APPENDIX 1

Southwark Council
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DRAFT

CLIMATE AND ENVIRONMENT

SUPPLEMENTARY PLANNING DOCUMENT (SPD)

JULY 2024

FOREWORD

Having declared a Climate Emergency in Southwark, we have focused across departments on delivering our Climate Action Plan, ensuring that we are using every tool to reduce carbon emissions and ensure that we are a borough delivering on net zero and climate resilience. Our Southwark Plan, which was agreed in 2022, includes very stretching targets on the Climate & Environment, including through our Energy Policy P60 which requires a significant reduction of operational carbon emissions through development, exceeding the requirements of the London Plan, and proposals to date around the Future Homes Standard.

This SPD provides additional guidance and best practice around implementation of our environmental sustainability policies and precedes a wider policy review of our Plan to ensure that we are line with the highest level of ambition around carbon reduction, both in operational use and through the construction process itself.

Councillor Helen Dennis
Cabinet Member for New Homes and Sustainable Development
Southwark Council

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CHAPTER 1

INTRODUCTION

1. INTRODUCTION

This section provides an overview of the Climate and Environment Supplementary Planning Document. It sets out how this guidance should be used and who should be using it. It includes a summary of what is required to achieve sustainable outcomes in line with the Southwark Plan for different types of development.

1.1 Overview

Southwark Council declared a climate emergency in March 2019. This means that the council is aiming to do all it can to make the borough carbon neutral by 2030. The Southwark Climate Change Strategy forms part of the road map to achieving this and sets out the key priorities for the council.

This SPD provides guidance to support Southwark Plan policy 'SP6 Climate Emergency'. It does not contain new policy. The SPD will be a material consideration in the determination of a planning application. It aims to help people understand climate mitigation and adaptation actions and provides advice on how to make successful planning applications that are in line with the council's Climate policies. It also sets out best practice for sustainable development in Southwark.

This guidance provides detailed, technical guidance on each of the following topics:

- Energy and sustainability standards
- Minimising flood risk and water efficiency
- Environmental protection and improving air quality
- Green infrastructure, biodiversity and trees
- Movement and transport
- Avoiding waste and minimising landfill

Following this guidance will ensure issues are avoided or mitigated early in the planning process. It provides information on how to meet the required standards for different types of applications. Refer to our website for a list of validation requirements.

1.2 What development does it apply to?

This SPD applies to all development of more than 1 unit that requires a planning application.

This includes:

- Fit outs and refurbishment to existing buildings
- Extensions to existing buildings
- New buildings
- Public domain works such as new or improved open space
- Landscaping works

The document applies to all types of land uses, including housing, offices, industrial development, retail, community and leisure facilities.

For guidance on how to consider climate and environmental issues as part of a householder application see the Householder SPD.

CHAPTER 2

ENERGY & SUSTAINABILITY STANDARDS

2. ENERGY & SUSTAINABILITY STANDARDS

This section provides guidance on the Southwark Plan 2022 policies 'P69 Sustainability Standards' and 'P70 Energy'. Plus, the London Plan 2021 'SI 3 Energy Infrastructure' and 'SI 4 Managing Heat Risks'.

2.1 BREEAM

A BREEAM assessment is a certification of environmental performance in buildings. It is a well-established best practice standard with specific assessments for different types of development.

Thresholds for submitting a BREEAM assessment

All qualifying development (listed below) is expected to be assessed against BREEAM, using the BRE guidance to assess the project at each stage of the process. If the development does not meet the criteria set out at each stage, this should be set out in the BREEAM pre-assessment.

The BREEAM certification used will vary depending on the type of development. Applicants should use:

- For new build non-residential over 500sqm use the BREEAM for New Construction certification.
- For refurbishment over 500sqm use the BREEAM Refurbishment and Fit Out certification. Newly constructed buildings can only be assessed under BREEAM Refurbishment if fit-out works are being carried out on a new-build shell only or shell & core building.
- For minor development under 1000 sqm, a single BREEAM assessment can be done to cover both the new-build and refurbished areas. A BREEAM New Construction or BREEAM Refurbishment and Fit Out can be used, depending on what the predominant use of the assessed floor area is classed as.
- For historic buildings, use notes on compliance set out in the BREEAM Assessment guidance on sustainable refurbishment of heritage buildings.

BRE BREEAM Assessment guidance provides further guidance on the different types of certifications.

Figure 1: Infographic showing the BREEAM pre- assessment ratings required for non-residential development over 500 sqm.

How to conduct a BREEAM assessment

There are four assessment options for BREEAM. The option selected depends on how the development is being handed over to future occupiers, i.e. either fully fitted, simple building, shell & core or shell only.

All developments should aim for fully fitted. Exceptions can be made in certain circumstances where a scheme is being handed over at a different stage. For example, if a development is mixed use and some components of the building will be occupied by different occupiers, it could include ground floor retail being fitted to one standard and the upper floors fitted to a higher standard.

A BREEAM pre-assessment should indicate which rating and credits are being targeted in line with the BREEAM methodology alongside a narrative on the design and indication of likely score. A Post-completion BREEAM assessment will need to be submitted to confirm the target approved in the decision notice and pre-assessment has been achieved before occupation of the building. This will be secured by condition.

Best Practice for BREEAM
Achieve a rating of 'Outstanding' in the Energy Section of the BREEAM assessment. This would be in addition to achieving Excellent overall. Achieving 'Outstanding' scores in Wat 01 and Waste 01

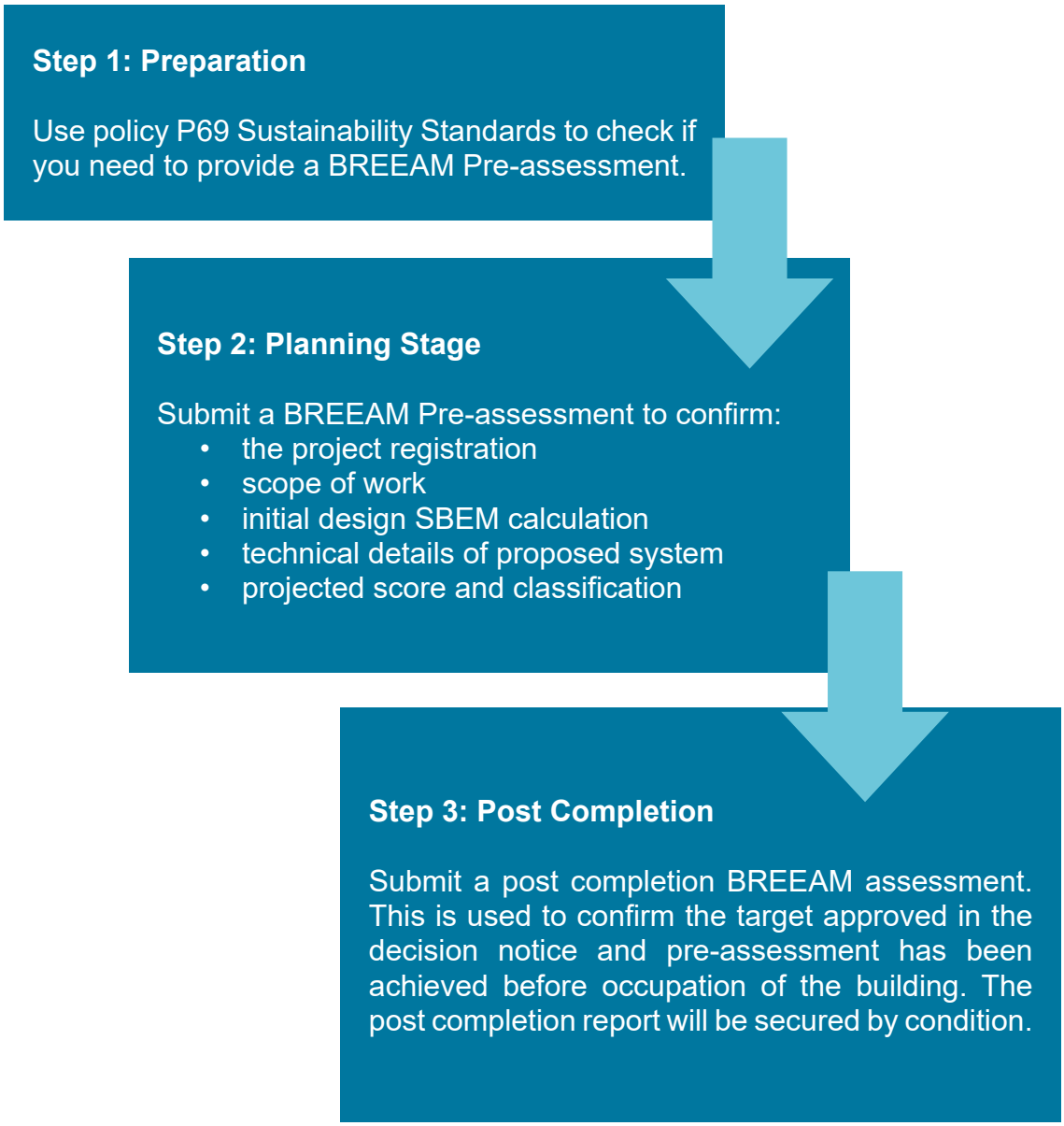

Figure 2: Flowchart showing the 3 main steps to BREEAM certification for non-residential development over 500 sqm.

2.2 Reducing water use

Applications should show how the water demand of the development has been reduced through water efficient design.

Developments should:

- Achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equal for commercial development.
- Achieve at least 1 BREEAM credit for water consumption for Non-residential development

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- Achieve a potable water use target of 105L per person per day for Residential development.
- Include a system to collect rainwater for use in external irrigation/watering, unless this is not feasible due to site constraints.
- Use 100% metering of all new buildings.
- Use highly efficient water saving fixtures, fittings and appliances.

Best Practice for water use
Residential development should achieve a potable water use target of 80L per person per day. To support this, some form of water recycling will be needed. Non-residential development should achieve at least 2 BREEAM credit for water consumption. Connect and use grey-water for all non-potable. This repurposes used water from the washing machine and shower to flush toilets and water gardens.

2.3 Implementing the cooling hierarchy

All development must follow the cooling hierarchy, as set out in Southwark Plan 2022 policy 'P69 Sustainability Standards'. This will help to manage heat risk through the design of a building.

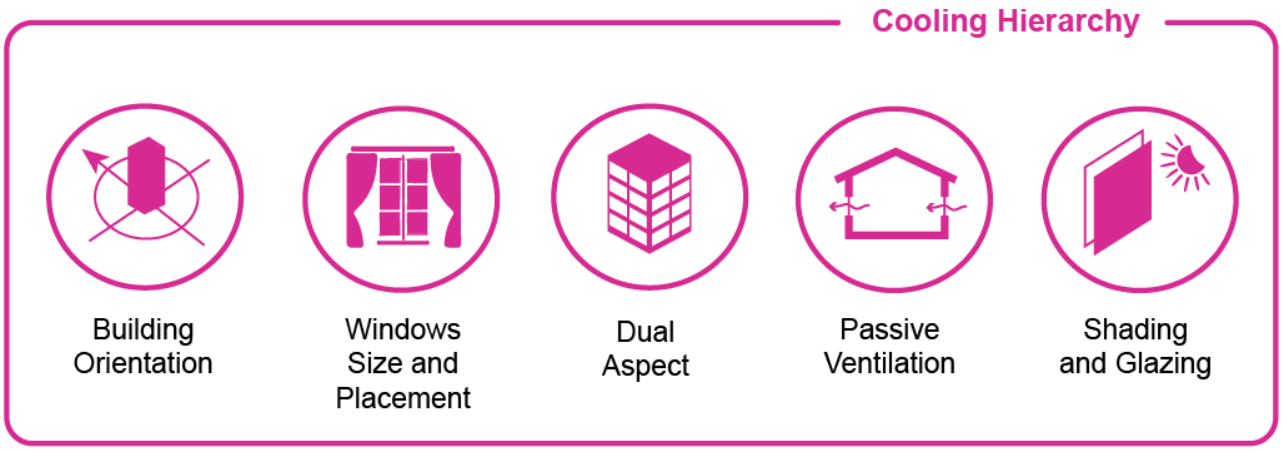

Figure 3: Infographic showing the cooling hierarchy all developments will need to follow manage heat risk through the design of a building

2.3.1 Step 1: Reduce heat entering a building

Glazing

Reducing the proportion of glazing or using solar shading can avoid overheating. G-values can be used to assess solar gains. Solar gains are a measure of how much heat is transmitted through a window from the sun's rays.

Highly glazed buildings, or a high percentage of glazing on northern elevations can contribute to heat loss in the winter. Best practice for windows is a g-value of 0.5 (for schools this can lowered to between 0.4-0.5). Avoid tinted glass or glazing films, with g values of below 0.5 as these reduce useful solar gain in winter. If overheating is a problem, it is better to reduce the proportion of glazing or use solar shading.

Glazing ratios set out the proportion of the building wall that is glazed.

Glazing ratios should be:

- up to 25% glazed on the southern elevation
- no more than 20% on the east/west elevations
- as little as possible on the northern elevation

Orientation

Glazing and external shadings are important to managing overheating risk in the summer. South-facing buildings usually have net heat gain. East/West windows can lead to overheating at the end of the day due to the low angle of the sun.

North-facing single aspect units should be avoided where possible as they can result in heat loss and have limited sunlight. Dual aspect properties have the best potential for cross ventilation and creating useful solar gain.

Residential buildings should:

- Orientate the largest building elevations within +/- 30° of South
- Maximise number of dwellings with a main living room that has at least one window on a wall facing 90° due South.

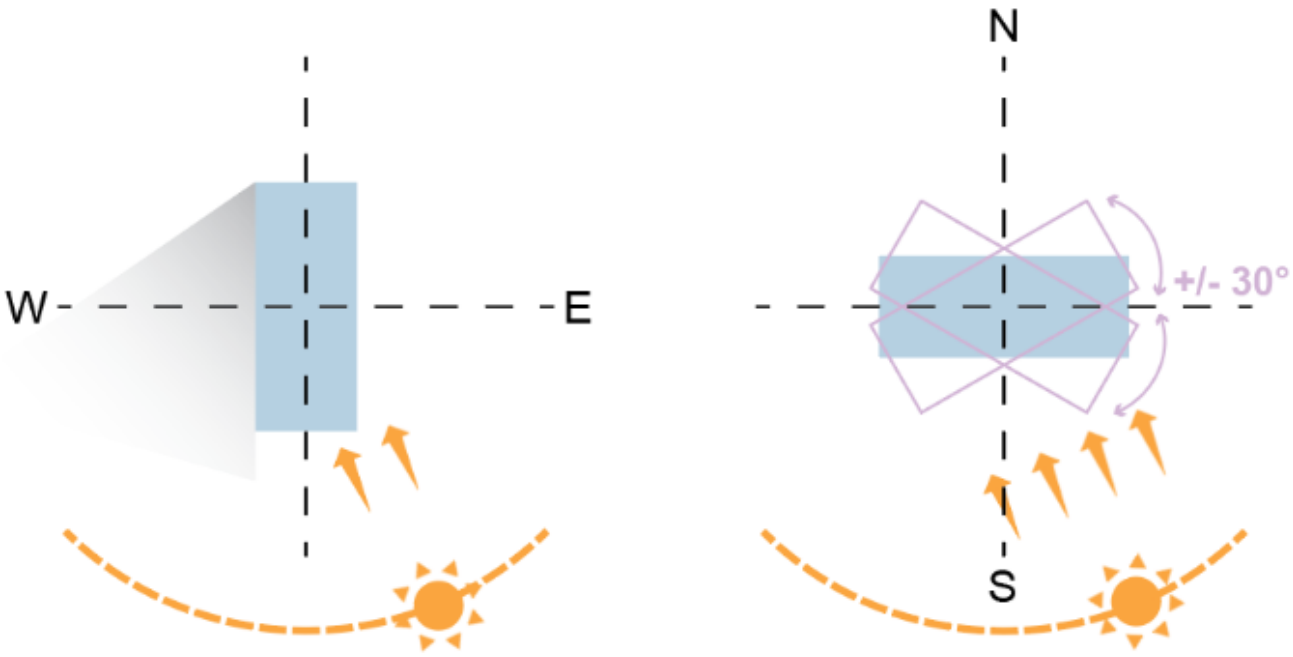

Figure 4: Diagram showing that building orientation facing +/-30° south can allow for more solar gain

External shading

Shading is most effective when external to the window, as this keeps the glass cooler and limits transfer of heat into a room. While thermal curtains are a cost-effective option, this allows the sun to hit the glass and warm the window.

Rooms with windows facing South and West should be designed with shading materials e.g. operable external blinds, shutters. For south facing windows, window shrouds are a good option. This is because they provide some shading from the high summer sun, whilst allowing the low winter sun in.

Form factor

The form factor is calculated by the surface to volume ratio (SVR). The SVR is the ratio between the building's envelope its volume. A more efficient form factor can reduce heat loss.

The ratio between the building's envelope area (EA) and the buildings volume (V) is calculated as:

SVR = EA/ V OR Total heat loss area / floor area = Form Factor

A simple and compact building form is the most efficient. This allows for more consistent installation of insulation. The suggested form factors for different typologies are below:

Typology	Suggested Form Factor
Small scale housing	1.7 - 2.5
Medium and large scale housing	<0.8 - 1.5
Commercial offices	1 - 2
Schools	1 - 3

Windows

Light-coloured materials around windows reflect daylight into buildings with overhangs or inset balconies. Using lighter materials internally can increase light.

