



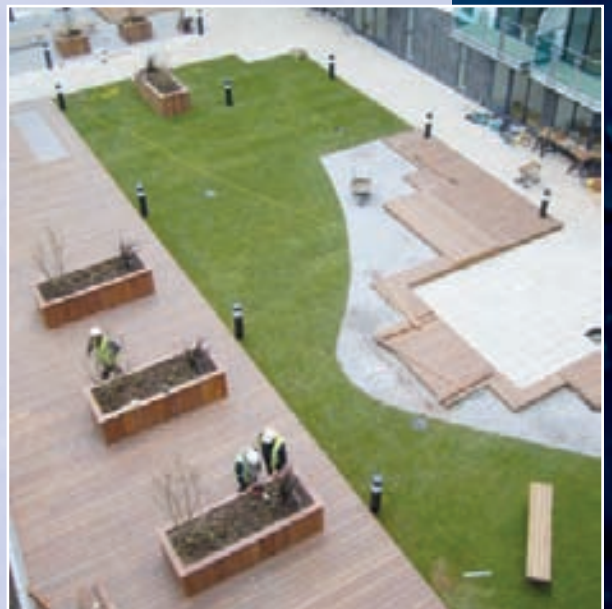
GREEN ROOF AND LIVING WALL SYSTEMS

WALLBARN CAN PROVIDE A NUMBER OF DIFFERENT OPTIONS FOR CONTRACTORS WISHING TO INCLUDE LIVING ELEMENTS ON ROOFS, BALCONIES, PODIUM DECKS AND WALLS.



Green roofs and living walls are a great way of providing an attractive, useful, environmentally friendly open space on an otherwise 'lost' flat roof or podium deck. They have benefits, some not always considered by developers, including:-

- **Improving the local environment** by providing wildlife habitats
- **Improving sound and thermal insulation**
- **Reducing the amount and speed of rainwater run-off** by around 50% and forming part of a SUDS design
- **Reducing the "heat island" effect** in built up areas and helping to improve air quality and environment
- **Protecting the structure** and waterproofing systems from UV, impact and abrasion, plant and bird infestation on the membrane
- **Ballasting inverted waterproofing systems**
- **Optimising the structural footprint** by providing extra space and an attractive natural area in often high density developments
- **Making the planning process a lot easier**
- **Increasing the value of the development**



WALLBARN HAS A VARIETY OF GREEN ROOF SOLUTIONS, FROM OFF-THE-SHELF STANDARD, EASY TO INSTALL SYSTEMS THROUGH TO BESPOKE, HIGHLY ENGINEERED VEGETATION AND DRAINAGE SYSTEMS DESIGNED, CONSTRUCTED AND MAINTAINED IN CONJUNCTION WITH OUR EXPERT HORTICULTURAL PARTNERS.

OUR OFFERING IS BROKEN DOWN INTO THREE BASIC PACKAGES:-

- THE COMPONENT GREEN OR BROWN ROOF
- THE MODULAR GREEN ROOF SYSTEM
- LIVING WALLS

COMPONENT GREEN ROOF SYSTEMS



This system is designed for **extensive** green roofs with a substrate level of between 70mm and 200mm.

The vegetation can be grass, sedum blankets, sedum/wildflower mixes, herbs or bio-diverse (brown roof) plants; depending on the wishes of the client.

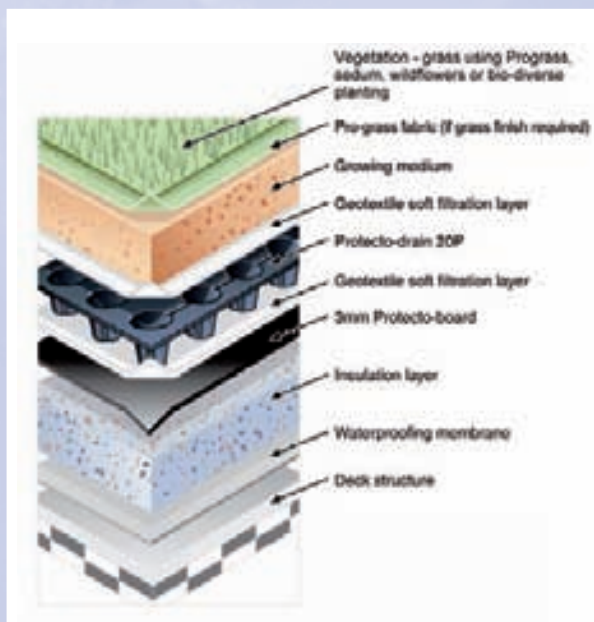
Each layer or component is supplied separately in bag or roll form and installed separately as a “dry” build-up. This allows easy access to roof areas.

This system is ideal for large scale areas, unlevel or more complicated decks as it is flexible and “built into” the existing structure.

