Considerations

ALL GREEN INFRASTRUCTURE

Green Infrastructure is an integral design component and must be considered at the early stages of a development proposal. When designing Green Infrastructure as part of a scheme, developers should consider how the proposed Green Infrastructure will integrate with and contribute to the existing Green Infrastructure network, particularly in terms of climate adaptation, water management and biodiversity.

Developers can contribute to Green Infrastructure through incorporating a variety of elements into proposals. These include but are not limited to trees, biodiverse terrestrial greenery (hedgerows, herbaceous habitats, etc.), green roofs, green walls, community gardens and rain gardens.

Proposals should demonstrate that they have selected appropriate species that can thrive in the microclimate of the space they are to be located within. New green infrastructure which incorporates planting for pollinators will be encouraged.

The irrigation provided for green infrastructure should be sustainable (i.e. not mains water) to minimise the use of mains water in response to serious water stress in London. Proposals should incorporate and maximise rainwater runoff collection and reuse. (See Flood Risk section of this ESPD for more information on Sustainable Drainage Systems).

In designing green roofs and walls consideration should also be given to fire safety having regard to government guidance on fire performance of green roofs and walls **gov.uk/government/publications/fire-performance-of-green-roofs-and-walls**. Fire safety issues are considered under the building regulations and the Council's building control team can advise further.

Where an existing estate-wide green infrastructure strategy is in place, the objectives of the strategy will be taken into account by the council when assessing the green infrastructure contributions of individual development sites.

Information required

It is essential that Green Infrastructure proposals are accompanied by a maintenance plan. Long-term maintenance arrangements will be a key consideration informing decisions on Green Infrastructure.

Key Considerations

GREEN ROOFS

Green roofs can provide a number of co-benefits including cooling and insulation of buildings, reducing water run-off and increasing biodiversity.

There are a variety of green roofs that can be used within a project. These include:

- **Extensive green roof** – Low nutrient and low maintenance, also often designed to be light weight. Not irrigated. Usually shallow substrate, typically less than 100mm, and often vegetated with sedum.
- **Biodiverse roof** – Wildlife roof designed to either replicate the habitat for a single or limited number of species or to create a range of habitats to maximise the array of species which inhabit the roof.
- **Semi intensive green roof** – Intermediate green roof type with characteristics of both extensive and intensive green roofs. Typically 100mm to 200mm substrate depth, sometimes irrigated, occasionally managed, and usually planted with a range of species.
- **Intensive green roof** – A green roof that requires intensive maintenance. Usually irrigated and usually with more than 200mm depth of substrate. Equivalent to a garden and usually referred to as a roof garden.

For more information on green roofs, including design, construction practice and maintenance see: **greenroofguide.co.uk**

Information Required

Details of the design and construction and a management plan will be required for green roof developments at full application stage. These should include details of the depth and specification of the substrate, the number, size, species and density of the proposed planting, and details of maintenance regime (frequency of operations, timing of operations and who is responsible), and irrigation.

The irrigation provided should be sustainable (i.e. not mains water) and the roof should provide the maximum biodiversity benefits within the site constraints. It should also be demonstrated that structural requirements to accommodate a green roof site have been considered. The structure needs to be able to accommodate the additional loading required for the depth of substrate.

Other constraints will also be considered at pre-application and application stage, such as height, orientation, exposure and safety.

Key Considerations

GREEN WALLS

Green façades where climbing plants and vines are rooted in the ground or elevated planter boxes – these are grown vertically directly onto the façade (extensive) or separately on trellis work (semi-intensive).

Living wall systems where plants are artificially supported ('intensive' – using growing media, artificial substrates, irrigation systems or hydroponics). This is where manufacturers/ designers breaks this down into:

- Planter troughs, modular pocketed panels;
- Foam substrate;
- Layers of felt sheeting; and
- Mineral wool.

Brown wall systems are naturally self-seeded wild plants that find a crevice or other root hold along building façades – this could be an accidental or intentional design feature.

For more information or ideas on wall greening solutions, please visit: thenbs.com/knowledge/the-nbs-guide-to-facade-greening-part-two

Information Required

GREEN WALL APPLICATION

An application involving a green wall (similar to green roof mentioned above) should include details of their design construction and management, demonstrating the design and choice of species has been taken into account. Public safety, security, maintenance and water use should be considered when designing green walls. Green wall proposals should be accompanied by a fire risk evaluation at application stage.

Along with site specific constraints such as height/ orientation/ exposure/ and structural requirements and that benefits to biodiversity will be maximised. An appropriate maintenance regime and access are important, and a management plan should be provided at full application stage. Details may be secured by condition.

Key Considerations

SUSTAINABLE DRAINAGE

See **Flood Risk** chapter for more information on appropriate forms of SuDS within Westminster.

Key Considerations

SPECIES AND HABITATS

Priority habitats in Westminster include parks and green spaces, private gardens, waterways including the Thames, standing water and woodland. Other important habitats in the City include built structures. Priority Habitats will be protected in line with City Plan Policy 34F and opportunities to create new habitats should be sought to meet biodiversity net gain and urban greening objectives (Policy 34B and 34G).

To support the conservation of London's wildlife the GLA has produced a list of priority species that are of particular conservation importance in London. Priority species should be taken into account when evaluating or delivering projects which could impact upon a priority species or provide opportunities to support their conservation. The London priority species list also includes a category of Opportunity Species. These are priority species for which there are likely to be the most opportunity to provide new or enhanced areas of habitat for across London's greenspaces or within new development. **The full list can be found here.**

The following list includes species for which there are likely to be opportunities to provide integrated habitats or urban greening/ landscaping designed to provide suitable habitats in Westminster:

- Swift;
- Peregrine;
- House Sparrow;
- Starling; and
- Bats

In addition to the above, there are a number of species where there is an opportunity to provide new or enhanced habitats in Westminster's existing green spaces and parks. As well as bats and birds, this includes butterflies, moths and the common frog.

Applicants are encouraged to incorporate wildlife-friendly elements in their designs, e.g. planting creepers, creating vertical habitats, introducing bird boxes within gardens or 'swift bricks' within external walls, in a shaded location or spaces for bats within gardens and in the external walls of new or converted buildings, facing south. Swift bricks' are also used by house sparrows and other small bird species so are considered a 'universal brick'. Integrated nesting bricks are preferred to external boxes for reasons of longevity, reduced maintenance, better temperature regulation, and aesthetic integration with the building design.

See the Retrofitting and Sustainable Design chapter for more information on protecting wildlife dependent on buildings for shelter. Natural England have produced **further advice** for developers regarding the impact of development on protected species and habitats.

Plant species should be chosen that are well suited to the specific conditions and microclimate of the intended location.

Historically many of our urban waterwayshave seen a net loss of biodiversity value through engineered concrete or steel sheet piled rivers banks. Developers of waterside development should explore opportunities to "green the edges" and/or enhance aquatic biodiversity.

Information Required

TREES

City Plan Policy 34H protects trees of amenity, ecological and historic value and those which contribute to the character and appearance of the townscape. The council has also produced audits of the designated conservation areas that include information on trees that are important to the character of the area. The information on trees within these audits must also be considered.

Where proposals will affect existing trees within the application site or on land adjacent to the site (including street trees), proposals should be accompanied by an up-to-date tree survey, arboricultural implications assessment and details of tree protection measures. This information should be prepared by a suitably qualified arboriculturist in accordance with the recommendations of BS5837: 2012 (Trees in relation to design, demolition and construction– Recommendations), and should include:

- A scaled plan that shows the position and crown spread of every tree with a stem diameter of over 75mm measured over the bark at 1.5 m above ground level, and shrub masses and hedges on the application site and adjacent land. For individual trees, the crown spread taken at four cardinal points;
- A schedule of tree details and their categorisation;
- Details of the root protection areas (RPAs) of the trees and details of any proposed alterations to the existing ground levels or any other works to be undertaken within the RPA of any tree within the tree survey plan and schedule. This includes any proposals for service trenches;
- Details of all proposed tree surgery and removal, and the reasons for the proposed works;
- Tree constraints, the RPA and any other relevant constraints plotted around each of the trees on relevant drawings, including proposed site layout plans;
- An arboricultural impact assessment that evaluates the direct and indirect effects of the proposed design and where necessary recommends mitigation;
- A tree protection plan superimposed on a layout plan, based on the topographical survey, and details of all tree protection measures for every tree proposed to be retained for the duration of the course of the development, and showing all hard surfacing and other existing structures within the RPA. This should take account of anticipated construction requirements;
- Details of the size, species and location of replacement trees proposed for any trees shown to be removed; and
- Strategic hard and soft landscape design, including species and location of new tree planting.

Applicants should demonstrate that basement development will protect important trees and the garden setting and ensure surface water drainage is maintained through adequate depth and volume of soil. See section 5 on SuDS for further information.

Key Considerations

TREES

It is important that as a first option trees should be retained. The retention of existing trees is more beneficial than tree removal and mitigating the loss with the planting of new trees. London Plan policy G7 says if planning permission is granted that necessitates the removal of trees there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT or another appropriate valuation system. The planting of additional trees should generally be included in new development, particularly large canopied species which provide a wider range of benefits because of the larger surface area of their canopy.

Trees and other green infrastructure can perform a variety of different functions, and new trees need to be planted according to the principle of the 'right tree in the right place'. There are many considerations including:

- Species diversity and biodiversity;
- Other ecosystem services – for example air quality, pollution absorption;
- Soil characteristics and below ground constraints;
- Size, form and canopy shape;
- Townscape and urban design considerations;
- Suitability for specific site constraints and wider city environment;
- Climate change resilience;
- Aesthetic qualities;
- Specific negative characteristics for example brittle branches or surface rooting; and
- Biosecurity.

If planning permission is granted that necessitates the removal of hardwood trees, Developers should ensure that felled trees are destined for use as timber so as to 'lock in' absorbed carbon, as opposed to destined for use as biofuels or green waste streams.

Soils can become degraded and compacted on development sites, but maintaining good soil structure is important for biodiversity, carbon capture and storage and water storage/ flood attenuation. Maintenance and provision of adequate soil volumes in developments is also the best way to provide for sustainable long-term tree and other green infrastructure planting. Providing trees and green infrastructure in confined planters or soil volumes is the least preferred option as this can result in short life expectancies and the need for frequent replacement of trees and other plants. All management plans should adopt peat-free, sustainable water use and integrated pest management principles.

BASEMENTS

In the majority of cases, a minimum 1.0m soil plus 200mm drainage layer will provide sufficient soil volumes to support tree growth and health to maturity. In some circumstances, for example where the basement area proposed is extensive, where trees will be planted in confined locations, where the root growth will be impeded, or where particularly large new trees are proposed, soil depths of up to 1.5m (plus drainage layer) will be needed to support tree growth. Details of the proposed soil profile and composition should also be provided.

Key Considerations

URBAN GREENING

Major development proposals should contribute to the greening of the City. The London Plan Policy G5 has developed an Urban Greening Factor (UGF), which is a scoring system that developments should meet. Greening features of a development are given a factor which equates to a score. A score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses) is required. Guidance on the UGF is being developed by the GLA and applicants should refer to this: **london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance**

The Wild West End Matrix (see Appendix 1) is a helpful guide to provide an indication of greening appropriateness of a development. This may be helpful for smaller schemes to be able to demonstrate a high greening value of development.

Required Standards

BIODIVERSITY NET GAIN (BNG)

City Plan policy 34, part G, requires developments to achieve biodiversity net gain, wherever feasible and appropriate.

A new Biodiversity Metric 3.0 was launched by Natural England in July 2021 and is designed to provide ecologists, developers and planners with a means of assessing changes in biodiversity value (losses or gains) brought about by development. The metric is a habitat-based approach to determining a proxy biodiversity value. A Small Sites Metric designed to simplify the process of calculating biodiversity net gain on smaller development sites, is also available. The council would expect any BNG submissions to be completed by a suitably qualified person, as defined by Chartered Institute for Ecology and Environmental Management (CIEEM).

There are links between biodiversity net gain and urban greening and surface cover types that score highest in the London Plan's Urban Greening Factor are also the ones which have the most potential to provide benefits for biodiversity. The GLA has published Urban Greening for Biodiversity Net Gain: A Design Guide which introduces simple design considerations for different types of urban greening features which can make space for nature in the built environment.

The Environment Act has introduced a mandatory 10% improvement in biodiversity value by 2023 and this requirement will be incorporated into any update of the ESPD.

MONITORING

City Plan Key Performance Indicator 23: Net change in Sites of Importance for Nature Conservation (SINCs) and designated open space

City Plan Key Performance Indicator 24: Delivery of play space in areas of play space deficiency

City Plan Key Performance Indicator 25: Improvements to parks, play areas and other open spaces

City Plan Key Performance Indicator 26: Number of open spaces awarded the Green Flag Award

City Plan Key Performance Indicator 27: Applications incorporating living walls and roofs

FLOOD RISK

Policy Overview

National

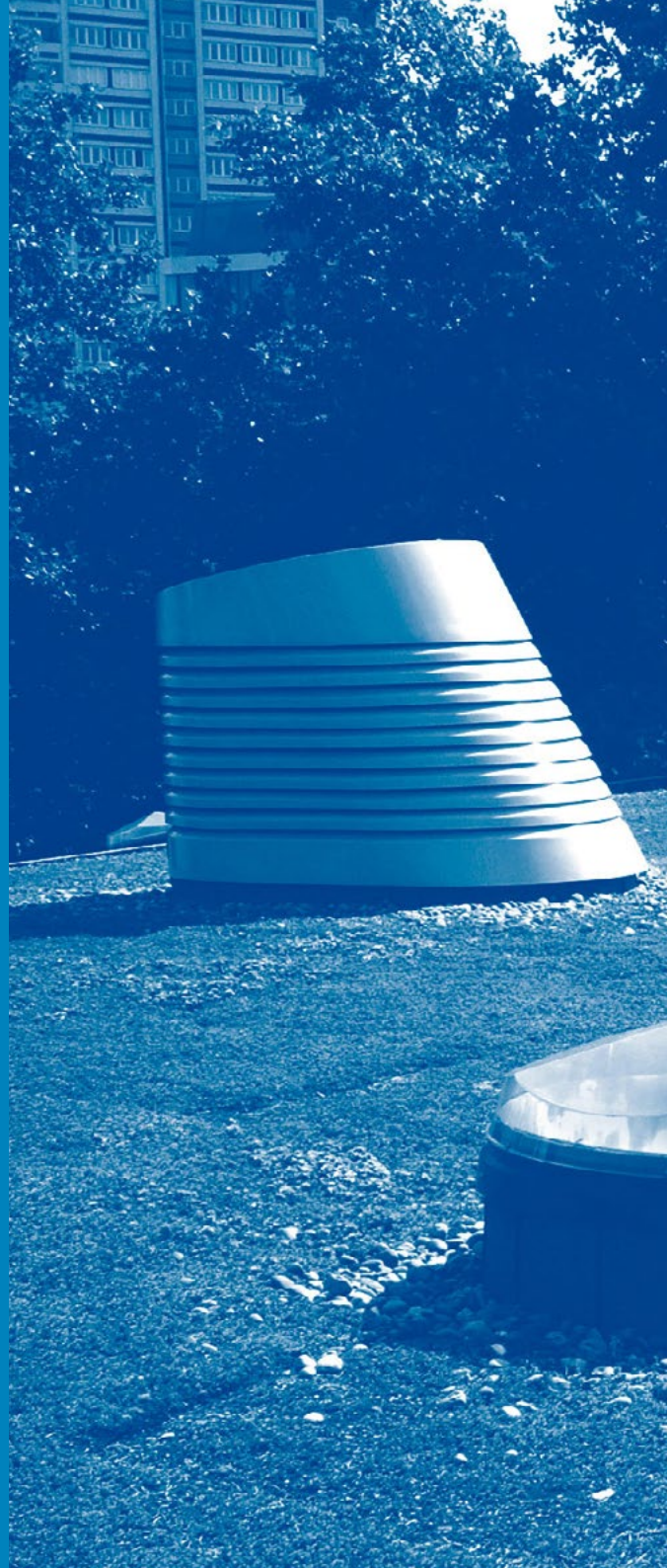
NPPF Chapter 14, Meeting the challenge of climate change, flooding and coastal change

Regional

London Plan Policy SI 12 Flood risk management
London Plan Policy SI 13 Sustainable Drainage
Mayor of London's Regional Flood Risk Appraisal (RFRA)
Thames Estuary 2100 Plan

Local

City Plan Policy 35 Flood risk
Strategic Flood Risk Assessment (SFRA)
Surface Water Management Plan (SWMP)
Local Flood Risk Management Strategy (LFRMS)



Introduction

Changes in climate are predicted to have a significant impact on future flood risk. Westminster City Council is a Lead Local Flood Authority and responsible for managing local flood risks in the city i.e. risks of flooding from surface water, ground water and smaller watercourses. The council has prepared a Strategic Flood Risk Assessment (SFRA) to support the development of City Plan policies relating to flood risk and this chapter of the ESPD. The SFRA provides an assessment of all sources of flooding within Westminster, including flooding from the River Thames, surface water, sewers and groundwater, taking account of the impacts of climate change. The SFRA also assesses the impact that land use changes and development in the area may have on flood risk and sets out a number of approaches to avoid, reduce, mitigate and manage this risk as part of a wider objective to ensure sustainable development.