Permeable railings can also allow light through.

Roof

White roofs or light colours on the roof and facades helps to reflect heat. Green infrastructure can also be used to keep the building cool.

Careful modulation of wall heights and roofscape can maximise daylight and sunlight into rooms. Roof overhangs, recessed windows and other solar shading can reduce the amount of direct sunlight from high-sun angles during summer months.

2.3.2 Step 2: Minimising internal heat generation

Pipe lengths should be kept minimal in heat distribution infrastructure within buildings – especially for lateral pipework in corridors of apartment blocks. Pipe configurations which minimise heat loss e.g. twin pipes, should be adopted.

2.3.3 Step 3: Managing the heat within the building through exposed thermal mass and high ceilings

Materials with a high thermal mass e.g. concreate, bricks, rammed earth, hempcrete could be used, especially for lateral pipework in corridors of apartment blocks.

2.3.4 Step 4: Passive ventilation

At the earliest design stage, the potential for natural ventilation should be considered. Buildings can be naturally ventilated by wind-driven ventilation or stack ventilation.

Cross ventilation across buildings and rooms can help with temperature control by creating a draft through a room. This can be through windows, doors, vents. High openable windows/ vents allow hot air to escape, and low-level windows allow cool air to enter a space.

Single sided ventilation does not allow for sufficient ventilation.

Cross ventilation with a chimney can be useful for flatted development to allow for more cross ventilation. This can also reduce the reliance and / or need for mechanical ventilation.

Successful natural ventilation is where there are a sufficient number of air changes per hour for the use of a building and the number of occupants. Part F Ventilation Building Regulation sets out how many air changes per hour are required to ventilate a building. Part O Overheating Building Regulation may require more than this to manage heating risk.

Major residential development should:

- Undertake dynamic overheating modelling in line with GLA and CIBSE Guidance using TM59 and TM49.
- Building Regulation Part O Compliance should also be considered throughout the design process.

Major non-residential should:

- Undertake dynamic overheating modelling in line with GLA and CIBSE Guidance using TM52 and TM49.

2.3.5 Step 5: Mechanical ventilation

Materials with a high thermal mass e.g. concreate, bricks, rammed earth, hempcrete could be used. especially for lateral pipework in corridors of apartment blocks.

Mechanical Ventilation with Heat Recovery (MVHR) units should be used if mechanical ventilation is required. These units use warm outgoing air to preheat incoming cold air through a heat exchanger. This provides ventilation while extracting and recirculating existing heat from within a building. MVHR's need a lot of electricity so the units should be highly efficient. They should be used in buildings that are very airtight to maximise their efficiency.

2.3.6 Step 6: Active cooling systems (ensuring they are the lowest carbon options)

Water based cooling systems run cold water through pipes in the floor and / or ceiling to cool the air.

Ground source cooling can be provided by a 'ground source heat pump'. In summer where the ground is cooler than the air, the difference in temperature can be used for cooling.

All major referable development must:

- Follow the GLA overheating requirements. This includes using the Good Homes Alliance Early-Stage Overheating Risk Tool.

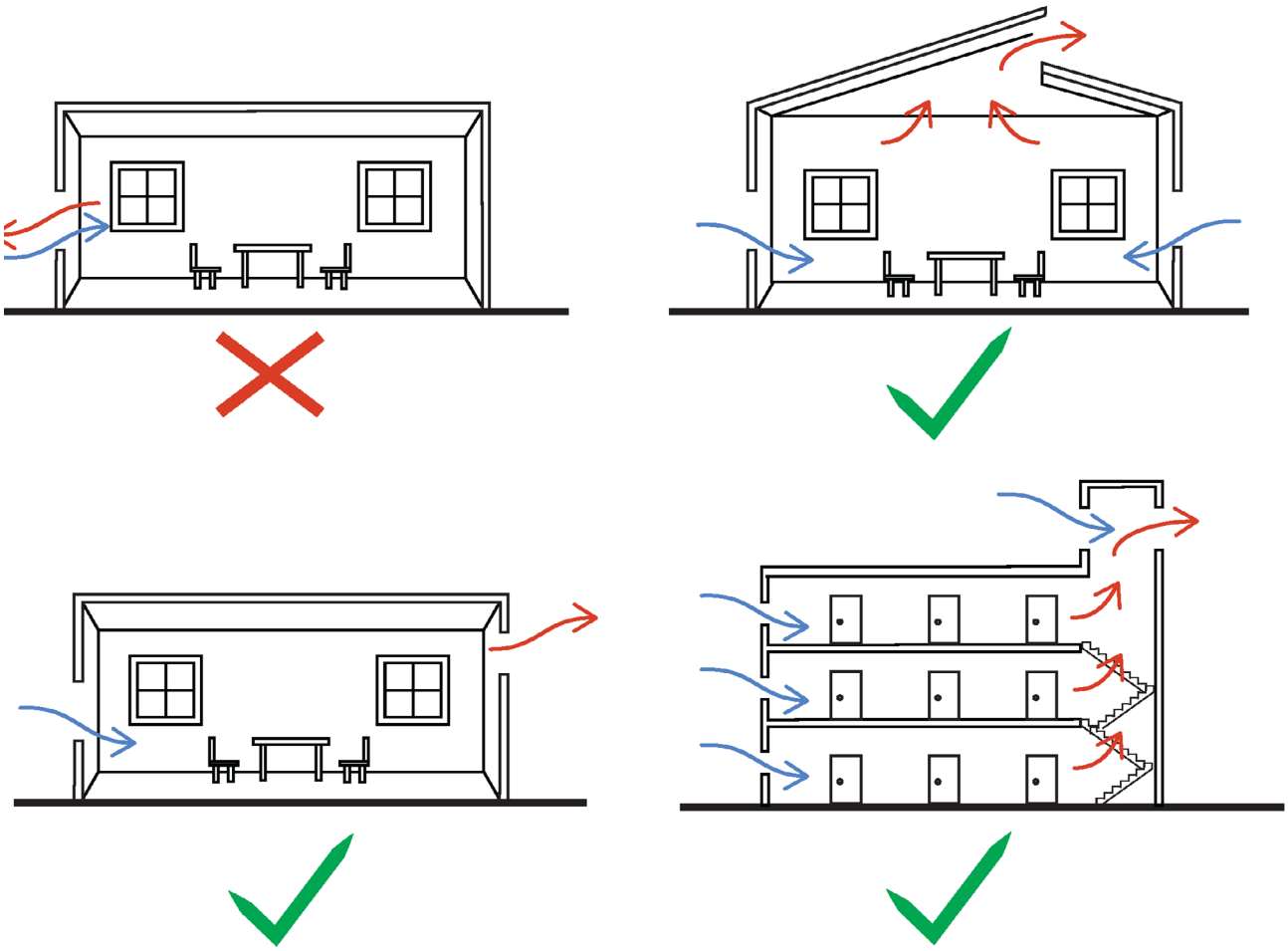

Figure 5: Diagram showing acceptable and unacceptable options for passive ventilation

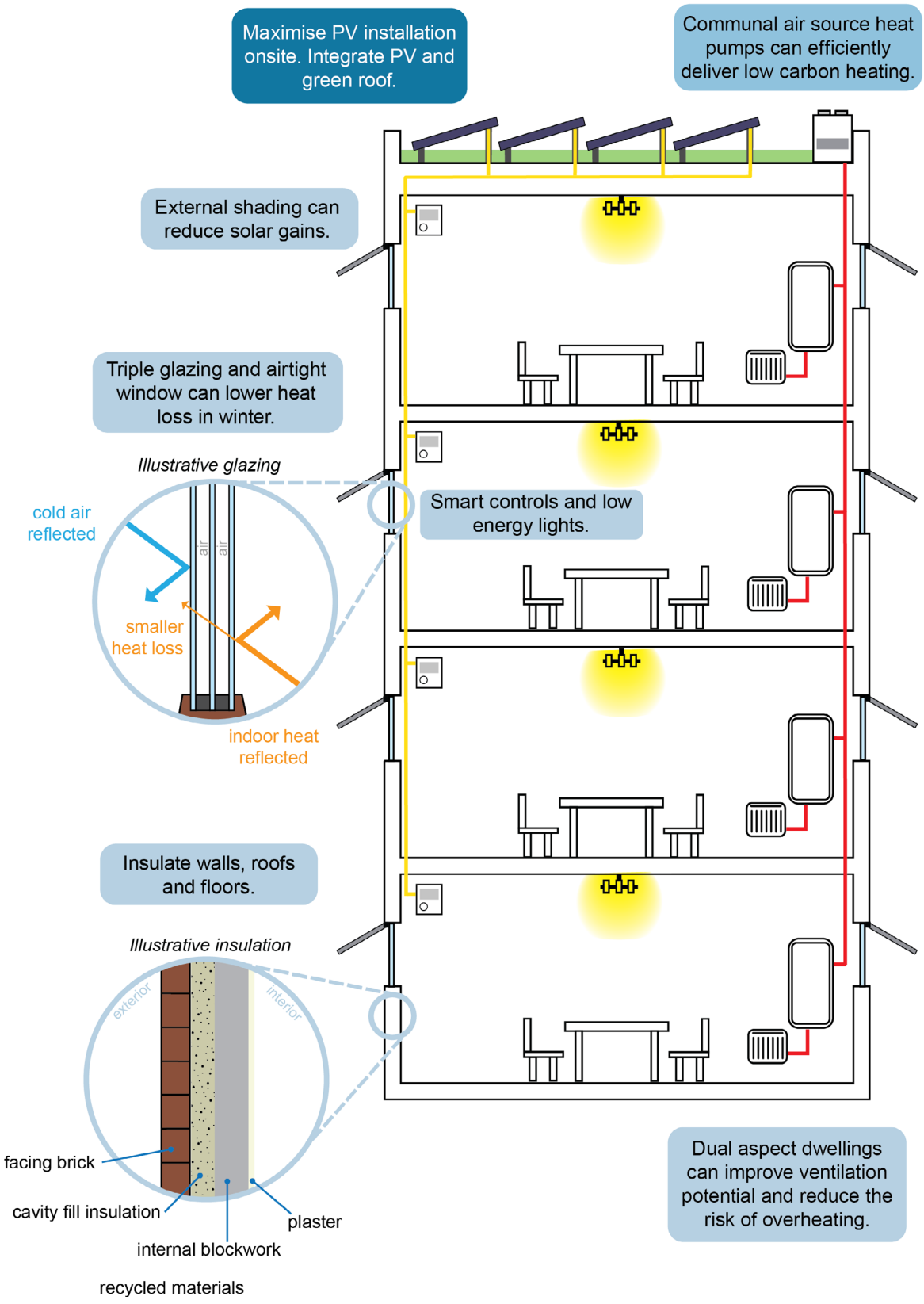

Figure 6: Diagram showing the Whole Building Approach-a list of energy options that should be implemented to achieve net zero.

2.4 Achieving carbon reductions in development

Major development

Applicants of major development must show that every opportunity has been explored to reduce carbon emissions. The reduction in emissions should be set out in the energy statement and be achieved by following the energy hierarchy.

Operational net zero is currently assessed for major development against the baseline set in the Part L Building Regulation Conserving Fuel and Power. For major development, we expect an uplift on this baseline to reduce all operational regulated energy emissions to zero.

All major development that cannot reduce carbon emissions on site to zero, must pay a financial contribution to offset residual carbon emissions to reach the zero-carbon target. Applicants must show that they have worked through each stage of the energy hierarchy before they are eligible to cover the shortfall with a financial contribution.

Part L Building Regulation was updated in 2022. All schemes from January 2023 are expected to assess the percentage uplift against Part L Building Regulation 2021. Refer to the GLA guidance and Southwark's validation checklist for further information.

Modelling of compliance and uplift over Part L

For major development, modelling of Part L Building Regulation should be undertaken in line with the latest GLA Energy Assessment Guidance.

For major and major referable development, a TM54 analysis at RIBA Stage 2 (or at least Stage 3) is helpful to be conducted alongside Part L Modelling to better understand and evaluate the operational carbon.

All development

All development must consider the energy hierarchy in reducing carbon emissions onsite. This should be set out in the planning statement, design and access statement or sustainability statement.

There is no requirement for a full energy assessment with an uplift over Part L for minor developments. Applicants are encouraged to carry out this assessment to understand the carbon emission implications of the development.

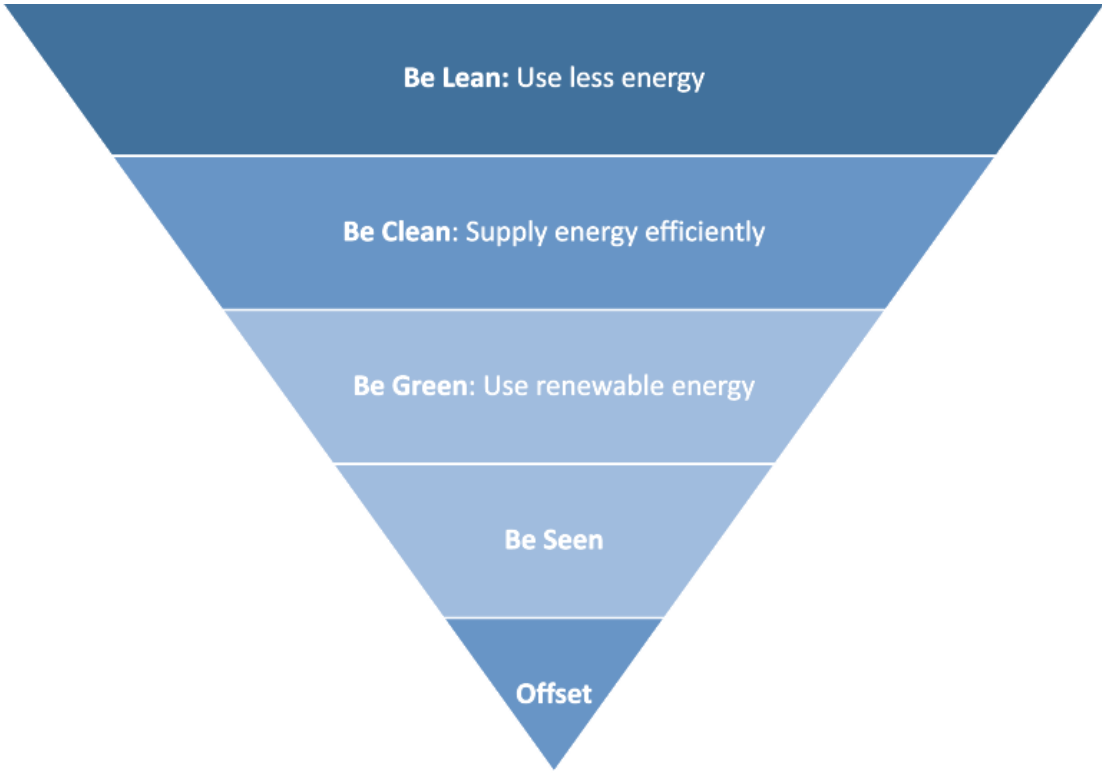

Figure 7: Energy hierarchy for major development

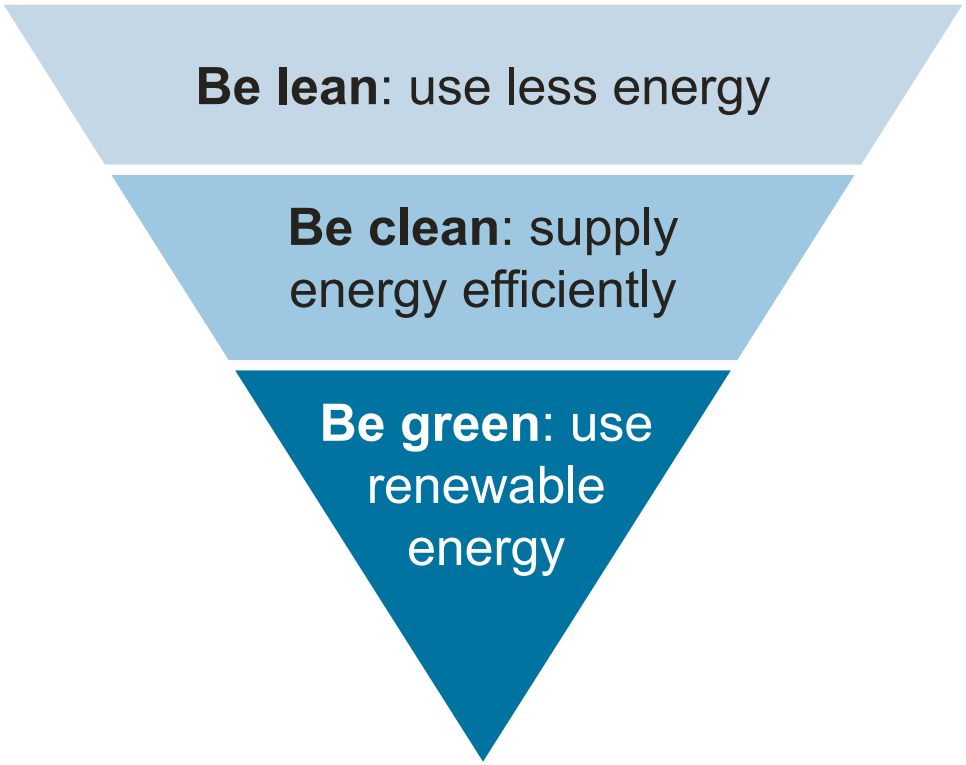

Figure 8: Energy hierarchy for all development

2.4.1 Applying the energy hierarchy

All development must follow the energy hierarchy, as set out in Southwark Plan 2022 policy 'P70 Energy'.

