Places for people & nature

Biodiversity design brief

A document outlining our biodiversity ambitions and the role you can play in creating the best experiences.

Landsec

Places for people and nature

Biodiversity is the measure of all living things, from single-celled organisms to plants and animals. It is not a desirable addition to modern life, but an indispensable partner in upholding environmental health whilst regulating our world and enriching our lives.

Green infrastructure is an essential element in the creation and delivery of functional, healthy and happy places where people thrive. We humans have an intrinsic link with the natural world, which has suffered in recent generations as urbanisation rates have increased and biodiversity has declined. Our urban environments are also faced with unprecedented challenges due to climate change, which will become progressively severe over coming decades.

Our spaces have a vital role to play in linking enhancements for biodiversity with better customer experiences. Our end goal is to create a mechanism to deliver high quality places where **people and nature mutually benefit in the long term.**

We are committed to maximising the biodiversity potential of all of our development and operational sites. In our operations, we have set a target of achieving a **25% biodiversity net gain** across the five sites offering the greatest potential by 2030. Our developments hold a strong potential to deliver meaningful green spaces benefiting people and nature.

This brief presents an approach to the **design, delivery and management of biodiversity** across our development sites to be applied by all project teams. In its application, this Brief should be read alongside our Sustainability Brief for Development.

The Brief is built around the following **five key principles** and presents an implementation process to be met throughout the planning, development and operational phases of our projects.

One: achieve measurable Biodiversity Net Gain
Two: deliver improved green infrastructure and ecosystem service provision
Three: improve health, wellbeing and engagement with nature
Four: embed climate resilience within biodiversity interventions
Five: commit to management and monitoring

We know the best results are achieved when **teams work in synergy towards common goals**; and we hope this document will stimulate interest and discussion amongst our design teams and across disciplines when addressing green infrastructure for our developments whilst creating greater transparency around our expectations and a clear framework for teams to work with to deliver better experiences for our customers.

The five principles

The Brief is built around five key Principles and presents an implementation process to be met throughout the planning, development and operational phases of our projects.

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The five principles

Principle one
Measurable biodiversity net gain

We will leave biodiversity in a measurably better condition on our developments, exceeding minimum standards for biodiversity net gain.

The Policy and Legal Context

The legislative framework in the UK provides protection for a range of plants, animals and habitats. However, this largely focuses on reactive interventions when said receptors are at risk, failing to account for the already degraded baseline of ecosystem health compared with pre-industrialised levels.

A potential solution for this comes in the form of 'biodiversity net gain' (BNG), a concept which has gained considerable support in recent years, having been embedded in national planning policy in England and adopted by industry. The UK Government are also on the verge of mandating BNG at the time of writing. There is still however a need for businesses to pave the way in application of BNG, setting best practice, and delivering schemes which exceed the bare minimum of policy compliance.

Principle one
Measurable biodiversity net gain

Sometimes through developments, we remove green space or habitats to make way for new buildings. We are however committed to the principles of **Biodiversity Net Gain** (BNG). This means providing the right habitats, encouraging appropriate species, and improving the quality of biodiversity reinstated. We are targeting a **15% uplift** in biodiversity compared with pre-development conditions for all new schemes, which is a significant net gain, exceeding typical minimum standards.

This uplift is measured using an industry recognised calculator, known as the **Defra Biodiversity Metric**. This tool allows for the biodiversity value of a site to be measured based on the type of habitat present and its relative condition. Designs can then be drawn up which target an improvement in biodiversity following development.

Before enhancing the ecological value of a site through design, we must first **evaluate the baseline condition**. For this, we'll conduct an assessment of the site in question, categorising and mapping the habitat areas present on site.

A Suitably Qualified Ecologist (SQE) will be engaged for this process. The SQE will ensure that all legislative and policy requirements with respect to biodiversity are fed back to the team and integrated within design and approach. This may include the need to follow local or region-specific guidelines with respect to measuring biodiversity/green infrastructure change, such as the Urban Greening Factor tool embedded within the emerging draft new London Plan, 2019.

