

City of London Local Plan Monitoring Report – Green Roofs

Local Plan Policy CS19: Open Spaces and Recreation
Data as at 31st March 2018



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Executive Summary

The City of London **Local Plan** sets out policies related to green roofs. Policies include:

- **Policy CS10 (Design);**
- **Policy CS15 (Sustainable Development and Climate Change);**
- **Policy CS18 (Flood Risk) and**
- **Policy CS19 (Open Spaces and Recreation).**

Prior to the 2005/06 financial year, open spaces at the Barbican Estate and Petticoat Square formed the first green roofs in the City of London. Additional green roof space constructed during the 1990s, followed by a range of green roofs completed during the 2005/06 period.

Since the 2005/06 financial year, there has been a consistent delivery of green roofs based on the plans and conditions relating to planning permissions. 1,100m² of extensive green roof space was completed during the 2017/18 financial year.

Initially, green roofs completed in the City of London were primarily **intensive**, but in recent years there has been a focus on providing **extensive** green roofs.

As at 31st March 2018, there was 42,600m² of green roof space within the City of London, which comprised of:

- 20,300m² of extensive green roof space.
- 20,100m² of intensive green roof space.
- 2,200m² of mixed-use green roof space.

Some green roofs provide full public access, while others are restricted to tenants or occupants, or provide only aesthetic and sustainable design benefits. As at 31st March 2018, there was 6,000m² of green roof space with full public access.

Green roofs in the City of London also provide wildlife habitats; the green roof at Cannon Green Building provides foraging opportunities for various species.

Green roofs also contribute to biodiversity by reducing energy consumption and mitigating flood risk.

1. Introduction

Background

The purpose of this report is to monitor the delivery of green roofs in the City of London to assess delivery and inform review of policies relating to green roofs set out in the City of London planning framework.

There are a range of definitions relating to the term ‘**green roof**’ ; this section sets out the definition used by the City of London Corporation in the City of London [Local Plan](#) (adopted 15th January 2015).

This report focuses on the green roof elements within individual roof spaces in the City of London.

Definition of a ‘Green Roof’

The term, ‘**green roof**’ refers to a roof that is partially or completely covered with vegetation and a growing medium, planted over a waterproof membrane. It may include additional elements; for example, a roof barrier, drainage or irrigation systems. Other features that can form green roofs include:

- ‘Container gardens’ on roofs, where plants are maintained in pots.
- Roof top ponds used to treat grey water¹.
- Open space areas that primarily form pedestrian routes, while being situated above the roof or basement of a building.

Green roofs serve several purposes including increased amenity, more aesthetically-pleasing roofscapes, wildlife habitats, building insulation, rainwater absorption and reduction of air temperatures, thus mitigating the urban heat island effect².

The City of London have been pragmatic, recognising that roof space is also needed for other activities (e.g. plant rooms, lift overruns, restaurants and viewing galleries).

Diagram 1 illustrates the green roof at **One New Change**, using Ordnance Survey (OS) mapping and aerial photography, setting out the spatial extent of the roof space and the green roof elements³. This green roof comprises paved roof terraces (**Picture 1**) and planted areas (**Picture 2**).

¹ Domestic waste water.

² Source: [National Geographic Society](#).

³ In most instances, this will not equate to the entire roof space.



Diagram 1: Green Roof at One New Change



Picture 1: Roof Terrace at One New Change



Picture 2: Green Roof Elements at One New Change

Policy Background

Paragraph 20 of the revised [National Planning Policy Framework \(NPPF\)](#) (July 2018) encourages ‘planning measures to address climate change mitigation and adaptation’.

Paragraph 150 (a) states that new developments should:

‘... avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure

The [London Plan](#) (March 2016) **Policy 5.11 (Green Roofs and Development Site Environs)** sets out London-wide policies for green roof provision:

‘Planning decisions

- A Major development proposals should be designed to include roof, wall and site planting, especially green roofs and walls where feasible, to deliver as many of the following objectives as possible:
 - a adaptation to climate change (i.e. aiding cooling)
 - b sustainable urban drainage
 - c mitigation of climate change (i.e. aiding energy efficiency)
 - d enhancement of biodiversity
 - e accessible roof space
 - f improvements to appearance and resilience of the building
 - g growing food.

LDF preparation

- B Within LDFs boroughs may wish to develop more detailed policies and proposals to support the development of green roofs and the greening of development sites. Boroughs should also promote the use of green roofs in smaller developments, renovations and extensions where feasible.'

Paragraph 5.52 provides further guidance:

'Green roofs are an essential sustainable design consideration and can take many forms in order to maximise their benefits in a given location... . Vegetated roofs, including terraces and gardens, can improve the thermal performance of the building, reduce the urban heat island effect, support sustainable urban drainage by absorbing rainfall to reduce flooding, enhance biodiversity, provide amenity for residents who may not have access to private gardens, provide opportunities to grow food and improve appearance.'

The [Draft London Plan](#) (December 2017) **Policy G1 (Green infrastructure)** states that:

'London's network of green and open spaces, and green features in the built environment such as green roofs and street trees, should be protected, planned, designed and managed as integrated features of green infrastructure.'

Policy CS19 (Open Space and Recreation) of the City of London **Local Plan** sets out the City of London's aims:

'To encourage healthy lifestyles for all the City's communities through improved access to open space and facilities, increasing the amount and quality of open spaces and green infrastructure, while enhancing biodiversity, by ... encouraging high quality green roofs, roof gardens and terraces, particularly those which are publicly accessible, subject to the impact on the amenity of adjacent occupiers.'

The amenity values of green roofs, roof gardens and terraces are also linked to other Local Plan policies, as set out in **Diagram 2. Table 1** lists all City of London **Local Plan** policies related to green roof provision.

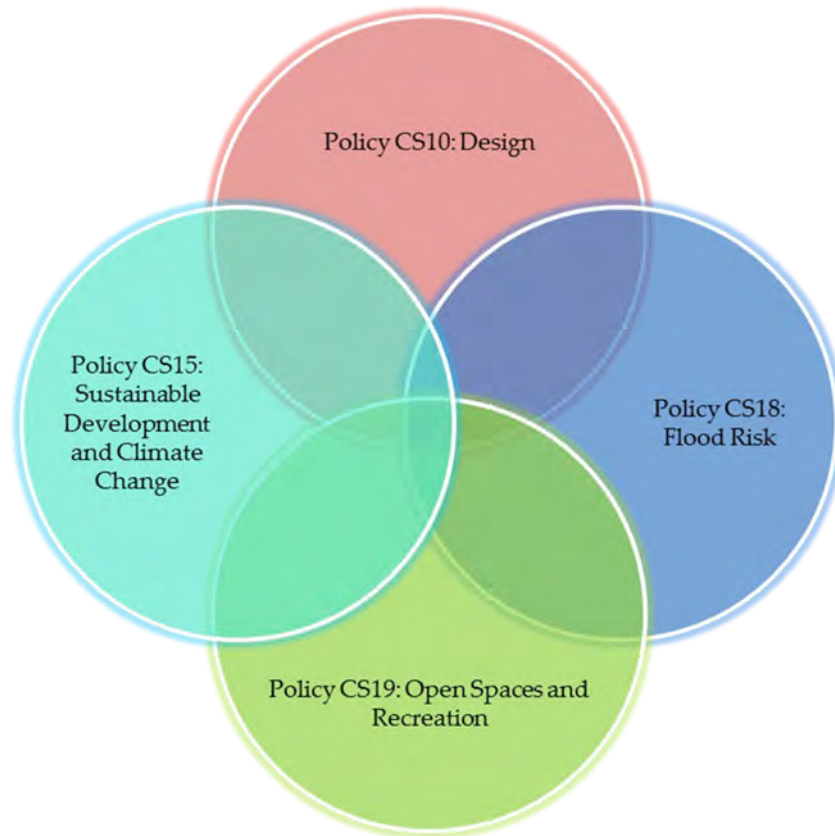


Diagram 2: City of London Local Plan Policy Considerations for Green Roof Provision

Policy Reference	Description
CS10	Design
DM 10.2	Design of green roofs and walls
DM 10.3	Roof gardens and terraces
DM 10.8	Access and inclusive design
CS15	Sustainable Development and Climate Change
DM 15.1	Sustainability requirements
DM 15.2	Energy and CO ₂ emissions assessments
CS18	Flood Risk
DM 18.1	Development in the City Flood Risk Area
DM 18.2	Sustainable drainage systems (SuDS)
DM 18.3	Flood protection and climate change resilience
CS19	Open Spaces and Recreation
DM 19.1	Additional open space
DM 19.2	Biodiversity and urban greening
DM 19.3	Sport and recreation

Table 1: City of London Policy Background

Data Sources

Information on green roofs used in this report has been obtained from:

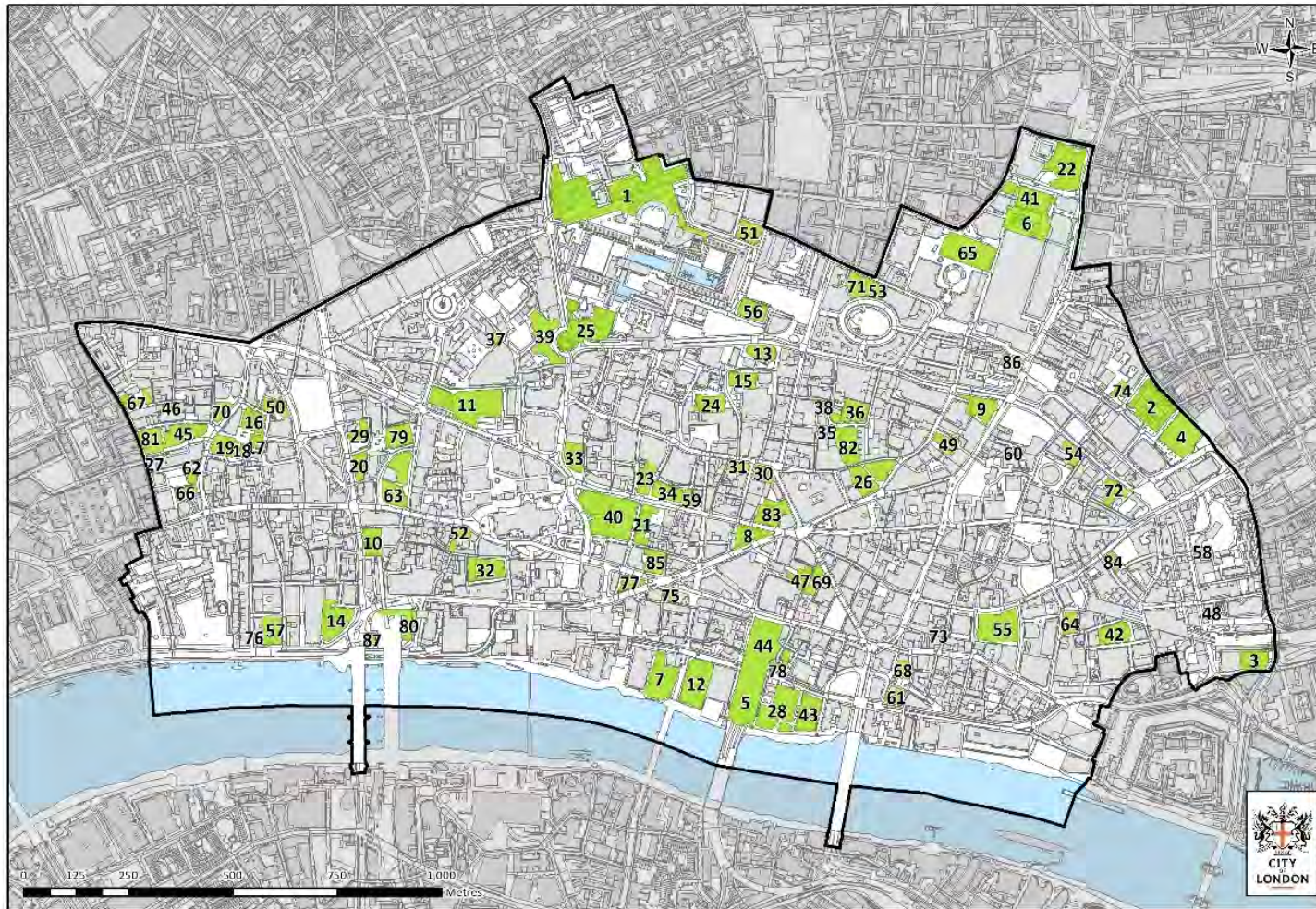
- Planning permission details;
- The City of London’s biannual [Development Schedules](#) and
- The City of London’s [Green Roof Case Studies report](#) (2011), which provides in-depth case studies.

