

# The Nine Concepts

Making space for  
nature and beauty



# Introduction

Many of the best things in life come from nature. It makes us feel relaxed and happy. It brings people together and creates a sense of identity and belonging. In a world that can seem tough and drab, nature is beautiful and inspiring. It also plays a fundamental role in the economy. It feeds our families, cools and cleanses our cities, and generates financial value in a myriad of ways.

We all know this. But at the same time, we let nature decline, and as a result species, habitats and communities are under threat. Between 2009 and 2012, London lost 215 hectares of green space, an area the size of Hyde Park and Battersea Park combined. Put that together with fewer bees, fewer trees and rising air pollution, and it represents a fundamental challenge to the way we all live.

In response, Britain has agreed to halt biodiversity loss by 2020. This is commendable. But the truth is, we could go further. We could do more than slow or halt the decline. We could reverse it.

The trick is to start thinking differently. Housebuilding, for example, is often accused of concreting over the countryside but we think it is actually part of the solution. New development can create places with more nature afterwards than before. It can create higher quality habitats and more biodiversity. Building more homes can help us solve multiple problems.

**“New development  
can create places with  
more nature afterwards  
than before”**

# Net biodiversity gain

The Berkeley Group has made a commitment to develop and apply an approach which ensures that all our new developments create a net biodiversity gain. This is part of a strategic plan for the business called Our Vision.

Very simply, this means there will be more nature on every site when Berkeley has finished than when we began.

Doing this demands a partnership approach, bringing together different professions and organisations in order to integrate biodiversity effectively into the design of new development.

# How to use this guide

This guide informs and facilitates cross-disciplinary discussion about biodiversity and achieving a net gain across multiple stakeholders, not just with ecologists or landscape architects.

The guide does not replace the need for a professional ecological survey; the professional opinion of an ecologist is key to recognising existing site conditions and opportunities.

Each concept is included to inspire fresh thinking and provide practical examples of actions that can be taken.

It is not always necessary to apply all nine concepts within this guide to create a beautiful, biodiverse place. Every project is different in terms of its setting and the opportunities to achieve a successful scheme. Relative value should be attributed on a site by site basis.



# Legal framework

A net gain in biodiversity complements the existing legal system for protected species. Design teams still need to apply the mitigation hierarchy to avoid, mitigate or compensate for significant harm to biodiversity in accordance with legislation. The legislation and policy summarised below are important context for this guide:

- The Natural Environment and Rural Communities (NERC) Act 2006 requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'. A developer must show that the protection of habitats and species which are of 'principal importance for the conservation of biodiversity' has been adequately addressed within a development proposal.
- The National Planning Policy Framework (NPPF) is the key national planning policy concerning nature conservation and halting the decline in biodiversity. The Framework specifies the need for protection of designated sites and priority habitats and species. Emphasis is also made for the need for ecological networks via preservation, restoration and re-creation that are more resilient to current and future pressures. Net gain is specifically mentioned three times within the NPPF.
- Biodiversity 2020 details the strategy for the next decade to halt the overall loss of England's biodiversity. It prescribes the inclusion of well-functioning ecosystems and coherent ecological networks to provide better places for nature which are assets for wildlife and people, with an ultimate ambition of providing net gain, as opposed to net biodiversity loss.

# The Nine Concepts

This guide has been produced to provide inspiration and ideas. It offers overarching design concepts that can help to deliver net biodiversity gain on new housing and mixed-use developments. It provides an overview of current research and thinking on the techniques available and the reasons for integrating biodiversity into developments.

The guide is underpinned by three main themes:

- **People** – focussing on human interaction and their experience;
- **Biodiversity** – the consideration of plants and animals;
- **Built Form** – the interrelationship of living elements with physical infrastructure and buildings.

These themes run throughout the guide.

The nine concepts complement Berkeley Group's Social Sustainability Toolkit. The concepts are derived from established research but are not

intended to be prescriptive. They can be used at all stages from pre-planning, through to technical design, detailed design and the way we market new homes and new places.



# 1. Green infrastructure

This involves thinking strategically around how green and blue spaces can be designed to be multi-functional; providing services for people, such as reducing air or noise pollution and flood resilience, whilst at the same time providing habitat for wildlife.

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- A development may include public and private spaces, buildings and pedestrian walkways, water features, meadows, hedgerows and trees. Try to design these to serve multiple functions whilst taking account of their wider setting.
- Think about water management and try to make the best use of it across the site. Slow it down, store it in green roofs and sustainable urban drainage and use it for irrigating planting areas.
- Create a habitat network through the built environment, providing residents with day-to-day interactions with nature and its associated health benefits.
- Choose habitats to create on site that integrate ecologically with the wider area. This will help species that need larger areas of habitat than can be provided on a single development site.
- Features can be tailored to any size of development. For example, surface water run-off can be intercepted by a single planter on a small site or feed into a pond on a larger one.
- Maximise wildlife benefit with multi-functionality by getting the design team, including the landscape architect and ecologist, working together at pre-planning stage.
- At detailed design stage, get the drainage engineers working together with the architects, landscape architects and ecologists to maximise the benefit of water on site. Even small changes such as plant selection and angle of slope can make a difference.