The city is divided into three flood zones which are designated by the Environment Agency. Zone 1 is the majority of the city and has the lowest probability of flooding, zone 2 has a medium probability of flooding and zone 3 the highest probability of flooding, including the floodplain. This map shows that the highest risk of flooding in (zones 2 and 3) are in the south east of the city. A number of surface water flood risk hotspots are also identified across the city and can be found in the council's **draft Strategic Flood Risk Assessment.**

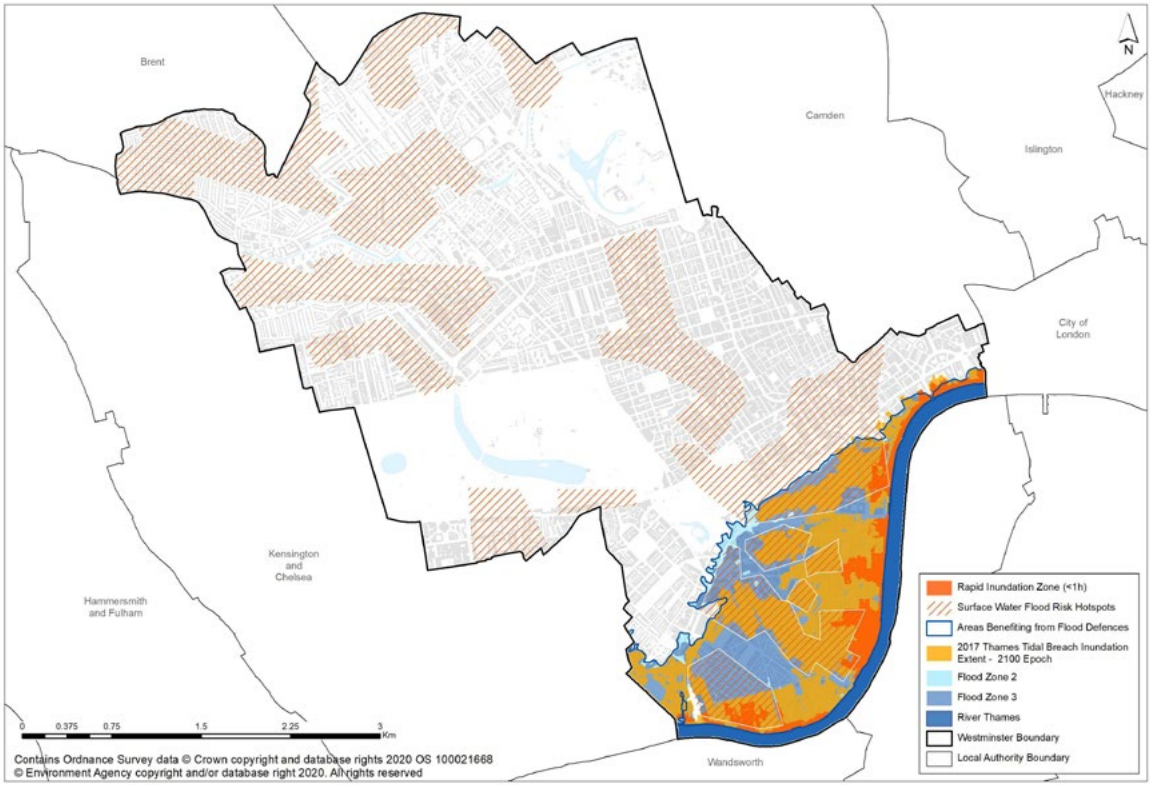


Figure 6: Flood Zones Map

Tidal and Fluvial Flooding (the River Thames)

Westminster is fortunate to be defended from tidal and fluvial flooding from the River Thames by the Embankment flood wall. Responsibility for maintenance and repair of the flood wall sits with the council, and the relevant landowners whom we partner with, alongside Thames Water and the Environment Agency to ensure that the appropriate standards are maintained.

The **Thames Estuary 2100 Plan** (TE2100) sets out recommendations for managing tidal flood risk in the Thames Estuary. The TE2100 Plan has three phases of activity: until 2035 this is to maintain and improve current defences, safeguard areas required for future improvements, and monitor climate change indicators. TE2100 Recommendations for Westminster are included in City Plan Policy 35 and include protecting and improving flood defences.

The council is in regular contact with the Environment Agency and Thames Water to review the City's tidal flood defences. Modelling takes place to assess the current position and project future scenarios, including a failure at the Thames Barrier. All parties are in agreement that flood defences are sufficient for current and projected models, but this is being continually monitored.

Surface Water Flooding

When rainwater does not drain away either by soaking into the ground or through the drainage system on roads and around buildings, surface water flooding builds up. Landscaped areas and planting are important ways to incorporate sustainable drainage into urban environments. Sustainable drainage can help to:

- Reduce the quantity of water (flooding);
- Slow down the speed of water run off (attenuate);
- Soak up surface water (infiltrate); and
- When accompanied with good design can channel water to appropriate areas for drainage (convey).

Surface water flooding drains away into the public sewer system which in Westminster is managed by Thames Water. Westminster has responsibilities as the highways authority to ensure that kerbs and gullies, gratings, grids, channels and ditches let water flow freely into the sewerage system.

Due to the heavily urbanised nature of Westminster, and the predominantly Victorian drainage infrastructure, there is a widespread risk of surface water flooding. The construction of the Thames Tideway Tunnel at Victoria, which is a 25km Super Sewer under the Thames will help alleviate pressure of sewerage that spills into the Thames.

For new developments, the **Strategic Flood Risk Assessment** (SFRA) should inform site-specific flood risk assessments as evidence to support the sequential and exceptions tests (discussed below) for individual applications and suggests methods of reducing causes and impacts of flood for developments.

Further guidance from central government on undertaking flood risk assessments for planning applications can be **found here.**

Appropriate types of SuDS in Westminster

Sustainable Drainage Systems (SuDS) are designed to drain water in a more sustainable way than conventional techniques, by mimicking natural drainage. They can achieve a number of objectives including controlling surface water runoff from developments, removing pollutants from urban run-off at source, and combining water management with green infrastructure, which can improve landscape, amenity and biodiversity. Given the climate change predictions for increased frequency and intensity of rainfall events, the use of SuDS will become increasingly important. Existing green spaces and landscaping areas also provide an important contribution to the provision of natural drainage in Westminster and these can often be retrofitted to incorporate SuDS. The loss of private gardens and landscaped areas to non-porous paved surfaces can incrementally erode this natural drainage and is discouraged.

Part J of Policy 35 requires that new development must incorporate SuDS to alleviate and manage surface water flood risk. There are a range of SuDS, not all of them suitable for a complex urban environment such as Westminster. Those considered most appropriate for Westminster to comply with Policy 35 (and subject to other policy considerations, in particular design), are set out below. There are links between SuDS and green and blue infrastructure. There are likely to be opportunities for SuDS to contribute to other policy requirements including conserving water, urban greening, habitat creation and biodiversity net gain.

RAINWATER HARVESTING AND RECYCLING

Rainwater harvesting can be used to reduce or remove the risk of flooding by retarding and/or attenuating surface water and rainwater runoff. Reducing surface water runoff also reduces or removes the potential wash off of pollutants from hard surfaces into the drainage network or groundwater systems. Rainwater harvesting and re-use has additional benefits by providing a separate water source for gardens and open space irrigation, and flushing toilets, thereby reducing the pressure on water resources. However, due to unconventional roof formations and a lack of space in Westminster it is recognised that implementing such systems may not always be possible. However, they should be used where appropriate, or it should be demonstrated that they have been considered and that constraints cannot be overcome. Canals can be used for draining clean surface water away from canalside sites with appropriate assessment and licencing by the Canal and River Trust.

PERMEABLE PAVING

Increased surface water runoff is directly related to the amount of impervious hard surfacing. Permeable surfaces suitable for Westminster include:

- Grass;
- Gravel;
- Paving blocks with soil or gravel filled pores;
- Paving blocks separated by gaps; and
- Porous paving.

Permeable paving can be used for roads, driveways, parking spaces and other hard surfaces. Opportunities to incorporate permeable paving in these situations should be maximised within development proposals.

RAIN GARDENS AND TREE PITS

Rain gardens and tree pits are landscaped shallow depressions that can be used as an alternative/supplement to traditional highway drainage. Rain gardens and tree pits are designed to reduce the amount of surface water that reaches the sewers, as well as to remove pollutants and capture and treat surface water from the vast majority of rainfall events. During heavier rainfall events rain gardens are designed to retain water on the surface when saturated before any excess water drains away via an overflow. Due to the landscaped element of rain gardens they have other benefits beyond drainage that include: reducing noise pollution, filtering pollution from the surrounding atmosphere and enhancing green infrastructure.

GREEN/BLUE ROOFS

Green/Blue roofs store rainwater in the plants and soil (or other growth mediums) and evaporate water into the atmosphere. The amount of water stored on a green roof and evaporated back is dependent on the growing medium, its depth and the type of plants used. Over summer green roofs can retain 70 – 80% of rainfall and over winter they retain between 25 – 40%.

They also reduce and delay runoff during times of heavy and prolonged precipitation and, therefore, reduce the impact of run-off on the storm water drainage system, reducing the likelihood of localised flooding. Green/Blue roofs have benefits for air quality, biodiversity, energy conservation (through improved thermal insulation and an extended life of the roof), countering the heat island effect, retarding and reducing storm water runoff, and noise insulation. (See Green Infrastructure section of this ESPD for more information on green roofs).

Further information on SuDS can be found at the following website **susdrain.org** You are encouraged to discuss the SuDS options you are considering with the council at pre-application stage.

Susdrain advises that when planning, or specifying SuDS, early consideration of the potential multiple benefits and opportunities will help deliver cost effective SuDS scheme with the best results. Potential benefits of implementing SuDS within a development are outlined in the below table. Susdrain were created by the Construction Industry Research and Information Association (CIRIA). The organisation provides a range of resources and information for those who are implementing or are considering implementing SuDS into developments.

susdrain.org/delivering-suds/

Development Requirements

Required Standards

THE SEQUENTIAL AND EXCEPTION TEST

As discussed in the NPPF para 157, the purpose of the Sequential Test is to direct development towards areas of lowest flood risk, from all sources. Across Westminster there are multiple flood risk sources that need to be considered on a site-by-site basis.

Within Westminster the only tidal and fluvial source of flooding, is the River Thames. However, as discussed above, Westminster benefits from significant tidal flood defence infrastructure, and under ordinary operational conditions, is not at risk of flooding from the Thames. It is therefore considered appropriate to assess flood risk from tidal and fluvial sources within Westminster as low, and this should not be a material factor when considering the application of the Sequential Test.

Despite the number of flood risk sources, the existing highly built form, general shortage of land and complexity of development pressures and land use in Westminster mean that it is not practicable to apply the Sequential Test to differentiate potential development sites.

The scarcity of land means that development in Flood Zone 2 and 3 will be considered although preference will be given to Flood Zone 1, where feasible. Proposals for development within Flood Zone 2 and 3 will be generally deemed sequentially acceptable subject to the NPPF Flood Risk Vulnerability Classification of the development and meeting the requirements of the Exception Test, where applicable (e.g. residential development in Flood Zone 3). See Table 8 for development types, their vulnerability classification and if an exception test is required.

Both elements of the Exception Test should be satisfied, where applicable, for development to be allocated or permitted. For the Exception Test to be passed:

A. The development would provide wider sustainability benefits to the community that outweigh the flood risk; and

B. The development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Table 8: Development Types and Appropriate Flood Zone Designations

Vulnerability Classification	Development Types	Flood Zone 1	Flood Zone 2	Flood Zone 3A	Flood Zone 3B
Essential infrastructure	Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.	✔	✔	ET	None present
	Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.	✔	✔	ET	
	Wind turbines.	✔	✔	ET	

✔ Development is appropriate ✖ Development is not appropriate ET: Exception Test will be required.

Vulnerability Classification	Development Types	Flood Zone 1	Flood Zone 2	Flood Zone 3A	Flood Zone 3B
Highly vulnerable	Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.	✓	ET	✗	None present
	Emergency dispersal points.	✓	ET	✗	
	Basement dwellings.	✓	ET	✗	
	Caravans, mobile homes and park homes intended for permanent residential use.	✓	ET	✗	
	Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').	✓	ET	✗	

✓ Development is appropriate ✗ Development is not appropriate ET: Exception Test will be required.

Vulnerability Classification	Development Types	Flood Zone 1	Flood Zone 2	Flood Zone 3A	Flood Zone 3B
More vulnerable	Hospitals.	✓	✓	ET	None present
	Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.	✓	✓	ET	
	Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.	✓	✓	ET	
	Non–residential uses for health services, nurseries and educational establishments.	✓	✓	ET	
	Landfill and sites used for waste management facilities for hazardous waste.	✓	✓	ET	
	Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.	✓	✓	ET	

✓ Development is appropriate ✖ Development is not appropriate ET: Exception Test will be required.

Vulnerability Classification	Development Types	Flood Zone 1	Flood Zone 2	Flood Zone 3A	Flood Zone 3B
Less vulnerable	Police, ambulance and fire stations which are not required to be operational during flooding.	✓	✓	✓	None present
	Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.	✓	✓	✓	
	Land and buildings used for agriculture and forestry.	✓	✓	✓	
	Waste treatment (except landfill* and hazardous waste facilities).	✓	✓	✓	
	Minerals working and processing (except for sand and gravel working).	✓	✓	✓	
	Water treatment works which do not need to remain operational during times of flood.	✓	✓	✓	
	Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.	✓	✓	✓	

✓ Development is appropriate ✖ Development is not appropriate ET: Exception Test will be required.

Vulnerability Classification	Development Types	Flood Zone 1	Flood Zone 2	Flood Zone 3A	Flood Zone 3B
Water-compatible development	Flood control infrastructure.	✓	✓	✓	None present
	Water transmission infrastructure and pumping stations.	✓	✓	✓	
	Sewage transmission infrastructure and pumping stations.	✓	✓	✓	
	Sand and gravel working.	✓	✓	✓	
	Docks, marinas and wharves.	✓	✓	✓	
	Navigation facilities.	✓	✓	✓	
	Ministry of Defence, defence installations.	✓	✓	✓	

✓ Development is appropriate ✖ Development is not appropriate ET: Exception Test will be required.

Vulnerability Classification	Development Types	Flood Zone 1	Flood Zone 2	Flood Zone 3A	Flood Zone 3B
Water-compatible development	Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.	✓	✓	✓	None present
	Water-based recreation (excluding sleeping accommodation).	✓	✓	✓	
	Lifeguard and coastguard stations.	✓	✓	✓	
	Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.	✓	✓	✓	
	Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.	✓	✓	✓	

✓ Development is appropriate ✖ Development is not appropriate ET: Exception Test will be required.

Required standards

THE SITE-SPECIFIC FLOOD RISK ASSESSMENT

In line with Policy 35B, site-specific Flood Risk Assessments (FRAs) will need to be prepared by prospective developers for:

- Development of more than 1 hectare;
- Development in Flood Zone 2 and 3 including minor development and change of use; and
- All developments within a Surface Water Flood Risk Hotspot.

Any development within 16 metres of the landward most extent of a tidal flood defence will be required to:

- Demonstrate how tidal flood risk will be effectively managed for the lifetime of the development;
- Demonstrate that development will not preclude or make the statutory crest level raising set out in the Thame Estuary 2100 plan onerous;
- Wherever possible, implement the statutory flood defence raisings as part of the main development construction works;
- Demonstrate that the tidal flood defences have a life expectancy that is commensurate with the lifetime of the development. Where the expected life expectancy of an existing structure cannot be sufficiently demonstrated to be commensurate with the lifetime of the development, or is proven to be less than the lifetime of the development, remediation or replacement of the flood defence will be required prior to occupation;
- Design replacement flood defences to the 2100 statutory crest level where required;
- Ensure a 16-metre buffer between the landward most extent of a tidal flood defence and any built structures has been secured to ensure there is sufficient space to undertake visual and engineering inspections of the defences, including any buried elements. This space is also required for maintenance, emergency works the TE2100 statutory crest level raisings and full replacement of the flood defences should this be required in the future;
- Demonstrate that the development will not have a negative impact on the structural stability of a tidal flood defence;
- Demonstrate that there is no net loss in intertidal habitat or flood storage capacity over the lifetime of the development; and
- Replace active flood defences, such as floodgates and stop logs, with a passive flood defence wall.

Information required

Site specific FRAs may be standalone documents submitted by the developer to accompany a planning application. In those instances where an Environmental Statement is required for a development the developer should ensure that the FRA is attached and informs the Environmental Statement.

The detail provided in the FRA should be based on up-to-date existing flooding information (e.g. Environment Agency's Flood Map for Planning, breach modelling results taken from the Thames Tidal Upriver Breach Inundation Assessment and history of flooding at the site) and be commensurate to the probability and associated risk of flooding for the proposed development taking into account the nature of the proposals: for example risk for a commercial property is generally lower than that for a residential development.

Where the probability of flooding to the site is negligible there is little benefit to be gained in assessing the potential risk to life and/or property as a result of flooding. Rather, emphasis should be placed on ensuring that runoff from the site is controlled safely and sustainably on-site and does not exacerbate flooding lower in the catchment.

Where appropriate, the scope of the FRA should be agreed with Westminster City Council: we recommend consulting the council's webpage on **Flooding and planning application requirements** for further information.

The Environment Agency and any other relevant bodies, for example Thames Water, should also be consulted. Those stakeholders will be able to provide useful background information to inform the assessment and the mitigation of flood risk through design.

The FRA must demonstrate how flood risk will be managed for a proposed development, without increasing flood risk to the surrounding areas; any associated surface water drainage strategy should utilise SuDS, unless there are practical reasons for not doing so, to ensure the sustainable management of surface water runoff. The council will make a decision based on the evidence within the FRA as to whether the development is acceptable.

Those proposing development within flood risk areas should take advice from the council and the emergency services during the FRA process to understand whether a Flood Warning and Evacuation Plan (FWEP) is required as part of the flood risk mitigation strategy; where appropriate, a FWEP can be attached as an appendix to the FRA.

