

12. Open Spaces and Green Infrastructure

12.1 Strategic Policy S14: Open Spaces and Green Infrastructure

The City Corporation will work in partnership with developers, landowners, the churches and other agencies to promote a greener City by:

1. Protecting existing open and green space;
2. Seeking the provision of new open and green space through development, public realm or transportation improvements;
3. Increasing public access to existing and new open spaces;
4. Creating, maintaining and encouraging high quality green infrastructure;
5. Using planting and habitat creation to enhance biodiversity, combat the impacts of climate change and improve air quality;
6. Promoting the greening of the City through new development opportunities and refurbishments; and
7. Ensuring new development and refurbishment protect and enhance the City's biodiversity.
8. Ensuring that the provision of new and enhanced open space, biodiversity and urban greening takes account of and contributes toward the green corridors identified in Figure 18 and the City Corporation's Biodiversity Action Plan.

Reason for the policy

- 12.1.0 The City is densely built up and most of its open space provision consists of small spaces at street level. Open spaces are vital to the City, offering residents, workers and visitors outside spaces in which to spend time, relax, and encounter nature, and play a crucial role in providing opportunities for play, exercise and recreation, and social interaction. Open spaces are also inclusive, providing free access for everyone. They are important havens for wildlife and enrich the City's biodiversity, and help to mitigate the effects of climate change, improve air quality and benefit wellbeing, and physical and mental health. Green infrastructure in the City includes civic spaces, parks and gardens, trees and planting, churchyards, burial grounds, green roofs and walls in addition to amenity spaces.
- 12.1.1 The City's growing workforce and increasing visitor numbers, and the limited amount of open space in the Square Mile, mean that there is a need to provide more open spaces, and to improve and protect those that exist. Some areas of the City have deficiencies of open space or access to nature, or are places

(such as the riverside) where additional open space and greening has an important role to play in realising the potential of the area and helping to create a more vibrant and welcoming City.

- 12.1.2 Greening the City is an important step in ensuring the City is resilient to the effects of climate change. It can assist in creating cooler spaces, mitigating the urban heat island effect, and provide shade. Greening can improve biodiversity, improve air quality, and create a more attractive environment. Given the dense nature of the Square Mile and the demand for additional capacity, it is crucial that development provides greening and improves biodiversity on site and contributes as appropriate to wider improvements to green infrastructure.

12.2 Policy OS1: Protection and provision of open spaces

The quantity, quality and accessibility of public open space will be maintained and improved.

1. Existing open space will be protected and enhanced.
Any loss of existing open space should be wholly exceptional and it must be replaced on redevelopment by open space of equal or improved quantity and quality on or near the site. The loss of historic open spaces will be resisted;
2. Additional publicly accessible open space and pedestrian routes will be sought in major developments, particularly in and near to areas of open space deficiency, in areas such as the riverside where it is a key component of placemaking, and where pedestrian modelling shows significant pressure on City streets;
3. Further open spaces will be created from underused highways and on development sites where feasible. Wherever possible, existing private spaces will be secured as publicly accessible open spaces as part of development;
4. Improvements to the accessibility, inclusion, design, greening, lighting and biodiversity of existing open spaces will be promoted and, where relevant, secured through development; and
5. Open spaces must be designed to meet the requirements of all the City's communities. They should be free, accessible, welcoming and inclusive. The design of open spaces should consider their context and how their use could contribute positively to the life of the Square Mile. This should include consideration of how seating, planting, lighting, and routes are designed and located; the potential for water features and noise attenuation; and opportunities for play, sport, recreation and leisure, taking into account likely users of the space.
6. The provision of public drinking fountains in open spaces will be encouraged.

Reason for the policy

- 12.2.0 The City of London has 376 open spaces totalling just under 35 hectares in March 2022, which includes parks, gardens, churchyards and hard open spaces

such as plazas and repurposed highway. Most of the open spaces are small, with approximately 80% of sites less than 0.2 hectares in size and only 11% over half a hectare. There is a need for additional open space in the City to provide facilities for the growing daytime population, to help reduce the effects of pollution and climate change, to provide facilities for relaxation, tranquillity, leisure and sport, and to increase biodiversity. The provision of open space in the City is uneven, with some areas of deficiency in access to public open space [INSERT MAP]. Sites within and near to these areas will need to play a role in improving access to open space.

