







# INTRODUCTION

Sky Garden aims to supply its customers with a complete interpretation, design, installation and maintenance service for a range of urban greening solutions. Products selected are high quality, where possible UK regionally procured and meet or exceed specification and performance criteria requirements.

Our services include a full range of living roof and vertical greening products, maintenance and aftercare programs, training and support.

Sky Garden manages the entire installation process from concept to delivery including if required, insulation and PV management, interface detailing, hard area and ballasting works, lifting and logistics.

The company operates nationally from four regional hubs from where sales and operational support is available.

Design services are based at Head Office where the company delivers award winning concepts for clients in all the major private and public sector UK markets.

With expertise that meets the demand of the most complex site and project requirements, Sky Garden offers packages for the general construction, education, retail and health areas of the construction industry as well as landscape, agriculture, horticulture and renewable energy sectors.



## Nationwide Coverage

Sky Garden has four regional offices based in Cheltenham, Manchester, London and Bristol. Strategically located to offer clients local support, products and services to meet their demands on a local or national level.



## Project Delivery

Every project is assessed and interpreted by the estimation team. Suggestions in adherence with specification and improvements to sustainability and system are provided. All aspects of project management are offered completed to the highest quality and safety standards.

## Heritage

Since establishing as Greenfix in 1986, Sky Garden has achieved consistent growth developing the green roof division in 1996 and maintaining a strong relationship guided ethos that provides results, security and reassurance for our clients.

## Supply Chain

Part of the success has been with regional production of key components, primarily living products, blankets, plugs and seed. Regional supply chain also provides us with value engineering options and ultimately successful delivery of on budget projects for our customers.

## Sky Garden Partners

With a range of industry membrane manufacturers including IKO, Sika, Protan, PDT, Prelasti, Euroclad, Rigidel, Icopal, Stirling Lloyd, TOR, Renolit and ICB. Sky Garden can produce green roof systems compatible with many of the UK's leading specifications.

## Training

Sky Garden offers a range of services to increase knowledge along with an accredited installer program for partner contractors.



# SKY GARDEN CLASSIFICATIONS

Green roofing generally falls into one of two main categories, Intensive Systems and Extensive Systems. Systems are governed by guidelines rather than standards; GRO, FLL, NHBC and Building Regs are all considered when planning a system.

## Intensive Systems

Which comprise a range of landscape areas for communal use, incorporating a range of larger plant, occasionally tree stock, deeper and heavier substrates. Intensive systems tend to be heavier trafficked so designs accommodate this requirement.

## Extensive Systems

Which are lighter, installed for aesthetic or environmental/ecological function, designed to specific loading and performance requirements, low traffic, generally maintenance only and with a high level of self sufficiency. Systems are usually blanket, plug or seed but can include bio-diverse and modular systems.

## Considerations

Green roof design is tailored to the requirements of the site, elements, location and known weather variants. When selecting components, key considerations affect the selection process.

- Site and logistics.
- Aspect/exposure (coastal)
- Wind/sun/shade/light/water availability
- Location/area of the country
- Winter temperature
- Aftercare
- Access



When designing the plant species type, all site conditions are considered and the appropriate mix will adhere site and roof variants.

The selected components will be the most suitable to meet the demands of the site and specification. The components will be sustainably, high quality and meet all performance criteria.

System choice is driven by several factors. These include aesthetics, cost, component selection, coverage, and bio-diversity. Green roof systems use a variety of plant material, species compatibility is measured in five ways:

- Bio-diversity
- Pollen provision suitable for foraging
- Nectar provision suitable for foraging
- Habitat provision
- Sustainability



# SKY GARDEN GREEN ROOFING

## Products

Green roofing comprises a variety of systems, some for instant impact (blankets), some for ecological and environmental function (bio-diverse) and some for general use and leisure (intensive).

## Applications

Green roofs are increasing in popularity both in urban and rural areas, roofs are selected for environmental reasons, to increase habitat provision and meet ecological guidelines, to mask or blend a building into its surroundings, to aid water management, reduce run off and reduce pressure on antiquated drainage systems, to reduce carbon and air pollutants and to improve the function of a building whilst reducing noise pollution and energy costs.



## Use

**Blanket systems:** pre-grown sedum, wildflower or hybrid systems for instant greening.

**Plug and seeded systems** for greater species diversity and ecological function.

**Bio-diverse systems** for environmental and ecologically sensitive sites requiring careful species and habitat preservation.

**Modular systems** for locations not suitable for extensive products, pitched roof applications and tight access situations.

**Turf systems** for communal use or meadowland re creation using deep substrate beds for load bearing decks and podiums.



## Benefits

Water management, air pollutant reduction, ecological and environmental function.

Green roof systems are designed and installed to meet quality, safety, sustainability, aesthetic and industry requirements.

## Maintenance and Aftercare

Green roof warranties are tied to aftercare programs, all roofs need a certain level of maintenance to remove invasive or damaging specimens.

Maintenance packages are tailored to the needs of the project, sector (new build or refurbishment) and building aspirations for the roof system.



# SKY GARDEN MODULAR SYSTEMS

## Products

Modular systems are used where applications dictate extensive materials are not appropriate or where membrane systems need inspection.

## Applications

Modular systems are used in several key areas of the new build and refurbishment markets. They are pre-grown and simple to install, the products lock together and tend to have integrated irrigation systems and retention systems for roof slopes in excess of 12°.



## Use

**Modular systems:** pre-formed cells that can be finished with sedum or wildflower blanket, plug or seeded options, bio-diverse or bespoke mixed species to suit all requirements.

**Pitched roofs systems** where the locking mechanism allows for simply application to roofs with slopes up to 20° and above if suitable retention is introduced.

**Limited access** situations where crane movement of components is impossible, modules can be carried in lifts and by stairwell to roof areas.

**Inspection,** where membrane systems or outlets need inspection the tray system clips open and allows this process to be carried out.

**Temporary,** suitable as a system that only remains in place as a screen for a given period of time, practical up to 3 years before the system fully knits together.

## Benefits

- Lightweight, pre-grown, system versatile, semi lightweight
- Aesthetic & sustainable
- Suitable for flat and pitched roof applications

## Maintenance and Aftercare

Aftercare services similar to the extensive green roof systems.





# SKY GARDEN BIO-DIVERSITY

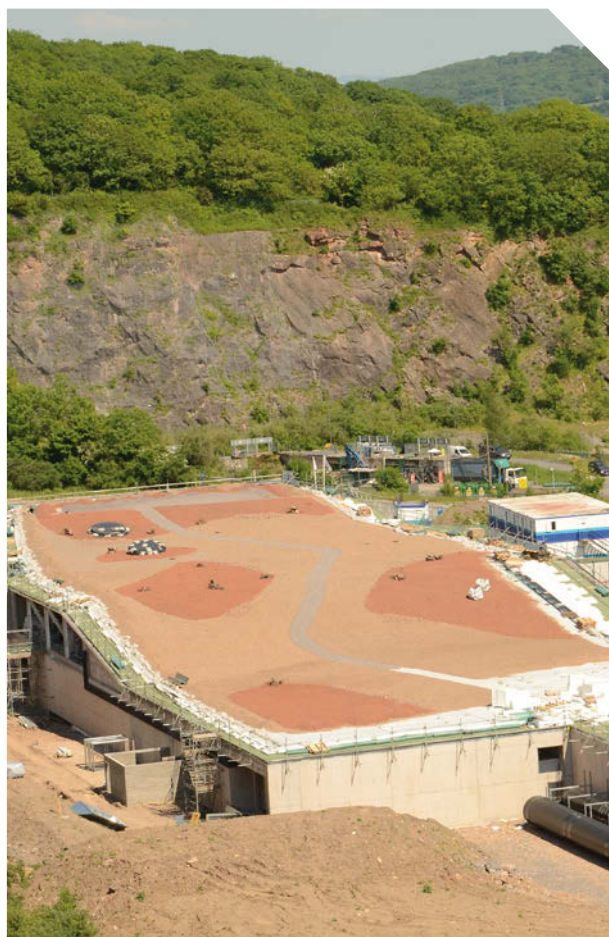
One of the most important aspects of green roof design is allowance for suitable system bio-diversity through species and habitat provision following site, local and national BAP (Bio-Diversity Action Plan) recommendations.

Bio-diversity plans will dictate requirements a green roof must meet. These may include:

(1) Provision of habitats for key bird, bat, insect or bee species, (2) Plant species diversity to provide suitable foraging potential for identified bee, other invertebrates and bird, (3) Wall based habitat provision for a range of bat and bird species, (4) Insect hibernacula incorporated into surface substrates and habitats, (5) Particular use of site or local materials.

Bio-diversity also considers the type of material used, where it has been sourced from, the distance it has travelled to site and the percentage of recycled content.

Sky Garden see bio-diversity as a defining area of green roof evolution and alongside standard extensive systems can provide bio-diverse modules and blankets to compliment some project designs.



## Habitat Construction

A key aspect of every bio-diverse system is the provision of habitat areas, these can be incorporated in a variety of ways:

- Habitat construction is driven by local and national bio-diversity action plans, site bio-diversity assessments and ecology plans.
- Use of substrates incorporating sand beds that allow for varied plant establishment and offer habitat potential to ground burrowing insects and small mammals.
- Stone piles on sand beds to encourage ground dwelling bee and insects and some small birds.
- Boulder piles providing larger off ground habitat potential for insects, bats and birds.
- Seasoned soft and hardwood piles that provide shelter and habitats for birds, small mammals, bees, bats and insects.
- Bare areas to maximise foraging capacity of bird species assuming allowance for invertebrate development has been made.