Key considerations

Property Flood Resilience (PFR) measures should be considered in the areas at risk of tidal breach flooding where appropriate; this depends on the level of risk and the nature of the proposals and can help in minimising the consequences of flooding and facilitating the recovery from the effects of flooding sooner than conventional buildings. PFR measures should be considered also for basement development within Flood Zone 2 and 3.

Subject to a site-specific survey, to identify the most suitable and appropriate measures, PFR could include for example:

- Raised thresholds: setting building thresholds higher than the maximum level of water expected;
- External walls: careful consideration of materials using low permeability materials to limit water penetration (avoiding using timber frame and cavity walls). Consider applying a water-resistant coating;
- Windows: flood resilient windows if they are to be located below the maximum water level expected. These windows should be watertight and be able to withstand the high pressure exerted on them when submerged under flood water (and the debris contained in the water);
- Air vents: should not be located below the maximum water level expected;
- Internal walls: avoid the use of gypsum plaster and plasterboard at the lower ground level; use more flood resistant linings (e.g. hydraulic lime, ceramic tiles). Avoid use of stud partition walls;
- Fittings, fixtures and services: locate all fittings, fixtures and services above the maximum water level expected to minimise damage by flood waters. Avoid chipboard and MDF (Medium Density Fibreboard). Consider the use of removable plastic fittings. Use solid doors, treated with waterproof coatings, or flood doors. Avoid fitted carpets. Locate electrical, gas and telephone equipment and systems above design flood level; and
- Drainage systems and pipes: Fit anti-flooding devices to drainage systems to prevent surcharged flooding through toilets. These devices act as one-way valves.

Surface Water Flooding

City Plan Policy 35B requires FRAs for all developments within Surface Water Flood Risk Hotspots. These are shown in Figure 9 to the right.

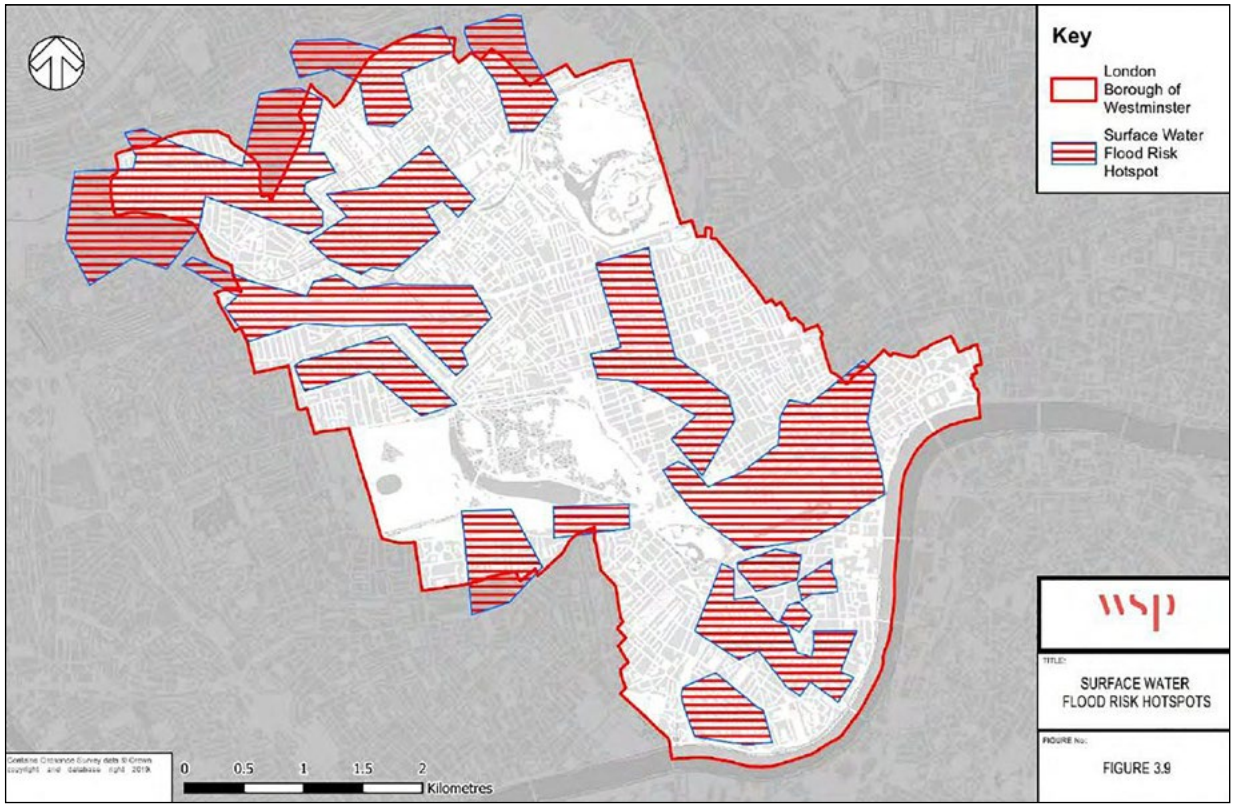


Figure 7: Surface water flood risk hotspots within Westminster

Key considerations

SURFACE WATER FLOOD FLOODING

The enhanced surface water flood modelling identifies areas at high risk of surface water flooding i.e. 'hotspots'. These 'hotspot' locations require particular attention in terms of flood risk management.

The complexity of development in Westminster and the difficulty in meeting housing requirements makes a sequential approach to the location of highly vulnerable and more vulnerable uses outside of areas of surface water flood risk 'hotspots' difficult to achieve. However, all development must be safe from surface water flooding, and, unless there are practical reasons for not doing so, SuDS should be used to manage surface water runoff.

Appropriate SuDS for each scheme should take account of the local circumstances and should be incorporated into the surface water drainage strategy submitted as part of the FRA, for major developments and when advised by Westminster City Council.

Developers required to submit a site specific FRA and, where necessary, surface water drainage strategy, will need to consider the following recommendations related to surface water flooding.

SUDS

In line with City Plan policy 35J, new development must incorporate SuDs to alleviate and manage surface water flood risk. Development should aim to achieve greenfield run-off rates and demonstrate how all opportunities to minimise site run-off have been taken. This would reduce the overall amount of run-off produced and any associated flood risk while providing significant additional benefits not directly related to flood risk management.

In line with London Plan policy SI 13 development should also ensure that surface water run-off is managed as close to its source as possible.

The GLA has released the **London Sustainable Drainage Proforma**. This proforma is required to accompany Sustainable Drainage Strategies submitted with planning applications and forms part of planning application validation requirements. It sets a clear standard for the information that should be provided in a Sustainable Drainage Strategy for all development in London.

Regular management and maintenance checks must be carried out on any SuDS scheme to ensure that the system always remains fully operational. Issues of adoption and future maintenance should be fully explored before implementation.

Applicants should follow the Mayor of London's drainage hierarchy and set out the proposed SuDS maintenance schedule in the strategy. The drainage hierarchy aims to reduce the rate and volume of surface water run-off. Rainwater should be managed as close to the top of the hierarchy listed below as possible. There should be a preference for green over grey features, and drainage by gravity over pumped systems.

Mayor of London's drainage hierarchy:

1. Rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation).
2. Rainwater infiltration to ground at or close to source.
3. Rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens).
4. Rainwater discharge direct to a watercourse (unless not appropriate).

MONITORING

City Plan Key Performance Indicator 20: Applications granted planning permission against Environment Agency advice on flood risk.

ENERGY

Policy Overview

National

NPPF Paragraphs 148, 151, 152, 153 and 154

Regional

London Plan
Policy D3 Optimising site capacity through the design-led approach
Policy SI 2 Minimising greenhouse gas emissions
Policy SI 3 Energy infrastructure
Policy SI 4 Managing heat risk
The Energy Assessment Guidance 2020 – Greater London Authority guidance on preparing energy assessments as part of planning applications (April 2020)
Draft 'Be Seen' – Energy Monitoring Guidance
Draft **Whole Life-Cycle Carbon Assessments Guidance**

Local

City Plan Policy 36 Energy
Westminster Carbon Offset Fund Guidance, January 2020
Climate Action Plan

Introduction

The reduction of carbon dioxide and other greenhouse gas emissions into the air is the central pillar in the council's Climate Emergency declaration, which is targeting a net zero carbon Westminster by 2040. This will ensure that we play our part in preventing the increase in global temperatures beyond 1.5 degrees.

The planning system is a key lever for carbon reduction in new buildings, refurbished and retrofitted buildings. The City Plan emphasises the need for energy and carbon reduction through Policy 36. This is significant for Westminster as emissions from buildings constitute nearly 86% of carbon emissions in Westminster overall, followed by road transport (11%) and waste (3%).

Ultimately, all buildings in Westminster will need to operate at or near to net zero carbon standards if our Climate Emergency targets are to be achieved. New development represents a clear opportunity to minimise the carbon impact of buildings and design them to meet the standards of a net zero carbon future. Any development that fails to achieve these standards risks becoming a carbon liability that will require remedial action and further investment in the future.

Ongoing maintenance is an effective method of monitoring energy performance of existing buildings. Nevertheless, refurbishment presents a clear opportunity to sensitively upgrade existing buildings to limit their carbon impact – and reduce the contribution of the built environment as a significant source of emissions in Westminster.

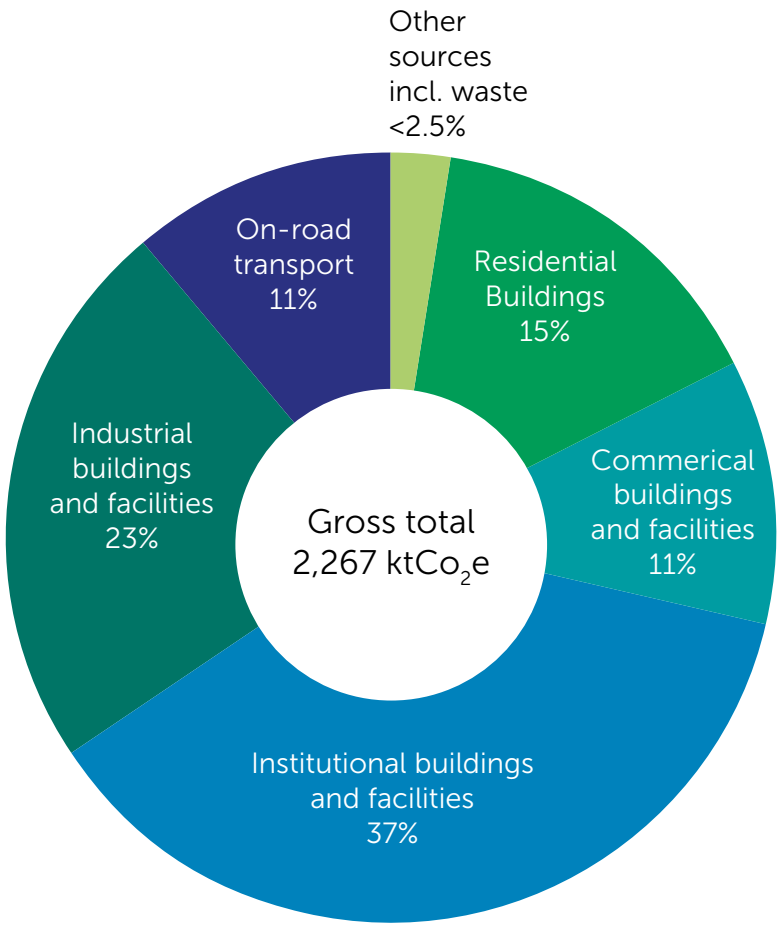


Figure 8: Westminster Carbon Dioxide emissions – 2,267 $ktCO_2e$ (Source SCATTER)

As well as reducing carbon emissions through the planning system, the council has set out a range of other measures in its **Climate Emergency Action Plan**. This includes working with residents and businesses to reduce their energy use.

Guidance

Energy assessments

Major development proposals, including shell and core schemes, should include a detailed energy assessment to demonstrate how energy use and carbon emissions have been reduced for the development in accordance with policy requirements, and that energy use has been a central consideration in the development's design and evolution.

An energy assessment may be submitted as part of the Sustainability Statement or as a standalone assessment. The energy assessment should adhere to the format and guidance set out in the **GLA's Energy Assessment Guidance 2020**. As a minimum, energy assessments should:

- **Calculate baseline energy demand and CO2 emissions, showing the contribution of emissions from both regulated and unregulated uses;**
- **Demonstrate how onsite energy demand and emissions have been addressed in accordance with the energy hierarchy approach;**
- **Indicate the design considerations and rationale behind the preferred approach; and**
- **Calculate the final energy and carbon performance of the development, and any carbon offset contributions to address residual shortfall, as necessary.**

Carbon Emission Factors

The current UK regulatory framework within Approved Document L of the Building Regulations uses carbon emissions as the basis to determine compliance under the Standard Assessment Procedure (SAP) – see **here.** The carbon produced by new buildings is estimated using Carbon Emission Factors, which are periodically updated to reflect the changing carbon intensities of fuel supply. It should be noted that the Standard Assessment Procedure for carbon emissions is not always the most appropriate assessment in the case of historic buildings (see the alternative metrics section below and in the Retrofitting and Sustainable Design Chapter of this SPD).

Energy assessments for developments that are not going to be connected to a planned or existing heat network should use SAP10 emissions factors. Developments in Westminster that are seeking to connect to an existing or proposed network should continue to use SAP 2012 so that the benefits of a heat network are appropriately reflected in energy calculations. For further guidance, please refer to the GLA's **Energy Assessment Guidance**.

Alternative metrics

There are a number of unintended consequences in using the existing Part L methodology to determine the performance of a development, most notably that the carbon intensities of energy supply can incentivise the use of mechanical systems over the improvement of on-site efficiency measures; contrary to the aims of the energy hierarchy.

We therefore encourage developers to provide alternative metrics and targets, as advocated by the London Energy Transformation Initiative (LETI), that better reflect operational energy demands of the development and support the fabric first principle. This includes energy use intensity and space heating demand (both measured in kWh/m^2/year).

Developers may provide calculations on the suggested alternative metrics alongside their Part L calculations, or as an appendix in their submitted energy assessment.

Net Zero Carbon

Policy 36B also requires major development to be net zero carbon and demonstrate this target is achieved. We support the UK Green Building Council's Framework Definition of Net Zero1 as follows:

Net Zero Carbon: Construction

"When the amount of carbon emissions associated with a building's product and construction stages up to practical completion is zero or negative, through the use of offsets or the net export of on-site renewable energy."

Net Zero Carbon: Operational

"When the amount of carbon emissions associated with the building's operational energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset."

Developers aiming for net zero carbon in construction should design the building to enable net zero carbon for operational energy and, where possible, through construction.

We encourage all major development proposals to exceed the minimum onsite performance standards set out in the London Plan (35% improvement on Part L of the Building Regulations 2013), wherever possible.

Achieving a net zero building: the energy hierarchy

Hierarchies are a useful tool for illustrating the priority placed on interventions to create a sustainable energy approach to development. In line with London Plan and City Plan policy, all developments should seek to reduce onsite energy demand and associated carbon emissions, and maximise low carbon energy sources. The Be Lean, Be Clean, Be Green, Offset approach should be incorporated into the design rationale for buildings and reflected in the energy assessment submitted as part of the planning application.

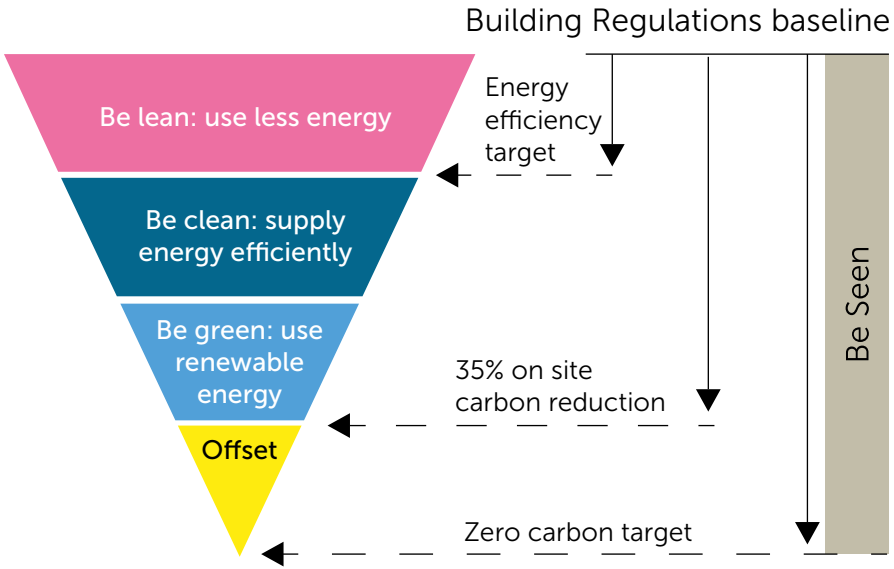


Figure 9: Energy Hierarchy (Source GLA)

Be Lean: use less energy

All development proposals are expected to minimise operational energy demand and maximise efficient use over all other measures – and before any mechanical systems are utilised. A sustainable design approach should demonstrate how this has been achieved and provide evidence to demonstrate the following approach has been fully considered:

- Using energy use intensity targets (kWh/m2/year) to better inform your design approach and success criteria for sustainable design;
- Employing passive design principles, including building form, thermal mass, orientation, location, and shading;
- Embracing a 'fabric first' approach, optimising insulation, air tightness and thermal mass to maximise the efficiency of your development. In line with GLA guidance, major residential developments should achieve a minimum 10% improvement on building regulations performance by energy efficiency alone. This increases to a 15% improvement for major non-residential schemes; and
- Using efficient and integrated systems to minimise energy demand from heating, cooling, lighting and ventilation.