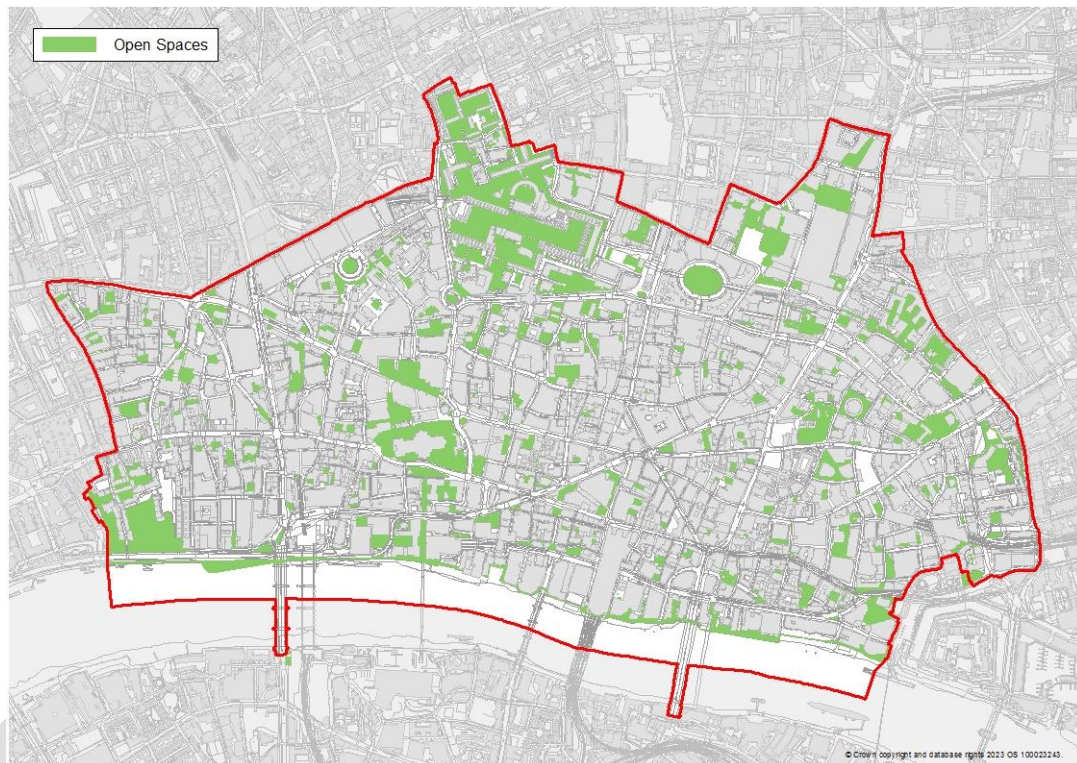


Figure 17: Open Spaces

- 12.2.1 As the City changes, there is a need for open spaces to play an increased role in supporting the life of the City. Open spaces provide a unique setting for people to spend time in free and accessible spaces, where they can pursue a variety of activities or simply enjoy being outdoors. Some parts of the City would benefit substantially from increased and improved open space provision. The Thames riverside has significant potential as an inclusive leisure destination but includes a riverside path that is narrow in places and lacks significant open areas where people can spend time and enjoy the river. Areas where there are due to be significant new attractions – such as Smithfield – that are likely to attract visitors including children and young people will require open spaces that can cater to their specific requirements. Other places, such as the City Cluster, where there are deficiencies in open spaces and high density development, will need to ensure that existing ground level open space works hard and is of an exemplary standard of design, that new spaces at ground level are created where possible, and that this is supplemented through the addition of publicly accessible roof gardens and other spaces (see policy DE5). Although

open space provision in the Aldgate area has been significantly enhanced with the opening of Aldgate Square, this area has a lower proportion of open space (see Figure 15).

12.3 Policy OS2: Urban Greening

1. The provision of urban greening should be integral to the design and layout of buildings and the public realm.
 - All development proposals will be required to demonstrate the highest feasible levels of greening consistent with good design and the local context;
 - The installation of biodiverse extensive or intensive green roofs, terraces and green walls will be sought, where appropriate, and new development should not compromise these elements on existing buildings located nearby; and
 - The loss of green walls and roofs, in whole or in part, will only be permitted in exceptional circumstances.
2. Major development proposals will be required to:
 - Include an Urban Greening Factor (UGF) calculation demonstrating how the development will meet the City's target UGF score of 0.3 as a minimum; and
 - Submit an operation and maintenance plan to demonstrate that the green features will be maintained and remain successful throughout the life of the building.

Reason for the policy

- 12.3.0 Urban greening provides a wide range of benefits for air quality, noise, urban heat island effect, rainwater run-off, biodiversity enhancement, recreation, and health and wellbeing of the City's communities. Given the limited opportunities to provide additional large green spaces in the Square Mile, greening the urban realm will be important if these benefits are to be realised. Greening will increase in importance as weather patterns continue to change with rising average temperatures, summer droughts and more intense rainfall events periodically through the year. The inclusion of blue infrastructure such as rain gardens and rainwater harvesting can help to minimise water use.
- 12.3.1 This policy promotes greening for all new buildings and public realm schemes. It takes account of the value of different types of greening through the application of an Urban Greening Factor (UGF), with a higher UGF for greening that provides multiple benefits.

- 12.3.2 The London Plan has introduced a UGF scoring system for London, which will operate as a tool to assess the amount, type and value of greenery within development proposals. Further information on applying and calculating the UGF is set out in Urban Greening Factor, London Plan Guidance (February 2023).
- 12.3.3 The City Corporation's UGF Study indicates that an UGF target of 0.3 would be deliverable for the majority of development in the City. The Study considered the potential for an UGF on a range of development types, including offices, residential, hotels and mixed commercial. Policy OS2 requires major development proposals in the City (commercial and residential) to include an UGF calculation demonstrating how it will meet the minimum UGF target of 0.3.

How the policy works

- 12.3.4 The City Corporation has long championed green roofs and continues to actively encourage them. The City Corporation will seek the provision of trees and landscaping in all development where this is possible. can take many forms and require careful design, installation and regular maintenance.
- 12.3.5 Green roofs should be designed, installed and maintained appropriately and can be designed as sustainable or ecological features, and recreational spaces. To ensure that the maximum practicable coverage of green roof and terraces can be achieved, location-appropriate plants should be installed on sloping roofs, between cradle tracks and underneath solar panel installations.
- 12.3.6 There are two main types of green roofs, intensive green roofs which can be used as recreational spaces with similar features to parks and gardens, and extensive ones (including BioSolar green roofs) having plants such as sedums and wildflowers but with limited or no access. Varying extensive green roof substrate levels will be encouraged to improve rainwater retention and enhance biodiversity, using a high proportion of native plants. Where developers seek to install intensive green roofs with deep substrates for amenity space, these are expected to be of high-quality design incorporating rainwater harvesting for irrigation to minimise water use.
- 12.3.7 The green roof should not impact adversely on protected views and planting should be appropriate to the location and height of the roof. All green roofs should be designed, installed and maintained appropriately for the life of the building to maximise the roof's environmental benefits including biodiversity, rain-water run-off attenuation and building insulation.
- 12.3.8 Development proposals could include greening of roofs, facades, terraces and balconies, both internal and external, and/or landscaping and tree planting around the building depending on the circumstances of each site. The UGF assessment should be submitted as part of the planning application, along with landscaping proposals and an operation and maintenance plan to show how the greenery will be maintained. This will ensure that suitable green elements are designed in and will remain attractive and viable throughout the life of the development. Urban greening should be considered at an appropriate stage in

the design of the scheme, and scores should not be reduced as conditions are discharged. Internal greening which is fully enclosed does not count towards the UGF target score.

12.4 Policy OS3: Biodiversity

Development should incorporate measures to enhance biodiversity, including:

1. Retention, protection and enhancement of habitats within Sites of Importance for Nature Conservation (SINCs), including the River Thames;
2. Measures recommended in the City of London Biodiversity Action Plan (BAP) in relation to particular species or habitats and action plans;
3. Green roofs, gardens and terraces, soft landscaping and trees and green walls where appropriate;
4. Helping to create green corridors and biodiversity links;
5. Wildlife-friendly features, such as nesting or roosting boxes and nesting opportunities for wild bees;
6. A planting mix and variation in vegetation types to encourage biodiversity;
7. Planting which will be resilient to a range of climate conditions, with a high proportion of native plants;
8. A lighting scheme designed to minimise impacts on biodiversity.

Reason for the policy

12.4.0 Protecting and improving biodiversity involves enhancing wildlife populations and their habitats. This has positive impacts for the environment, the economic and social life of the City and the aesthetics of the streetscape. Healthy biodiversity should be viewed as a sign of a healthy environment and healthy city.