Report Structure

For the City of London’s green roofs, this report analyses:

- Spatial distribution;
- Year of completion⁴;
- Green roof types;
- Public access and recreational amenity;
- Biodiversity considerations and
- Sustainability issues.

⁴ 1st April to 31st March.



Map 1: Distribution of Green Roofs in the City of London

2. Spatial Distribution

Introduction

Map 1 shows the distribution of roof spaces with green roofs in the City of London; the numbers relate to **Appendix 1**, which lists them, detailing:

- Location;
- Planning permission (where applicable);
- Spatial area;
- Financial year of completion (or an estimate);
- Green roof type & recreational amenity and
- Public access.

Additional details are provided, where available, of:

- Sustainability benefits and
- Flood risk abatement measures.

Analysis

As **Map 1** shows, green roofs are located throughout the City of London, with concentrations at:

- The western boundary, at Fetter Lane and Blackfriars;
- Farringdon Street and Old Bailey;
- The northern boundary, at the Barbican and Middlesex Street residential estates, and Broadgate;
- The central area, at Gresham Street and Cheapside;
- The southern area near Cannon Street Station and Upper Thames Street and
- The south-eastern area, near Fenchurch Street.

Areas where there are deficiencies in green roof provision include:

- Concentrations of listed buildings⁵, subject to City of London **Local Plan Policy CS12 (Historic Environment)**⁶; this includes the Temples, Smithfield and areas adjacent to Bank Junction, which are [conservation areas](#) and

⁵ See also **Figure N** in the City of London **Local Plan**.

⁶ See also **Figure K** in the City of London **Local Plan**.

- Areas suitable for tall buildings, as set out in City of London **Local Plan Policy CS14 (Tall Buildings)**; this includes the City of London’s Eastern Cluster⁷, which contains few green roofs.

⁷ See City of London **Local Plan Policy CS7 (Eastern Cluster)**.

3. Year of Completion

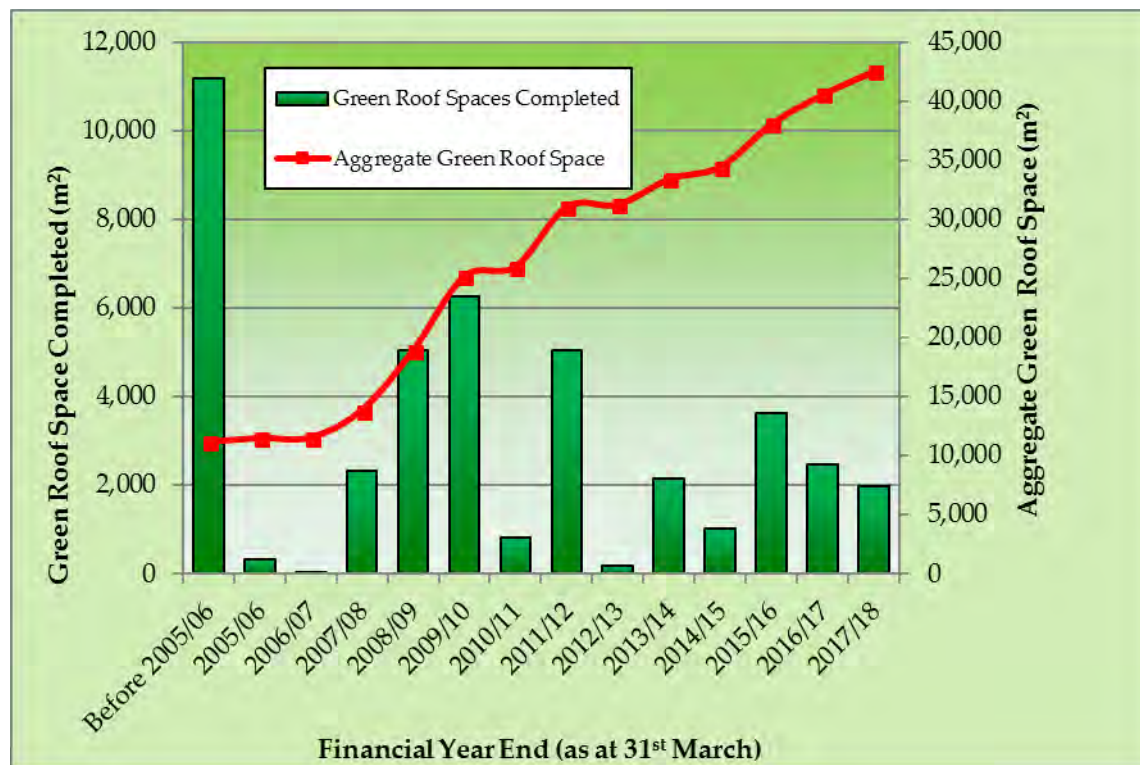
Introduction

This section analyses how the spatial distribution of green roofs has evolved over time.

Green Roof Completions by Financial Year

Past Completions

Graph 1 and **Table 2** set out the amount of green roof space⁸ completed by financial year, including the aggregate total; more details are provided in **Appendix 1**.



Graph 1: Green Roof Space Completed in the City of London

⁸ The data provided in this report shows variances from the document, [Planning and Delivering Green Roofs in the City of London](#) (Royal Town Planning Institute Awards for Planning Excellence 2017, Excellence in Planning for the Natural Environment). The City of London have quality-assessed data using aerial photography, which gives an accurate picture of the green roof elements. In practice, there will be some variances between green roofs completed and that set out in the planning permission documentation.



Financial Year	Green Roof Space	
	Completed	Aggregate
	square metres	square metres
Before 2005/06	11,200	11,200
2005/06	300	11,500
2006/07	40	11,600
2007/08	2,300	13,900
2008/09	5,000	18,900
2009/10	6,300	25,200
2010/11	800	26,000
2011/12	5,100	31,100
2012/13	200	31,300
2013/14	2,200	33,400
2014/15	1,000	34,500
2015/16	3,600	38,100
2016/17	2,500	40,600
2017/18	2,000	42,600

Table 2: Total Green Roof Space in the City of London

Prior to the 2005/06 period, 11,200m² of green roof space was completed; the first green roofs were at the Barbican Estate highwalks and Petticoat Square. Subsequently, redevelopment schemes provided green roofs during the 1990s and 2000s.

Total green roof space remained stable until the period between 1st April 2007 and 31st March 2010 when significant amounts of green roof space were delivered, aggregating to 25,200m² as at 31st March 2010.

Between 1st April 2010 and 31st March 2015 there was a significant increase, particularly during the 2011/12 period when 5,100m² of roof space was completed. As at 31st March 2015, there was 34,500m² of green roof space.

Between 1st April 2015 and 31st March 2018, the total green roof space continued to increase, aggregating to 42,600m² as at 31st March 2018. This included the delivery of 2,000m² of green roof space across 11 sites during the 2017/18 period.

Projected Completions

As at 31st March 2018:

- A range of redevelopment schemes were under construction and projected to incorporate green roofs and



- There was also a range of potential green roofs set out in schemes, permitted but not commenced⁹.

Taking this potential delivery of green roofs, it is estimated that there will be a gain of 22,700m² in green roof space between 2018/19 and 2023/24, potentially increasing the total green roof space in the City of London to 65,800m² as at 31st March 2024.

Appendix 2 sets out details of where green roofs are projected for delivery.

Spatial Distribution

Past Completions

Table 3 analyses green roof distribution by time periods, while **Map 2** shows the spatial distribution including year of completion.

Period	Green Roof Distribution
Up to 31 st March 1995	A sporadic pattern that included: <ul style="list-style-type: none"> • Planting areas on the Barbican Estate highwalks owned and maintained by the City of London Corporation. Although the Barbican highwalks primarily form open spaces and walking routes, they are located above commercial and transport uses, and hence fall within the definition of a ‘roof’; • The croquet lawn at Exchange Square, which is situated at ground level, and is primarily a landscaped open space; the Broadgate Estate was constructed above the railway tracks adjacent to Liverpool Street Station, and therefore falls within the definition of a ‘roof’ and • Cannon Bridge House.
1 st April 1995 to 31 st March 2000	Located sporadically, at 100 New Bridge Street, One Poultry and 99 Bishopsgate.
1 st April 2000 to 31 st March 2005	Only one green roof was completed; this was at 2 King Edward Street (adjacent to St. Paul’s Cathedral).
1 st April 2005 to 31 st March 2010	Large concentrations of green roofs in the west and central areas; one green roof was completed in the north-east area, at 201 Bishopsgate.
1 st April 2010 to 31 st March 2015	Concentrations of green roofs near Fetter Lane, Upper Thames Street, Bevis Marks and Fenchurch Street.