THE BUILD-UP

From the upper surface, working down:

- Vegetation – standard products either
 - **grass** grown from **Pro-grass** pre-seeded biotextile,
 - **sedum** blanket or
 - **sedum/wildflower** mix
- **Growing medium/substrate** at an absolute minimum of 70mm deep up to 200mm, containing
 - crushed lecca
 - green waste (up to 30%)
 - peat (10%)
 - locally sourced marine aggregate and grit
 - 12-14 month release fertilizer (if required)
- **Geotextile** filtration layer
- 20mm perforated **Protecto-drain 20P**
- **Geotextile** filtration layer
- Wallbarn 3mm **Protecto-board** (where appropriate)



GRASS FINISH:

- Using **Pro-grass** biotextile fabric and laid into a substrate 200mm
- Can tolerate higher level of traffic
- Grass takes approximately 4 weeks to grow and is fully established after 4 months
- Less rainwater runoff (up to 60% retained)
- Regular maintenance and irrigation required
- Saturated weight up to 150kg per m2



SEDUM BLANKET:

- 70mm substrate
- Sedum supplied in established (9 month old blanket
- Instant green roof
- Very low maintenance, weed clearance once per year
- Drought resistant, little irrigation required
- Saturated weight approximately 50kg per m2



SEDUM/WILDFLOWER BLANKET:

- 70mm substrate
- Plug planted mixture and established into thin layer of substrate.
- Native, local plants can be used including herbs, bulbs and heather
- Can take up to 24 months to be fully established
- Fairly low maintenance depending on vegetation
- Saturated weight approximately 50kg per m2



We do not supply green roof systems on roofs with more than a 15 ° slope

BROWN ROOFS:

- 70mm substrate
- A basic sedum / wildflower blanket supplied interspersed with native, local plants
- Natural, sustainable habitat can be created
- Very low maintenance and no irrigation required
- Opportunities to recycle site waste in substrate



PLUG PLANTED EXTENSIVE ROOFS:

- Up to 200mm substrate
- Plug planted vegetation installed on site
- Large variety of foliage available
- Very low lead times
- Can be installed at any time of year
- Can take up to 24 months to be fully established
- Less rainwater runoff (up to 60% retained)
- Higher maintenance
- Saturated weight up to 200kg per m2 depending on vegetation



MODULAR GREEN ROOF SYSTEMS



These module trays are ideal for the smaller green roof or non professional installer, as they come as complete ready-grown units and are very simple and easy to fix.

It is strong, established and healthy and well anchored into the intermediate layers, so there is less risk of wind uplift or erosion in the crucial time period just after installation.

Also, if there are problems with the deck beneath, one “pod” or section can easily be lifted out without any disruption to the whole deck.

In other designs the whole area may need to be taken up when trying to discover the source of leaks, for example.



The build-up is the same as with the component green roof, each tray holding the Pro-drain 20P drainage sheeting, geotextile filter layer, 70mm substrate and a sedum blanket.

The vegetation is seeded or planted and fully established over a period of **nine months**.

Because the plants are established, they are less likely to be “shocked” once installed onto the roof and more likely to thrive.

Sedum or sedum/wildflower mixes are available as standard modules, and other bespoke vegetation can be selected subject to lead times of 6-8 weeks (although the plants will be less established).

The drainage layers are hardwearing and flexible. They can be cut and shaped around particular details.

Standard pods are 1m² in size and grown in a nursery.

The saturated weight of each tray is 50kg (50kg per m²).



A major advantage to this system is the “clip on” nature of installation. The fuss, time and skill required to install drainage layers separately is removed as it comes in a complete kit.



Installation couldn't be simpler. Just protect the waterproofing, lay the bottom layer of geotextile filter fabric and place the module into position on top.



Each section has an overlap of Pro-drain 20P, so the egg-box shaped cells from one module can be fitted beneath the substrate of the next to achieve a secure and seamless fit together. No fixings are needed to go through into the deck, giving less disturbance to the waterproofing. The weight of the system will hold everything in place.

Each module weighs 50 kg so can be picked up and moved with relative ease by two people.

The modules can be stacked on top of each other up to 20 trays high onto a pallet for delivery to site.

As the drainage sheeting is egg-box shaped, an air gap will maintain the vegetation for a **maximum of three days** before installation.





LIVING WALLS

Living walls are a slightly newer adaptation of the green roof concept. They offer all the advantages of green roofs in terms of added value, water attenuation and insulation.

They are an easy way to produce more natural space in often restricted areas. They are low maintenance, extremely attractive, highly visible and completely versatile.

Green walls are essentially a framework of vertical trays holding individual cells

which are planted up with soil and plants. This frame is then fixed to a straight wall.