Be Lean – Energy efficient design and construction

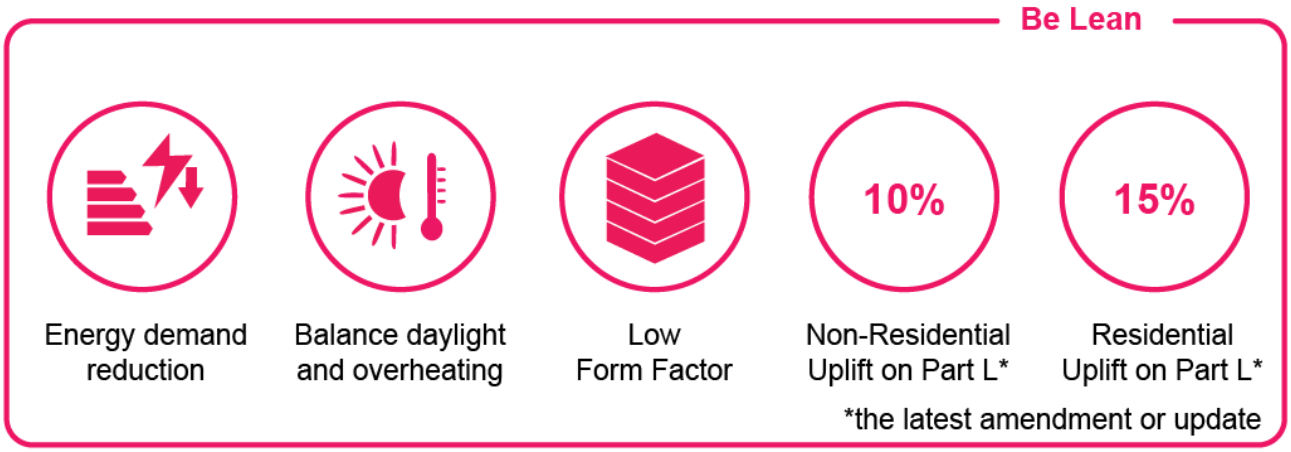

Figure 9: Infographic showing different ways that energy needs can be reduced through energy efficient design and construction; otherwise known as Be Lean.

All development should be designed to reduce energy demand. This encourages a fabric first approach where the building and materials are as efficient as possible.

This can be done by taking the following design actions:

1. Primary energy:

Total energy needed for all domestic applications (heating, hot water and domestic electricity) must not exceed 60 kWh/m2 of living space per year.

2. Reducing energy usage:

For major developments, buildings should be designed to achieve the Energy Use Intensity (EUI) targets set out below:

a) Residential – 35 kWh/m²/year (EUI)

b) Schools – 65 kWh/m²/year (EUI)

c) Office, Hotels, Student Accommodation, and all other non-residential uses – 55 kWh/m²/year (EUI)

3. Space heating demand:

All major developments should be designed to achieve the space heating demand target of 15kWh/m²/year.

4. Thermal Comfort:

a) Avoid complicated building forms that increase the external surface area and the heat loss of the building.

b) Living areas should be comfortable year-round, with no more than 10 percent of the hours each year exceeding 25°C.

c) No thermal bridging

d) Triple glazing with Low E coatings

5. Air tightness:

Development should be designed for high levels of air tightness. This includes window and door seals, seals of flue whilst also balancing the need for ventilation in the right places.

6. Insulation:

a) Allow for a thickness of insulation material that can achieve a conductivity of 0.04 W/m/K with additional space for structure and finishes

b) Ensure the whole structure has been included in u-value calculations for air tightness so that the insulation is fit for purpose to achieve an airtight finish.

c) In new buildings, walls built with cavities and insulation are effective at insulating homes[1].

d) Floors should be well insulated with thick polystyrene or polyurethane insulation.

e) All buildings should be designed for a maximum ~10 W/m² peak heat loss (including ventilation).

1 A wall U-value of 0.26 W m^{-2} K^{-1} is currently (2022) suggested by the UK Building Regulations.

Best practice for U-Values	
Typology	Suggested Fabric U-values (W/m^2.K)
Small scale housing (terraced or semi-detached houses)	Walls 0.13 - 0.15 Floors 0.08 - 0.10 Roof 0.10 - 0.12 Exposed ceilings/floors 0.13 - 0.18 Windows (0.80 triple glazing) Doors 1.00
Large scale housing (four floors and above)	Walls 0.13 - 0.15 Floors 0.08 - 0.10 Roof 0.10 - 0.12 Exposed ceilings/floors 0.13 - 0.18 Windows (0.10 triple glazing) Doors 1.00
Schools	Walls 0.13 - 0.15 Floors 0.09 - 0.12 Roof 0.10 - 0.12 Windows (0.10 triple glazing) Doors 1.2
Schools	Walls 0.12 - 0.15 Floors 0.10 - 0.12 Roof 0.10 - 0.12 Windows (0.12 double glazing) Doors 1.2

Source: LETI Climate Emergency Design Guide

Be Clean – Low carbon energy supply

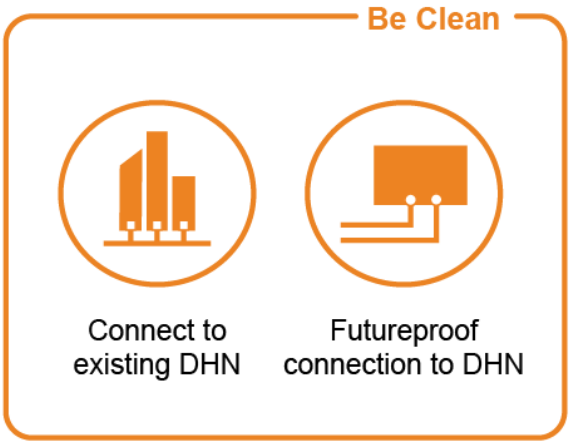

Figure 10: Infographic showing different ways that low carbon energy supplies can be implemented;

Major development

Major developments must follow the decentralised energy hierarchy when deciding on a heat source, as set out in Southwark Plan 2022 policy 'P70 Energy'.

The hierarchy sets out the prioritisation of heat sources for major development:

1. Connect to a District Heat Network (DHN).

2. Explore connection to planned DHN.

3. Futureproof a connection to a DHN.

4. Use heat pumps (ground source, air source, water source); or

5. Use a hybrid system (gas connection with heat pump); or

6. Use electric boilers or instantaneous systems for low energy demands (e.g. domestic hot water); or

7. Create own localised DHN or implement a site-wide low carbon communal heating system; or

8. Explore and evaluate the potential to oversize the communal heating system for connection

The hierarchy is in accordance with the GLA Energy Assessment Guidance, which contains further information.

Applicants must provide a whole life cost analysis if future connection to a DHN is seen to be uneconomic for end users. This analysis should compare the communal and proposed systems. Larger schemes may choose to opt for alternative heating sources such as energy clusters or batteries.

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Fact Box: London Heat Map

Use the London Heat Map to determine if there are feasible connections to an existing or planned DHN.

The map covers:

- Heat demand estimates for each building
- Locations of potential heat supply sites
- Locations of existing and proposed DHNs
- A user-friendly visual tool for heat network design and scenario planning
- Extent of London Heat Network Priority Area

Connecting to an existing heat network

A development must connect to a District Heat Network (DHN) where possible. Connecting to an existing DHN will form part of the 'Be Clean' percentage reduction against Part L Building Regulation. The DHN must not exceed the CO_2 emission and primary energy factors set out in Part L 2021. The DHN must also be low carbon.

The applicant must provide confirmation that the network operator has capacity to serve the development, or that the network operator is willing to expand the capacity of the network to support it. This must be set out in the energy statement alongside timescales for connection.

Any additional impact on air quality from an increase in DHN capacity or usage should be considered.

Connecting to a planned or future heat network

If a scheme cannot connect to an existing heat network, it must utilise other low carbon heat sources.

A scheme must futureproof a connection to a DHN if it is within the London Heat Network Priority Area. The connection should not be included in the 'Be Clean' calculations as it is only futureproofed. Futureproofing ensures that developments are adaptable and take account of expected future changes.

Futureproofing a development for connection to a DHN requires:

- A single energy centre supplying the site, where all energy generating equipment is located. This could be a communal system with a single point of connection, served by a single energy centre for the entire site which connects all buildings. This will help to facilitate future connection to an area wide DHN and can be less costly than retrofitting the site for connection at a later stage.
- The energy centre to have capacity for connection to an area wide DHN.
- Sufficient space for specified equipment and any additional equipment that may need to be installed in the future.

Phased developments

Developments that will be delivered in phases should seek to create one energy centre large enough for the entire site. An energy assessment providing a simple schematic of the communal heat network and all development uses connected into it must be provided. This should also include the location of the energy centre.

Where the applicant can provide evidence that a single energy centre is not possible, they must seek to reduce the number of centres. They must also explain how the network will evolve across the development's phasing programme.

Be Green – on site renewable energy generation and storage

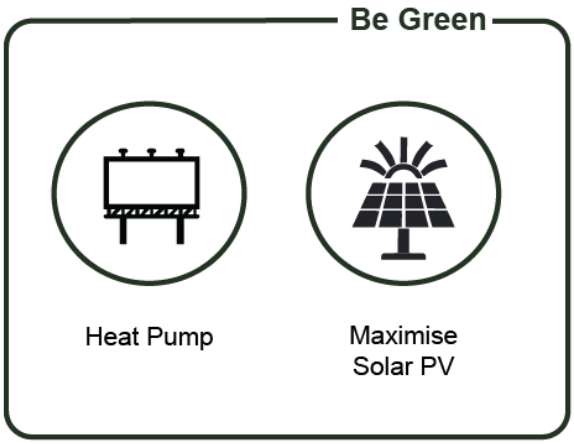

Figure 11: Infographic showing different ways that on site renewable energy generation and storage can be implemented

Major development

All major development must assess options for the use of renewable energy generation onsite. This needs to show how opportunities to produce, store and use renewable energy on-site have been maximised. This should be set out in the energy assessment.

All development

Photovoltaic panels (PV)

All development must consider how to optimise the electricity generation of PVs.

This includes a consideration of:

- Angle
- Orientation
- Roof placement
- Overshadowing (due to existing/future buildings, trees or structures)

South-facing and flat roofs are the most beneficial for solar photovoltaics, or whichever design is most suitable to maximise renewable energy generation.

The GLA Energy Assessment Guidance includes further information in relation to assessing PVs.

Best practice for PVs				
All development	Minor development	Major (Residential)	Major (Offices)	Major (all other non-residential)
Consider the embodied carbon in PV. For example, how far the PV has been transported, or considering alternatives to PV such as PV tiles etc.	Maximise renewables so that 100% of annual energy requirement is generated on-site.	Maximise renewables so that 70% of the roof is covered with PV.	Maximise renewables to generate the annual energy requirement for at least two floors of the development on-site.	All major development proposals to maximise on-site renewable energy generation.

Low carbon heat

The following design actions should be taken.

Residential Development

- Reduce heating and hot water peak demand
- Active demand response measures
- Install heating set point control and thermal storage
- Electricity generation and storage
  - Consider battery storage
- Electric vehicle (EV) charging
  - Electric vehicles turn down
- Behaviour change
  - Incentives to reduce power consumption and peak grid constraints

Non-Residential Development

- Peak reduction demand
- Reduce heating and hot water peak energy demand
- Active demand response measures
- Install heating and cooling set point control
- Reduce lighting, ventilation and small power energy consumption
- Electricity generation and storage
  - Conside battery storage
- Electric vehicle (EV) charging
  - Electric vehicle turn down
  - Reverse charging EV technology
- Behaviour change
  - Incentives to reduce power consumption and peak grid constraints.
  - Encourage responsible occupancy

Best practice for low carbon heat		
All Development	Minor Development	Major Development
• Gas boilers should be replaced with heat pumps, or a connection to a low carbon network • No new gas boilers • No fossil fuels onsite	• Connection to a communal heat source depending on feasibility. The heat source should be low carbon	• Encouraging 'energy clusters' on major or strategic schemes. This is where multiple renewable sources (e.g. DHN connection and PV and a battery) are used • Limit the dependency on fossil fuels for heat generation for peak demand

Best practice for heat pumps

All development

Utilise a heat pump for low carbon heat, after improving the energy efficiency and fabric efficiency using the energy hierarchy.

Heat pump enclosures and acoustic screening can be used to reduce the noise generated from heat pumps. Heat pumps should not increase background noise above 10dB. A noise impact assessment should be undertaken to assess the need for enclosures and acoustic screening.

Major development

Where heat pumps are proposed, a high specification of energy efficiency will be expected to ensure the system operates efficiently and reduces peak electricity demand. This applies to any type of heat pump proposal including air source heat pumps (ASHPs), ground source heat pumps (GSHPs), water source heat pumps (WSHPs) or hybrid and ambient loop types of systems.

For full details on the require information in an Energy Assessments for Heat Pumps, refer to the GLA Energy Assessment Guidance.

2.4.2 Monitoring - Major Applications

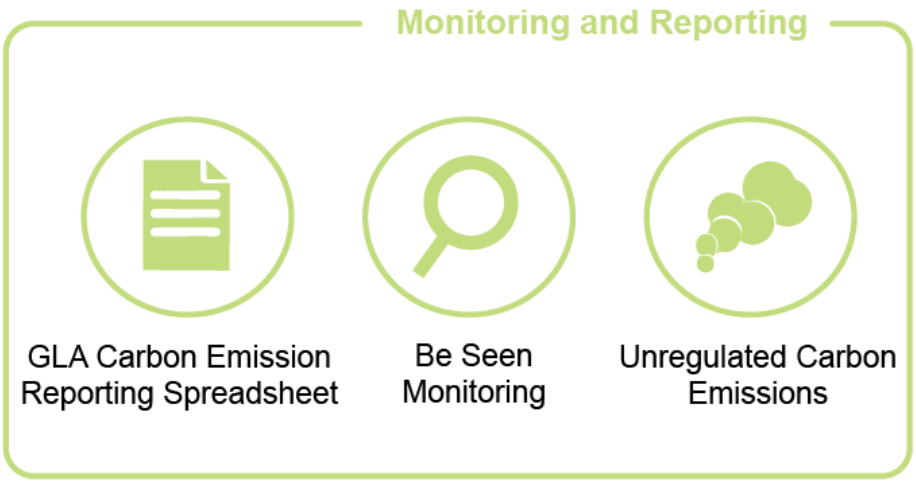

Figure 12: Infographic showing different ways through which operational energy performance is monitored;

The Energy and Environment Pro-Forma submitted at planning stage will ensure consistent data collection, monitoring and reporting.

Along with the Energy and Environment Pro-Forma, major development will need to provide the GLA Carbon Emission Reporting Spreadsheet.

See the S106 & CIL SPD and validation checklist for full monitoring requirements.

Post completion monitoring Be Seen

The requirement for post completion monitoring is secured by S106 agreement. Information must be submitted to the GLA Be Seen Portal. Refer to the S106 SPD for further information.

This monitoring process from planning stage to post completion and in-use stage ensures that the gap between what is consented and what is built is monitored and mitigated against. This is called the Performance Gap. The Be Seen monitoring requirements address the performance gap.

Unregulated carbon emissions

The Part L Building Regulation compliance and uplift percentage are based on modelling which includes only regulated emissions.

Unregulated CO_2 emissions are those which are produced from unregulated loads within a building. This is typically related to cooking and electrical appliances, as well as other small power. Current Building Regulations do not impose a requirement to report such emissions and instead focus solely on regulated emissions.

The calculation of unregulated carbon emissions should be done as part of the compliance with the 'Be Seen' policy and associated guidance.

The latest GLA Be Seen Monitoring Guidance for major development provides further information on reporting unregulated carbon emissions and energy.

All major development must report the unregulated emissions through EUI targets, alongside regulated carbon emissions. This information should also be provided in the GLA Carbon Emission Spreadsheet at the planning stage.

Unregulated carbon emissions

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2.4.3 Carbon offsetting – Major applications

Developments should be designed to the highest performance standards using the stages outlined in the energy hierarchy.

This is to minimise the carbon emissions which are required to be offset from the development. See the S106 & CIL SPD for more information on how the offset is calculated and used.

2.4.4 Whole Life-Cycle Carbon (WLC)

Whole Life-Cycle Carbon (WLC) includes embodied carbon and operational carbon. The purpose of using WLC carbon is to move towards constructing buildings that generate the lowest carbon emissions over their whole lifespan.

Development is required to consider how upfront embodied carbon in existing buildings onsite can be utilised. Embodied carbon should also be considered in decision-making to reduce operational in-use carbon.