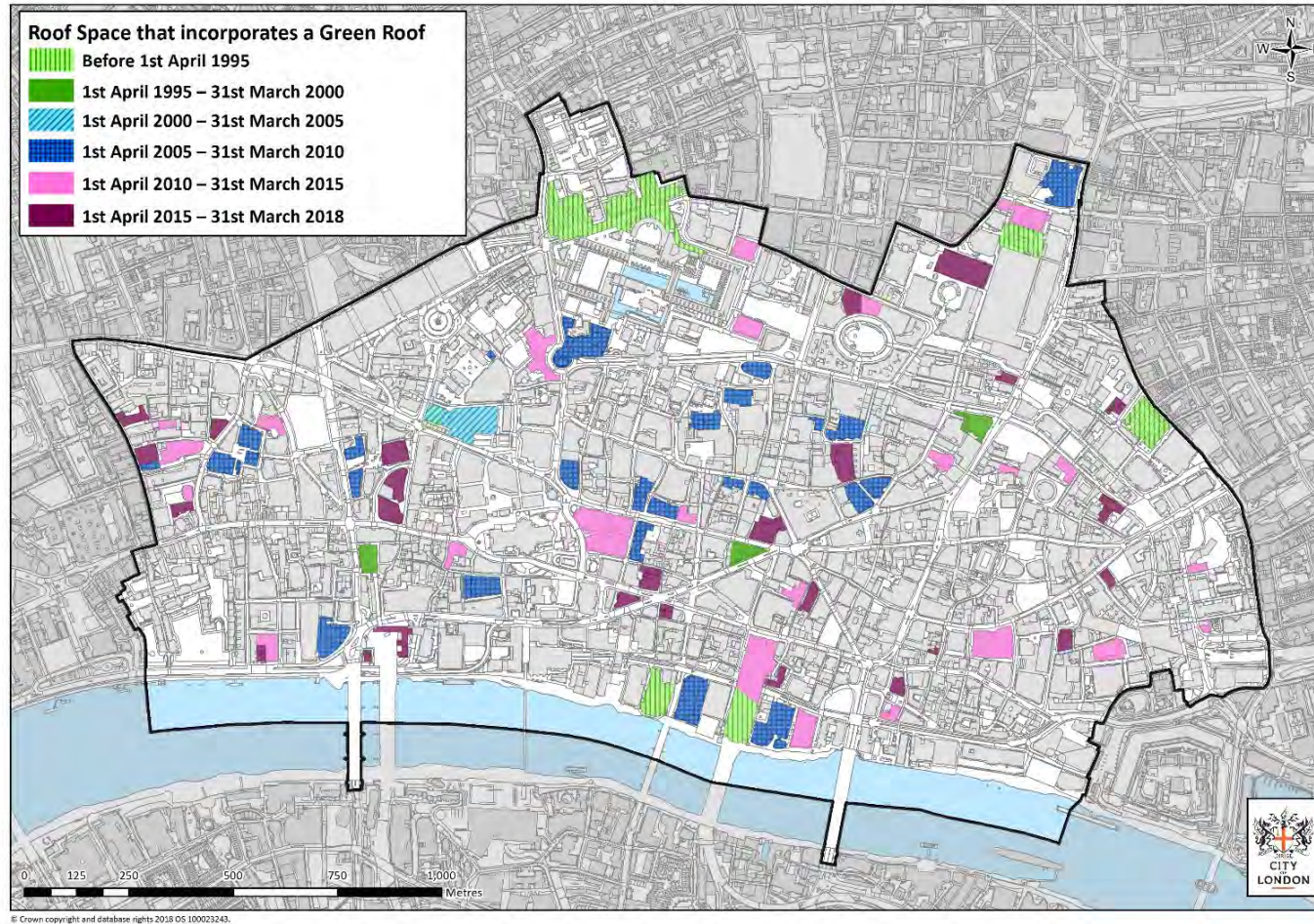
⁹ As set out in the City of London’s **Development Schedules**.

Period	Green Roof Distribution
1 st April 2015 to 31 st March 2018	Concentrations of green roofs at Fetter Lane, Old Bailey, Cannon Street and near Fenchurch Street.

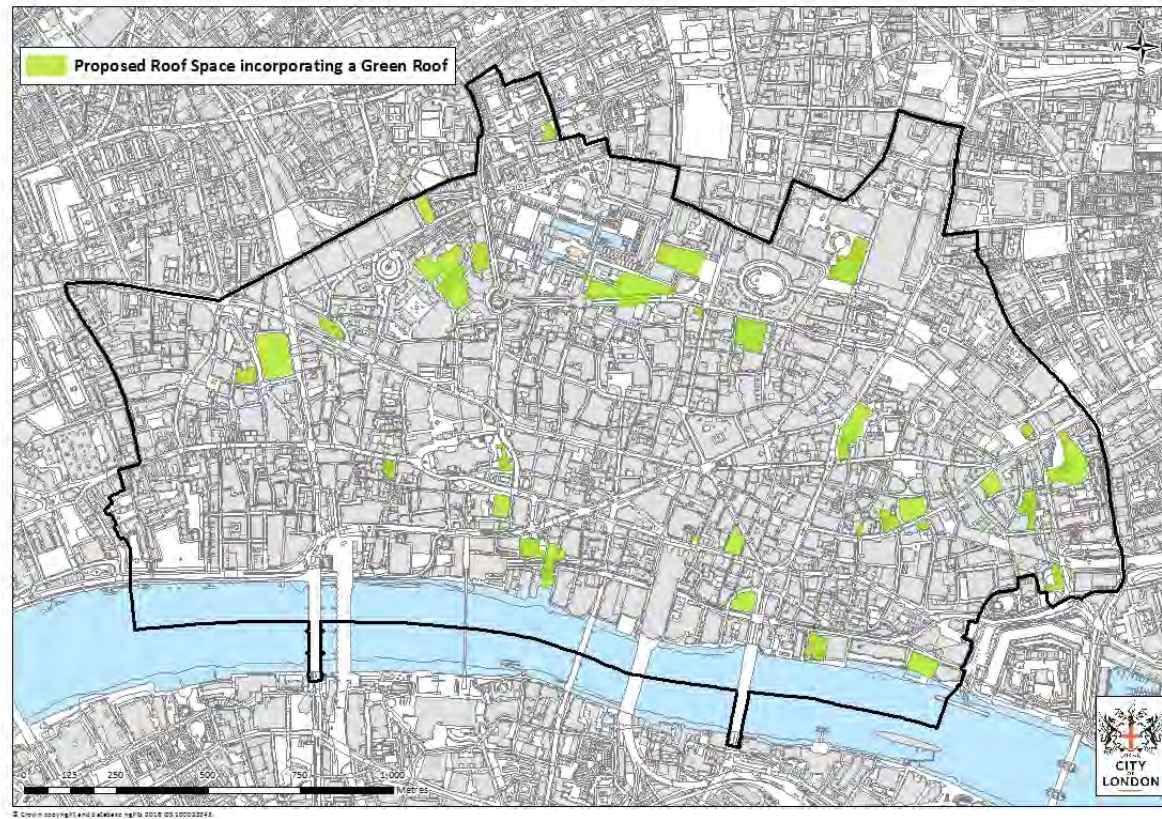
Table 3: Distribution of Green Roofs, Analysed by Time Periods

Projected Completions

Map 3 sets out the proposed roof spaces that will incorporate a green roof. The spatial distribution complements that set out for past completions with the addition of a range of proposed green roofs located in the Eastern Cluster. Such examples include development sites at 22 Bishopsgate, 6-8 Bishopsgate, 116-124 Fenchurch Street and 130 Fenchurch Street.



Map 2: Roof Spaces with Green Roofs, by Year of Completion



Map 3: Projected Green Roofs in the City of London

4. Green Roof Types

Introduction

This section defines different types of green roofs, primarily **extensive** and **intensive**, analysing their spatial distribution and providing examples.

The City of London **Local Plan Policy DM 10.2 (Design of green roofs and walls)** sets out a preference for extensive green roofs:

‘To encourage the installation of green roofs on all appropriate developments. On each building the maximum practical coverage of green roof should be achieved. Extensive green roofs are preferred, and their design should aim to maximise the roof’s environmental benefits, including biodiversity, run-off attenuation and building insulation.’

Table 4 sets out definitions for all green roof types, and detailed descriptions used in the City of London context.

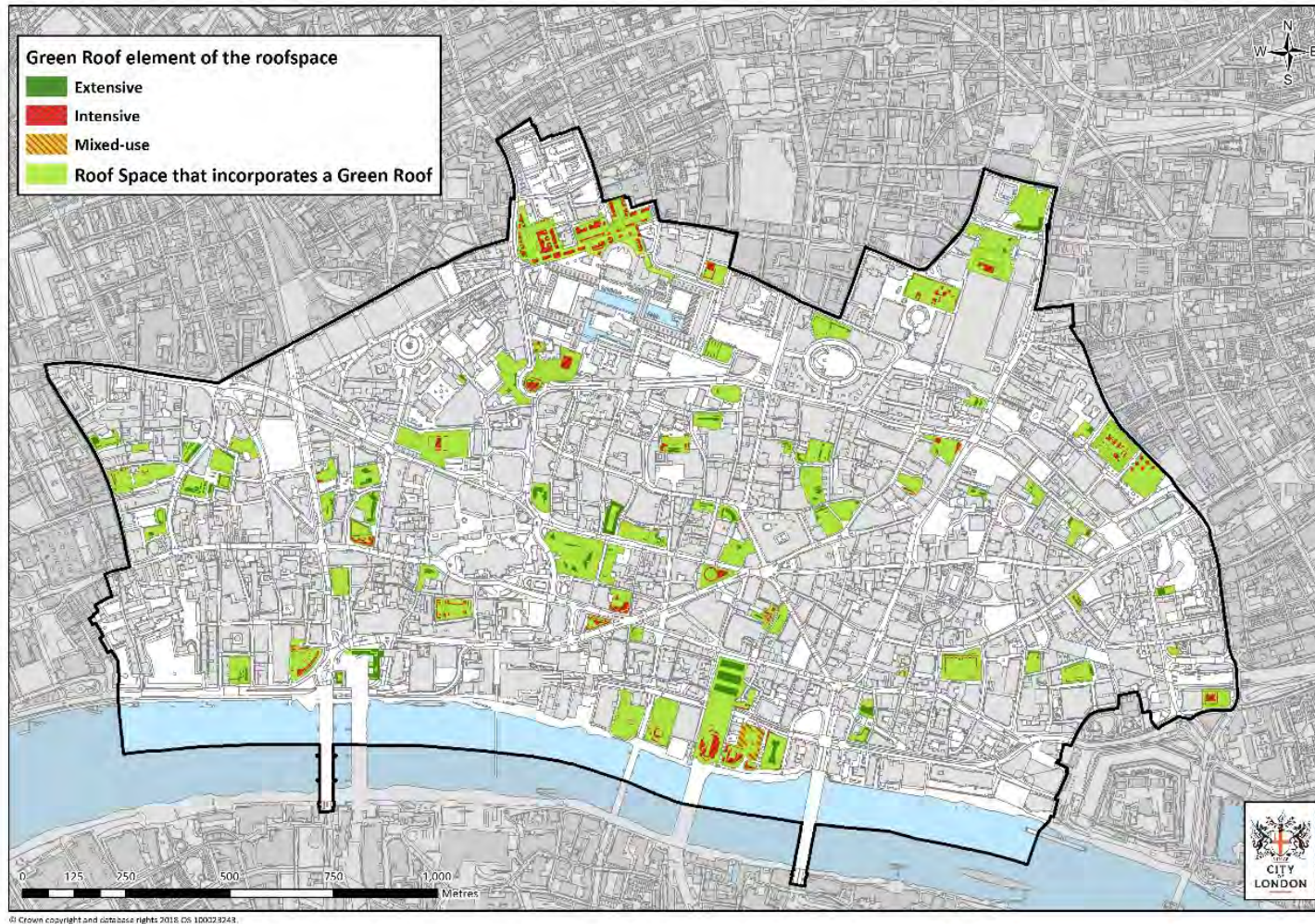
Green Roof Type	Definition	City of London Context
Extensive	These range in thickness from 20mm to 127mm; they are lighter than intensive green roofs and require minimal maintenance.	These have low maintenance requirements and rarely need artificial irrigation. Based on thin soil or substrate layers, planting styles are naturalistic with the objective of establishing a self-sustaining plant community, such as sedums or hardy wildflower mixtures. The City of London encourages a minimum substrate depth of 80mm. Ideally there will be a variation of depths to encourage rainwater attenuation and a wider range of species.
Intensive	These are thicker than extensive green roofs (at least 128mm); they can support a wider variety of plants but are heavier and require more maintenance.	These need similar levels of maintenance to a ground-level garden, usually comprise deep soil and a growing medium and require artificial irrigation. The usual reason for installing an intensive green roof is to provide amenity space. Intensive green roofs normally have a minimum depth of 128mm and can support a wide range of planting but are normally heavier than extensive green roofs and require greater maintenance. They are adaptable, to accommodate virtually any type of plant.