Habitat provision is a functional requirement for bio-diverse and brown roofs, where applicable material is available from site; it can be incorporated into habitat design.



## Plant Species

Traditional bio-diverse or brown roofing re-uses site plant material to maintain ecosystems. Material is removed from site, stored and returned to populate the roof.

Blended bio-diverse mixes are available if site material is not available that offer herbs, grasses, wildflower and cornflower, these blend with self seeding policies normally associated with this system.

# SKY GARDEN VERTICAL SYSTEMS

## Products

Vertical systems are used to complete buildings with high aesthetic finishes that compliment ecological and environmental functions of the build, the systems comprise high species numbers, can incorporate habitat provision for a range of bird and bat species and are adaptable for internal and external applications using modular or wire frame technology.

## Applications

Modular systems can be used as permanent or temporary screens, internally and externally utilising conventional fixing and mounting mechanisms.

Modules are pre-established with a range of plant finishes suitable for the aspect and exposure of the site. Systems incorporate irrigation systems, feeding and monitoring processes.

## Use

**Modular green wall systems** are pre-grown and fit to wall cladding details, require complex water and feed systems, tend to work hydroponically and require high levels of remedial maintenance.

**Wire systems** require a wall to be covered with a wire framework that has ground planted species trained across it. Coverage is not instant but the plant material is more sustainable and self sufficient

**Green screens** are pre-grown, tend to be 2-3m in height and can be ground planted or used in planters where mobility is required. These are often Hedera (Ivy), Beech or mixed deciduous and designed to screen not necessarily flower.

## Benefits

- Cladding and screening of buildings, sites and industry.
- Aesthetics and environmental function.
- An aid to water run off use and management.
- Ecology and acoustic reduction.

## Maintenance and Aftercare

Green walls are high maintenance systems that require regular remedial intervention, correct use of water and feed and management of external pressures and conditions.



# SKY GARDEN LANDSCAPE

## Products

The landscape and green roof markets are linked through project relevance as many tenders incorporate disciplines from both areas.

All aspects of hard and soft landscaping, production centres for specialist drought tolerant tree and shrub species and construction of planters, podium, paths and roads, slabs and decking are considered on a project basis.

## Applications

Experience is critical so fully trained industry installers are used and Sky Garden offer a bespoke estimation service for landscape and associated green roofing works.

Projects often require higher levels of interpretation, installation expertise and aftercare so packages are project specific.

## Use

**Podium landscaping**, all aspects of podium works are considered, including drainage systems, pathways and extensive landscape, trees and intensive planting, water and leisure areas.

**Plant works**, the company has an extensive network of grower partnerships that can facilitate the most challenging of plant specifications.

**Drought tolerance**, a special range of drought tolerant plant material suitable for roofing and podium works is available.



**Hard landscaping**, all areas of hard landscaping including raised beds, slab, block and deck detailing is considered.

**Roof landscaping**, where green roofs interface with ballast, slab, artificial and deck areas.

**Hybrid systems**, artificial systems are becoming more prevalent on roofs where leisure and communal use is the major driver but where different finishes and textures are required.

## Benefits

High visibility systems with a range of finishes, plants, trees, aesthetics and functions

## Maintenance and Aftercare

Maintenance packages to fit the requirements of the project are available if required.



# SKY GARDEN REGIONAL PRODUCTION TEMPLATE

## Products

Roofs can be alien environments for plants and increasingly regional success and speed of establishment is dependent on the suitability of material, hardening off process and location of production compared to installation requirements.

## Applications

Sedum, wildflower, bespoke and hybrid blanket products are produced on a regional template with production zones in the South East, North and Scotland whilst several units outside Cheltenham cater for blanket, plug and drought tolerant production.



## Use

**Blanket systems**, produced on a regional basis to ensure material has optimal opportunity to establish and thrive once installed on the roof. Product is field hardened and harvested as required, the most applicable product is selected for each regional project.

**Plugs & Shoots**, produced in the West Midlands and hardened on site.



## Benefits

Soft product often struggles on the roof, tender material can be burnt from wind scorch and temperature exposure if material is supplied from a more temperate or protected production facility. Regional and hardened product is produced to mirror as much as possible the site conditions and plant material will establish better and quicker.

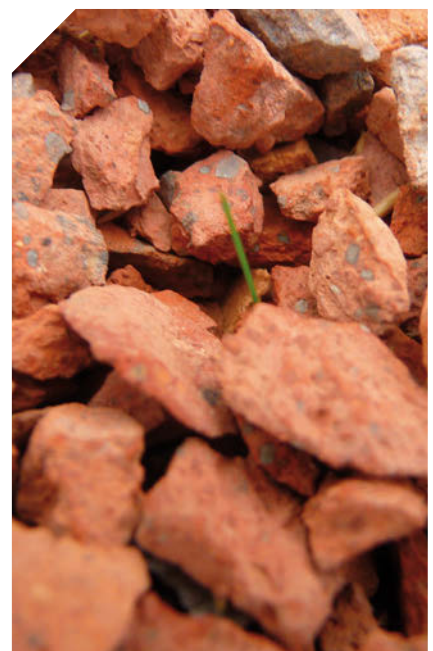
## Maintenance and Aftercare

All production material is monitored and mother stock is maintained to prevent species cross over and mix contamination. Bare zones surround all production areas and seed nets are erected to minimise the spread of weed from neighbouring areas at key times of the year.



## Substrates

Substrates are blended regionally using virgin crushed brick, aggregate and clay particles, composted pine/bark mulch or green waste and comprise a maximum of 20% organic content.





# SKY GARDEN SOLAR SYSTEMS

## Products

Installing a solar PV system is a visible statement about being environmentally aware and as such can also focus building users and householder's minds on their energy consumption and green credentials as a whole.

## Applications

There are two main financial benefits from a PV system. Firstly the free electricity which is available – this naturally helps reduce energy overheads and provides greater supply security with some future insulation from the cost rises associated with traditional fossil fuels.

Secondly most grid connected installations will be eligible to obtain regular payments under the governments Feed in Tariff payments system. This is an index linked and guaranteed return for 20 years that enables a profit to be generated from the PV system (typical ROI 10-14%). The scheme provides direct payments to individuals and organisations from utility companies who are obliged to buy renewable electricity at fixed, above-market, rates set by the Government.

## Use

**Domestic Solar**, buildings with a pitched roof orientated SW & SE or a reasonable size flat roof space can all benefit from PV. Regardless of building type, height and location in most cases Sky Garden will be able to offer a secure solution

**Commercial Solar**, ballasted and compatible fixed template systems to achieve a range of outputs are available. Output design and specification is building specific and completed on request.

**Solar Thermal**, heating systems applicable for commercial builds available if required, applicable for health and school facilities with heavy water use or swimming pools.

**Ground Based Solar**, field based systems connected to the grid, broad acre and dependent on planning and local conditions, regulations and subsidy considerations are part of the pre-planning process that are part of an all-round service package.

## Benefits

Investing in a zero CO<sub>2</sub> energy production method can significantly reduce a building's carbon footprint, 20 tonnes of CO<sub>2</sub> per year can be saved by a typical 10kW PV system (0.43kg of CO<sub>2</sub>/kWh). With no moving parts and no energy transportation, on site PV energy generation easily enables organisations to obtain BREEAM rating credits and meet their Carbon Reduction Commitments.

## Maintenance and Aftercare

Project management and roofing teams operate nationwide and can deliver a high quality service with experience in providing a smooth integration with other site works. A full design, install and commission service is provided for the PV system and advice about location on the roof, ballasting and options on how best to integrate with a green roof are all given.

Full cleaning and interface maintenance is provided as part of the package.



# SKY GARDEN WATER MANAGEMENT

## Products

Water management now plays a vital role in green roof design, whether in moderating run off, storage, green roof attenuation, blue roof tanking systems or harvesting. How water is used is a pivotal part of the construction process.

## Applications

When designing the requirements of a green roof, the question of water management can often be compromised by cost efficacy and weight load limitations. Substrate beds are constructed to allow free drainage or developed with water holding capacity. Drainage systems can moderate run off even when the system is saturated helping drainage systems to cope following storms.



## Use

**System attenuation**, designed into the system to manage water flow and the amount of rainfall the system can hold and use.

**Harvesting**, systems can be built to allow free draining that feeds harvesting tanks and is used for ground and roof top irrigation.

**Storage**, if weight and funds permit below system and wall mounted storage pods can be used to control and moderate water leaving the roof in a fully controlled fashion.

**Blue Roofs**, tanking systems with restricted outlet technology that hold and control water beneath and within ballasted systems.

**Irrigation**, temporary and permanent systems with recirculation potential, solar sensors and roof moisture sensors can make this a fully automated process.

**Monitoring**, wireless moisture sensors that link to smart phone technology can now warn of roof problems to a control hub anywhere in the country.

## Benefits

Managing water will relieve pressure on antiquated or pressurised drainage systems

Green roofs will reduce dramatically the speed water leaves the roof compared to a standard flat roof system.

Systems can be designed to use large percentages of average rainfall and still restrict run off even when fully saturated.

