

Biodiversity net gain. Good practice principles for development

Case studies

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27 Living roof enhancement, Bolsover Street

Details

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Project owner	Greengage Environmental Ltd, morgan.taylor@greengage-env.com

27.1 PROJECT SUMMARY

Proposals were sought to extend a roof terrace on the seventh floor of a residential development located near to Regent's Park in central London. This would have resulted in the loss of a small area of sedum roof. Local planning policy required development to preserve biodiversity, encouraging net gains for habitats and species of local, regional and national conservation importance, which in this instance included living roofs.

A strategy was devised which included proposed habitat improvement works for another section of sedum roof located on the sixth floor of the same building. This strategy aimed to compensate for the loss of the seventh floor sedum roof, and result in overall BNG. To quantify this, Defra's biodiversity metric (Defra, 2012) was applied alongside the BRE's BREEAM land use and ecology area weighted species calculator.



Figure 27.1 Augmented living roof at 50 Bolsover Street

Both sedum roofs supported relatively low floral diversity, comprising pre-grown sedum blankets on low nutrient roof substrate. The substrate depth beneath the sedum blanket on the sixth floor roof varied between 80 mm and 120 mm. Several wildflower and grass species had self-seeded, establishing, in principle, the potential for additional seeding and plug planting. Both roofs were lacking in habitat structure, or other features that could be considered of potential value for invertebrates, birds and bats.

The strategy included the following actions:

- Seeding and plug planting of 10 wildflower species that thrive on low nutrient living roofs and are of value for notable invertebrates.
- Placement of stone and sandy piles to add habitat structure for invertebrates such as solitary bees.
- Planting of:
 - new pollinator-friendly herbaceous raised beds on the sixth floor flat balcony.
 - an ivy visual screen to delineate the edge of the roof with the adjacent balcony.
- Provision of two ‘invertebrate hotel’ structures to provide added aesthetic benefit and potential habitat structure for invertebrates.

The strategy also defined a management and monitoring plan, which included a feedback mechanism to note and action any appropriate remedial works, ensuring the continued improved ecological functionality of the roof. This was previously lacking.

The BREEAM calculator accounted for new planting, however it did not provide a mechanism for factoring in the invertebrate enhancement features, and the general improved ‘condition’ at site. Some professional judgement had to be used to categorise the sedum roof habitats in terms of distinctiveness and quality. The calculation was made based on the following conditions:

- The living roof (as it exists) was considered of moderate quality (with sedum species seemingly growing well, but supporting poor floral diversity), with the proposed roof good quality. But an active management plan needed to be in place that addressed biodiversity actions.
- The living roof (as it exists and as proposed) was of high distinctiveness if judged as habitat category PI2 of JNCC (2010). Living roofs of this type are designed as an analogue of previously-developed land. This category presented a reasonable proxy, with no known alternative precedent given the infancy of this methodology at the time of the original report in 2014.

27.2 OUTCOMES

An initial planning application was submitted in 2014. Following several technical queries, consent was granted on appeal in January 2015. A pre-commencement condition requiring a biodiversity improvement and management plan was submitted to and approved by the LPA. Works to the sixth floor living roof were completed in January 2018.

A three-year monitoring regime has been instructed by the developer, with the roofs maintained in perpetuity.

The main outcome was to establish the use of the BREEAM and Defra calculators to demonstrate BNG relating to a GI asset in an urban planning scenario.

This project is an example of retrofitting biodiversity features within an existing building. The provision of visually-pleasing features (patterned stones and ‘sculpture-like’ invertebrate towers) was well received. The client was supportive of the strategy and appreciated the benefits that an ecosystems approach could have for the value of the site.

27.3 KEY BENEFITS AND SUCCESS FACTORS

It was important that the ecologist had an active role in liaising with the landscaping/living roof company, meaning nothing was lost in translation.

Initially, there was a lack of understanding from the local planning authority of the concepts relating to technical feasibility of the proposed works (eg relating to the loading implications and ability to plug/plant in a sedum blanket). This was addressed through clear communication, employing a multidisciplinary team (including landscape professionals, ecologists and engineers) and providing supporting evidence.

The lack of dedicated biodiversity planning officers within a local planning authority may also create issues when technical judgements are required.

Some presumptions had to be made with respect to quality and distinctiveness in the absence of any guidance relating the offsetting tool to GI or the urban environment.

The most important learning point is that it is possible to augment existing GI assets and retrofit ecological features to the built form as both a compensatory measure and to achieve calculable BNGs.