# VALUABLE GREEN SPACES

HOW TO...

Adding value to a property through green space involves input from a range of specialists. Asset managers have an interest in the outcomes from green space development, and often retain final decision on strategic green space issues. The development of green spaces is usually coordinated by a property manager with support and input from a facilities manager.

Establishing green space involves consideration of the following elements:

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## 1. TARGETING VALUE

### General questions when considering the development of green spaces

The development of green space will be based on a project brief. When defining the brief, a property manager may find consideration of the following questions useful:

**What functions should the green space provide?**
Consider how the functionality requirements of the proposed green space can help to inform the type. For example, a green space that provides a social function for people will need to be accessible. Alternatively, a green space that provides ecological value may benefit from particular habitat types to support local or target species.

**Who are the future users of the green space?**
Consider how the green space may be used in the future to ensure the longevity of the installation. Through the provision of a flexible or multi-functional installation, the requirements of different users can be met over a longer time period.

**Will the green space support BREEAM credits or planning requirements?**
Where a green space is installed to meet specific requirements, consider how these objectives can be clearly set out at the project inception. This will enable the early design phases to consider related constraints or opportunities. For example, a green roof may have implications for the structural design in relation to loading.

**How can green spaces consider multiple value opportunities?**
Consider how combining a range of features may provide a variety of complementary benefits. For example, incorporating biodiverse roofs with photo-voltaic cells and publicly accessible green space, may enable health and wellbeing benefits alongside micro-climate management and renewable energy generation.

### The concept of biophilic design

**The benefits of biophilic design**
Biophilic design is a very visible way of demonstrating that a building is designed to support wellbeing, whilst also contributing to the overall design aesthetic and supporting the brand of an organisation.

The concept of biophilia manifests in a desire for humans to seek connections with nature which, in turn, can have a positive impact on health and wellbeing.

With an estimated 90% of our lives spent indoors[1], biophilic design can enable the positive benefits of exposure to nature. Many elements of the positive impact that buildings can have on health and wellbeing are reflected in the WELL Building Standard.

Incorporating direct or indirect elements of nature into the built environment has been demonstrated to reduce stress, blood pressure levels and heart rates, whilst increasing productivity, creativity and self-reported rates of well-being[2].

1 https://www.bretrust.org.uk/knowledgehub/biophilic-design/

3 https://www.oliverheath.com/biophilic-design-connecting-nature-improve-health-well/

Biophilic design in the workplace has shown to increase creativity and boost employee well-being[3]. It can contribute towards improved patient recovery times in hospitals, reduced crime rates in residential areas, and increased learning ability and test results in schoolsin additional to boosting mood and overall wellbeing.

3 https://www.ansgroupglobal.com/news/principles-and-benefits-biophilic-design

### Biophilic considerations in planning the brief

Considerations of biophilic design should be given from the earliest stages of design to maximise benefit and reduce costs.

Incorporating biophilic design can range in scale and aspiration from the installation of simple green features such as planters or the use of natural patterns and colours, to more complex installations such as green walls or the creation of spaces that can immerse people in nature.

A specialist biophilic designer should be engaged to understand the potential of the project and help to set the brief for more ambitious designs.

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## 3. FEASIBILITY AND DESIGN RISK

When integrating green space into buildings and developments, a property manager may find the following questions useful when considering the feasibility and associated risks.

**What are the space constraints?**
For example, if a green roof is being planned, consider if this has an implication on the location or size of the window cleaning equipment.

**Is the location suitable for selected planting and habitat features?**
For example, consider the amount of natural light required for plants or whether the location of a habitat feature is suitable for the target species.

**What are the maintenance requirements?**
As green spaces are living, it is important to consider the future maintenance requirements for different types of installation at the outset of the project. If maintenance is not thoroughly planned, the installation will not provide consistent value throughout its lifetime.

**Is the building structurally suitable for a new installation?**
For example, consider the structural loading capacity of an existing building. Advice from a suitably qualified structural engineer should be sought before proceeding with any retrofitted installations.

**Is there suitable access to water and electricity?**
For example, water will be required for the establishment of any planting on the installation and may be required for ongoing irrigation.

**Is the space safely accessible?**
For example, it is important that the space can be safely accessed for construction and long-term maintenance purposes.