Storage on roofs can aid periods of drought and ensure the roof and ground based plantings are not compromised when watering is restricted.

## Maintenance and Aftercare

All irrigation, harvesting and storage systems are maintained as part of the system installation package. Green roof programs will normally include irrigation assessments and winter de commissioning of surface systems that would be damaged by persistent cold weather.

## BLUE ROOFING

Blue roofs are designed to harness the efficacy of storm water controls instead and sometimes including vegetation systems for the attenuation of water run off. Blue roofs tend to occur on large open roof spaces with high capture capacity, normally seen in commercial development, with wide gutters and a robust waterproof tanking membrane.

## Benefits

The benefits of blue roofing are water capture and run off control, encapsulated cell systems compatible with green roof and ballasted systems, better harvesting and delivery controls of stored water, closed systems so minimal risk of contamination or disease cultivation.

Blue roofs use controls above outlets to regulate storm water runoff from the roof, preventing the downstream drainage system from surcharging and flooding. Some storm water may be temporarily stored on the roof while the discharge can be released to a storm water harvesting or infiltration system, or a portion can be discharged to the drainage system at a relatively slower flow rate.

In many circumstances, blue roofs actually control potential costs related to storm water flooding.





# SKY GARDEN COMPONENT SELECTION

A green roof system comprises a range of primary and secondary selections.

## Primary

- 1. Protection layer**  
Geo synthetic fleece separating the drainage board from the membrane
- 2. Drainage layer**  
Water retention and drainage cell, rigid, 12-60mm
- 3. Filter layer**  
Geo synthetic fleece separating the drainage board from the substrate
- 4. Substrate layer**  
Blended crushed brick substrate, topsoil, bio-diverse substrate 40-200mm
- 5. Surface finish**  
Pre-established blanket, plug, seed or modular finish 30-50mm



## Secondary

- 1. Surface contour**  
Substrate or system surface contour for increased diversity +/- 20-100mm
- 2. Habitat creation**  
Substrate blends, stone, boulder, aggregate and wood surface habitats
- 3. River stone margin**  
300mm standard detail 20:40 washed river stone to system edge
- 4. Metal retention / separation up stand**  
Aluminium up stand as system retention or separation between stone and system, 0.9-3mm
- 5. Irrigation**  
Temporary sprinkler and permanent sub-terranean systems to roof top sources
- 6. Maintenance**  
System remedial and inspection visits to suit project and system



Sky Garden's UK grown blankets have been developed specifically for extensive living roof systems, producing an attractive range of flora that in turn attracts a wide range of fauna on to the roof.

Sky Garden's blanket substrate is a blend of recycled crushed brick and organic material, allowing for a free draining low nutrient and moisture retentive growing medium.

Sky Garden's water retention and drainage boards are designed specifically for living roofs. The bonded filter fleece prevents any blockages, the retention cups store water for healthy growth and the perforations allow for drainage of excess water.

The protection fleece adds an extra layer of defence to the waterproofing layer.

# SKY GARDEN COMPONENT SELECTION

[illegible]



# SKY GARDEN SEDUM BLANKET (SGS02)



## System Compatibility

New Build warm and cold  
Refurbishment  
Inverted

●  
●  
●

## Establishment

Established  
% cover installed

●  
90

## Functions and Drivers

Aesthetics  
Sustainability  
Habitat provision  
BAP compliance  
BREEAM calculation  
Attenuation aid  
Carbon absorption  
Thermal improvement  
Acoustic improvement

●  
●  
●  
●  
●  
●  
●  
●  
●

## Use

Sedum  
Wildflower  
Plug or seed/shoot  
Shrubs and trees  
Turf systems

●  
●  
●  
●  
●

## Roof Slopes

Flat  
0-5°  
Up to 12°  
Up to 20°  
Up to 45°

●  
●  
●  
●  
●

## Weight

Weight, wet (kg/m²)  
Weight, dry (kg/m²)

90  
80

## Typical Maintenance

Visits per year

2

## System Performance

Substrate Depth (mm)  
Drainage board depth (mm)  
Drainage water storage (l/m²)  
Substrate run off reduction %  
Water use potential %  
Harvesting compatibility  
Storage compatibility  
Habitat provision  
Nectar foraging provision  
Pollen foraging provision

50+10  
20  
8-10  
60  
60  
Yes  
Yes  
●  
●  
●

Suitable for application ●  
May be compatible ●  
Not suitable ●

## Product

### SGS02 Pre-Grown Sedum Blanket

Regionally produced 10-12 species blanket.

12-18 month established. UK provenance species pre-established and field hardened.

The product contains a range of sedum and alpine varieties for sun and partial shade and is produced through a biodegradable woven grid to ensure integrity in transport and installation.

## Applications

Systems are suitable for both new build and refurbishment. Roof pitches up to 45° can be greened but over 12° retention systems are required.

Blankets offer instant greening solutions and the system is suitable for high visibility situations where established finishes are required. The system weight allows for inverted system ballasting as dry weights exceed 80kg/m².

## Maintenance

Sedum blanket systems are designed to be low maintenance, species selection ensures that the roof will evolve successfully but intervention is sometimes required to minimise invasive urban species.

## Irrigation

Sedum blanket systems with a minimum of 50mm substrate may require irrigation for the first six months post installation. Once established consideration is required only during elongated periods of drought (6-8 weeks).

## Additions

Wildflower, cornflower, herbs or perennials can be added to enhance bio-diversity (growing time 8-12 months, variety dependent).

## Benefits

- Instant greening
- Better establishment
- Less maintenance than immature systems

## Component Description

### (SGPL0102) Protection Layer

2mm geo synthetic filter fleece

### (SGRDL01020) Drainage Layer

20mm drainage and retention cell

### (SGFL0101) Filtration Layer

1.1mm geo synthetic filtration fleece

### (SGSS01050) Substrate Layer

50mm blended 90:10 crushed brick

### (SGSB01030) Vegetation Layer

30mm sedum blanket

## Species Number

10-12

## Contour

System laid flat

## Habitats

Not as standard

## Additional Items to standard system offer

### River Stone detail (edge)

300mm (20:40) stone detail

### River Stone detail (penetrations)

150-300mm (20:40) stone detail

### Metal Retention Detail

2mm bonded or ballasted system

### Metal Separation Detail

1.2mm bonded or ballasted system

## Irrigation

Recommended for establishment and periods of drought

## Additional Species

Regional wildflower and cornflower over seed  
1-2gms/m²

## Habitat Creation and Contour

### Habitat Creation

Rock and log piles within sedum blanket system

### System Contour

Light 20mm contour can be specified at design

# SKY GARDEN WILDFLOWER BLANKET (SGV01)



## System Compatibility

New Build warm and cold	●
Refurbishment	●
Inverted	●

## Establishment

Established	●
% cover installed	90

## Functions and Drivers

Aesthetics	●
Sustainability	●
Habitat provision	●
BAP compliance	●
BREEAM calculation	●
Attenuation aid	●
Carbon absorption	●
Thermal improvement	●
Acoustic improvement	●

## Use

Sedum	●
Wildflower	●
Plug or seed/shoot	●
Shrubs and trees	●
Turf systems	●

## Roof Slopes

Flat	●
0-5°	●
Up to 12°	●
Up to 20°	●
Up to 45°	●

## Weight

Weight, wet (kg/m²)	140
Weight, dry (kg/m²)	100

## Typical Maintenance

Visits per year	2
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## System Performance

Substrate Depth (mm)	80+10
Drainage board depth (mm)	20
Drainage water storage (l/m²)	8-10
Substrate run off reduction %	70
Water use potential %	70
Harvesting compatibility	Yes
Storage compatibility	Yes
Habitat provision	●
Nectar foraging provision	●
Pollen foraging provision	●

Suitable for application	●
May be compatible	●
Not suitable	●

## Product

### SGV01 Pre-Grown Wildflower Blanket

Regionally produced 25-30 species blanket.

12-18 month established. UK provenance species pre-established and field hardened. The product contains a range of wildflower, herbs, perennial plants, cornflower, dwarf grasses. The mix is designed to be sun and partial shade tolerant and is produced through a biodegradable woven grid to ensure integrity in transport and installation.

## Applications

Systems are suitable for both new build but generally too heavy for refurbishment. Roof pitches up to 15° can be greened but over 15° retention and irrigation are required.

Blankets offer instant greening solutions and the system is suitable for high visibility situations where established finishes are required. The system weight allows for inverted system ballasting as dry weights exceed 80kg/m².

## Maintenance

Wildflower blanket systems are designed to be low maintenance, species selection ensures that the roof will evolve successfully but intervention is sometimes required to minimise invasive urban species. Some wildflower systems benefit from flower removal once a year to maintain species diversity.

## Irrigation

Wildflower Blanket systems with a minimum of 80mm substrate may require irrigation for the first six months post installation and then periodically through the summer to maintain aesthetic performance.

## Additions

Wildflower, cornflower, herbs or perennials can be added to enhance bio-diversity (growing time 8-12 months, variety dependent).

