27th October 2022

PP/2022/0406/P – Discharge of Condition 6 – Extensive Green Roof works

Condition 6 of PP/2022/0406/P states:-

Prior to commencement of development, full details in respect of the living roof in the area indicated on the approved roof plan shall be submitted to and approved by the local planning authority. The details shall include:

- i. A detailed scheme of maintenance;
- ii. Sections at a scale of 1:20 with manufacturers details demonstrating the construction and materials used showing a variation of substrate depth with peaks and troughs, and;
- iii. Full details of planting species and density

The living roofs shall be fully provided in accordance with the approved details prior to first occupation and thereafter retained and maintained in accordance with the approved scheme.

Reason: In order to ensure the development undertakes reasonable measure to take account of biodiversity and the water environment in accordance with policies G1, CC1, CC2, CC3, D1, D2 and A3 of the London Borough of Camden Local Plan 2017.

The proposed living roof is the Bauder XF301 Sedum System which is a lightweight sedum roof system. Please find attached to this letter:

- The Bauder XF301 Sedum System Product Datasheet which provides the roof system details.
- The Bauder General Maintenance guide fort the Lightweight Sedum Systems including the XF301 roof system.
- The Bauder Vegetation Guide which outlines the species of the XF301 system (page 9).
- Drawing 314.19 806 which includes the 1:20 section through the roof and 1:5 manufacturers detail illustrating the build up of the substrate.

Yours sincerely,

The

Patrick Brice For and on behalf of Johanna Molineus Architects

JOHANNA MOLINEUS ARCHITECTS LIMITED Company: No. 5514722 Director: Johanna Katharina Molineus Architect Dipl.Ing. (Hons) Registered Offices: Lane Cottage, Pound Green, Arley, Bewdley, Worcs DY12 3LF VAT registration number: 8510285 47

Revision: January 2018

BAUDER

PRODUCT DATASHEET

Bauder XF301 Sedum System

Single layer, light weight, Sedum System.

Intended Use

Bauder XF301 Single Layer Sedum System is an ultra-light weight sedum system. The product can be laid directly onto the waterproofing without the need for a growing medium. XF301 also contains a moisture mat which retains up to 5 Ltr of water/m2. The vegetation is a mix of in excess of 14 sedum varieties.





PRODUCT INFORMATION AND TECHNICAL PERFORMANCE				
Characteristic	Unit	XF300 Sedum Blanket		
Maximum Saturated Weight	Kg/m²	≤44		
Thickness	mm	34 - 44		
Sedum and Saxifrage Species	Nos	14 - 17 species		
pH Value		6.5 - 7		
Typical Supply Size	m	1 x 2		
Sedum Species	14+	The species mix is adjusted from time to time. Please contact Bauder Technical for further information		
Long Rolls (for use with crane attachment)	m	5 to 10m		
Material		Substrate and sedum plants, embedded in a nylon mesh, with a moisture retention fleece		

IRELAND

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CERTIFICATION AND ENVIRONMENTAL INFORMATION			
International Standards Organisation	ISO 9001:2015 Quality Management		
(ISO)	Certificates EN1271 (UK) and 70499/03-15_e (Germany).		
	ISO 14001:2015 Environmental Management		
	Certificates A10552 (UK) and 70499/03-15_d (Germany).		
	ISO 50001: 2011 Energy Management		
	Certificate 70499/03-15_c		
BS 476 Part 3: 2004	Ext. F. AA Ext. S. AA		
Recycled content	≥ 80% recycled material		

INSTALLATION GUIDANCE

Normally installed directly onto the waterproofing or on flat roofs onto SDF mat. Care should be taken not to traffic the sedum. XF301 should be layed by skilled operative. See Bauder's Green Roof Installation Guide for full details.

IRELAND



General Maintenance Lightweight Sedum System

Bauder XF301 system



Bauder green roof extensive systems

These practises should be carried out annually as part of a structured maintenance regime.

General Maintenance

The appearance of the vegetation on an extensive green roof will change over the year. The growth and flowering of the individual species within the vegetation mix will be dependant upon fluctuations in the seasonal weather. Extensive green roofs and sedum plants will not always be green. In the winter, sedum will become smaller and turn red/ brown in colour as they prepare themselves to withstand the coming winter frosts.