12.4.1 A number of areas along the riverside, west of Farringdon Street and east of Bishopsgate have been identified as Areas of Deficiency in Access to Nature (SINC AoD) by Greenspace Information for Greater London (GiGL) London's environmental records centre and the Mayor of London. SINC AoDs are defined as built-up areas more than 1km walking distance from accessible Sites of Importance for Nature Conservation (SINCs). The River Thames, which is a Site of Metropolitan Importance for Nature Conservation (SMINC), brings wider benefits for migrating birds and fish species. However this SMINC has limited access to nature so does not alleviate AoD in the City. It is important that opportunities are taken to improve biodiversity throughout the City, and particularly in areas where this would improve green corridors or biodiversity links, such as along the riverside.

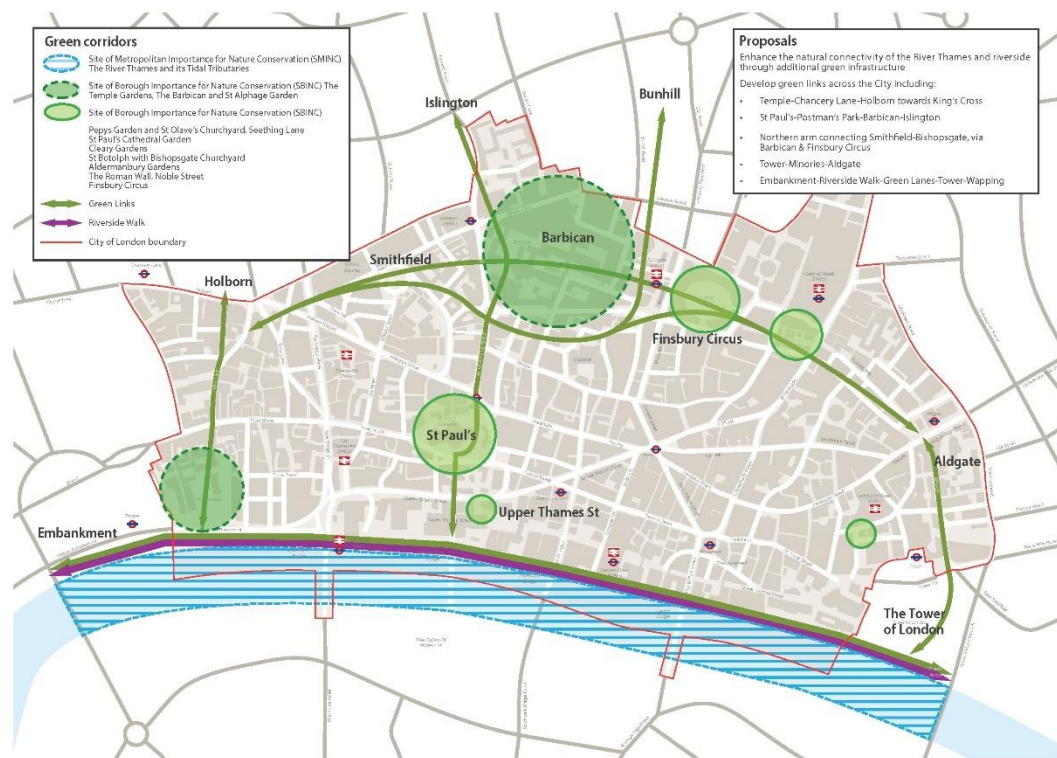


Figure 18: Green corridors

How the policy works

12.4.2 Measures to enhance biodiversity should provide habitats that benefit the City's target species (house sparrows, peregrine falcons, swifts, black redstarts, bats, bumblebees and stag beetles) and by extension a wider range of insects and birds. The City of London BAP provides further details about the target species, their target habitats and action plans. The City has 13 SINC's, including three new SINC's (Postman's Park, Portsoken Street Garden, St Dunstan in the East Church Garden) which were agreed following a review in 2016. Two existing SINC's were agreed to be upgraded as part of this review: Barbican and St Alphage's Garden, which includes the Barbican Wildlife Garden and the Beech Gardens, was upgraded from Grade 2 to Grade 1 Site of Borough Importance for Nature Conservation (SBINC); and Roman Wall, Noble Street, which was extended southwards to include St Anne and St Agnes Churchyard and was upgraded from a Local SINC to a Grade 2 SBINC. These new and upgraded SINC's will formally take effect upon adoption of this Plan.

12.4.3 New developments should seek to protect and enhance biodiversity and the City's environmental assets. This can be achieved by providing spaces for biodiversity to flourish through the retention and planting of trees and soft landscaping, along with green roofs and green walls where appropriate. A variety of these provisions in one development will create habitats for a range of

different wildlife species. Joined up green spaces and corridors which link SINC sites give species a better chance of survival in the urban landscape and greater resilience to future climate change. Proposals for riverside developments should consider whether there may be opportunities to incorporate habitat creation measures to enhance the biodiversity of the River Thames SMINC.

- 12.4.4 The City's wildlife depends not only on greenery but also on the built environment. Buildings can provide roosting sites for bats and nesting opportunities for birds. Artificial features such as nest boxes should be integrated into the design of development or refurbishment schemes wherever suitable to provide additional habitat for the City's target species. Biodiverse features of value to wildlife that support the City of London's BAP including target species and target habitats but are not included within the Defra Biodiversity Metric (DBM) 4.0. These should be provided in suitable locations, in close proximity to green features, and should include but are not limited to bird boxes, bat boxes and wild bee nesting habitat (cavity and ground nesting) and invertebrate hotels. Development should provide a clear justification as to why these features cannot be included.
- 12.4.5 Where development has a potential impact on designated sites of importance for biodiversity in or near the boundary of the site, the developer should submit an appropriate Ecological Assessment outlining how any impacts will be avoided, minimised or mitigated. Where necessary, the City Corporation will seek independent review of an assessment, paid for by the developer.
- 12.4.6 As set out in the BAP, the City of London recognises the importance of biodiversity data collection to improve monitoring and informs decisions and identify future areas of priority in the City. Opportunities such as citizen science and school projects and records collected by local voluntary individuals and groups make a significant contribution in supporting biodiversity and raises the profile of species and habitats within the City. Many of these findings are reported directly to GiGL.