Green Roof Type	Definition	City of London Context
Mixed-use	These combine a mixture of extensive and intensive green roof elements.	Mixed-use green roofs comprise a mixture of amenity space and areas primarily used for planting. Individual green roof elements will have the same maintenance requirements as extensive or intensive green roofs.

Table 4: Green Roof Types

Spatial Distribution

Map 4 provides details of the spatial distribution of green roofs analysed by type as at 31st March 2018; the map illustrates the green roof element of the roof space.



Map 4: Green Roof Types in the City of London

Extensive Green Roofs

As **Map 4** shows, **extensive** green roofs are evenly distributed throughout the City of London. There are very few at the Thames frontage and none are located near the Barbican Estate; significant clusters are located near Fetter Lane and Cheapside.

Extensive green roofs have accounted for 64% of green roof space completed in the City of London between 1st April 2005 and 31st March 2018.

Examples include:

- 181 Queen Victoria Street;
- 150 Cheapside (**Picture 3**);
- The Ned Hotel, 27 Poultry;
- Cannon Street Station;
- 1 Angel Court;
- 117-121 Bishopsgate and
- The Monument Building, 11 Monument Street.



Picture 3: 150 Cheapside

Intensive Green Roofs

As **Map 4** shows, several **intensive** green roofs are located near St. Paul’s Cathedral and the River Thames, utilising the roof space to take advantage of the views of the City and the river¹⁰. Another significant cluster is located towards the north of the City, incorporating 5 Moor Lane and the Barbican Highwalks.

Intensive green roofs have accounted for 29% of green roof space completed in the City of London between 1st April 2005 and 31st March 2018.

Other examples of intensive green roofs in the City of London include:

- 28 Chancery Lane;
- 10 Queen Street Place;
- 45 Cannon Street;
- Cannon Bridge House, 25 Dowgate Hill (**Picture 4**) and
- MAPFRE Dixon House, 72-75 Fenchurch Street.



Picture 4: Cannon Bridge House

¹⁰ City of London policies to protect St. Paul’s Cathedral include **Local Plan Policy CS13 (Protected Views)**, the City of London [Protected Views Supplementary Planning Document \(SPD\)](#) (January 2012) and the [St. Paul’s Heights](#) grid, which sets out maximum building heights within viewing corridors associated with historic buildings.

Mixed-Use Green Roofs

As **Map 4** shows, the City of London has a small number of **mixed-use** green roofs in sporadic locations. Mixed-use green roofs have accounted for 7% of green roof space completed in the City of London between 1st April 2005 and 31st March 2018 and include:

- 107 Cheapside (**Picture 5**);
- 1 Angel Lane and
- Plantation Place, 30 Fenchurch Street.

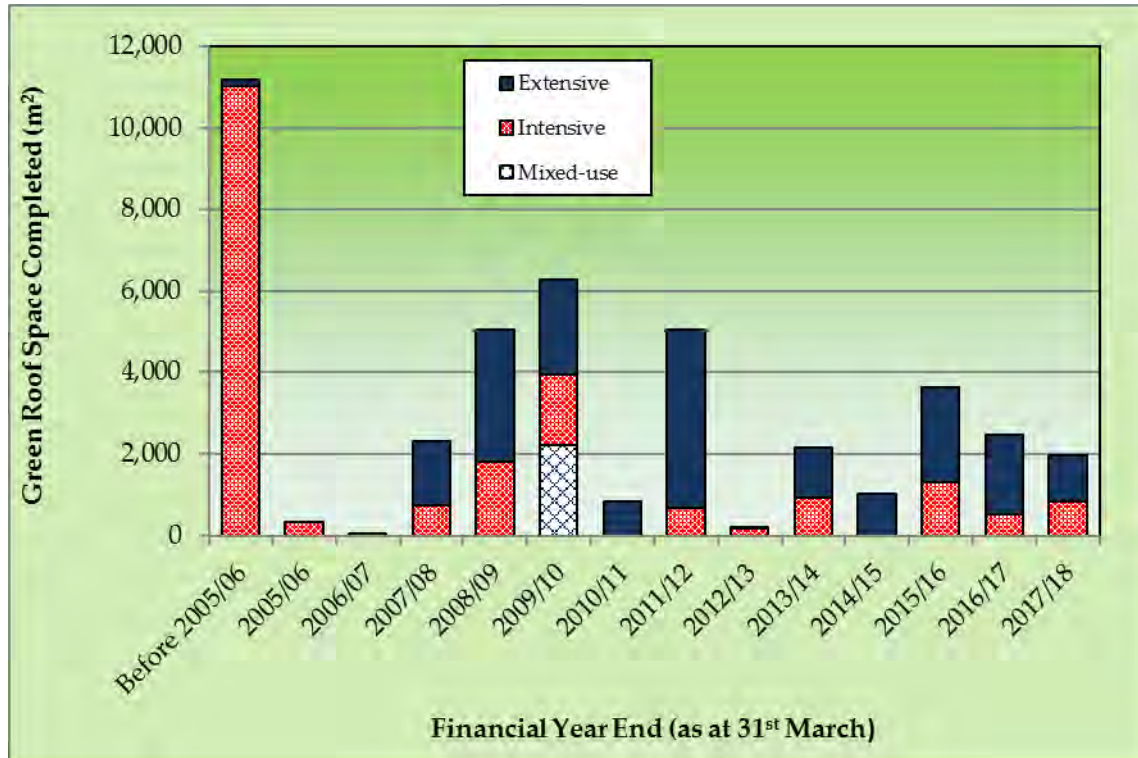


Picture 5: 107 Cheapside

Green Roof Types Analysed by Completion Year

Past Completions

Graph 2 analyses the total area of completed green roof space in the City of London, by type and financial year of completion.



Graph 2: Green Roof Completions by Type

As at 31st March 2005, green roofs in the City of London comprised approximately:

- 150m² of extensive green roof space and
- 11,000m² of intensive green roof space.

Between 1st April 2005 and 31st March 2010, significant amounts of extensive and intensive green roof space were completed, including:

- 7,200m² of extensive green roof space (completed after 1st April 2007);
- 4,600m² of intensive green roof space, mostly completed after 1st April 2008 and
- 2,200m² of mixed-use green roof space, completed during the 2009/10 financial year.

The majority of green roof space completed between 1st April 2010 and 31st March 2015 (7,500m²) was Extensive Redevelopment schemes completed

during the 2011/12 financial year provided 4,400m² of extensive green roof space.

Between 1st April 2015 and 31st March 2018, significant amounts of extensive and intensive green roof space were completed (5,400m² and 2,700m² respectively).

As at 31st March 2018, the City of London contained:

- 20,300m² of extensive green roof space;
- 20,100m² of intensive green roof space and
- 2,200m² of mixed-use green roof space.

This demonstrates a significant increase in the total green roof space (particularly extensive green roof space) between 1st April 2005 and 31st March 2018.