Bauder recommends that all green roofs have a way of watering during prolonged periods without rain. All green roofs will benefit from water during droughts. Generally sedums are much more drought tolerant than native wildflowers but both will benefit from a prolonged soaking (not little and often) to prevent them from fully drying out (see Bauder's Watering Guide).

All green roofs will require feeding from time to time. Bauder's lightweight Xero Flor Sedum Blanket contains little in the way of natural nutrient, so fertiliser must be applied annually to ensure that the plants become resistant to extremes of weather and temperature.

The Bauder Sedum Blanket contains approximately 14-17 different plant species. Not every species incorporated will survive and the more dominant will prevail over time dependant on location.

General maintenance is best carried out annually during springtime. However, increasing the number of visits will improve the aesthetics of the roof.

Preliminary Maintenance Procedures

The following procedures should be carried out in order to ensure the roof is maintained in good condition and to protect the validity of the waterproofing system guarantee:

- Ensure that relevant health and safety procedures are followed when working at roof level, this includes making sure that safe access can be gained to the roof. It is advised that the contractor should always seek proof of current maintenance for any man-safe roof access systems prior to proceeding with the work on site.
- Remove all dead vegetation and debris from the roof surface, taking particular care to ensure that all chute outlets, gutters and downpipes are clear.

Please note: Roofs in the vicinity of taller trees will need more frequent maintenance. Bauder recommend removing dead leaves during the spring and again in the autumn, to ensure that they do not damage the roof vegetation.

- Remove the lids of all inspection chambers, ensure that all rainwater outlets and downpipes are free from blockages and that water can flow freely away.
- Ensure that any protective metal flashings and termination bars remain securely fixed in place. Renew or repair as necessary.
- Examine all mastic sealant and mortar pointing for signs of degradation. Repair or replace as necessary.
- Check that all promenade tiles and paving slabs remain in position, secure and in good condition.
- The building owner should keep a record of all inspections and maintenance carried out on the roof. Any signs of damage, contamination or degradation to the waterproofing should be reported to Bauder immediately, in order that arrangements can be made for remedial work to be carried out if necessary.

Bauder Limited 70 Landseer Road, Ipswich, Suffolk, IP3 oDH bauder.co.uk Bauder Limited O'Duffy Centre, Carrickmacross, Co.Monaghan bauder.ie

Green roof extensive system

- When carrying out maintenance to adjoining areas, care must be taken not to damage either the landscaping or the waterproofing system. If it is considered that either element has been effected, Bauder should be contacted for ad -vice. Any waterproofing damage caused after completion of the original installation may invalidate the guarantee.
- Any unauthorised alterations to the waterproofing system will invalidate the guarantee. If such a situation should arise, Bauder should be contacted to advise on the alteration and how it should be incorporated without effecting the guarantee.

Vegetation Maintenance Tasks

Application of Fertiliser to the vegetation: As a general rule all sedum based green roofs require feeding annually to promote strong growth in the sedum and make them more drought tolerant.

Plant encroachment

Any vegetation which has invaded into drainage outlets, inspection chambers, walkways and the vegetation barriers (pebbles) should be removed. Additional washed stoned pebbles, similar to existing can be added if movement or settlement of the pebble vegetation barrier has occurred.

- If an irrigation system is fitted, it is best to run it only during prolonged dry weather and for limited periods see 'Irrigation' information.
- Only a relatively few species of sedum and other plants suitable for an extensive green roof installation will persist in partial and full shade, and they will generally be greener in colour and grow in these locations.
- If problems with the vegetation are suspected, Bauder may be contacted for advice and, if necessary, a suggested course of action.

Weeding

With the exception of saplings, which should always be removed, weeds in an extensive green roof should be considered as a problem only of aesthetics. If considered excessive, they can be removed either manually or by using a 'spot weed wipe'.

Repairing Bare Patches

- Bare patches can be easily repaired and this is best done during the main growing seasons of March/April or from late August until the end of September.
- Using vegetation cuttings from surrounding areas of abundant growth and either Bauder substrate or a sand soil mix following the guidance of Bauder's Sedum Patching Maintenance Guide.