Recommended minimum design standards

The London Energy Transformation Initiative (LETI) Climate Emergency Design Guide[8] sets out recommendations for how new buildings can be designed to meet the UK's climate change targets. The guide provides recommended specifications for different building archetypes including housing and commercial offices.

We support the design recommendations set out in the LETI Design Guide and would encourage new build development to implement the indicative design measures, as summarised in Table 9, wherever feasible and appropriate. Standards for retrofit projects are discussed in the Retrofitting and Sustainable Design chapter.

8 leti.london/cedg

	Small scale residential (terraced or semi-detached homes)	Medium scale (up to 4 storeys) and large scale (more than 4 storeys) residential	Commercial Offices
Fabric U-Values	0.13 - 0.15	0.12 - 0.15	0.12 - 0.15
Walls:	0.08 - 0.10	0.10 - 0.12	0.10 - 0.12
Floor:	0.10 - 0.12	0.10 - 0.12	0.10 - 0.12
Roof:	0.80 (triple glazing)	1.00 (triple glazing)	1.00 (triple glazing)
Windows	-	1.20 (double glazing)	1.20 (double glazing)
Doors	1.00	1.00	1.00
Efficiency Measures	<1 (m3/h.m^2@50pa)	<1 (m3/h.m^2@50pa)	<1 (m3/h.m^2@50pa)
Air tightness	0.04 (y-value)	0.04 (y-value)	0.04 (y-value)
Thermal bridging	0.6 - 0.5	0.6 - 0.5	0.4 - 0.3
G-value of glass			
Energy Use Intensity	35 kWh/m^2/year	35 kWh/m^2/year	55 kWh/m^2/year
Space heating demand	15 kWh/m^2/year	15 kWh/m^2/year	15 kWh/m^2/year

Table 9: LETI Design Guide Recommended Standards

Passive Solar Design

The design rationale for buildings in the city should, where practicable, maximise the opportunities for natural lighting and the heating of spaces in buildings through conduction, radiation and convection. Despite the physical constraint of many development sites, this design approach is important (particularly for residential use) as it helps to determine the orientation of the building, the type of materials that are used to optimise thermal efficiencies, use of insulation and the size and location of windows, optimising solid to void ratio.

During the cooler months, heating premises through solar design is desirable but it is important to ensure that the same design rationale does not cause overheating during the summer months.

Strategies to consider to passively cool buildings include dual aspect design to allow for windows on opposite facades to create cross ventilation, shading devices like blinds and where appropriate overhangs. The incorporation of green infrastructure into developments not only as living walls and roof but tree planting, natural sustainable drainable systems and other spaces also provide a cooling effect on buildings.

Managing Heat Risk

City Plan policy 36E requires all developments to be designed and operated to minimise the risk of internal overheating. Major development proposals will include a cooling strategy in line with the Mayor of London's cooling hierarchy (London Plan Policy SI4).

Our climate resilient approach to the built environment is not only important for reducing carbon emissions but also for the health and wellbeing of the people that occupy those buildings. Overheating in buildings occurs when people are exposed to high levels of heat for extended periods of time. This can take place not only in existing buildings but also new developments. For vulnerable populations especially older people the results can be fatal. In Westminster we are experiencing hotter summers and the density of development in the city means that the urban heat island effect is experienced in many parts of the city by our communities. Ensuring that existing and future building occupants are familiar with the measures that effectively cool homes will help minimise the risk to people's health.

Be Clean: supply energy efficiently

Once energy demand has been minimised, we would expect all developments to demonstrate how they will supply clean energy as efficiently as possible to further reduce their emissions impact. Where possible, developments should aim for all onsite heating and hot water provision to be fossil-free, prioritising electrified or hybrid heat sources.

In locations where the density is sufficient for decentralised heat networks to provide a realistic solution, we would expect developments to use a communal low temperature heating system and select an appropriate heat source in accordance with the GLA's recommended heating hierarchy.

Combined Heat and Power (CHP), and Heat Networks

Combined Heat and Power (CHP) describes the process of producing both heat and electricity at the same time. Decentralised heat networks describe the network of pipes that distribute heat from a central source, for example a CHP plant to a number of sites which could be homes, offices, schools or a combination of buildings. Local heat networks help reduce the distribution losses of traditional grid systems and offer an efficient and competitive solution for heating buildings in areas with high heat density. Heat networks can also provide long-term flexibility for decarbonisation through the replacement of heat generation plant with low carbon technologies.

Air quality is a significant issue in the city and combustion from gas boilers and CHP contributes to this problem. Where a gas fired CHP system is proposed, the requirements for air quality assessment and monitoring must be adhered to and an air quality neutral assessment must be provided for any applications incorporating CHP. We would expect any proposal for CHP to demonstrate how they will use secondary heat sources and outline the timeline for switching to fossil fuel free generation as part of long-term decarbonisation strategy for the network.

In line with the GLA's energy hierarchy, we encourage developments located in the heat network priority areas (Figure 12 and 13), to connect to an existing network in order to maximise the efficiency of the existing infrastructure, minimise overall emissions and deliver the best outcome.

The London Heat Map, accessed **here**, is an open-access mapping tool showing information on existing district heating systems, the relative heat density of different areas, opportunities for connections to 'anchor heat loads' and new and existing network opportunities The map should be used by developers as part of their energy planning to identify potential opportunities for network connections (planned and existing) around their site, and to help identify potential heat loads or supply opportunities.

Developments proposing to deliver or connect to a heat network (either now or in the future) should adhere to the design standards and principles set out in the **London Heat Network Manual II (2021), available here.**

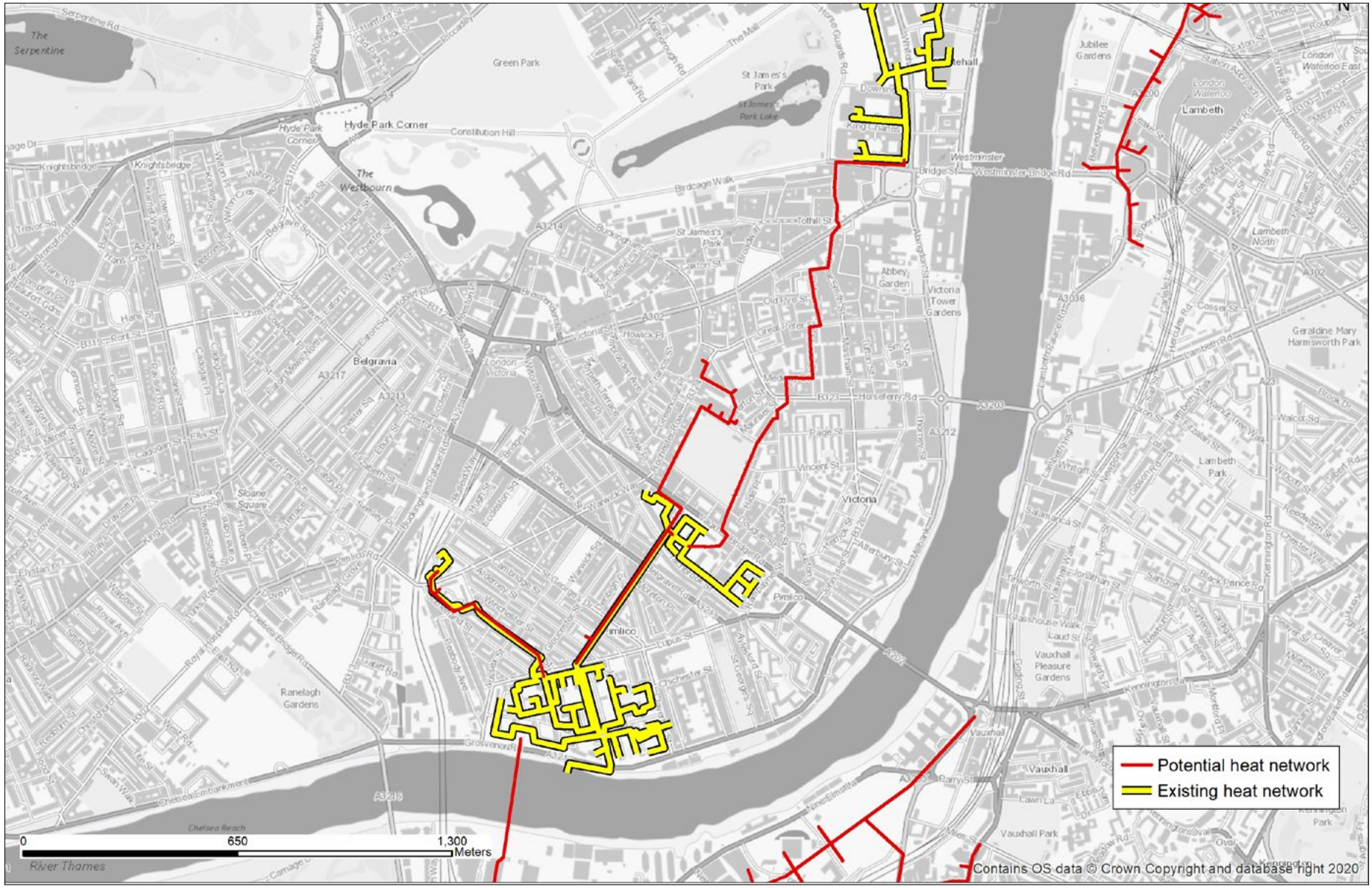


Figure 10: Current and potential heat networks in Westminster (Source maps.london.gov.uk/heatmap)

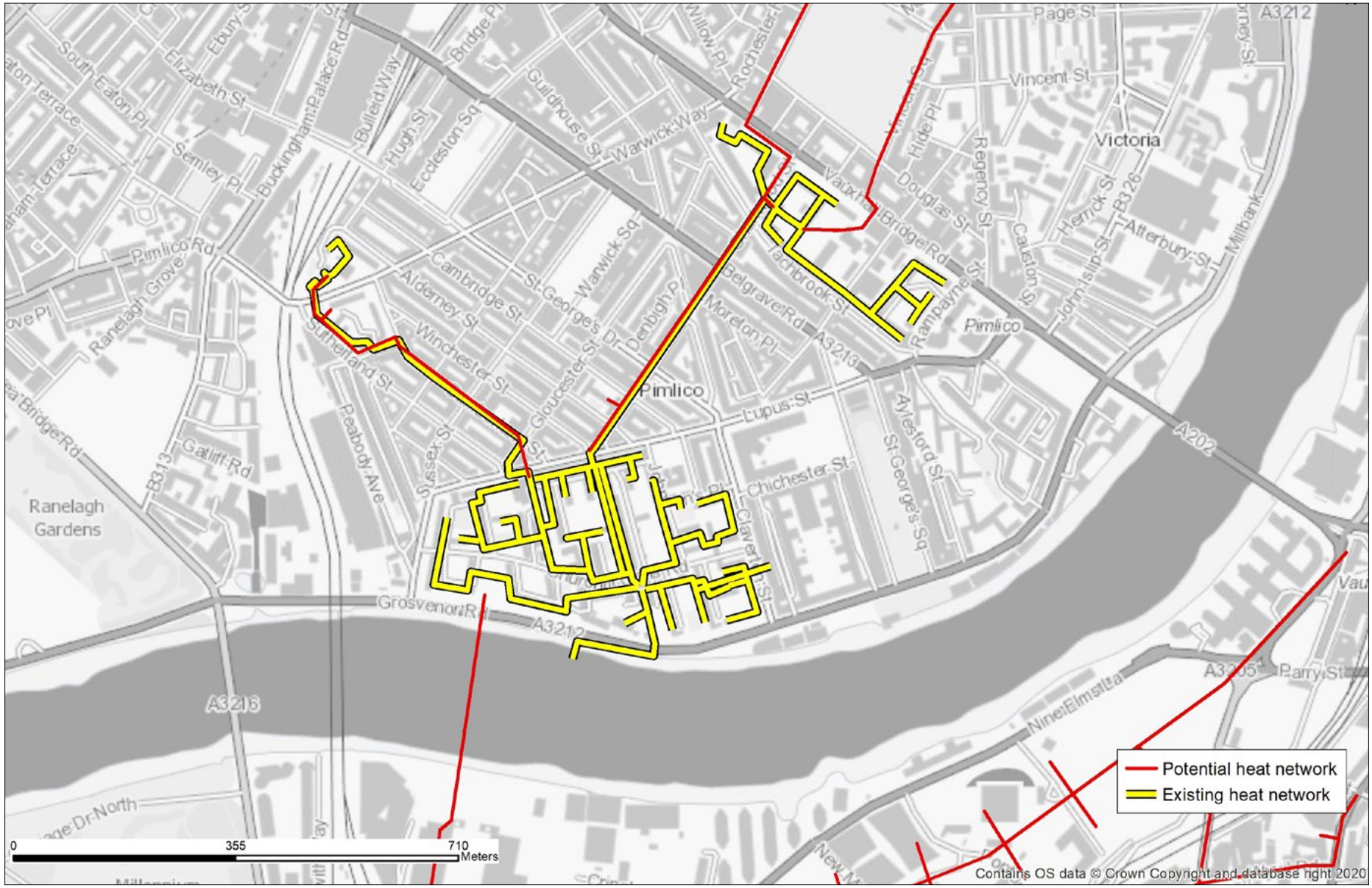


Figure 11: Current and potential heat networks in Westminster (Source maps.london.gov.uk/heatmap)

Outdoor heaters

Outdoor Heaters are popularly used by the hospitality industry and in residential settings to provide warmth in outdoor spaces. When such heaters use fossil fuels these add to further carbon emissions and should be avoided. If outdoor heaters are being considered for use within a development than then only the most sustainable types should be used to help reduce energy consumption. For more information, please refer to the council's licensing webpage.

Site-wide approach to energy

In our housing renewal areas, a site-wide / master planning approach should be taken to energy incorporating the energy, heating and cooling hierarchies. Ensuring that our communities in these areas have access to affordable energy not only when the schemes are built out but beyond requires futureproofed energy infrastructure. Being able to access future changes in technology is key to Westminster's Climate Resilient approach.

Be Green: use low and zero carbon technologies

Onsite renewable energy generation should be prioritised, with any residual demand for energy met by low and zero carbon sources. We would encourage developers to maximise on-site renewable energy generation, regardless of whether the minimum on-site carbon reduction target has already been achieved, to allow the development to minimise its operational emissions and grid-based energy consumption.

The following are the preferred options for on-site renewable energy systems in Westminster:

Heat Pumps

Heat pumps utilise the difference in temperature between the ground (or the air or water depending on the type) and the room that they are heating. The low temperature heat is transferred through the heap pump to heat the space in the room or building.This low carbon technology can be hugely efficient when integrated into new building especially for example for underfloor heating.

As part of a refurbishment or retrofit scheme their scale and integration into existing townscape needs to be handled sensitively, taking into account outdoor condenser units which some heat pumps utilise, and the potential for noise pollution. Heat pumps need to be accessible for maintenance and so retrofitting into high-rise blocks will require internal units or a suitable balcony, roof or communal area nearby.

Heat pumps are permitted development, meaning they don't need planning permission, providing they meet certain conditions[9]. Heat pumps which do not meet these criteria will need planning permission before installation. This includes limits for installations to listed buildings, and within conservation areas and the World Heritage Site. Further information can be found in the Retrofitting and Sustainable Design section of this SPD.

Solar Technologies (Solar Thermal and Solar PV)

Where overshadowing can be avoided, solar energy can represent an effective renewable technology to be used in Westminster. Solar can be used to generate electricity (solar photovoltaics) or to heat water (solar thermal) in a building. There is an extensive range of panels available (including solar slates) with a variety of colours, thicknesses and glazing options available and visual impacts can be mitigated through siting and design.

Opportunities to incorporate solar technologies may be reduced in some instances in sensitive locations on listed buildings and in conservation areas,

9 Further information on permitted development criteria for heat pumps can be found on the Planning Portal website

however the council strongly advocates such technologies and wants to work with applicants to find the best solution, which can be discussed at pre-application stage. As a general principle the aesthetics of solar technologies are appropriate within the city and they can be installed in conjunction with green roofs to maximise climate resilience on sites. See the Retrofitting and Sustainable Design section of this ESPD for guidance on installing solar technologies on existing buildings, including heritage assets.

Canal water can also be used for sustainable heating and cooling of canalside developments. The Canal and River Trust's Water Development Team can provide further information on this.

Offsetting

Carbon offset payments are collected as a last resort when residual carbon emission performance in a proposed development cannot be achieved on site through the Be Lean Be Clean and Be Green approach. It is set at a level that reflects the cost of addressing the residual emissions.

As part of the energy statement submitted to support a planning application, the tonnes of carbon that are not mitigated should be offset in accordance with the GLA's methodology.

The cost of carbon is detailed in the council's emerging Planning Obligations and Affordable Housing SPD and in the council's carbon offset guide, found **here.** The council's carbon offset guide sets out the how the offset price is calculated, the current cost of carbon and how the carbon offset fund will be spent in the city. The council will regularly review and update the local cost of carbon.

Westminster's carbon offset funds are managed in accordance with the existing processes for allocating planning obligations and funding bids determined by the council's Cabinet CIL Committee. The council will actively promote projects supported through carbon offset contributions to ensure confidence and transparency in the offset process.

Be Seen: monitoring and measuring

The actual energy use of a building once occupied is just as important as the planning for energy supply and use prior to development taking place. This will determine how much of the planned energy savings have been realised and the direct contribution the building makes to tackling climate change in reality.