## Benefits

- Instant greening & better establishment
- Less maintenance than immature systems
- Greater species diversity
- Greater ecological function
- Better habitat and pollen/nectar provision

## Component Description

### (SGPL0102) Protection Layer

2mm geo synthetic filter fleece

### (SGRDL01020) Drainage Layer

20mm drainage and retention cell

### (SGFL0101) Filtration Layer

1.1mm geo synthetic filtration fleece

### (SGBDS01080) Substrate Layer

80mm blended 80:20 crushed brick

### (SGSB01030) Vegetation Layer

30mm wildflower blanket

## Species Number

25-30

## Contour

System laid flat

## Habitats

Not as standard

## Additional Items to standard system offer

### River Stone detail (edge)

300mm (20:40) stone detail

### River Stone detail (penetrations)

150-300mm (20:40) stone detail

### Metal Retention Detail

2mm bonded or ballasted system

### Metal Separation Detail

1.2mm bonded or ballasted system

## Irrigation

Recommended for establishment and periods of drought

## Additional Species

Regional wildflower and cornflower over seed 1-2gms/m²

## Habitat Creation and Contour

### Habitat Creation

Rock and log piles within sedum blanket system

### System Contour

Light 20mm contour can be specified at design



# SKY GARDEN SEED AND SHOOT (SGS04)



## System Compatibility

New Build warm and cold	●
Refurbishment	●
Inverted	●

## Establishment

Established	●
% cover installed	25

## Functions and Drivers

Aesthetics	●
Sustainability	●
Habitat provision	●
BAP compliance	●
BREEAM calculation	●
Attenuation aid	●
Carbon absorption	●
Thermal improvement	●
Acoustic improvement	●

## Use

Sedum	●
Wildflower	●
Plug or seed/shoot	●
Shrubs and trees	●
Turf systems	●

## Roof Slopes

Flat	●
0-5°	●
Up to 12°	●
Up to 20°	●
Up to 45°	●

## Weight

Weight, wet (kg/m²)	120
Weight, dry (kg/m²)	90

## Typical Maintenance

Visits per year	2
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## System Performance

Substrate Depth (mm)	80+10
Drainage board depth (mm)	20
Drainage water storage (l/m²)	8-10
Substrate run off reduction %	70
Water use potential %	70
Harvesting compatibility	Yes
Storage compatibility	Yes
Habitat provision	●
Nectar foraging provision	●
Pollen foraging provision	●

Suitable for application	●
May be compatible	●
Not suitable	●

## Product

### SGS04 Sedum Seed and Shoot System

Regionally sourced seed and shoot.  
Seed (mixed) sedum and alpine 1.5gms/m².  
Shoot (mixed fresh) 100gms/m².

UK provenance, shoots field harvested from single species mother stock. The product contains a range of sedum and alpine seed and sedum mixed species shoots. The mix is broadcast to the surface of the substrate with a tackyfier and watered thoroughly and consistently until germination and rooting is complete.

## Applications

Systems are suitable for both new build and refurbishment. Roof pitches up to 15° can be greened but over 15° the system is not sustainable. Immature systems offer greater species diversity but take up to 36 months to establish with the correct roof management and maintenance systems in place. The system weight allows for inverted system ballasting as dry weights exceed 80kg/m².

## Maintenance

Immature systems require greater levels of maintenance during establishment. Open substrates can lead to weed invasion and bird damage is often experienced on these systems. There is a high need for irrigation, especially where shoots are used if installed late Spring – Summer.

## Irrigation

Immature systems require an irrigation system during establishment, especially where shoots or plugs are used. Systems will be required through the first Summer and then periods of hot dry conditions.

## Additions

Wildflower, cornflower, herbs or perennials can be added to enhance bio-diversity (additional seed mixes).

## Benefits

- Greater species diversity
- Greater ecological function
- Better habitat and pollen/nectar provision

## Component Description

### (SGPL0102) Protection Layer

2mm geo synthetic filter fleece

### (SGRDL01020) Drainage Layer

20mm drainage and retention cell

### (SGFL0101) Filtration Layer

1.1mm geo synthetic filtration fleece

### (SGSSS01080) Substrate Layer

80mm blended 90:10 crushed brick

### (SGSSS01002) Vegetation Layer

Sedum seed and shoot mix 1.5gm + 100gm

## Species Number

15-20

## Contour

System laid flat

## Habitats

Not as standard

## Additional Items to standard system offer

### River Stone detail (edge)

300mm (20:40) stone detail

### River Stone detail (penetrations)

150-300mm (20:40) stone detail

### Metal Retention Detail

2mm bonded or ballasted system

### Metal Separation Detail

1.2mm bonded or ballasted system

## Irrigation

Recommended for establishment and periods of drought

## Additional Species

Cornflower and bio-diverse seed mixes  
1-3gms/m²

## Habitat Creation and Contour

### Habitat Creation

Rock and log piles within seeded system

### System Contour

Light 20mm contour can be specified at design

### Substrate Retention Nets

A fine grade mesh that wraps under the system. The net is planted through then wraps under substrate to minimise surface erosion and bird damage on immature systems.

# SKY GARDEN STANDARD TURF SYSTEM (SGT01)



## System Compatibility

New Build warm and cold	●
Refurbishment	●
Inverted	●

## Establishment

Established	●
% cover installed	90

## Functions and Drivers

Aesthetics	●
Sustainability	●
Habitat provision	●
BAP compliance	●
BREEAM calculation	●
Attenuation aid	●
Carbon absorption	●
Thermal improvement	●
Acoustic improvement	●

## Use

Sedum	●
Wildflower	●
Plug or seed/shoot	●
Shrubs and trees	●
Turf systems	●

## Roof Slopes

Flat	●
0-5°	●
Up to 12°	●
Up to 20°	●
Up to 45°	●

## Weight

Weight, wet (kg/m²)	275
Weight, dry (kg/m²)	200

## Typical Maintenance

Visits per year	N/A
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## System Performance

Substrate Depth (mm)	250
Drainage board depth (mm)	20
Drainage water storage (l/m²)	8-10
Substrate run off reduction %	70
Water use potential %	70
Harvesting compatibility	Yes
Storage compatibility	Yes
Habitat provision	●
Nectar foraging provision	●
Pollen foraging provision	●

Suitable for application	●
May be compatible	●
Not suitable	●

## Product

### SGT01 Standard Turf System

Regionally produced medallion sport turf comprising 4-6 standard lawn species. Hard wearing. UK provenance material.

The product contains a range of species suitable for roofing works and moderate to high traffic. The system will require similar levels of maintenance to a standard lawn not allowed for within standard roofing maintenance packages. The system is watered thoroughly and consistently, turf products require irrigation through the summer to maintain performance and aesthetics.

## Applications

Systems are suitable for both new build but too heavy for most refurbishment situations other than concrete decks.

Roof pitches up to 12° can be greened but over 12° the system is not sustainable.

The system will mature quickly with correct maintenance packages and suitable irrigation.

## Maintenance

As with any turf product, the system will need cutting regularly. The product will also benefit from being fed and scarified once a year.

## Irrigation

It is recommended that all turf systems are irrigated during the establishment period and through the summer months.

Temporary and permanent subterranean systems are available.

## Additions

Wildflower mixes can be applied where Spring flowering is required to improve aesthetics and environmental function.

## Benefits

- Instant greening
- Quick establishment

## Component Description

### (SGPL0102) Protection Layer

2mm geo synthetic filter fleece

### (SGRDL01020) Drainage Layer

20mm drainage and retention cell

### (SGFL0101) Filtration Layer

1.1mm geo synthetic filtration fleece

### (SGTS010250) Substrate Layer

250mm blended top soil

### (SGMTS01030) Vegetation Layer

Medallion turf

## Species Number

4-6

## Contour

System laid flat

## Habitats

Not as standard

## Additional Items to standard system offer

### River Stone detail (edge)

300mm (20:40) stone detail

### River Stone detail (penetrations)

150-300mm (20:40) stone detail

### Metal Retention Detail

2mm bonded or ballasted system

### Metal Separation Detail

1.2mm bonded or ballasted system

## Irrigation

Recommended for establishment and periods of drought

## Additional Species

Wildflower mix 1-3/m²

## Habitat Creation and Contour

### Habitat Creation

N/A with this system

### System Contour

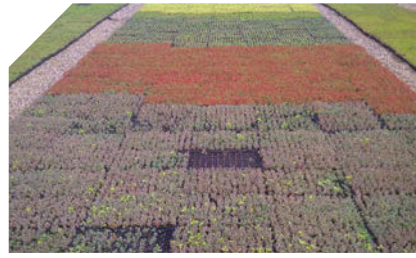
Light 20mm contour can be specified at design stage

### Substrate Retention Nets

In exposed situation its is recommended to use a fine grade mesh that wraps under the system. The net is planted through then wraps under substrate to minimise surface erosion and bird damage on immature systems.



# SKY GARDEN PLUG & PLANT (SGS03)



## System Compatibility

New Build warm and cold	●
Refurbishment	●
Inverted	●

## Establishment

Established	●
% cover installed	25

## Functions and Drivers

Aesthetics	●
Sustainability	●
Habitat provision	●
BAP compliance	●
BREEAM calculation	●
Attenuation aid	●
Carbon absorption	●
Thermal improvement	●
Acoustic improvement	●

## Use

Sedum	●
Wildflower	●
Plug or seed/shoot	●
Shrubs and trees	●
Turf systems	●

## Roof Slopes

Flat	●
0-5°	●
Up to 12°	●
Up to 20°	●
Up to 45°	●

## Weight

Weight, wet (kg/m <sup>2</sup> )	120
Weight, dry (kg/m <sup>2</sup> )	90

## Typical Maintenance

Visits per year	2
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## System Performance

Substrate Depth (mm)	80+10
Drainage board depth (mm)	20
Drainage water storage (l/m <sup>2</sup> )	8-10
Substrate run off reduction %	70
Water use potential %	70
Harvesting compatibility	Yes
Storage compatibility	Yes
Habitat provision	●
Nectar foraging provision	●
Pollen foraging provision	●

Suitable for application	●
May be compatible	●
Not suitable	●

## Product

### SGS03 Sedum Plug & Plant System

Regionally sourced plug plants, 50mm standard plugs installed at 18-20/m<sup>2</sup>.  
UK provenance material.

