Greengage

ED-OGI1

Brighter strategies
for greener projects

Client: City of London Corporation

Project: CoL BNG Policy

Report: Biodiversity Net Gain Study

QUALITY ASSURANCE

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1.0 NON-TECHNICAL SUMMARY

Greengage Environmental Ltd was commissioned by the City of London Corporation to undertake a Biodiversity Net Gain (BNG) Feasibility Study, for the Square Mile.

This document is a report of this feasibility study and goes further than current local biodiversity policies to provide an evidence base for a new BNG policy within the new Local Plan, that will be used to outline what the securing of meaningful net gains for biodiversity within the Square Mile would look like.

The Square Mile is highly urban in nature with a high proportion of zero baseline sites that will be developed on, therefore the mandatory BNG of 10% within the Environment Act 2021 is not considered as an appropriate measure for the delivery of meaningful BNG, within new developments. Therefore, a Biodiversity Unit per hectare (BU/ha) measure has been explored for viability.

This study aimed to establish what the current BNG 'business as usual' baseline scenario is and what BNG could be delivered when ecological habitat enhancements were followed good practice guidance in a maximised scenario.

To understand the two scenarios the study reviewed 35 planning applications in the Square Mile from 2010 to 2023. As far as possible applications were evenly distributed throughout the Square Mile, with the aim of each ward being represented at least once. Selected applications also aimed to represent a broad spectrum of development types, split between:

- Office;
- Hotel;
- Student accommodation (residential); and
- Historic buildings.

A mean outcome of 1.54 BU/ha was calculated for submitted applications, across all projects. However, if the developments had maximised green/blue infrastructure then this outcome increases to a potential 3.42 BU/ha.

The evidence set out within the study supports the reasoning for inclusion of a BU/ha target rather than a percentage gain, ensuring that all sites deliver effective and meaningful outcomes to enhance the biodiversity of the Square Mile, regardless of baseline habitats.

Accounting for the data presented in this study it appears feasible and reasonable to expect all development proposals in the Square Mile to deliver **3 BU/ha** on-site.

Greengage have also undertaken a high-level analysis of current land uses within the City of London Corporation's ownership to identify potential opportunities for the provision of potential off-setting schemes for those developments that failed to meet the targeted 3 BU/ha. This is likely to be best provided through a Community Infrastructure Levy or similar tool.

2.0 INTRODUCTION

Greengage was commissioned by the City of London Corporation to undertake a Biodiversity Net Gain (BNG) Feasibility Study for the Square Mile.

Currently the City of London has a draft policy that states:

"Development should aim to secure net gains for biodiversity where possible."

The purpose of this feasibility study is to go further and provide an evidence base for a new BNG policy within the new Local Plan, that will be used to outline what the securing of meaningful net gains for biodiversity within the Square Mile would look like.

2.1 AIMS AND OBJECTIVES

The study aimed to provide the City of London Corporation with a quantifiable BNG target for new development applications that is realistic for developers to deliver but also provides meaningful gains for biodiversity throughout the Square Mile.

This was undertaken by:

- Examining an agreed upon number of planning applications (major and minor, consented and completed) over a defined period to identify the baseline area of qualifying habitat;
- Calculating the baseline number of biodiversity units and the number of biodiversity units to be delivered (or agreed to be delivered), using the Department for Environment, Food & Rural Affairs (Defra) BNG Metric 4.0 methodology from Natural England[1],[2]
- Calculating the number of biodiversity units that could have been delivered if proposals had reasonably maximised green/blue infrastructure (G/BI)[1]; and
- Determining an appropriate biodiversity units per hectare (ha) (BU/ha) target to be adopted as a planning target with future iterations of the Local Plan.

As well as quantifying a suitable BNG target for new development, the study also looked at options within the City of London Corporation's holdings to identify whether there were opportunities to undertake biodiversity enhancements, providing off-site uplifts in biodiversity units that could then be sold to developers.

2.2 GREENGAGE COMPETENCIES

Sam Barker has an undergraduate degree in Environmental Science (BSc Hons), holds a Natural England Great Crested Newt Licence and is an Associate member of CIEEM. Sam has over six years' experience of undertaking and managing a range of ecological surveys and assessments.

[1] Green/blue infrastructure in the context of an urbanised environment is understood to be all natural and semi-natural landscape elements at a variety of spatial scales. Green/blue infrastructure can include green roofs, green walls, parks, street trees, sustainable drainage systems, through to woodlands, wetlands and natural flood management functioning.

Saul Ridley has an undergraduate degree in Zoology (BSc Hons) and a Masters degree in Conservation Biology (MRes), he is also a qualifying member of CIEEM. Saul joined Greengage in July 2023 and has three years' experience in ecology. He specialises in combining technology such as remote sensing techniques and GIS with traditional ecology surveying skills to complete projects across the UK and internationally.

Faye Durkin, who has reviewed this report has a first class BSc (Hons) in Environmental Science and MSc in Environmental Management and Sustainable Development. She is a full member of CIEEM and an Associate member of IEMA. She co-chairs the IEMA Biodiversity and Natural Capital Steering Group and is a member of the IEMA Policy and Practice Committee. She has over 16 years of ecological consultancy experience and is licenced to survey bats and GCN in England and Wales. She has held mitigation licences for bats and GCN and holds a CL31 water vole displacement licence.

This report was written by Sam Barker, BNG calculations and assessments undertaken by Saul Ridley and reviewed and verified by Faye Durkin who confirms in writing (see the QA sheet at the front of this report) that the report is in line with the following:

- Represents sound industry practice;
- Reports and recommends correctly, truthfully and objectively;
- Is appropriate given the scope of works proposed; and
- Avoids invalid, biased and exaggerated statements

2.3 BACKGROUND

City of London

The City of London, also known as the Square Mile, is looked after and promoted by the City of London Corporation which provides local government services but also as a corporate organisation owning assets that extends beyond the City.

The City of London covers 1.12 square miles, counts around 11,000 residents, 590,000 daily commuters and 10 million annual visitors[3]. The Square Mile is a highly urbanised centre of business, finance and historical land uses with small areas of open green spaces and significant open space along the River Thames and the Riverside Walk. The City is unique as unlike many other areas of London does not have for example residential gardens however does have many small pocket parks/green spaces.

The New Local Plan

The City of London Corporation is consulting on a new City Plan and Transport Strategy, to update and replace the current Local Plan 2015[4]. The new Local Plan (City Plan 2040) will provide a framework for future development in the Square Mile. It will set out what type of development as well as the vision, strategy and objectives that the City of London Corporation have identified for planning up to 2040.

This includes how the City of London Corporation secures the enhancement of biodiversity and the role out of mandatory BNG within future development proposals.

Biodiversity in Urban Areas

Urban areas such as the Square Mile have the potential to support biodiversity through well considered urban design and landscape management which can support diverse communities, albeit in the context of a heavily fragmented natural environment set amongst the dominance of buildings and hardstanding. Urban centres can support a range of adapted species including nationally rare species, for example the use of extensive green roofs by the Black Redstart (Phoenicurus Ochruros). New development in urbanised locations can accordingly contribute significant gains for biodiversity through the integration of green infrastructure and the associated creation of steppingstone habitats[2]. However, the Square Mile has less opportunities than other urban areas for increasing biodiversity on a large scale. Many of the existing green spaces are small and fragmented and creating new green spaces although achievable is harder to implement in a high-density urban environment.

BNG in Urban Areas

Within the statutory Defra BNG Metric, hardstanding, buildings and areas of bare ground, without vegetation present, are given a zero or very low unit weighting. As 10% net gain in biodiversity value becomes mandatory[5], the Government have set a 'de minimis' area of habitat that would trigger a mandatory BNG assessment, this has been set at 25m^2,[6]. This means that sites with a zero or extremely low habitat baseline wouldn't statutorily have to provide a BNG assessment.

However, it will be up to Local Planning Authorities (LPAs) to apply BNG policy within their local plans, likely resulting in regional differences of what level of BNG is required, especially in regard to zero and low baseline sites.

Fundamentally, zero-unit baseline sites cannot achieve a percentage gain so currently developers only report on the units created. However, in low unit sites it is common to find developments delivering relatively few biodiversity units but achieving thousands, if not, tens of thousands of percentage gain, which can be misleading to the reader and be subject to misuse or 'greenwashing'[3],[7].

With this context in mind, this project seeks to calculate an appropriate absolute post completion biodiversity units (BU) per hectare (ha) (BU/ha) measure that urban developments within the Square Mile, should seek to achieve. Such a measure rewards projects that deliver meaningful gains for biodiversity contextualised against their scale and is accordingly far more appropriate for calculating benefits on zero or low baseline sites than a percentage gain.

As shown in Chapter 2, the current Local Plan Biodiversity policy does not provide any guidance for how biodiversity should be measured or set a target BNG value that development should seek to

[2] Habitat - The natural environment in which an animal or plant usually lives.

[3] Greenwashing is a PR tactic used to make a company or product appear environmentally friendly, without meaningfully reducing its environmental impact.

achieve. The remainder of this report seeks to provide a scientifically robust and defensible methodology for the calculation of target BU/ha which is outlined in Chapter 3. Results of the study are presented in Chapter 4 with discussion and key recommendations in Chapter 5, how the City of London should deal with offsite habitat provision is considered in Chapter 6 with conclusions and proposed wording for the new BNG policy provided in Chapter 7.

3.0 LEGISLATIVE AND POLICY CONTEXT

3.1 NATIONAL BNG LEGISLATION AND POLICY

Under the Environment Act 2021[5], all planning permissions granted in England (with a few exemptions) will have to deliver at least 10% BNG, with the gains secured for at least 30 years. BNG was due to become statutory from November 2023 but has been delayed until January 2024. However all the guidance and regulations will be published by the end of 2023.

This expands the policy set out within the National Planning Policy Framework (2021)[8] which specifically states in Paragraph 174 (d):

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

(d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.";

Paragraph 179 (b):

"Plans should, promote the conversation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."; and

Paragraph 180 (d):

"When determining planning applications, local planning authorities should apply the following principles:

(d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."

3.2 REGIONAL BNG AND URBAN GREENING POLICY

The London Plan[9]

The London Plan emphasises the approach to enhancing biodiversity within the capital should be through the strategic use of GI within developments as stated in Policy G1.