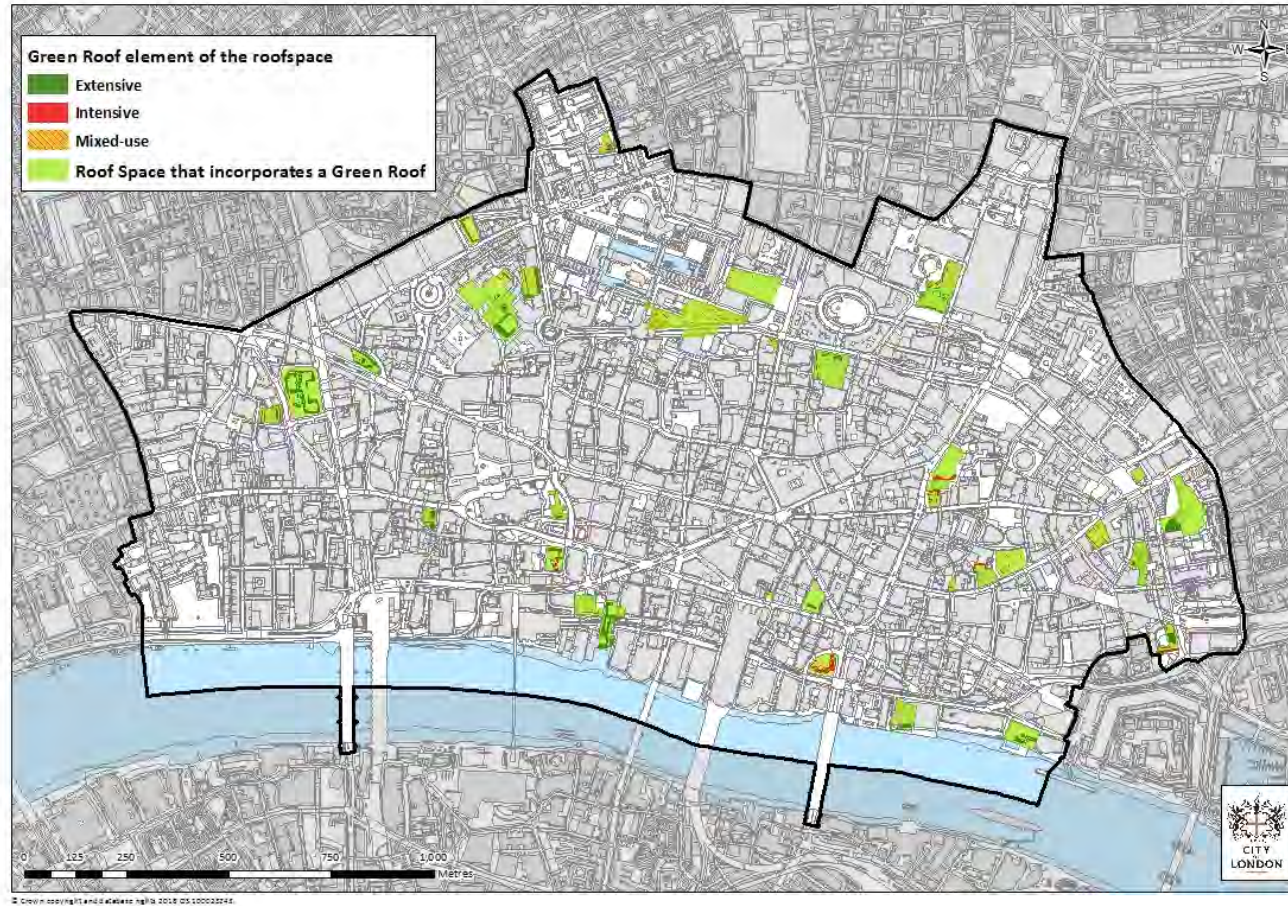
Projected Completions

Map 5 shows that, as with recent trends, green roofs in the City of London projected for completion between 1st April 2018 and 31st March 2024 will primarily be Extensive This will account for approximately 15,600m² of green roof space in the pipeline as at 31st March 2018, with clusters in the localities of Smithfield and London Wall.

Intensive green roof completions are projected to total just under 3,000m²; these will primarily be located within the City's Eastern Cluster¹¹.

Just over 4,100m² of projected green roof space will be mixed-use, primarily located towards the east of the City.

¹¹ See City of London **Local Plan Policy CS7 (Eastern Cluster)**.



Map 5: Projected Green Roofs in the City of London by Type

5. Public Access and Recreational Amenity

Introduction

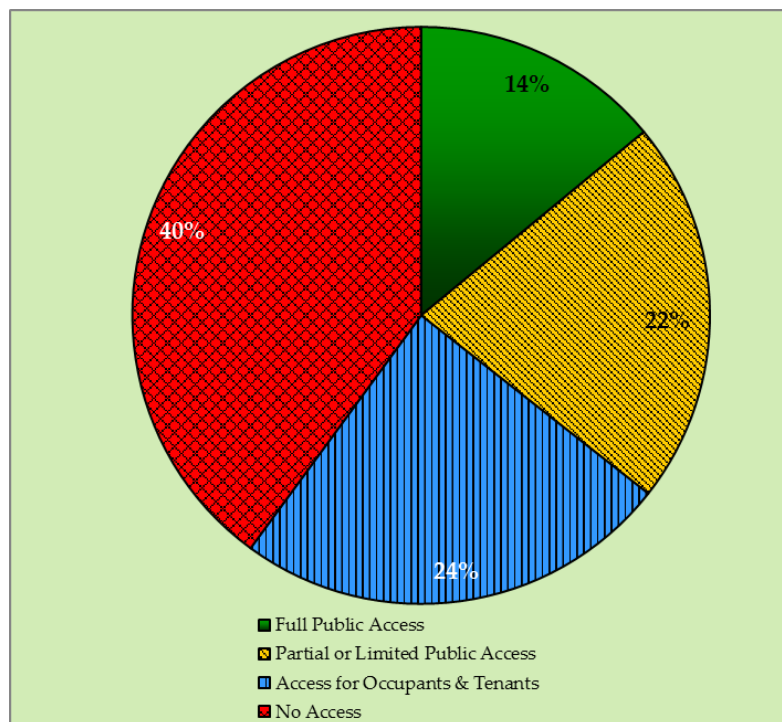
The City of London **Local Plan Policy CS19 (Open Spaces and Recreation)** encourages developers to ensure that new green roofs are accessible to the public (see **Section 1** for the full policy wording). This section assesses public access to green roofs, using four categories, as **Table 5** shows.

Public Access Type	Definition
Full	The public have unrestricted access, although some green roofs may be closed at night for security reasons
Partial or Limited	The public have access only to some parts of the green roof space, or only have access during public events
For Occupiers and Tenants	Access is limited to occupiers and tenants of the building (e.g. residents in a housing block or workers in an office block)
None	Access for maintenance purposes only.

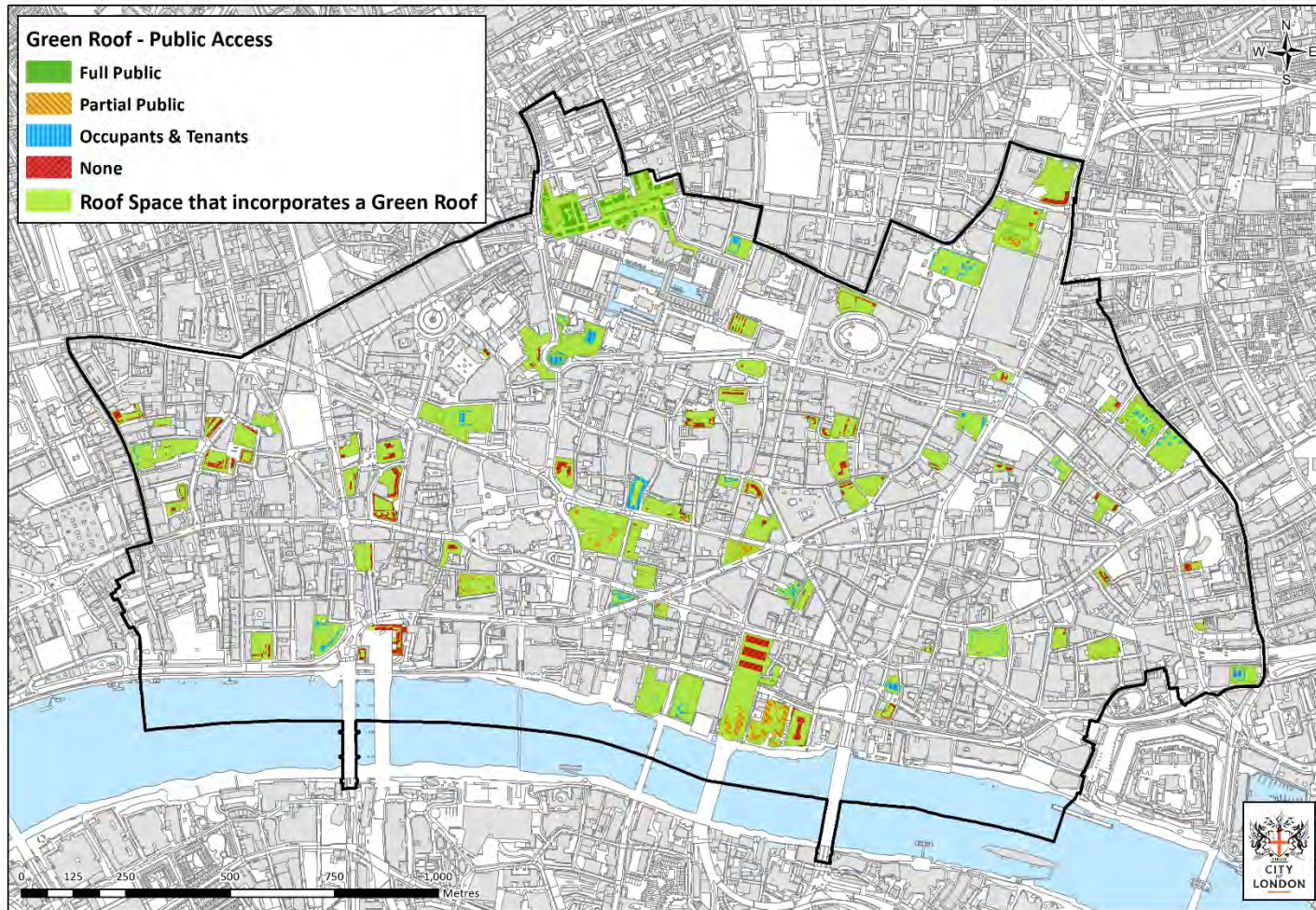
Table 5: Access to Green Roofs

Spatial Distribution

Graph 3 sets out the proportion of green roof space analysed by the four public access categories; **Map 6** illustrates spatial distribution by access type.



Graph 3: Public Access to Green Roofs



Map 6: Public Access to Green Roofs in the City of London

Full Public Access

In the City of London, approximately 6,000m² of green roof space (14% of the total) has full public access.

Due to pragmatic issues relating to maintenance, privacy and security, full public access is only provided to a small number of green roofs, designed as public spaces. These green roofs normally include paved areas and associated materials to accommodate pedestrians.

Green roofs of this type are predominantly **Intensive** As **Map 4** shows, these are primarily located outside of the central area, e.g. The Barbican Estate Highwalks (**Picture 6**).



Picture 6: Highwalks at the Barbican Estate

Partial or Limited Public Access

In the City of London, 9,200m² of green roof space (22% of the total) has partial or limited public access. These types of green roof sites are predominantly **intensive** and, as **Map 4** shows, form clusters:

- Around St. Paul’s Cathedral and Cheapside (e.g. the terrace at One New Change, the restaurant area at One Poultry and the roof space at Grange Hotel, Carter Lane) and
- At Cannon Street (including Cannon Bridge House and 1 Angel Lane).

The croquet lawn¹² at Exchange Square (**Picture 7**) also forms a green roof with limited public access.



Picture 7: Exchange Square

¹² This is used as an ice rink during the Winter.

Access for Occupiers and Tenants

There are several sites where exclusive access is provided for occupiers and tenants. In the City of London, 10,400m² of green roof space (24% of the total) has exclusive access for occupiers and tenants.

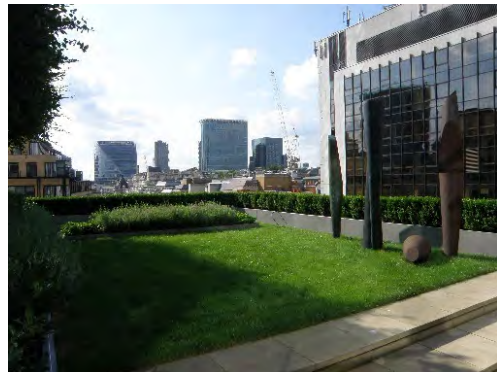
In most cases, there are intended for recreational use, and thus the green roof might include seating provision. These are predominantly **intensive** and, as **Map 4** shows, are distributed sporadically around the City of London.