**Example 1: Queen Elizabeth Olympic Park**  
(London Legacy Development Corporation)

Wetlands have been created to improve flood resilience along the River Lea in Stratford that are also valuable wildlife habitat and have a recreational benefit. Adjacent new apartments have green roofs to reduce surface water run-off and provide additional habitat.



**Example 2: Wye Dene**  
(Berkeley)

In order to minimise surface water run-off swales have been created at Wye Dene to manage the excess water. The swales provide an amenity feature for the development and have been planted to provide habitats for wildlife.



## 2. Connectivity

This is about creating, contributing to and protecting the network of habitats that help to link populations of species and provide opportunities for wildlife to thrive. Enhancing connectivity can go hand in hand with improving accessibility for people via walking and cycling routes.

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- Work out the proximity of your development site to existing habitat corridors at the master-planning stage. Check if the site includes “stepping stones” of wildlife habitat that you need to keep.

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- If there is existing wildlife habitat next to your site, can your site add to it? Or can your site include new linear features (such as hedgerows), to form a link to habitat areas beyond the site?

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- Group new habitats together to maximise wildlife benefit. For example, amphibians such as frogs and newts breed in water, but need dry land to forage for insects and cover.

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- Most wildlife will want to roam through your site in search of food, shelter, to breed or to find a new home. Does your site layout facilitate movement for local wildlife? Remember that perceived barriers such as buildings, walls, roads and fences can all be designed to allow movement for different species.

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- Design lighting to avoid shining or reflecting onto wildlife areas and habitat corridors, especially hedgerows, waterbodies and mature tree lines. This will ensure existing or proposed networks are not impaired.

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**Example 1: Woodberry Down**  
(Berkeley)

At Woodberry Down in Hackney, new tree belts, hedgerows and wetlands have been created to marry with existing habitats beyond the site boundary and enhance local wildlife corridors. A new boardwalk has been constructed to allow residents to enjoy this revitalised area.



**Example 2: Red Cross Gardens**  
(Bankside Open Spaces Trust)

The small pond at Red Cross Gardens supports abundant wildlife despite its central London location, including breeding smooth newts, dragonflies and birds. It is one of several natural open spaces in north Southwark that provide habitat stepping stones for wildlife and people.



### 3. Buildings and hard landscaping

This is about using buildings and hard landscaping as opportunities to create wildlife habitat. Greenery can enhance the building's appearance and performance and provide amenity and health benefits.

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- Design wildlife habitat into the building fabric. This can be done in many different ways, such as with green roofs, green walls, bird and bat boxes, planters, balconies and window boxes.

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- Design green roofs that provide different types of habitat such as mounds of soil, deadwood piles, small boulders and pockets of water, which will attract a greater number of invertebrates.

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- Make the most of walls which can provide support to vertical habitat or climbers and provide sheltered conditions for wall-trained fruit trees.

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- Follow guidance on optimal height and orientation when installing bird and bat boxes and locate them close to trees, grassland or water where birds and bats can forage.

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**Example 1: Reuben's Hotel**  
(The Red Carnation Hotel Collection)

Green walls are popular options where space is at a premium. This one on the Reuben's Hotel in London Victoria is thought to be largest of its kind in Europe and is maintained through the re-use of water. The green wall provides much needed greenery and is suitable habitat for foraging invertebrates and bats.



**Example 2: PricewaterhouseCoopers LLP**  
(More London)

The biodiverse green roof on the PwC office in More London includes a range of nutrient-poor substrates that are suitable for a wide range of colourful plants that attract invertebrates.



## 4. Links to the community

**This is about the role of biodiversity in the social life, health and wellbeing of residents and the wider community. It can also provide educational opportunities.**

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- Plan and design community facilities and wildlife areas together so they can provide benefits and not barriers to the use of the site.

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- Design high-valued habitats (such as ponds or a mature tree) where they can be appreciated on a regular basis. Habitats (such as native scrub and hedgerows) are often best positioned along site boundaries.

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- Nurture contact with nature by designing play spaces, with natural materials such as logs and “living” tunnels, close to areas of value for wildlife.

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- Encourage resident’s involvement by providing information about volunteering in welcome packs. Residents could be invited to help build and monitor a range of habitats such as hedgehog houses or bug hotels.