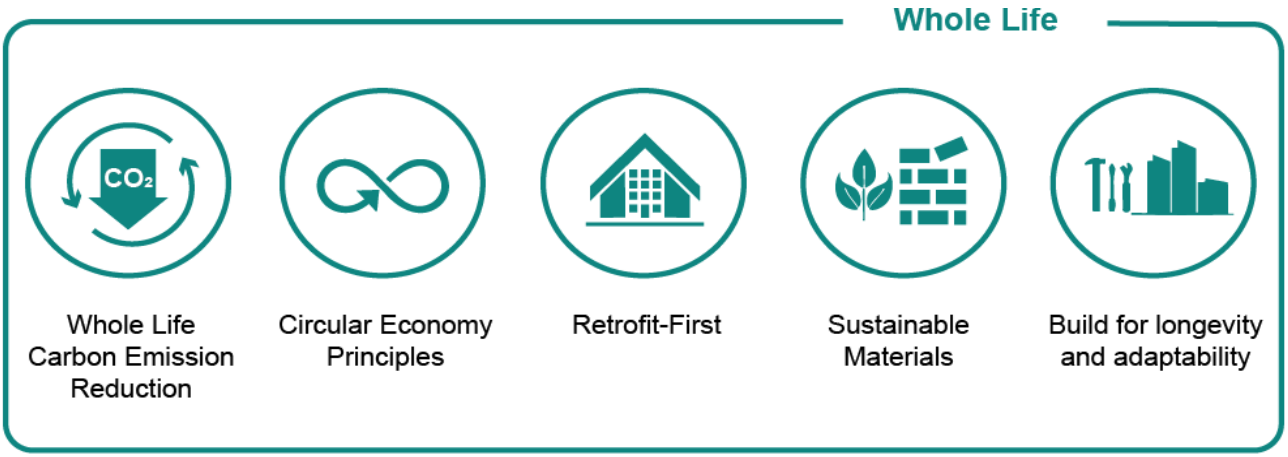

Figure 13: Infograohic showing whole life carbon principles

Major referable

The London Plan states a WLC assessment should be submitted for major referable schemes.

The assessment should be submitted at the following stages:

- Pre-application (where relevant)
- Planning application submission (i.e. RIBA stage 2/3)
- Post-construction (i.e. prior to occupation of the development. Generally, it would not be expected that the assessment would be received three months post-construction)

The template is available on Southwark's validation checklist. Follow the methodology as set out in the GLA WLC Guidance.

WLCAs and Circular Economy Statements are interrelated. It is important to make sure the two documents correlate.

The benchmarks set out in Appendix 2 of the GLA WLCA guidance. Where the benchmarks cannot and have not been met, justification should be set out in the WLC Assessment template spreadsheet.

Selecting a typology to use as a benchmark should be based on the most prominent land use in a development. Where there is not a specific typology for a scheme, the applicant must select the one most similar to their development, i.e. the use of the majority floorspace. Student accommodation schemes should be assessed as residential.

Best practice for Whole Life Carbon			
All Development	Minor Development	Major Development	Major referable
At early design stages, the design should consider: • Retention of structural elements or high impact building layer • Re-use of existing elements • Massing optimisation of new elements • Recycling of existing materials on and offsite • Designing for longevity and flexibility to extend the life of the building	Evidence of WLC consideration at the planning stage in the planning statement or design and access statement	Evidence of WLC consideration at the planning stage in the energy statement.	Development should aim to meet the aspirational benchmarks as set out by the GLA. Applicants are also encouraged to use the LETI 2020 and 2030 embodied carbon targets for upfront carbon modules A1-A2, as well as the RIBA 2030 embodied targets. Design actions could be: • Re-use materials on site, adapt existing buildings and structures. • Assess the embodied carbon implications of operational carbon improvements and reduce the embodied carbon of these measures. • To select low-carbon materials with a long life expectancy. • Minimise operational carbon through a fabric first approach. • Design for flexibility and longevity, considering the future disassembly and reuse of the building site. • Use locally sourced materials. • Utilise efficient and lightweight construction methods.

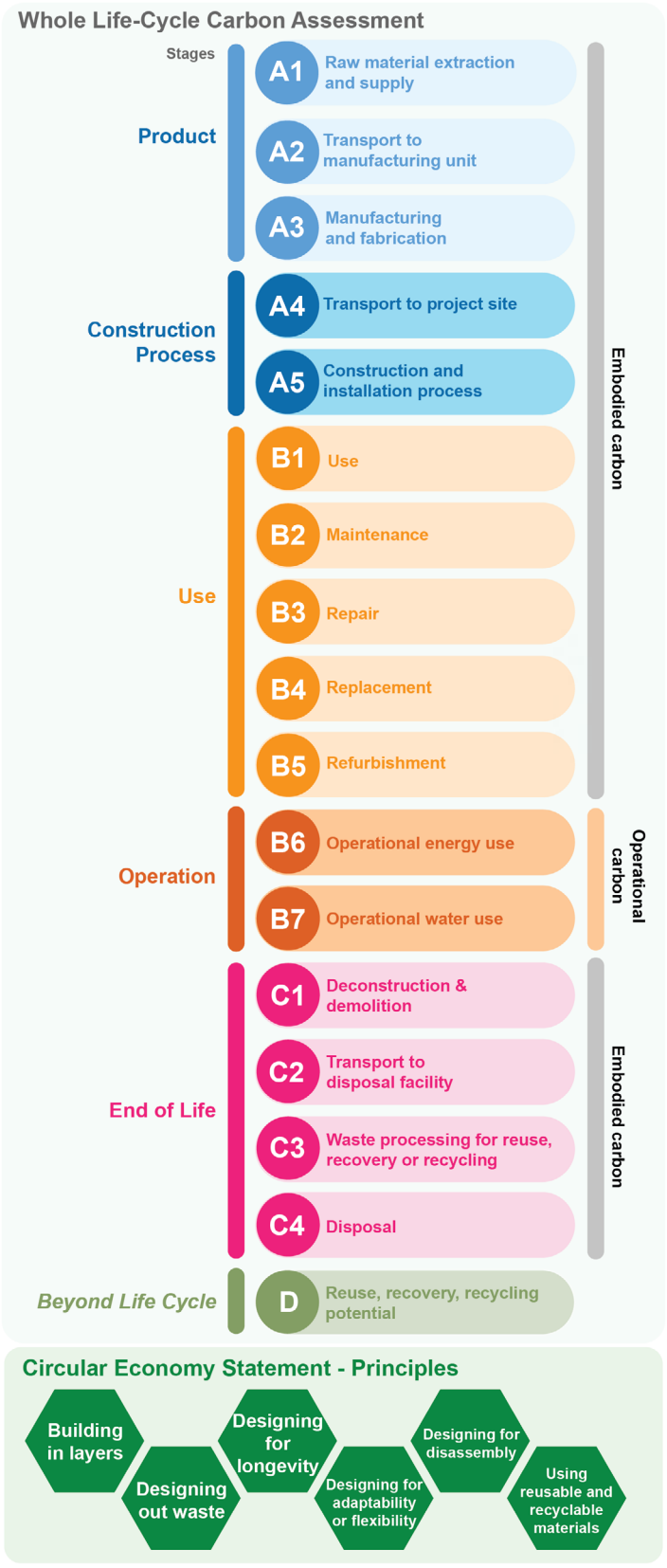

Figure 14: Diagram showing how a whole life cycle carbon assessment (WLCA) is calculated

2.4.5 Circular Economy (CE) statements

Southwark Plan 2022 policy 'P62 Reducing waste' and London Plan 2021 policy 'SI 7 Reducing waste' and supporting the circular economy set out the policy requirements for Circular Economy (CE) Statements.

These statements only apply to major referable planning applications.

Complete the CE Statement in line with GLA Circular Economy Guidance.

Circular Economy Statements are required to be submitted at the following stages:

- pre-application (where relevant)
- planning application submission (both outline and detailed)
- post-construction (i.e. upon commencement of RIBA Stage 6 and prior to the building being handed over. Generally, the assessment would happen no more than three months post-construction). Any changes in design following the submission should be accounted for in the post-construction statement.

The CE Statement consists of a written report and a spreadsheet, with the relevant tab(s) filled in at each stage. Applicants should also submit a written statement to support the spreadsheet. This should provide further explanation, calculation, and supporting evidence. The Project Details section can set out if an application has more than one building and/or circular economy approach.

The Circular Economy Guidance sets out more information on what needs to be submitted at each stage.

Best practice for Circular Economy Statements			
All Development	Major referable	Major referable with clear site	Major referable with existing building onsite
Consider circular economy principles in the demolition, construction and de-construction of buildings by reducing, reusing, and recycling materials.	Utilise CE Statements to assess which approach to retrofitting and refurbishment is appropriate. Maximising opportunities for material reuse and innovative practice. Exceed the targets for recycled materials and diversion of waste from landfill. A pre-demolition audit should be produced at the pre-application stage to inform design decisions around whole life cycle carbon emission reduction and addressing circular economy principles. The best practice CE Statements are 'pioneering'. The GLA Circular Economy Guidance sets out more information on this. For best practice Post Construction Stage Reporting, analysis could be included of structural issues that have to be addressed, and ideas or suggested solutions provided.	Where the site is cleared, the starting point for redevelopment should be to assess what can be reused from the site, materials or elements available on the site. Where it is technically possible and viable to recover these materials, then these materials should be deconstructed and reused. Where these materials cannot be, these should be demolished and recycled.	Where there is an existing building onsite, the starting point for redevelopment should be assessing what can be retained of the existing building. To utilise embodied carbon in the existing buildings, the existing building should be retained and refurbished where it is suited to the new use and requirements, where it is no, the building should be repurposed.

2.4.6 Retrofitting

Southwark Plan 2022 policy 'P70 Energy' and London Plan 2021 Policy 'SI 7 Reducing waste and supporting the circular economy' set out the policy considerations for retrofitting.

The following design actions should be considered when looking at the planning application stage:

All Development	Major Development	Major referable Development
Retrofit should take a fabric first approach. First reducing energy consumption and improving air tightness to improve energy efficiency. The key components of successful retrofit are: • Energy demand reduction • Improved occupant and building health • Long term maintenance plan • Whole Building Retrofit Plan (including lifespan of different building elements) • Measure and report on energy use and heating demand of the building throughout its life • Be innovative in design and approach • Consider WLC emission implications of decisions, especially upfront embodied carbon	• Design should consider embodied carbon emission reduction. • Embodied and operational carbon should be weighed up in decisions. Provide evidence and full justification to show this trade off.	• Use Circular Economy Statements to assess how existing materials onsite can be re-used or recycled. This includes whole buildings and structures. Circular Economy Statements can be helpful in the assessment of demolition instead of retrofitting. • Use the WLCAs to achieve the benchmarks for the most relevant development type. • In line with GLA Guidance, design decisions should assess the embodied and operational carbon. • Balance the embodied carbon cost of design decisions to improve operational carbon savings.

Best practice for retrofitting

A Whole Buildings approach to retrofitting is considered best practice. A Whole Buildings approach should consider the lifespan of each building component and how it can be retained, improved or recycled and re-used to reduce WLC emissions.

A Whole Building Retrofit Plan should include:

1. Set out key building information, constraints, risks, and opportunities.
2. Set out the key works proposed along with related strategies and details.
3. Set out the sequence of work.
4. Be appropriate in the plan's level of detail and intervention for the project.
5. Include a plan for monitoring and reporting energy consumption.
6. The plan should stay with the building and be passed on from owner to owner.

The energy hierarchy can be applied to retrofitting as set out below:

Be Lean	Remove fossil fuel heat sources and replace with low carbon alternatives. For example: Heat Pumps. Install insulation – this may vary in different contexts but some opportunities to install insulation are in: • Solid and cavity wall • Roof/loft • Under floor • Pipework • Glazing for windows and doors • Draught proofing • Living roofs Air tightness should be improved including triple glazing Design for passive ventilation where possible, before mechanical ventilation is considered. Upgrade to lower LED lighting EUI of 50 kWh/m²/yr Space Heating Demand of 50 kWh/m²/yr Hot water demand target of 20 kWh/m²/yr including additional allowance for homes <75m³ (+5 kWh/m²/yr) Reduce the space heating demand and EUI as far as is practicable for the building/situation.
Be Clean	For major development, schemes should still utilise the decentralised energy hierarchy to assess the feasibility of a DHN to supply decentralised low carbon heat. Schemes not able to utilise an existing heat network for connection should still follow the process set out previously to futureproof a connection to the DHN.
Be Green	Development should maximise renewables onsite, aiming for around 40% of roof area covered in PV panels. An integrated green roof with solar panels is considered best practice. For minor schemes, solar battery storage is encouraged, where the renewable energy generation exceeds the energy demand onsite.

CHAPTER 3

MINIMISING FLOOD RISK

3. MINIMISING FLOOD RISK

This section provides guidance on Southwark Plan 2022 policy 'P68 Reducing flood risk'. It also relates to London Plan 2021 policies 'SI 12 Flood risk management' and 'SI 13 Sustainable drainage'.

3.1 Sequential and exception test

If required, the sequential test and exception test should be submitted alongside the Flood Risk Assessment as part of a planning application.

3.1.1 Sequential test

Developments that meet both of the following criteria must submit a sequential test:

- Located in flood zone 2 or 3
- A sequential test has not been completed for the proposed development type on the site previously

The sequential test aims to steer new development to areas with the lowest risk of flooding. It is a sequential, risk-based approach. It takes all sources of flood risk and climate change into account. The proposed development site will be compared with other available sites to find out which has the lowest flood risk. It may not be possible to find other comparable development sites in low-risk areas.

In this case, the sequential test should compare reasonably available sites:

- Within medium risk areas; and
- Then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas.

It may also be useful to consider flood risk management infrastructure. This can impact the level of risk within high and medium flood risk areas. Parts of Southwark (mostly in the north) are within the River Thames flood catchment area and benefit from significant tidal defence infrastructure.

3.1.2 Exception test

The exception test shows how flood risk will be managed on the proposed site. It needs to show how the sustainability benefits of the development to the community outweigh the flood risk.

The exception test may be required depending on the outcome of the Sequential test and the potential vulnerability of the site and the development. This is judged against the NPPF Flood Risk Vulnerability Classifications.

3.2 Site-specific Flood Risk Assessment

Developments that meet any of the following criteria must submit a site-specific flood risk assessment:

- Located in flood zone 2 or 3
- Sites of more than one hectare
- Basement extensions

Major applications in Critical Drainage Areas for surface water flooding

Located in flood zone 1 where there is a critical drainage problem as notified by the Environment Agency.

This must be submitted with a planning application. Applicants must show that suitable sites are not available in an area with a lower risk of flooding (i.e., that the development meets the Sequential Test).

Applicants must also show that the development will not increase flood risk for surrounding buildings. A flood exceedance flow diagram or drawing should be provided to demonstrate this.

3.3 Development in flood risk areas

Development in flood risk areas will need to be made safe from flooding through the site layout and design of the building.

This can be achieved by, but is not limited to;

- Locating the most vulnerable uses on upper levels or in lower risk areas
- Ensuring buildings do not block key flood routes
- Raising floor levels

It is preferable that less vulnerable uses (such as shops, offices and leisure facilities) are located at ground floor level. Basements should generally be avoided or used for storage, servicing or parking purposes only. Sleeping areas should not be located below the predicted 1 in 200 year flood level.

Finished floor levels should be set no lower than 300mm above the predicted maximum water level where they are located within an area at risk of flooding.

The approach taken will depend on the amount and speed of water likely to pass through a site during a flood event and how long it will remain. Where a low level of flooding is expected, measures to make a building flood resistant may be appropriate. Where higher levels of flooding are expected, a building will need to be made flood resilient.

Best Practice for flood resilient design
Flood resilient design can reduce the damage from water entering a building. This should be factored into developments in addition to flood resistant design. This will limit damage if flood resistant design measures fail. This is important since flood resistance cannot be guaranteed.

3.4 Basement Impact Assessments

A Basement Impact Assessment (BIA) may be required as part of your planning application. This depends on the size of the basement and whether the application falls within a high flood risk area. The council should be consulted prior to planning submission to determine whether a BIA will be required. In general, a BIA will be required when a proposed development includes a new or extended basement.

When a BIA is required, this should be specific to the site and the proposed development. The assessment will depend on the scale, location and complexity of the scheme. A screening exercise should be undertaken to determine the level of detail required. The stages of the BIA should include screening, scoping, site investigation and study (as required). It should conclude with the final impact assessment.

The Basement and Flooding Guide for Developers sets out more information on this, including what should be assessed.

3.5 Sustainable Drainage Systems (SuDS)

Sustainable Drainage Systems (SuDS) describes methods which manage surface water drainage in a way that mimics the natural process. SuDS help to slow the flow of water leaving a site by providing attenuation.

SuDS can also provide broader benefits such as providing greenspace for wildlife improving biodiversity. Other benefits include the capture and re-use of site runoff (rainwater harvesting) for irrigation and non-potable uses.

To manage surface water as part of a new development, applicants should follow the guidance below.

Major Development	Minor Development
• Use water-sensitive urban design and SuDS. This should bring surface water runoff down to greenfield runoff rates. • Applicants must show how they have followed the drainage hierarchy as set out in London Plan Policy SI 13 Sustainable drainage. • Underground attenuation systems or sewer discharge should be a last resort. Infiltration, discharging via a watercourse, and above ground attenuation are preferred. • An overview of common types of SuDS measures that may be suitable for installation within Southwark is included in Appendix B of the SFRA. • Applicants must complete and submit the council's Sustainable drainage systems (SuDS) proforma. This sets out how SuDS will be implemented on the development site.	• Development should not increase surface run-off leaving the site (measured in litres per second per hectare) at peak times. This should be controlled so that it is the same for all storms expected in a 1 in 100 year period. • Development should not increase the area of non-permeable areas. • Drainage must meet the minimum requirements of Part H of the Building Regulations. • Where a flood risk assessment is not required, information on how a development has been designed to manage surface water should be included in the Design and Access Statement. • Drainage should be designed not to flood for the 1 in 30 year return period

Best Practice for SuDs

If designed well, SuDS can have multiple benefits for a development. This includes helping to achieve Biodiversity Net Gain (BNG) and sustain greening and enhancing site design and character.