Once we have a clear understanding of the baseline ecological value of a site and the legal and policy standards that must be followed, we can then look to design-in measures which will result in **gains beyond baseline conditions** and minimum standards. This will be achieved through early instruction and consultation with the SQE, as well as encouragement of an open dialogue between disciplines.

The **early design stage** is the best opportunity to embed meaningful green interventions. We want to avoid the need to shoe-horn green interventions in at a late stage in design, where opportunities may have been missed and might bring cost and design disruption.

The need for site assessments to comply with BRE ecology requirements will also be considered from the outset of a scheme, with design interventions seeking to maximise BREEAM Land Use and Ecology credit achievement.

How we'll measure success

— Percentage uplift in biodiversity units from pre- to post-development calculated using the Defra biodiversity metric, against our target of 15% uplift.
— The number of BREEAM credits achieved for Land Use and Ecology. We expect the maximum number of credits to be targeted.

The five principles

Principle two
Improved green infrastructure and ecosystem service delivery

We will create green infrastructure which delivers societal benefits alongside those for wildlife.

Green infrastructure describes the network of green and blue urban spaces which are strategically managed and delivered for the benefit of people. If designed well, green infrastructure can help us address a multitude of contemporary issues in urban environments, including disconnection with nature, biodiversity decline, and threats to climate change resilience and ecosystem service delivery.

Ecosystem services are the tangible benefits that we receive as a society from nature. The concept acknowledges that improvements for nature can be mutually beneficial for humanity; good quality green infrastructure which provides a home for wildlife can serve multiple additional functions, including:

- Climate resilience (water management, flood risk management, carbon sequestration)
- Microclimate (air quality, local thermal comfort)
- Wellbeing (sensory, relaxation and stimulation, social engagement and interaction).

Principle two
Improved green infrastructure and ecosystem delivery service

We will therefore favour design features which are:

— Considerate of the site's ecological context and proximity to surrounding green or blue space, accounting for opportunities to **aid connectivity for wildlife**. This includes the creation of green & blue corridors, routes along which wildlife can freely pass; sensitive lighting design with light spill controls and maximisation of opportunities to create new linear habitats. Vertical greening will focus on low management, cost effective solutions such as climber and trellis systems, maximising vertical surface cover where possible.

— Designed to **maximise habitat variety and structure**. Opportunities for the creation of novel habitats (appropriate from an ecological or land use perspective) will be taken, including the provision of living roofs, water features, urban woodland and invertebrate habitat structures. All new buildings will have integrated bird and bat boxes provided, targeting appropriate species in locations recommended by the ecologist.

— Multifunctional, resulting in gains for biodiversity alongside other factors such as **flood risk** (e.g. through rain gardens, swales or other SuDS measures) or **air quality** (e.g. through new tree planting and vertical greening adjacent to roads). Living roof coverage (ideally biodiverse roofs) will be maximised.

— Integrative, both in terms of the form and location of design features amongst the built form, and in a design feature's ability to **engage and connect with people**. Landscaping will include a wide range of species of known value for pollinators. Biosolar roofs which integrate greening with PV panels will be encouraged.

Maximisation of improvements will rely upon all disciplines within the design team working together. The project manager will introduce all relevant consultant teams and encourage cross-disciplinary working; e.g. the drainage engineer will speak with the landscape architect and ecologist to maximise opportunities for SuDS, and the ecologist will engage with the architect and structural engineer to identify opportunities for living roofs.

Ten key ecosystem services of highest relevance and value have been defined based around the priorities of Landsec's Sustainability Strategy. A qualitative judgement will be made by the ecologist on whether these services are delivered by an asset or a proposed development, and if so, the relative extent of delivery be it low, moderate or high. This will be informed by quantitative assessment where possible and will result in an ecosystem delivery score. We're aiming to achieve a score of at least 20 points out of 30. The selection of services and criteria for the delivery bands are outlined in the Ecosystem Service Matrix on the next page.