It is well established that a performance gap exists between predictions of energy consumption from building compliance tools determined at the development design stage and the actual measured energy use of a development once completed and occupied. To achieve net zero-carbon buildings we will need to better understand their in-use performance so that we can address and reduce the performance gap moving forwards. Ensuring a development operates as designed is also an important consideration in safeguarding the wellbeing and financial implications for building users.

The GLA have produced 'Be Seen' Guidance which sets out requirements for post-construction monitoring (to align with London Plan policy SI2). The purpose of the 'be seen' policy is to better understand the performance gap between design and actual performance. The guidance states that reporting requirements should be secured through a Section 106 agreement and a template is provided alongside the guidance. Further guidance may be provided if required in the council's Planning Obligations and Affordable Housing SPD. The 'Be Seen' guidance can be viewed **here.**

The 'Be Seen' energy reporting requirement applies to major developments. However, provision of energy monitoring data is essential to understanding this and we therefore encourage all developers to submit this information to the council post-occupation to understand how the building is being used compared to projections at application stage and what can be learnt for future developments. Collection of this data over time will also help to create a city-wide picture of energy usage to inform strategic decisions.

Embodied and Whole Life Carbon

While reducing operational energy is a key priority to reach our net zero carbon targets, whole life carbon costs and benefits over the life of the building also need to be carefully considered to avoid allowing practises that unintentionally increase the overall carbon impact of a development.

Whole Life Carbon considers the combined impacts of both operational and embodied carbon emissions over a building's entire lifecycle. This includes the emissions associated with sourcing, extraction and processing of materials, transporting materials to site, construction of the building, in-use operations (including maintenance, repair and replacement) and end of life (demolition, disassembly and waste processing). The aim of this approach is to move towards a building or a product that generates the lowest carbon emissions over its whole life. Whole Life Carbon assessments are considered to be cradle to grave assessments, however Westminster is following the GLA's approach set out in its WLC guidance which requires consideration of phases beyond the project life cycle to include the retrofit or reuse of any existing built structures, in part or as a whole.

Through a whole building life cycle assessment designers and developers are able to identify the parts of the building that have the highest levels of embodied carbon as well as levels of operational carbon and seek to remedy this through reviewing options. LETI have developed the Embodied Carbon Primer as supplementary guidance to their Climate Emergency Design Guide. The guidance includes useful prompts and information to support clients and designers to consider opportunities to reduce the embodied carbon of their developments.

The London Plan requires that all applications that are referable to the Mayor comply with the WLC standard. In Westminster, to align with our climate priorities and City Plan Policy 38 on sustainable design, all major developments which include substantial demolition are also required to meet the WLC standard. Substantial demolition includes total demolition of a building, façade retention redevelopment schemes and other redevelopment schemes where only the superstructure is being retained.

Where all or part of the existing building can be retained and demolition can be avoided, this will help conserve resources, reduce embodied carbon, minimise waste and avoid dust and emissions from demolition. However, this needs to be carefully balanced against other sustainability objectives, the need to deliver new housing and economic growth, meaning demolition will still be appropriate in some circumstances. When balancing the merits and impacts of retention or demolition of the existing building, the council will consider environmental, economic and social sustainability issues in the round with reference to other City Plan policies.

There are links between Whole Lifecycle Carbon Assessments, Energy Assessments, Circular Economy Statements and other assessments which may be submitted as part of a planning application.

Applicants should refer to the following sources for further information:

- GLA guidance on WLC assessments
- LETI Climate Emergency Design Guide
- LETI Embodied Carbon Primer

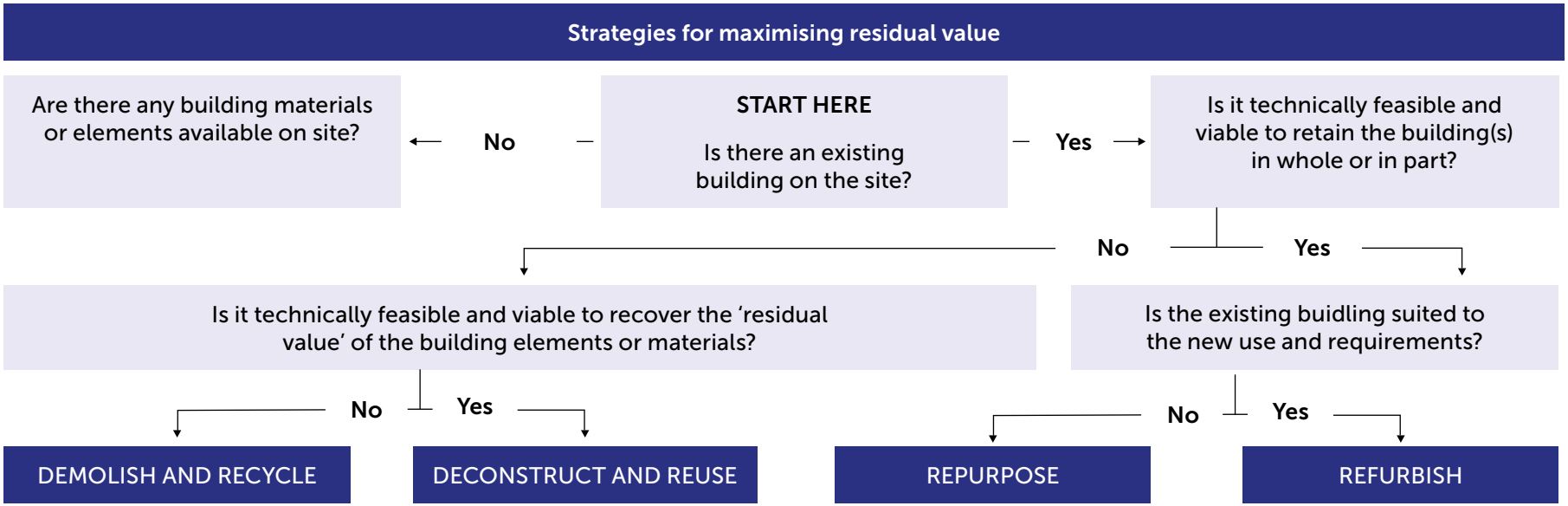
Development Requirements

Information required

WHOLE LIFE-CYCLE CARBON ASSESSMENTS

Applicants will be expected to prepare WLC Assessments in line with GLA WLC Guidance which is due to be published in 2022.

Until that time, proposals for major developments which include substantial demolition should be assessed against the GLA's Circular Economy 'decision tree' to demonstrate if an existing building could and should be retained.



Applicants will be expected to submit the GLA's WLC Assessment template and provide reasons for decision-making in respect of retention or demolition of existing buildings. Applicants are encouraged to seek pre-application advice from the council.

Information required

ENERGY ASSESSMENTS

All major applications should include an energy assessment to demonstrate how energy use and carbon emissions have been reduced for the development in accordance with policy requirements, and that energy use has been a central consideration in the development's design and evolution.

An energy assessment may be submitted as part of the Sustainability Statement or as a standalone assessment. The energy assessment should adhere to the format and guidance set out in the **GLA's Energy Assessment Guidance 2020.** As a minimum, all energy assessments must:

- Calculate baseline energy demand and CO2 emissions, showing the contribution of emissions from both regulated and unregulated uses;
- Demonstrate how onsite energy demand and emissions have been addressed in accordance with the energy hierarchy approach;
- Indicate the design considerations and rationale behind the preferred approach; and
- Calculate the final energy and carbon performance of the development, and any carbon offset contributions to address residual shortfall, as necessary.

In addition, further detailed evidence must be provided in accordance with the type and scale of the development proposal.

Required standards

ENERGY ASSESSMENTS

MAJOR RESIDENTIAL DEVELOPMENTS

Submission of a detailed energy assessment demonstrating:

- How the development achieves, and ideally exceeds, the minimum 35% improvement on Part L of Building Regulations 2013;
- How the development has achieved a minimum 10% improvement over Part L of the Buildings Regulations by energy efficiency measures alone;
- 'As designed' SAP compliance reports and detailed DER and TER worksheets for each stage of the energy hierarchy;
- Supporting evidence demonstrating the selection and specification of low or zero carbon technologies (e.g. system specifications, roof plans, seasonal co-efficient of performance, as appropriate); and
- A calculation of the carbon offset contribution required to address any residual onsite emissions.

MAJOR NON-RESIDENTIAL DEVELOPMENTS

Submission of standalone energy strategy demonstrating:

- How the development achieves, and ideally exceeds, a minimum 35% improvement on Part L of Building Regulations;
- How the development has achieved a minimum 15% improvement over Part L of the Buildings Regulations by energy efficiency measures alone;

- 'As designed' BRUKL Compliance Reports and detailed BER and TER worksheets for each stage of the energy hierarchy;
- Supporting evidence demonstrating the selection and specification of low or zero carbon technologies (e.g. system specifications, roof plans, seasonal co-efficient of performance, as appropriate); and
- A calculation of the carbon offset contribution required to address any residual onsite emissions.

DECENTRALISED ENERGY PROPOSALS

Any development proposing to utilise or connect to a decentralised heat network, must demonstrate compliance with the technical standards set out in Appendix 1 of the London Heat Network Manual. The following evidence will need to be provided:

- Information on the proposed heating system, including datasheets and plans confirming the proposed heating system specification;
- A scale drawing of the proposed plant room and layout, including space requirements for heat exchangers; and
- Confirmation of the proposed plant room specification.

All developments in heat network opportunity areas should connect to an existing heat network. Where this is not considered viable robust justification must be provided and the development should be designed so as to enable future connection to a district heating network.

WHOLE LIFE CARBON ASSESSMENT

WLC Assessments are required for referable applications and major applications which include substantial demolition. Other applications involving demolition should include a proportionate level of justification for demolition within the sustainable design statement. Applicants should refer to the Mayor of London's guidance on Whole Life Carbon Assessment and submit the completed WLC Assessment Template.

OFFSETTING FUND

Westminster City Council's methodology and approach to calculating carbon offset contributions is set out in the council's carbon offset guide, found **here.** Further guidance will be detailed in the council's emerging Planning Obligations and Affordable Housing SPD.

MONITORING

City Plan Key Performance Indicator 19: Applications that include renewable technologies

City Plan Key Performance Indicator 22: Reduction of carbon dioxide emissions (total end user and per capita) by local authority area, as reported by Department of Business Environment and Industrial Strategy (BEIS)

London Plan 'Be Seen' – monitor, verify and report on energy performance for major developments


KV2
KM2
OL2

WASTE MANAGEMENT

Policy Overview

National

National Planning Policy for Waste (2014)

Regional

London Plan Policy SI 7 Reducing waste and supporting the circular economy
London Plan Policy SI 8 Waste capacity and net waste self-sufficiency

Local

City Plan Policy 37 Waste Management
Recycling and Waste Storage Requirements
Municipal Waste Management Strategy 2016 – 2031


cartons
mixed paper & card
City of Westminster
RECYCLING
mixed paper & card
food tins & drink cans
mixed glass bottles & jars
recycle for London

Introduction

Waste in Westminster is generated by households, businesses, institutions and building projects. The council has a number of different roles and responsibilities related to waste.[10] City Plan policy 37 and this ESPD relates to the council's role as a waste planning authority. This includes strategic waste planning and ensuring waste storage is incorporated into new developments.

This ESPD should be read in conjunction with the council's Municipal Waste Management Strategy (2016 – 31) through which we are aiming to achieve a 65% recycling target of municipal waste by 2030. To increase recycling and environmental performance, the city council offers separate collections for dry recycling, and food waste (by 2023) and aims to reduce the volume of non-recyclable waste produced by Westminster households and businesses. We will also provide visitors and tourists the opportunity to recycle on the go through segregated street litter bins. The government's **Resources and Waste Strategy** will bring changes to the way waste is managed in Westminster. The city council will work with residents, businesses and stakeholders to accommodate these changes.

Implementing the waste hierarchy and promoting circular economy principles is key to reducing the amount of waste produced and ensuring that more materials are reused, repaired and recycled.

Waste Hierarchy

The waste hierarchy is a framework for securing a sustainable approach to waste management. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to re-use, then recycling, then recovery, and last of all disposal (e.g. landfill). Most of the legislative drivers for reducing waste, ensuring products can be repaired and promoting recycled materials come from central government and are outside the remit of the planning system. However, the council expects development to implement the waste hierarchy by ensuring that 95% of construction and demolition waste is reused, recycled or recovered (through Site Waste Management Plans / Code of Construction Practice), and providing sufficient space for the separate storage of dry recycling, food waste and residual waste in residential and commercial buildings.

10 Further information on Westminster's waste collection and disposal functions can be found on the council's website.

Stages	Includes
Prevention	Using less material in design and manufacture. Keeping products for longer; re-use. Using less hazardous material.
Preparing for re-use	Checking, cleaning, repairing, refurbishing whole items or spare parts.
Recycling	Turning waste into a new substance or product. Includes composting if it meets quality protocols.
Other recovery	Includes anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materials from waste; some backfilling operations.
Disposal	Landfill and incineration without energy recovery.

Circular Economy

As we move to a resource efficient Westminster, we will be looking for opportunities to move from a linear to a circular economy. The Circular Economy is described by the London Plan as An economic model in which resources are kept in use at the highest level possible for as long as possible in order to maximise value and reduce waste, moving away from the traditional linear economic model of 'make, use, dispose'. City Plan policy aims to contribute to the London Plan targets for recycling and for London's net self-sufficiency by 2026.

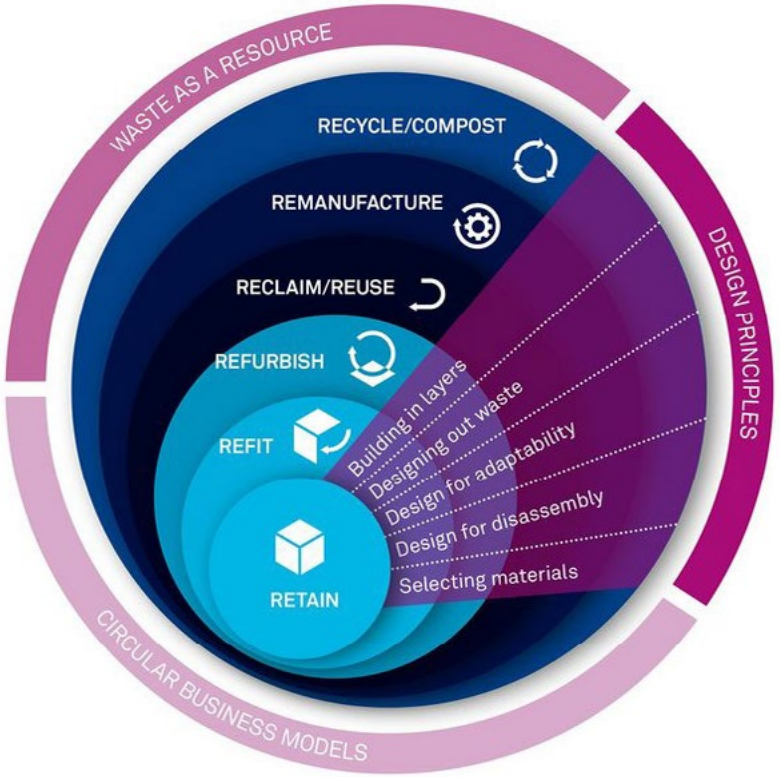


Figure 12: Circular economy hierarchy for building approaches (Source GLA)

Putting the circular economy into action in Westminster's built environment means in the first instance exploring retention and refurbishment of buildings rather than demolition and re-build. If this is not possible, then incorporating reused materials into a new development.

In the linear economic model, the intrinsic value of products and materials reduce over the life of the building. By moving to a circular economy approach, both buildings and their component parts retain their intrinsic value when they are reused and retained.

The council is committed to promoting the Circular Economy. Applications referable to the Mayor[11] must include a Circular Economy Statement which demonstrates how circular economy principles have been embedded into the design. The council will also consider lowering this threshold for Circular Economy Statements to major applications through the next review of the City Plan.

There are links between Circular Economy Statements and Whole Lifecycle Carbon Assessments. In Westminster, to align with our climate priorities and City Plan policy 38 D.3 on sustainable development, all referable applications and major developments which include substantial demolition are required to meet the WLC standard. Westminster is following the GLA's approach to WLC assessments which requires applicants to consider the retrofit or reuse of any existing built structures before embarking on the design of a new structure or building. See the ESPD section on Energy for more details.

11 Development of 150 residential units or more and/or development over 30 metres in height referable to the Mayor.

Development Requirements

Required Standards

WASTE STORAGE

To comply with City Plan policy 37B and London Plan policy SI7 A6, when a planning application is submitted, the council will expect details to be specified and agreed of adequate, flexible, and easily accessible storage space and collection systems that support the separate collection of dry recyclables, food waste and residual waste. This includes space for storing bulky items and reusable goods in residential accommodation. This requirement is essential for the following types of application:

- New developments;
- Residential conversions;
- Major extensions to existing buildings;
- Redevelopments; and
- Changes of use that require planning permission and significantly change the amount of waste generated on-site, especially those providing hospitality services.

Further waste storage planning advice can be found in the council's **Recycling and Waste Storage Requirements guidance.**

For applications within Use Class E applicants will need to demonstrate that adequate space for waste storage has been provided for all types of development within Class E. If this cannot be demonstrated then a condition may be applied to limit the number of uses or to the proposed use only. This will be considered on a case-by-case basis.

Permission will not normally be granted in advance of submission of details indicating satisfactory storage arrangements. However, in exceptional circumstances it may be considered appropriate to reserve details of the waste storage accommodation, for approval prior to commencement of construction.

All residential dwellings must have storage space for seven days' output of waste. At least 60% of the storage capacity should be for recyclable material if using communal waste storage. Please note that chute systems are not permitted as their use for dry mixed recyclables has not demonstrated the quality required of these materials for reprocessing.