The product contains a range of sedum and alpine plugs. Plugs are planted randomly across roof areas to a standard density plan and can follow a design if discussed at estimate stage. The system is watered thoroughly and then consistently until rooting is complete.

## Applications

Systems are suitable for both new build and refurbishment. Roof pitches up to 25° can be greened but over 25° the system is not sustainable.

Immature systems offer greater species diversity but take up to 36 months to establish with the correct roof management and maintenance systems in place. The system weight allows for inverted system ballasting as dry weights exceed 80kg/m<sup>2</sup>.

## Maintenance

Immature systems require greater levels of maintenance during establishment. Open substrates can lead to weed invasion and bird damage is often experienced on these systems.

There is a high need for irrigation, especially where shoots are used if installed late Spring – Summer.

## Irrigation

Immature systems require an irrigation system during establishment, especially where shoots or plugs are used. Systems will be required through the first summer and then periods of hot dry conditions.

## Additions

Wildflower, cornflower, herbs or perennials can be added to enhance bio-diversity (additional seed / plug mixes)

## Benefits

- Greater species diversity
- Greater ecological function
- Better habitat and pollen/nectar provision

## Component Description

### (SGPL0102) Protection Layer

2mm geo synthetic filter fleece

### (SGRDL01020) Drainage Layer

20mm drainage and retention cell

### (SGFL0101) Filtration Layer

1.1mm geo synthetic filtration fleece

### (SGSSS01080) Substrate Layer

80mm blended 90:10 crushed brick

### (SGSPS01020) Vegetation Layer

Sedum plug system (standard) 18-20/m<sup>2</sup>

## Species Number

15-20

## Contour

System laid flat

## Habitats

Not as standard

## Additional Items to standard system offer

### River Stone detail (edge)

300mm (20:40) stone detail

### River Stone detail (penetrations)

150-300mm (20:40) stone detail

### Metal Retention Detail

2mm bonded or ballasted system

### Metal Separation Detail

1.2mm bonded or ballasted system

## Irrigation

Recommended for establishment and periods of drought

## Additional Species

Cornflower & bio-diverse seed mixes 1-3gms/m<sup>2</sup>

## Habitat Creation and Contour

### Habitat Creation

Rock and log piles within seeded system

### System Contour

Light 20mm contour can be specified at design

### Substrate Retention Nets

A fine grade mesh that wraps under the system. The net is planted through then wraps under substrate to minimise surface erosion and bird damage on immature systems.

# SKY GARDEN BIO-DIVERSE STANDARD (SGBD03)



## System Compatibility

New Build warm and cold	●
Refurbishment	●
Inverted	●

## Establishment

Established	
% cover installed	10

## Functions and Drivers

Aesthetics	●
Sustainability	●
Habitat provision	●
BAP compliance	●
BREEAM calculation	●
Attenuation aid	●
Carbon absorption	●
Thermal improvement	●
Acoustic improvement	●

## Use

Sedum	●
Wildflower	●
Plug or seed/shoot	●
Shrubs and trees	●
Turf systems	●

## Roof Slopes

Flat	●
0-5°	●
Up to 12°	●
Up to 20°	●
Up to 45°	●

## Weight

Weight, wet (kg/m²)	150
Weight, dry (kg/m²)	100

## Typical Maintenance

Visits per year	1-2
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## System Performance

Substrate Depth (mm)	100
Drainage board depth (mm)	20
Drainage water storage (l/m²)	8-10
Substrate run off reduction %	60
Water use potential %	60
Harvesting compatibility	Yes
Storage compatibility	Yes
Habitat provision	●
Nectar foraging provision	●
Pollen foraging provision	●

Suitable for application	●
May be compatible	●
Not suitable	●

## Product

### SGBD03 Bio-Diverse Standard Seeded

Locally sourced and site blended bio-diverse system seeded with regional bio-diverse seed mixes.

UK provenance species and locally sourced screened products.

Bio-diverse seed mix is a blend of grass, herbs, wildflower, cornflower, alpine and perennial plants. Introduced at 1-3gms/m² and broadcast over the contoured substrate bed.

## Applications

Systems suited to new build and refurbishment concrete decks. The system comprises an aggregate substrate bed comprising crushed brick and mixed aggregate graded from 0-60mm with a maximum of 20% organic content.

The product is contoured to encourage diversity and finished with surface habitats of stone, rock, sand and wood to comply with local bio-diversity plans and assessments.

## Maintenance

Bio-diverse systems are seeded and left to self develop, a roof assessment to remove invasive or damaging specimens is recommended once a year.

## Irrigation

Bio-diverse systems tend not to have irrigation systems unless plug or young plants are used.

## Additions

Cornflower and additional wildflower mixes or plug plants to contours, generally 20/m² to 20% of the roof area to maximise species diversity.

## Benefits

- Species diversity
- Ecological function
- Environmental function
- BREEAM
- Low maintenance
- Less maintenance than standard extensive systems

## Component Description

### (SGPL0102) Protection Layer

2mm geo synthetic filter fleece

### (SGRDL01020) Drainage Layer

20mm drainage and retention cell

### (SGFL0101) Filtration Layer

1.1mm geo synthetic filtration fleece

### (SGBDS010100) Substrate Layer

100mm blended 80:20 crushed brick

### (SGBDS01002) Vegetation Layer

1.5gms/m² bio-diverse seed

## Species Number

18-20

## Contour

25-50mm

## Habitats

Rock and log piles on sand bases, 1 pile per 250m²

## Additional Items to standard system offer

### River Stone detail (edge)

300mm (20:40) stone detail

### River Stone detail (penetrations)

150-300mm (20:40) stone detail

### Metal Retention Detail

2mm bonded or ballasted system

### Metal Separation Detail

1.2mm bonded or ballasted system

## Irrigation

Recommended for establishment and periods of drought only

## Additional Species

Regional wildflower and cornflower over seed 1-2gms/m²

## Habitat Creation and Contour

### Habitat Creation

Included within system

### System Contour

Included within system

### Substrate Retention Nets

A fine grade mesh that wraps under the system. The net is planted through then wraps under substrate to minimise surface erosion and bird damage on immature systems.



# SKY GARDEN GREEN ROOF MODULE (BLANKET) (SGM01)



## System Compatibility

New Build warm and cold	●
Refurbishment	●
Inverted	●

## Establishment

Established	
% cover installed	90

## Functions and Drivers

Aesthetics	●
Sustainability	●
Habitat provision	●
BAP compliance	●
BREEAM calculation	●
Attenuation aid	●
Carbon absorption	●
Thermal improvement	●
Acoustic improvement	●

## Use

Sedum	●
Wildflower	●
Plug or seed/shoot	●
Shrubs and trees	●
Turf systems	●

## Roof Slopes

Flat	●
0-5°	●
Up to 12°	●
Up to 20°	●
Up to 45°	●

## Weight

Weight, wet (kg/m²)	100
Weight, dry (kg/m²)	80

## Typical Maintenance

Visits per year	1-2
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## System Performance

Substrate Depth (mm)	65
Drainage board depth (mm)	N/A
Drainage water storage (l/m²)	14
Substrate run off reduction %	50
Water use potential %	60
Harvesting compatibility	Yes
Storage compatibility	Yes
Habitat provision	●
Nectar foraging provision	●
Pollen foraging provision	●

Suitable for application	●
May be compatible	●
Not suitable	●

## Product

### SGM01 Modular System (Blanket)

Pre-grown green roof modular product for flat and pitched roofs up to 25°. The system is pre-established as a blanket product, can be plug planted to increase species diversity and has a sedum, bio-diverse or wildflower finish.

The product is a modular cell that is supplied as a finished unit, has the option of an integrated irrigation and retention system and locks together to offer flat and pitched roof applications.

## Applications

Systems suited to new build and refurbishment. The units are simply to install and provide an instant greening system which can be removed if inspection below is required.

Blankets offer Instant greening solutions and the system is suitable for high visibility situations where established finishes are required. The system weight allows for inverted system ballasting as dry weights exceed 80kg/m². The system can be adjusted to work in lightweight situations.

## Maintenance

Sedum blanket systems are designed to be low maintenance, species selection ensures that the roof will evolve successfully but intervention is sometimes required to minimise invasive urban species.

## Irrigation

Sedum blanket systems with a minimum of 50mm substrate may require irrigation for the first six months post installation. Once established consideration is required only during elongated periods of drought (6-8 weeks).

## Additions

Cornflower and additional wildflower mixes can be applied to finished modules to enhance bio-diversity.