Specifically, Policy G1 states:

A. *"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.*

B. *Boroughs should prepare green infrastructure strategies that integrate objectives relating to open space provision, biodiversity conservation, flood management, health and wellbeing, sport and recreation."*

And are to be delivered through ensuring developments secure net biodiversity gain as set out in Policy G6, which states:

"Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process."

Urban Greening

Furthermore, the GLA developed an Urban Greening Factor (UGF) tool[10] which should be used in all major planning applications and set in policy within Policy G5:

A. *"Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including tree), green roofs, green walls and nature-based sustainable drainage.*

B. *Boroughs should develop a UGF to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Table 8.2, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominantly residential, and a target score of 0.3 for predominantly commercial development (excluding B2 and B8 uses).*

C. *Existing green cover retained on site should count towards developments meeting the interim target score set out in (B) based on the factors set out in Table 8.2."*

Information on its application is provided within the UGF London Plan guidance document[10]. This document sets out what the tool is and how it should be used to assess greening on developments, specifically:

"The UGF is a tool to evaluate the quality and quantity of urban greening. It enables major developments to demonstrate how they have included urban greening as a fundamental element of site and building design in order to meet London Plan Policy G5."

It should be noted that UGF is not a tool to measure biodiversity benefits of proposals, but is used to evaluate the quality and quantity of urban greening elements within site and building design. There is an opportunity to unlock additional space for BNG by steering associated soft landscaping towards habitat creation therefore providing more biodiversity on-site.

3.3 LOCAL BIODIVERSITY & GREENING POLICIES AND STRATEGY

Current City of London Local Plan[4]

At a local level, the current City of London Local Plan has several policies mentioning or regarding the improvement of biodiversity.

Policy CS9: Thames and the riverside

"To ensure that the City capitalises on its unique riverside location, sustaining the river's functional uses in transport, navigation and recreation, whilst minimising risks to the City's communities from flooding by:

2 (iv) Improving opportunities for biodiversity, in line with the City of London Habitat Action Plan[4] for the Thames foreshore."

Policy DM 10.2 Design of green roofs and walls

1. *"To encourage the installation of green roofs on all appropriate developments. On each building the maximum practicable 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.*
2. *To encourage the installation of green walls in appropriate locations, and to ensure that they are satisfactorily maintained."*

Policy DM 10.3 Roof gardens and terraces

1. *"To encourage high quality roof gardens and terraces where they do not:*
    - *Immediately overlook residential premises;*
    - *Adversely affect rooflines or roof profiles;*
    - *Result in the loss of historic or locally distinctive roof forms, features or coverings;*
    - *Impact on identified views.*
2. *Public access will be sought where feasible in new development."*

Policy DM 10.4 Environmental enhancement

"The City Corporation will work in partnership with developers, Transport for London and other organisations to design and implement schemes for the enhancement of highways, public realm and other spaces. Enhancement schemes should be of a high standard of design, sustainability, surface treatment and landscaping, having regard to:

- *The predominant use of the space, surrounding buildings and adjacent spaces;*
- *Connections between spaces and the provision of pleasant walking routes;*
- *The use of natural materials avoiding an excessive range and harmonising with the surroundings of the scheme and materials used throughout the City;*
- *The inclusion of trees and soft landscaping and the promotion of biodiversity, where feasible linking up existing green spaces and routes to provide green corridors;*
- *The City's heritage, retaining and identifying features that contribute positively to the character and appearance of the City;*
- *Sustainable drainage, where feasible, co-ordinating the design with adjacent buildings in order to implement rainwater recycling;*

[4] There are currently no City of London Habitat Action Plans associated with the current BAP, however there are two target habitats (open mosaic habitat and standing open water).

- *The need to provide accessible and inclusive design, ensuring that streets and walkways remain uncluttered;*
- *The need for pedestrian priority and enhanced permeability, minimising the conflict between pedestrians and cyclists;*
- *The need to resist the loss of routes and spaces that enhance the City's function, character and historic interest;*
- *The use of high quality street furniture to enhance and delineate the public realm;*
- *Lighting which should be sensitively co-ordinated with the design of the scheme."*

Policy CS15: Sustainable development and climate change

"4 (vi) the need to enhance biodiversity and provide for its conservation and enhancement, particularly for the City's flagship species and the City's priority habitats (urban green spaces, churchyards and cemeteries, built structures and the tidal Thames)."

Policy DM 18.2 Sustainable drainage systems (SuDS)

"3. SuDS should be designed, where possible, to maximise contributions to water resource efficiency, biodiversity enhancement and the provision of multifunctional open spaces."

Policy CS19: Open Spaces and Recreation

" 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:

1. Seeking to maintain a ration of at least 0.06 hectares of high quality, publicly accessible open space per 1,000 weekday daytime population:
    a. *Protecting existing open space, particularly that of historic interest, or ensuring that it is replaced on redevelopment by space of equal or improved quantity and quality on or near the site;*
    b. *Securing public access, where possible, to existing private spaces;*
    c. *Securing additional publicly accessible open space and pedestrian routes, where practical, particularly in the eastern part of the city;*
    d. *Creating additional civic spaces from underused highways and other land where this would not conflict with other strategic objectives;*
    e. *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.*
2. Improving access to new and existing open spaces, including those in neighbouring boroughs, promoting public transport access to nearby open space outside the City and ensuring that open spaces meet the needs of all of the City's communities.

3. Increasing the biodiversity value of open spaces, paying particular attention to sites of importance for nature conservation such as the River Thames. Protecting the amenity value of trees and retaining and planting more trees wherever practicable.
4. Improving inclusion and access to affordable sport, play and recreation, protecting and enhancing existing facilities and encouraging the provision of further facilities within major developments."

Policy DM 19.1 Additional Open Space

1. *"Major commercial and residential developments should provide new and enhanced open space where possible. Where on-site provision is not feasible, new or enhanced open space should be provided near the site, or elsewhere in the city.*
2. *New open space should:*
    - *Be publicly accessible, where feasible; this may be achieved through a legal agreement;*
    - *Provide a high quality environment;*
    - *Incorporate soft landscaping and Sustainable Drainage Systems, where practicable;*
    - *Have regard to biodiversity and the creation of green corridors;*
    - *Have regard to acoustic design to minimise noise and create tranquil spaces.*
3. *The use of vacant development sites to provide open space for a temporary period will be encouraged where feasible and appropriate."*

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*[5]*;*
- *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."*

City Plan

The City of London Corporation is currently reviewing its planning documents as part of a policy review known as City Plan (2040)[11]. This was previously referred to as City Plan (2036) which was published in March 2021 and will be updated once the revised City Plan (2040) emerges.

[5] Following a review beehives are now not considered suitable for the City of London, given the increased potential spread of disease between colonies due to climate change and lack of access to suitable areas of land. Instead creation of habitat features to support cavity nesting and ground nesting bees, including artificial interventions such as bee bricks, leaving areas of bare ground and creating mounds with the incorporation of sandy loam substrates

Within the emerging City Plan, the sustainability and high quality design to buildings, streets and spaces are at the forefront of the vision for the Square Mile over the next 17 years to 2040 and will be consulted on in 2024. The following draft policies are set out in City Plan (2036):

Strategic Policy S8: Design

"The City Corporation will promote innovative, sustainable and inclusive high-quality buildings, streets and spaces. Design solutions should make effective use of limited land and contribute towards well-being and a greener, zero emission City, through development which:

Form and Layout

1. *Optimises pedestrian movement by maximising permeability, providing external and internal pedestrian routes which are inclusive, welcoming, convenient, comfortable, and attractive, enhancing the City's characteristic network of accessible buildings, streets, courts and alleys;*
2. *Is pedestrian-focussed, reducing conflict between pedestrian and vehicular traffic, creating a safe and attractive public realm, prioritising pedestrians and cyclists, whilst mitigating the impact of building servicing;*
3. *Delivers publicly accessible space within the development by maximising the amount of accessible, inclusive and free to enter roof terraces and spaces, including in tall buildings and along the river and around City landmarks; and*
4. *Delivers world class sustainable buildings which are mixed-use, adaptable, adopt circular economy principles and contribute towards a zero emission, zero carbon and climate resilient City.*

Experience

5. *Optimises micro-climatic conditions, addressing solar glare, daylight and sunlight, wind conditions and thermal comfort and delivers improvements in air quality, open space and views;*
6. *Delivers street level building frontages which are active, public facing, usable, permeable, interesting, well-detailed and appropriately lit, delivering suitable levels of passive surveillance;*
7. *Optimises the amount of green infrastructure and amenity space integral to the architecture, enhancing public access to nature and biodiversity through maximising the provision of green roofs, walls and trees; and*
8. *Delivers inclusive buildings, streets and spaces that meet the access needs of all the City's communities irrespective of background or circumstance."*

Policy DE3: Public Realm

"The City Corporation will work in partnership with developers, Transport for London and other organisations to design and implement schemes for the enhancement of the streets and spaces between buildings and the creation of new spaces. Public realm schemes must be of a high standard of design, sustainability, surface treatment and landscaping, having regard to:

- *The predominant use and function of the space and adjacent spaces;*

- *The use of sustainable natural materials, avoiding an excessive range and harmonising with the surroundings of the scheme and materials used throughout the City;*
- *The inclusion of trees and soft landscaping and the promotion of biodiversity, where feasible linking up existing green spaces and routes to provide green corridors;*
- *The City's heritage, identifying and retaining features that contribute positively to the character, cultural experience and appearance of the City;*
- *The provision of sustainable drainage, where feasible, co-ordinating the design with adjacent buildings to facilitate the implementation of rainwater recycling;*
- *The need to provide accessible and inclusive design that meets the needs of different users, ensuring that streets and walkways remain uncluttered and enhance pedestrian permeability;*
- *The need to provide a high quality, safe and functional public realm;*
- *The sensitive co-ordination of lighting with the overall design of the scheme; and*
- *The wellbeing of users in relation to air pollution, noise, temperatures, shading and microclimate."*

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:

- *Protecting existing open and green space;*
- *Seeking the provision of new open and green space through development, public realm or transportation improvements;*
- *Increasing public access to existing and new open spaces;*
- *Creating, maintaining and encouraging high quality green infrastructure;*
- *Using planting and habitat creation to enhance biodiversity, combat the impacts of climate change and improve air quality;*
- *Promoting the greening of the City through new development opportunities and refurbishments; and*
- *Ensuring new development and refurbishment protect and enhance the City's biodiversity."*

Specifically, policies for biodiversity, within this draft include:

Policy OS3: Biodiversity

"Development should aim to secure net gains for biodiversity where possible by incorporating measures to enhance biodiversity, including:

- *Retention and enhancement of habitats within Sites of Importance for Nature Conservation (SINCs), including the River Thames;*
- *Measures recommended in the City of London Biodiversity Action Plan (BAP) in relation to particular species or habitats;*

- *Green roofs and walls, gardens and terraces, soft landscaping and trees;*
- *Green corridors and biodiversity links;*
- *Wildlife-friendly features, such as nesting or roosting boxes;*
- *A planting mix and variation in vegetation types to encourage biodiversity;*
- *Planting which will be resilient to a range of climate conditions, with a high proportion of native plants;*
- *A lighting scheme designed to minimise impacts on biodiversity."*

The biodiversity policy will be updated to include additional wording on BNG including the creation of habitat features to support cavity nesting and ground nesting bees.