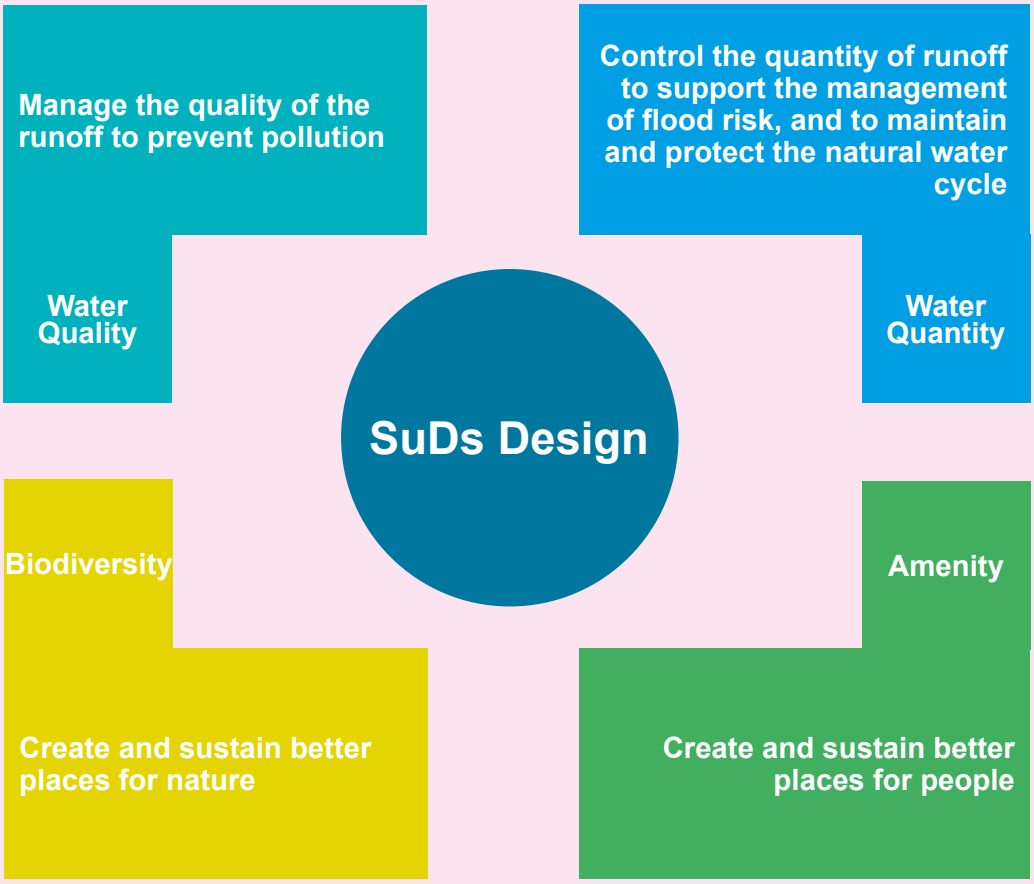

Figure 15: Diagram showing the benefits of Sustainable drainage systems (SuDS) (Source: CIRIA SuDS Manual)

3.6 Vulnerability classifications

The NPPF explains how some land uses are more vulnerable to flooding than others. More vulnerable uses should be directed to areas of lower flood risk.

Uses that are highly vulnerable if a flood occurs include:

- Buildings that will be occupied by the emergency services;
- Telecommunications installations;
- Basement dwellings;
- Caravans and mobile homes intended for permanent residential use; and
- Installations requiring hazardous substances consent.

3.7 Finished floor levels

Flood risk can be mitigated by ensuring habitable floor levels are raised above the maximum flood water level.

Floor levels should be raised by the following recommended amounts, as a minimum:

- In areas at fluvial flood risk:
- 300 mm above the 1% AEP event plus climate change water level;

In areas at risk of tidal flooding due to breach in the Thames Tidal Defence:

300 mm above the maximum water level caused by a defence breach, including consideration of climate change.

This is in line with Southwark's Strategic Flood Risk Assessment (SFRA) section 5.2.6, Surface Water Management Plan and Flood Risk Management Strategy.

Flood resistance and resilience measures should be adopted where this is not achievable or flood depths of above 600 mm are anticipated. These measures should mitigate the potential damage to property in case of flooding. Measures will depend on the estimated flood depth and type of development.

Further guidance can be found in our SFRA (5.2.7) and from the Environment Agency.

CHAPTER 4

AIR QUALITY & ENVIRONMENTAL PROTECTION

4. AIR QUALITY & ENVIRONMENTAL PROTECTION

This section provides more detail on how Southwark Plan 2022 policies will be applied. These include 'P65 Improving air quality', 'P66 Noise pollution and soundscapes', 'P65 Protection of amenity', and 'P64 Contaminated land and hazardous substances'. It also relates to the London Plan 2021 policies 'SI 1 Improving air quality' and 'SI 2 Minimising greenhouse gas emissions'.

4.1 Air quality

Southwark Plan policy 'P65 Improving air quality' and London Plan policy 'SI 1 Improving air quality' set out the policy requirements for improving air quality.

There are various sources of air pollution in Southwark. The main sources are road transport, gas boilers, commercial cooking, and construction. Air Quality will need to be considered when designing developments, especially if using natural ventilation.

All of Southwark has been designated an Air Quality Management Area (AQMA). This is because there are widespread areas of the Borough which exceeds the national Air Quality Objectives for NO_2 and PM_{10}. The GLA also identify Air Quality Focus Areas (AQFA) that exceed the EU annual mean limit value for NO_2 and have high human exposure.

There are a series of Air Quality Focus Areas in Southwark and on the borough boundary. These can be seen in the Southwark Air Quality Action Plan and Technical Guidance on Air Quality. These can also be viewed on Southwark Maps.

4.1.1 Air quality neutral

All developments are required to be air quality neutral in line with part (B) of London Plan 'Policy SI 1 Improving air quality'. The Air Quality Neutral London Plan Guidance provides advice on how to show that a development is air quality neutral.

4.1.2 Air quality assessments - Major applications

Major applications also need to submit an air quality assessment. The council's validation checklist sets out what applicants need to submit. The air quality assessment includes the following sequential steps:

1. Preventing exposure. This can be done by eliminating, isolating or replacing sources and activities with alternatives.

2. Reducing and minimising exposure through mitigation.

3. Offsetting a new development's air quality impact. Applicants can do this by contributing to air quality improvements elsewhere in Southwark.

4.1.3 Air quality positive - Major referable development

Applications for major referable development must include an Air Quality Positive Statement. This should form part of the Environmental Impact Assessment (EIA).

More information can be found in the Air Quality Positive London Plan Guidance.

Best practice for air quality

The following measures can help minimise emissions or mitigate against them:

- Suitable form, layout and orientation can increase dispersion of pollution.

- Good ventilation
  - » This should consider ambient air pollution and humidity. For example, locate air intakes away from sources of poor air quality.

- If there is a new combustion plant, consider the flue location and discharge velocity at planning stage.

- Road traffic emissions are the main source of severe air pollution in London.
  - » Development can help tackle this by prioritising walking, cycling and public transport. See the sustainable transport chapter for more information.

4.2 Light pollution

Artificial light provides valuable benefits to society. These include extending opportunities for sport and recreation and improving the sense of safety. Yet, it has the potential to become 'light pollution'.

This is where excessive light spill is harmful to wildlife or a source of annoyance to people.

Lighting assessment

A lighting assessment will be required for all development proposing external lighting. It will also be required for applications involving works to areas of public access.

A lighting assessment should consider and include the following:

- layout plan with beam orientation
- schedule of the equipment in the design
- hours of operation
- light levels and spillage
- Impact on biodiversity
- Illuminance contours (with properties surrounding the development)
- The size of the lights/light fittings
- for projecting signs - mark the distance from the edge of the sign to the kerb edge

All exterior lighting should be designed to prevent obtrusive light from affecting any sensitive receptor.

External lighting must:

- Be in line with the Institute of Lighting Professional (ILP) Zone Standards;
- Be designed to minimise glare and light spill;
- Avoid conflict with traffic lighting, road and/or river users;
- Consider 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.

Facilities with floodlights or significant external lighting may be subject to planning conditions. These conditions may restrict the times of lighting operation. The existing character of an area may influence what level of lighting it is acceptable.

Development sites on or next to a Site of Importance for Nature Conservation (SINC) are especially sensitive. In these cases, applicants should provide a lighting strategy to show how the impact of lighting on biodiversity has been mitigated. Refer to the chapter 5 for more detail.

4.3 Odour

Development must avoid creating odours that harm amenity. This is most often a consideration for restaurants and hot food takeaways. It also applies to some manufacturing processes and waste treatment or transfer sites.

Where development and land use create unwanted odours, these must be mitigated against.

4.3.1 Extraction system details

Restaurants and hot food takeaways must have suitable extraction systems. Applicants should submit details of this as part of the planning application.

This should include:

- Floor plans showing ductwork locations, kitchen layout and surrounding uses;
- Elevations showing ductwork and discharge points;
- Section plans showing cooking arrangement and extraction hood;
- Full technical specification of extraction system including fans, odour abatement and noise control;
- System maintenance requirements.

All kitchen extraction systems should include a suitable odour abatement plant. This should include more than cleanable coarse and fine filters. For example, carbon filters, electrostatic precipitation and UV/ozone treatment.

Developers may need to demonstrate that suitable duct space has been provided through the building to the roof level to accommodate the proposed or any future extraction flue. Flue outlets should also be at high level.

In some cases, a condition may be applied to planning permission. This may relate to maintenance of the extraction system or involve keeping records showing compliance.

4.3.2 Odour assessment

Applications for some other types of commercial sites may also be likely to harm amenity. In these cases, an odour assessment should be submitted as part of the application. This should include odour dispersion modelling.

4.4 Noise and vibration

Developments must use good acoustic design to achieve internal sound standards. Developments should not rely on insulation of the building envelope alone.

Southwark applies the Agent of Change principle to manage noise impact. This requires the person initiating a change to mitigate against the impacts on new and existing users from the change.

4.4.1 Noise impact assessment

For major developments that will generate noise, applicants must submit a noise impact assessment. This also applies to major developments that are likely to be affected by an existing source of noise.

A noise impact assessment must be prepared by a qualified acoustician.

It should detail:

- Noise exposure categories;
- Associated impact and mitigation measures;
- Layout, design and insulation;
- Information and plans about all plant equipment;
- Comprehensive measurement of examples of the noise source from existing sites operating elsewhere;
- Comparison and verification of measured data against existing data sources where possible. For example, from scientific literature or international standards;
- Assessment of the existing background level at the receptor location;
- Calculation of the predicted specific noise level at different locations. These include the façade, gardens and amenity areas of sensitive receptors. This should be based on relevant obtained data;
- Comparison of noise levels to relevant general standards. For example, WHO standards and BS8233:2014;
- Full consideration of the impact of LAF max noise. For example from door slams, ball strikes, shouts or whistles;
- Consideration of the character of the noise. This should include whether it may exacerbate the impact on amenity

The council's Environmental Protection technical guidance for noise sets out further detail.

4.4.2 Noise management plan

In some cases, ongoing noise management and control will be particularly important. In these cases, a noise management plan will be required for major development.

Best practice for noise

Good acoustic building design

Buildings should be designed to mitigate noise impacts. This includes building layout and location or noise sensitive uses. This is more effective than measures based on the materiality of the building.

Design outcomes that can minimise these impacts include:

- Location of buildings on the site to minimise noise exposure. This includes maximising separation of noise sources and sensitive receptors. It also involves the use of buildings or topography to screen noise.
- Layout of habitable rooms within buildings to reduce exposure to more noise-sensitive rooms.
- Ensuring dwellings exposed to high noise levels are dual aspect. This will provide each unit with access to a relatively quiet façade when possible.
- Access to relatively quiet external amenity space
- Measures to reduce noise at source and\or on the transmission path where possible.

Noise Mitigation Measures

Sometimes the building design and layout are unable to completely mitigate noise impacts. In these cases, materials and other detailed design measures include:

- Relocation of plant or noise-generating activity.
- Substitution for alternative or quieter plant or processes.
- Reduction in source noise levels via engineering methods. For example, lower-noise fans, flow smoothing on duct bends etc.
- Change in working practices or processes to reduce noise. For example, changing times of operation, reducing fan\jet power).
- Use of duct attenuators; acoustic barriers and acoustic absorption.
- Vibration isolation and/or damping.
- Enclosure of plant in insulating enclosures.
- Insulation of building envelopes.
- Enclosure of plant in insulating enclosures.
- Insulation of building envelopes.

4.5 Land contamination

Land contamination is most likely to arise from previous uses. It may also arise from an adjacent site that had industrial activity on it. Southwark's industrial history means that some brownfield sites may be contaminated. This is a material consideration for the purposes of Town and Country Planning. Owners and developers must establish the extent of potentially harmful materials.

Developers should identify the impacts of development at the design stage. This includes temporary, permanent, and cumulative impacts. Developers must assess the potential risks from contamination. This should consider local circumstances and the proposed use. This needs to be submitted as part of a contaminated land assessment.

4.5.1 Contaminated land assessment

If a proposed development is on or near a site that is potentially contaminated, a contaminated land assessment must be carried out. The applicant must also take remediation measures. This also applies to any proposed development with a basement.

A detailed site investigation has multiple purposes;

1. To find out if the building or land are contaminated with dangerous material
2. To assess the contamination that is present.
3. To find out if it could affect human health or the environment.

Where there is a potentially contaminated site the following steps will need to be taken:

- For basement developments, if a site investigation is required it should be in the footprint of the area to be developed. I.e., within the actual area where the basement will be.
- Industrial development applications should include information on expected waste discharges. They should also explain how risks of pollution are being avoided. Where there will be discharges into waterways, a permit from the Environment Agency may be required.

4.6 Demolition plan and construction and environmental management

The impacts of construction and demolition can be detrimental to the environment. There can also be impacts on the health and safety of users of the site and its surroundings. These impacts include air quality, noise, odour, traffic and land contamination,

The council is a Highway Authority. This means it has a statutory obligation to minimise the impact of any works on its highway. This is set out in the Traffic Management Act 2004 (s.16. Network Management Duty). The applicant must demonstrate how they will carry out construction safely using public highways. They must explain how they will minimise and control vehicular movements to reduce road danger.

4.6.1 Construction Environment Management Plan (CEMP)

All major development and some minor applications in highly sensitive locations will need to provide a Construction Environment Management Plan (CEMP) post approval. Preparing and negotiating a CEMP early on with the council will streamline development. It will also minimise detrimental impacts to the road network, the community and local businesses.

A CEMP provides a developer with an outline of what activities on public highways are acceptable.

This to ensure that:

- All activities are undertaken safely. This is to minimise the risk to the public as well as to operatives.
- Impacts on road users are minimised and traffic can flow.
- There is no damage to the highway or associated assets.
- The CEMP should show how the impact of the demolition and/or construction process will be managed and mitigated.

This should cover:

- Cumulative impacts in the area. These include noise, vibration, dust and air pollution,congestion and contamination.
- Issues arising because of construction, earthworks and drainage/ sewerage on site

.

- The location may require construction impacts to be mitigated, such as in a busy pedestrian area or close to a major junction.
- Network Management. This includes onsite activity, transport arrangements, monitoring, and community liaison.
- Opportunities for delivery consolidation or careful timing to reduce disruption. The CEMP should set out how this will be monitored.
- The environmental aspects of the scheme such as noise, dust, vibrations and air quality (see required standards below). Monitoring is carried out by the council's Environmental Protection team.

The Technical Guidance for Demolition and Construction sets out acceptable standards in detail.

Best practice for CEMP
The best plans are made with the entire life span of the development in mind. The future building or structure and its environment as well as the building process must be visualised.

Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Application approved and CEMP required via S106 legal agreement	Appoint principal contractor	Undertake community liaison	Submit draft CEMP for council review and pay relevant fees .	CEMP approved and works can commence.	Ongoing monitoring and discussions carried out by council

CHAPTER 5

GREEN INFRASTRUCTURE, BIODIVERSITY & TREES

5. GREEN INFRASTRUCTURE, BIODIVERSITY & TREES

This section provides guidance on Southwark Plan 2022 policies 'P13 Design of Places', 'P58 Open Water Space', 'P59 Green infrastructure', 'P60 Biodiversity' and 'P61 Trees'.

Other policy considerations include:

- The Southwark Nature Action Plan 2020. This contains Habitat Action Plans and measures which developers should take to promote biodiversity.
- The emerging London-wide Local Nature Recovery Strategy (LNRS).
- Mandatory Biodiversity Net Gain, which applies to minor and major developments (with exceptions).
- Designations such as SINCs, open space, Tree Preservation Orders (TPOs) and Priority Habitat.