12.5 Policy OS4: Biodiversity Net Gain

Major developments are required to deliver Biodiversity Net Gain (BNG) to conserve and enhance biodiversity by:

1. Meeting the City's BNG target on-site score of achieving a minimum of three biodiversity units per hectare (BU/ha);
2. Providing the biodiversity value of the site pre-development and post-development after applying the mitigation hierarchy. Information on habitats of known value to biodiversity to be incorporated and maximised on-site, achieving a minimum three BU/ha;
3. Any off-site areas proposed for habitat creation or enhancement for both pre-development and post development. However the City expects delivery to be achievable on-site and off-site provision should be a last resort;

4. Material if it is not feasible to achieve the target score on-site then offsetting will be required, with preference given to off-setting schemes that help with the delivery of wider City of London Corporation policies and strategies, through the use of nature-based solutions and maximise opportunities for local nature recovery;
 5. Providing the following information:
 - A Preliminary Ecological Appraisal Report (PEAR) or other appropriate Ecological Assessment alongside a completed Defra Biodiversity Metric (DBM) spreadsheet at planning application stage;
 - A Biodiversity Gain Plan (BGP) setting out the enhancements that will be incorporated on site to meet the BNG score, secured through condition prior to commencement;
 - A Habitat Management and Monitoring Plan (HMMP) setting out maintenance, management and monitoring of enhancements and the post-development biodiversity values of the site, secured through condition prior to commencement.
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Reason for the policy

- 12.5.0 Biodiversity Net Gain (BNG) is an approach to development that leaves biodiversity in a better state than before. Major new developments are required to deliver BNG and the Environment Act 2021 requires them to provide a minimum 10% BNG. Habitats will need to be secured for at least 30 years and the Defra Biodiversity Metric (DBM) 4.0 is the current method for calculating BNG but this may change. Due to the City's highly urban nature and the high proportion of sites with a zero (or close to zero) baseline for biodiversity, the 10% uplift would not deliver meaningful improvements to biodiversity within the Square Mile.
- 12.5.1 The Biodiversity Net Gain Study (2023) examined a range of development sites across the City and found that if biodiversity were maximised on these sites, they could have delivered an average of 3.41 biodiversity units per hectare (BU/ha). This evidence has informed the policy target set of achieving a minimum of three biodiversity units per hectare (BU/ha).

How the policy works

- 12.5.2 All major developments are expected to submit a Preliminary Ecological Appraisal Report (PEAR) or other appropriate Ecological Assessment alongside a completed Defra Biodiversity Metric (DBM) in line with national requirements setting out how the development will meet the City of London's BNG target score of achieving a minimum three BU/ha on-site. The assessment should be undertaken by a suitably qualified and/or experienced ecologist and should include baseline and proposed habitat mapping. The City of London Corporation may seek independent ecological advice to review submitted BNG reports. It is expected this independent assessment will be funded by the developer.

- 12.5.3 The latest DBM or agreed equivalent will be used to quantify the biodiversity value of the site pre-development, post-development after application of the mitigation hierarchy and for any off-site areas proposed for habitat creation or enhancement both pre and post development. The City Corporation expects habitat creation to be delivered and maximised on-site providing biodiversity to the immediate area before off-setting is considered. Developers are expected to set-out BNG as an integral design aspect of the overall scheme and delivery meaningful ecology to increase levels of biodiversity in the City. The assessment should be undertaken by a suitably qualified and/or experienced ecologist and should include baseline and proposed habitat mapping. Section 106 obligations may be sought for monitoring of major applications for BNG delivery.
- 12.5.4 The Urban Greening Factor (UGF) tool establishes the provision of urban greening in new developments and does not measure biodiversity benefits of proposals. Higher scoring surface cover types within the UGF are often ones which can deliver benefits for biodiversity. There is an opportunity to unlock additional space for BNG by steering associated soft landscaping towards habitat creation therefore providing more biodiversity on-site which is of benefit to local wildlife.

12.6 Policy OS5: Trees

The City Corporation will seek to increase the number of trees and their overall canopy cover by:

1. Requiring the retention of existing mature and semi-mature trees and encouraging additional tree planting to be integrated into the design and layout of developments and public realm improvements where appropriate;
 2. Protecting trees which are subject to Tree Preservation Orders (TPO) and designating new TPOs where necessary to protect trees of high amenity value;
 3. Other than in exceptional circumstances, only permitting the removal of existing trees which are dead, dying or dangerous. Where trees are removed, requiring their replacement with trees that can attain an equivalent value;
 4. Ensuring that existing trees located on or adjacent to development sites are considered during the planning process and are protected from damage during construction works; and
 5. Promoting tree planting to provide a diverse range of tree species, including large-canopy trees wherever practicable, especially in places that would contribute to the green routes set out in figure 18.
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Reason for the policy

- 12.6.0 There are just over 2,500 trees in the City, which are found in a variety of locations: along streets, in open spaces such as churchyards and livery company gardens, residential estates, business premises, historic parks and gardens and along the riverside.
- 12.6.1 Trees are an integral part of the City's unique history and an important asset. It is essential that the existing tree stock is managed and preserved effectively and that new trees are planted having regard to their contribution to enhancing amenity and townscape. Trees provide a wide range of benefits in the urban environment, including the trapping of air pollutants, enhancing biodiversity, providing shade and shelter from sun and rain, absorbing rainwater and filtering noise.
- 12.6.2 The City of London Tree Strategy SPD aims to increase the number of City Corporation owned trees and ensure that all trees within the City are managed, preserved and planted in accordance with sound arboricultural practices whilst taking account of their contribution to amenity and the townscape for both current and future generations. The Tree Strategy SPD will be kept under review and should be read alongside the City of London Biodiversity Action Plan (BAP).
- 12.6.3 Trees play an important role in connecting green spaces to create green corridors. Additional planting where feasible will help to reinforce those corridors. The green routes identified in figure 18 set out priority corridors for greening the City. It is important that new tree planting includes a variety of species to increase the resilience of the City's tree stock against the threat of disease and the impacts of a changing climate.

How the policy works

- 12.6.4 Developers will be expected to safeguard existing trees, plant new trees and only remove trees in exceptional circumstances. Where trees are removed during development works, replacement trees of an appropriate species, height and canopy cover must be planted when works are completed. The City Corporation will seek financial compensation for any trees removed or damaged without permission. This value will be based on a recognised tree valuation method such as the Capital Asset Value for Amenity Trees (CAVAT) or i-Tree Eco.
- 12.6.5 The City Corporation will use TPOs, s106 planning obligations or conditions to ensure the retention of existing trees and the provision of new trees.

13. Climate resilience

13.1 Strategic Policy S15: Climate Resilience and Flood Risk

Buildings and the public realm must be designed to be adaptable to future climate conditions and resilient to more frequent extreme weather events.

1. Development must minimise the risk of overheating and any adverse contribution to the urban heat island effect;
 2. Development must avoid placing people or essential infrastructure at increased risk from river, surface water, sewer or groundwater flooding;
 3. Flood defence structures must be safeguarded and enhanced to maintain protection from sea level rise;
 4. Development should contribute towards making the City more resilient and should seek opportunities to integrate into wider climate resilience measures in the City.
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Reason for the policy

13.1.0 Today's new buildings will probably be in place for decades or longer and must be resilient to the weather patterns and climate conditions they will encounter during their lifetime. Designing climate resilience into buildings and the public realm will help keep the City safe and comfortable as climate patterns change. The UK Climate Projections (CP18) predict that London will experience a rise in mean temperatures of between 2°C and 6°C by 2061. This will increase the risk of overheating and the need for energy intensive air conditioning. In addition to this the City can experience temperatures up to 10°C higher than the countryside around London, due to heat retention and waste heat expulsion from buildings resulting in an urban heat island effect. Climate change could potentially affect patterns of wind flow in high-density urban environments like the City and this will be kept under review.

