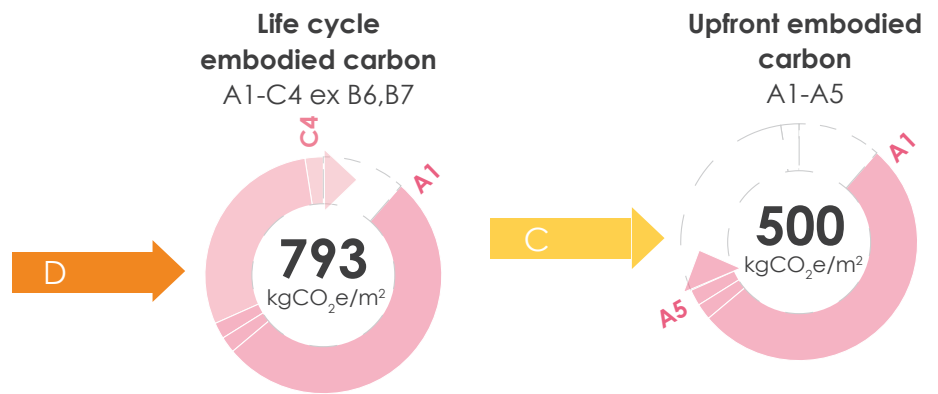
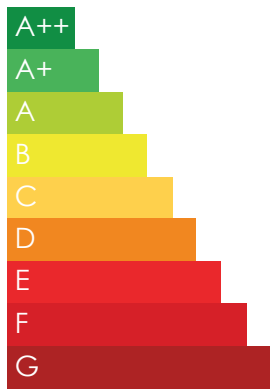


Stratford Pavilion by ACME



Building elements included



Project overview
The Pavilion is a new landmark building in Endeavour Square, Stratford. The Pavilion is conceived as a folded public space, a 'vertical piazza'. Stairs, balconies and amphitheatres invite exploration; a place to gather, relax and enjoy views of the East Bank and the Olympic Park from the rooftop. The ground and first floor of the building provide space for D&D's Haugen café, restaurant and deli; and a new visitor centre for the Olympic Park.

Project sector

Retail

Assessment date

2020 (at RIBA Stage 4)

RIBA work stage

5

GIA (m²)

1500m²

Year of project completion

2021 (Complete)

Analysis

OneClickLCA

Database(s) used

RICS

Type of building

New build

Ref. study period

60 years

Location

UK

Data notes

3 Storeys, lightweight timber structure, cross-laminated and glue-laminated timber panels and beams, district heating network, BREEAM Outstanding, EPC A rating.



Image c. @Hufton+Crow

Assessment objective

A life cycle assessment and a whole life carbon study has been undertaken by the services engineer at stage 4. An IMPACT compliant LCA was first produced in support of the two exemplary credits under BREEAM NC 2014 Mat01 - Life cycle impacts. An additional Whole Life Cycle assessment was also undertaken in accordance with the RICS methodology, this taking in consideration the operational energy and water.

Key lessons learned

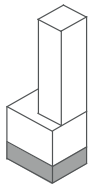
Timber frame buildings perform better than full concrete or steel frames, however, only with an appropriate offsetting strategy and definition of the building 'end of life' stage can the full potential be unlocked. Recycling & circular economy strategies should also be embedded within design development.

Key barriers and challenges

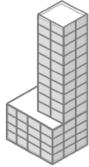
The building geometry was complex and required close coordination between design team members using BIM. In some locations cantilever length exceeded the capacity of timber so a few steel beams had to be introduced.

A concrete core was required to achieve the structural performances and a concrete ground floor slab/basement to avoid timber in direct contact with ground. A general lack of products which have been certified for compatibility with timber, eg. fire stopping or waterproofing, was a major challenge.