## Benefits

- Easy to install & low maintenance
- Species diversity & ecological function
- BREEAM & environmental function

## Component Description

### (SGPL0102) Protection Layer

2mm geo synthetic filter fleece

### (SGMOD01) Tray System

80mm retention tray

### (SGFL0101) Filtration Layer

1.1mm geo synthetic filtration fleece

### (SGSS010065) Substrate Layer

65mm blended 80:20 crushed brick

### (SGSBS01030) Vegetation Layer

30mm Sedum Blanket

## Species Number

10-12

## Contour

N/A

## Habitats

N/A

## Additional Items to standard system offer

### River Stone detail (edge)

300mm (20:40) stone detail

### River Stone detail (penetrations)

150-300mm (20:40) stone detail

### Metal Retention Detail

2mm bonded or ballasted system

### Metal Separation Detail

1.2mm bonded or ballasted system

## Irrigation

Integrated system available pre-install

## Additional Species

Regional wildflower and cornflower over seed 1-2gms/m²

## Habitat Creation and Contour

### Habitat Creation

N/A for this system

### System Contour

N/A for this system

## Substrate Retention Nets

A fine grade mesh that wraps under the system. The net is planted through then wraps under substrate to minimise surface erosion and bird damage on immature systems.

# SKY GARDEN VERTICAL MODULE (SGVM01)



## System Compatibility

New Build warm and cold	●
Refurbishment	●
Inverted	N/A

## Establishment

Established	
% cover installed	90

## Functions and Drivers

Aesthetics	●
Sustainability	●
Habitat provision	●
BAP compliance	●
BREEAM calculation	●
Attenuation aid	●
Carbon absorption	●
Thermal improvement	●
Acoustic improvement	●

## Use

Sedum	●
Wildflower	●
Plug or seed/shoot	●
Shrubs and trees	●
Turf systems	●

## Roof Slopes

Flat	N/A
0-5°	N/A
Up to 12°	N/A
Up to 20°	N/A
Up to 45°	N/A

## Weight

Weight, wet (kg/m²)	75
Weight, dry (kg/m²)	65

## Typical Maintenance

Visits per year	4
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## System Performance

Substrate Depth (mm)	80
Drainage board depth (mm)	N/A
Drainage water storage (l/m²)	20
Substrate run off reduction %	N/A
Water use potential %	60
Harvesting compatibility	Yes
Storage compatibility	Yes
Habitat provision	●
Nectar foraging provision	●
Pollen foraging provision	●

Suitable for application	●
May be compatible	●
Not suitable	●

## Product

### SGVM01 Vertical Module

Pre-grown green wall modular system, using hydroponic technology with integrated nutrition and irrigation feeds.

The product is compatible with wall cladding systems and locks into place using a system that prevents theft or movement under severe weather pressure. The product uses 24 species of grasses, ferns, herbs and herbaceous plants, pre-established and delivered mature and hardened off. UK provenance species are used.

### Applications

The system can be designed for internal or external use and has the option of a recirculation and filter system to manage water use.

### Maintenance

All wall systems require high levels of maintenance, the system will require remedial intervention 2-3 times a year and irrigation and feed system maintenance. The system operates a wireless alarm and moisture monitoring system that links to a smart phone alerting if irrigation or regional moisture levels require attention.

### Irrigation

Integrated irrigation system that will need connecting to a pump station to feed and irrigate correctly. The system runs through each module and has a simple release mechanism if an individual panel is removed.

### Additions

Plant species are discussed and bespoke for each system and aspect. Maintenance, aesthetic requirements and exposure are all defining factors when specifying a sustainable system.

### Installation

The system will need installing with an irrigation system immediately as the hydroponic technology is not sustainable without water for any length of time.

### Plant Failure

Green walls have a graduated establishment process which often requires a percentage of plants being replaced over the first 2-3 years.

### Benefits

- Species diversity & ecological function
- BREEAM & environmental function
- Aesthetics

## Component Description

### (SGVMOD01) Modular Wall System

80mm retention tray

### Vertical Support Tray

### Vertical Locking System

### (Established Plant Layer (Project Specific)

### Integral Irrigation System

### Integral Fertiligation System

### Wireless Monitoring System

### Species Number

20+

### Aftercare & Maintenance

3 year mandatory program on all wall systems

### Habitats

N/A

## Additional Items to standard system offer

### Irrigation

Integrated to systems as standard

### Additional Species

Project specific discussion

## Habitat Creation and Contour

### Habitat Creation

Vertical habitats can be incorporated for a range of bird species

### System Contour

N/A

## Plants that may be considered

### Sunny Position - Upright Plants

*Alchemilla Mollis* Lady's Mantle, *Alliums*, *Basil*, *Euonymus*, *Festuca*, *Geraniums*, *Phormiums*, *Sage*, *Salvia*, *Erigeron*, *Helianthemum*

### Sunny Position - Trailing Plants

*Bacopa*, *Clematis*, *Trailing Thyme*, *Trailing Lotus*

### Shade Position - Upright Plants

*Azaleas*, *Brunnera* (Jack Frost), *Bergenia* (Elephants Ears), *Fushias*, *Ferns*, *Heuchera*, *Hydrangea*, *Liropes*, *Mint*

### Shade Position - Trailing Plants

*Ajuga Reptans*, *Dichondra Argentea*, *Hedera*, *Heucherella*, *Hosta*, *Lamium*, *Lysimachia*, *Tiarella*
















































































































































































































































# SKY GARDEN PLANT SELECTION GRID (Sedum)

Sedum Species	Height	Colour	Flowering Spread	Exposure		System Stream		
				Sun ●	Shade ○	Seed ●	Plug ●	Blanket ●
Sedum hispanicum	10-12	✚ ✚ ✚	S S A	●	●	●	●	
Sedum acre <i>Golden Carpet</i>	12-15	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum acre <i>October Fest</i>	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum album	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum ellacombianum	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum selskianum	15-20	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum floriferum	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum forsterianum	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum hybridum	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum kamtschaticum	15-20	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum kamtschaticum <i>W. Gold</i>	10-12	✚ ✚ ✚	S S A	●	●	●	●	
Sedum lydium glaucum	10-12	✚ ✚ ✚	S S A	●	●	●	●	
Sedum montanum <i>Orientalis</i>	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum oreganum	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum rupestre	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum reflexum	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum sediforme	10-12	✚ ✚ ✚	S S A	●	●	●	●	
Sedum sexangulare	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum spurium	10-12	✚ ✚ ✚	S S A	●	●	●	●	●
Sedum album <i>Coral Carpet</i>	10-12	✚ ✚ ✚	S S A	●	●	●	●	



# SKY GARDEN PLANT SELECTION GRID (Wildflower)

Plant Species	Height	Colour	Flowering Spread	Exposure		System Stream		
	(cm)	    	(S)ummer (S)pring (A)utumn	Sun 	Shade 	Seed 	Plug 	Blanket 
Achillea spp	15-25	 	S S					
Agrostis spp	15-20	 	S S					
Agrostemma spp	15-20	   	S S					
Agrimonia spp	15-20	 	S S					
Allium spp	15-20	 	S S					
Anthoxanthum spp	15-20	 	S S					
Anthyllis spp	15-20	 	S S					
Anthemis spp	15-20	 	S S					
Aster spp	15-20	   	S S					
Aquilegia spp	15-20	 	S S					
Briza spp	15-25		S S					
Carex spp	15-25		S S					
Campanula spp	15-20	 	S S					
Centaurea spp	15-20	 	S S					
Chrysanthemum spp	15-25	   	S S					
Cynosurus spp	15-20	   	S S					
Dactylis spp	15-25	   	S S					
Daucus spp	15-20	   	S S					
Dianthus spp	15-20	   	S S					
Echium spp	15-20	   	S S					
Eupatorium spp	15-20	   	S S					
Festuca spp	15-30+		S S					
Filipendula spp	15-30+	   	S S					
Galium spp	15-20	   	S S					
Glebionis spp	15-20	   	S S					
Helianthemum spp	15-30+	   	S S					
Hieracium spp	15-20	   	S S					
Hylotelephium spp	15-20	 	S S					
Hypericum spp	15-20	 	S S					
Holcus spp	15-30+	 	S S					
Hypochaeris spp	15-30+	 	S S					
Iberis spp	15-20	 	S S					
Leucanthemum spp	15-20	 	S S					
Linum spp	15-20	 	S S					
Linaria spp	15-20	 	S S					