13.1.1 Although the total annual rainfall is projected to remain broadly similar to current levels, patterns of rainfall are expected to change with more intense storms and periods of low rainfall. This will increase the risk of flooding, particularly from surface water and from sewer surcharge from London's combined drainage network. Conversely there will be a greater risk of water shortages and drought conditions as rainfall fluctuates.

13.1.2 The City lies within the tidal section of the Thames and is vulnerable to sea level rise resulting from climate change. The Thames Estuary 2100 Plan identifies the need for the existing flood defences in central London to be raised by up to 0.5m by 2050 and 1m between 2050 and 2100 to protect London from flooding.

How the policy works

13.1.3 The City Corporation will continue to monitor and model climate change impacts on the City to inform policy and decision making through implementation of, and annual monitoring and review of, the City Corporation's Climate Action Strategy. UK Climate Projections and the detailed actions in the Climate Action Strategy form the basis of future planning for climate resilience in the City. The City of London Strategic Flood Risk Assessment will be reviewed at least every five years or more frequently if circumstances require.

13.2 Policy CR1: Overheating and Urban Heat Island Effect

1. Developers will be required to demonstrate that their developments have been designed to reduce the risk of overheating through:
 - solar shading to prevent solar gain, particularly on glazed facades;
 - urban greening to improve evaporative cooling;
 - passive ventilation and heat recovery;
 - use of thermal mass to moderate temperature fluctuations;
 - minimal reliance on energy intensive cooling systems.
 2. Building designs should minimise any contribution to the urban heat island effect.
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Reason for the policy

- 13.2.0 Development presents an opportunity to renew or adapt the existing building stock and public spaces, or provide new buildings and spaces, which will cope better with changing climate patterns. The design of buildings should reduce energy demands from cooling infrastructure, making them more resilient to higher temperatures. Measures such as urban greening and design features that provide shade and shelter can have a positive impact on or near the building, minimising the urban heat island effect (see Policy OS2).
- 13.2.1 Climate adaptation measures can contribute to wider benefits by pre-empting potential detrimental climate impacts. Careful selection of plants which are resilient to a range of weather conditions will assist wildlife to survive changed climate conditions. Urban greening and reduced reliance on air conditioning will have benefits for the City's air quality.

How the policy works

13.2.2 For all major development, the City Corporation will require climate adaptation and resilience to be addressed at the design stage. Sustainability Statements should include details of the proposed adaptation and resilience measures. Energy statements should demonstrate how energy demand for cooling will be

minimised. BREEAM credits for adaptation to climate change should be targeted.

13.2.3 For minor development, the Design and Access Statement should include details of climate resilience and adaptation measures.

13.3 Policy CR2: Flood Risk

All development within the City flood risk area, and major development elsewhere, must be accompanied by a site-specific flood risk assessment demonstrating that:

1. the site is suitable for the intended use, in accordance with the sequential and exception tests (see tables 4 and 5) and with Environment Agency and Lead Local Flood Authority advice;
 2. the development will be safe for occupants and visitors and will not compromise the safety of other premises or increase the risk of flooding elsewhere;
 3. safe access and egress routes are identified; and
 4. flood resistance and resilience have been designed into the proposal.
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Reason for the policy

13.3.0 While the City is generally at low risk of flooding due to its topography, some parts of the City are at risk of flooding from the River Thames and from surface water or sewer overflow in the former Fleet valley.

13.3.1 The Policies Map identifies the areas at risk from these sources as the City flood risk area. This policy will ensure that vulnerable uses are not located in areas that are at risk of flooding and that suitable flood resilience and evacuation measures are incorporated into the design.

How the policy works

13.3.2 Site-specific flood risk assessments must address the risk of flooding from all sources and take account of the City of London Strategic Flood Risk Assessment and the City of London Local Flood Risk Management Strategy. Necessary mitigation measures must be designed into and integrated with the development. Design and mitigation measures such as sustainable drainage systems may provide protection from flooding for properties beyond the site boundaries.

13.3.3 Within the City Flood Risk Area different uses will be acceptable in different zones. Table 2 shows the vulnerability classifications and Table 5 shows which level of vulnerability classification is suitable in which part of the City Flood Risk Area. The Environment Agency's flood zones are shown on the Policies Map. Thesequential test must be applied for all development other than minor development or change of use in the City flood risk area, which comprises Environment Agency Flood Zones 2 and 3 and areas at risk of surface water or

sewer flooding. Where a change of use results in a more vulnerable use, evidence must be presented to demonstrate safety and suitable access and egress routes. Where necessary, conditions may be attached to planning permissions to manage the change of use into more vulnerable categories.

Essential Infrastructure	<ul style="list-style-type: none"> • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations
Highly Vulnerable	<ul style="list-style-type: none"> • Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Installations requiring hazardous substances consent.
More Vulnerable	<ul style="list-style-type: none"> • Hospitals • Residential institutions such as care homes and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Sites used for waste management facilities for hazardous waste.
Less Vulnerable	<ul style="list-style-type: none"> • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in 'more vulnerable' and assembly and leisure. • Police, ambulance and fire stations which are not required to be operational during flooding. • Waste treatment (except hazardous waste facilities).
Water-compatible development	<ul style="list-style-type: none"> • Flood control infrastructure. • Sewage transmission infrastructure and pumping stations • Docks, marinas and wharves. • Navigation facilities. • Water-based recreation (excluding sleeping accommodation). • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.

Table 2: Flood risk vulnerability classifications relevant to the City
Source: Relevant uses from Planning Practice Guidance (Flood Risk and Coastal Change)

13.3.4 If the intended use of a site falls into one of the categories where an exception test is required, as set out in Table 3, the developer will need to investigate whether there is a reasonably available site outside the City flood risk area which would be more suitable for the intended use. If no alternative site is available, the developer must demonstrate through the exception test that the benefits of the development outweigh any risk from flooding, and that the development will be safe without increasing the risk of flooding elsewhere.