How city greening should be achieved:

"Policy OS2: City Greening

1. *The provision of urban greening should be integral to the design and layout of buildings and the public realm.*
    - *All development proposals would 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 remain successful throughout the life of the building."*

Local UGF

The City of London produced an Urban Greening Factor Study[12] and the findings of this are set out in the emerging Local Plan through Policy OS2 (City Greening). Minor bespoke adjustments have been made from the GLA's scoring system to encourage certain categories of greening which will deliver significant benefits in the City. The findings of this study presented a recommendation for a target UGF of 0.3 for both commercial and residential developments in the Square Mile being a challenging and appropriate target[13] when the Proposed Submission Draft of the City of London Local Plan (2036)[14] was published.

Other emerging policies

There are a number of further strategic policies within the New Local Plan that relate to sustainability, flood protection, provision of open space and trees, which can all be supported through the provision of high quality nature based solutions (NbS)[6], driven by BNG.

City of London BAP[15]

The City of London BAP provides a strategic focus to ensure species and habitats are understood and considered throughout the decision-making process. The BAP directly supports the overall aim of the City Corporation's Corporate Plan to shape outstanding environments. Specifically, the following species and habitats have been identified as being selected to highlight their importance within the City of London and to focus management and monitoring:

- House sparrow (Passer domesticus);
- Black redstart;
- Swift (Apus apus);
- Peregrine falcon (Falco peregrinus);
- Bats (Chiropter spp.);
- Wild bees - bumblebees and solitary bees;
- Stag beetle (Lucanus cervus);
- Open mosaic habitat; and
- Standing open water.

City of London Riverside Strategy[16]

The City of London Riverside Strategy includes a biodiversity strategy policy (SP10), which specifically refers to opportunities for development to enhance the River Thames. SP10 states:

"Opportunities for terrestrial and aquatic biodiversity should be designed into flood defence raising and associated works to create a 'string or pearls' of habitats. Works should consider future raising needs, be designed for future climate projections and not encroach into the river."

[6] Actions to protect, sustainably manage and restore natural or modified ecosystems, which address societal challenges (e.g. climate change, food and water security or natural disasters) effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits.

4.0 METHODOLOGY

4.1 BIODIVERSITY METRIC

This assessment used the Biodiversity Metric 4.0 to calculate BU scores for the varying scenarios modelled for each application site. This followed good practice guidance from Natural England[1],[2] and joint guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM)[17],[18] Institute of Environmental Management and Assessment (IEMA) and Construction Industry Research and Information Association (CIRIA)[19].

This metric uses BU as a proxy for the ecological value of area based habitats. The areas of each habitat parcel are measured, assigned a 'Distinctiveness' and 'Condition' score.

Distinctiveness is an automatic score for the habitat classification that is built into Metric 4.0 and can't be adjusted, this represents the habitats distinguishing features and its inherent ecological value. Whereas condition refers to the state each parcel is in relative to a predetermined set of criteria outlined in the supplementary Biodiversity Metric 4.0 guidance[2].

For post-development habitat areas, additional multipliers are applied taking into account time to reach desired condition and difficulty of creation of the habitats. The Metric also factors in whether the habitat creation is in a strategically beneficial location.

An assessment of the predicted change in ecological value is undertaken comparing the change in value between the baseline and proposed habitats by providing the percentage change. Changes in broader habitat types (for example, 'Urban', 'Woodland' and 'Grassland' habitats) are also tracked with the trading of these broader habitats discouraged, unless specifically targeted within a local strategy. Trading down of habitats is not permitted.

The assessment only considered area-based units and didn't consider hedgerow (linear) or river based units as these were not present on the majority of applications reviewed. Where hedging was present this was as part of roof terracing and therefore did not function, in the ecological sense, that hedgerows do in more natural settings, these were therefore included within an 'introduced shrub' category under the area based units.

The only aquatic feature within the Square Mile that would fall under the Defra Metric 4.0 river based units assessment was the River Thames. Given that the banks of the River, in this location, are sheer concrete with limits to what can be achieved in the river channel itself, it was felt that applications within the historical riparian zone would not be reflective of the reason that a river based assessment should be undertaken, under the Metric guidance.

Small Sites Metric

Natural England has released a Small Sites Metric (SSM)[20], which is a much simplified version of the Biodiversity Metric 4.0 and designed for use on small development sites where the following criteria are met:

For residential development:

- There are fewer than 10 residential units on a site area (no more than 9 units) less than 1 ha; or
- If number of residential units is not known, the site area is less than 0.5 ha.

For non-residential development:

- Where the floor space to be created is less than 1,000 m^2; or
- Where the site is less than 1 ha.

However, the SSM cannot be used on such sites where:

- Habitats not available in the SSM are present;
- Priority habitats are within the development site (excluding some hedgerows and arable field margins);
- European protected species (such as bats) are present on the development site; and
- Any offsite interventions are required.

It is understood that small sites will be required to assess BNG from April 2024.

Although most of the sites within this study would be eligible to be assessed under the SSM, because of uncertainties around whether the current version will be updated prior to April 2024, it was considered that the full statutory version Biodiversity Metric 4.0 should be used for this study instead.

4.2 SITE SELECTION

To calculate a recommended, evidence-based BU/ha value for the integration within future City of London planning policy it was considered necessary to first establish current and/or recent BNG performance of proposed or new developments within the Square Mile. This took the form of an assessment of BNG (measured as % change and BU/ha) proposed for consented sites or permissions in the pipeline, within a sample of recent (submitted since 2010) planning applications; this represents the 'business as usual' scenario.

As far as possible applications were evenly distributed throughout the Square Mile, with the aim of each ward being represented at least once. Selected applications also aimed to represent a broad spectrum of development types, split between:

- Office;
- Hotel;
- Student accommodation (residential); and
- Historic buildings.

All major, consented applications, whether still in the pipeline or developed between 01/01/2010 and 31/07/2023 were assessed for information that could be used to determine a BNG outcome.

Upon selection, the submission documents for each application were reviewed alongside any other available supporting data, such as aerial imagery or Google StreetView, to determine the pre-development BU/ha and the proposed BU/ha and percentage gain.

4.3 SITE ASSESSMENTS

A hierarchy was used to establish baseline and proposed BU measures as accurately as possible, based on the variable information available under each planning application. The hierarchy, in order of preference for sourcing accurate habitat area, typology and condition data, was:

1. Biodiversity Metric Calculations
2. UGF calculations
3. BREEAM/Code for Sustainable Homes
4. Preliminary Ecological Appraisals
5. Drawings (e.g., existing and proposed site layouts, green roof plans etc.)
6. Reports (e.g. Design and Access Statements, Landscape Strategies)
7. Satellite imagery.

Satellite imagery was considered the least desired source of data for assessing habitats, given that it can be very difficult to differentiate between habitats and if imagery is old, will not provide an accurate reflection of baseline/delivered habitats.

4.4 MAXIMISED SCENARIO ASSESSMENTS

Where it was reasonably believed that further opportunities to provide GI and/or BI were present on projects (i.e. where opportunities for integration of biodiverse roofs, vertical greening and roof terraces had seemingly been missed), these were marked up and overlaid onto the existing landscaped proposals and transferred into GIS for the additional areas to be measured.

Using these new habitat areas, an updated BNG calculation was run in Defra Metric 4.0. These calculations provided the hypothetical maximised BU/ha outcomes modelled and used in this study.

Rules followed when determining the potential for additional habitat feature provision were:

- Un-greened flat roofs present, without significant plant machinery or obvious conflict present;
- Where targeted higher targeted condition scores of proposed habitats could have been achieved; and
- Where relevant, large areas of hardstanding public realm was devoid of trees, rain gardens or other greening elements.

Maximised BU/ha outcomes were based on what, in Greengage's expert opinion, could have been reasonably achieved for each given site. Limits were established to the extent of certain habitat types, which included:

- All biodiverse roofs were given a good condition;
- Areas of biodiverse roofs avoided any proposed plant infrastructure;
- A 1m buffer was kept between biodiverse roofs and the roof edge;
- Any additional trees were assumed to be small in nature and in poor condition.

4.5 ANALYSIS

Standardisation

To standardise and then compare baseline, proposed and maximised BU delivery between the sites, BU measures were normalised through division of BU value by red line application area in ha (taken from the City of London's public access planning webpage), thus providing a comparable BU/ha for each site across the three study scenarios (baseline, proposed and maximised).

$$[BU \div Area\ of application\ site\ (ha) = BU/ha]$$

For developers, ecologists and the City of London to work out how many BU a site would be required to meet the target BU/ha score, the area of the site can be multiplied by the target BU/ha score.

$$[Area\ of\ application\ site\ (ha)\ X\ target\ BU/ha = No.of\ BU\ required\ to\ meet\ target\ BU/ha]$$

Once target BU is known, this can be taken away from the proposed BU to show either the surplus BU or the shortfall of BU required to meet the target BU/ha on any site.

$$[No.of\ proposed\ BU - No.of\ BU\ required\ to\ meet\ target\ BU/ha = \pm BU\ to\ achieve\ target\ BU/ha]$$

Example:

Site A has an area of 1.3 ha, using the Defra Biodiversity *Metric 4.0 the proposed landscaping currently delivers 2.2 BU or 1.69 BU/ha.*

[2.2 (proposed BU) ÷ 1.3 (ha) = 1.69 BU/ha (of current proposals)]

The City of London has set a 3BU/ha target for development proposals.

