52 LIME STREET
LONDON
SKANSKA

BIG Biodiversity Challenge Award Category: Innovation

Project overview

A new commercial office development for client WRBC at the confluence of Lime Street and Leadenhall Street, comprising 35 office storeys, roof plant, 3 basement levels and a new public square. The project includes retail/restaurant areas at ground floor and basement as well as service access and central plant.

What were the biodiversity conditions on site, prior to the enhancement?

A construction site located within a dense, hyper-urban environment with lots of pedestrian and vehicular transport. The site is surrounded by tarmac pedestrian areas and roads, and the immediate area features modern high-rise buildings with a mixture of designs and façades. An extended Phase 1 Habitat Survey of the Site was undertaken in May 2012 in advance of Site clearance and construction activities. The ecologist considered the site to be of low ecological value, due to the predominance of buildings and lack of vegetation.

What were the reasons behind this project ?

Skanska undertook a trial for a new mixed-seed lightweight temporary living wall system for construction applications to help refine the product design and usage constraints. The project would enable testing of the products ability to suppress construction dust and noise, increase worker wellbeing (biophilia) and improve biodiversity on site. Additionally, the nature of the trial qualified for a BREEAM innovation credit and would likely increase their Considerate Constructors Scheme audit score thus providing marketing opportunities. However, the ultimate aim was to provide a case supporting the roll-out of this system on a larger scale and encourage more prevalent use of such systems in the industry to promote urban diversity.

Living hoarding progress, day 26

Under construction day 3

What were the biodiversity measures taken?

Skanska worked in collaboration with Arup and Green Fortune to trial out an innovative new 'living hoarding' concept, comprising 20 species of flowering plants and grasses which are grown from seed in situ at the construction site, rather than away from the site in energy-intensive greenhouses as with alternative systems. The system is more flexible, lower-cost, and had a lower environmental impact than alternative systems (such as common ivy-based hoarding which offers little biodiversity benefit).

The trial was replicable & required minimal maintenance once setup, receiving all necessary water and nutrients through an automated drip-irrigation system. Awareness was promoted via an opening presentation to the construction team, posters on site & vocally via the appointed Living Hoarding Champion. A survey revealed staff had engaged in conversation over the living hoarding & the majority would encourage its use on future projects.

Over the 1.5 years the hoarding was trialled, the project ecologists found that the: flowering plant communities were very healthy, flowering throughout the season; herbs/ruderal species had arrived/expanded; great mullein managed to find its way there and establish very well; and the vegetation developed to be thick enough to offer bird nesting opportunities. They found at least ten species of spider, three bumblebees and one honeybee, standard and parasitic wasps, at least three hoverflies, three butterflies, slugs, snails, ladybirds, several unidentified moths and numerous smaller flies/insects. Bats living in the area may feed on these species. Goldfinches were observed to be feeding on the seeds provided by the plants on the top end of the wall and various birds regularly stopped by.

The living hoarding concept thus proved to confer significant local ecological benefits, supporting the London Biodiversity Action Plan by providing a means of encouraging wildlife into the built environment.

Evidence of flowering on living hoarding

Living hoarding with comms example to work force

Further information

The hoarding comprised a 3x4m seeded mat mounted onto tarpaulin, a drip-irrigation tube running along the top connected via a tube to a battery powered irrigation system and water feed. Guttering running under the mat collected excess water.

Baseline readings for PM10 and PM2.5 were taken from the annual means calculated at local LAQN monitoring stations and compared against hand-held readings taken during the trial. Unfortunately, the context of the hoarding's location (next to the vehicle loading bay, goods hoists, materials/waste storage areas and smoking area) prevented the team from establishing any impact on air quality. Further dust monitoring should be carried out where a more suitable installation location can be found. A staff survey was distributed to try and assess any impact on well-being. Overall, the staff responded positively and would like to see the system used more widely however due to the complexity of factors contributing to well-being, we were unable to deduce a direct cause-and-effect and would recommend a more extensive approach.

The study provided a greater understanding of the behaviour of mixed-seed hoarding and highlighted its limitations – one being insufficient forecasting of conditions over the course of the project. The species-mix thrived in the open starting conditions of the trial but were less successful in the shadier environments as the building progressed in height (see Photo 6).

Nonetheless, we believe the diversity attained through use of mixed seed hoarding closer replicates the complexity of natural ecosystems and thus surpass the benefits of existing mono-species systems.

Starting to shoot, day 11

After 1 year, 3 months

All photos by Skanska

Project Team

- Skanska: trialled the product on the 52 Lime Street development
- Client for the development: W. R. Berkley Corporation
- Arup: consultant to the development
- Green Fortune: worked in partnership with Arup to deliver the living hoarding

What was the motivation for carrying out the enhancement?

Skanska recognises the destructive impact of construction on biodiversity. Our Biodiversity-Strategy group supports projects on how they can mitigate or enhance their impact and encourages the sharing of best practice, like successes in the 'BIG Biodiversity Challenge'. Lime street was highlighted as a fantastic opportunity to trial the living hoarding concept due to its longevity and iconic nature that would provide a platform to publicise the trial. We hope it spurs research in a direction that leaves behind previous methods of low ecological worth, helping to reverse the damage of urbanisation and contribute towards more sustainable environments to live/work in.

All photos by Skanska