

1,3&5 Agar Grove, London, NW1 9SL

Planning Condition 7

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*
 - III. Full details of planting species and density*
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I. Maintenance Strategy

Please refer to the Appendix 2 Maintenance Strategy adopted for this scheme – Bauder – General Maintenance Lightweight Sedum System - Bauder XF301 system.

The 'green roof system' is described as 'low maintenance' and shall be carried out strictly in accordance with the details so approved and shall be maintained as such thereafter.

General maintenance is normally carried out annually during springtime, however certain tasks such as the removal of weeds, seedlings and accumulated leaf litter may also be done during the autumn.

Fertiliser must be applied annually to ensure the that the plants become resistant to extremes of weather and temperature.

Maintenance shall be executed in accordance with the manufacturer's recommendations and the approved details.

II. Section at a scale of 1:20

Please refer to the Appendix 1, indicating the drawing titled Condition 7

III. Planting Species & Density

Proposed Green Roof

The system is predominantly sedum and chosen to ensure the development provides the maximum possible provision towards creation of habitats within the constraints of the existing building, layout and access.

We are proposing to utilise a comprehensive manufactured system which incorporates a tried and tested maintenance strategy.

The proposed green roof shall be planted/seeded with an agreed mix of species within the first planting season following practical completion of the building works.