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- Provide information for interesting areas of the site such as explaining the planting design, what wildlife may be seen, or the historical relevance of certain trees planted.

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- Be creative in the way you think about encouraging enjoyment of nature. For example, seating equipped with Wi-Fi could be placed by a mature tree or in sight of a bird-feeder.

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- Include edible plants such as fruiting trees and shrubs that will allow engagement with nature through cultivation and harvesting, as well as benefiting birds such as song thrush.

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**Example 1: QUERCUS – Quality Urban Environments for River Corridor Users and Stakeholders** (London Development Agency)

A new tributary of the River Ravensbourne has been created at Ladywell Fields as part of measures to alleviate flooding in Lewisham town centre. Aside from creating high value wildlife habitat, the scheme has revitalised an under-used open space, and provides opportunities for natural exploration.



**Example 2: The Hamptons**  
(St James)

The 30 acres of a parkland at The Hamptons provides a landscape which protects and enhances local wildlife and also functions as a recreational venue for residents and the general public. A special bird hide has been constructed to allow public viewing.



## 5. Local ecological character and distinctiveness

This is about the role that nature plays in strengthening the sense of place through creating habitats and selecting species that are characteristic to the local landscape or town character.

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- Consult an area's local Biodiversity Action Plan to find out which habitats and plants are appropriate to the site's location. This will reinforce the sense of place.

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  - Habitats can show clear regional variations reflecting traditional farming methods, landscape context, soils and geology. Aim to enhance those existing on site and create new ones where possible.

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  - Maintain local distinctiveness by using plants that occur locally; and try to source stock with a local provenance.

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- Improve the chances of attracting and retaining regionally distinctive species by conserving local populations, improving habitat connectivity and the habitats they need.

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  - Consider planting hedges and orchards using locally distinctive species mixes and varieties that reflect the local area.

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**Example 1: Kidbrooke Village**  
(Berkeley)

Black Poplar are among Britain's most endangered native trees and were a characteristic feature of floodplains. Berkeley teamed up with the London Wildlife Trust and pupils from a local primary school to plant a new avenue of these trees at Kidbrooke Village in the Royal Borough of Greenwich.



**Example 2: Orchard Grove**  
(Berkeley)

At Orchard Grove, Yarnton additional fruit trees have been planted to enhance an existing traditional orchard, a habitat listed in the local Biodiversity Action Plan.



## 6. Habitats and vegetation types

This is about creating habitats that function successfully for wildlife while maximising visual enjoyment for people.

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- Use wavy edges and create gentle transitions from one habitat to another. This will favour colourful butterflies, and potentially slow-worms if local populations exist.

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- Optimise habitat value for a wide range of species by thinking about the pattern, arrangement and height of vegetation. Aim to provide a mosaic of tall flower-rich vegetation, trees, scrub and small areas of open ground.

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- Mimic the rich complexity of natural habitats when designing new planting areas, creating as many different plant layers as possible.

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- Freshwater attracts high biodiversity. Design water features to incorporate gentle slopes, marginal planting and avoid lighting to attract dragonflies, frogs and bats.

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- Plant species-rich hedgerows for their year-round value for wildlife. They can also make effective boundaries and do not take up too much space.

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**Example 1: Neo Bankside**  
(Native Land)

The layered character of a natural woodland has been replicated in planting at Neo Bankside, central London by incorporating trees along with shrubs, ferns, herbaceous plants and grasses. It provides varied habitat and is attractive.



**Example 2: Edenbrook**  
(Berkeley)

Tall, flower-rich vegetation has been created alongside new wetlands at Edenbrook in Hampshire. This provides gradations between wet and dry conditions and variation in the height and density of planting that will allow a wide range of species to thrive.



## 7. Seasonality and maturity

**This is about keeping long-established features and complementing them with planting that gives all-year round interest for people and resources for wildlife.**

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- Mature trees, hedgerows and long-established meadows harbour immense biodiversity. They have historical value and cannot be quickly replicated, so retain them as far as possible on site.

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- Create instant and seasonal splashes of colour by planting quick growing nectar-rich flowers, spring and autumn bulbs within planting borders and meadows. Consider the value of various plant species as wildlife food during the growing season and also for sheltering and breeding during the dormant times of the year.

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- Diseased trees, which pose a safety concern, can be cut down to a safe height, rather than removed.

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- Consider reusing tree stumps on site to form natural sculpture, play features or dead-wood habitat.

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**Example 1: Queen Elizabeth Olympic Park**  
(London Legacy Development Corporation)

Planting schemes at the Queen Elizabeth Olympic Park in Stratford contain a very wide range of plants that flower over a long period. They provide nectar and seeds that provide a sustained food source for many species.