**How can biophilic design be considered?**
It is important to consider how space is used to maximise the benefits of biophilic design. For example

- Consideration should be given to where people spend most of their time and ensure there is good access to natural light and views.
- How biophilic design elements can be incorporated within areas where the innovative or collaborate behavior are to be promoted.

Many designers will be able to advise on the integration of simple biophilic elements. However, for more complex or aspirational designs, a specialist should be considered.

To maximise the impact, consider the integration of multiple aspects of biophilic design, including planting, textures, colours, lighting and air quality. The layout of space should emphasise biophilic elements that are already available, for example, if there are views over green spaces or areas with excellent natural light.

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## 4. CONTRACTOR SELECTION

To ensure successful installation and establishment of green space installations. A property manager may find the following questions useful when selecting a landscape contractor or designer:

### All projects

**Is the landscape contractor or designer BALI (British Association of Landscape Industries) registered?**
BALI members pledge to carry out their business to the highest industry standards. This involves investing in staff training and skills development, adhering to health and safety regulations, considering the environmental and ethical implications of what they do.

**Can the contractor demonstrate a track record of previous experience?**
Ask the contractor to provide evidence of completed similar schemes. This is an opportunity to see examples of their finished work and to request feedback from previous clients.

### Biophilic design

**Are there specific requirements for the design or maintenance of biophilic elements?**
Through the concept of biophilic design, the built environment seeks to replicate natural elements through the incorporation of vegetation, natural colours, patterns and textures in the physical design of the space. It can also seek to maximise connections with nature outside the building by increasing light quality and promoting views of nature.

### Green roofs

**Does the landscape contractor or designer adhere to the Green Roof Organisation (GRO) Code of Practice?**
The GRO Code has been developed for the UK to ensure the green roof market delivers quality green roofs for the built environment. Unlike most other building product systems, green roofs rely on both a construction and a landscape element in their planning, installation and maintenance.

**Do they adhere to the German Code of Practice known as the FLL?**
FLL is the default Code of Practice for most countries in the world. It gives guidance on green roof specifications, installation and maintenance.

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## 5. COMPLETION, HANDOVER AND MANAGEMENT

Once a green space installation is complete, it is important to that an appropriate handover is undertaken, and that the building management team is aware of information and maintenance requirements relevant to the green space.

A property manager should be aware that the following information should be recorded, as a minimum, for the Health & Safety file:

- As built drawings.
- Specification.
- Landscape Habitat Management Plan.
- Certification and warranties, where relevant.

A Landscape Habitat Management Plan should be established for the ongoing monitoring and maintenance of greenspace installations. This should cover a period of five years from installation completion. It is recommended that the landscape contractor is retained for a minimum of one year, preferably three for more significant projects, post completion to carry out maintenance works. This will help to ensure the successful establishment of planting.

**Communication and working practices**
While occupiers and other building uses often have an innate appreciation of nature, it also is beneficial to communicate the design intent and how the space can support wellbeing and boost creativity.

For example, it is important to consider how working practices can be changed to encourage people to spend time in areas when they can benefit from the biophilic design elements.

## 6. GREEN SPACE TYPES AND HABITAT FEATURES

The decision of the type of green space to install at a property should involve consideration of the aims of the project, the budget and spatial requirements, the requirements of occupiers, and the aspirations of the asset manager.

It is important that asset, property and facilities managers all have an understanding of different green space types and habitat features.

### GREEN SPACE TYPES


Green, blue and biodiverse roofs


Green walls


Modular planters


Street trees


Window boxes and planters


Allotments and food growing


Water features


Sustainable drainage

### Green, blue and biodiverse roofs

Green roofs are created when planting is established on top of a roof structure. Green roofs can be designed as accessible spaces for people, areas to provide visual aesthetic, spaces to support wildlife and ecology or a combination of these.

Green roofs also provide numerous other benefits, such as reduction in water run-off, reduction in the surface temperature of roofs, provision of building insulation, and reduction in the impact of external and internal noise.

While green roofs will require specific maintenance, the level of maintenance activity will depend on the type of green roof installed.

There are numerous types of green roof which should be considered depending on the needs and planned future uses of the installation.

**If the roof will be accessible consider an intensive green roof.**
These green roof systems often include features similar to those in parks and gardens, such as trees, shrubs, paving and furniture. They require a thick substrate and supporting structure suitable for heavy loading.

The deep substrate allows the planting of a wide range of rooting species, including trees and can offer excellent benefits for biodiversity and amenity. When planning an intensive roof, consider including a variety of habitats (such as meadow, hedgerow, pond or native shrub planting) to improve opportunities for wildlife colonisation.

