



Middle Walk Living Wall

Woking, United Kingdom

Project Case Study

Client: Eco Green Roofs Limited

Installed: 2021



As part of ThamesWey's regeneration project in Woking, a tired 1960s block of maisonettes overlooking the high street was transformed with a green building envelope solution, incorporating a bio-diverse green roof and Biotecture's PlantBox living wall system. Working with structural engineers, Biotecture designed an innovative, value-engineered solution that enabled the living wall to be retrofitted to the existing brick balconies. The final effect sees elegant ribbons of green wall stretching across the width of the building, softening the brickwork and elevating the aesthetics above Wolsey Place shopping centre.

Project Details

ThamesWey, the housing development arm of Woking Borough Council, had a vision for Middle Walk, creating a place where 'people want to live' and where the built environment was in tune with nature.

Along with its landscape architects, Hyland Edgar Driver, and main contractor Woodland Commercial, ThamesWey was looking for a solution that incorporated green, biodiverse features on the 30 leasehold residential units in this urban setting. The living walls and roof also had to deliver in terms of attenuating noise from local traffic, reducing air pollution and minimising the urban heat island effect.

As with regeneration of all existing buildings, careful consideration had to be given to weight loadings imposed by an add-on facade, which required assessment of the brickwork balustrades by structural engineers. It was first envisaged that the living wall would be suspended from this brickwork, however the survey identified that it had limited additional weight loading capacity and therefore was unsuitable for this.

The conclusion was that the brickwork would need to be demolished and replaced with a new steel balustrade to run along the length of the terraces. ThamesWey invited ways of avoiding this carbon intensive route because it would add to the cost, timescales and cause major disruption for residents.

Sub contractor EcoGreen Roofs and Hyland Edgar Driver, who had worked with Biotecture on the living wall at Wimbledon Court No.1, approached the company to help identify a living wall solution that would avoid having to demolish the brickwork balustrades.

Highlights

- ◆ Retrofit transformation of 1960s social housing in town centre
- ◆ Green envelope solution with living walls and green roof
- ◆ Bespoke load bearing steel brackets designed to support living wall
- ◆ Over 9,700 plants selected to help increase biodiversity



Our Approach

Early stage consultancy work took place to prove the viability of a retrofit solution, working with structural engineers to design discreet 150mm bespoke steel support brackets that fixed directly onto the existing concrete floor slab on the balcony. These avoided interference with the existing reinforcements and acted as the base for the freestanding PlantBox living wall system.

The approach transferred all loadings onto the main building structure, meaning no weight loading on the brickwork. Only restraint fixings at height were needed for the PlantBox troughs and these were fixed into the brickwork following a structural 'pull test'.

This practical, value-engineered solution avoided the need to demolish the brickwork and also minimised disturbance to residents, who could remain in their homes while the living wall system was installed.

The design was viewed as an innovative solution by the project partners and elevated the proposal above others, resulting in specification of Biotecture's PlantBox living wall system.

Biotecture provided a 'turnkey' solution – concept, structural assessment, design, installation and maintenance – of the living wall as well as liaison with project teams and residents.

As part of its consultative approach, Biotecture's team walked the site with the client to determine optimum locations for the irrigation system and accompanying pipework. Enhanced sustainability of the living wall was achieved through a proposal to integrate an irrigation system featuring daily remote monitoring technology. This ensures that the plants remain healthy and flourish throughout the year.

It also provided an opportunity to discuss the best way of scheduling works around 30 fully occupied flats. Biotecture proposed using a spider lift from the high street, because it avoided the need for access to individual flats and minimised disruption to residents. As part of this approach, Biotecture managed all works throughout the installation, residents were kept informed of installation dates throughout and the client received regular progress reports.

Over 9,700 plants were grown at Biotecture's nursery in West Sussex before they were delivered to site. They were chosen to provide a range of colour and texture in keeping with the local flora and fauna.

Biotecture's living wall at Middle Walk will help reduce air pollution because the plants capture toxins, gases and particulate matter by engaging a number of natural processes called biogenic regulation. The plant foliage also establishes a heat-absorbing canopy, with the shading effect reducing the building's surface from absorbing solar radiation and re-radiating it back into the surrounding environment to exacerbate the urban heat island effect.

Reducing noise is another benefit delivered by the living walls at Middle Walk because of the plants' ability to absorb sound. Thicker, fleshy leaves are particularly effective at doing this, meaning disturbance from nearby roads and pedestrian areas is minimised. Conversely, glass or metal balustrade fronts would have the effect of bouncing sound waves without any attenuation.

A key learning from this project is that biodiversity net gain can be achieved in older buildings, whilst in making them look and perform like new. Biotecture worked closely in conjunction with Eco Green Roofs to provide the full green envelope of refurbishment.

The Middle Walk project also demonstrates Biotecture's willingness to undertake early-stage consultancy involving structural engineers to prove viability of a proposal. The start point at Middle Walk was identifying ways to save the client time and cost as well as minimising disturbance for residents,

"The revitalisation of Middle Walk is an environmental revelation, showing how a concrete and brick landscape can be transformed with a little thought and imagination. EGR and Biotecture have delivered an exciting, sustainable solution to the refurbishment market, that is already generating positive comment from occupants and the wider community."

– **David Gollop** | Director, Woodland Commercial