# SKY GARDEN PLANT SELECTION GRID (Wildflower)

Plant Species	Height	Colour	Flowering Spread	Exposure		System Stream		
	(cm)	✚ ✚ ✚ ✚ ✚ ✚	(S)ummer (S)pring (A)utumn	Sun ●	Shade ○	Seed ●	Plug ●	Blanket ●
Malva spp	15-25	✚ ✚	S S	●	●	●	●	
Medicago spp	15-20	✚ ✚	S S	●		●	●	●
Origanum spp	15-20	✚ ✚	S S	●		●	●	●
Papaver spp	15-20	✚ ✚	S S	●		●	●	●
Plantago spp	15-30	✚	S S	●		●	●	●
Pimpinella spp	15-20	✚ ✚	S S	●		●	●	
Primula spp	15-25	✚ ✚ ✚ ✚	S S	●		●	●	
Phleum spp	15-20	✚ ✚ ✚ ✚	S S	●		●	●	
Prunella spp	15-20	✚ ✚ ✚ ✚	S S	●	●	●	●	
Poa spp	15-20	✚ ✚ ✚ ✚	S S	●	●	●	●	
Poterium spp	15-20	✚ ✚	S S	●	●	●	●	
Potentilla spp	15-50	✚ ✚	S S	●	●	●	●	
Ranunculus spp	15-25	✚ ✚	S S	●	●	●	●	●
Receda spp	15-25	✚ ✚	S S	●	●	●	●	
Rhianthus spp	15-20	✚ ✚	S S	●	●	●	●	
Rumex spp	15-20	✚ ✚ ✚ ✚	S S	●	●	●	●	●
Sanguisorba spp	15-20	✚ ✚ ✚ ✚	S S	●	●	●	●	●
Salvia spp	15-50	✚ ✚ ✚ ✚	S S	●	●	●	●	
Scabiosa spp	15-20	✚ ✚ ✚ ✚	S S	●	●	●	●	●
Schedonorus spp	15-20	✚ ✚ ✚ ✚	S S	●		●	●	
Silene spp	15-20	✚ ✚	S S	●		●	●	●
Stachys spp	15-50	✚ ✚	S S	●		●	●	
Thymus spp	15-50	✚ ✚	S S	●		●	●	
Tragopogon spp	15-20	✚ ✚	S S	●		●	●	●
Trifolium spp	15-20	✚ ✚	S S	●		●	●	
Trisetum spp	15-20	✚ ✚	S S	●		●	●	
Medico spp	15-20	✚ ✚	S S	●	●	●	●	●
Leontodon spp	15-20	✚ ✚	S S	●	●	●	●	
Sanguisorba spp	15-20	✚ ✚	S S	●	●	●	●	
Viola spp	15-20	✚ ✚	S S	●	●	●	●	
Knautia spp	15-20	✚ ✚	S S	●	●	●	●	●
Koeleria spp	15-20	✚ ✚	S S	●		●	●	
Lathyrus spp	15-20	✚ ✚	S S	●	●	●	●	
Leontodon spp	15-25	✚ ✚	S S	●		●	●	●



# SKY GARDEN PLANT SELECTION GRID (Bio-Diverse)

Plant Species	Height	Colour	Flowering Spread	Exposure		System Stream		
	(cm)	☀ ☁ ☂ ☔ ☕ ☖	(S)ummer (S)pring (A)utumn	Sun ●	Shade ○	Seed ●	Plug ●	Blanket ●
Agrimonia spp	20-50	☀ ☁ ☂ ☔	S S	●		●	●	●
Anthyllis spp <i>Kidney Vetch</i>	20-50	☔ ☕	S S	●	●	●	●	●
Centaurea spp <i>Common Knapweed</i>	20-50	☀ ☁ ☂	S S	●	●	●	●	●
Clinopodium spp <i>Wild Basil</i>	20-50	☔ ☕	S S	●	●	●	●	●
Echium spp <i>Viper's Bugloss</i>	20-30	☀ ☁ ☂	S S A	●		●	●	●
Galium spp <i>Lady's Bedstraw</i>	20-50	☀ ☁ ☂ ☔	S S	●		●	●	●
Hypericum spp <i>Perforate St John's Wort</i>	20-50	☀ ☁ ☂	S S	●	●	●	●	
Knautia spp <i>Field Scabious</i>	20-30	☀ ☁ ☂	S S A	●	●	●	●	●
Leontodon spp <i>Rough Hawkbit</i>	20-50	☔ ☕	S S	●	●	●	●	●
Leucanthemum spp <i>Oxeye Daisy</i>	20-50	☔ ☕	S S	●	●	●	●	●
Linaria spp <i>Common Toadflax</i>	20-30	☔ ☕	S S	●	●	●	●	●
Lotus spp <i>Birdsfoot Trefoil</i>	20-30	☔ ☕	S S A	●		●	●	●
Malva spp <i>Musk Mallow</i>	20-30	☀ ☁ ☂	S S	●	●	●	●	●
Origanum spp <i>Wild Marjoram</i>	20-50	☔ ☕	S S A	●	●	●	●	●
Plantago spp <i>Hoary Plantain</i>	20-30	☔ ☕	S S	●	●	●	●	●
Primula spp <i>Cowslip</i>	20-30	☀ ☁ ☂	S S A	●	●	●	●	●
Prunella spp <i>Selfheal</i>	20-50	☀ ☁ ☂	S S	●	●	●	●	●
Ranunculus spp	20-30	☀ ☁ ☂	S S A	●	●	●	●	●
Reseda lutea	20-30	☀ ☁ ☂	S S A	●	●	●	●	●
Sanguisorba ssp <i>Minor</i>	20-50	☔ ☕	S S A	●	●	●	●	●
Silene spp <i>Bladder Campion</i>	20-30	☔ ☕	S S	●	●	●	●	●
CORNFLOWER SPECIES								
Agrostemma spp	20-30	☀ ☁ ☂	S S	●	●	●	●	●
Anthyllis spp	20-50	☀ ☁ ☂	S S	●	●	●	●	●
Centaurea spp	20-30	☀ ☁ ☂	S S	●	●	●	●	●
Glebionis spp	20-30	☀ ☁ ☂	S S	●	●	●	●	●
Papaver spp	20-30	☀ ☁ ☂	S S	●	●	●	●	●
GRASSES								
Briza spp	20-100	☔ ☕	S S A	●	●	●	●	●
Cynosurus spp	20-100	☔ ☕	S S A	●	●	●	●	●
Festuca spp	20-100	☔ ☕	S S A	●	●	●	●	●
Phleum spp	20-100	☔ ☕	S S A	●	●	●	●	●
Trisetum spp	20-100	☔ ☕	S S A	●	●	●	●	●





# SKY GARDEN MAINTENANCE

All green roofs need some degree of maintenance. Unwanted plant material can take hold in any situation and if unmanaged will compromise establishment of some species. Systems are designed to be as sustainable as possible but depending on aesthetic and functional requirements, feed, weed and irrigation intervention can be considered.

## Maintenance Services

Remedial requirements are tailored to the need of the system, site, aesthetic and functional requirements and client wishes.

## Sedum Systems

Two remedial visit, once in the Spring which include feeding and once in the Autumn that include weeding and if required, irrigation maintenance.

## Wildflower Systems

Systems require a greater number of visits, generally four off which two are material removal visits, one weeding and one feeding.

## Intensive Systems

Packages for these intensive roofs are dictated by the plant type and are bespoke, often requiring pruning and high levels of plant management.

## Bio-Diverse Systems

Low input system, one or two visits to remove invasive and damaging specimens and to maintain immature material in year one.

## Non-Cover Elements

Roofs are often damaged once the installation teams have left site, damage by other building operations, birds and other services will be assessed and added to the report. Extra costs will be formally priced and submitted.

## Irrigation

Where systems are installed, the maintenance program will cover winter decommissioning. Surface based systems cannot tolerate cold weather and will perish.

### INCLUDED IN THE PROGRAMME

#### WEEDING & FEEDING

- Remedial removal & replacement
- Invasive weeds
- Slow release fertiliser

#### IRRIGATION

- Irrigation decommission
- Irrigation re-commission
- Irrigation assessment

#### BIRD DAMAGE

- Bird protection (netting, if applicable to system)

#### GENERAL

- Outlets and drain inspection
- Species review
- Diversity report
- Habitat report
- Habitat maintenance

#### VISITS & REPORTS

- Single assessment
- 2 annual visits
- Visit report and recommendations

### NOT INCLUDED IN THE PROGRAMME

#### BIRD DAMAGE

- Bird scarers
- Bird damaged plug replanting

#### MATERIAL DAMAGE

- Theft
- Vandalism
- Damage by other services
- Damage by material loads
- Lack of irrigation
- Extreme storm damage

#### VISITS & REPORTS

- 4 annual visits
- Bespoke agreement



# CASE STUDY BRITISH HORSE SOCIETY



## Project

British Horse Society, Coventry

## Size

2000m<sup>2</sup>

## Membrane

The waterproof membrane was IKO installed by Hodge Single Ply.

## System

Sedum blanket system comprising locally produced species to produce a high aesthetic flat to 10° system.

## Value

£75,000

## Aim and Brief

To produce an aesthetic and functional system that married into the surrounding landscape, the sedum species selected show similar colouration patterns to the surrounding trees allowing the building to blend into its surroundings.

## Habitat Construction

Selected species allowed for suitable foraging potential of nectar and pollen to sustain small invertebrates that allowed for bird foraging and small habitat provision was made for selected species.





# CASE STUDY ADNAMS BREWERY



## Project

Adnams Brewery, Southwold

## Size

6458m<sup>2</sup>

## Membrane

28° standing seam system by Ash and Lacey.

## System

Complex pitched sedum blanket system designed to shelter and mask the building within its own landscape.

## Value

£200,000

## Aim and Brief

To produce a sustainable green roof system that wrapped the surrounding hills over the building, making it almost impossible to see and minimising the build's impact on the environment.

## Habitat Construction

Allowance was made for habitat construction within ballasted systems around PV cells. The roof had selected species of sedum shown to be important in the local bio-diversity assessment produced for the build.



# CASE STUDY BLACK ROCK POLICE FIREARMS CENTRE



## Project

Black Rock Quarry, Portishead

## Size

6000m<sup>2</sup>

## Membrane

Installed by Span Roofing.

## System

Bio-Diverse roof using locally derived material and constructed following local bio-diversity assessments to maximise roof diversity.