Flood Risk Vulnerability classification	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
EA Zone 1	✓	✓	✓	✓	✓
EA Zone 2	✓	Exception Test required	✓	✓	✓
EA Zone 3a	Exception Test required	x	Exception Test required	✓	✓
EA Zone 3b	Exception Test required	x	x	x	✓
SFRA Surface water/sewer flood risk areas	Exception Test required	x	Exception Test required	✓	✓

Table 3: Suitability of different uses in flood zones

Source: amended from Planning Practice Guidance – Flood Risk and Coastal Change

- 13.3.5 The City of London Strategic Flood Risk Assessment (SFRA) provides guidance on suitable flood resistance measures to prevent water entering the building and flood resilience measures, which enable speedy recovery in the event of flooding. These measures should be specified for all development within the City flood risk area and may be controlled by condition. Passive design measures such as suitable threshold levels and the use of flood resilient materials will be favoured over active measures such as removable flood barriers. All sleeping accommodation must be located above the modelled tidal breach level as shown in the SFRA unless it can be demonstrated that a permanent fixed barrier at the threshold of the property would prevent water ingress in a breach event.
- 13.3.6 Design measures can help to reduce flooding, thus protecting the local area beyond the development site, through:
- sustainable drainage systems;
 - green/blue roofs; and
 - rainwater reuse, recycling and attenuation
- 13.3.7 Resistance to flooding can be achieved through design measures such as:
- raised kerbs and altered topography which contains water at a distance from the building;
 - avoiding opening windows or vents at ground floor or basement levels;
 - using low permeability materials to limit water penetration of external walls, and flood resistant doors to prevent water ingress; and
 - fitting non-return valves on plumbing to prevent sewer surcharge within the building.
- 13.3.8 Flood resilience measures make clean up after a flood more efficient, and include:
- avoiding locating sensitive equipment such as computer servers at lower levels of buildings in flood prone areas;
 - locating all fittings, fixtures and services at a suitable height to minimise damage by flood waters;
 - using impermeable surfaces and structures; and
 - providing sumps and soak-aways that gradually release water to the sewer network.
- 13.3.9 In order to demonstrate that the development will be safe for occupants, flood warning and evacuation plans should be provided for all 'more' or 'highly' vulnerable development within the City flood risk area. Details of the type of measures which should be included in an evacuation plan are set out in the City's SFRA.

13.3.10 For minor development outside the City flood risk area, an appropriate flood risk statement should be included in the Design and Access Statement.

13.4 Policy CR3: Sustainable drainage systems (SuDS)

1. All development, transportation and public realm proposals must incorporate SuDS principles and be designed to minimise the volume and discharge rate of rainwater run-off into the combined drainage network in the City, ensuring that rainwater is managed as close as possible to the development.
 2. The design of the surface water drainage system should be integrated into the design of proposed buildings and landscaping, unless there are exceptional circumstances which make this impractical. Proposals should demonstrate that run-off rates are as close as possible to greenfield rates and the number of discharge points has been minimised.
 3. SuDS designs must take account of the City's archaeological and other heritage assets, complex underground utilities, transport infrastructure and other underground structures, incorporating suitable SuDS elements for the City's high density urban situation.
 4. SuDS should be designed, where possible, to maximise contributions to water resource efficiency, water quality, biodiversity enhancement and the provision of multifunctional open spaces.
 5. An operation and maintenance plan will be required to ensure that the SuDS elements will remain viable for the lifetime of the building.
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Reason for the policy

13.4.0 The drainage system in Central London comprises a combined network where foul sewage from internal plumbing combines with rainwater drainage in the same underground pipework. Consequently, heavy rain can result in overloading of the drainage network with discharges of diluted sewage from manholes within the City flood risk area and combined sewer outflow pipes into the Thames at Walbrook Wharf and Blackfriars.

13.4.1 More frequent extreme rainfall events are predicted because of climate change and therefore the risk of sewer overflow flooding is increasing. To combat this, it is necessary to reduce the total amount of rainwater entering the drains and/or slow down the rate at which it enters the drains. Sustainable Drainage Systems (SuDS) provide a range of techniques for achieving this.

How the policy works

13.4.2 All development presents opportunities to reduce rainwater run-off. The cumulative impact of minor development, transport and public realm proposals are as important as major development in reducing the risk of sewer overflow flooding. Therefore, all development, transport and public realm proposals must contribute to a reduction in rainwater run-off to the drainage network.

- 13.4.3 For major development, pre-application discussion with the City Corporation as Planning Authority and Lead Local Flood Authority and consultation with the Environment Agency, Thames Water and other interested parties is encouraged to ensure that SuDS designs are suitable for the proposed site. SuDS designs must comply with the London Plan drainage hierarchy (see London Plan policy SI 13) and local requirements should be discussed at pre application stage with the City Corporation.
- 13.4.4 Although planning permission may not be required for all transport and public realm schemes, SuDS and drainage plans should be integrated into the design process of these schemes to protect the City from flooding.
- 13.4.5 For all major development, a separate SuDS and Drainage Plan must be submitted at application stage. For minor development the Design & Access Statement should include details of how rainwater run-off has been minimised. Designs should focus on reducing flows as close as possible to greenfield runoff rates, minimising the number of discharge points from the site.
- 13.4.6 Proposals should demonstrate an integrated approach to water management, for example intercepting the first 5mm of each rainfall event through greening and incorporating rainwater storage for reuse or irrigation. Major developments should specifically maximise the other benefits of SuDS such as biodiversity, amenity and water quality.
- 13.4.7 Arrangements for maintenance throughout the life of the building must be considered in the design of SuDS. Planning conditions may be used to secure a suitable operations and maintenance plan.

13.5 Policy CR4: Flood protection and flood defences

1. Development must protect the integrity and effectiveness of structures intended to minimise flood risk and, where appropriate, enhance their effectiveness.
 2. Wherever practicable, development should contribute to an overall reduction in flood risk within and beyond the site boundaries, incorporating flood alleviation measures for the public realm.
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Reason for the policy

- 13.5.0 The City of London is protected from flooding by the Thames Barrier, and more locally by flood defence walls along the River Thames. The Thames Estuary 2100 (TE2100) project recognises the need for the raising of flood defences by up to 0.5m by 2050 and 1m by 2100.

How the policy works

- 13.5.1 Development adjacent to the flood defences must maintain their integrity and effectiveness for the benefit of the whole City. Development on the riverside should be designed to enable future flood defence raising without adverse

impacts on river views, the setting of historic buildings and pedestrian movement along the riverside walk. Constraints may exist where flood defences form part of an existing building. Discussions with the Environment Agency will be required to establish the most effective designs for improved flood defences and to incorporate adequate set back from the defences to allow for future maintenance and raising in line with the TE2100 Plan.

13.5.2 A strategic approach to flood defence raising will enable riparian developers to design buildings and the riverside environment to accommodate higher flood walls. Riparian owners are responsible for maintenance and enhancement of flood defences.

