Many layers of sustainability

As sustainability filters to all elements of construction, living roofs are a very visual message of environmental intent. Gareth Moores, executive chairman of Lytag Ltd explores the benefits of living roofs and the role they can play in supporting the construction industry's drive for improved sustainability.

Offering operational advantages as well as a simple way of making the construction industry 'greener', green roofs are already popular in mainland Europe and are becoming more common in the UK. Change is being driven by government legislation such as the Code for Sustainable Homes, Housing Green Paper and the draft Strategy for Sustainable Construction, all of which require improved energy efficiency, better use of materials and reduced waste. Living roofs are able to play their part, incorporating the use of sustainable materials, supporting energy efficiency and providing a secondary drainage system.

Greater uptake of living roofs has been hampered by a lack of detailed understanding of the different types of living roofs that are possible, their capabilities and the benefits they offer. But these perceptions are starting to turn and living roofs have the potential to become a more common feature on our skyline.

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The options

Living roofs can vary significantly, from roof terraces to sedum roofs. There are three basic types of living roof – extensive, semi-extensive and intensive, relating to the amount of maintenance each requires, depth of growing medium and the type of plants the area will support.

Extensive roofs form the most lightweight roofs and are therefore most suitable for those who want to incorporate living roofs with minimal upkeep. These are the most common type of living roof, made up of a thin growing medium, often a sedum mat, which is wind, frost and drought resistant making them one of the hardest wearing.

In comparison, semi-extensive roofs have deeper soils and are therefore able to support a larger and more diverse variety of plants, but as a result will require a greater level of maintenance. Intensive roofs are most suitable for commercial uses as they have deep substrates which can support lawns, shrubs and trees and require complex irrigation systems.

All three offer excellent performance benefits to the environment and have great drainage potential. The latter is especially important given the increasingly prolonged periods of wet weather we seem to be experiencing and recent flash flooding. One of the main benefits of a living roof is the fact that it can act as a Secondary Urban Drainage System (SUDS), helping to delay storm surface run off, with plants and growing medium soaking up large percentages of rain water. A study in Germany has shown that during a 10mm rainstorm, 200 litres of rainwater fell on an 18m² extensive green roof and only 15 litres actually passed from the roof to the ground. Livingroofs.org, the independent resource on living roofs, has estimated that under average conditions living roofs can retain between 70 and 80% of rainfall in the summer and 25 and 40% in the winter.

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Embracing sustainability

Sustainability has a myriad of meanings, but for those working in construction, using materials that are recycled, reclaimed or secondary (those manufactured using other industries' by-products) helps prolong our natural resources for future generations. When it comes to designing and constructing a living roof, the choice of aggregate can help to increase the 'green' credentials of the project.

Using an aggregate that comes from secondary sources wins on two counts – helping to make a productive use of a material that would otherwise go to landfill, as well as reducing demand for quarried material.

Bourne Amenity Ltd, a supplier of landscaping and sports amenity products to local authorities, landscapers and term contractors, has developed a green roof soil following requests for a lightweight growing medium. Various mixes of the soil have been developed to suit different requirements from bedding planters to lawns and provide a structured body to support the growth of a variety of seeds, plants, flowers or turf. Sustainability has been an important criterion, so the company uses Lytag lightweight aggregate, which is a by-product of coal fired power stations. Bourne Amenity Ltd uses Lytag lightweight aggregate within the soil to provide the ideal bulk density ratio, but one of the key benefits it offers is the ability to retain moisture, stopping the soil from drying out in high winds and periods of dry weather. Trials are being conducted into the use of Lytag lightweight aggregate as a growing medium, reducing the need for compost or soil, a further help to reducing the weight of the living roof.

In the current economic climate working in a more environmentally sustainable way is also economically sustainable. Living roofs are a great opportunity for the roofing sector to showcase its own credentials. Further improvements can be leveraged from choosing sustainable materials that will often offer similar or even greater performance characteristics, helping the industry show improved sustainability, demonstrate delivery against client and government demands and produce a high quality living roof that in itself offers long term environmental benefits. ■