Examples include:

- 28 Chancery Lane;
- Unilever House, 100 Victoria Embankment (**Picture 8**);
- 1 Wood Street;
- 10 Queen Street Place;
- 45 Cannon Street;
- 99 Bishopsgate (**Picture 9**);
- Parts of the green roof at The Monument Building and
- Petticoat Square.



Picture 8: Unilever House



Picture 9: 99 Bishopsgate

No Access

There is a range of green roofs where only maintenance access is provided and thus the roof provides only aesthetic benefits. These sites are normally designed for minimal maintenance and the natural growth of sedum and wildflowers.

In the City of London, 17,000m² of green roof space (40% of the total) is not accessible; these are predominantly **extensive** and include:

- 181 Queen Victoria Street;
- 20 Old Bailey;
- 1 Puddle Dock;
- St. Bartholomew’s Hospital (**Picture 10**);
- The Ned Hotel¹³;
- 1 Angel Court;
- 201 Bishopsgate (**Picture 11**) and
- MAPFRE Dixon House.



Picture 10: St. Bartholomew’s Hospital



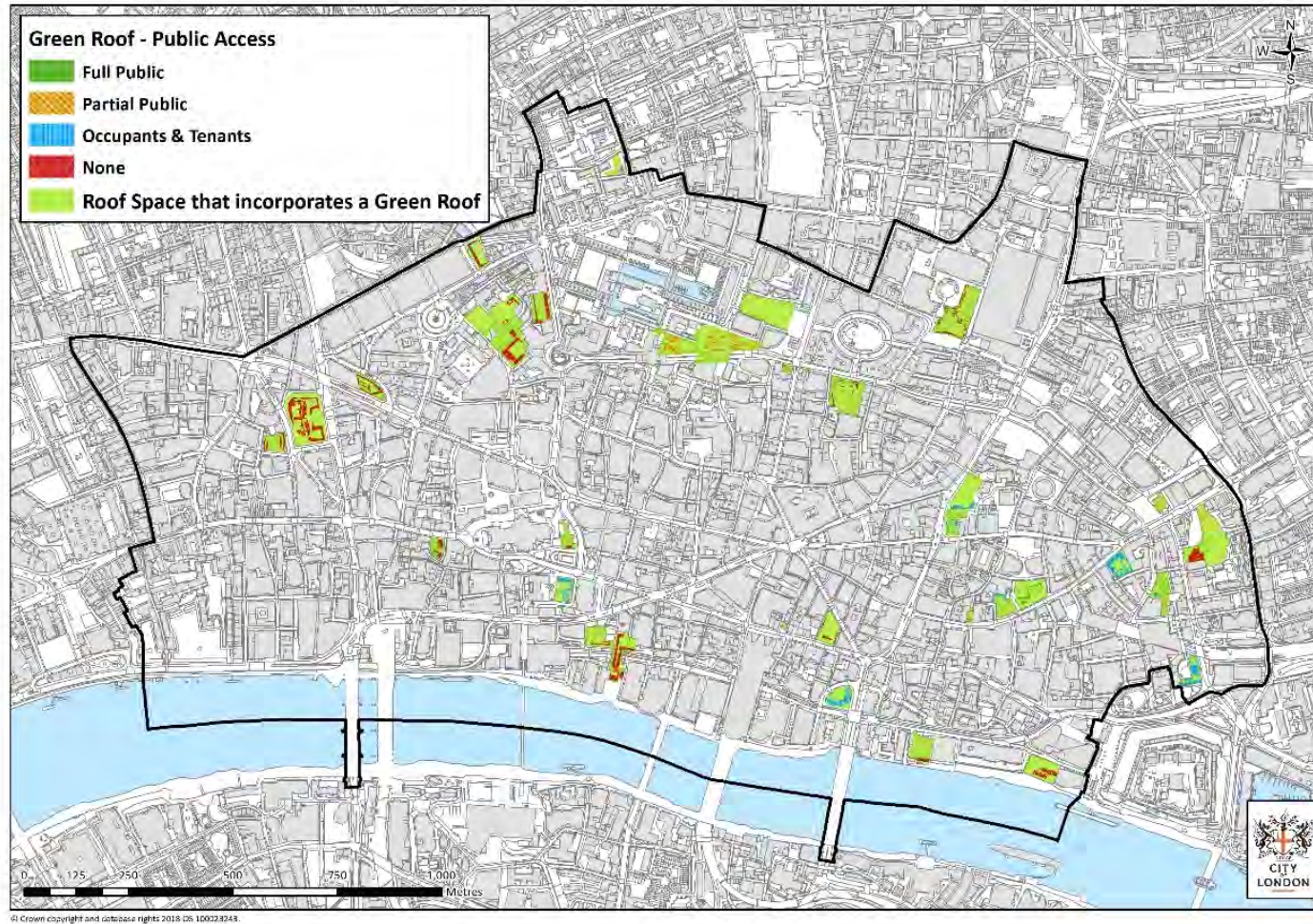
Picture 11: 201 Bishopsgate

¹³ The green roof is separate from the open air swimming pool located on the roof of this building, which is on a terrace with no green elements and thus not included in this report.

Projected Completions

Map 7 illustrates projected green roof completions between 1st April 2018 and 31st March 2024:

- Only a small number of new green roofs will provide either full or partial public access;
- Several new green roofs will provide amenities for occupiers and tenants; these will primarily be located in the east of the City of London and
- The majority of new green roofs will provide no access; these will be located primarily in the north-west area, around Smithfield.



Map 7: Public Access to Projected Green Roofs in the City of London

6. Biodiversity Considerations

Introduction

This section analyses wildlife habitats and biodiverse planting within green roofs. Contribution to biodiversity within a dense urban area is a key component of green roofs. The **London Plan Policy 7.19 (Biodiversity and access to nature)** sets out that development proposals should:

- a wherever possible, make a positive contribution to the protection, enhancement, creation and management of biodiversity
- b to prioritise assisting in achieving targets in biodiversity action plans (BAPs) ... and/or improving access to nature in areas deficient in accessible wildlife sites
- c not adversely affect the integrity of European sites and be resisted where they have significant adverse impact on European or nationally designated sites or on the population or conservation status of a protected species or a priority species or habitat identified in a UK, London or appropriate BAP or borough BAP.'

Draft London Plan Policy G6 (Biodiversity and access to nature) states that: 'Proposals which create new or improved habitats that result in positive gains for biodiversity should be considered positively'.

Paragraph 5.53 states that green walls 'should be considered in new developments'.

City of London **Local Plan Policy DM 10.2 (Design of green roofs and walls)** sets the context for the design of green roofs to maximise the environmental benefits, including biodiversity. The policy background for biodiversity is set out in **Policy DM 19.2 (Biodiversity and urban greening)**:

'Developments should promote biodiversity and contribute to urban greening by incorporating:

- green roofs and walls, soft landscaping and trees;
- features for wildlife, such as nesting boxes and beehives;
- a planting mix which encourages biodiversity;
- planting which will be resilient to a range of climate conditions;
- maintenance of habitats within Sites of Importance for Nature Conservation.'

Wildlife Habitats

Table 6 sets details of green roofs that provide a bio-diverse environment with habitats for a range of different wildlife species, detailed in.

Species	Details
Bees and other insects	Hives at the Museum of London (Picture 12) and Cannon Bridge House.
	'Bee hotels' at Mint Hotel.
	Habitats for sand bees and butterflies at 30 Cannon Street.
	Invertebrate boxes' at 1 Creechurch Place.
	Pollen and nectar-rich plants at 1 King William Street.
Birds	Nesting birds at One Poultry.
	Bird habitats at 40 Chancery Lane and 60 Ludgate Hill.
	Black redstarts at Guildhall and 201 Bishopsgate.
	Falcon roosts are proposed for St. Bartholomew's Hospital.
Bats	Bat boxes have been provided at 40 Chancery Lane, St. Bartholomew's Hospital, Cannon Bridge House and 5 Broadgate.
Variation in vegetation types	Provides habitats for a range of insects and birds; see Biodiverse Planting .
Shrubs	Planted at Cannon Green Building, Bush Lane, providing foraging opportunities for various species.

Table 6: Wildlife Habitats



Picture 12: Beehive at the Museum of London

Some green roofs in the pipeline as at 31st March 2018 include proposals for:

- Bird boxes;
- Bat boxes and
- Bat foraging habitats.

The projected green roof on the site of Bernard Morgan House will target locally important species including black redstarts.

Biodiverse Planting

Planting has been incorporated into most green roofs in the City of London, to improve biodiversity; **Table 7** details the range of approaches.

Planting type	Details
Native wildflowers	Planted at 28 Chancery Lane, 75 Shoe Lane and The Ned.
	Wildflowers, mosses, succulents and herbs at 40 Chancery Lane.
	Cornflowers and cowslips at 70 Mark Lane.
	Native flowers and fine grass species at 1 Creechurch Place.
Evergreen hedges	Planted at 5 Moor Lane and New Court, 7-9 St. Swithin's Lane.
Trees	Planted at 99 Bishopsgate and 5 Broadgate.
Allotments	Used for the planting of vegetables, with examples at One Poultry and 1 Angel Lane (Picture 13).
Planting pockets	Provided at Exchange House, forming a 'carpet' of vegetation.

Table 7: Biodiverse Planting



Picture 13: 1 Angel Lane

Some green roofs in the pipeline as at 31st March 2018 will include:

- Wildflower blankets and
- Vine wires to assist growth of creeping plants.

7. Sustainability Issues

Introduction

Within a densely built-up area like the City of London, it is important that new development is environmentally sustainable. The City of London is situated adjacent to the River Thames and thus flood risk abatement is also a significant issue when assessing redevelopment proposals.

This section analyses how green roofs in the City of London minimise the urban heat island effect and flood risk and provide rainwater runoff attenuation.

The Urban Heat Island Effect

Policy Background

Green roofs can contribute to sustainability, because they insulate heat within buildings; this has the effect of reducing the urban heat island effect. This has mostly been delivered by planting vegetation on building roofs, creating additional layers and thus requiring less energy consumption.

Paragraph 5.25 of the **London Plan** states that:

‘Design features such as green roofs ... can enhance biodiversity, absorb rainfall, improve the performance of the building, reduce the urban heat island effect and improve the appearance of a development.’

London Plan Policy 5.3 (Sustainable design and construction) and **Draft London Plan Policy GG6 (Increasing efficiency and resilience)** require major redevelopment proposals to avoid contributing to the urban heat island effect.

Draft London Plan Policy SI4 (Managing heat risk) states that:

‘Development proposals should minimise internal heat gain and the impacts of the urban heat island through design, layout, orientation and materials.’