[1.3 (ha) X 3 (target BU/ha) = 3.9 BU (BU required to meet target BU/ha)]

Therefore, site A has a shortfall of 1.7 BU to meet the target *3 BU/ha.*

[2.2 (proposed BU) - 3.9 (BU required to meet target BU/ha) = 1.7 BU (BU shortfall)]

In this instance Site A would be required to either re-design the site to ensure that they met the required 3 BU/ha or would need to purchase 1.7 BU from an offset provider.

Comparison

Comparisons of BU/ha for the scenarios were made across and between the following:

- All sites;
- Between application use types;
- Across zero baseline applications; and
- In relation to other planning drivers such as UGF.

BNG v UGF

A UGF enables planning authorities and developers to discuss the appropriate level of GI that should be provided to deliver locally relevant outcomes, such as climate resilience or active travel, benchmarked against target scores for different types of development[21]. Within UGF surface cover types in a proposed development are given different scores on their GI quality. Typically, the better scoring surface cover types are also the ones which have the most potential to provide benefits for biodiversity and incorporating these within a UGF will likely deliver net gains in biodiversity.

Where available, UGF scores were correlated against proposed BU/ha scores to see if there was a correlation between higher UGF, delivering higher BU/ha.

4.6 LIMITIATIONS

The mechanisms built into the City's public access webpage and GIS mapping tool made it difficult to identify applications that could fit within the study parameters. Where feasible the refinement tools (development type, ward, application type etc) built into the advanced search within the webpage were used to reduce the number of potential applications as these are quite crude and could have led to applications potentially being missed, if they didn't fit the set parameters.

Tree canopy cover and vertical greening are considered separately from area-based habitats within Biodiversity Metric 4.0, this means that small sites with trees and vertical greening can disproportionately skew the results as areas of canopy cover and vertical greening can mean that 'habitats' area is greater than site area when looking at units per hectare.

Where full BNG calculations were not provided within the planning application documents, ensuring accurate areas of proposed and maximised green/blue infrastructure were significantly more challenging. This was especially the case on larger, more complex proposals that had a variety of habitats proposed. Where it was deemed that there was insufficient data to provide a robust assessment of BNG, applications were scoped out of the study. This limited the overall robustness of the study as older schemes tended to have less available information than newer ones.

There were a small number of anomalously high BU/ha outcomes. These were applications that had relatively small development footprints but with proportionally more tree planting and vertical greening proposed. These significantly skewed the data and could have led to overall higher average BU/ha being recorded. However, it was believed these were still valid, robustly analysed and provided a 'real' picture of the variety of applications within the Square Mile so have been included. However, there is the acknowledgement of these anomalous results, represented with larger Interquartile Range (IQR) outcomes than maybe would have been expected if a more uniform set of results were captured.

The IQR was used to show the spread of BU/ha without the effect of the few anomaly projects that either achieved a considerably higher or lower BU/ha than would have been reasonably expected.

Within the Metric, zero baseline sites that provided a net gain are automatically given 100% gain in biodiversity value. For analytical purposes this 100% gain was used to assess average percentage gains/losses for proposed and maximised developments, even though 100% of 0 equals 0.

5.0 RESULTS

5.1 SITE SELECTION

An initial 41 planning applications were identified as having sufficient information which could potentially be used to determine robust BNG baseline, proposed and maximised assessment scenarios.

After scrutinising the submission documents 34 of these 41 sites were scoped into the final detailed assessment, as these were the ones with documentation containing sufficient information on pre-development/proposed habitat areas, or information allowing Greengage to calculate these areas.

The location and distribution of the sites can be found at Appendix A.

'De minimis'

The government have set a 25m^2 'de minimis' area of habitat that would trigger a mandatory BNG assessment. Under this threshold, 24 out of 34 of the applications or 69% of applications reviewed would fall below this level.

Those that fell below the 'de minimis' were included within the assessment study sample.

5.2 BIODIVERSITY UNITS AND UNITS/HA

Baseline

The mean baseline BU value for all sites was 0.05 (IQR 0.02) equivalent to an average 0.09 BU/ha (IQR 0.11). However, 24 of the development sites had 0 BU baselines.

Proposed

The mean BU value proposed for delivery in assessed planning applications was 0.50 BU (IQR 0.51), equivalent to a mean percentage change of 307% (IQR 0) gain in biodiversity value and a mean of 1.54 BU/ha (IQR 0.89).

Maximised

The mean BU value that could be delivered, should all developments have maximised green/blue infrastructure within their proposals, was 1.05 BU (IQR 0.78), equivalent to a mean percentage change 559% (IQR 391) gain and a mean of 3.42 BU/ha (IQR 1.77).

Case Study: 100 New Bridge Street

Baseline

Table 5.1 100 New Bridge Street baseline BNG assessment

Broad Habitat	Habitat Type	Area (ha)	Distinctiveness	Condition	BU
Urban	Developed land; sealed surface	0.2515	V. Low	N/A - Other	0.00
Urban	Intensive green roof	0.0248	Low	Poor	0.05
				Total	**0.05**

BU/ha

$$[0.05\ (BU)\ \div 0.2763\ (ha) = 0.18\ BU/ha]$$

Proposed

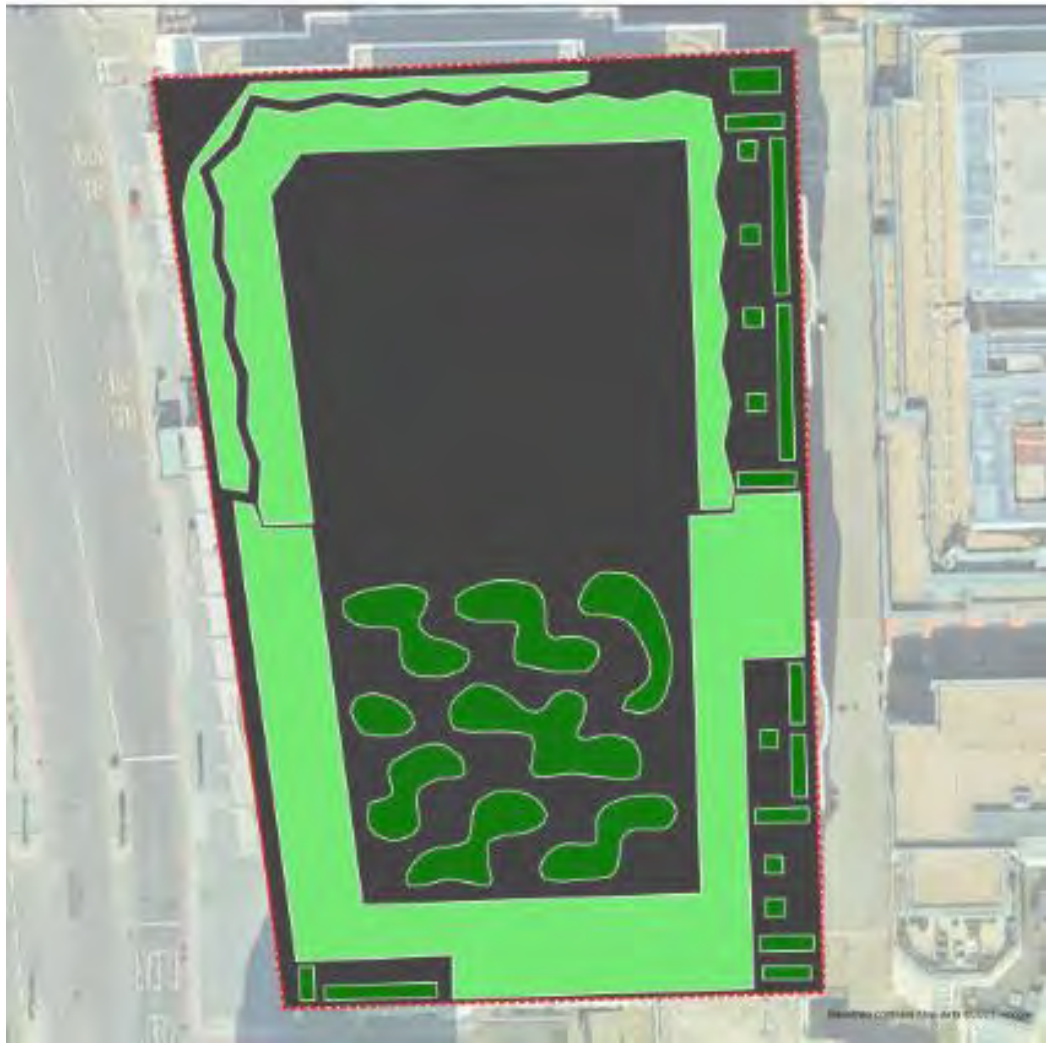
Table 5.2 100 New Bridge Street proposed BNG assessment

Broad Habitat	Habitat Type	Area (ha)	Distinctiveness	Condition	BU
Urban	Developed land; sealed surface	0.1576	V. Low	N/A - Other	0.00
Urban	Other green roof	0.0858	Low	Condition Assessment N/A	0.18
Urban	Intensive green roof	0.0315	Low	Good	0.17
				Total	**0.35**

BU/ha

$$[0.35\ (BU) \div 0.2763\ (ha) = \ 1.27\ BU/ha$$

Figure 5.1 100 New Bridge Street Proposed BNG layout



Maximised

Table 5.3 100 New Bridge Street maximised BNG assessment

Broad Habitat	Habitat Type	Area (ha)	Distinctiveness	Condition	BU
Urban	Developed land; sealed surface	0.099	V. Low	N/A - Other	0.00
Urban	Biodiverse green roof	0.1458	Medium	Good	0.90
Urban	Intensive green roof	0.0315	Low	Good	0.17
				Total	**1.07**