## Value

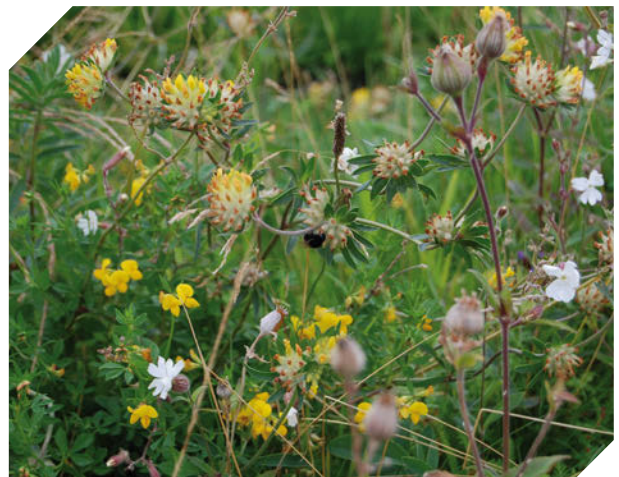
£130,000

## Aim and Brief

The site within a quarry was designed to blend with the surrounding walls of the environment it was placed within. The substrate was blended from local quarries to form the finish and the roof comprised 30% seeded vegetation and 70% non-vegetated for self seeding processes.

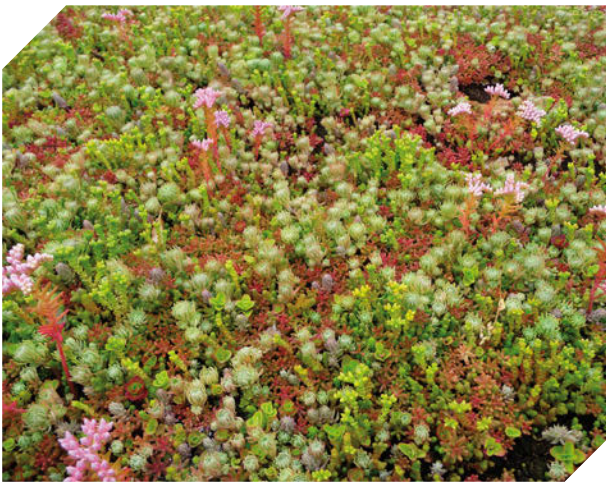
## Habitat Construction

The roof provided many habitat areas for identified species within the local bio-diversity report and site action plan.





# CASE STUDY TERMINAL 5



## Project

Terminal 5, Heathrow Airport

## Size

250m<sup>2</sup>

## Membrane

N/A

## System

The highly aesthetic signs that greet visitors to Heathrow Terminal 5 are iconic and required a sedum system able to flourish in a high pollutant area and with minimal maintenance.

## Value

£50,000

## Aim and Brief

To produce a mixed species blanket able to thrive in the environment of exhaust fumes and aviation fuel. The project required careful selection of species and a range of 30 were used to capture the aesthetic requirements of the system all year round.

## Habitat Construction

The system with its wide flowering range provided suitable nectar and pollen sources for bees and insects.



# CASE STUDY WESTONBIRT ARBORETUM



## Project

Westonbirt Arboretum

## Size

600m<sup>2</sup>

## Membrane

Unknown

## System

The visitor centre at Westonbirt produces a unique environment for a green roof. For 6 months the roof is exposed and for the remainder is under tree cover so a variety of local species have evolved.

## Value

£85,000

## Aim and Brief

The remit was to produce a sedum roof that evolved towards controlled bio-diverse. Tree saplings are removed but herbs and self seeding naturalisation encouraged. The roof goes through seasonal change unusual with a sedum based system.

## Habitat Construction

Species diversity to encourage a range of bird, insect and bee species was closely considered and the roof now offers multiple habitat opportunities to meet site and location demands.





# CASE STUDY KANE'S FOODS



## Project

Kane's Foods, Evesham

## Size

8000m<sup>2</sup>

## Membrane

28° standing seam system by Euroclad.

## System

The system was a complex wildflower blend designed for standing seam application where the roof ran from flat to 32°. The plant range exceeded 50 species and the roof when in flower completely hid the building within the local landscape.

## Value

£300,000

## Aim and Brief

To produce a system that mirrored the surrounding fields so the building was hidden from view unless you were standing before it.

The system needed to comprise 50 identified local species pre-grown to established locally and installed on a limited substrate bed to adhere to roof load requirements.

## Habitat Construction

The project was a blending of multiple buildings and along with minimal site impact, the species choice offers rich diversity for a range of insect, birds, invertebrates and bee species.



# CASE STUDY NEW BOND STREET



## Project

New Bond Street, London

## Size

750m<sup>2</sup>

## Membrane

Unknown

## System

The roofs on New Bond Street provided a major task as lifting and loading was through internal access and stairwells, crane lifting was impossible due to location. The roofs had high ecological importance and were constructed to present functional and aesthetic bio-diverse systems.

## Value

£120,000

## Aim and Brief

To produce a bio-diverse template with multiple habitat allowances for a range of 11 identified species within the London bio-diversity plan. The roofs had areas of seed, plug and bare non-vegetated to provide diversity for plant and invertebrate development.

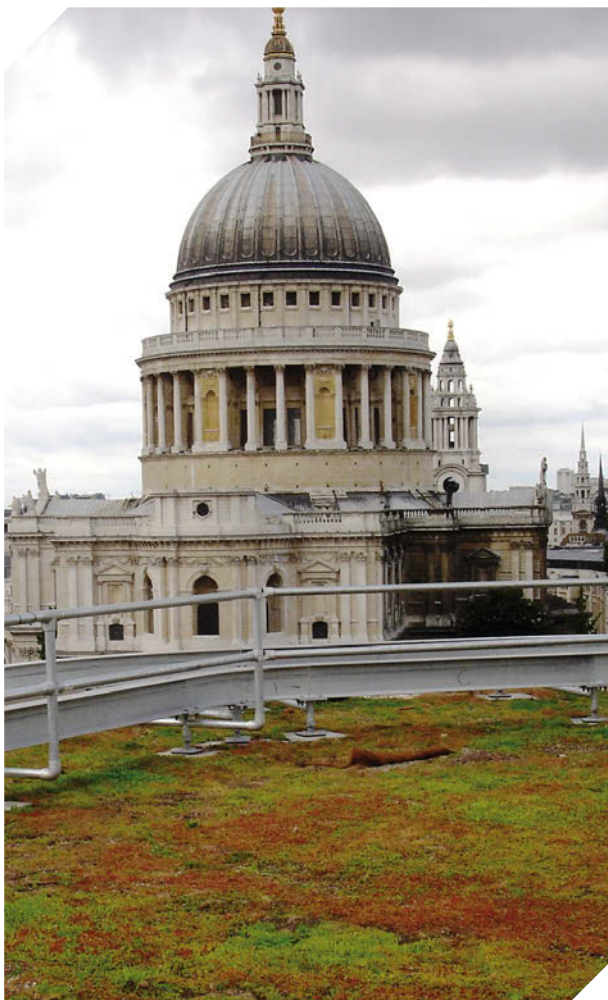
## Habitat Construction

The systems included seasoned log and rock/sand piles, sand beds and bare open areas of mixed substrate to encourage foraging for insects and bird species identified in the bio-diversity action plan.





# CASE STUDY WOOD STREET



## Project

Wood Street, London

## Size

2300m<sup>2</sup>

## Membrane

Flat roof system, Integritank.

## System

The wood street project, commanding iconic panoramic views across central London offered an opportunity to blend sedum with bio-diversity and communal areas for building function.

## Value

£90,000

## Aim and Brief

To produce a sedum blanket low maintenance high aesthetic system and maximise diversity through habitat provision and species use. The roof also incorporated break out communal areas that needs to be designed in as high traffic areas.

## Habitat Construction

Provision was made for a range of species identified in the bio-diversity plan for London.



# CASE STUDY WOODCOCK STREET



## Project

Woodcock Street, Birmingham

## Size

2000m<sup>2</sup>

## Membrane

Membrane system installed by APEX Roofing.

## System

The bio-diverse roof was split into several sections, most of which are at one level and a small section is located part way on the fascia of the building.

## Value

£150,000

## Aim and Brief

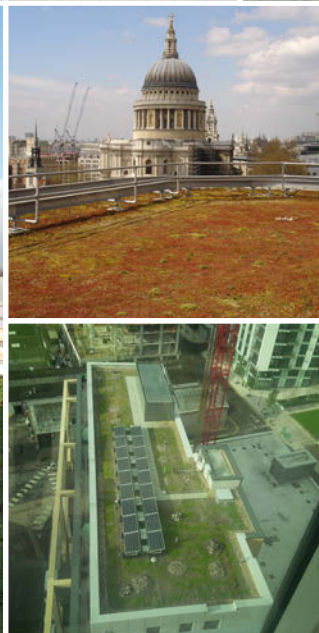
Construction of an office block, car parking and associated landscaping. The living roof was proposed for the project in an attempt to compensate for loss of the foraging habitat. A Sky Garden bio-diverse system was installed on the green roof, seeded with native wildflower seed with log and stone habitats installed.

## Habitat Construction

Mixed habitat provision for a range of identified species including birds and invertebrates, substrate incorporated screened site soils and aggregate.











## Sky Garden

Unit 4 Beta  
Orchard Industrial Estate  
Toddington  
Cheltenham  
Gloucestershire  
GL54 5EB

01242 620905

enquiries@sky-garden.co.uk

www.sky-garden.co.uk

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