How we'll measure success

— Ecosystem service delivery score based on the Ecosystem Service Matrix.

— Creation and implementation of green infrastructure strategies for major schemes.

Principle two
Ecosystem service matrix criteria

	Value		
Ecosystem Service	**Low** [1 point]	**Moderate** [2 points]	**High** [3 points]
Polination one	Low (less than 5 species flowering at any one time) diversity of pollinator friendly plants	Moderate (between 5 -15 species flowering at any one time) diversity of pollinator friendly plants	High (over 15 species flowering at any one time) diversity of pollinator friendly plants
Polination two	No invertebrate habitat structure such as log piles or loose friable substrate	Some habitat structure for invertebrates, although fewer than 2 features per $10m^2$	Habitat structure with over 2 features per $10m^2$
Year-round floral interest	Floral species present which flower for 2 months or less of the spring/summer	Floral species present across ≥50% of planting area which flower for 3-4 months throughout the spring/ summer	Floral species present across ≥50% of planting area which provide flowering throughout spring/summer (at least April to September) and provide invertebrate over-winter opportunities/value for phytophagous species
Access	No access and not overlooked	No access and overlooked	Accessible and widely overlooked
Experience	No planting which offers colour, culinary use or scent	≤1/3 of planting offers interest through colour, texture, use or scent	≤2/3 of planting offers interest through colour, texture, use or scent
Social cohesion and engagement	1 – 2 of the 5 ways to wellbeing principles are met through green space provision	3-4 of the 5 ways to wellbeing principles are met through green space provision	All 5 of the 5 ways to wellbeing principles are met through green space provision
Regulatory one (living roof)	Substrate depth averages under 50mm	Substrate depth averages 100mm or more	Substrate depth averages over 150mm with shrub planting and/or high sward; or living roof of any kind integrated with blue roof system
Regulatory two (street tree & planters)	≥ 1/2 of trees, shrubs or planters are constrained by tree pit or planter volume/show sign of decline	≤ 1/3 of trees or planters are constrained by tree pit or planter volume/show sign of decline	All trees and shrubs in good health with capacity to grow and retain water in tree pits/planters
Regulatory three (vegetative cover inc. living roof cover)	≤25% of site area is permeable	26-49% of site area is permeable	≥50% of site area is permeable
Air quality	No cover of species/habitats present with known benefits for localised air quality	Site has up to 20% cover (relative to total footprint) of species/habitats with known benefit for localised air quality	Site has 20% or more cover (relative to total footprint) of species/habitat with known benefit for air quality or has physical barrier for air quality control

The five principles

Principle three
Improved health, well-being and engagement with nature

We will help our customers live happier and healthier lives through the creation of well-designed green space.

Natural elements have a proven positive effect on human sense of wellbeing.

People have become disconnected from nature as rates of urbanisation have increased and diversity and abundance of wildlife have declined. This has coincided with a greater understanding of contemporary health issues, in particular mental health, for which access to nature has been identified as an important tool in prevention and treatment.

When designing green spaces in our developments, we will embed measures delivering direct **tangible benefits upon the health of our customers**. The design of green spaces will apply relevant guidance from the WELL Building Standard as a tool to quantify the benefit to occupants and local communities.

In Central London, the improvement of **localised air quality is a crucial goal**. Living walls containing plants of known value for reducing particulate pollution are a tool to improve the quality of spaces for our customers. Planting which provides added **sensory engagement** alongside focused biodiversity improvement will be favoured, such as scented or colourful herbs, night-scented climbers, year-round flowering shrub and herbaceous species, blossoming trees or edible plants. The location of planting will be considerate of where people are most likely to congregate, e.g. near restaurants, cafés or retail.