5.1 Green infrastructure

Green infrastructure is a term used to describe a network of green spaces within an area. When designed well, green infrastructure is multi-functional. It should be an additional enhancement, not just compensation for habitat loss or biodiversity impacts. It should be appropriately maintained to promote longevity. Green infrastructure can provide benefits for nature, the built environment, and physical and mental wellbeing. Its provision should consider the context and character of a place and the priorities and needs of the local community and wildlife, including;

- Cooling and shading, which reduce the urban heat island effect.
- Carbon storage and improved air quality.
- Increasing soil absorption, which helps reduce the risk of flash flooding.
- Enhancing the public realm and the character of a place.
- Recreation, leisure and increased access to nature.
- Opportunities for active travel.
- Pollination of plants by insects.
- Food growing opportunities.
- Habitats for insects, birds and small mammals

5.1.1 Designated open spaces

Southwark's designated open spaces, including Metropolitan Open Land and Borough Open Land, help to deliver these benefits.

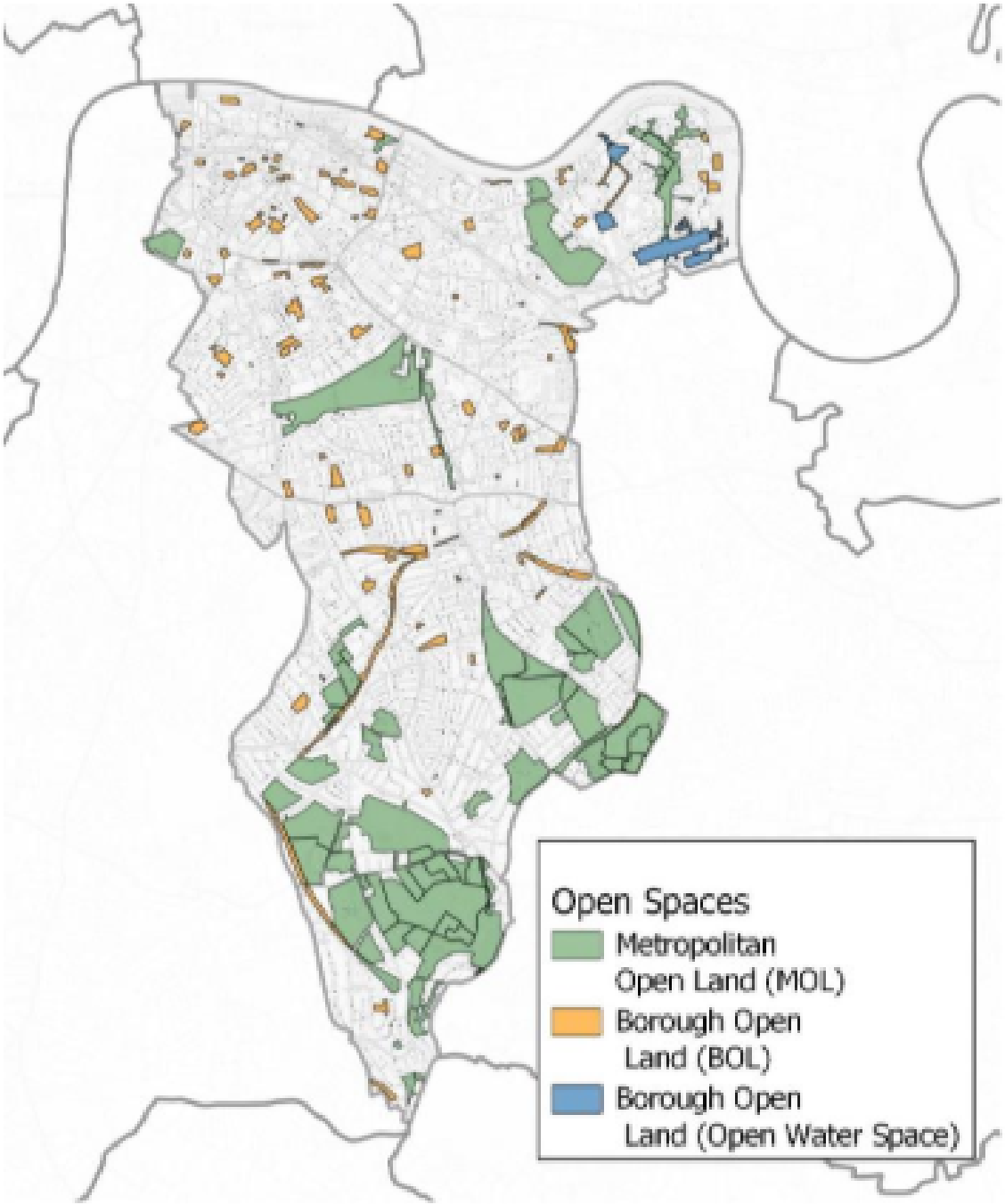

Figure 16: Designated open spaces, including Metropolitan Open Land and Borough Open Land

Best practice for green infrastructure (all development types)

- Developments should include measures which contribute to the green infrastructure of a site and surrounding area. This could include tree planting, rain gardens, pocket parks and biodiverse green roofs and walls.

- Applicants should consider how its provision of green infrastructure responds to the issues and needs of a site and the surrounding area.

- Areas which could benefit from green infrastructure include:
  - Air Quality Focus Areas (on Southwark Maps Spectrum Spatial (southwark.gov.uk))
  - Areas susceptible to surface water flooding
  - Areas deficient in access to open space and nature
  - Areas in need of improved green links and connectivity to other areas of open space and nature.
  - Urban heat island hotspots. Refer to the GLA London Climate Risk map for more information.
  - The position of buffer planting and provision of amenity space.

- Developers should seek opportunities to turn underused areas of hard surfaces into green spaces. For example, planting trees and vegetation using pocket parks or mini woodlands.

- Applicants should consider how tree planting can shade amenity space, play areas and pedestrian routes. This can help mitigate urban heat island effect.

- Applicants should refer to the national green infrastructure standards (Green Infrastructure Standards for England, naturalengland.org.uk).

5.1.2 Sites of Importance for Nature Conservation (SINCs)

Southwark has a network of Sites of Importance for Nature Conservation (SINCs). They contribute to the green connections which link open space and nature to Southwark's communities.

SINCs are designated based on the habitats and species they support and their value for nature conservation. SINCs may also be designated as statutory local nature reserves, or as open land.

They often include;

- Areas of protected Priority Habitat. In Southwark, this includes woodland, open mosaic habitat and ponds.

- Areas of irreplaceable habitats, such as ancient woodland and veteran trees.

Developers should avoid damage and/ or disruption to a SINC. Developers should refer to Southwark Maps to check how close their site is to a SINC and follow the ecological mitigation hierarchy (refer to section 5.2.1).

Proposals should consider the effect of shading and artificial lighting on nearby SINCs and other habitats. Bat Friendly lighting should be used where appropriate, in line with guidance in ILP (GN08/23).

Where negative impact on a SINC is unavoidable, mitigation should be carefully considered from the site design stage. It will only be permitted in exceptional circumstances. It should be discussed with the council at pre-application stage.

Best practice for SINCs (all development types)
• Development should enhance habitat connectivity to a SINC and, where possible, between SINCS and open spaces. • Development next to open spaces should include green buffers of biodiverse planting. The width should be proportionate to the site and aim to create an ecological transition between the land uses on site. • Development should aim to prevent the creation of wildlife barriers which block green corridors and fragment habitat.

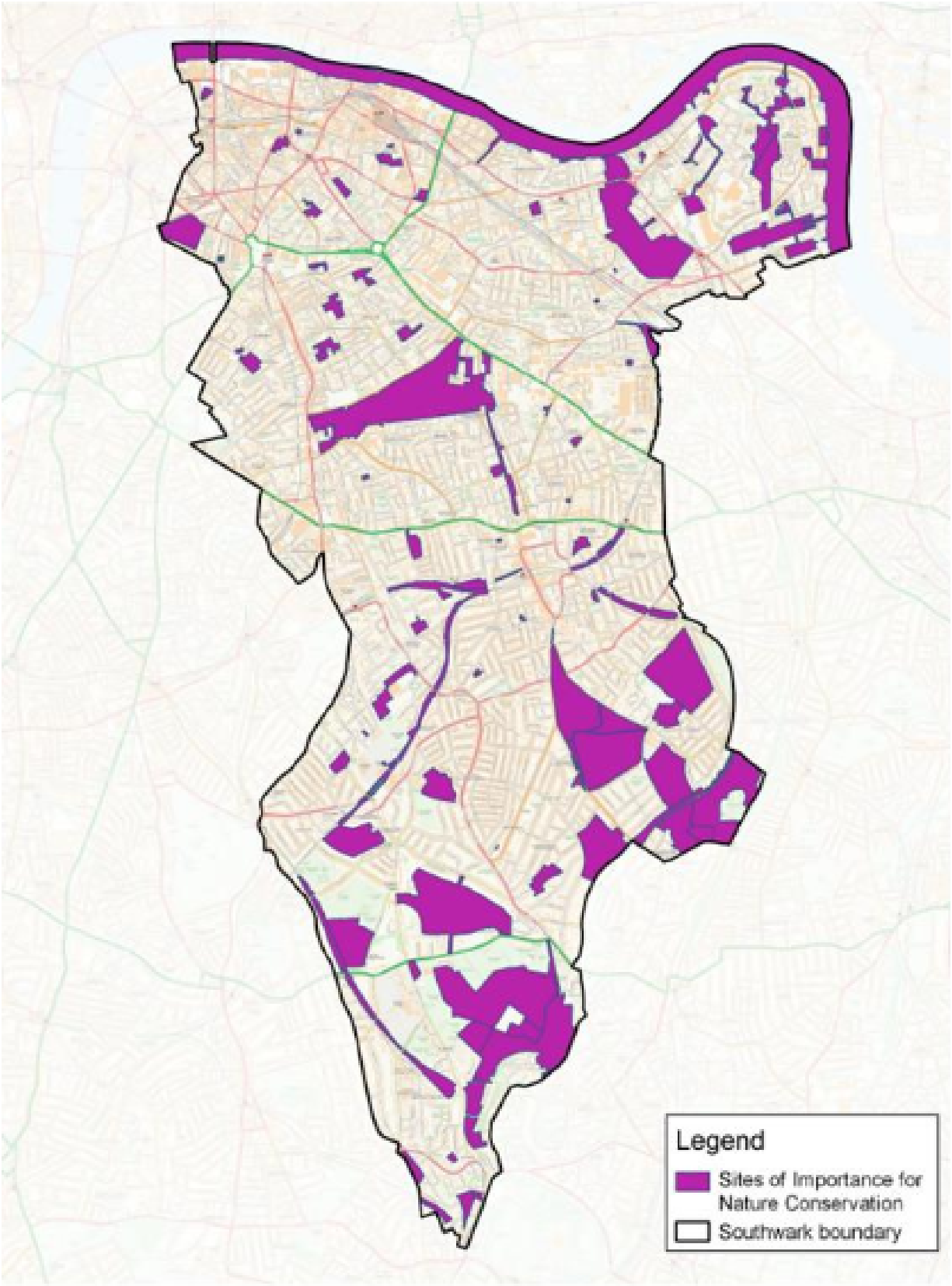

Figure 17: Map of SINCs in Southwark

5.1.3 Urban Greening Factor (UGF) - Major developments

The London Plan's Urban Greening Factor (UGF) policy G5 relates to the benefits provided by different surface and ground coverings. These range from sealed surfaces to landscaping and biodiverse green roofs. Benefits include surface water absorption and increased biodiversity.

All major developments must meet the London Plan's UGF targets. This is particularly important in areas of high density and/or open space deficiency.

- Mainly residential development should score a minimum UGF of 0.4.
- Mainly commercial development (excluding B2 and B8 uses) should score a minimum UGF of 0.3.

Applicants should refer to the council's validation checklist for the UGF planning application requirements. These are separate to the validation requirements for Biodiversity Net Gain.

Best practice for UGF (all development types where relevant)
• Urban Greening Factor (UGF) should be considered alongside Biodiversity Net Gain. UGF surface and ground coverings with a higher rating tend to be more beneficial for biodiversity. • Trees on roofs should be counted in the UGF calculation as intensive green roof only. They should not be counted again in the tree planting surface category. • Ground-level trees in planters should not be included in UGF calculations. • Avoid over-extensive use of mown lawns, where possible. • Retain or maximise the coverage of shrubs and hedges on site. • Refer to the Mayor's Urban Greening for Biodiversity Net Gain design guide. • Refer to national UGF guidance UGF 3.3 User Guide (naturalengland.org.uk). • Refer to section 5.3 for best practice on wildlife planting

5.1.3 Green roofs and green walls

Green roofs provide a growing medium and drainage system for a range of plants. They can provide thermal efficiency, biodiversity and amenity.

Green roofs can be categorised as follows:

	Extensive Green Roof	Semi-intensive Green Roof	Intensive Gren Roof or vegetation over structure
Planting type	Mosses, herbs, grasses	Grasses, ferns, woody plants and shrubs	Lawns, perennials, shrubs, trees
Maintenance and Use	Low maintenance Visual and Biodiversity.	Maintenance depends on planting	High maintenance Amenity space – roof gardens
Minimum depth of settled substrate	80mm (or 60mm beneath vegetation blanket)		150mm

Developers should provide details of the design, construction and management of green roofs and consider structural loading requirements early on. This includes:

- The depth and specification of the substrate. This should be suitable for shallow and deep-rooted plants. Variable depths can create habitats for a greater range of invertebrates. Pebbles, gravels, sands, branches and logs can offer suitable habitats.
- A roof plan showing the number, size, species and density of the proposed planting. Green roofs will be expected to be laid out in accordance with this plan.
- Drought tolerance of the planting.
- How the roof will be used. Not all green roof types are suitable for amenity sitting out space and will be restricted to maintenance or emergency access only. Incorporating solar PV onto a green roof will also reduce the area available for greening and will require a specific design.
- Maintenance. This includes the frequency of irrigation and who is responsible.
- Confirmation that the green roof will be planted and/ or seeded within the first planting season following practical completion.

Extensive green roofs should not be used as amenity sitting out space and should only be used in the case of essential maintenance, repair or escape in the event of an emergency. Semi-intensive and intensive green roofs can be used for amenity space, but any proposed seating should be situated on hard surfaces and not on the greenery.

Green walls may be either green facades or living walls. Green facades use plants rooted from the ground or planter boxes that climb up trellises. Living walls use modules across the wall. Irrigation and maintenance needs must be considered from the outset.

Fire regulations should be considered when designing a green wall. Dry grasses and oily foliage should be avoided. Built heritage and townscape impacts should also be considered.

Best practice for green roofs and green walls (all development types where relevant)

Biodiverse green roofs should:

- Aim to meet the definition of Open-Mosaic Habitat: a patchwork of varied, habitats with a range of ground conditions (substate, topography, water and nutrient availability, aspect) and vegetation heights.
- Capture rainwater and minimise runoff;
- Use sustainable irrigation, not mains water
- Use minimum 75% wildflower planting and maximum 25% sedum coverage;
- Have varied substrate composition and depth;
- Include invertebrate enhancements such as log and sand piles;
- Be compatible with solar panels (bio-solar roofs) where practical;
- Be considered on structures such as cycle storage and bin stores, where practical.

Green walls should

- Maximise solar gain in winter and provide shading for buildings in summer;
- Include native plants and those listed in the RHS plants for pollinators guide18.
- Be considered on perimeter walls and small structures such as bin and cycle stores

Figure 18: Modular living wall in Elephant and Castle

5.1.4 SuDS and rain gardens

The management of surface water SuDS and rain gardens provide opportunities for enhanced biodiversity, landscaping and amenity features.

Rain gardens provide an opportunity to channel surface water towards root areas and provide low maintenance irrigation. They should have absorbent and free draining soils, although below ground utilities and known archaeology should also be considered. Rain gardens should use plants which are resilient to inundation and trees, shrubs and herbaceous perennials which have a known benefit wildlife.

Best Practice for SuDS and rain gardens (all development types where relevant)
Sustainable drainage systems (SuDS) should: • Be integral to project design; • Provide additional benefits where possible. These may be for ecology, urban cooling, visual quality or amenity; • Consider opportunities to incorporate nature-based SuDS. For example bioswales, rain gardens and rainwater re-use and harvesting. For further guidance please refer to SuDS in London – a guide (tfl.gov.uk)

5.2 Biodiversity and ecology

5.2.1 Ecological mitigation hierarchy

The ecological mitigation hierarchy (Figure 19) is an established approach to mitigating the ecological impacts of a development. The steps should always be followed when designing a site, before mandatory Biodiversity Net Gain is applied. This will help limit any negative impacts on biodiversity.