Green roof extensive system

Vegetation Maintenance Tasks

Fertiliser for Bauder XF301 sedum blankets

- Bauder Sedum Blankets are grown in a shallow growing medium which contains very little nutrient, so the annual application of fertiliser is crucial to ensure the plants remain healthy.
- Fertiliser should ideally be applied during March/April, as it helps the plants to prepare for extreme weather conditions. Organic fertiliser can be obtained direct from Bauder in 20kg bags.
- Always apply the fertiliser at the given rate on the instructions. It is recommended that the fertiliser is lightly 'watered in' immediately after application, to avoid "burning" of the foliage. Dung-based organic fertilisers should be avoided.

Irrigation Bauder XF301 systems

Bauder always advises that there should be a way to water any green roof during times of dry weather. This might be a water supply point adjacent to the green roof, or a fully automatic irrigation system.

Bauder recommends when sedum systems are installed, that there is provision of either a sprinkler or drip line irrigation system if the following conditions apply: -

- The roof is in full sun.
- All roof with a slopes exceeding a 2° pitch.
- Windy or exposed site locations.
- Sites up to 50 miles inland of the east coast of the UK mainland.

Irrigation should only be activated during periods of dry weather, or if the sedum plants are showing signs of distress. The irrigation system is best run at night or at dawn or dusk to minimize unnecessary evaporation. Then once every 4-6 days for the duration of the hot weather. This can be easily managed by using an inexpensive battery-powered, programmable timer.

Green roof extensive system

BAUDER GREEN ROOF MAINTENANCE SERVICE

Green roof maintenance service is carried out by Bauder's preferred maintenance providers. These experienced green roof maintenance companies have worked closely with Bauder carrying out maintenance services throughout mainland Britain for several years.

A typical maintenance programme includes:

- **Roof evaluation** a comprehensive review of the Bauder green roof to determine what remedial work, if any, needs to be completed.
- Removal of weeds and unwanted items over time a green roof can become congested with leaves, debris and other unwanted vegetation, which can be removed.
- Inspection examination of roof outlets and removal of any encroaching vegetation to enable water to flow freely to rainwater pipes.
- Application of fertiliser to help restore a green roof to its best, an organic slow release granular fertiliser will encourage growth.
- Testing after all work has been performed, the irrigation system will be examined to ensure it works as expected.

This work can be undertaken by the companies detailed below, who directly manage the maintenance of green roofs and will cover all aspects of the service from quotations through to invoicing. Bauder and our preferred suppliers are committed to the arrangement and will ensure a high standard of expert care and advice for our customers.

Green roof maintenance contractors currently recommended to maintain green roof elements for the Bauder system

Green Maintenance in England and Wales: The Urban Greening Company Mr Mike Cottage

105 Ridgeway Marlow Buckinghamshire SL7 3LH 07515 887868 greenmaintenance@tugc.co.uk tugc.co.uk

Green Maintenance in Scotland: Urban Utopia Landscapes

Mr Gavin Gale Mayville Gardens East Edinburgh Lothian EH5 3DW 0800 061 4353 office@urbanutopialandscapes.com urbanutopialandscapes.com

If you would like Bauder to forward your details to one of the preferred maintenance companies, please email **c.roddick@bauder.co.uk** giving the details of the green roof and contact information with explicit permission for your details to be shared with the preferred supplier.



Bauder Vegetation Guide

For extensive and biodiverse green roofs



Bauder Vegetation Guide

The Bauder Vegetation Guide for Extensive and Biodiverse Green Roofs has been written for landscape architects and ecologists to understand and select the correct species and vegetation from the different choices available for Bauder green roof systems.

The focus of this guide is specifically vegetation. For guidance on the initial design of a green roof, please refer to the Bauder Green Roof Design Considerations. Other combinations: blue and green roofs or Bauder BioSOLAR Systems are covered in their own design guides.

Green roof types

Sedum Roofs

Planted with mainly sedum species, these roofs are very drought tolerant and low maintenance. Most sedums are not UK native species and therefore sedum roofs are considered to have a lower environmental benefit.

Wildflower Roofs

The roof is planted with British native wildflowers. These types of green roofs are heavier and require more maintenance than sedum systems.

Biodiverse Roofs

A wide mix of plant species (normally all British native species) is used on a biodiverse roof. Designed to give a broad spectrum of differing habitats for plants and insects.

Brown Roofs

(Now referred to as biodiverse roofs) This term is used to describe a self-generated biodiverse roof. This way of establishing a Biodiverse roof is no longer considered best practice.