THE MAKEUP:

- A straight, secure wall is required
- They are delivered to site as pre-grown, pre-assembled panel grids
- A fixing bar is secured to the wall and the frame screwed into it
- The panels can be installed on any angle up to completely vertical
- The frames are made of High Density Polyethylene (HDPE), are UV resistant and have a class B fire rating
- Each frame measures 500mm x 500mm x 65mm deep and has 45 cells
- Each cell is set at a 30° angle
- These cells run 9 high and 5 across each section and have a growing medium depth of 60mm
- Extended depth cells can be supplied as non standard items
- Each cell is drip fed with water from the collection panel at the top of the panel. There is a reservoir and drainage holes as part of the irrigation system

A major advantage of this system is that a single module can be removed from the frame at any time and replaced (if the plants are suffering, for example) without major disruption to the rest of the area. Indeed our nursery partners can hold stocks of replacement panels for immediate switch over if required.

The horticultural options are vast. Sedum, grasses, ferns, ivy, herbs, edible and exotic plants can be included, subject to micro climatic conditions and maintenance programmes.



GUIDELINES FOR MATERIAL SELECTION, USES, INST THE DIFFERENT SYSTEM BUILDUPS

	COMPONENT GREEN ROOF FOR GRASS	COMPONENT GREEN ROOF FOR SEDUM	COMPONENT GREEN ROOF FOR SEDUM / WILDFLOWER MIX
PRE-GROWN MODULAR KIT	X	X	X
3MM PROTECTO-BOARD	WHERE APPROPRIATE DEPENDING ON THE MEMBRANE BELOW		
300GSM GEOTEXTILE FILTER UNDER FLEECE	✓	✓	✓
PROTECTO-DRAIN 20 P	✓	✓	✓
300GSM GEOTEXTILE FILTER FLEECE ABOVE	REQUIRED BUT DENSITY DEPENDING ON WATER FLOW RATE		
100GSM GEOTEXTILE FILTER FLEECE ABOVE	REQUIRED BUT DENSITY DEPENDING ON WATER FLOW RATE		
70MM LIGHTWEIGHT GROWING MEDIUM	X	✓	✓
UP TO 200MM LIGHTWEIGHT GROWING MEDIUM	✓	IF DESIRED	IF DESIRED
WALLBARN PRO-GRAS BIOTEXTILE	✓	X	X
SEDUM BLANKET	X	✓	X
SEDUM / WILDFLOWER MIX BLANKET	X	X	✓
PLUG PLANTED VEGETATION	X	X	X
HDPE MODULAR PANELS	X	X	X
MOUNTING STRIPS AND FIXING BARS	X	X	X
IRRIGATION SYSTEMS	✓	IF DESIRED BUT NOT ESSENTIAL	
LEAD TIME FOR PLANTS	AVAILABLE IN STOCK	PLANTING IN APRIL READY LATE SUMMER, JULY READY AUTUMN, AUTUMN PLANTING READY SPRING	
STOCKS HELD	✓	✓	✓
PLANTING TIME	ABOVE 10°C	BEST FROM EARLY SPRING TO NOVEMBER	
SATURATED WEIGHT	150KG PER M²	50KG PER M²	50KG PER M²
LEAD TIME FOR INSTALLATION	UP TO 4 WEEKS		
INSTALLATION REQUIREMENTS	SAFE ACCESS TO ROOF AND STORAGE AREAS F CRANE ACCESS AN ADVANTAGE		
SPECIALIST INSTALLATION	AVAILABLE	AVAILABLE	AVAILABLE
SUPERVISED INSTALLATION	AVAILABLE	AVAILABLE	AVAILABLE
ONGOING TRAINING SCHEMES	AVAILABLE	AVAILABLE	AVAILABLE
MAINTENANCE CONTRACTS	AVAILABLE	AVAILABLE	AVAILABLE
FREQUENCY OF MAINTENANCE	WEEKLY	6 MONTHLY	MONTHLY
POSSIBILITY FOR INTERIORS	X	X	X
NON-MAINTENANCE TRAFFICKING OF AREA	✓	NOT RECOMMENDED	
HARD LANDSCAPING ACCESS TO AREA	RECOMMENDED		