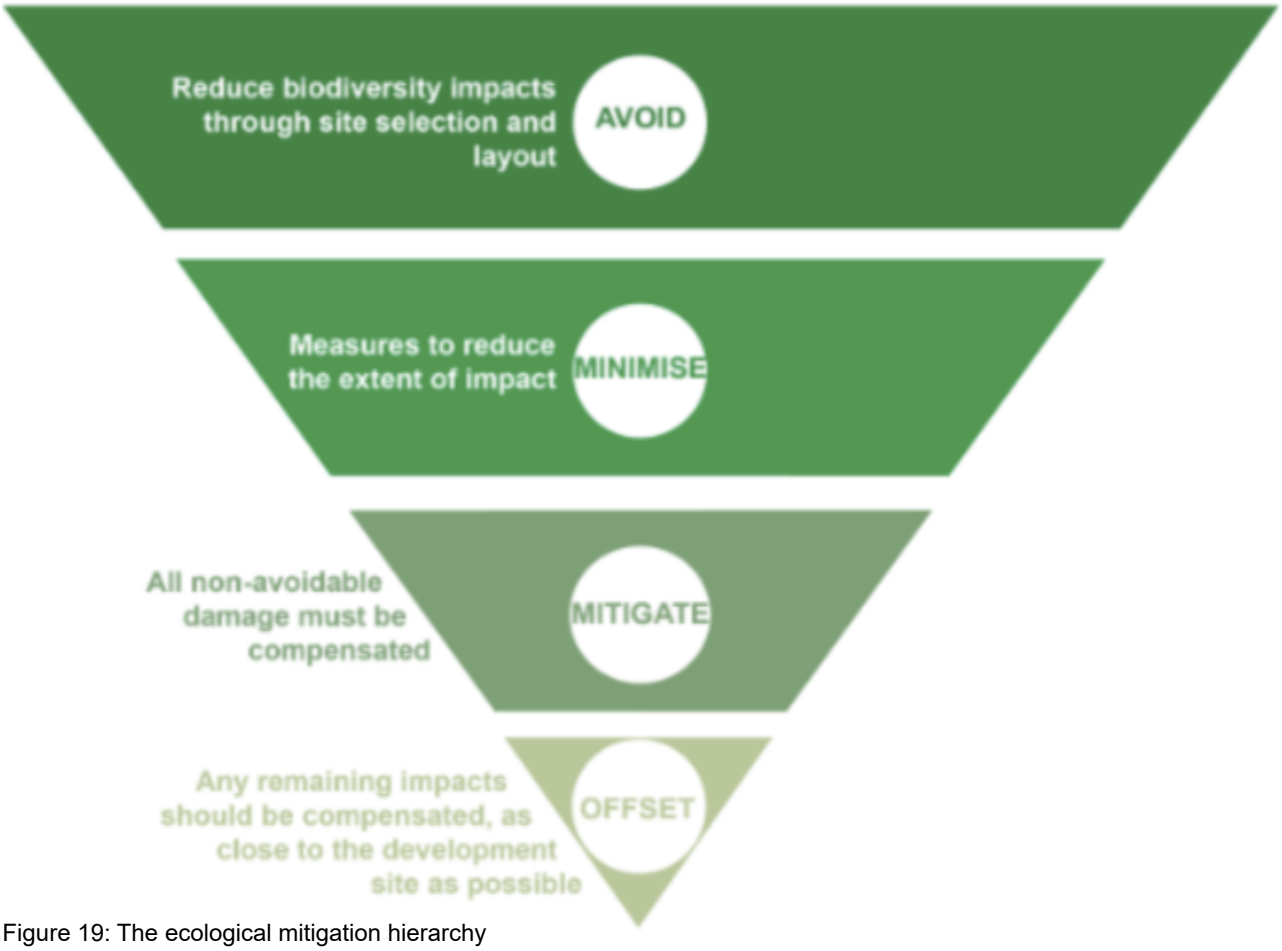

Figure 19: The ecological mitigation hierarchy

5.2.2 Biodiversity Net Gain (BNG)

Biodiversity Net Gain (BNG) is a statutory requirement arising from the Environment Act (2021). It ensures that habitats are left in a measurably better state than they were before the development.

Major and minor developments (with some exceptions) must provide a minimum of 10% Biodiversity Net Gain over the pre-development biodiversity value of the site. This is a legal requirement. BNG does not remove the need for the ecological mitigation hierarchy or other environmental and protected species legislation, guidance and professional codes. Further details are on the Government's biodiversity web pages.

Applicants should aim to deliver the greatest biodiversity gain possible, designed and delivered in a way which is appropriate to the site context. Applicants should check whether their site is in or close to a designated open space or a Site of Importance for Nature Conservation (SINC). Consideration should be given to how onsite biodiversity relates to existing habitats or green corridors within the site or beyond the red line boundary.

Any irreplaceable habitats present on a site should be recorded in the Biodiversity Statutory Metric. In Southwark, irreplaceable habitats include ancient woodland and veteran trees. Impacts on the habitats should be avoided. Any impacts flagged will be considered unacceptable and will require discussion with the council. If there are no impacts, the enhancement of irreplaceable habitats can contribute towards a development's BNG.

Impacts on the borough's Priority Habitats, defined by UK Hab data, should be avoided. These habitats include woodland and ponds. Applicants should check Southwark Maps and www.magic.gov.uk for the location of these areas and the habitat type.

BNG should be provided on-site. Where this is not possible, offsite BNG should be provided. This should be as close to the site boundary as possible. A registered offsite BNG provider should be used. Evidence will be required at planning application stage of any offsite BNG units being reserved or purchased. Statutory credits will only be accepted as a last resort. This must be discussed with the planning case officer before an application is submitted.

Habitat interventions need to be realistic and deliverable within the defined project timeframe.

Completing the Statutory Biodiversity Metric

Applicants should follow the guidance in the Government's Statutory Metric User Guide. The correct statutory BNG metric should be used. The biodiversity metric Trading rules and Principles must be followed.

If a small site is proposing offsite BNG or if Irreplaceable Habitat or Priority Habitat is present onsite, the Statutory Metric should be used.

The metric should be used as early as possible in the site design process. It should guide decisions on how to avoid biodiversity loss and maximise gains. A competent individual, such as an Ecologist, should complete it. A qualified river condition assessor should complete the watercourse part of the metric. This applies if the site has a watercourse, or any part of the site's red line boundary is within 10m of a watercourse.

Applicants must meet the validation requirements on the Southwark Council website. Further guidance can be found in the Government's Biodiversity Net Gain PPG.

The Biodiversity Gain Plan and completed statutory metric submitted after planning approval must be reflective of site design.

Strategic significance

Strategic significance in the BNG metric describes the local significance of a habitat, based on location and habitat type. Strategic significance is set to either high or low and should be recorded in the pre and post-development parts of the metric.

The statutory metric requires applicants to apply a strategic significance score of 1.15 if it is close to areas where sensitive ecology which are mapped. When available, applicants should also refer to London's Local Nature Recovery Strategy (LNRS). Sites close to the LNRS will have a strategic significance score of 1.15.

In the meantime, if a development site and/ or habitat to be created or enhanced is in or adjacent to the following locally ecologically important sites, the strategic significance in the metric should be set to 1.15.

- Local Nature Reserve
- SINC
- Designated open spaces (MOL, BOL)
- Open water
- Sites with a Habitat Action plan listed in the Southwark Nature Action Plan (SNAP)
- Priority Habitat, as defined by Natural England.

The low distinctiveness score should be used where the site area or compensation area is not defined in the local strategies above.

BNG 30-year management and monitoring

Government policy requires that BNG which is considered to be 'significant' is maintained by the developer or landowner for 30 years from the completion of the scheme. In Southwark, the definition of 'significant' BNG will depend on;

- the scale and complexity of the site
- the pre-development and post-development biodiversity value and distinctiveness, as defined by the Biodiversity Metric.

Significant BNG will be secured in a S106 agreement. A monitoring fee will be required. Development sites with significant BNG will be required to;

- Submit a Habitat Management and Monitoring Plan after planning approval, before the commencement of development. This is in addition to the requirement for a Biodiversity Gain Plan and a final, completed Statutory Metric.

- Manage and maintain the BNG for at least 30 years after the development is completed.

- Submit Habitat Condition monitoring reports to the council at agreed intervals. This will typically be at years 2, 5, 10, 15, 20, 25 and 30.

Best practice for BNG (all development types)
• Consider how biodiversity measures can be multi-functional. They can form part of the site's landscaping and amenity space strategy. They can also form part of nature-based sustainable drainage systems. • Deliver BNG in a way which is most beneficial to the site. For example, native species should be prioritised in habitat corridors and priority habitat/ ancient woodland. • Use the council's pre-application service if you need advice. • Refer to Southwark's Nature Action Plan 2020 for information on biodiversity and protected species in Southwark.

5.3 Trees

Trees are an important feature of the borough's public realm and amenity space. They provide a range of benefits:

- Character and a sense of place
- Screening, cooling and shading benefits
- Filtering traffic noise
- Absorb dust and other pollutants.
- Provide ground, trunk and canopy habitat for a range of birds and invertebrates

Large, mature trees are a landscape, environmental and amenity asset. Development should avoid and mitigate the risk of damage to trees and their root systems during design and construction. Developers should refer to the British Standard BS 5837:2012 for trees. This relates to design, demolition and construction.

An Arboricultural Impact Assessment will be required at planning application stage for any application where there is a tree protection order (TPO). Refer to Section 9.2 of Southwark's Heritage SPD for more information.

Applicants should refer to the Southwark's Streets for People Strategy. This provides guidance on tree planting and nature-based solutions on highways and public footways. Tree planting should allow easy access for future maintenance to underground services. For example, gas and water pipes, and electricity cables. Refer to Street Works UK guidance for further details.

Applicants should adhere to the 'right tree, right place' principle, and follow the guidance in the Southwark Tree Management Policy.

Trees planted as part of a development must be maintained according to guidance from the Woodland Trust until they are fully established. Tree canopy cover onsite should be increased where possible. This will support the Southwark Climate Change Strategy (2021) goal of reaching 24% canopy cover by 2030.

CAVAT (Capital Asset Value for Amenity Trees (CAVAT)

CAVAT is one of the principal methods of tree valuation in the UK. It recognises the value of large, mature trees are a landscape, environmental and amenity asset. All Category A and Category B trees should be retained onsite. Only in exceptional circumstances will the council allow appropriate replacement with new trees. Applicants must justify this with evidence.

Replacement must not cause a net loss of amenity. This is based on the existing value of the benefits of the tree removed, calculated using CAVAT. Applicants should appropriately mitigate any loss of category C trees.

Tree specifications

Developers should plant trees that are resilient to the impacts of climate change and appropriate to the site context. Developers should refer to Southwark's latest Species Palette for a list of appropriate trees. Large canopy trees should be planted where possible.

Newly planted trees should have a stem circumference of 12-16cm (measured at 1m above root collar level). This is because trees of this size are more adaptable to planting and establish growth faster than larger tree stock.

Trees must be planted with sufficient soil volume:

	Canopy area	**Target soil volume**
Large (8m plus diameter)	50m² +	30m³
Medium (5m - 8m diameter)	19.6m² +	12m³
Small (3m – 5m diameter)	7.1m² +	5m³

Note: This formula does not apply to columnar habit trees. The soil volume requirements can be calculated for narrow trees by basing the canopy diameter on the natural growth form, which is the widest spread of that species.

Best practice for trees (all development types)

Where possible, trees should be provided at grade, on a level surface and in natural soil. Planters should be avoided.

Soil

Trees need nutrient rich, moist, well aerated and uncompact soil to mature in an urban environment. Degraded soil should be improved or replaced. Soil should be improved by:

- Increasing rootable volume.
- Decompaction.
- Mixing heterogenous, obstructive soil layers.
- Soil amendments (e.g. compost (tea), sand, clay, lava, biochar, limestone – depending on the problem).
- Soil replacement by suitable high -quality planting substrate. This should only take place if it is impossible to sufficiently improve the current soil).
- Tree pits should include a gravel aeration layer and be constructed in a manner which avoids soil compaction.

Development which is set back from woodland should be planted so that a woodland buffer can develop. This helps provide a gradual transition; as follows:

1. Forest trees such as oak, ash and beech, to
2. Woodland edge trees such as birch, hawthorn, rowan and sallow
3. Woodland edge shrubs such as blackthorn, dogwood, elder, hazel
4. Wayfaring trees, herbaceous vegetation and gardens.

The width for a woodland buffer area is around 15m. This is measured from the centre of the trunk of the largest forest tree species growing closest to the edge of the existing woodland.

Trees in Conservation Areas

Development that affects trees in a Conservation Area should consider the landscape setting, as well as the role of the trees in the historic context. This may be particularly important in the Dulwich Wood area. Developers should refer to the relevant Conservation Area appraisal. (Conservation Areas - Southwark Council).

5.4 Wildlife habitats

Developers should consider ways to improve the habitats they provide for wildlife. Features such as swift bricks, bird and bat boxes are strongly encouraged and are usually required by planning conditions. Insect hotels, log piles and hedgehog friendly fencing should be considered.

These features cannot be counted in the Biodiversity Net Gain Statutory Metric, but should form part of the site's overall biodiversity strategy.

Developers are encouraged to survey for fauna before undertaking maintenance or development. A Preliminary Ecological Assessment (PEA) will usually be required. Refer to the council's validation checklist for details.

5.4.1 Diverse planting

Planting strategies should go beyond traditional soft landscaping and tree planting. Wildflower meadows, mini woodlands, mixed native hedging, orchards and wildlife ponds should also be considered. It should provide a variety of microclimates for users, such as access to sun, shade and wind shelter.

- Planting strategies should be developed which cater for local wildlife and declining species. Professional advice should be sought where possible.
- Planting should include a high proportion of nectar rich, pollinator-friendly flora and native species, ideally at least 50%.
- Vegetation and planting should be used to stabilise slopes and soils vulnerable to erosion
- Barriers which block the movement of wildlife, such as hedgehogs, should be removed where possible.
- Area created to promote biodiversity should be maintained to a high standard to promote longevity.
- Management plans for the long-term maintenance of habitats for biodiversity should be in place for grounds maintenance.

Best practice for wildlife habitats (all development types)

Swift bricks

- Swift bricks should be installed where possible;
  - » 1 to 4 should be installed on a medium to large house
  - » 4 to 10 on a small block of flats and 10 to 20 on a large site e.g. a school, hospital, warehouse or major residential development.
- Swift bricks should be at least 5 metres above ground, out of direct sunlight or shaded beneath broad eaves.
- Allow a minimum 5m clear drop beneath and in front of the box
- To avoid disturbance, there should be a minimum of 5m without windows or doors under and in front of swift boxes.
- They should not be obstructed by trees, cables, creepers or aerials.

Bird boxes

- Use untreated wood
- Clean out each year in winter, use boiling water.
- Use different size holes to cater for different species.

Bat Boxes

- Use untreated wood and scour the inside back panel so the bats can grip it
- Never clean out or disturb the bat boxes – a licensed bat specialist is required to do this
- Affix boxes facing south or southwest
- Install several around 1 tree as bats like to move about during the seasons
- Avoid installation in illuminated areas.

Best practice for diverse planting (all development types)

Wildflower Meadows

- Seed mixes should include UK native wildflowers and meadow grasses
- Aim to include 50% native species and a minimum of 60% of plants on the RHS 'Perfect for Pollinators' list.
- Position to optimise exposure to the sun
- Meadows can be established with meadow turf (plastic-free) or by sowing seeds. Ground preparation will be required.
- Timed maintenance, including once or twice a year 'cut and collect' regimes will allow plants to seed after flowering and maintain low nutrient levels.
- Signage can be installed to communicate the benefits of 'relaxed' mowing regimes.

Invertebrate habitats or 'insect hotels'

- Build wooden structures with a variety of fillings, including canes, bark, wood, rolled up corrugated cardboard, reeds and stones and secure with mesh.
- Use untreated wood if possible.
- Log piles and dead hedges can be left as habitat for invertebrates.

Loggeries and habitat piles

- Invertebrate habitats provide shelter to insects and foraging habitat for birds and mammals. This includes dead wood and loggeries, valuable habitats for the endangered stag beetle
- Install logs vertically, half buried in soil and secure well
- Use broadleaf hardwood (e.g. oak, beech, sycamore, ash), not conifer wood.
- Site the loggery in a partially shaded site.
- Install log or stone piles close to the pond to provide shelter for amphibians

Hedgehog friendly fencing

- Hedges or open fences allow hedgehogs through without modification.
- A 13 x 13cm hole will allow a hedgehog to pass through, while limiting other animals such as cats or foxes.
- Use gravel boards with precut holes which allow hedgehogs through without affecting strength or security.

5.5 Open water

Development by open water should maximise benefits for water ecologies. Developers should balance this with access and amenity improvements.

New development should be set back from watercourses or open water. This creates a buffer area for environmentally sensitive design and management. Buffer planting should include trees or shrubbery with understorey vegetation. It should complement and enhance the area that it is protecting. Lighting design should minimise light spill onto open water.

Wildlife ponds provide a water source and attract wildlife such as frogs, newts and dragonflies. Ponds with wetland and marginal planting should be included where feasible. Ponds should be dug to provide a range of depths and shallow profiles. Refer to the Wildfowl and Wetland Trust website for a step-by-step guide.

Best practice for open water (all development types)

Wildlife ponds

- Locate the pond away from trees to avoid it filling with leaf fall.
- Try and fill the pond with rainwater. Mains water can result in algal blooms.
- In small ponds, avoid introducing aggressive marginal plants such as flag iris and fish, which eat amphibians.
- Consider fencing the pond or installing a surface grid for safety

CHAPTER 6

MOVEMENT & TRANSPORT

6. MOVEMENT & TRANSPORT

This section provides more detail on applying the Southwark Plan 2022 policies 'P49 Public transport', 'P50 Highways Impacts', 'P51 Walking', 'P52 Low line routes', 'P53 Cycling', 'P54 Car parking' and 'P55 Parking standards for disabled people and the physically impaired'.

