



EXTENSIVE TYPE GREEN ROOFS. MANAGEMENT RECOMMENDATIONS

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'Green roof' is a generic term used here to describe roof coverings applied to waterproofed surfaces. The green roof will be:

1. Low maintenance.
2. Can be lightweight.
3. Does not require irrigation once established.
4. Naturalistic in appearance.
5. Installed for environmental and building performance reasons rather than for recreational use.

Levels of management will depend on:

1. Type of green roof installed.
2. Aesthetic requirements of the client/end user.
3. Functional requirements of the roof (the green roof must not impact on the prime function of the roof build up which is to keep the structure waterproof. If the green roof is designed correctly this should not be an issue).
4. Requirement to observe and record data (particularly important for biodiverse (brown) roof type build ups where ensuring empathy between roof covering and local species is important).

Introduction

By their nature, extensive type green roofs are **low** maintenance. An established, well designed green roof will not require irrigation and will continue to develop to create a self-sustaining community on the roof providing habitat for plant, invertebrate and bird species. For Sedum- or herbaceous-type green roofs certain procedures can be beneficial, particularly in the first year, to ensure long-term success. For any green roof covering we would recommend at least annual inspection visits – if only to ensure that the hard elements of the roof build are functioning properly. Blackdown Horticultural Consultants (BHC) Limited offer management contracts of 12 months and above depending on the client's requirement. As a general guide, it is recommended that management visits be carried out two or three times in the first year and once or twice in each subsequent year but this depends on the type of system installed and the rate of plant cover. The following are general procedures related to the green roof only. Not all the procedures will be appropriate to every roof.

We can also include within any management package other services normally associated with the roof such as cleaning of rooflights and clearing of gutter ways.

Safe access

Under the construction design and management regulations 1994, appropriate measures should be taken at both design and construction stages to ensure safe access and passage over the planted roof areas for management personnel.

Access and egress routes to and from the roof need to be carefully considered. Ideally these should be discussed and agreed between client/end user and BHC before completion of the installation phase if a management contract is required.

A post and wire fall protection system set at the perimeter of the roof will allow management procedures to be carried out safely once on the roof. This permanent system should be installed prior to the green roof. Safe maintenance access can then be gained to all roof areas by personnel equipped with harnesses and lanyards (BHC personnel equipped with own harness and lanyard). Care should be taken if the roof build up includes elements within the area of the roof that also have a fall risk. Typical of this would be roof lights. If the roof lights present a hazard then installed fall prevention system locally to the roof light may have to be included.

With regards the design and installation of any fall prevention system for planted roof management we would advise the following;

1. Inform the supplier and installer that fall prevention system will be installed as part of a green roof build up and will be used to gain safe access to all planted areas.
2. Clarify any supplier/installer requirements for operation of the fall protection system as part of the planted roof build up prior to placing an order.

Designing a roof so that the planted element can be managed safely is not problematic provided that the correct information is given to the safety equipment supplier/installer. Methods of access, working on the roof and egress should then be agreed prior to the management visit being required.

Trafficking of the green roof

Trafficking of the green roof on the basis of 2-3 times a year will have no detrimental effect. If works are to be carried out on the roof surface or to adjacent structures care should be taken to minimise damage to the plant layer resulting from repeated trafficking. In this case we would advise that access routes to the works are tightly defined to ensure damage is minimised. If the plant material is damaged regrowth normally occurs. However, the speed of recovery will depend on the level of damage, duration of the trafficking period and time of year.

Removal of undesirable plant material

Determination of the aesthetic requirements of the client/end user and the design of system to these requirements are key factors. Undesirable plant material is probably a most significant issue on Sedum-type green roofs (simply because they are most apparent against the low growing background vegetation). Sedum species are well adapted to life on the roof and quickly become established. However, even on a well designed roof a few other native species may intrude. Some people welcome the colonisation of so-called 'weeds' to promote biodiversity. However, the client may prefer them to be removed.

Recording of green roof performance

We believe observation, identification and recording of the plant, invertebrate and bird species using roof space is important. This data not only reinforces the value of the green roof to the client/end user but also strengthens the argument for even wider implementation of green roof technology. Collection of this information forms an integral part of our management procedures.

Briefly, other management processes could include:

1. Checks and treatment for pests and diseases (not a general approach but geared towards specific projects where aesthetic appeal is key).
2. Application of nutrient and soil conditioner (to include low level organic feed and mycorrhizal inoculate).
3. Correction of system. Acidification of the growing medium can occur particularly in built up areas where rainfall may be acidic. Acidified low nutrient growing mediums can encourage the establishment of moss. Low levels of moss are not a problem and indeed should be viewed as a significant part of the roof's biodiversity. However, if moss becomes too well established this can be at the expense of the plant community and exposed aggregate attractive to ground nesting bird species. BHC personnel will check substrate pH and nutrient levels and amend it accordingly.
4. Checking of gutters and drain ways.
5. Cleaning of glazed areas.
6. Removal of flower heads after flowering (possible aesthetic requirement). Removal of meadow grass 'thatch'.
7. Removal of leaf litter. The ideal position for a green roof is in full sun. In certain situations, adjacent trees could shed leaves onto the roof surface. Depending on quantity, these may need to be removed with a leaf-blowing machine. This would be a seasonal requirement.