Principle three
Improved health, well-being and engagement with nature

In residential developments, we will consider opportunities to provide **growing space** for residents. Taking care of an allotment has been linked to improved mental health and strengthens the feeling of belonging to a community. 'Urban green fingers' guidance can be provided to residents on how to simply and cost effectively manage their own green spaces, however small, encouraging urban gardening and food growing. **Volunteering opportunities** in relation to gardening or green space management will be identified where appropriate.

We'll seek to share the purpose of our green infrastructures with our customers and local communities, to raise awareness and encourage people to take notice of the environment around them.

Exercise and play space opportunities which integrate nature will be encouraged where appropriate, with seating opportunities located near to planting, or in shaded locations beneath tree canopies.

Design principles will take account of the NHS's Five Ways to Wellbeing principles:

- **Connect** – green space design should account for opportunities to encourage people to socialise and connect, building social cohesion amongst a community.
- **Be Active** – green spaces should encourage exercise, be it through creating space for yoga, or providing a nice stop on a running route
- **Take Notice** – green space should include features which catch the eye, engage the senses of passers-by and allow for reflective moments.
- **Give to Others** – this principle focuses on helping others, however green space should allow for participation, perhaps through volunteering opportunities which engage people with community food growing.
- **Learn** – green space should provide a space for events to be held or should be integral to the learning experience itself through providing gardening opportunities for residents or including interpretation boards.

Biophilic design seeks to benefit people through mirroring natural environments, embedding greenery and prioritising prospective user's health and wellbeing. Biophilic design principles will be applied inside and out, with a focus on the use of natural materials, space design, planting and abundant daylight to foster a connection between users and the natural world.