**Example 2: Wimbledon Hill Park**  
(Berkeley)

The retention of many of the mature trees at Wimbledon Hill Park not only benefits local wildlife; they contribute to the character of the development and some have been made into features themselves.



## 8. Species diversity and adaptiveness

This is about achieving an optimal balance of native and horticultural plants that can adapt to future climatic conditions, yet provide an attractive and distinctive landscape throughout the year.

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- Try and use as many different species of native and horticultural plants as possible as this will provide valuable food resources and will attract pollinating insects and birds.

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- Include drought tolerant plants and allow enough space for young trees and hedgerows to grow to maturity.

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- Aim to provide all the resources necessary for the species to persist. For example, honey bees require adequate nectar-rich foraging habitat and water as well as the hive for the colony.

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**Example 1: Common blue butterfly**

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Many charismatic butterfly species require a specific native plant to lay their eggs and for their caterpillar stage to feed on. The common blue, pictured here, uses bird's-foot-trefoil, which is an attractive low-growing plant included in many grassland seed mixes.



**Example 2: Oakgrove  
(Berkeley)**

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A swale, which forms part of the sustainable urban drainage strategy at Oakgrove, Caterham, has been seeded with a range of native wildflowers. The plants chosen are local to this part of Surrey and tolerant of fluctuating water levels.



## 9. Management

This is about ensuring the site is managed to maintain its value for people and wildlife.

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- Integrate a site's Landscape and Ecology Management Plan with the maintenance contract to ensure management prescriptions for wildlife are embedded into long-term maintenance costs and applied across all public realm areas.

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- Provide training to grounds maintenance staff to foster an understanding of the existing and potential wildlife value on site and how to adjust planting to changing climatic conditions.

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- The natural process of succession (or self-seeding) is a free service by nature that can increase the biodiversity value of habitats. Future management of a site can allow this process to create woodlands, meadows and diversify green roofs.

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- Appoint estate managers with good communication skills and an aptitude for community engagement. Use them to explain the value of habitats on site to residents and foster interest and involvement; for example, through a local planting group.

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- Consider how different parts of the site can be managed differently to achieve greater habitat diversity. For example, grassland can be managed as short lawn in high-use areas and allowed to grow tall in quiet areas to provide cover for wildlife.

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**Example 1: Taunton Castle**  
(managed by Taunton Deane Borough Council)

An area of grassland adjacent to Taunton Castle in Somerset has accommodated multiple uses by separating different management areas by a low clipped hedge. This has enabled a meadow to be created in the foreground, enhancing existing scrub and mature trees, whilst retaining the footprint and visual setting of the historic building.



**Example 2: Fitzroy Gate, Isleworth**  
(St James)

Biodiversity is maximised at Fitzroy Gate by providing a mix of native habitats. The nature of the spaces gradually changes, with the formal treatment and ornamental species associated with the buildings progressively becoming more natural and native in character towards the river's edge.



## Further information

IEMA, **Biodiversity Net Gain – Principles and Guidance for UK Construction and Developments**, [www.iema.net/policy/natural-environment/principles-and-guidance](http://www.iema.net/policy/natural-environment/principles-and-guidance)

St William, **First Life, Then Spaces, Then Buildings**, [www.berkeleygroup.co.uk/media/pdf/6/h/St-William-essay-First-life-then-spaces-then-buildings.pdf](http://www.berkeleygroup.co.uk/media/pdf/6/h/St-William-essay-First-life-then-spaces-then-buildings.pdf)

Berkeley Group, **Creating successful places: a toolkit**, [www.berkeleygroup.co.uk/media/pdf/l/h/berkeley-social-sustainability-toolkit.pdf](http://www.berkeleygroup.co.uk/media/pdf/l/h/berkeley-social-sustainability-toolkit.pdf)



# Our commitment to net gain

"Berkeley Group's commitment to delivering a measurable biodiversity net gain will bring fantastic benefits for housing and biodiversity. Their nine concepts approach, bringing together wildlife, people and the built form, is exciting and innovative, and offers a vision for how communities and nature can thrive together. It demonstrates the value of nature for place making and the potential for sustainable development to benefit people and the natural environment."

Natural England

"It is refreshing that Berkeley Homes have embarked on a commitment to secure net gains for biodiversity within their developments. This is a bold step given the nature of the company's core business of residential developments, often within quite challenging sites in terms of space and location. However, the adoption of nine concepts – *Making space for nature and beauty* – that inform the Biodiversity Toolkit should help to embed an increased understanding of the principles for designing and managing high quality landscapes and features that help to secure benefits for nature and for the communities that live in and by Berkeley's developments."

London Wildlife Trust



[www.berkeleygroup.co.uk](http://www.berkeleygroup.co.uk)



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