It also relates to London Plan 2021 Policy 'T1 Strategic approach to transport', Policy 'T2 Healthy Streets', Policy 'T3 Transport capacity, connectivity and safeguarding', Policy 'T4 Assessing and mitigating transport impacts' and Policy 'T5 Cycling'.

A whole site approach will need to be taken to achieve more sustainable transport outcomes following the hierarchy set out above.

6.1 Walking and wheeling

6.1.1 Designing streets

Streets and footpaths should be designed to be walkable, accessible, safe and inclusive for all. The Southwark Streetscape Design Manual (SSDM) demonstrates how to create streets that can be enjoyed by everyone. This manual should be referred to for any development which interacts with public streets or footpaths.

Streets can be improved for all users by:

- Including clear, logical and inclusive wayfinding signage, maps and local information.
- Using safety measures. This can include the use of lighting, passive surveillance of the street or encouraging street activity.
- Placing safe crossings for pedestrians along key walking routes. The crossings should be straight across the road and located for the benefit of pedestrians. Crossings should also link up with walking routes.
- Submit details of the gradient, length and landing of any ramps and provide spot levels (points which indicate height above sea level) on plans for any area of the site that will have direct access onto the public highway.
- Creating walkways that protect pedestrians from collisions with cyclists. Design pedestrian and cycling paths to be separated by a kerb, different paving or painted line which delineates the mode of travel.

Footpaths can be improved all users by:

- Maintaining a minimum width of 4m from kerb to property on the local road network. This minimum width should be 7m for Old Kent Road.
- An unobstructed path of 2.4m will need to be maintained where there is street furniture in place (such as plantings, cycle parking, or outdoor tables and chairs)
- Using tactile paving so that visually impaired people can detect dropped kerbs with their feet and cane. The inclusive mobility guidance sets out more information on the types of tactile paving that can be used.
- Considering wheelchair user access to the front door of the building from the back edge of the public highway, routes to/from Blue Badge Bays and routes to/from accessible cycling spaces.

Best practice for designing streets

To make streets as accessible and easy to use for all users, it is best practice to use tonal and colour contrast, which can help visually impaired people identify street furniture.

6.2 Cycling

Reducing emissions from private vehicles is an important step towards making the borough carbon neutral by 2030. Many people use cars, or other polluting vehicles, because there are barriers to travelling in a more sustainable way. Storing a bicycle, for example, can often be difficult without a dedicated cycle store.

To encourage more sustainable travel, developments must provide adequate provision of high-quality cycle parking and storage. This needs to be considered at the start of the design process.

6.2.1 Cycle parking requirements

The Southwark Plan 2022 policy 'P53 Cycling' and London Plan policy 2021 'T5 Cycling' set out cycle parking requirements. These requirements will ensure that current and future demand is catered for. The amount of required cycle parking spaces varies depending on the development type. There are also different requirements for visitor and long-stay cycle parking.

Sprawling areas often need higher levels of cycle parking as there can be poor accessibility to public transport. This is to ensure there are good opportunities for sustainable travel in these areas.

To address this, residential development should:

In areas of low Public Transport Accessibility Levels (PTAL) (≤4),

- Meet at least the minimum cycle parking requirements of the London Plan policy T5. This is a higher requirement than the Southwark Plan policy P53.

In areas of higher Public Transport Accessibility Levels (PTAL) (≥5),

- Meet at least the minimum cycle parking requirements of the Southwark Plan policy P53. This is a higher requirement than the London Plan policy T5.

6.2.2 Cycle parking design

Applicants must refer to the latest design standards when designing a cycle store. This may be updated by Transport for London or another relevant transport body.

The council will only accept cycle parking spaces in Sheffield stand or two-tier rack form. This is due to their ease of use. The required amounts of each stand will depend on the type of development and the expected users. Vertical or semi-vertical racks are not considered acceptable. These require lifting of cycles and may therefore be difficult for some to use. They can also cause damage to cycles.

Cycle parking must also be accessible for people with different needs and physical abilities. Many young families for example use cargo bikes as their main mode of transport. Disabled people can also operate various adapted cycles that fit their abilities. Both of these cycles will need larger parking spaces than standard bicycles. This approach is in line with Southwark Plan Strategic Policy 'SP6 Climate Emergency', which states that Southwark should be a place where 'walking, cycling and public transport are the first choice of travel as they are convenient, safe and attractive'.

Further design principals for cycle storage include, but are not limited to:

- Entrance to the cycle storage facility should be easy and separate to any vehicle traffic and located away from delivery bays.
- The entrance should be well overlooked and well lit, particularly at night-time or where the parking is under cover.
- Access should be considered carefully, particularly for those using non-standard cycles, with clear signage from the main entrance of the building.
- Access routes to the storage should be 1.5 wide minimum in any new development.
- Doors on routes to cycle stores must be power assisted.

- Aisles within the storage must be 2m wide with Sheffield stands, and 2.5m wide with two-tier racks.
- It is recommended that external doors are a minimum of 2 metres wide.

Small schemes and conversions may not be able to provide cycle parking in a building. In these cases, a secure, weatherproof place to store all types of cycles should be provided. These can be in the form of purpose-built cycle stores that are enclosed on all sides. Horizontal bike lockers for individual properties can be accepted where space does not allow for a traditional purpose-built cycle store.

6.2.3 Showers and changing facilities

These are required for all commercial development. These are places or rooms within a commercial or office building that are designed to support people who cycle or walk to work.

These should include:

- Accessible changing facilities
- Showers - Generally a shower is required for every 10 cycle spaces
- Lockers - there should be a locker per cycle space.

6.2.4 Short stay cycle parking – for visitors and customers

Required short stay cycle should be provided on site wherever possible. This is to encourage shoppers, customers, deliveries and visitors to travel sustainably.

The parking may only be provided on the street in exceptional circumstances. This is typically when the constraints prevent the parking being provided on site. A S106 contribution of £370 per Sheffield stand (as of 2024) will be required to facilitate on-street cycle parking. This figure may vary from year to year.

6.2.5 Encouraging cycling

The following methods can be included in proposals to help to encourage cycling.

Cycle clubs

- Cycle clubs can be created in residential and non-residential developments by providing free bookable standard cycles and e-bicycles during the tenancy.

Cargo bike clubs:

- Southwark has sponsored the introduction of cargo bikes in Walworth and Dulwich through a partnership with Peddle My Wheels, as part of the OurBike scheme. These can be utilised by residents to allow them to sustainably make their own deliveries and collections (such as weekly shopping).

Pool bikes

- The following steps can be taken to help with setting up a pool bike scheme:

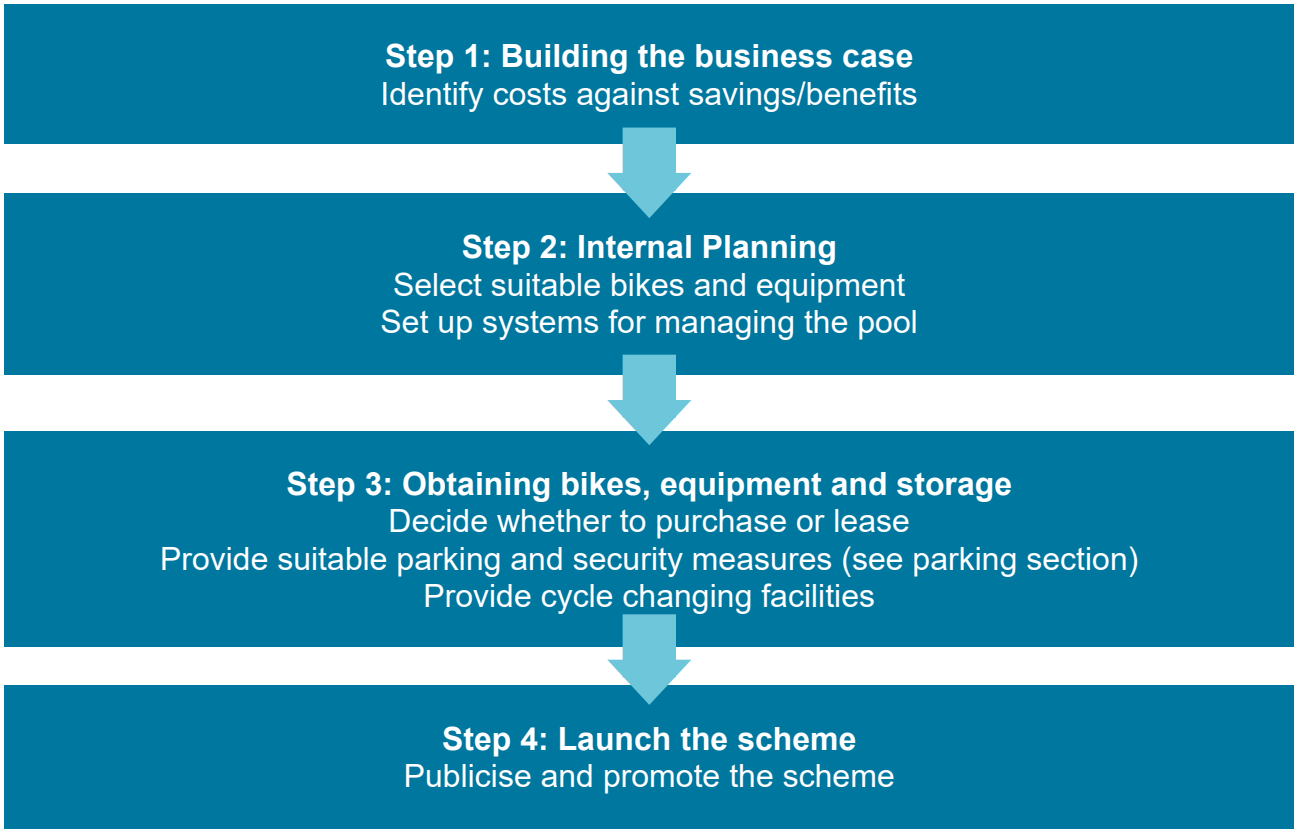

Figure 20: Flowchart showing steps that can be taken to help with setting up a bike pooling scheme.

6.3 Accessible public transport and capacity

6.3.1 Providing good walking and cycling links to public transport

Safe and accessible walking and cycling routes can encourage the use of public transport.

The following steps should be taken when providing these links:

- Consider how the users of the development are likely to move around. Likely movements will include travelling to and from work, local amenities (such as parks) and infrastructure (such as schools). These movements will vary between different types of development
- Identify existing walking and cycling routes which surround the site.
- Map how the site can connect to public transport such as buses, London Underground and National Rail routes
- Consider how the development can establish links between existing walking and cycling routes and surrounding public transport
- Where possible, collaborate with neighbouring sites to create new walking and cycling route

6.3.2 Assessing the impact of development on the transport network

To assess the impact of development on public transport it will be necessary to:

a. Establish the accessibility level of a site using the Public Transport Accessibility Levels (PTAL) rating. A development on a site with a high PTAL rating is unlikely to have a noticeable impact on existing transport services. Whereas a major development on a site with a low PTAL rating (normally 3 or below) may have difficulties relying on the existing public transport service.

b. Conduct a trip generation exercise on TRICS. This is the best way to understand the impact of development on the public transport network. This will show if the network has capacity to support an increase in journeys and allow the council to recommend the mitigation of any adverse impacts via S278 works, S106 contributions and other information.

Major developments will need to provide Transport Assessments and supporting documents to assess the impact of development on transport.

These supporting documents include:

- Travel Plans
- Transport Statements
- Movement Plans
- Delivery and Servicing Plans
- Car Parking Management Plans
- Construction Environment Management Plans
- Active Travel Zone Assessments
- Construction Logistics Plan
- Trip Generation Report
- Levels and Gradients Plan

A Movement Plan is a diagram that shows how different users, including pedestrians, cyclists and motorists, will arrive and depart from a site and move around within the site. The Plan should also show the location of infrastructure. This includes cycle routes and lanes, cycle hire docking stations, pedestrian routes and crossings. This may be as simple as a drawing which shows how different types of users/trips move around, to and from the site.

6.4 Shared transport and car clubs and reducing reliance on cars

6.4.1 Reducing reliance on cars

Southwark Plan 2022 policies support car-free development in all areas across the borough.

Car free development means that no parking spaces are provided as part of the development on site. New developments will also not have access to parking permits in any existing or future Controlled Parking Zones (CPZs). This is separate from any requirement to provide Blue Badge parking bays.

Car-free developments in accessible areas will help Southwark grow sustainably by reducing reliance on the private car. In some cases where public transport accessibility levels are lower, a limited amount of car parking may be needed. Car Clubs can be a good way of limiting the amount of space used on parking. Some developments will need to contribute towards a Car Club.

The provision of Car Club spaces and vehicles on-site will be secured via an S106 agreement. See S106 SPD for more information.

In some cases, it will be necessary to provide on-site car parking spaces and/or vehicular access for blue badge holders where required. A strategy should be provided which ensures that blue badge holder parking spaces are allocated based on need.

6.4.2 Electric Vehicle Charging Points (EVCPs)

Electric Vehicle Charging Points (ECVPs) must be provided for every permitted parking space in a new development. This is in accordance with Southwark Plan 2022 Policy 'P54 Car parking' and London Plan Policy 'T6.1 Residential parking'.

Supporting electric vehicle use can be achieved by:

- Ensuring 20% of spaces and Disabled spaces are fitted with active EVCPs, and 80% are fitted with passive (not connected) EVCPs.
- Ensuring EVCPs are well designed and do not obstruct pavements or cause them to become inaccessible.
- Ensuring EVCPs are regularly maintained. This may be secured by a condition of planning permission.
- Specifying locations within the site layout plans and whether they are passive or active.

Best practice for EVCPs
Where a small number of parking spaces are provided, 100% active provision of EVCPs is encouraged. Blue Badge parking bays should be prioritised for EVCPs.

CHAPTER 7

WASTE MANAGEMENT & RECYCLING

7. WASTE MANAGEMENT & RECYCLING

7.1 Management of domestic and commercial waste and recycling in new developments

This section provides detail on applying Southwark Plan 2022 policy 'P62 Reducing waste'. It also relates to the London Plan Policy 2021 'SI 7 Reducing waste and supporting the circular economy' which set out the policy requirements.

A Waste Management Statement (WMS) will need to be submitted for all full planning applications that would generate residential or commercial waste. This should contain a commitment to reducing waste generated on site. It should also commit to reusing and recycling construction, demolition and excavation waste.

7.2 Communal refuse facilities – Residential

The waste management guidance notes for residential developments set out the suitable types of waste storage and collection arrangements for residential developments

Best practice for residential communal refuse facilities

Space provision

To help residents recycle where possible, there should be space for them to separate out waste into two different containers. One for recyclable and one for non-recyclable waste.

Purpose built flats should consider:

- Storage space including maturing areas
- Storage areas for communal food waste containers
- Storage space inside kitchens for seven litre containers
- Sufficient space to accommodate wormeries on balconies.

Storage specification

Purpose built flats should consider:

- On site in-vessel food waste digesters
- Food waste disposal units (underneath sinks)

Developments with gardens should consider providing composting facilities.

7.3 Communal refuse facilities – Commercial

Location

- Storage of bins on public streets will not be supported.
- Storage areas for bins should be separate for non-residential and residential

Space provision

- British Standard BS 5906:2005 should be used to calculate the capacity of waste storage needed. Where the end user of a building is not known, calculations should assume the highest levels of waste generation likely for that use class.

Accessibility

- Recycling facilities should be as easy to access as waste facilities.
- In large developments, more than one waste container will need to be accommodated. The lift doors and adjacent lobby or corridor must be sized so that waste containers can be easily manoeuvred. In new buildings, storage containers should, wherever possible, allow movement of containers to the collection point without going through a building. (Unless it is a porch, garage or carport or other open covered space).
- Paths (between bin storage and collection point) should be level, unless the gradient falls away from the housing or chamber, in which case it should not exceed 1:12 (BS5906).
- Where collection vehicles must enter a development, there should be sufficient on-site turning circles or hammerheads. This is to allow safe manoeuvring and exit from the development.

Storage specification

- Applicants will need to provide information on the expected waste to be generated by the proposed use and the frequency of collection. Applicants must also explain how the storage capacity provided is adequate, including for organic waste.
- Generally, enough space to store waste for a week should be provided.
- An operational waste management plan should be submitted with the application.

Best practice for storage specification
In addition to the traditional container options, developers may wish to look at further options for storage of their waste pending collection. Any non-standard collection methods of collection or storage of waste, e.g., use of compactors, vacuum-based technology, or roll-on, roll-off skips, should be discussed with our operations team prior to submitting a planning application.

7.4 Clinical or hazardous waste

Clinical waste includes anything containing bodily fluids or tissue (such as bandages, plasters, and incontinence pads), discarded drugs or needles. Clinical waste must be stored separately from all other waste. Normally clinical waste is sealed inside yellow, coded bags. Sharps (such as needles) are stored in special boxes.

Any development containing any sort of medical centre, dental surgery, veterinary surgery, assisted living, nursing home, or home or day centre for disabled people must have separate storage and collection arrangements for clinical and non-clinical waste.

7.5 Managing litter associated with hot food takeaway businesses

Measures may need to be put in place to reduce the litter associated with hot food takeaway business to ensure there is no unacceptable impact from litter on the amenity of the area.

Best practice for hot food takeaways
Reduce litter from hot food takeaway by: • Installing litter bins in the local area • Commit to litter picking • Put up advertising signage to encourage disposal of litter.

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