Extensive Roofs

All of the above roof types and most green roofs with substrate under 200mm are classed as extensive roofs.

Intensive Roofs

A roof typically with substrates over 200mm, capable of supporting much more complex herbaceous, woody shrubs and trees, are classed as intensive roofs.



Choosing the type of vegetation

The reason for the green roof will often dictate whether sedum, native wildflower or biodiverse vegetation is specified.

Sedum gives a high aesthetic look to a roof and need very low levels of aftercare. Native wildflowers offer a more natural finish. British native species are used to complement the local environment and create natural habitats. They give an attractive show of flower in the summer. Biodiverse roofs use native wildflowers again to give a broad range of different habitats. A biodiverse roof also incorporates areas of bare ground, habitat piles of dead wood, stone, and sand. These can have quite a low aesthetic appeal at sometimes of year.

If there is a requirement for recreational use, then intensive/accessible green roof systems will be required. These are more traditional in layout with lawns and herbaceous planting.

Sedum systems

Sedum is still the most popular covering for green roofs. Bauder can be supplied as either a deeper substrate system or a single layer, lightweight system.

Advantages of specifying a sedum system

- Extremely tough and drought tolerant, making it low maintenance and giving a high aesthetic value.
- Will grow in very shallow substrate, spreading to give excellent low growing ground cover, which can give the lowest build-up of green roof when height is a consideration.
- Mainly evergreen, providing a pleasing aesthetic throughout the year.
- Sedum systems are typically the lightest green roofs, ideal for projects that have weight loading limitations.

Considerations when choosing sedum

- Sedum species are almost exclusively not British native species. If your planning requirements are for native species, a different green roof system may be a better choice.
- Sedum blankets are not very diverse and so have a limited flowering season. This makes them less valuable for pollinators.
- Sedum cannot be easily grown from seed at roof level.
 A sedum blanket will give instant greening and is already established.
- This system will not tolerate any foot traffic.
- Sedum green roofs need high levels of light. Shade created by buildings could hinder the establishment of your sedum roof.



Wildflower

With such a broad range of British native flowering plants available, wildflower can produce a green roof that is ideally suited to the location and aspect of the environment. The planting can be established by either blanket, plug or seed.



Advantages of specifying a wildflower system

- Bauder Wildflower Blankets (WB), seed and plugs are all British native species collected in line with Flora Locale Code. This ensures providence and suitability for ecologically sensitive schemes.
- Wildflower systems can establish quickly and will produce a more diverse habitat to enhance biodiversity.
- Using the correct mix of Wildflower species will give a prolonged flowering season, giving a longer food source to pollinators.
- Wildflowers require relatively low levels of aftercare and maintenance.

Considerations when choosing wildflower vegetation

- A deeper build-up (150mm+) is required and so this system is heavier than sedum.
- Wildflower system will require some additional water in time of drought.
- Wildflowers will require more maintenance.
- When not in flower the swath can look untidy.
- This system will not tolerate any foot traffic.

Biodiverse roofs

Biodiverse roofs are primarily designed to maximise different habitats mixing vegetation with other features and bare ground to create a matrix of habitats. These varied areas attract many different invertebrates and insects which themselves become a food source for birds and bats.

Advantages of specifying a wildflower system

- Bauder biodiverse roofs use all British Native species typically supplied as seed and plugs, making them the most ecological beneficial green roof systems.
- Bauder biodiverse roofs can have a range of surface finishes and treatments to produce a more diverse habitat making them more likely to achieve planning approval.
- Biodiverse roofs normally contain a broad range of native species which can give a prolonged flowering season.
- Biodiverse systems require low levels of aftercare and maintenance.

Considerations when choosing wildflower vegetation

- The range of habitats can make biodiverse systems appear scruffy and unkept.
- Biodiverse systems will suffer without water in times of drought.
- Biodiverse roofs still need to be managed. They can become weed infested without maintenance.
- Biodiverse roofs will not tolerate any foot traffic.



Intensive green roofs

Intensive roofs have deeper planting areas which enable large and more diverse plants to be included. The roof is likely to be a mix of soft and hard landscaping and have some form of public access.