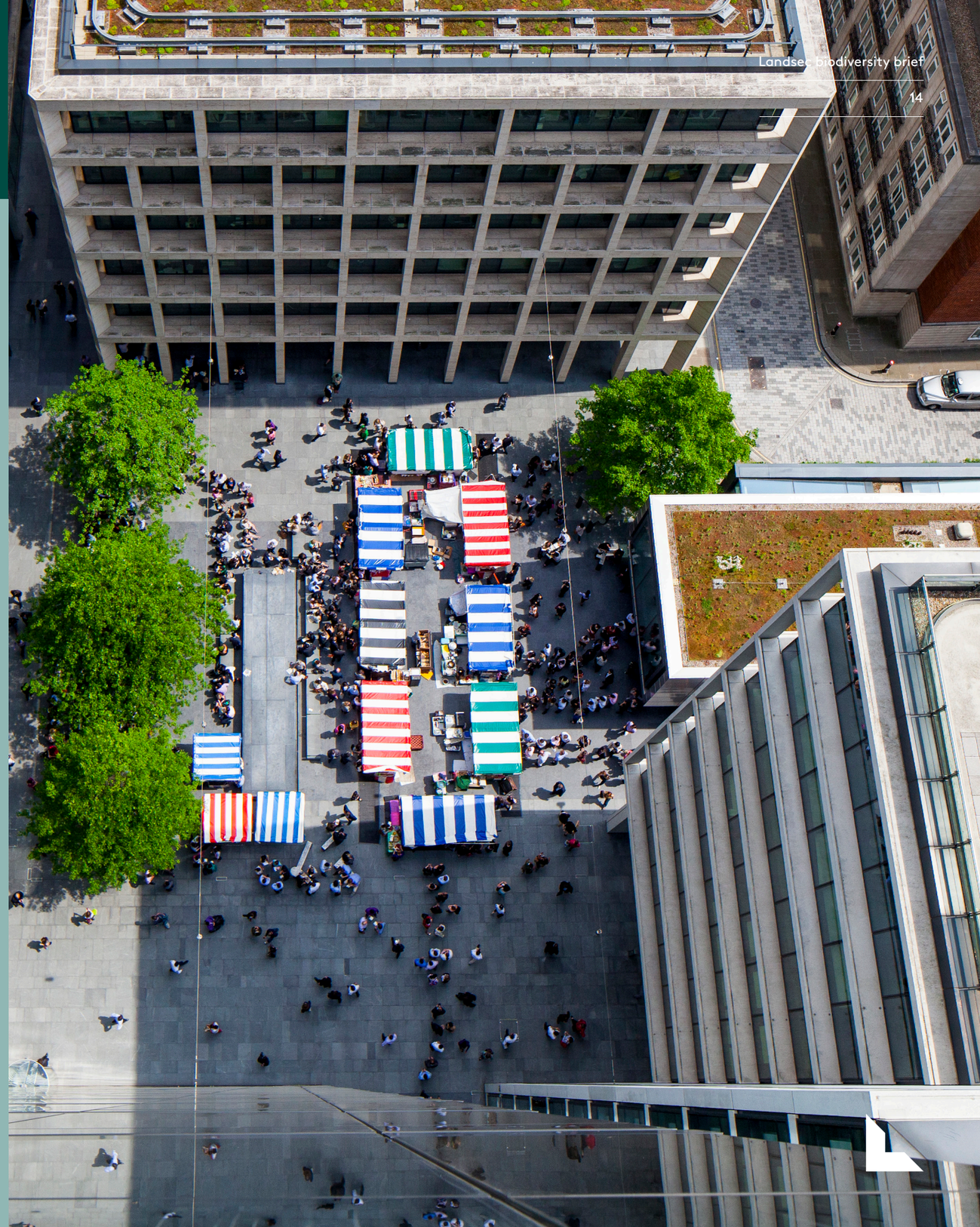
How we'll measure success

- Meeting the requirements of WELL Building Standard that relate to the design of green spaces.
- Improve on the health and wellbeing criteria of the Ecosystem Service Matrix.
- Evaluation of user experience through post-occupancy surveys where appropriate.
- Assessment of proportion of green space provision in relation to total site area and total open accessible space.

The five principles

Principle four
Embedded climate resilience

We will leverage green space to deliver climate resilient developments, with a focus on urban heat island effect, extreme weather events and biosecurity.



Principle four
Embedded climate resilience

Without question, climate change represents the biggest challenge faced by humanity in the 21st century. Actions to address climate change risk can broadly be split into those designed to mitigate its extent, and those to embed resilience, mitigating the inevitable impact.

Biodiversity plays a role in both with ecosystems - helping to regulate the climate, whilst also acting as a tool to create environments more resilient to predicted climate risks.

Our spaces have to be designed to withstand the future conditions that climate change will impose within their lifetime.

Landscaping schemes will demonstrate drought tolerance and hardiness to weather extremes; features which require extensive irrigation will be discouraged. Opportunities for water harvesting for use in irrigation will be maximised.

Where risk is identified, green features which can help **manage surface flood risk** during extreme weather events will be included within schemes. This may include rain gardens and swales, permeable paving or strategically located living roofs. This will also reflect aspirations of Principle 2 relating to the delivery of ecosystem service improvement.

Street tree networks will be designed strategically to **provide shade and manage water risk**, be it periods of drought or extreme weather. Tree species selection will favour those with increased urban and climate resilience. High species diversity is a simple way to enhance biosecurity and reduce disease risk.

Plants will be sourced and grown in UK nurseries to **reduce biosecurity risk**. This will mean a reduced risk of the importation of pest or disease from the Continent or further afield which increasingly threaten native species.

Peat bogs are an important and increasingly rare habitat which are highly valued for their carbon storage ability. Peat-free composts will therefore be used as part of new landscaping.

How we'll measure success

— Appropriate climate resilient design actions are embedded within plans, reflected in outcomes of Landscape Habitat Management Plans and green infrastructure strategies.

— A review of Climate Change Adaptation Risk alongside relevant project specific technical assessments such as a Flood Risk Assessment or Urban Heat Island Assessment.