BU/ha

$$[1.07\ (BU)\ \div 0.2763\ (ha) = 3.87\ BU/ha]$$

Figure 5.2 100 New Bridge Street Maximised BNG layout

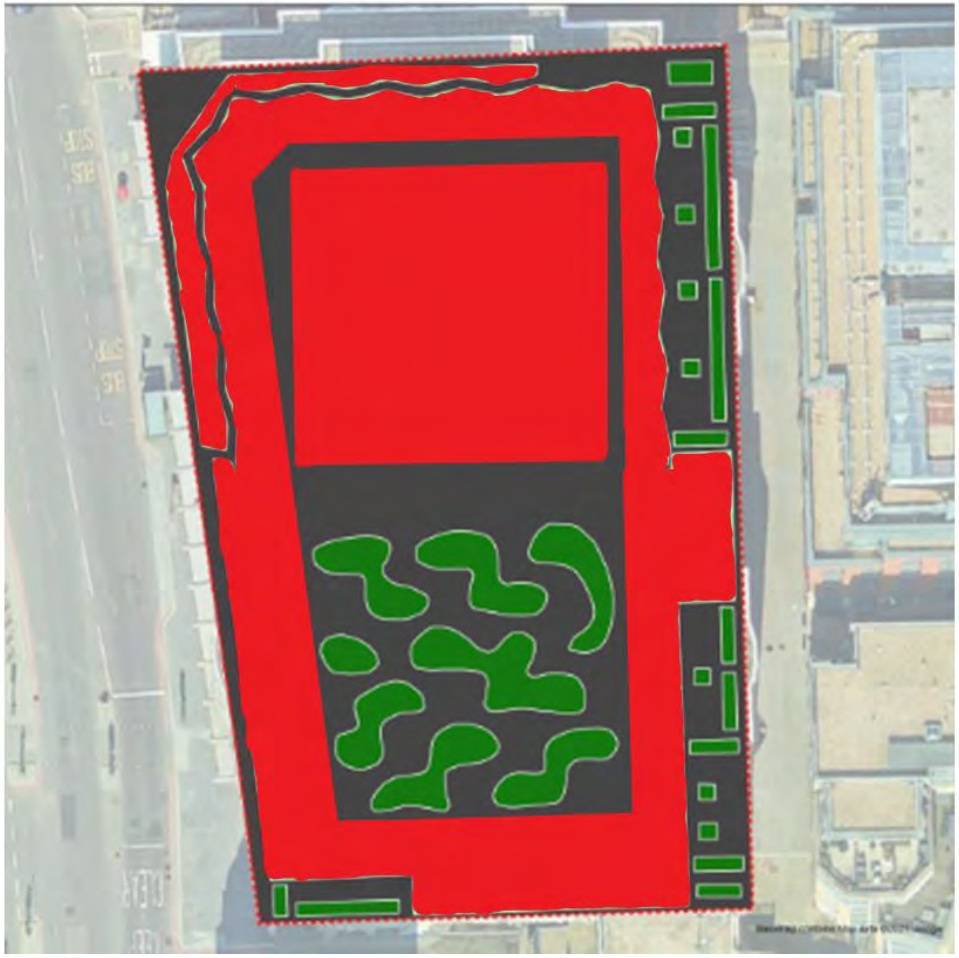


Table 5.4 Mean BU/ha scenarios between application type

Application type	Number of sites	Mean Baseline BU/ha (IQR)	Mean Proposed BU/ha (IQR)	Mean Proposed % Change (IQR)	Mean Maximised BU/ha (IQR)	Mean maximised % Change (IQR)
Office	25	0.05(0*)	1.29 (1.04)	250 (0*)	2.69BU/ha (1.52)	472 (0*)
Hotel	6	0.02 (0*)	2.68 (2.57)	528 (0*)	6.54 (2.42)	936 (0*)
Student accommodation (residential)	2	0.56(0.37)	1.55 (0.03)	372 (302)	3.68 (1.41)	695 (249)
Other (historic building)**	5	0.14 (0.30)	1.46 (0.89)	163 (91)	3.03 (0.84)	269 (391)

**Predominantly 0 baseline sites achieving (100% gain); **Other (historic building) also includes those applications that fall within another type and so are included in both types*

Proposed BU/ha

'Hotel' applications generally delivered the best biodiversity outcomes, with a mean of 2.68 BU/ha, however 'student accommodation (residential)' led applications delivered only slightly lower BU/ha with 1.55 and other (historic building) with 1.46 BU/ha. 'Office' applications delivered the poorest biodiversity outcomes with a mean of 1.29 BU/ha.

'Hotel' applications provided the biggest uplift between of BU/ha from baseline levels with a mean uplift of 2.66 BU/ha, significantly more than the uplifts provided by the other development types. There was an uplift of 1.32 BU/ha for 'other (historic building)1.25 BU/ha for 'office' and 0.99 BU/ha for 'student accommodation (residential)'.

Proposed % Change

'Hotel' led applications also delivered the highest mean percentage gains of all development types with 528%.

This was significantly greater increases compared to the other development types with 'student accommodation (residential)' delivering a mean 372%, 'office' 250% and 'other (historic building)' 163%.

From all applications analysed only two achieved less than 100% gain, one was from 'student accommodation' led development types, achieving a 70% gain and one from 'office' led development resulting in a 29% loss in biodiversity value from baseline levels, respectively.

The vast majority of applications were zero baselines, which for the purposes of this were given a 100% gain.

Maximised

When greening was maximised for each application, 'hotel' applications delivered the greatest BU/ha with a mean of 6.54 BU/ha, but this was skewed by one application achieving a maximised 22.88 'Student accommodation' and 'other (historic building) developments both achieved greater than 3 BU/ha on average, with 3.68 BU/ha and 3.03BU/ha respectively. 'Office' led development achieved the lowest average maximised greening scenario with 2.69 BU/ha.

Maximised % Change

'Hotel' led applications again delivered the highest mean percentage gains of all development types with an average 936%.

This was significantly greater increases compared to the other development types with 'student accommodation (residential)' delivering a mean 695%, 'office' 472% and 'other (historic building)' 269%.

All applications achieved over 100% gain in maximised scenarios.

5.3 ZERO BASELINE SITES

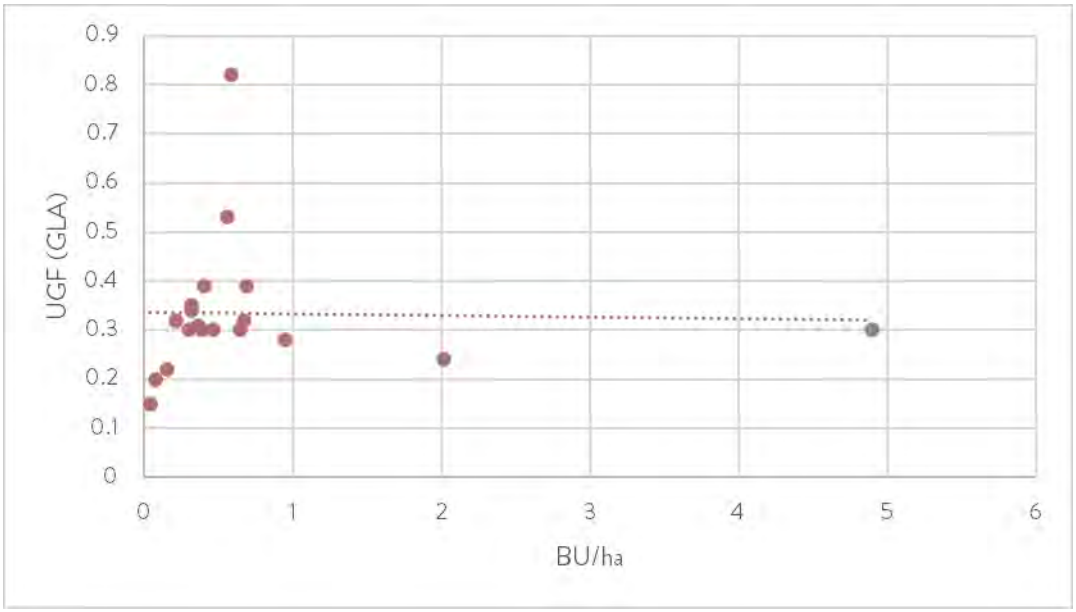
For sites that had 0 BU baseline, the mean proposed outcome was 1.53 BU/ha and the maximised modelling scenario outcome was 3.48BU/ha.

5.4 BNG V UGF

The figure below (Figure 5.3) shows each site where a Greater London Authority (GLA) and or City of London UGF score had been provided in submitted applications, plotted against the proposed plans BU/ha.

As is shown on Figure 4.1, there is no significant correlation between UGF and proposed BU/ha.

Figure 5.3 The relationship between UGF scores and BU/ha using the proposed greening submitted with applications.



6.0 DISCUSSION

The study sampled 35 planning applications in the Square Mile from 2010 to 2023. These were applications which included sufficient data to determine baseline BU, proposed development BU and hypothetical maximised BU outcomes.

A mean outcome of 1.54 BU/ha was calculated for submitted applications, across all projects. However, if the developments had maximised green/blue infrastructure then this outcome increases to a potential 3.42 BU/ha.

Hotel led applications provided both the highest proposed BU/ha and highest potential maximised BU/ha outcomes, compared with other development categories with a proposed 2.68BU/ha and maximised 6.54BU/ha.

Interestingly, the majority (32) of the applications reviewed would be considered as 'Major' planning applications, due to an increase in floor space of greater than 5,000m^2 and the majority being associated with office led development applications.

A total of 24 or 69% of applications reviewed fall under the mandatory 'de minimis' area of baseline habitat. If this is representative of the Square Mile, then over half of all applications would likely fall under the mandatory threshold and would not have to take biodiversity net gains into account. The mean proposed outcome for these sites was calculated as 1.53 BU/ha and 3.48 BU/ha in maximised scenarios. These were in line with the overall averages across all development types and all baseline BU values, providing evidence that zero baseline sites are of equal value in increasing BNG compared with those sites with existing habitat baselines.

When proposed BU/ha was assessed against proposed UGF scores it was found there was no significant correlation between higher UGF scores and higher BU/ha scores. There is evidence showing that whilst UGF's do help developments provide greater open space and greening, there are surface types including permeable paving and water features (chlorinated) or unplanted detention basins, that provide no biodiversity benefit but can be used to increase the UGF score. Therefore, developments achieving the target UGF score will not always guarantee that the development delivers significant improvements for biodiversity and thus this lack of clear biodiversity improvement provides additional evidence and reasoning as to why a specific City of London BU/ha BNG target should be introduced into the Local Plan.