Key Considerations

The council is aware of the need for additional waste storage for businesses in Westminster and is seeking solutions. New development is encouraged to include additional on-site waste storage space for other businesses in the area.

Information Required

Provisions must be clearly marked

This provision of waste storage must be clearly marked on the relevant plans submitted with the planning application, e.g. containers for waste marked 'W', those for recycling marked 'R' and those for organic waste marked 'O'. Where large amounts of waste would be generated a waste compactor and/or cardboard baler may be required (note: comingled recyclables cannot be compacted). The storage locations of the cardboard baler, compactor, food waste facilities and waste cooking oil must be indicated on the plans. Wash down and drainage facilities are also necessary to meet required hygiene standards.

Required Standards

WASTE STORE SIZE

The waste store should be sized to accommodate additional recycling containers as may be required in the foreseeable future. In developments with mixed residential and commercial units, the residential dwellings would be required to have seven days' storage.

Commercial collection service, for non-residential uses, is a charged service that can only be provided by a licensed waste contractor, such as the council, who need to be contracted to perform the collection service. The council only has a duty to collect residential waste and recyclables (covered by the Residential Council Tax). For commercial developments in areas where the City Council's collection service is:

- Daily – provision must be made for at least two days output of waste.
- Three times a week, or less – provision must be made for at least four days' output of waste.

CLINICAL WASTE

In all applications where clinical waste will be produced (medical, dental, cosmetic and veterinary establishments, etc.), separate storage and collection arrangements will be required for clinical and non-clinical waste. A separate waste store must be provided exclusively for clinical waste, which. must be secured and locked. The clinical waste store should be provided with an impermeable surface with a sealed drainage system or within sealed containers located on an impermeable surface with a sealed drainage system. Sealed containers shall be kept locked when not being loaded or unloaded. A waste permit may be required from the Environment Agency to store clinical waste on site, please refer to the Environment Agency guidance on storage of clinical waste for further information. The Department of Health guidance on the safe management of healthcare waste should also be referred to.

Information Required

WASTE MANAGEMENT PLANS OR STRATEGIES

In major residential or commercial developments, a waste management plan or strategy must be submitted. This can be a separate document or can be covered in the Design and Access Statement. Where an existing area-wide or estate-wide strategy is in place for the consolidation of storage and collection of waste, this will be considered by the council when assessing the suitability of the applicant's proposed approach to waste.

The waste management plan or strategy should indicate:

- Estimated volumes and types of waste produced by the development;
- The size and location of waste and recycling stores and how recyclable material and other waste would be delivered to these stores;
- The equipment specified for compacting and/or containing waste;
- The management of biodegradable material (a composter may be required); and
- The proposed collection point as well as the method for transferring waste to this location.

A waste route diagram should be included showing transfer of waste within the development to the waste store and transfer of waste from the waste store to the collection point. The route from a waste storage area to the nearest parking place for a waste collection vehicle must be kept to a minimum, particularly if bulk waste storage containers or compactors are proposed.

Applicants should seek pre-application advice concerning the type, size and location of the proposed waste storage accommodation. This SPD only provides basic advice on the storage requirements for waste and recyclable materials that may be helpful in early stages of the design process.

Required Standards

RECYCLING

It normally costs less to recycle waste and proposed waste management systems should therefore be designed to maximise recycling. To do this, major developments (both residential and commercial) should have a minimum of one waste management operative on full time or part time basis to ensure proper segregation dry recyclables, food waste and residual (non-recyclable).

WASTE EQUIPMENT

Major developments should have the following waste equipment or facility where relevant.

- Food waste facilities (if the development includes restaurants);
- Cardboard balers;
- Compactors (only general waste should be compacted); and
- Public Micro Recycling Centre (Bring Banks).

CIRCULAR ECONOMY STATEMENTS

Policy 37C, Waste Management requires developers to submit a Circular Economy Statement, Site Environment Management Plan and/or associated Site Waste Management Plan. Circular Economy Statements should be submitted for referable applications in line with London Plan policy SI 7 to demonstrate how construction, demolition and excavation (CD&E) recycling and beneficial use targets will be met. Compliance with the Council's Code of Construction Practice should also be shown.

Information Required

A Circular Economy Statement is required for referable applications and should demonstrate:

1. How all materials arising from demolition and remediation works will be re-used and/or recycled.
2. How the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life.
3. Opportunities for managing as much waste as possible on-site.
4. Adequate and easily accessible storage space and collection systems to support recycling and re-use.
5. How much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy.
6. How performance will be monitored and reported. (London Plan)

MONITORING

City Plan Key Performance Indicator 28: Capacity of new waste and recycling facilities

City Plan Key Performance Indicator 29: Amount, type and destination of waste exported from Westminster

RETROFITTING AND SUSTAINABLE DESIGN

Policy Overview

National

NPPF Chapter 2. Achieving sustainable development
NPPF Chapter 16. Conserving and enhancing the historic environment
Historic England – Energy Efficiency and Historic Buildings (2018)
Energy Efficiency and Traditional Homes
LETI Climate Emergency Retrofit Guide
SPAB Research into the Energy Efficiency of Old Buildings

Regional

London Plan Policy HC1 Heritage conservation and growth
London Plan Policy SI 5 Water Infrastructure

Local

City Plan Policy 38 Design principles
City Plan Policy 39 Westminster's heritage
Retrofitting Historic Buildings for Sustainability

Image credit: The Crown Estate

Introduction

This chapter includes sustainable design principles for both existing buildings and new build. While the main focus is retrofit of existing buildings, the overarching sustainable design principles in City Plan policy 38D seek to ensure all development, in both new build and existing buildings, is designed to be durable, adaptable and limit long-term resource use, including water and energy consumption, with features to mitigate and adapt to climate change integrated in development design from the outset. Guidance on designing for sustainability cuts across a number of topics and is included in a range of chapters in this SPD.

Refurbishment and retrofit projects provide an important opportunity to improve the energy and water efficiency of existing buildings and reduce emissions, which is key to achieving net zero carbon by 2040 and addressing water stress in the capital.

New build projects will need to meet key sustainability standards to be acceptable in planning terms, including energy and water efficiency, as detailed in the City Plan, London Plan and elsewhere in this SPD.

Retrofitting existing buildings

The upgrade and reuse of existing buildings is a sustainable approach and can help by avoiding the higher carbon footprint associated with constructing new buildings. Retrofit can also enable existing and historic buildings, including listed buildings, remain fit for purpose and in active use when sensitively adapted and upgraded. Retrofitting buildings which contribute to the special character of conservation areas as opposed to demolishing them also helps retain their distinctive character.

Water use efficiencies help mitigate water stress, contribute to carbon and energy savings and help manage the need for new major infrastructure. Water efficiency through retrofitting can increase the energy efficiency of buildings by reducing hot water consumption and reduce costs on water bills.

Many of the existing buildings in Westminster are constrained, for example by space or subject to a heritage designation, and so retrofitting may be more complex. A large proportion of the building stock in Westminster has a heritage designation, whether through statutory listing or being located in a Conservation Area, so finding sensitive and effective ways to improve energy efficiency of historic buildings is of vital importance.

Given the extent of heritage assets, Westminster is uniquely placed to lead in work on the area of sensitive retrofitting of historic buildings and this work area will be a priority in order to tackle the issue of climate change. The council will also ensure the value of Westminster's exceptional heritage remains and will continue to meet statutory duties to protect heritage assets. An approach to retrofitting measures that is iterative in nature and looks for lower-cost and minimally invasive interventions can often be most effective.

The most effective retrofit solutions will optimise energy and water efficiency and ensure a safe, healthy and comfortable environment for occupants while protecting and enhancing heritage significance. The availability of trained and skilled trades people who can carry out the necessary works will be essential to delivering retrofit solutions. The council will seek opportunities to support skills development for a green economy as part of our **Climate Emergency Action Plan.**

GUIDANCE FOR RESIDENTS

There are a growing number of resources to assist residents in making their homes more energy efficient and reducing their environmental impact. The key elements of retrofit include:

1. Reduce the heating demand and energy use;
2. Remove fossil fuel heat sources and replace with low carbon alternatives; and
3. Generate renewable energy on site if feasible.

The **council's website** provides useful resources and advice for residents on climate change, energy efficiency and wider sustainability opportunities.

The Planning Portal has information on **planning rules, permitted development limits and building regulations for common projects** for the home. Most energy and water efficiency initiatives for domestic properties, such as draught-proofing, insulation, renewable energy installations and butts for rainwater harvesting are permitted development, but residents in listed buildings or conservation areas should check Table 10: Retrofit Measures below for further guidance.

EcoFurb provides a low carbon homes service that helps homeowners plan and deliver energy efficiency improvements, gives impartial advice, and oversees the works. London residents can also use the free Plan Builder on their website to get ideas on how to retrofit your individual home.

LETI's **Climate Emergency Retrofit Guide** provides advice on how to develop a whole house Retrofit Plan. It also provides best practice targets for constrained (e.g. listed buildings) and unconstrained building types. The Passivhaus Trust also has guidance on their **EnerPHit Retrofit Plan.**

There are a number of useful resources for residents wishing to upgrade their historic homes including the council's webpages on **Retrofitting historic buildings** and **Design and heritage in planning,** as well Historic England's **guidance on modifying historic windows for energy efficiency.**

A **template Sustainable Design Statement** has been developed by the council to help residents demonstrate that sustainable design principles, particularly the principles in Policy 38, have been considered for householder applications and to meet the planning application Validation Requirements.

Approach to retrofitting existing buildings

We support sensitive retrofit and expect proportionate measures to be taken to improve the energy and water efficiency of existing buildings. Applicants should set out in their design and access or sustainable design statement details of the building's current performance and condition, including the identification of issues and locations where it is sub-optimal, options which have been assessed and how consideration has been given to this issue having regard to the impact upon the historic environment. Where the building affected is a listed building or within a conservation area the impact of any retrofit measures on the building or area should be assessed and harm to their significance avoided. Where harm does occur, this must be weighed against the public benefits of the proposals. Addressing, mitigating and adapting to climate change is considered a public benefit as are other environmental aims such as improving air quality and reducing flood risk.

While this guidance sets out many typical retrofit measures and provides general guidance, the complex and sometimes unique nature of historic buildings means that generic guidance has its limitations. Due to the unique nature of heritage assets, the balance of addressing climate change, protecting heritage assets and viability will need to be considered on a case-by-case basis. Applicants are encouraged to contact the council for **pre-application advice.**

Applicants should take a coordinated or 'whole building' approach to planning and delivering all retrofitting projects as opposed to delivering piecemeal measures. Applicants are encouraged to develop a retrofit plan to help understand all of the individual pieces of work needed to improve the home, how these interact and any associated consequences. A retrofit plan can help maximise the energy, health and comfort improvements delivered by retrofit and avoid unnecessary, costly or abortive work.

A retrofit plan should include:

- Key building information, constraints, risks, and opportunities;
- Main works proposed along with related strategies and details;
- The sequence of work; and
- A plan for monitoring and reporting energy consumption.

Not all retrofit measures require planning permission (see Table 10). Small scale changes can deliver dramatic outcomes. These could include: thoughtful maintenance and repair; changing how the building is operated; repairing existing windows and doors and taking advantage of their special characteristics; installing secondary glazing, and upgrading lighting.

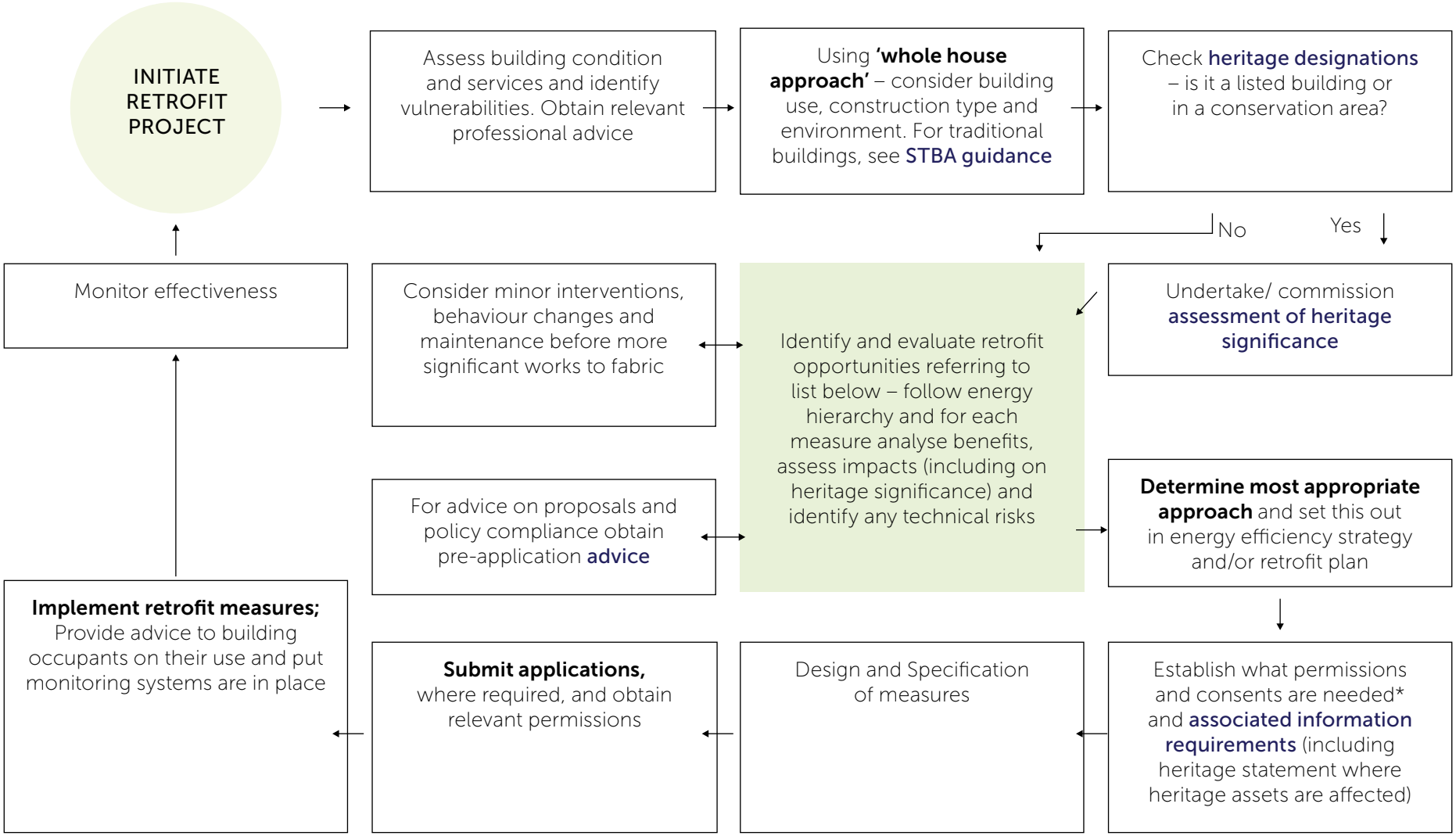
Historic buildings should be treated sensitively having regard to the differences between modern and traditional construction. Before beginning to think about measures to retrofit to a property, it is necessary to understand the building as it is already, to think about what simple changes can be made. A 'whole building approach' should be taken as advised by Historic England which considers:

- Context;
- Construction;
- Condition;
- Historic significance;
- An understanding of all the factors that affect energy use; and
- Producing an energy efficiency strategy.

The following considerations and questions may provide guidance when considering which of the sustainability upgrades set out in the following section will be most appropriate for a property.

- **How is the building used?** Can it be used more efficiently? Firstly, you should ensure that you are already undertaking measures that can be implemented at no cost, which involve changes to behaviour rather than the building fabric, and low cost minor alterations and additions to make the building more energy efficient.
- **What condition is the building in?** You should first undertake any necessary repairs, ensuring buildings are in good order and water-tight. A damp building will be less thermally efficient, and this should be addressed before additional measures are considered.
- Consider the type of heritage protection that applies. **Is your property a listed building or within a conservation area?**
- **What scope do you have to make changes?** Freeholders will have the most scope, while leaseholders and tenants will be constrained by the terms of their lease and will require permission/consent of the freeholder/landlord.
- **What is the budget?** Each building is unique and costs will vary depending on the requirements. Consider the cost effectiveness, and the likely payback period of measures that will have a medium to high cost.
- **What permissions/consents do you need to obtain?** Some measures will be 'permitted development' for which planning permission is not required, as long as the property is not subject to an Article 4 direction or planning condition amending the permitted development rights. For listed buildings it is likely that listed building consent will be required. Please refer to permissions table below for details.
- **Undertake work** Ensuring that any new systems work effectively, and that occupants (and future occupants) understand how to use them.
- **Monitor and undertake necessary maintenance, upgrading systems where new technology emerges.**

Figure 13 below shows the process for assessing retrofit opportunities



*See Permissions Required table page 116 onwards.

Westminster retrofit opportunities

Advice is set out below on the main opportunities for retrofit in Westminster. Please note that not all the measures below will be appropriate for all buildings. You should identify the most appropriate measures for your building based on analysis above and using the advice on technical risks associated with different measures and impacts on heritage significance set out in the table that follows. Lower risk measures should be considered first.

Building Insultation

LOFT AND ROOF INSULATION

Installing insulation in existing roof voids can have a significant positive impact on energy efficiency. Historic buildings with a timber roof structure lend themselves to insulation between joists and rafters without any visual impact or harm to the historic building. Natural insulation materials such as wool-based insulation which allow a building to breathe should be used, reducing the possibility of moisture and damp problems. When fitting, an air gap must be left around the margins of the building to allow air to circulate. Care should be taken around electrical cables (lay these over the insulation), and allow a gap around any lights that may heat up (e.g. downlighters installed for the rooms below). It is also advised to insulate loft hatches.