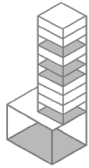
Building elements embodied carbon (A1-A5)



Substructure
91 kg CO₂e/m² (A1-A5)



Superstructure
362 kg CO₂e/m² (A1-A5)



Finishes
4 kg CO₂e/m² (A1-A5)



FF&E
N/A kg CO₂e/m² (A1-A5)



Building services
44 kg CO₂e/m² (A1-A5)

Success stories

In addition to the impact on reduction of carbon footprint, the adoption of a timber frame was highly beneficial to the programme given the speed of erection. Use of digital modelling and fabrication processes for the frame and also the feature timber fins drove quality and minimised waste. The use of BIM in coordination reduced clashes and site issues. Thanks to the timber's thermal properties, less insulation material was required to meet fabric performance targets, further reducing the carbon footprint. Exposing the naturally beautiful timber frame internally enabled a reduction in the quantity of materials used in the fit-out.

Material selection

The timber frame solution was driven initially by the requirement for a lightweight solution given the location over a tunnel. The building was thus conceived as a series of timber slabs, with timber decking and cladding on terraces, and full height glazing to maximise daylight and views in and out to suit the building use. As a "building in the round" without a true rear facade, solid areas of facade were design to mimic the reflective properties of glass.

Design decision justification

As noted above the decision to pursue a timber frame solution was initially driven by the requirement to minimise loads on the DLR tunnel beneath the building. This in turn enabled a reduction in the size / depth of the foundation solution.

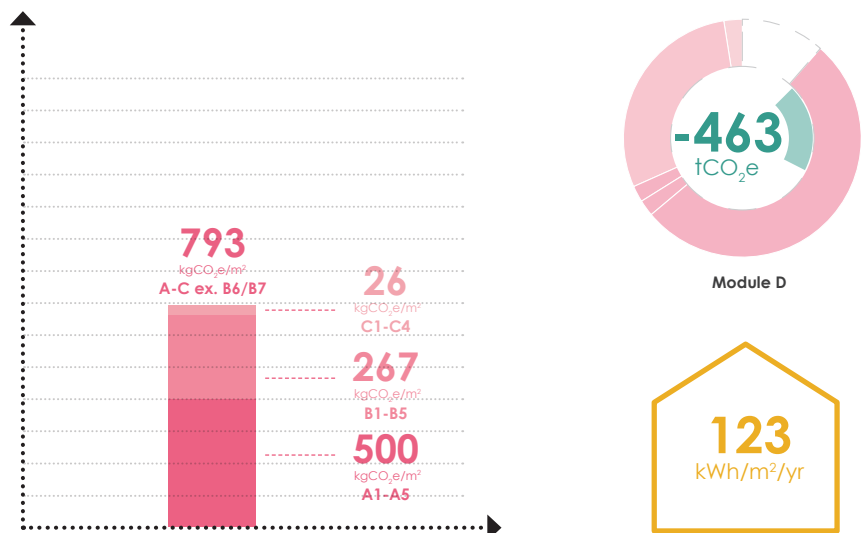
Client engagement

Lendlease's latest carbon targets published in August 2020 are aiming for Net Zero Carbon by 2025 for direct and indirect emissions (scopes 1 & 2) and absolute zero carbon by 2040 including other indirect emissions (scope 3).

Embodied carbon and scope of services

For this building the embodied carbon reporting was not integrated into the scope of services. However, the client started reporting embodied carbon metrics internally and launching new minimum sustainability standards for future projects. Additionally, the whole life carbon impact and opportunity to meet industry targets, such as the LETI targets, will be requested and introduced in future design briefs.

Life cycle embodied carbon reporting summary



Operational energy estimation method:
PHPP at design stage

Client:

Stratford City Business District Ltd

Architecture:

ACME

Structural engineering: Arup

MEP, sustainability:

Norman Disney & Young

Civil engineering: Buro Happold

Facade consultant: Meinhardt

Access consultant: Lord Consultants

Planning consultant: QUOD

Cost consultant: Gardiner & Theobald

Fire consultant: The Fire Surgery

Landscape architecture:

Gustafson Porter + Bowman

Acoustics: Hoare Lea

Wind consultant: FD Global

Ecology: Green Infrastructure

Waste, security, traffic: WSP

Public artwork: Troika

Construction manager:

Lendlease Construction