13.6 Strategic Policy S16: Circular Economy and Waste

1. The City Corporation will support businesses and residents in moving towards a Zero Waste City, by applying circular economy principles, the waste hierarchy and the proximity principle at all stages of the development cycle.
2. The City Corporation will actively co-operate with other Waste Planning Authorities (WPAs) in planning for capacity to manage the City's residual waste through:
 - Identifying waste management capacity in the City, or elsewhere in London, to meet the City's London Plan waste apportionment target, including through partnership working with other London WPAs;
 - Co-operating with WPAs within and beyond London to plan for suitable facilities for the City's waste;
 - Safeguarding Walbrook Wharf as a waste site and wharf suitable for the river transport of waste; and
 - Monitoring waste movements to and from the City and reviewing its waste arising and capacity study at least every five years.

Reason for the policy

13.6.0 The City Corporation has responsibility to plan for adequate facilities to manage the waste that originates in the City. This includes waste collected from the City's households and businesses, waste generated in the process of redevelopment and hazardous waste from premises such as St Bartholomew's Hospital.

13.6.1 The London Plan and the London Environment Strategy set the framework for waste management in London. These strategies promote circular economy principles and the waste hierarchy: prevention, preparing for reuse, recycling, other recovery, and disposal only as a last resort.

- 13.6.2 The current London Plan has set a waste apportionment figure requiring the City to identify sites with capacity to manage 90,000 tonnes of waste annually by 2041, with an apportionment in 2021 of 84,000 tonnes. This figure represents the City's contribution to meeting the Mayor's target of 100% net self-sufficiency in the management of London's household and commercial and industrial waste from 2026.
- 13.6.3 The London Plan sets out criteria for the selection of waste management sites, which the City of London Waste Arisings and Waste Management Capacity Study review 2016 used to evaluate potential sites in the City. This study concludes that, with current technologies and economic considerations, there is no viable waste management capacity within the Square Mile and that the City will not be able to satisfy the London Plan waste apportionment within its boundaries.
- 13.6.4 The City Corporation has an agreement with the London Borough of Bexley and participates in the South-East London Joint Waste Planning Group, which comprises the boroughs of Bexley, Bromley, Greenwich, Lewisham and Southwark along with the City of London. The Group has identified sufficient waste management capacity up to 2036 to meet the combined apportionment of each of its individual members. The City will continue to contribute to London-wide waste planning through membership of the London Waste Planning Forum and will work with the GLA and the Environment Agency to improve waste planning.
- 13.6.5 For commercial reasons, a proportion of the City's waste will continue to be transported to sites outside London. This includes construction, demolition and excavation (CD&E) waste which is not covered by the Mayor's targets for net self-sufficiency. Annual monitoring of such waste exports will inform Duty to Co-operate discussions with receiving authorities within and outside London to ensure that sufficient capacity remains in the planning pipeline.
- 13.6.6 The London Plan sets out apportionments for land-won aggregates, which does not include the City of London and there is no requirement to include a policy for minerals within the Local Plan. Application of circular economy principles encourages the re-use and recycling of demolition waste and the use of recycled aggregates in order to reduce reliance on imported aggregates and retain embodied carbon.
- 13.6.7 It is imperative that the City adopts circular economy and waste hierarchy principles, to cut down on the quantity of useable materials that are discarded and to eliminate reliance on disposable items, including single use plastics, in the City. Those materials that are discarded should be managed as close as possible to the City and transported by modes that are least damaging to the environment.

How the policy works

- 13.6.8 The City Corporation will continue to monitor the quantities and types of waste originating in the City and work with the City's communities to minimise this

waste, applying circular economy principles to design out waste and pollution and keep products and materials in use. The City Corporation will continue to work with the South-East London Joint Waste Planning Group and other WPAs in London and beyond to ensure that the City's waste apportionment is met and that suitable facilities are available for the City's waste to be managed in the most sustainable way.

- 13.6.9 Changing economics and new waste management technologies means that small scale waste management is becoming more viable within the City, particularly within large development sites.
- 13.6.10 During the period 2021-2041 a proportion of the City of London's waste will continue to be managed outside London. Co-operation with WPAs outside London will aim to ensure that facilities with sufficient capacity remain available to accept the City's waste during this period.
- 13.6.11 The City Corporation will continue to safeguard Walbrook Wharf as a waste site and river wharf in line with the London Plan and the Safeguarded Wharves Direction. Any proposed development which would prejudice the operation of the existing safeguarded waste site at Walbrook Wharf will be refused.
- 13.6.12 Pre-application consultation on suitable waste treatment, storage and collection facilities is encouraged. The level of detail required at the planning application stage will be proportionate to the scale of development.
- 13.6.13 The Environmental Statement (for EIA applications) or sustainability statement should provide an assessment of on-site waste treatment options and quantities of residual waste likely to arise from the site.

13.7 Policy CE1: Sustainable Waste Facilities and Transport

All development proposals should incorporate waste facilities, which must be integrated into the design of buildings and allow for separate treatment, storage and off-road collection of waste and recyclable materials, where feasible. Major developments should provide a single waste collection point to facilitate efficient waste management from multi tenanted buildings.

The environmental impact of waste transport will be minimised through:

1. Encouraging the use of rail and waterways for removal of waste, including deconstruction waste and delivery of construction materials;
 2. Ensuring maximum use of rail and waterways for the transport of excavation waste particularly from major infrastructure projects;
 3. Requiring low and zero emissions transport modes for waste movement;
 4. Reducing the number of waste vehicles by promoting optimum use of waste transport vehicle capacity through on-site or multi-site consolidation of waste.
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Reason for the policy