Green roofs can contribute to the delivery of **City of London Local Plan Policy CS15 (Sustainable Development and Climate Change)**; this includes:

- The criteria in **Policy DM 15.1 (Sustainability requirements)**, including those set out in the Building Research Establishment Environmental Assessment Method ([BREEAM](#)) assessment;

- Energy and CO₂ emissions assessments, including landscaping to reduce energy consumption, set out in **Policy DM 15.2 (Energy and CO₂ emissions assessments)**;
- Guidelines relating to carbon emissions set out in **Policy DM 15.4 (Offsetting of carbon emissions)**; offsetting may be applied to water resources and rainwater run-off to meet on-site sustainability targets;
- Minimising any contribution to the urban heat island effect caused by heat retention and waste heat expulsion, when designing buildings; this is set out in **Policy DM 15.5 (Climate change resilience and adaptation)** and
- Air Quality Impact Assessments, as set out in **Policy DM 15.6 (Air quality)**.

City of London Context

In the City of London, the issue of reducing the urban heat island effect has been addressed in the following ways:

- Thermal insulating effects at 150 Cheapside, the Guildhall and One Poultry;
- The green roof at St. Dunstan’s House reduces energy consumption in the top-floor flats and
- Some green roofs are integrated with the provision of photovoltaic panels; examples include 25 Basinghall Street (**Picture 14**), 117-121 Bishopsgate and the Monument building.



Picture 14: 25 Basinghall Street

Projected green roofs in the City of London as at 31st March 2018 include proposals to minimise solar gain¹⁴.

¹⁴ When an object absorbing solar radiation causes an increase in thermal energy.

The green roof projected at the 10 King William Street redevelopment site is projected to result in an 18% reduction in carbon emissions.

Mitigation of Flood Risk

Sustainable Drainage Systems (SuDS) are forms of artificial drainage systems that replicate natural systems designed to abate flood risk, with minimal impact on the environment. SuDS will usually be aimed at containing water runoff (e.g. collection, storage, cleaning) before releasing it into water courses and other natural features, thus reducing the speed and volume of water entering the sewer network.

Policy Background

London Plan **Policy 5.13 (Sustainable drainage)** encourages developers to utilise SuDS, ‘unless there are practical reasons for not doing so’.

Draft London Plan Policy SI12 (Flood risk management) advises that flood risk should be ‘minimised and mitigated’ in any development proposals requiring flood risk assessments.

3.4.2 of the Mayor’s Supplementary Planning Guidance (SPG) on [Sustainable Design and Construction](#) (published April 2014) sets out that:

‘It is important to incorporate sustainable draining in all developments to prevent the increasing volume of surface water runoff during heavy rainfall. Surface water flooding is the most likely form of flooding that development may be exposed to. Surface water flooding is likely to increase due to the anticipated increased intensity in rainfall events as well as the continuing urbanisation of London. ... It is essential to consider how SuDS measures will be incorporated at the initial design stage, especially when the National Standards for SuDS is introduced.’

The Department for Environment, Food and Rural Affairs (DEFRA) published [non-statutory national SuDS standards](#) in March 2015.

The City of London Corporation is committed to the mitigation of flood risk and has published a [Local Flood Risk Management Strategy](#) (2014-2020, published September 2014). Local Plan **Policy CS18 (Flood Risk)** sets out a range of criteria to ensure that the City remains at low risk from all types of flooding:

‘Reducing rainwater run-off, through the use of suitable Sustainable Drainage Systems (SuDS), such as green roofs and rainwater attenuation throughout the City.’

In terms of assessing the current green roof provision in the City of London, the broad assumption is that rainwater runoff attenuation and ability to absorb water is mainly dependant on substance thickness. The City of London evaluates this with regards to new planning applications as part of SuDS assessments.

SuDS drainage plans, which are required for all major redevelopments, should provide data for monitoring the rainwater run-off benefits of green roofs.

City of London Context

The ‘pocket garden’ at Exchange House (**Picture 15**) is one example of SuDS being implemented in the City of London; the roof attenuates rainwater runoff, reducing the amount that is released into the sewers.



Picture 15: Exchange House

Rainwater Runoff Attenuation

Table 8 details where green roofs in the City of London have provided rainwater runoff attenuation.

Attenuation Type	Example Sites
Rainwater Harvesting Features	27 Chancery Lane The Ned Hotel
Rainwater Catchment Systems	Clifford's Inn, Fetter Lane St. Dunstan's House, 133-137 Fetter Lane 70 Mark Lane
Roof Irrigation Systems	28 Chancery Lane
Grey Water (waste water from domestic uses) Recycling	The Ned Hotel
Waterproof Membranes	All have been provided at 1
Drainage Attenuation Layers	Creechurch Place.
Moisture Retention Blankets	

Table 8: Examples of Rainwater Attenuation Features

Several green roofs in the pipeline as at 31st March 2018 will include rainwater harvesting and grey water recycling features.

The proposed green roof at 15-16 Minories will include a rainwater storage pool¹⁵.

¹⁵ The committee report for Permission 13/01056/FULMAJ identifies this as a 'blue roof'.

Appendices

Appendix 1: Green Roofs Completed up to 31st March 2018

Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
1	Barbican Estate Highwalks	BAR4/(01)	5,940	Approx. 1975/76	Intensive, with open space and pedestrian routes	Full access	A significant amount of planting	
2	Petticoat Square	4631	600	Approx. 1975/76	Intensive, with open space and play facilities	Residents	A significant amount of planting	None
3	Minories Car Park, Mansell Street	3709BD	539	Approx. 1989/90	Intensive, includes recreation facilities.	Occupants & tenants	Trees in planters	
4	Beaufort House, 15 St. Botolph Street	4939C	447	Approx. 1991/92	Intensive	Access for tenants		
5	Cannon Bridge House, 25 Dowgate Hill	4960B	1,543	1991/92	Intensive, with open space	Limited	Allotments	

City of London Local Plan Monitoring Report – Green Roofs

Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
6	Exchange Square	4678K	464	1991/92	Intensive, croquet lawn, with seasonal use as an ice rink	Subject to booking	None	None
7	Vintners Place, 68 Upper Thames Street	4999S	97	1994/95	Intensive	Tenants		
8	One Poultry	4616X	538	1997/98	Intensive, ancillary to a restaurant	Partial, limited to opening hours	Attraction of insects, bees, moths, butterflies and birds Seasonal plants Thermal insulation	
9	99 Bishopsgate	3264CJ	344	1998/99	Intensive	Tenants		
10	100 New Bridge Street	4969	144	1998/99	Extensive	None		
11	2 King Edward Street	5195A	488	2001/02	Intensive	Tenants		



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
12	10 Queen Street Place	3365DN	356	2005/06	Intensive	Tenants	The planted area provides biodiversity	
13	1 Coleman Street	04/00958/FULL	44	2006/07	Extensive	None		
14	Unilever House, 100 Victoria Embankment	04/01069/FULL	744	2007/08	Intensive	Tenants	Substrate depths and plant species support biodiversity	Rainwater attenuation
15	1 Basinghall Avenue	3297AS	380	2007/08	Extensive	None		
16	2 New Street Square	06/01029/FULL	173	2007/08	Extensive	None		
17	3 New Street Square	06/01029/FULL	234	2007/08	Extensive	None		
18	4 New Street Square	06/01029/FULL	153	2007/08	Extensive	None		
19	5 New Street Square	06/01029/FULL	640	2007/08	Extensive	None		
20	5 Fleet Place	04/00331/FULL	153	2008/09	Extensive	None		



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
21	Bow Bells House, 9 Bread Street	05/01076/FULL	64	2008/09	Intensive	None	Building insulation	
22	201 Bishopsgate	05/00167/FULEIA	873	2008/09	Extensive	None	Attraction of bees, butterflies, hoverflies and birds	
23	1 Wood Street	04/00489/FULL	1,486	2008/09	Intensive	Tenants		
24	Guildhall	05/00008/FULLR3	256	2008/09	Extensive and Intensive	None	Attraction of insects and birds Reduction of energy consumption	
25	Museum of London	06/00174/FULL	1,456	2008/09	Intensive	Employees	Reduction of the urban heat island effect	Rainwater attenuation
26	125 Old Broad Street	05/00227/FULL	339	2008/09	Extensive	None		
27	22 Chancery Lane	06/00600/FULL	60	2008/09	Extensive	None		



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
28	1 Angel Lane	05/00653/FULEIA	3,201	2009/10	Mixed-use	Limited, during functions and events	Encourages repopulation of black redstarts	
29	25 Farringdon Street	07/00742/FULL	110	2009/10	Extensive	None		
30	1 Lothbury	06/00500/FULL	487	2009/10	Extensive	None		
31	60 Gresham Street	05/00929/FULL	181	2009/10	Extensive	None		
32	Grange Hotel, Carter Lane	05/00105/FULL	598	2009/10	Intensive, ancillary to the hotel	Partial		Water catchment system
33	150 Cheapside	4962A	692	2009/10	Extensive	None	Bird and bat boxes Gravel paths to prevent weed growth	
34	107 Cheapside	06/00669/FULL	37	2009/10	Extensive	None		
35	King House, 2 Copthall Avenue	07/01306/FULL	160	2009/10	Extensive	None		



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
36	12 Throgmorton Avenue	04/00276/FULL	268	2009/10	Extensive	None		
37	St. Bartholomew's Hospital	04/00344/FULEIA	144	2009/10	Extensive	None	Bat boxes Potential for peregrine falcon roosts	
38	7-9 Copthall Avenue	07/01285/FULL	162	2009/10	Extensive	None		
39	200 Aldersgate Street	09/00841/FULL	233	2009/10	Extensive	None		
40	One New Change	05/00431/FULEIA	830	2010/11	Extensive, with terrace and bar	Partial public, with some additional areas accessible to tenants		
41	Exchange House, 12 Primrose Street	N/A	161	2011/12	Extensive	None	'Planting pockets'	The 'planting pockets' provide SuDS

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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
42	Mint Hotel, 7 Pepys Street	06/00214/FULL	396	2011/12	Extensive	Partial	'Bee hotels' Green wall ¹⁶	Rainwater attenuation
43	Riverbank House, 2 Swan Lane	07/00292/FULEIA	912	2011/12	Extensive	None		
44	78 Cannon Street	06/00901/FULEIA	3,085	2011/12	Extensive	None		
45	110 Fetter Lane	06/01060/FULL	69	2011/12	Extensive	None		
46	20 Cursitor Street	05/00702/FULL	44	2011/12	Extensive	None		
47	New Court, 7-9 St. Swithin's Lane	06/00903/FULL	452	2011/12	Intensive	Tenants	Evergreen hedges	Rainwater harvesting
48	52-56 Minories	08/00738/FULMAJ	36	2012/13	Extensive	None		
49	22 Old Broad Street	N/A	117	2012/13	Intensive	None		
50	66 Shoe Lane	11/00653/FULL	46	2012/13	Intensive	Tenants		
51	5 Moor Lane	06/01160/FULEIA	476	2013/14	Intensive	Residents		

¹⁶ These are defined on the [City of London website](#).