The above evidence supports the reasoning for inclusion of a BU/ha target, ensuring that all sites deliver effective and meaningful outcomes to enhance the biodiversity of the Square Mile, regardless of baseline habitats.

This study also provides clear evidence that many developments seeking planning approval within the Square Mile have the potential to deliver better outcomes for biodiversity than is currently being achieved. BU/ha outcomes are also simple to measure using the standard Biodiversity Metric methodology to calculate BU provision, contextualised against site red line area.

Accounting for the data presented in this study it appears feasible and reasonable to expect all development proposals in the Square Mile to deliver 3 BU/ha on-site.

The vast majority of enhancement measures that were used in the maximised scenario's, to establish the BU/ha target were provided at roof and terrace level. Following the mitigation hierarchy, as set out within the BNG good practice guidelines[17] enhancements should first be maximised on-site before off-setting is considered. This ensures that biodiversity is provisioned for and maximised in the area that is being affected by development, rather than depleting the ecological value of the proposed development site and immediate surroundings further.

It has been established that if good condition (as per GRO guidelines[22]) biodiverse roofs, roof terraces with a large variety of wildlife friendly planting, as well as presence of climbing plant species, tree and shrubs, it is feasible to deliver the target BU/ha scores on site in the majority of cases.

Finally, the new policy should cover the majority of planning applications, regardless of baseline habitat value. To fully assess the BNG outcomes on proposed developments it is recommended that sufficient resources are identified to undertake ecology work or an ecological consultant employed to assess BNG outcomes.

To make it clear what information should be submitted with qualifying applications, the City of London should provide a list of documents and/or information that will be required at different stages of the planning process. This should, but not be limited to:

- A Preliminary Ecological Appraisal Report (PEAR) or other appropriate ecological assessment and completed Defra Metric 4.0 spreadsheet showing with a planning submission;
- Once the development is approved, a Biodiversity Gain Plan (BGP)[23] and a Habitat Management and Monitoring Plan (HMMP) will be secured through condition of planning consent, prior to commencement of works; and
- Where appropriate as part of a Section 73 to make changes to approved landscaping plans, an updated Defra Metric 4.0, net gain plan and HMMP should be provided, to show how the development still meets the BNG policy.

Monitoring of all biodiversity enhancements and regular reviews of HMMP would be expected to be undertaken by the developer/building owner/building manager for a minimum 30 years maintenance period[5]. However, it may be prudent for the City of London to also undertake monitoring of a percentage of sites against submitted Habitat Management and Monitoring Plans to ensure these are being followed and the predicted gains being met.

7.0 OFF-SITE HABITAT PROVISION

If a target of 3 BU/ha is the policy target for new development within the City of London, a total of 20 of the applications would miss this and therefore would require BU offsets.

Offsetting should be ecologically coherent, viable and add value to where most biodiversity benefit can be gained, not necessarily on or adjacent to the development site[18]. These will be secured either through payment into a Community Infrastructure Levy (CIL), Section 106 agreements, or a conservation covenant[24].

All offsetting sites would need to be registered on the national Natural England BNG site register, but the unit uplifts could be allocated prior to the registration. As part of registering off-setting BNG enhancements, there would be a requirement for these to be managed and monitored for a minimum of 30 years. Any enhancement for biodiversity undertaken since 30 January 2020 is eligible to be registered as a BNG off-setting site[5].

With off-setting there is a spatial risk factor[1] included within the Biodiversity Metric 4.0 depending on how far from the habitat loss, the off-set is, these are:

- 1 - Compensation inside Local Planning Authority (LPA) boundary or National Character Area (NCA) of impact site;
- 0.75 - Compensation outside LPA or NCA of impact site, but in neighbouring LPA or NCA; and
- 0.5 - Compensation outside LPA or NCA of impact site and neighbouring LPA or NCA.

Should the City of London want to bring forward opportunities for offsetting, then there are several options that could be explored further to deliver biodiversity enhancements that could be captured within Metric 4.0, providing BU uplifts.

Any offsite biodiversity enhancements should also align with policy targets and providing NbS[25] to help mitigate the risks posed by climate, poor air-quality and access to nature, as identified within the Climate Resilience Adaptive Pathways Study[26].

7.1 WITHIN THE SQUARE MILE

The City of London have been highlighted as having Areas of Deficiency to Nature[27] and Areas of Deficiency in Access to Public Open Space which are set out in the London Plan through GiGLs data sets. As such enhancing features within the City of London for biodiversity would help to alleviate these deficiencies and provide members of the public that live, work and move through the Square Mile better access to nature and public open space.

Sites of Importance for Nature Conservation (SINCs)

There are a total of nine SINCs within the Square Mile. SINCs are recognised by the City of London Corporation as important wildlife sites and fall into one of three main tiers:

- Sites of Metropolitan Importance (SMINC);

- Sites of Borough Importance (SBINC I and II); and
- Sites of Local Importance (SLINC).

The nine sites within the Square Mile are listed in the table below, along with a brief version of the citation of each designation. Upon adoption of the draft Local Plan (City Plan 2040) there will be 13 Sites of Importance for Nature Conservation in the City. This includes the nine below and three proposed sites to be adopted (Postman's Park, Portsoken Street Garden, St Dunstan in the East Church Garden).

There are likely opportunities to enhance the biodiversity value of the SINCs or connectivity of the SINCs within the Square Mile, through biodiversity offsets. Greengage previously provided EMP's for two of the SINCs within the borough to maximise the biodiversity value of these. This is something that could be rolled out across the other SINCs (Cleary Gardens[28] and St Paul's Cathedral Churchyard Gardens[29]) with bespoke management plans created for each and the enhancements captured within the Defra Biodiversity Metric 4.0 that could then used for off-setting purposes.

As a SMINC, although unlikely to be feasible from a BNG off-set perspective, efforts should still be encouraged to enhance, where feasible, land immediately adjacent to the River Thames.

Table 7.1 List of SINCs within the City of London.

Site Name	Tier	Citation
The River Thames and it's Tidal Tributaries	SMINC	The River Thames and the tidal sections of creeks and rivers which flow into it comprise several valuable habitats not found elsewhere in London. The mud-flats, shingle beach, inter-tidal vegetation, islands and river channel itself support many species from freshwater, estuarine and marine communities which are rare in London. The site is of particular importance for wildfowl and wading birds, with the river walls, particularly in south and east London, providing important feed areas for the nationally rare and specially protected black redstart.
The Barbican and St Alphage's Gardens	SBINC Grade I	Within the site are St Alphage's Garden together with two adjoining gardens; the Roman Wall, medieval stonework and the old Barber Surgeon's Hall south of St Giles; the large gardens to the south of Defoe House; the wild meadow garden; Beech gardens; and the main lakes.
The Temple Gardens	SBINC Grade II	The Temple Gardens represent one of the largest areas of green space in the City, and although formally managed, support a fair amount of wildlife interest. Included in the site are the Inner Temple main garden, garden court and most of the Middle Temple main garden (although the western edge of the latter lies within the City of Westminster). The gardens

		comprise open lawns with a variety of mature trees, small areas of shrubbery and some wall-climbing shrubs and flower beds.
Pepys Garden and St Olave's Churchyard, Seething Lane	SLINC	Pepys Garden contains a number of small trees including large false acacia (Robinia pseudoacacia), a maidenhair tree (Ginkgo biloba) and two old mulberries (Morus sp.) with a boarder of shrubs around the edge and lawn in the centre. The garden, located between Seething Lane and 10 Trinity Square, includes a formal lawn, seating and a pergola. St Olave's Churchyard includes trees, pockets of shrubbery and herbaceous planting.
St Paul's Cathedral Garden	SLINC	This is a very important garden historically and culturally, in providing the setting for St Paul's Cathedral. It contains a wide variety of mature trees, trees with biblical associations, many fruit trees, and trees with strong visual character. There are substantial areas of shrubbery, offering cover and a berry source for wildlife. The garden also has extensive lawns, flower beds and rose gardens.
Cleary Gardens	SLINC	The garden is constructed on three levels, linked by a series of steps, terraces and pergolas. The garden contains several semi-mature trees and the pergola, terraces and staircase have been planted with climbing shrubs.
St Botolph Without Bishopsgate Churchyard	SLINC	St Botolph's is a mature garden with plenty of trees, wide lawns, tall hedges, some substantial areas of tall shrubbery and an ornamental pool.
Aldermanbury Gardens	SLINC	An attractive garden on the site of the former Wren church of St Mary, Aldermanbury. The old tombstones and old stone walls around the northern section of garden have been colonised by a range of ferns. The garden contains a good mixture of ornamental trees, a knot garden and several flower beds.
The Roman Wall, Noble Street	SLINC	Part of the south-west corner of a Roman fort plus a section of Roman Wall has been colonised by wild plants and at the foot of the wall lies an area of damp grassland.
Finsbury Circus	SLINC	It is said to be the oldest public park in London, it has a traditional layout with mature trees and shrubbery around the perimeter, wide lawns and flower beds.

Existing Open Spaces

There are several urban parks and green spaces within the Square Mile, these are likely to currently comprise poor quality amenity grassland, urban street trees and introduced shrub planting (all score relatively low within Biodiversity Metric 4.0). There are likely opportunities to enhance these spaces to provide a wider coverage of higher biodiversity value habitats, in a better condition.

Streets

The City of London is a small and highly built-up borough, there are likely already pedestrianised and pedestrian priority streets within the Square Mile that are included within the City of London Corporations Cool Streets and Greening Program[30], that could incorporate greening features including additional street tree planting, rain gardens and provision of biodiversity value and climate resilient planting. As well as providing an uplift in biodiversity value, these measures would also help contribute to flood alleviation, reduction in air pollution, reduction in perceived noise levels, increase popularity and provide health and wellbeing benefits for people walking along these streets and public spaces.