- 13.7.0 On major developments, opportunities for waste minimisation and on-site waste treatment, in line with the London Plan's definition of waste management, should be explored in order to minimise the transport of residual waste within and beyond the City. The City of London Waste Arisings and Capacity Study identifies a range of options which should be considered, subject to the appropriate environmental permits, to facilitate a reduction in residual waste from City development sites.
- 13.7.1 Waste treatment, storage and collection facilities must be integrated into new development and considered at an early stage of design to avoid the problems created by the placing of waste on the highway. Adequate provision must be made for the volume and types of residual waste and recyclables expected to be generated, especially the amount of paper and packaging generated by offices. The need to avoid health hazards associated with waste from catering establishments, the waste storage and collection needs of street traders, the separate storage of recyclable waste and the special arrangements required for the storage and transportation of clinical and hazardous waste should be provided for, where necessary.
- 13.7.2 Waste and recyclables should be capable of collection from off-street service areas which are integrated into the design of buildings. The provision of such areas may not be practicable in small developments or refurbishments and may conflict with the protection of listed buildings and conservation areas. In such cases waste stores within the site near the highway are preferable to the presentation of waste and recyclables on the pavement. Residential developments, including short-term-lets, must be provided with ground floor waste and recyclables storage and collection facilities, with direct access to the highway for collection purposes.
- 13.7.3 The City Corporation will attach appropriate planning conditions relating to waste treatment, storage and collection, but may also make use of its other regulatory powers to control waste in the City. Compliance with the City of London's operational waste requirements should contribute to BREEAM requirements for waste credits.
- 13.7.4 The proximity principle advocates that waste should be managed as close as possible to where it originates to reduce the environmental impacts of its transportation. The City's restricted land area makes the provision of waste facilities within the City problematic, and it therefore relies on movement of the waste that is generated in the City to appropriate waste management facilities elsewhere in London and beyond London's boundaries.
- 13.7.5 Unlike other local authority areas, the majority of the waste that is generated in the City is managed by private contractors. A proportion of the City's waste, including the small fraction of household waste, is transported by river from the safeguarded waste transfer station at Walbrook Wharf. The remainder is transported primarily by road, with destinations varying from one year to the next due to the commercial decisions of private waste contractors.

13.7.6 This policy aims to maximise the use of the River Thames for waste transport, encourage transport modes such as rail and other waterways and encourage efficient use of low and zero emissions road vehicles for transporting waste.

How the policy works

13.7.7 The City Corporation will continue to work with the Port of London Authority, Marine Management Organisation and the Environment Agency to enable sustainable use of the River Thames for the movement of freight and waste, including the reduction of emissions from river transport.

Major development

13.7.8 Construction Logistics Plans should identify how sustainable transport of waste materials from the site will be addressed during the construction phase. Delivery and servicing plans should demonstrate how the transport of waste will be minimised, the potential for use of the river to move waste, and how low emission vehicles will be enabled during the operational phase of the building's life.

All other development

13.7.9 Planning application documents should clearly demonstrate how waste minimisation, storage and sustainable waste transport have been addressed.

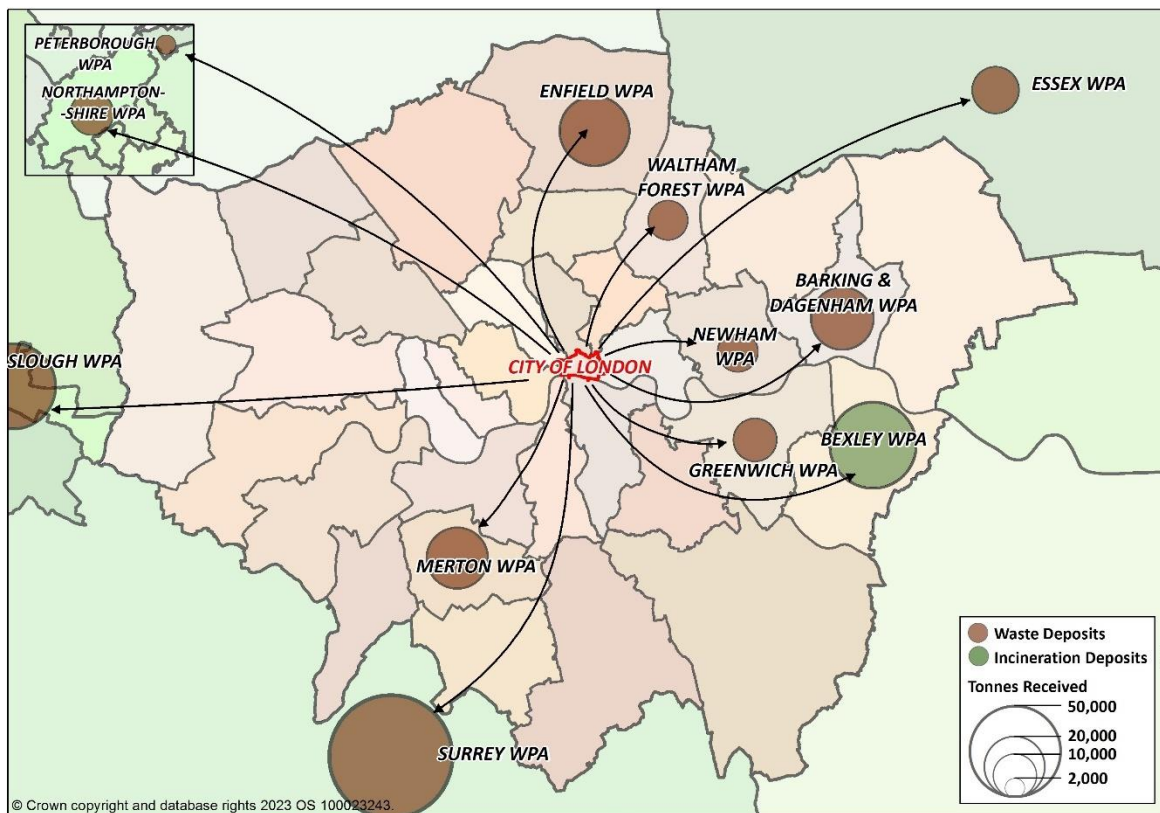


Figure 19: Waste deposit locations

13.8 Policy CE2: New waste management sites

1. Proposals for new facilities for waste management, handling and transfer will be required to demonstrate through design and sustainability statements that the benefits of the proposed development outweigh any adverse impacts and particularly that:
 - the development will handle waste which has been generated locally;
 - access arrangements, mode of transport and transport routes will minimise the potential for congestion and environmental impacts, including local air quality impacts and carbon emissions. Use of the river for transport of waste and recyclables will be encouraged;
 - the carbon impact of the development will be minimised. New waste facilities generating energy from waste should comply with the Mayor's Carbon Intensity Floor (CIF); and
 - the development is resilient to natural and man-made safety and security challenges.
2. Noise-sensitive development adjacent to the existing waste site at Walbrook Wharf, and development that would compromise the use of the river for waste operations, will be resisted.
3. Development in the vicinity of new waste management sites should not compromise the waste management operations on the site or create an unacceptable land use conflict.

Reason for the policy

13.8.0 Although the City is unlikely to be able to accommodate large waste management facilities within its boundary, changes in technology and waste transport costs may make small scale commercial facilities viable in the future.

How the policy works

- 13.8.1 Assessment of potential conflicts such as noise, vibration, odour, visual impact, pedestrian access and road or river transport will be a key matter in consideration of proposals. Mitigation which resolves potential conflicts may be necessary for development to proceed.
- 13.8.2 The criteria set out in this policy will be used, alongside other policy considerations, to evaluate the suitability of proposed waste facilities and conditions will be applied to ensure that any new facility is suitable for the City's high-density urban environment.