It is also important to consider the health and wellbeing values of the space through the provision of spaces for social interaction, exercise and contemplation such as play areas, workspaces, sports facilities or seating.

These types of roof usually require a higher level of maintenance, often equivalent to a garden or park.

**If the roof is not accessible but visible, consider an extensive green roof.**
These green roofs require a thinner layer of substrate, needing only lightweight layers of free-draining materials to be functional. Extensive green roofs should be planted with a variety of hardy, drought tolerant species such as wildflower, herbs, grasses and sedums.

Where possible, different depths and types of lightweight substrate should be integrated to provide a wider variety of habitats for invertebrates and enable the plug planting of larger plants and shrubs. This will also provide greater aesthetic value to those overlooking the space.

Extensive green roofs require some limited maintenance following establishment.

**If the roof is not accessible or visible, consider a biodiverse roof.**
Biodiverse roofs are created primarily for ecological purposes and often to recreate habitat lost when development occurs or even to enhance existing value. A biodiverse roof is similar to a green roof in its functionalities and benefits it provides to a building but is specifically designed to provide habitat value for a variety of urban species.

The roof can be created using local soils or excavated topsoil from nearby development projects, and can be planted with locally relevant plants, or can be left to colonise naturally. Areas of rubble, gravels, sands, branches and logs can be used to create more diverse habitats for invertebrates and birds.

If left to colonise naturally, biodiverse roofs require very little maintenance.

**When water management is an important aim, consider integrating a blue roof system designed to attenuate or store rainfall.**
A blue roof allows for the build-up of water above the waterproof membrane for a defined period to enable the attenuation of stormwater and control discharge of runoff at a designed flow rate.

Captured water may be reused within the building to flush toilets, water plants or other uses. Blue roofs can also be designed to have a thin layer of substrate and planting above the water storage system to provide ecological value.

For further guidance, refer to the GRO Green Roof Code of Best Practice for the UK.

## Green walls

Green walls, also known as living walls, can have a dramatic impact on an environment due to their potentially impressive aesthetic, and wide-ranging biodiversity benefits.

Green walls can range in type from walls simply planted with climbing plants and wall shrubs, to more complex systems including specific, contoured designs for the façades of buildings. The planting scheme can be tailored to suit the light conditions of the surface upon which they are installed, with shade and drought tolerant species available.

Green walls are likely to host a range of invertebrates, can be planted with berry-bearing plants to provide birds with food, and can be used as a nesting place for breeding birds. Other benefits, including graffiti deterrence, protection of façades from heavy rain and UV light, air quality improvements and noise reduction should also be considered in the design.

## Modular planters

For short-term or easy to install green spaces, modular systems such as the pocket habitat or the sedum tray can be considered.

Modular planters are designed to be retro-fitted onto any area of open space to provide quick-win opportunities for planting and habitat creation. These types of installation are of value where a short term or more cost-effective solution for greening is sought.

The modular planters assist with run-off reduction, noise and heat reduction and can be planted with several species of benefit to local wildlife such as seeding grasses and native flowering plants or filled with a variety of substrates to provide valuable habitats for invertebrates.

Modular systems provide a cost effective and impressive visual amenity, and require little in the way of maintenance, but are likely to require watering during the warmest periods of the year. These systems may be used for temporary or long-term establishment, however, in the case of temporary installations a plan should be made for their relocation at the end of their provisional placement.

## Street trees

Street trees have multiple benefits, including visual aesthetic, microclimate improvements, carbon sequestration, nesting sites for birds and pollen production for insects.

Selection of tree species should be site specific and consider size, canopy density, shape, characteristics and biodiversity potential. Where possible larger tree species should be selected and planted in the ground.

For smaller or more constrained sites trees can be grown in surface mounted planters. A landscape specialist should be consulted to ensure that street trees are suitably positioned to coordinate with other public realm demands, such as underground services.

Site context should be considered in relation to heritage (such as listed façades) and tree species selection.

## Window boxes and planters

Window boxes and planters provide the opportunity to add biodiversity, seasonal interest and ecological value for a small cost.

Maintenance requirements are low and mainly consist of regular watering, particularly throughout the summer, and damaged plants can easily be replaced. Plant species can be selected in accordance with light and moisture conditions for each location. Colour, texture, scent and seasonal variety should be considered for aesthetic value.