Advantages of specifying an intensive roof system

- Typically, a mix of hard and soft landscaping is used making this roof system suitable for public access and recreation.
- Intensive roofs can incorporate any type of plant, from mature trees to lawns and water features, this gives clients to opportunity to make the area a real asset to the building.
- Intensive green roofs create an outdoor living space.
- Intensive roofs are normally designed with a very high aesthetic.

Considerations when choosing an intensive system

- Intensive systems are deep and heavy (250mm+ / 300-500kg/m²).
- These roof systems require regular maintenance and some form of irrigation system.
- Intensive roofs are expensive to construct and maintain.

Vegetation for BioSOLAR systems

Plants that will thrive on a Bauder BioSOLAR green roof must be low growing so as not to shade the PV panels, and shade tolerant if they are to grow under the panels.

Pre-grown vegetation blankets such as WB and SB blankets are grown in full sun and are therefore not suited to the areas in front of and under the PV panels. Sedums are in general not very shade tolerant species so again, not ideally suited.

Bauder's Flora 3 native seed mix has been specially designed to give a broad mixture of sun and shade tolerant species that are naturally low growing. This is the ideal mix for in front of and under the panels. Away from the PV array any of the other plants and establishment techniques can be used.









Vegetation supply options

For most roof types there are three main options for establishing the vegetation; Seed, Plug Plants and Vegetation Blanket.

Seed

This is the most cost-effective way to establish vegetation at roof level. However, seeding can only take place at the correct time of year will take some time (up to 2 years) to fully establish. Seeding at roof level is more difficult than sowing seed at ground level.

Wildflower Seed

Bauder produces five seed mixes of native wildflowers with additional additives to help the establishment process.

Bauder Flora range of seed mixes has been developed to give the seed the best possible chance of germinating and establishing on the roof. The mixes contain a carefully selected range of species for the type of green roof being established. In addition, the mix contains a tackifier to stick the wildflower seed to the surface of the substrate, preventing it from being blown away or washed deep into the substrate. In addition, the mix also contains Mycorrhizal fungi and a slow-release fertiliser to speed up the establishment process.

Biodiverse Roofs

Seed is often combined with plug planting and other habitat features to produce a board mix of habitats.

Sedum Roofs

Bauder does not recommend trying to establish sedum on roofs using seed. The very small sedum seeds and the hostile conditions at roof level make establishment very problematic. The GRO Code warns against using seed and recommends instead using either a pre-grown vegetation blanket or plug plants.

Name	Bauder Flora 3 Seed Mix GB50120403	Bauder Flora 5 Seed Mix GB50120405	Bauder Flora 7 Seed Mix GB50120407	Bauder Flora 9 Seed Mix GB50120409	Bauder Flora 11 Seed Mix GB50120411
Location	General	Urban	Chalk Grassland	Coastal	Scottish
Description	Low growing and shade tolerant species to suit most conditions. Recommended for BioSOLAR installations.	Chosen plants can absorb pollution and CO₂ and provide a habitat for insects and invertebrates.	These are key wildflower species found on the North and Downs, Mendips Chilterns, and the Cotswold.	Species that can cope with drier conditions, higher winds, and a more saline environment.	Seeds are certified to be of Scottish providence to give Scottish sites truly native vegetation.
No of Species	49	38	28	24	33
Wild Flowers	31 (65%)	28 (80%)	23 (85%)	14 (75%)	26 (75%)
Annuals	8 (20%)	6 (10%)	None	3 (10%)	3 (15%)
Sedge and Grasses	8 (15%)	2 (10%)	5 (15%)	4 (15%)	2 (10%)
Sedum	2	2	0	3	2
Coverage	100g per m²	100g per m²	100g per m²	100g per m²	100g per m²
RHS Perfect for Pollinators	35	34	22	20	29
Laval Food	12	9	11	8	6

These mixes can be used on their own or combined with Bauder British native plugs or other mixes to give a wider vegetation selection. All the mixes are sown at a rate of 100g/m² and applied in the same way. All the wildflower is harvested using the former Flora Locale charity code of practice. The mixes are also RHS approved Perfect for Pollinators allowing the logo to be displayed. The installation process is covered in the Green Roof Installation Guide.