INSTALLATION AND PLANTING TIMES ARE GIVEN BELOW: REQUIRE VARIOUS CONSIDERATIONS

COMPONENT ROOF PLUG PLANTED BULBS / LARGER PLANTS	COMPONENT BROWN ROOF	MODULAR GREEN ROOFS WITH SEDUM	MODULAR GREEN ROOFS WITH SEDUM / WILDFLOWER MIX	MODULAR BROWN ROOFS	SEDUM GREEN WALLS	FERN / IVY / GRASS / HERB MIXTURE WALLS
X	X	✓	✓	✓	X	X
		WHERE APPROPRIATE DEPENDING ON THE MEMBRANE BELOW				
✓	✓	✓	✓	✓	X	X
✓	✓	X	X	X	X	X
	X	X	X	X	X	X
X	✓	X	X	X	X	X
X	✓	X	X	X	X	X
✓	IF DESIRED	X	X	X	X	X
X	X	X	X	X	X	X
X	X	X	X	X	X	X
X	X	X	X	X	X	X
✓	✓	X	X	X	✓	✓
X	X	X	X	X	✓	✓
X	X	X	X	X	✓	✓
✓	X	IF DESIRED BUT NOT ESSENTIAL		X	✓	✓
6 WEEKS	BESPOKE	PLANTING IN APRIL READY LATE SUMMER, JULY READY AUTUMN, AUTUMN PLANTING READY SPRING		BESPOKE	PLANTING IN APRIL READY LATE SUMMER, JULY READY AUTUMN, AUTUMN PLANTING READY SPRING	
✓		✓	✓	BESPOKE	✓	✓
ANY TIME	ANY TIME	BEST FROM EARLY SPRING TO NOVEMBER		ANY TIME	NOT RECOMMENDED JUNE TO AUGUST	
200KG PER M²	VARIABLE	50KG PER M²	50KG PER M²	VARIABLE	64KG PER M²	64KG PER M²
UP TO 4 WEEKS	UP TO 6 WEEKS	UP TO 4 WEEKS		UP TO 6 WEEKS	5 WEEKS BASED ON 1,800M²	
OR COMPONENTS, E		SAFE ACCESS TO ROOF AND STORAGE AREAS FOR PALLET, CRANE ACCESS AN ADVANTAGE			SCAFFOLD AND ACCESS TO WALL	
RECOMMENDED	RECOMMENDED	AVAILABLE	AVAILABLE	RECOMMENDED	✓	✓
AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	X	X
AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	
RECOMMENDED	AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	RECOMMENDED	
MONTHLY	YEARLY	6 MONTHLY	MONTHLY	YEARLY	6 MONTHLY	
✓	X	X	X	X	X	✓
✓	✓	NOT RECOMMENDED		✓	X	X
D		RECOMMENDED			X	X

Depending on the vegetation planted, maintenance is relatively minimal. Pruning should take place twice a year, and regular checks for blockages to the irrigation system should be made.

Living walls can cover ugly urban walls with a natural, luxurious finish, but they can also have a practical use. Edible plants can be grown effectively, and they have been installed successfully in schools and learning centres. They can be supplied empty with either cuttings or seeds, allowing students to plant their own nursery stock and learn from their efforts.



LIVING WALLS FOR INTERIORS



Green walls can also be installed for interior areas.

The concept is the same although careful consideration needs to be made into the type of plants chosen.

Tropical plants can be sustained easily in this way.

Horticultural advice is recommended.

LIVING WALLS USING PRO-GRASS

Some green walls can be installed into groundworks using Pro-grass biotextile as a far cheaper alternative to frames.

In areas of civil engineering, for example, the biotextile fabric can be installed and secured within solid embankment fixings, grass starting to grow within 4 weeks and fully established in approximately 4 months.



Green roofs and living walls can offer huge advantages on and around structures and represent added value to the project. They can improve the environment in high density areas significantly.

Around 50% or even more of the rainwater can be retained in the vegetation and soil which puts much less pressure on drainage systems. Not only does this help in the water management within the site, but it is appreciated at planning level.

In the age of sustainability, bio-diverse and brown roofs offer the chance to recycle decontaminated elements from the building project such as rubble, saving with disposal costs. Bio-diverse roofs will have coarse substrates with lower nutrient levels and less absorption of rainwater. However, proper drainage and filtration systems still need to be installed.



Remember that landscaped podium decks have the same buildup and maintenance requirements as green roofs – and offer the same potential benefits.

Access is always important to these areas, and we recommend that paving areas are laid onto Wallbarn support pads, as the rainwater can drain beneath the slabs and into the drainage outlets without interference or re-direction.

Our systems are designed for **extensive roof applications**, with substrates up to 200mm deep. The substrate must be an absolute minimum 70mm deep for vegetation to be sustained. The weight of the green roof system will depend on the type of soil and vegetation chosen. Wallbarn has standard grade sedums and soil substrates but alternative and adapted materials can be used, depending on type of plants or gardens desired.

**IT IS ESSENTIAL TO ENSURE THAT THE ROOF
STRUCTURE CAN WITHSTAND THE WEIGHT OF A SATURATED
GREEN ROOF SYSTEM**

**WALLBARN GREEN ROOFS, LIVING WALLS AND
BIO-DIVERSE SYSTEMS. WE COVER ALL THE OPTIONS FOR
EXTENSIVE LIVING DECKS.**

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