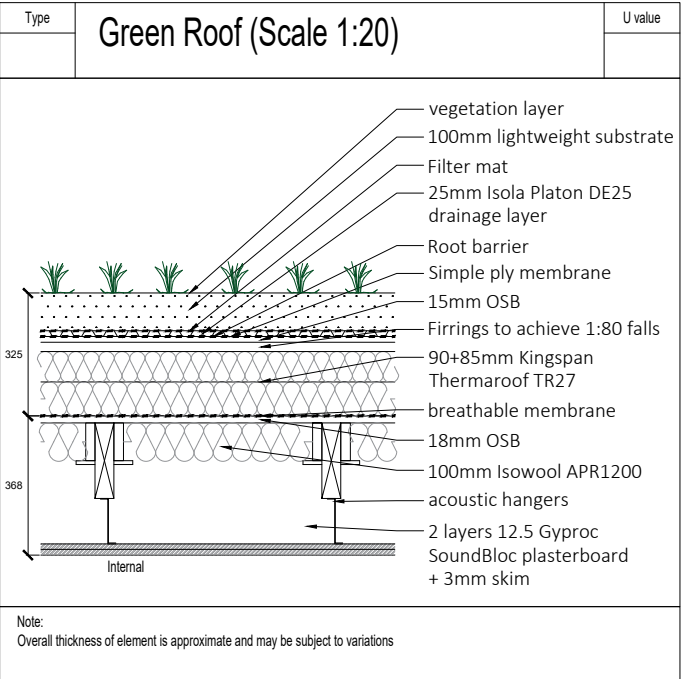
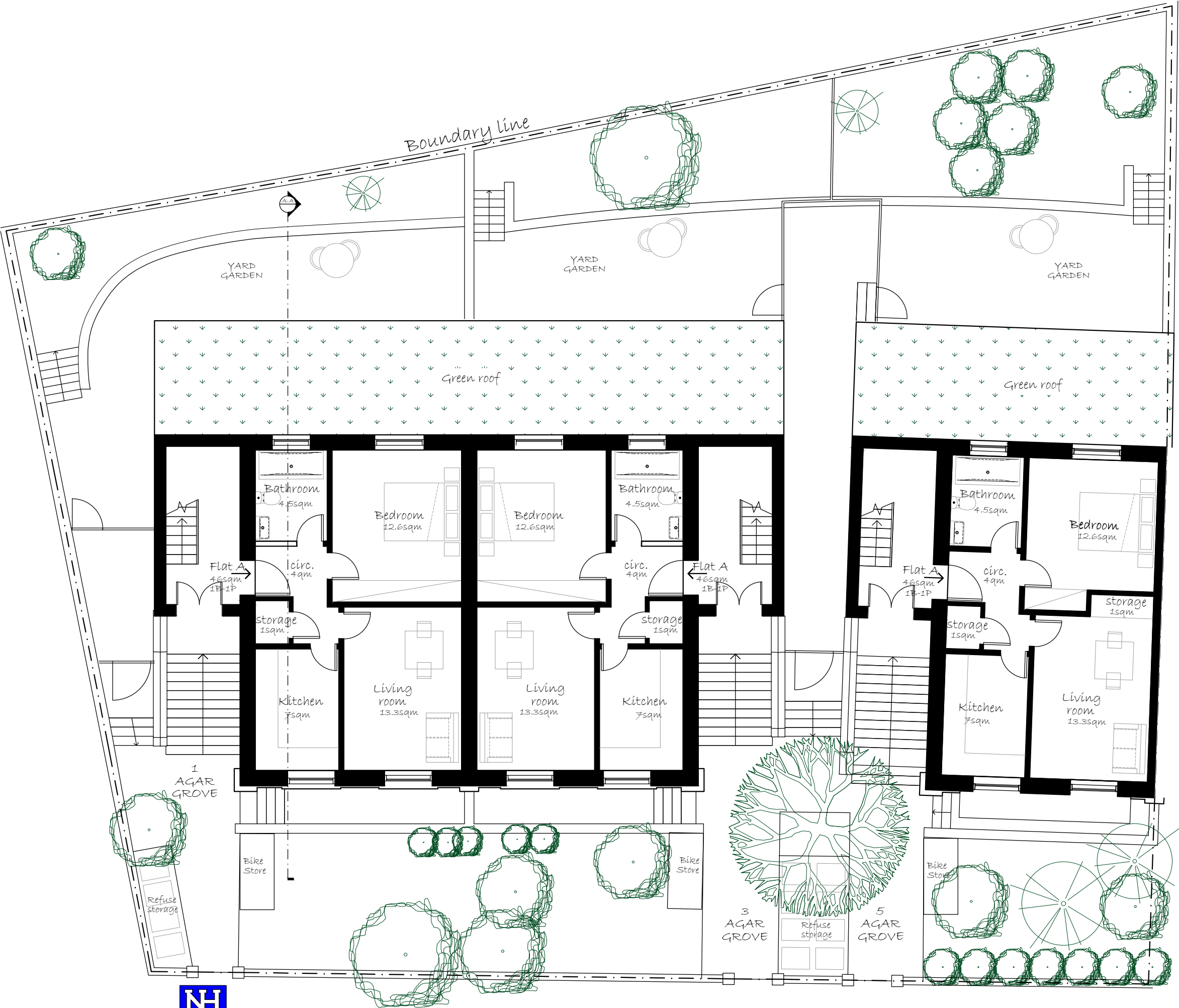
Planting density is typically 18 --- 20 plugs per m2. Plant the plugs into the growing substrate, staggered and at a suitable depth, and ensure plant material is not covered.

The seed mix density consists of approximately 90% low growing, drought tolerant sedum plants and may also include other species such as Saxifrages, grasses, moss and herbs. The 'green roof system' shall contain a minimum of 9 different species as follows:

- Sedum album 'Bella d' Inverno'
- Sedum album 'Coral Carpet'
- Sedum ewersii
- Sedum montanum subsp. orientale
- Sedum pulchellum
- Sedum rupestre (reflexum)
- Sedum spurium mesemlanthemum = Delosferma
- Sedum spurium mesemlanthemum = hallii
- Sedum verticillatum

The above species have been chosen by the manufacturer as they are particularly suited to the UK climate.

Appendix 1 – Section at Scale 1:20



Proposed
Raised Ground Floor



Appendix 2 – Maintenance Strategy

General Maintenance Lightweight Sedum System

Bauder XF301 system



General maintenance procedures

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.

General maintenance procedures

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 advice. 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.

General maintenance procedures

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.

General maintenance procedures

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.rodick@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.