11-21 Canal Reach by Bennetts Associates, BAM & Cundall





Project overview

A 400,000sq ft commercial office, initially designed as two adjacent buildings capable of either being let as a single building, two buildings, or with 8 tenancies per floor.

> Project sector Commercial Office

Assessment date 2020 (at RIBA Stage 2,3,4 & PC)

RIBA work stage

GIA (m²) 54921m²

Year of project completion 2021 (Complete)

Analysis Sturgis Carbon Calculator

Database(s) used EPDs and data submitted by contractor

> Type of building New build

Reference study period 60 years

Location

Data notes 12 Storeys Aluminium unitised curtain wall Post-tensioned frame

Assessment objective

Image c. Bennetts Associates, BAM & Cundall

The design team was initially briefed with designing the lowest embodied carbon building of its type, with Sturgis Carbon Profiling providing benchmarks and targets for this goal.

Key lessons learned

The massing design which allows maximised roof terraces/gardens whilst removing the need for a basement is something that could be replicated in similar situations.

Relating to procurement/measurement, we discovered the need for subcontractor contractual requirements to provide data, as obtaining as-built data for the final assessment was laborious.

Key barriers and challenges

The project had a very difficult site, with a very long curving plot backing on to the Eurostar line and district cooling plant.

The planning requirements limited the amount of area that could be occupied, with a plot volume that required set-backs at upper levels.

The brief of an adaptable/flexible building capable of numerous configurations also provided a design challenge. Whilst moving to Post-tensioned structure allowed for a large reduction in concrete and reinforcement, it did mean retaining cement replacement levels was a big challenge.



Building elements embodied carbon (A1-A5)



98 kg CO₂e/m² (A1-A5)



Superstructure 370 kg CO₂e/m² (A1-A5)



Finishes 78 kg CO₂e/m² (A1-A5)





Building services 149 kg CO₂e/m² (A1-A5)

Client: Argent Architect: Bennetts Associates Structural engineer: Ramboll until Stage 4 then BAM Design Services engineer: Cundall until Stage 4 then BAM Design Cost consultant: Gardiner & Theobald Sustainability: Cundall until 2018 then BAM Design Carbon consultant: Sturgis Carbon Profiling until 2018 then Cundall Façade consultant: FMDC until 2018 then NET Consultancy CDM advisor: David M. Eagle. Ltd Fire consultant: Jeremy Gardner Associates Acoustic consultant: Sandy Brown Associates Site logistics / Asset protection: Arup Landscape architect: LDA Design Lighting consultant: Michael Grubb Studio BREEAM:

Cundall until Stage 4 then BAM Design

Success stories

Though the project does not meet the LETI 2020 targets, for a design from 2015 it is probably the best example of reducing a building as far as possible without any radical departures from typical construction practices.

The building is also inherently adaptable, with lifts and cores separated, and core expansion options and multiple soft-spots designed in.

Despite client aspirations, it was not possible to integrate carbon targets within the contract at the time, but regardless of this working together as a team the design team and contractor have managed to improve on carbon targets.

Particularly with the aluminium façade and Post-tensioned structure, procurement and subcontractor engagement managed to retain specification choices that are often lost on other projects.

Material selection

Though hybrid structures were considered, including Cross Laminated Timber options, this was not deemed possible due to the costs involved in 2015.

A Post-tensioned concrete frame was seen as the best way of obtaining adaptable spaces with flat slabs capable of flexible rearrangement of floor plates. The original design relied on thermal mass of the concrete which allowed the removal of large amounts of MEP equipment, though this was not taken through to completion.

Design decision justification

The louvred façade was designed in coordination with planner's aspirations that the project not replicate the solid/glazed patterns of adjacent buildings, providing shading to the façade and originally allowing for a low-energy displacement ventilation system to work.

The metal content of the louvres was reduced as much as possible to provide visual interest but also to dramatically reduce the upfront carbon emissions.

Client engagement

At appointment the client set the target of "the lowest embodied carbon building of its type".

Life cycle embodied carbon reporting summary