Plugs plants

More expensive than seed and slower to install, plug planting enables the greatest degree of control for the green roof designer. They guarantee that the correct species are planted in the optimal location. This is particularly useful for small green roofs where a high aesthetic finish is required. Plugs are difficult to establish at roof level and planting should only take place during the spring or autumn. Bauder supplies a large selection of Native Wildflower plugs (a small sample of which can be seen in the table on page o8) enabling the exact species to be supplied for the particular location. Bauder's British Native species plugs are all grown in the UK and sourced in line with the Flora Locale* code of conduct.

Bauder recommends plugs are planted at between 15-25 plugs per m². The plugs will require careful handling and aftercare. Refer to the watering and establishment section of this guide and the Bauder Green Roof Installation Guide.

Bauder British Native Wildflower Plugs

Bauder plugs are grown in peat-free compost. The production avoids using chemicals and uses primarily biological control methods including nematodes, mites, and parasitic wasps to keep aphids, Sciaridae flies and vine weevil under control.

Bauder supplies approximately 300 different species of British native wildflower plugs. These are supplied in trays of 52 or 104 as either single species or a mixed pack.

Plugs are very fragile when first planted and will need careful aftercare and watering for the first 10-12 weeks to allow them to establish.

*Flora Locale is a charity that provides best practice for the sourcing and collection of native seed in the UK.



Botanical name	Common plant name	Flowering colour	Flowering period	Positioning
Achillea millefolium	Yarrow	White	Jun-Aug	- Ö
Agrimonia eupatoria	Agrimony	Yellow	Jun-Sep	- Ö
Allium schoenoprasum	Wild Chives	Purple	Jul-Aug	Ö.
Allium scorodoprasum	Sand Leek	Purple	May-Aug	Ö:
Anthoxanthum odoratum	Sweet Vernal grass	Brown	Apr-Jul	
Anthyllis vulneraria	Kidney vetch	Yellow	Jun-Sep	Ö.
Arabis glabra	Tower Mustard	White	Jun-Jul	
Armeria arenaria	Jersey Thrift	Pink	Jul-Aug	
Armeria maritima	Thrift	Pink	Apr-Oct	Ö.
Bellis perennis	Daisy	White	Mar-Oct	Ö:
Briza media	Quaking Grass	Purple/Green	May-Aug	Ö.
Campanula glomerata	Clustered Bellflower	Purple	Jun-Oct	
Campanula rotundifolia	Scottish bluebell, Harebell	Purple	Jun-Sep	
Carex arenaria	Sand Sedge	Brown	May-Jul	Ö.
Carex flacca	Glaucous sedge	Brown	May-Jun	Ö.
Centaurea cyanus	Cornflower	Blue	Jun-Aug	
Clinopodium vulgare	Wild Basil	Pink	Jul-Sep	
Cynosurus cristatus	Crested Dog's-tail	Green/Light Brown	Jun-Aug	
Dianthus deltoides	Maiden Pink	Pink/Red/White	Jun-Sep	Ö.
Echium vulgare	Viper's bugloss	Blue	Jun-Sep	Ö
Erigeron acer	Blue fleabane	Blue	Jul-Aug	Ö.
Erysimum cheiri	Wild Wallflower	Yellow/Orange	Mar-May	Ö.
Festuca ovina	Sheep's Fescue	Green/Light Brown	May-Jul	Ö
Festuca rubra	Red Fescue	Green/Yellow/Reddish	Apr-Sep	Ö
Fragaria vesca	Wild strawberry	White	Apr-Jul	Ö
Galium verum	Lady's bedstraw	Yellow	Jul-Aug	Ö.
Geranium pyrenaicum	Hedgerow Crane's-bill	Purple	Apr-Oct	- Ö
Geranium sanguineum	Bloody Cranesbill	Purple	Jun-Jul	Ö.
Glechoma hederacea	Ground ivy	Purple	Mar-May	Ö.
Helianthemum nummularium	Common rock rose	Yellow	May-Sep	Ö.
Hypericum perforatum	Perforate St John's-wort	Yellow	Jun-Sep	Ö.
Hypochaeris radicata	Catsear	Yellow	Jun-Sep	Ö.
Leontodon autumnalis	Autumn Hawkbit	Yellow	Jun-Oct	
Leontodon hispidus	Rough hawkbit	Yellow	Jun-Sep	Ö:
Leucanthemum vulgare	Oxeye Daisy	White	May-Sep	
Linaria purpurea	Purple toadflax	Purple	Jun-Oct	Ö.
Linaria vulgaris	Common toadflax	Yellow	Jul-Sep	
Lotus corniculatus	Bird's-foot trefoil	Yellow	Jun-Sep	×.
Lychnis flos-cuculi	Ragged robin	Pink	May-Aug	- X
Oenothera stricta	Fragrant evening primrose	Pale Yellow (flowers in low light)	May-Sep	- Ö
Ononis spinosa	Spiny restharrow	Purple/Pink	Jun-Sep	- X
Origanum vulgare	Wild marjoram	Purple/Pink	Jul-Sep	- Ö
Papaver rhoeas	Common field Poppy	Red	Jun-Aug	- X
Plantago coronopus	Buck's-horn plantain	Yellow	May-Jul	- X
Plantago lanceolata	Ribwort plantain	Brown	Apr-Oct	- X
Potentilla argentea	Hoary cinquefoil	Yellow	May-Aug	
Potentilla reptans	Creeping cinquefoil,	Yellow	Jun-Sep	- Ö
Potentilla rupestris	Rock cinquefoil	White	Jun-Aug	Ö.
Poterium sanguisorba ssp. Sanguisorba minor	Salad burnet	Red	May-Aug	- X
Primula veris	Cowslip	Yellow	Apr-May	Ö.
Primula vulgaris	Primrose	Yellow	Mar-Jun	Ö.
Prunella vulgaris	Selfheal	Purple	Jun-Oct	<u> </u>
Saponaria officinalis	Soapwort	Light Pink	Jul-Sep	- Q
Scabiosa columbaria	Small scabious	Blue	Jul-Sep	<u>Q</u> .
Sedum acre	Biting stonecrop	Yellow	Jul-Aug	-Ö-
Sedum album	White stonecrop	White	Jun-Aug	-O:
Seaum anglicum	English stonecrop	Pinkish-White	Jun-Sep	- OF
Sedum rupestre	Reflexed stonecrop	Yellow	Jun-Aug	
Silene latifolia subsp. alba	White campion	White	May-Oct	- Q:
Silene uniflora (maritima)	Sea campion	White	Jun-Aug	-O:
Silene vulgaris	Bladder campion	White	Jun-Aug	
Stachys officinalis	Betony	Purple	Jul-Sep	
Teucrium scorodonia	Wood sage	Green	Jul-Sep	-Q:
Thymus polytrichus	Wild thyme	Purple	May-Aug	- Office and a second s
Viola riviniana	Dog violet	Purple	May-Oct	- QE
Viola tricolor	Wild pansy	Purple	Apr-Sep	÷O:

Vegetation blanket

Bauder supplies a range of pre-grown wildflower and sedum blankets, these have the advantage of giving an instant greening effect. Whilst more expensive, they demand significantly reduced establishment times.

Bauder's vegetation blankets are grown in Norfolk and are typically a year old when supplied, ensuring the vegetation is mature enough to withstand the lifting, transportation, and relaying process.

The blankets should have 80%+ vegetation coverage (typically 90%+). The blankets are grown outside so will always have small amounts of grass and moss within them. The correct establishment and maintenance of the blanket will reduce the weed species and allow the sedum to flourish.







Bauder produces an installation guide and videos which shows the correct way to build and install the various green roof systems and the vegetation finishes.

Bauder XF301

This is a specialist lightweight product designed to enable sedum to thrive on structures where their lightweight construction prevents other deeper substrate-based system from being installed. The sedum layer has a saturated weight of less than 44Kg/m2.

On flat roofs the system is installed with a 20mm SDF drainage mat to prevent waterlogging of the sedum plants.

Bauder also supplies a retention system enabling the XF301 to be installed on pitches up to 25 degrees (please contact Bauder for pitches greater than 25 degrees).

Bauder Sedum Blanket XF301 indicative plant list

Sedum Species

Sedum album
Sedum ellacombianum
Sedum floriferum
Sedum hybr. Czar's Gold
Sedum montanum
Sedum kamtchaticum
Sedum oreganum
Sedum pulchellum
Sedum reflexum
Sedum rupestre Angelina
Sedum sexangulare
Sedum spurium 'coccineum' (Purple Carpet)
Sedum spurium
Sedum spurium 'Summer Glory'
Sedum stenopetalum
Sedum stoloniferum
Sedum saxifraga granulata
Sedum hispanicum*

The exact percentages of seed and mix of species is reviewed and adjusted prior to each production of sedum blanket.