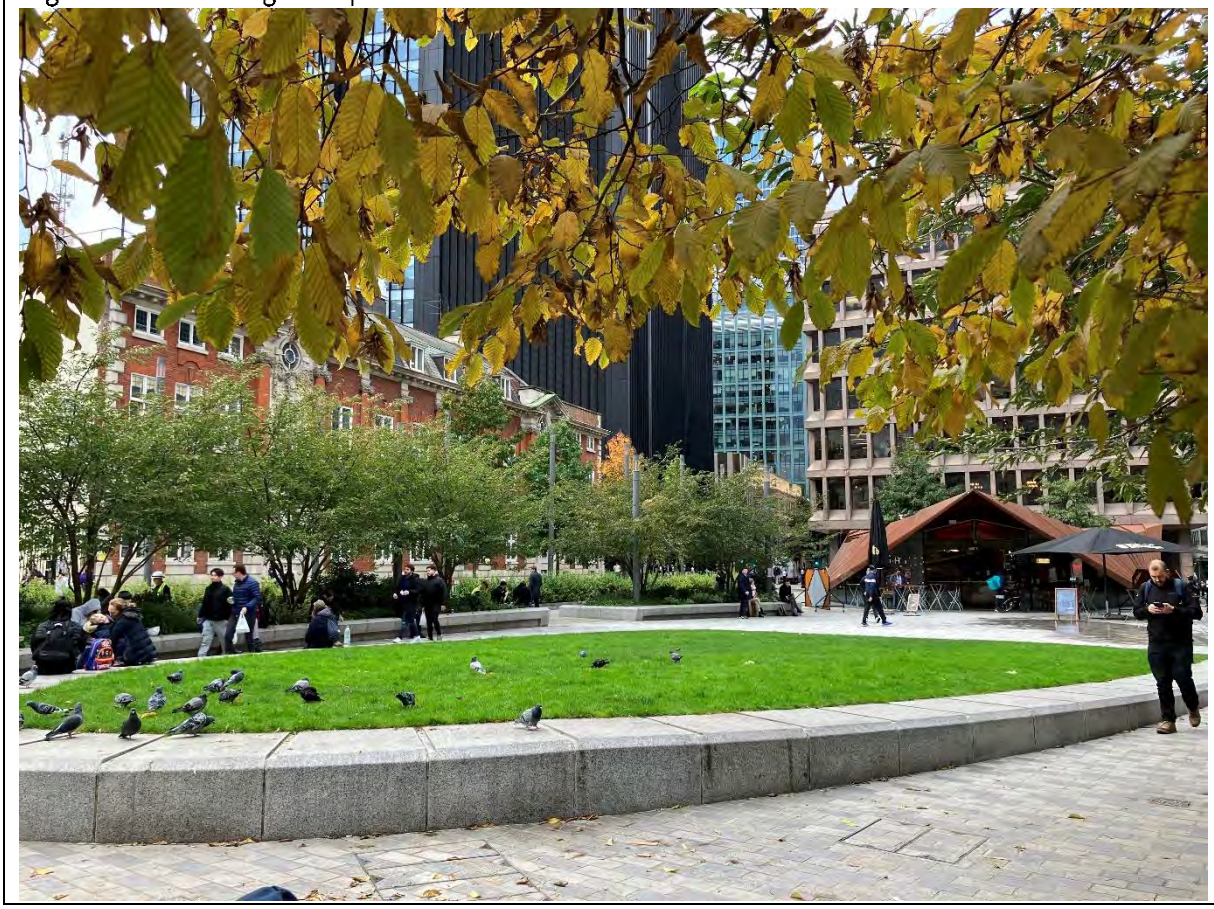
It is understood that these areas would have to be chosen on a case-by-case basis, there may be complex underground utilities, heritage assets and transport infrastructure that would make greening these unviable for BU uplift.

Case Study: Aldgate Square

The redevelopment of Aldgate Square involved the re-routing of the existing gyratory to create one of the largest open spaces in the Square Mile. The busy roads were replaced with pedestrian-friendly streets and a central main square. The landscaping enhancements have included a large lawn, water features, street tree planting, shrub planting and the enlargement and improved, high-quality planting of St Botolph without Aldgate Church gardens.

These are all enhancements that would provide an uplift of BU that could be captured within Biodiversity Metric 4.0 for BNG offsetting.

Figure 7.1 Aldgate Square



7.2 WITHIN WIDER CORPORATION OWNERSHIP

'Up-stream'[7]

'Up-stream' would include any physical land assets that the City of London Corporation own, and through enhancing biodiversity of these would provide nature-based solutions that would help the City of London meet the wider policy and strategy goals.

[7] Up-stream has been taken from the systems thinking approach to ecosystem service provision, can ecological habitat creation or restoration (damming works) away from where there is a potential issue (flooding in the Square Mile), whilst providing BU that can be marketed.

An example of this would be restoring flood meadows or increase woodland planting on land within the Thames catchment or tributaries of the Thames such as dam works in Hampstead Heath that were completed in 2016, to reduce flooding in the Fleet Valley[31], which in turn reduces the quantity and speed of flood water entering the City Flood Risk Area, Thames Policy Area and neighbouring areas that could exacerbate flooding within London.

Other

There are likely parcels of land outside of the Square Mile such as residential housing estates, open spaces and schools, where habitat creation and enhancement would have little to no positive 'up-stream' impact on the Square Mile, although would have benefit in their local area.

These present potentially larger areas of land that could be the focus of offsets from development within the City of London, delivering a significant uplift in BU, through the enhancement of existing habitats and creation of higher distinctiveness habitats, such as the 42-acre wildflower meadow sown in land surrounding Epping Forest[32] that was created in 2021 as part of the City of London Corporation's Climate Action Strategy[33].

Local Nature Recovery Strategy

The City of London will develop a Nature Recovery Strategy once the Mayor of London as the responsible authority has published a Local Nature Recovery Strategy (LNRS). By 2026 the City of London will report on its biodiversity duties and strategies.

It is recommended that a cross-departmental officer group is established to develop a unified vision and strategy for nature recovery across the City of London. This should act as a steering committee, ensuring that the goals of the LNRS are aligned and have the full support of all departments.

8.0 CITY OF LONDON NEW BNG POLICY AND LEGISLATION

This study has provided an evidence base to support the inclusion of a new biodiversity policy within a new or updated Local Plan, specifically to address the Square Mile's unique highly urban setting but also the potential development here has to deliver meaningful BNG.

8.1 PROCESS FOR ASSESSING BNG

To ensure that proposals meet the BNG policy requirements the following information should be provided by the developer for assessment[34] by the City of London with each relevant planning application.

Submitted with a planning application

- A PEAR or other appropriate ecological assessment; and
- Completed Defra Metric 4.0 spreadsheet.

Upon approval prior to works commencing:

- BNG plan and HMMP, approved in writing by the City of London.

Prepared as a condition of planning or post-planning:

- Updated Defra Metric 4.0, net gain plan and Habitat Management and Monitoring Plan, if landscape plans change to show how the development still meets the BNG policy.

8.2 PROPOSED POLICY WORDING

Core Strategic Policy CSXX: Biodiversity Net Gain

To conserve and enhance the biodiversity of the Square Mile and make a more sustainable and resilient City by ensuring development includes:

1. Habitats of known value to biodiversity have been incorporated and maximised on site, achieving a minimum 3 biodiversity units per hectare (BU/ha) as measured using the statutory Defra Metric;
2. Where development falls short of the 3 BU/ha target, then offsetting will be required, with preference given to off-setting schemes that help with the delivery of wider City of London Policies, through the use of nature based solutions;
3. Ensuring features of value to wildlife that support City of London BAP[15] species, but are not counted within the statutory metric are provided in suitable locations, in close proximity to green features, these should include but are not limited to bird boxes, bat boxes and wild bee nesting habitat (cavity and ground nesting)and invertebrate hotels.

4. Where wildlife boxes and features, have not been included within the application proposals, there should be a clear justification as to why these cannot be included.

9.0 CONCLUSION

Greengage was commissioned by City of London Corporation to undertake a BNG Feasibility Study to inform emerging planning policy targets, for the Square Mile.

The Square Mile is highly urban in nature with a high proportion of zero baseline sites that will be developed on, therefore the mandatory BNG of 10% within the Environment Act 2021 is not considered as an appropriate measure for the delivery of meaningful BNG, within new developments. Therefore, a BU/ha measure has been explored for viability.

This study reviewed 35 planning applications in the Square Mile from 2010 to 2023, determining what 'business as usual' for BNG has been to date and assess what potential BNG could have been achieved if greening had been maximised. However, it is expected that all applications would be required to meet the BNG target. This, along with future monitoring of ecological enhancements to ensure accountability of projects to deliver the agreed enhancements over a 30 year period will likely require a technical ecology specialist to assist.

It is proposed that all developments new-build and retro-fit should present a BNG assessment that achieves **3 BU/ha**.

It was found that submitted applications were currently achieving a mean of 1.54 BU/ha, across all projects. However, if these same developments had maximised green/blue infrastructure on-site then this outcome would have delivered a mean of 3.41 BU/ha.

A total of 69% of reviewed applications would have fallen below the governments 'de minimis' of having 25m^2 baseline habitat and therefore under mandatory BNG, these would not need to undertake a BNG assessment. However, if these sites maximise greening then they could deliver a mean 3.48 BU/ha, showing that these should be considered within local policy and the context of the Square Mile.

Greengage have also undertaken a high level analysis of current land uses to identify potential opportunities for the City of London Corporation to provide potential off-setting schemes for developments that failed to meet the targeted 3 BU/ha.

Greengage have also set out the process for assessing BNG within applications and proposed wording for a new policy, to be incorporated within the new City of London Plan. To fully assess the BNG outcomes on proposed developments it is recommended that sufficient resources are identified to undertake ecology work or an ecological consultant employed to assess BNG outcomes.

APPENDIX A APPLICATION SITE DISTRIBUTION

Figure A.1 Distribution of all sites within the Square Mile

CITY OF LONDON BNG POLICY

City of London Authority Boundary

Application Boundaries

Title: Figure A.1 Distribution of Application Sites

Drawn by: SB
Date: 16/08/2023

Reviewed by: FD
Date: 16/08/2023
Project number: 552409
Sources: City of London Corporation, GLA, Google Maps

Greengage

APPENDIX B GOOD URBAN BIODIVERSITY DESIGN

To help the City of London ensure that biodiversity has been maximised within future developments and to show how the City of London could maximise uplift for offset sites within the Square Mile and help achieve the goals of the local BAP. Greengage has shown in FigureB.1 what good urban biodiversity design should be, these features are further described in Table B.1.