Whilst insulation of a loft (between joists) is straightforward (sometimes referred to as 'cold roof') and is likely to be acceptable, insulation at rafter level (where a loft space has already been converted to provide additional space, referred to as 'warm roof') is more complicated. There are various options including insulation between the rafters, on top of the rafters and below the rafters. Some options will result in the roof height changing. Additional considerations in heritage buildings may include whether there is a historically significant lining or ceiling fixed to the underside of the rafters. If this cannot be removed, and the only way to attach insulation is by removing the roof tiles and inserting from above, then this may not be economic, unless other works to the roof are being undertaken at the same time. It is important adequate ventilation is retained to avoid moisture build up and consequent damp problems.

For more information please see **Insulating Roofs in Historic Buildings**

FLOOR INSULATION (SUSPENDED TIMBER FLOORS)

Heat loss through the floor amounts to around 15% for the average house. Simple draught-proofing of gaps between floor and skirting and between floorboards with sealant can be undertaken relatively easily and at low cost. Suspended timber floors on the ground floor, typical for many older properties can be insulated to improve thermal comfort. This will be quite straightforward if there is a cellar or crawlspace below, but without this, floorboards can be lifted and insulation inserted underneath, supported by netting. This should be to the depth of the joist only and should not block air bricks. Care needs to be taken when lifting boards to minimise damage. Avoid blocking airbricks when draughtproofing or when insulating, and take care to maintain cross ventilation beneath suspended timber floors to avoid rotting floor timbers. Consider the potential loss of historic fabric (floorboards/skirting/door surrounds/doors) that may occur if insulation increases floor height.

For more information please see **Insulating Floors in Historic Buildings**

SOLID WALL INSULATION

Solid wall insulation can be a way of improving the thermal efficiency of a building, and could save energy and reduce heating bills. Most of the historic buildings in Westminster have solid masonry walls, either of brick or stone. The only way to insulate them is by adding a layer of insulation either internally or externally. Around 35% of heat loss from a typical home is through its walls.

External solid wall insulation systems consist of a layer of insulating material fixed to the wall and covered by a render or cladding, which provides a degree of protection from weather and impact damage. The major issue to consider is that external wall insulation will have an impact visually on the relationship between the building envelope and its openings, altering the detailing around windows and doors, and also eaves and roof verges. It is possible to extend roof eaves to deal with this.

For this reason external solid wall insulation will need to be very carefully designed, and where heritage assets are affected is likely to be contentious. In these cases it is likely to be allowed in certain circumstances such as on the rear elevations, and in enclosed locations, not for part-only of a unified terrace, although applications to apply to the whole of a terrace would be considered. Careful detailing is required around windows to minimise the impact of altered window reveals. This is generally considered a safer solution in terms of the risk of damp and moisture in a building than internal solid wall insulation and will not reduce floor space internally. However, there are also significant inherent risks in creating thermal bridges for moisture which can result in damp and rot problems in localised areas, so professional advice is necessary and on traditional buildings, very careful analysis of impacts on fabric would be needed and if acceptable, vapour permeable insulation should be used.

Internal wall insultation will take up internal floorspace and can alter the relationship of the door and window reveals, and will require skirting boards, cornicing and decorative plasterwork to be relocated. There are also inherent risks in creating thermal bridges for moisture which can result in damp and rot problems in localised areas, and in many circumstances it will not be appropriate on buildings of traditional construction. On such buildings, where internal insultation is demonstrated to be appropriate, materials with similar breathable qualities should be used.

For more information please see **Insulating Walls in Historic Buildings**

DRAUGHTPROOFING

Poorly fitting windows and doors, often the result of warping over time, and years of repainting can lead to significant heat loss and make rooms feel uncomfortable. A significant amount of heat is lost through windows, both the glass and the gaps in and around the frames. The heritage conservation value of a building will influence the options that are available, as alterations to windows and doors can have a significant impact on the historic value of the building.

There are a range of types of draught proofing systems available, from DIY foam strips which stick on to professionally fitted compression seals or carrier seals that fit within frames and suitable for different types of window. Generally, foam strips, although very low cost, are not recommended for sash windows, and will need to be replaced regularly. Casement windows will be suitable for compression seals that sit within the window frame, and sash windows will typically have brush seals installed, which seal the gaps between top and bottom sashes when closed.

Generally, there will be no problem with fitting these to existing windows in historic buildings. For particularly noteworthy windows in listed buildings it is advisable to check with design and conservation officers before proceeding.

For more information please see **Draught-proofing windows and doors**

Glazing

SECONDARY GLAZING

Secondary glazing is available in a variety of systems to suit different window styles. Heat losses from a window could be reduced by over 60% by using secondary glazing with a low emissivity (Low-E) hard coating facing the outside. This also has benefits in terms of noise reduction. There are a variety of systems – those that are openable – hinged or sliding, fixed, and lightweight removable. In all cases careful thought should be given to how to access original windows for cleaning and maintenance.

Secondary glazing will generally be possible for all types of historic property, subject to obtaining listed building consent (where relevant). For best results it should be combined with a refurbishment of existing single glazed windows. However, draught- proofing should not be applied to the original window to maintain ventilation and avoid condensation. Double glazed secondary glazing may be an option particularly where noise is a significant issue. When considering the historic fabric of a building, secondary glazing is a lower risk option than replacing existing historic glazing with thermal single or double glazing as secondary glazing is reversible.

For more information please see **Secondary glazing for windows**

THERMAL SINGLE, DOUBLE (OR TRIPLE) GLAZING

Use of energy efficient glazing and modern double-glazed windows can achieve improved thermal performance as well as security and acoustic benefits. There are slim profile options as well as those with low emissivity coatings which improve performance. These are appropriate in conservation areas, subject to detail and in some situations in listed buildings. Upgrading of existing historic windows to incorporate slim profile double glazing is also possible where this can be achieved without harm to significance. This will only be acceptable where windows are of types robust enough to accommodate the increased thickness and weight of double glazing without significant alteration. Thermal single glazing could also be acceptable where the existing window cannot be adapted to take double glazing. Where historic windows to a listed building contribute positively to special interest and these cannot be upgraded without harm to significance, they should be retained, repaired and consideration given to draught-proofing and secondary glazing or other benign and reversible methods of upgrading to improve thermal efficiency.

The PassivHaus standard, which aims to achieve very high levels of thermal insulation and air tightness is most appropriate for new build developments. Retrofit projects are unlikely to achieve the same levels of energy efficiency as the Passivhaus standard because many of the elements, like orientation and structure, are already decided. To meet the high levels of air tightness required a building would typically fit triple glazing which is not always appropriate for existing buildings. However, **EnerPHit** is the Passivhaus certificate for achieving highly energy-efficient home retrofits. The EnerPHit standard recognises this difficulty and sets the required performance at a lower level than Passivhaus to accommodate working with existing buildings.

For more information see **Modifying historic windows.**

Key considerations

Wildlife in the UK is protected under the Wildlife and Countryside Act (1981) (as amended). Before you start any works to a property you need to make sure wildlife and protected species would not be affected. Before undertaking works, check the roof space for bird / bat roosts and other urban wildlife dependent on buildings for shelter. Any works that would affect breeding birds and their nests, such as works of demolition, vegetation removal or site clearance, should be done outside the nesting season from 1 of March to 31 July inclusive. Also note that any scaffolding even for minor external works can prevent birds accessing their nest sites in buildings. Bats use existing holes and gaps in trees and buildings for nesting. They can fit in gaps as small as a human thumb, so be mindful of missing tiles or gaps within the roof soffits before you start any works.

Heating and Energy

Efficiencies in heating can be made by reducing sources of thermal discomfort and by choosing to heat the people rather than the air (especially when local sources use low-carbon energy). For space heating and cooling, adjusting the thermostat can deliver great benefits. When boilers need to be replaced, low carbon equipment should be chosen. In this way, significant energy and carbon savings can be made without adverse effects on the fabric of the historic building, its character, or its setting.

BOILER UPGRADE

Without proper programmable heating controls, the benefits of a more efficient condensing boiler will not be realised. Therefore, thermostats should be programmable 'Chrono-proportional' thermostats on a timer, enabling a number of different programmable room temperature levels each day. These should be combined with TRV (Thermostatic Radiator Valves) in each room (except the room where the thermostat is located, and the bathroom) which switch off the heating in a room when it reaches the required temperature. Such systems can be wireless, which mean that no wiring or making good following works is required.

The government has indicated that there will be a ban on gas and oil boilers in new homes from 2025 and that replacement gas and oil boilers will be phased out by the mid-2030s.[12]

GROUND AND AIR-SOURCE HEAT PUMPS

Air source heat pumps take warmth from the air and use an evaporator coil to supply heating or hot water to a building. A system consists of an external unit, usually near a wall, though it can be located away from the building (requiring a clear amount of space either side for air circulation), and an internal unit with a hot water cylinder.

12 **Energy white paper; powering our net zero future** (December 2020)

Ground source heat pumps consist of pipes underneath the ground which extract warmth to supply heating or hot water to a building. It consists of a loop of pipes filled with water and antifreeze, laid horizontally, in a trench or vertically (up to 100m deep). The fluid in the pipes warms up and passes through a heat exchanger in the heat pump converting it to high grade heat. To install ground source heat pumps requires a certain amount of space externally.

Heat pumps require electricity to run, so are not strictly speaking renewable, but are a low carbon source of energy.

The installation of heat pumps on domestic premises are permitted development in some circumstances, meaning they don't need planning permission, providing they meet certain conditions as set out in Figure 10 and on the **Planning Portal website**[13] and residents are encouraged to contact the council to confirm whether planning permission is required before starting works.

Heat pumps are best suited to buildings with good insulation levels. If homes do not already have good levels of insulation, this will need to be added internally or externally depending on local circumstances. Heat pumps work better with underfloor heating but radiators can be upgraded to accommodate the lower output from heat pumps. Heat pumps need to be accessible for maintenance and so retrofitting into high-rise blocks will require a suitable balcony, roof or communal area nearby or an internal 'exhaust' unit. Electric heat retention storage heaters could be considered as an alternative for properties that cannot have a heat pump installed.

For more information please see **Heat pumps**

SOLAR PHOTOVOLTAIC

Solar PV panels convert energy from the sun into electricity. The installation of PV panels can significantly reduce CO_2 emissions and help to reduce energy bills. The orientation of the roof is the critical factor in determining maximum operational efficiency of solar PV panels. They should be as close to south facing as possible, and work best at an angle of 30° to the horizontal. They should not be shaded by trees or neighbouring buildings.

An alternative to conventional solar PV panels are solar roof tiles, which are designed to look similar to normal slate roofing tiles. These may be appropriate where the roof is not original – as they would replace modern roof fabric. Where historic fabric is retained solar panels would involve less loss of original roof tiles. For more information please see **Photovoltaics (PV).**

SOLAR THERMAL PANELS

Solar thermal panels use the radiant heat of the sun to warm water in solar collectors which is pumped to a thermal store. It is most likely to be used to top-up or supplement a main system, rather than meet all of a building's water heating demand. It is well suited to domestic buildings which have a low demand for hot water. The minimum amount of space needed to be effective is around 2 – 4m², ideally between south east and south west facing, at an angle of 30° and should not be shaded by trees or neighbouring buildings. In addition to the collector panels, space is typically needed to house a large hot-water cylinder with a storage capacity of at least 120 litres, and up to 200 – 300 litres for larger buildings. Additional pipework will also be necessary.

13 **planningportal.co.uk/info/200130/common_projects/27/heat_pumps/2**

There are different types of system, direct and indirect. Direct systems heat potable water in the collector panel, and pump it to a tank for use. Indirect systems are filled with fluid (often antifreeze) which passes through the collector panel and a heat exchanger transfers heat to potable water which is separate from the fluid circulating in the panels. This slightly more complex system provides freeze and overheating protection.

Greening

GREEN ROOFS

Technologies have evolved to enable planted roofs, ensuring they have an appropriate medium to grow in and the necessary support system. A well-designed green roof will make a significant contribution to conserve and enhance biodiversity, creating green corridors. They also are beneficial in managing flood risk, as they attenuate rainwater, reducing the likelihood of flooding from surface water runoff. There is also some evidence that they act to reduce overheating (and reduce the urban heat island effect), reduce CO_2 emissions, absorb noise and trap air pollutants.

A heavier intensive roof, requiring a greater load bearing capacity, may be less achievable on historic buildings. See the Green Infrastructure chapter for more information on green roofs.

Key Considerations (retrofit projects)

All developments involving retrofit of existing buildings are encouraged to meet the targets set out in LETI Climate Emergency Retrofit Guide. These represent best practice and go beyond the fabric performance of BREEAM domestic refurbishment. The council will consider using the LETI targets as a benchmark in the next iteration of the City Plan.

Information Required (retrofit projects)

Applicants should set out how they have complied with the above guidance in their Sustainable Design Statement or Design and Access Statement and are encouraged to include a retrofit plan, as set out above. Where heritage assets are affected, the heritage statement should set out how the proposed changes may impact on a building's heritage significance and address the balance between heritage harm and public benefit in line with paragraphs 201 and 202 of the NPPF and City Plan Policy 39.

Required Standards (retrofit projects)

A whole building approach is expected for retrofit development.

Where heritage assets are affected, applicants should set out the options which have been considered, and how any technical risks and impacts on heritage significance have been addressed, where relevant. The design and access/ heritage statements should demonstrate that harm has been avoided in the first instance and, where harm is caused, demonstrate that the least harmful option is being pursued, and justify that the proposed solution improves building performance.

Applicants are encouraged to use their Sustainable Design Statement and/or Design & Access Statement to explain how any proposed changes are delivering a public benefit in delivering exemplar schemes to mitigate and adapt to climate change and achieving standards beyond policy compliance.

Developers should seek opportunities to minimise the use of mains water and incorporate measures such as smart metering, water saving and recycling measures to help to achieve lower water consumption rates.

Table 10: Retrofit Measures – risks and issues and heritage considerations

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Loft and roof insulation	Low risks if installing between existing joists, but ensure an air gap around edges of loft to avoid damp and allow air to circulate. Cold roof insultation is most likely to be appropriate. Installation of insulation at rafter level has more risks associated. Breathable insulation materials should be used.	Acceptable and permission not required as long as it doesn't alter external appearance of roof.	Acceptable and permission/ consent not normally required as long as it doesn't alter external appearance of roof or involve modification of roof structure.	Acceptable and permission not required as long as it doesn't alter external appearance of roof.
Floor insulation (suspended timber floors)	Low risk, but care needed when lifting floorboards. Ensure air bricks are not covered by insulation as circulating air is needed to prevent damp and rot. Breathable insulation should be used.	Acceptable, internal alterations of an unlisted property in a conservation area don't require planning permission.	Likely to be acceptable subject to detail.	Acceptable/ Permission not required.

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Boiler upgrade	Low risk	Will generally be acceptable ideally should be located on the rear of a property and next to existing downpipes. If an existing flue is lawful and proposed new one is of the same dimensions it probably won't require planning permission to replace. A flue is permitted development on a dwellinghouse (not including flats) subject to the height of it not exceeding the roof by more than 1m, and in a conservation area not fronting a highway or being on principal or side elevation.	Likely to be acceptable where the flue is positioned in a visually discreet location on the rear elevation, ideally next to existing downpipes. If an existing flue is lawful and its replacement is proposed with a new one of the same dimensions, it is unlikely to require planning permission. Listed building consent would be required for the flue and for any internal alterations.	A flue is not permitted development for flats. Planning permission would be required for any flue that would materially affect the external appearance of the building. Would be permitted development for a dwellinghouse subject to it not exceeding the highest part of the roof by 1m or more. If an existing flue is lawful and proposed new one is of the same dimensions it probably won't require planning permission to replace.
Heating controls	Low risk	Internal alterations do not require planning permission.	Does not require planning permission or listed building consent.	Internal alterations do not require planning permission.
Micro Combined Heat and Power (CHP)	Low risk	In a conservation area, a flue for CHP on a dwellinghouse (here including flats) would be permitted development except where it is more than 1m above highest part of roof or a wall or roof slope which fronts a highway.	Acceptable where any flue should be positioned in a visually discreet location on the rear elevation. Listed building consent would be required for the flue and for any internal alterations.	Planning permission for a flue for CHP on a dwellinghouse (here including flats) not normally required, and the flue will be permitted development up to a maximum of 1m above highest part of the roof.

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Ground source heat pumps	Low risk (requires well-insulated buildings)	Permitted development for dwellinghouses (including buildings wholly consisting of flats).	Listed building consent would be required.	Permitted development for dwellinghouses (including buildings wholly consisting of flats).
Air source heat pumps	Low risk (requires well-insulated buildings)	Permitted development for dwellinghouses or a block of flats, subject to certain restrictions. Air Source Heat Pumps which are not permitted development must conform to City Plan policy. Those which are permitted development should minimise effect on amenity of the area. One way of doing this is by complying with the noise standards. Seek advice from acoustics team in Environmental Health for larger/noisier systems.	Acceptable where the external unit is positioned in a visually discreet location. Noise may be an issue where planning permission is required. Air Source Heat Pumps which are not permitted development must conform with City Plan policy. Those which are permitted development should minimise effect on amenity of the area. One way of doing this is by complying with the noise standards. Seek advice from acoustics team in Environmental Health for larger/noisier systems. Listed building consent would be required.	Permitted development for dwellinghouses or a block of flats subject to certain restrictions including their use only for heating. Air Source Heat Pumps which are not permitted development must conform to City Plan policy. Those which are permitted development should minimise effect on amenity of the area. One way of doing this is by complying with the noise standards. Seek advice from acoustics team in Environmental Health for lager/noisier systems.