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
52	1-3 St. Paul's Churchyard	11/00709/FULL	211	2013/14	Intensive	None		
53	Finsbury Circus House, 15 Finsbury Circus	10/00571/FULMAJ	229	2013/14	Extensive	None		Rainwater harvesting
54	6 Bevis Marks	09/00450/FULMAJ	153	2013/14	Extensive	Tenants	Grey water recycling	Rainwater harvesting (aided by the roof canopy)
55	Plantation Place, 30 Fenchurch Street	5191F	441	2013/14	Mixed-use	None		
56	1 Fore Street Avenue	11/00969/FULL	376	2013/14	Extensive	None		
57	Carmelite House, 50 Victoria Embankment	11/00228/FULL	279	2013/14	Extensive	None		
58	24-26 Minories	12/00145/FULMAJ	329	2014/15	Extensive	None		
59	100 Cheapside	09/00353/FULMAJ	270	2014/15	Extensive	None		



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
60	5 St. Helen's Place	10/00902/FULMAJ	183	2014/15	Extensive	None		
61	24 Monument Street	13/00645/MDC	258	2014/15	Extensive	None	Rainwater harvesting	
62	St. Dunstan's House, 133-137 Fetter Lane	13/00895/MDC	170	2015/16	Extensive	None	Reduces top-floor energy consumption High-biodiversity-value planting	Reduction of rainwater runoff
63	60 Ludgate Hill	12/00474/MDC	1,678	2015/16	Extensive and Intensive	Partial, for tenants	Bird and insect habitats Ferns	
64	70 Mark Lane	14/00370/MDC	139	2015/16	Extensive	None	Mixture of planting types	Rainwater catchment
65	5 Broadgate	10/00904/FULEIA	979	2015/16	Extensive and intensive green roofs, with terrace 'courtyards'	Partial, for tenants	Swiss alpine species Trees Bird and bat boxes	Rainwater harvesting



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
66	Clifford's Inn, Fetter Lane	15/00620/MDC	87	2015/16	Extensive	None		Rainwater catchment
67	40 Chancery Lane	14/00553/MDC	584	2015/16	Extensive	None	Biodiverse planting Habitats for insects, birds and bats	
68	The Monument Building, 11 Monument Street	13/00049/FULMAJ	504	2016/17	Extensive	Tenants (partial access)	Wildlife habitats Photovoltaic panels	Waterproofing
69	1 King William Street	13/00366/FULMAJ	137	2016/17	Extensive	None	Wildflower seed mix with at least 15 plant species, including pollen and nectar-rich plants that attract insects	Storm water attenuation
70	12 New Fetter Lane	11/00423/FULL	555	2016/17	Extensive	None	Habitats for local wildlife and plants	



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
71	River Plate House, 8 Finsbury Circus	12/00811/FULMAJ	146	2016/17	Extensive	None	Photovoltaic panels	
72	1 Creechurch Place	13/01082/FULMAJ	282	2016/17	Extensive	None	Vegetation Biodiversity enhancements 'Invertebrate boxes' Diverse mixture of native wildflowers and fine grass species	Waterproof membrane Drainage and attenuation layer Moisture retention blanket
73	9-10 Philpot Lane	14/00189/FULL	63	2016/17	Extensive	None		
74	4 Devonshire Square	14/00849/FULL	139	2016/17	Extensive	None		
75	46 Cannon Street	14/00774/FULL	122	2016/17	Extensive	None		
76	Audit House, Victoria Embankment	13/00789/FULMAJ	78	2016/17	Extensive	None		
77	30 Cannon Street	13/01177/FULL	523	2017/18	Intensive	Tenants		



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Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
78	Cannon Green Building, 27 Bush Lane	16/00102/FULL	120	2017/18	Extensive and Intensive	Partial, for tenants	Shrubs Foraging opportunities for various species	
79	20 Old Bailey	14/01138/FULL	464	2017/18	Extensive	None	Photovoltaic panels Native plant species	Waterproofing
80	1 Puddle Dock	15/00536/FULL	1,707	2017/18	Extensive	None		
81	28 Chancery Lane	11/00426/FULMAJ	222	2017/18	Intensive	Tenants	Mixture of native and non-native planting species	Rainwater harvesting, roof irrigation
82	1 Angel Court	13/00985/FULL	337	2017/18	Extensive	None	BREEAM credits needed to enhance ecological value	BREEAM credits needed in relation to flood risk/rainwater run-off

City of London Local Plan Monitoring Report – Green Roofs

Site ref.	Location	Planning Permission	Area (m ²)	Financial Year Completed	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
83	The Ned Hotel, 27 Poultry	13/01036/FULMAJ	110	2017/18	Extensive	None	Sedum, grass and wildflower planting	Contribution to water attenuation Greywater recycling, rainwater harvesting
84	MAPFRE Dixon House, 72-75 Fenchurch Street	14/00579/FULL	249	2017/18	Intensive	None	Photovoltaic panels 'Trickle irrigation' system	
85	45 Cannon Street	13/00339/FULMAJ	730	2017/18	Intensive	Tenants	Rainwater attenuation	
86	117-121 Bishopsgate	09/00192/FULMAJ	177	2017/18	Extensive	None	Photovoltaic panels	
87	181 Queen Victoria Street	14/00186/FULL	223	2017/18	Extensive	None		Rainwater attenuation



Appendix 2: Projected Green Roofs (1st April 2018 to 31st March 2024)

Location	Planning Permission	Area (m ²)	Projected Financial Year of Completion	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
75 Shoe Lane	13/00974/FULL	437	2018/19	Extensive	None	Wildflower turf	Rainwater attenuation, grey water recycling, water-saving fittings
160 Aldersgate Street	15/00086/FULMAJ	869	2018/19	Extensive	None	Improvements to thermal mass and reduction of overheating	Rainwater and grey water harvesting, rainwater attenuation
33 King William Street	14/00860/FULMAJ	985	2018/19	Intensive	Occupants	Will contribute to building cooling	Reduction of water run-off, greywater recycling, rainwater harvesting



City of London Local Plan Monitoring Report – Green Roofs

Location	Planning Permission	Area (m ²)	Projected Financial Year of Completion	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
Senator House, Queen Victoria Street	16/00236/FULL	449	2018/19	Mixed-use	Occupants	Biodiverse sedum and wildflower meadow	
London Wall Place	14/00259/FULL	2,462	2018/19	Mixed-use	Partial.		
100 Minories	12/00263/FULMAJ	1,009	2018/19	Mixed-use	Partial, for tenants		Rainwater attenuation
Bartholomew Close	15/00417/FULMAJ	1,476	2018/19	Extensive	None	Insulation, solar gain maximising, photovoltaic panels	
Sugar Quay, 1 Water Lane	12/01104/FULMAJ	667	2018/19	Extensive	None	A green wall is likely to provide a bird and insect habitat	Attenuation of rainwater runoff (green wall). Grey water or rainwater harvesting

City of London Local Plan Monitoring Report – Green Roofs

Location	Planning Permission	Area (m ²)	Projected Financial Year of Completion	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
15-16 Minories	13/01055/FULMAJ	873	2018/19	Extensive	None		Rainwater harvesting system, rainwater storage pool
78-86 Fenchurch Street	08/00824/FULMAJ	1,183	2018/19	Mixed-use	Tenants		Rainwater harvesting and grey water recycling
34 London Wall	14/00518/FULL	42	2018/19	Extensive	None		
116-124 Fenchurch Street	14/00237/FULMAJ	470	2018/19	Mixed-use	Full access		Rainwater and grey water recycling
70 Farringdon Street	12/01225/FULEIA	2,842	2018/19	Extensive	None		
100 Liverpool Street	14/01385/FULEIA	813	2018/19	Extensive	None	Aggregate mix with native species, wildflower blanket	



City of London Local Plan Monitoring Report – Green Roofs

Location	Planning Permission	Area (m ²)	Projected Financial Year of Completion	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
111 Cannon Street	15/01368/FULL	48	2019/20	Intensive	Occupiers	Designed to achieve a BREEAM 'Excellent' rating. Native and wild flowers, bird and invertebrate habitats, net gain in biodiversity value	Rainwater attenuation
2-6 Cannon Street	14/00780/FULMAJ	389	2019/20	Mixed-use	Tenants	Vine wires for creeping plants, trees	Waterproof membrane
22 Bishopsgate	15/00764/FULEIA	434	2019/20	Intensive	Occupiers		Two rainwater attenuation tanks
Crossrail Station, Lindsey Street	13/00605/FULEIA	528	2019/20	Extensive	None	Minimisation of solar gain	Rainwater attenuation

City of London Local Plan Monitoring Report – Green Roofs

Location	Planning Permission	Area (m ²)	Projected Financial Year of Completion	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
35-41 Vine Street	13/00166/FULMAJ	70	2019/20	Intensive	Occupiers		Rainwater harvesting, minimum substrate depth of 80mm to provide rainwater attenuation storage
60 London Wall	16/00776/FULMAJ	414	2019/20	Extensive	None	Insulation improvements, water-saving measures	Rainwater run-off reduction, SuDS
St. Paul's Cathedral School	16/00850/FULL	92	2019/20	Extensive	None		
21 Moorfields.	14/01179/FULEIA	70	2020/21	Extensive	None	Will enhance site ecology and biodiversity	BREEAM credits needed for flood risk
60 Upper Thames Street	11/00572/FULMAJ	1,656	2020/21	Extensive	None	Will assist cooling	SuDS
6-8 Bishopsgate	15/00443/FULEIA	239	2020/21	Intensive	Occupiers		



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Location	Planning Permission	Area (m ²)	Projected Financial Year of Completion	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
150-153 Fenchurch Street	16/00345/FULMAJ	42	2020/21	Extensive	None		
St Botolph-without-Aldgate	17/01054/FULMAJ	200	2021/22	Extensive	None		
130 Fenchurch Street	14/00496/FULMAJ	200	2021/22	Intensive	Occupiers	Planters, bird and insect boxes	
65 Holborn Viaduct	12/00105/FULMAJ	700	2021/22	Extensive	None		
10 King William Street	14/00178/FULEIA	226	2021/22	Extensive	None	18% carbon emissions savings projected, photovoltaic panels	
Site of Creed Court, Ludgate Hill	14/00300/FULMAJ	349	2021/22	Extensive	None	Potentially photovoltaic panels	Rainwater attenuation



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Location	Planning Permission	Area (m ²)	Projected Financial Year of Completion	Type and Recreational Amenity	Public Access	Sustainability Benefits	Flood Risk Abatement Measures
43 Golden Lane	16/00590/FULL	128	2021/22	Intensive	Occupiers	Will target locally important species, e.g. black redstart. Bat foraging, and invertebrate habitats	Reduction of water runoff rate
10 Lower Thames Street	17/01287/FULL	209	2023/24	Extensive	None		

Information

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The City of London Corporation is the local authority for the financial and commercial heart of Britain, the City of London.