Table B.1 Good urban biodiversity design details

1	Biodiverse Sustainable Urban Drainage Systems (SuDS)	Biodiverse Sustainable Urban Drainage systems (SuDS) can be created to reduce, slow down and filter surface water run-off thereby mitigating risks of flooding, reducing the pressure on local drainage systems, filtering pollutants and improving water quality and discharging rainwater slowly back into the system. SuDS features should be focused on the integration of rain gardens at street level, creating Blue Green Streets, for overland flow / storm water attenuation as well as improvement of water quality. Species for rain gardens should be selected to handle greater periods of drought alongside submergence. Layout and species selection should favour smaller birds and invertebrates.
2	Biodiverse planting	Where possible, native plant species or species that are of value to biodiversity, including pollinators (e.g., those listed on the RHS Plants for Pollinators[35]) should be incorporated into any formal landscaping areas. In particular, species which are 'climate resilient' requiring little maintenance with a high level of drought tolerance should be favoured. Formal landscaped areas should in the first instance be within the planting beds incorporating a mix of perennial, shrub and tree species. Where this is not possible use of street furniture and other hard landscaped elements could provide planting opportunities.
Within above two features.	Street trees	All new street tree planting should be planted with areas of wider soft landscaping, including within rain garden design and formal planting areas. Within an urban environment, street trees have a number of benefits, besides biodiversity, they reduce the effects of the urban heat island, absorb pollution, trap and store water and provide amenity value. New trees should be tolerant to drought stress which will improve tree survival rates.

		Guidance regarding species specification for provision of different Green Infrastructure components is provided in Trees & Design Action Group's Tree Species Selection for Green Infrastructure[36]
3	Vertical greening	Where vertical greening does not impact the heritage value of a building and can be managed and maintained safely in accordance with the fire safety regulations[37],[38], trellis based green walls should be installed and planted with a range of native and species known to be of value to wildlife. Species chosen should provide mixed height vegetation with foliage providing effective nesting habitat. Key things to be factored into designs include: • Aspect - this influences watering requirement and species suitability. • Depth of growing medium in planters – sufficient depth should be provided allowing for root growth and water retention. Irrigation systems should be installed for periods of dry weather. • Trellis type – tensioned wire systems should be favoured for their longevity and aesthetic appeal. These systems also tend to allow greater distance from the building, providing opportunities for wildlife and allowing easier maintenance and access to building facade. • Intended height for growth – climbers will clearly take time to reach intended heights and coverage so areas subject to vertical greening should be realistic about the heights expected to be delivered by single plants. If significant heights are targeted, then subsequent suspended troughs could be provided up the trellis with additional climbing plants provided. The use of 'patterned' or aesthetically pleasing trellis systems could be considered so that aesthetic benefits are provided in the time taken for the climbers to reach maturity; and • Multiple species should be provided with identifiable ecological benefit for phytophagous or nectivorous invertebrates.
4	Biodiverse living roof	Substrate based, extensive living roofs/bio-solar roofs should be included on all flat roofs, where this doesn't impeded plant. The roofs should be plug planted and seeded with at a species mix of known plants of value to wildlife, which are regionally produced, to provide a wildflower roof. All roof build up's should meet requirements of the Green Roof Organisation (GRO) Code 2014[22]. All biodiverse roofs should include invertebrate enhancement features including: • Four sand piles per 100m^2 of biodiverse roof; • Two rope coils per 100m^2 of biodiverse roof;

		• Two log piles per 100m^2 of biodiverse roof, with logs being at least 100mm in diameter and the bark still on; and • Two ephemeral water trays per 100m^2 of biodiverse roof.
5	Intensive green roof terrace	Intensive green roofs, with a minimum of 300-450mm of soil to support herbaceous, shrub, and tree planting should be incorporated where accessible roof gardens and terraces are proposed. Intensive green roof planting strategies should follow the principles of the low-water ground-level planting in raised or integrated planters to create ecological and aesthetic consistency, such as urban farms or parklets. Dense biodiverse pollinator friendly planting, including fruiting flowering shrubs and trees should dominate the planting mixes.
Additional	BAP features	As well as the features above that can be captured within the Defra Metric, to ensure that landscape proposals and City of London off set sites also work to meeting the goals of the local BAP, bird nesting boxes, bat roosting features, habitat for solitary bees and other quantitative habitat features should be incorporated. All nesting boxes and habitat features should be installed at correct heights and aspects for the species they are providing for. Features that should be included within most proposals: • Bat boxes for crevice dwelling species; • Open fronted black redstart boxes in proximity to biodiverse green roofs; • House sparrow terraces; • Swift boxes; • Generalist bird boxes with 32mm entrance holes; • Where appropriate, peregrine perches for hunting; • Invertebrate log piles, hotels and panels, solitary bee bricks and posts within appropriate planting.

Figure B.2 Good Urban Biodiversity Design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APPENDIX C FULL SITE LIST

Application Reference	Address	Ward	Development Type	Scoped In (Y/N)
10/00832/FULEIA	London Wall Place, London, EC2.	Bassishaw	Office	Y
20/00870/FULL	11 Pilgrim Street, London, EC4V 6RN	Farringdon Within	Office	Y
16/00809/FULMAJ	Fountain House, 130 Fenchurch Street, London, EC3M 5DJ	Langbourn	Office	Y
16/00590/FULL	The Denizen - Bernard Morgan House, 43 Golden Lane, London, EC1Y 0RS	Cripplegate	Residential	N
13/01036/FULMAJ	The Ned, 27 Poultry, London, EC2R 8AJ	Walbrook	Hotel	Y
18/01352/FULL	120 Moorgate, London, EC2M 6UR	Coleman Street	Office	Y
22/00742/FULMAJ	Snow Hill Police Station, 5 Snow Hill, London, EC1A 2DP	Farringdon Without	Hotel	Y
17/00623/FULL	Bishopsgate Plaza, Bishopsgate, Devonshire Row London, EC2	Bishopsgate	Hotel/Residential	N
22/00321/FULL	Woolgate Exchange, 25 Basinghall Street, London, EC2V 5HA	Bassishaw	Office	Y

22/00164/FULL	3A New Street Square, London, EC4A 3BF	Castle Baynard	Office	Y
21/00781/FULMAJ	65 Holborn Viaduct, London, EC1A 2FD	Farringdon within	Student accommodation (Residential)	Y
20/00997/FULEIA	Salisbury Square- Land Bounded By Fleet Street, Salisbury Court, Salisbury Square, Primrose Hill & Whitefriars Street, London, EC4Y	Castle Baynard	Other (historic building) - Mixed use scheme	Y
20/00671/FULEIA	55 Gracechurch Street, London, EC3V 0RL	Bridge	Office	Y
20/00546/FULMAJ	5 Chancery Lane, London, WC2A 1LG	Farringdon Without	Office	Y
20/00773/FULL	Wood Street Police Station, 37 Wood Street, London, EC2P 2NQ	Bassishaw	Hotel	Y
21/00279/FULMAJ	10 King William Street, Site Bounded By King William Street, Cannon Street, Abchurch Lane & Nicholas Lane, London, EC4N 7TW	Candlewick	Office	Y
21/00622/FULEIA	115 - 123 Houndsditch, London, EC3A 7BU	Aldgate	Office	Y

21/00826/FULMAJ	Boundary House, 7 - 17 Jewry Street, London, EC3N 2EX	Tower	Hotel	Y
22/00158/FULMAJ	Princes Court 7 Prince's Street, London, EC2R 8AQ	Walbrook	Office	Y
22/00202/FULMAJ	Cripplegate House, 1 Golden Lane, London, EC1Y 0RR	Cripplegate	Office	N
22/00848/FULMAJ	65 Gresham Street, London, EC2V 7NQ	Bassishaw	Office	Y
22/00748/FULMAJ	100 New Bridge Street, London, EC4V 6JA	Farringdon Within	Office	Y
23/00365/FULMAJ	30 - 33 Minories & Writers House, 13 Haydon Street, London, EC3N 1PE	Tower	Office	Y
22/01245/FULMAJ	47-50 Mark Lane, London, EC3R 5AS	Tower	Office	Y
22/01155/FULLEIA	85 Gracechurch Street, London, EC3V 0AA	Langbourn	Hotel	Y
22/01178/FULL	Barbican Estate, London, EC2Y 8EN	Cripplegate	Other (historic building)	Y
22/00981/FULEIA	55 Bishopsgate, London, EC2N 3AS	Cornhill	Office	Y

22/00882/FULMAJ	Friary Court, 65 Crutched Friars, London, EC3N 2AE	Tower	Student accommodation (Residential)	Y
13/01055/FULMAJ	15 - 16 Minories & 62 Aldgate High Street, London, EC3N 1A	Tower/ Portsoken	Office	N
21/00658/FULMAJ	7 Devonshire Square, London, EC2M 4YH	Bishopsgate	Office	N
19/01343/FULEIA	Smithfield Market - Poultry Market & General Market & The Annexe Buildings, West Smithfield, London, EC1A 9PS	Farringdon Without	Other (historic building)	N
12/00263/FULMAJ	100 Minories, London, EC3N 1AP	Tower	Hotel	Y
16/00236/FULL	Senator House, 85 Queen Victoria Street, London, EC4V 4AB	Vintry	Office	Y
15/01368/FULL	111 Cannon Street, London, EC4N 5AR	Walbrook	Office	Y
14/00237/FULMAJ	120 Fenchurch Street - Land Bounded By Fenchurch Street, Fen Court, Fenchurch Avenue & Billiter Street, London, EC3	Langbourn	Office	Y

15/00086/FULMAJ	160 Aldersgate Street, London, EC1A 4DD	Farringdon Within	Office	Y
13/00974/FULL	One New Street Square - 75 Shoe Lane And The International Press Centre 76 Shoe Lane And Merchant Centre 1 New Street Square, London, EC4	Castle Baynard	Office	Y
14/00780/FULMAJ	4 Cannon Street, London, EC4M 6YH	Bread Street	Office	N
14/00860/FULMAJ	33 King William Street, London, EC4R 9AS	Bridge	Office	Y
12/01225/FULLEIA	Fleet Building, 40 Shoe Lane, 70 Farringdon Street, Plumtree Court, 42 Shoe Lane, 12 Plumtree Court & 57 Farringdon Street, London, EC4A	Farringdon Within	Office	Y
14/00973/FULMAJ	19 - 20 Garlick Hill & 4 Skinners Lane, London, EC4V 2AU	Vintry	Hotel	Y

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