Wildflower Blanket

Bauder's British Native Wildflower Blanket is designed to give a long flowering season. There are more species than would normally be sown in a wildflower meadow at ground level. The number and type of species reflects the challenging environments found at roof level.

The Bauder WB Native Wildflower Blanket is grown on 100% bio-degradable carrier, typically 6 -12 months old at time of harvest. The blanket deliberately contains a very broad mix of species as not all species will flourish in the individual conditions found on any given roof. The seed is all of British Providence, harvested in line with the Flora Locale code of conduct. This pre-grown vegetation mat greatly speeds up establishment, reducing the risks and difficulties associated with trying to establish vegetation at roof level.



Bauder Green Roof designs including the WB Blanket and Flora seed mixes follow the following standards:

All native seed is collected under the Flora Locale code. Seed mixes are approved as Perfect for Pollinators from the RHS. Biodiverse Specification and Habitat layout designs are approved by Buglife (the Invertebrate Charity).



Wildflower Species

Scientific name	Common name
Achillea millefolium	Yarrow
Agrimonia eupatoria	Agrimony
Aquilegia vulgaris	Columbine
Bellis perennis	Daisy
Campanula glomerata	Bellflower; Clustered
Campanula rotundifolia	Harebell
Centaurea cyanus	Cornflower
Centaurea nigra	Knapweed; Common
Chicorium intybus	Chicory
Clinipodiem vulgare	Basil; Wild
Daucus carota	Carrot; Wild
Dianthus deltoides	Pink; Maiden
Dipsacus fullonum	Teasel
Echium vulgare	Viper's-bugloss
Feoniculum vulgare	Fennel
Geranium pratense	Crane's-bill; Meadow
Linaria vulgaris	Toadflax; Common
	Bird's-foot-trefoil;
Lotus corniculatus	Common
Lythrum salicaria	Purple; Loosestrife
Malva moscahta	Mallow; Musk
Origanum vulgare	Marjoram; Wild
Papaver rhoes	Poppy; Field or Common
Pilosella aurantiaca	Fox-and-cubs
Plantago media	Hoary plantain
Primula veris	Cowslip
Primula vulgaris	Primrose
Ranunculus acris	Buttercup; Meadow
Rumex acetosa	Sorrel; Common
Salvia verbenaca	Clary; Wild
Scabiosa columbaria	Scabious; Small
Scorzoneroides autumnalis	Hawkbit; Autumn
Silene dioica	Campion; Red
Silene flos-cucculi	Ragged-Robin
Silene uniflora	Campion; White
Sucissa pratensis	Devil's-bit scabious
Tanacetum vulgare	Tansy
Thymus polytrichus	Thyme; Wild
Trifolium pratense	Clover; Red
Viola riviniana	Common dog violet
	Pansy; Wild or
	Heartsease
Grass species	
Festuca ovina	Sheepfescue
Festuca rubra	Slender Creeping Red
	Fescue
Briza media	Quaking-grass
Hordeum brachvantherum	Barlev: Meadow



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Millimeters (mm)

-Bauder XF301 Sedum Blanket held in place by Bauder Retention Strips

_150mm unobstructed roof space to perimeter of rooflights as required in Bauder standard details _500mm unobstructed roof space to perimeter for access and

> Notes: - Bauder XF301 roofing system to be installed as per manufacturers detail. - 500mm clear unobstructed roof surface to perimeter of roof for access and maintenance - 150mm clear unobstructed roof surface to perimeter of rooflights as per standard detail

project 19 Bedford Square, London WC1B 3HH client The Bedford Estates

drawing title

Extensive Green roof detail

drawing no.

314.19 806



⁽Drg.No: D0901-00W_1-2Deg_007-Ext-XF301-SM_002)

(Drg.No: D0901-00W_1-2Deg_008-Ext-XF301-SM_001)

Drawing Number: ^{1:5} @ A0 D0901-00W_1-2Deg_200-Ext-XF301-SM_001 Drawn By: Checked By: Approved By: Date: PCH CR NB Aug 2017