The five principles

Principle five

Managed and monitored environments

All our schemes will have a Landscape and Habitat Management Plan in place to prescribe actions which are cost effective and proportional to the scale and nature of the design features.

Where we create new green infrastructure, we're committed to **good maintenance**. This means ensuring that our operational teams receive a habitat management plan and the right training.

Green infrastructures will be designed to be low maintenance, requiring minimal irrigation or horticultural input. For the management of our green spaces, we want to encourage **wildlife-friendly gardening principles** such as composting; and discourage unnecessary pruning or mowing. No pesticides or herbicides shall be used (other than when managing invasive/nuisance species which stand to impact the biodiversity value of a feature), with natural pest control methods applied when necessary.

To close the loop and keep learning, we will collect data on the effectiveness of design features, in terms of their ecological functionality, management burden and user perceptions.

How we'll measure success

— Through evidenced implementation of site-specific Landscape and Habitat Management Plans and monitoring of management costs.

Delivering the principles

To deliver the best results, biodiversity enhancements and green infrastructure will be planned from early design stage of our developments, coordinated with the design team and followed-through design and construction. This section presents key biodiversity actions against the RIBA Plan of Work.

Planning timeline

We will favour schemes which approach biodiversity in a consistent, step-wise manner, following the timeline outlined opposite.

0 - 1
Strategic Definition & Brief

- Project Manager and sustainability lead to review Brief and engage with ecologist
- Baseline conditions to be assessed, identifying constraints and opportunities for gains

2 - 4
Design

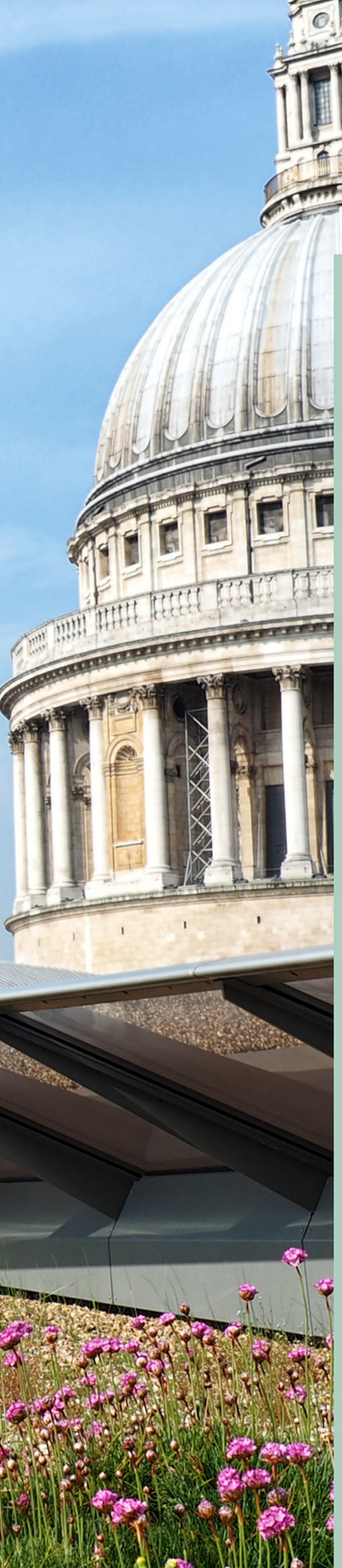
- Cross-disciplinary dialogue to be had to identify opportunities for multifunctional interventions
- Biodiversity and GI strategies to be completed, which include evidence of measurable gains
- Ecosystem service matrix to be completed
- Strategies to include Landscape and Habitat Management Plans (LHMP)

5 - 6
Construction & Handover

- Opportunities for temporary greening on construction site to be identified with delivery partners
- Ecologist to oversee key stages of construction where appropriate and undertake Post Construction Review, confirming compliance with Brief
- Management teams to be briefed on requirements

7
In Use

- LHMPs to be implemented, including monitoring requirements



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