Planters can also be used creatively to provide localised shade and shelter, areas for play or to create a sense of place and improve local identity.

## Allotments and food growing

The WELL Building Standard encourages opportunities for 'gardening or cultivation' to enable people to become more engaged with food production processes which can lead to better eating habits and a healthier lifestyle.

Opportunities for food growing can be explored on roof gardens and balconies, in streets, on green walls and in window boxes. Whilst lack of space often renders larger scale food production unviable, value can be generated from food growing as an educational resource, for testing new technologies, local restaurant provision or to engage with building tenants and neighbouring communities.

## Water features

Integrating water features within or adjacent to an ecological installation has numerous benefits including providing a water source for insects and birds.

Access to the water for a range of species should be considered, such as overhanging planting to allow insects access to the water's surface.

The integration of moving water can also provide wellbeing benefits to building occupiers. WELL Building Standard sets requirements for the inclusion of water features in larger scale projects.

## Sustainable drainage

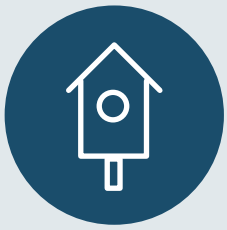
Sustainable drainage should also be considered where appropriate, with an aim to replicate natural systems and enable localised detention and management of storm water. This helps reduce the amount of water runoff entering combined sewers and lessens the risk of flooding.

While the introduction of soft landscape, green roofs, street trees and green walls all have an effective impact in stormwater detention, it may be necessary to incorporate additional sustainable drainage methods such as urban swales and water collection to successfully manage rainfall.

In retrofitting sustainable drainage to existing streets, above ground methods are preferable so not to blur the lines between the new system and existing below ground infrastructure.

Detaining surface water above ground has further values including biodiversity benefits passive cooling, reuse of water through irrigation, pollutant filtration and opportunities for incorporating water into public art or play.

## HABITAT FEATURES



Bird boxes

Invertebrate features

Bird feeders

Bat Boxes

## Bird boxes

As natural roosting and nesting space for birds declines in urban areas, artificial bird boxes can re-create nesting spaces where human activities such as habitat removal have reduced them. Bird boxes should generally be placed away from direct sunlight, and all should be in locations where they can be accessed for maintenance, but where there is minimal likelihood of humans causing a disturbance to them.

Bird boxes can be affixed to the external surfaces of buildings wherever space allows, or, through the use of specially designed hollow bricks or units, nesting space can be built directly into structures or their façades.

A suitably qualified ecologist should be consulted to advise on the box type, quantity and installation. Bird boxes may be generic or species specific, an ecologist shall advise on the type depending upon the species likely to be present.

Generic bird boxes can provide nesting space for robins, blackbirds, blue and great tits, thrushes and more. However, some species of bird require specific nesting conditions to be able to successfully rear their young, including the house sparrow, black redstart and peregrine falcon. For these species, specific nesting boxes can be purchased or built.

## Invertebrate features

Invertebrate features should be designed to provide additional habitat value for a range of invertebrates.

The planting of native vegetation will attract insects, but further features will attract insects with specialist requirements, such as burrowing bees and wasp. These features may include rubble mounds, log piles or insect houses.

A suitably qualified ecologist should be consulted to advise on the type, quantity and installation of the features, depending on the situation presented at each site.

## Bird feeders

Urbanisation of many cities has reduced the availability of food sources for many urban dwelling bird species. The installation and maintenance of bird feeders will provide a rich food source for birds when their need is at its greatest.

Feeders can be filled with seeds, nuts and fruit, or balls of fat can be hung to attract birds to specific locations. Bird feeders can be purchased and put up straight away, or they can be created from recyclable materials, providing opportunities for local engagement and education.

## Bat Boxes

The provision of artificial bat roosts will encourage bats to colonise in urban areas and should be placed in areas which are likely to remain undisturbed by human actions for the foreseeable future.

Bat boxes either come in the form of attachable boxes which can be retrofitted to the external façade of a building, or hollowed bricks/units which can form part of the structure of a building, with holes facing out to allow bats to enter and exit the roosts.

The roosts can be designed for a few bats, or for entire colonies, with a range of specifications to suit the different situations presented at each building.

A suitably qualified ecologist should be consulted to advise on the box type, quantity, location, and the aspect of installation depending on the situation presented for each site.