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Water efficiencies	Low risk – In all locations we recommend water butts are discreetly located where possible, for example to the rear of the property.	Internal measures such as water-saving showerheads and taps and external rainwater harvesting such as water butts do not require planning permission.	Internal measures such as water-saving showerheads and taps do not require planning permission. Listed building consent for external rainwater harvesting such as water butts is unlikely to be required unless directly fixed to historic/ original fabric	Internal measures such as water-saving showerheads and taps do not require planning permission. External rainwater harvesting such as water butts do not usually require planning permission, but in areas where there is an **Article 4 Direction** you may require permission if located on principal elevations/ fronting the highway.
Draughtproofing	Medium – Advice may be needed on ventilation and condensation.	Internal alterations of an unlisted property in a conservation area don't require planning permission.	Likely to be acceptable in most cases without listed building consent, although where the windows are especially important advice should be sought from design and conservation officers before proceeding.	Internal alterations of an unlisted property do not require planning permission.
Secondary glazing	Medium – Advice may be needed on ventilation and condensation. Take care not to damage existing windows and shutters (if present).	Acceptable Internal alterations of an unlisted property in a conservation area don't require planning permission.	Will generally be acceptable, subject to detailed design. Listed Building consent will be required.	Acceptable. Internal alterations of an unlisted property do not require planning permission.

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Thermal single or Double glazing	Medium–Advice may be needed on ventilation and condensation	Acceptable but windows should be well-designed and detailed to reflect the character of the existing building. Planning permission will be required for flats where new windows materially affect the external appearance of the building, e.g. where the frame size changes; opening mechanisms change or materials for the window change. For a dwellinghouse (not flats) this is permitted development but is subject to certain conditions.	Thermal single glazing or slim profile double glazing will be acceptable where this can be installed without harm to significance. Listed Building consent will be required, and this is most likely to be appropriate where historic windows have been replaced with ones whose design are of poor quality installed to a modern extension or later part of the buildings.	Acceptable subject to detailing. Planning permission will be required for flats where new windows materially affect the external appearance of the building, e.g. where the frame size changes; opening mechanisms change or materials for the window changes. For a dwellinghouse (not flats) this is permitted development subject to certain conditions.

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Solar photovoltaic system (PV electric panels)	Medium – Specialist installation advice needed and possibly a feasibility study or structural survey to ensure the roof structure will bear the weight of the panels. Have a supply of replacement roof tiles in case these are broken during installation.	This is permitted development, even on the roofs of principal elevations of dwellinghouses and flats in conservation areas, subject to it being 'sited so as to minimise its effect on the external appearance of the building and the amenity of the area', i.e. where there are alternative options for installation, the location which minimises the visual and amenity impacts must be selected. Would not be permitted development: – If it protrudes more than 20cm from the roof slope; – If it is higher than the highest part of the roof (excluding chimney); and – In a conservation area, on a wall which fronts a highway.	Will generally be acceptable in a discreet location, where not visible from surrounding properties (e.g. internal valley roof or flat wall behind a parapet). Listed building consent will be required.	This will not generally require planning permission as it is permitted development on any roof or wall slope of dwellinghouses and flats, subject to it being 'sited so as to minimise its effect on the external appearance of the building and the amenity of the area', i.e. where there are alternative options for installation, the location which minimises the visual and amenity impacts must be selected. Not permitted development if it protrudes more than 20cm from roof slope or is higher than the highest part of the roof (excluding chimney).

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Solar thermal panels	Medium – Specialist installation advice needed and possibly a feasibility study or structural survey to ensure the roof structure will bear the weight of the panels. Have a supply of replacement roof tiles in case these are broken during installation.	This is permitted development, even on the roofs of principal elevations of dwellinghouses and flats in conservation areas, subject to it being 'sited so as to minimise its effect on the external appearance of the building and the amenity of the area', i.e. where there are alternative options for installation, the location which minimises the visual and amenity impacts must be selected. Would not be permitted development: – If it protrudes more than 20cm from the roof slope; – If it is higher than the highest part of the roof (excluding chimney); and – In a conservation area, on a wall which fronts a highway.	Will generally be acceptable in a discreet location, where not visible from surrounding properties (e.g. internal valley roof or flat wall behind a parapet). Listed building consent will be required.	This will not generally require planning permission as it is permitted development. Not permitted development if it protrudes more than 20cm from roof slope or is higher than the highest part of the roof (excluding chimney), on any roof or wall slope of dwellinghouses and flats, subject to it being 'sited so as to minimise its effect on the external appearance of the building and the amenity of the area', i.e. where there are alternative options for installation, the location which minimises the visual and amenity impacts must be selected.

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Green roof	Medium – Specialist installation advice needed and possibly a feasibility study or structural survey to ensure the roof structure will bear the weight of the substrate; permeability of roof membrane by plant roots, and that any height of balustrade is sufficient, and structure has sufficient capacity to bear the load, where it is used as amenity space, although this would be less likely to be viewed favourably.	Planning permission required where depth of build-up is greater than 150mm, which is fairly likely with a well designed living roof. However for dwellinghouses where the build-up is less than 150mm and doesn't exceed highest part of the existing roof this is likely to be permitted development, but this would be for flat roofs in a discreet location (not pitched roofs) but note proposals for 'intensive' living roofs which can be used as an amenity space would be less likely to receive permission. For flats planning permissions would be required.	Acceptability will depend on impact upon significance. May be acceptable on an existing flat roof in a discreet location such as behind a parapet wall. Listed Building Consent and Planning Permission will be required.	Planning permission required where depth of build-up is greater than 150mm, which is fairly likely with a well-designed living roof. However for dwellinghouses where the build up is less than 150mm and doesn't exceed highest part of the existing roof this is likely to be permitted development, but this would be for flat roofs in a discreet location, (not pitched roofs) but note proposals for 'intensive' living roofs which can be used as an amenity space would be less likely to receive permission. For flats planning permissions would be required.

		Permissions required		
Upgrade	Risks, Issues and considerations	Unlisted within a conservation area	Listed building	Unlisted outside a conservation area
Internal solid wall insulation	Very high – Specialist advice and installation required due to possible moisture and ventilation problems. Breathable insulation should be used.	Internal alterations of an unlisted property in a conservation area don't require planning permission. However, you are advised to speak specialist advice if this is proposed to a building of traditional construction.	Acceptability will depend on impact on significance and fabric. Would require listed building consent for changes affecting the building's character as one of special architectural or historic interest, such as materials, details and finishes. This may be granted in spaces of lesser significance where original finishes have already been lost but impact on fabric needs consideration.	Internal alterations of an unlisted property don't require planning permission. However, you are advised to speak specialist advice if this is proposed to a building of traditional construction.
External solid wall insulation	High – Specialist advice and installation required due to possible moisture and ventilation problems. Breathable insulation should be used.	In certain circumstances external wall insulation may be possible, such as on the rear elevation, in an enclosed situation (not part of a unified terrace) where the materials used are of a similar appearance to the existing building or extension. Planning permission will be needed in all cases for external wall insulation comprising or including the following: stone, artificial stone, pebble dash, render, timber, plastic or tiles.	This is generally not considered appropriate for listed buildings but this will depend on the impact on significance, as well as potential impacts on fabric. Planning permission and listed building consent would be needed.	Central Government guidance suggests this is permitted development on the principal elevation (or other elevations) of a dwelling house (not flats) subject to the material being of a similar appearance to the existing building or extension.

New Buildings and BREEAM

For the council to assess the impact of a proposed new building it is necessary to evaluate the environmental performance of the building in the round. BREEAM (Built Research Establishment Environmental Assessment Methodology) is the most established environment assessment methodology that rates and certifies the performance of buildings by assessing a broad range of sustainability issues and categories. The standard is set out in City Plan policy 38 E. This assessment methodology can be applied to a range of buildings from residential to offices. There are environmental assessment methodologies on the market including LEED (Leadership in Energy and Environmental Design), WELL Building Standard and PassivHaus. If consideration is being given to a non-BREEAM methodology a pre-application discussion should be undertaken for the council to understand how BREEAM equivalent standards will be achieved.

Development Requirements

Required Standards

All developments must integrate and positively address the sustainable design principles in policy 38 and are encouraged to aim to achieve the highest possible BREEAM standards. The City Plan also sets requirements in policy 38E for minimum BREEAM standards for development of certain types and sizes:

Development Type	Size of Development	Standard Required
Non-Domestic	500sqm (GIA) or greater	At least BREEAM Excellent or equivalent
Residential conversions and extensions	Conversions or extensions which create 500sqm (GIA) or greater of residential floorspace or five or more residential units	BREEAM Excellent (BREEAM domestic refurbishment) or equivalent

Non-Domestic as referred to above includes some communal living accommodation such as hotels.

Developers should seek opportunities to minimise the use of mains water and incorporate measures such as smart metering, water saving and recycling measures to help to achieve lower water consumption rates in line with London Plan policy SI 5 Water Infrastructure. New residential developments must show that they are capable of achieving maximum internal mains water consumption of 105 litres per person/day excluding an allowance of five litres per person/day for external water use. Commercial development should achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent

Information Required

Evidence is expected to be submitted to demonstrate the BREEAM standards are met or exceeded.

This information is provided in two stages:

1. Planning application stage – using a BREEAM pre-assessment estimator submitted as part of the energy or sustainability strategy. This pre-assessment sets out the targeted credits and proposed measures in the scheme in accordance with different BREEAM methodology themes. It provides a narrative on the design and an indication of the likely score (and associated overall BREEAM rating to be achieved) which can be checked by officers at application stage.
2. Pre-occupation – usually secured by a condition attached to the application to be discharged prior to occupation. This is evidenced by the final or post-construction certification of the scheme by BREEAM confirming the level achieved. If BREEAM certification has not been provided prior to occupation, the council will consider an extension to this timeframe to avoid buildings lying empty.

Where an alternative methodology is being used requirements should be agreed in advance through pre-application discussions.

Applicants should show that sustainable design requirements within City Plan policy 38 have been met through a Design and Access Statement or Sustainable Design Statement where applicable.

MONITORING

City Plan Key Performance Indicator 17: Number of developments of thresholds set out in policy achieving BREEAM excellent (or equivalent) Standard

City Plan Key Performance Indicator 31: Number of designated heritage assets completely demolished/lost

APPENDIX 1


ADIDAS
03

The council intends to develop a locally specific Urban Greening Factor (UGF) based on the Wild West End (WWE) Matrix. This will require preparation of a local evidence base, including a Green Infrastructure Strategy. This will be reflected in the next iteration of the City Plan and ESPD.

The Wild West End (WWE) Value Matrix, developed by Westminster's largest property owners, is a set of criteria to help establish best practice and ensure high quality delivery when creating new green space in the city's dense urban environment. There are criteria set out depending on the function of the green space that should be met. Green spaces should aim to have at least two functions to be considered multi-functional. This matrix assigns values to the green space:

- Biodiversity (n.b. The forthcoming Environment Act mandates that all developments must achieve net gain for biodiversity of 10% and developers are required to submit a biodiversity gain plan with their applications);
- Climate;
- Microclimate;
- Wellbeing; and
- Social.

Values are assigned based on the above factors and the greater number of functions that a site fulfils, the greater value it has. This qualitative approach means that play facilities for young people and sustainable drainage, for example, for a local housing project, can co-exist by design rather than by default. Pocket parks and smaller areas of open space can be as valuable as large sites as they have a range of functions for the people that use them. This incremental approach is also valuable for overall greening of the whole city and cumulatively addressing deficiency. Incorporating green infrastructure onto walls and buildings is hugely valuable additional infrastructure.

Wild West End Green Space: Functional Value Matrix (Source Wild West End)

Function	Biodiversity		Climate		Microclimate
	Connectivity	Habitat provision	Water management	Energy & Carbon	Air quality
General Requirements (for all green space typologies)	Provision of a wide mix of pollen rich species with seasonal variety; and / or Provision of fruiting trees or shrubs bring variation in biodivesity benefits, mistletoe establishment.	Consideration of the type and quantity of habitats provided (e.g. wildflower meadow, native shrub planting, hedgerow or pond); and Inclusion of correctly installed and orientated species features such as: – Bird boxes (generic or specific) – Bat boxes – Invertebrate boxes	Demonstrate significant retention and re-use of rainwater on site such as: – Incorporation of areas for water attenuation during rainfall events such as swales or depressions – Rainwater collection and re-use from adjacent buildings and hard surfaces and Provision of hardy, drought tolerant planting that requires no or minimal irrigation. and Where practical, the provision of mulch to all planted areas to help retain moisture.	Incorporation of sustainable energy generation where part of a wider energy strategy; and / or Demonstrate reduction of energy usage in associated buildings, such as reduced heating / cooling cost; and Demonstrate the provision of suitable measures to optimise carbon sequestration/ reduction (e.g. the use of low embodied carbon materials; consideration of the end of life use of materials; and selection of planting species to maximise carbon sequestration over their lifetime).	Demonstrate the identification of suitable measures to improve air quality based on site conditions. These may include: Provision of large species trees (15m+); and / or Incorporation of species with higher leaf density and a variety of textures to help capture and filter particulates; and / or Provision of hedges / trees / green walls to create a buff er to adjacent trafficked areas; and Consideration of pollution tolerant species, such as trees with flaking bark.

	Well-being		Social	
Thermal comfort	Sensory	Active	Engagement	Interaction
Provision of features such as large trees, trellises or green walls to provide shade and shelter; and / or Provision of open moving water such as fountains, to provide cooling benefits.	Provide opportunities for relaxation and stimulation such as: – Seating areas for quiet contemplation – Visually attractive planting with a variety of textures, colours and seasonal variation – Scented planting such as herbs and flowering species – Sound and movement through planting and water features	Where accessible, provide opportunities for sport and recreation such as: – Sports courts – Play areas – Exercise equipment – Running tracks and / or Provide opportunities for informal exercise such as: – Walking routes with seating – Natural play – Gardening	Where accessible, provide opportunities for customers to directly engage with the space and inform physical changes or usage and activities, such as: – Gardening club – Resident's committee – Social planning group or For inaccessible spaces, provide opportunities for local residents / workers to directly engage with the space and inform the management and maintenance. Ensure that users are aware of the wider benefits, aims and objectives of the installation.	Where accessible, provide opportunites for formal interaction, such as: – Sports clubs; – Gardening clubs – Play groups and / or Provide opportunities for informal social interaction, such as: – Group seating areas – Play spaces – Picnic tables – Technologically enabled area (to encourage outdoor working)

Function		Biodiversity		Climate		Microclimate
		Connectivity	Habitat provision	Water management	Energy & Carbon	Air quality
Feature-specific requirements (to be considered in addition to the general requirements)	Green / blue roof	Where planted, ensure a minimum 50% coverage (seeding and/or plug planting) with native wildflower, herbs and grasses; and Where sedum is additionally proposed, at least four sedum species should be included.	Provide a minimum of two types of substrate with a range of depths to provide values to a wider variety of species.	The inclusion of void formers to allow for the retention of water on the roof (blue roof system); or Provide a variety of depths of substrate and areas of shallow depressions to allow for greater water retention.	Maximise substrate to optimise carbon sequestration. (>200mm)	Demonstrate measures to reduce the exposure of the green space to extreme wind or sunlight conditions often experienced at roof level.
	Green wall	A minimum of three species should be incorporated.	N/A	Where practicable, soil-based systems should be used; and Ensure the provision of integrated water storage for irrigation.	N/A	Consideration of the location of the green wall in relation to prevailing winds / localised air movement.
	Public realm	Provide strategic links to existing green spaces. Where window boxes and hanging baskets are installed, ensure at least 60% of planting is nectar/pollen-producing flower species.	Designs should be sensitive or complementary to the ecology of adjacent green spaces.	The provision of cellular storm water storage system around tree roots or integrated with areas of planting; or Ensure the provision of a large permeable surface area at the base of the tree/ adjacent to soft landscape areas.	N/A	Planting of hedgerows as an alternative to fencing or other hard boundary treatments.
Indoor greening		N/A	N/A	Provision of planting that requires no or minimal irrigation.	Consider species which require low energy requirements. For example, plants that avoid use of artificial lighting.	Selection of species which benefit indoor air conditions such as provision of oxygen and capture of harmful indoor pollutants.

	Well-being		Social	
Thermal comfort	Sensory	Active	Engagement	Interaction
N/A	N/A	N/A	N/A	N/A
Consider the location of vertical greening. For example living walls on southern facing façades can cool both the building. and adjacent public realm.	Consideration of opportunities for noise absorption in the location of the green wall.	N/A	N/A	N/A
Where tree planting is included, consider species type and location. For example large deciduous trees adjacent to southern face of buildings will provide protection from the sun and passive cooling of building in the summer and allow more light in winter; and / or Provision of avenue of trees adjacent to tall buildings to reduce the effects of downdrafts and wind tunnelling.	Where tree planting is considered, select species to provide movement, texture and seasonal interest and to help create a 'sense of place'; and / or Adjacent to buildings, provide large species trees so that the canopy is visible from higher level windows.	Provision of tree-lined streets or other visible green features such as swales which can help promote walking and cycling through improved external conditions; and Consideration of linkage and connectivity with other areas of green space.	N/A	Provide opportunities for people to interact with the space, such as: – Art installations – Programme of actvities or events throughout the day / season.
N/A	Provide opportunities for relaxation and stimulation through visually attractive planting with a variety of textures, colour and scent.	N/A	Ensure that users are aware of the wider benefits, aims and objectives of the installation.	Demonstrate the use of the planting to encourage social interaction (e.g. by providing noise absorption or through creative installations, such as planted seating areas that promote social interaction).

City of Westminster