

Award

Sky Innovation Centre, London

PROJECT TEAM

Architect: **AtkinsRéalis**

Structural Engineer: **Arup**

Main Contractor: **ISG Ltd**

Client: **Sky**



Sky Innovation Centre showcases structural engineering excellence in holistic low carbon design processes and lean design using advanced analysis. The minimalist structure creates an inspiring working environment for Sky's most inventive, forward-thinking minds.

The design fosters ideation and collaboration putting human centric design at the forefront. A dynamic activity-based working strategy was devised for a hybrid workforce, offering the very highest sustainability, wellness and Whole Life Carbon (WLC) performance standards. It showcases excellence in holistic sustainable and user-centred design, whilst supporting Sky's ambitious net zero vision. The building achieved BREEAM 'Outstanding' and WELL 'Platinum'. Sky is the first European Broadcaster to achieve this accolade.

To satisfy the requirement for an easily adaptable workspace, the structure provides uninterrupted floor plates with a rear core, maximising natural daylight, openness, transparency and connectivity across the workspace.

Staff well-being drove the design - building a strong connection between the workspace and the external landscaping, creating a bold 'internal landscape'. Sky and the project team have created a striking and unique building, with an outstanding workspace that delivers delight to its occupants, creating an impactful and lasting impression.

The energy strategy aligns with UKGBC 2025-2030 net zero targets and trajectory, prioritising passive measures such as fabric efficiency, effective shading, free cooling and passive exhaust ventilation.

The embodied carbon of the structure is 202kg CO₂e/m² of GIA, which is a 10% improvement on LETI 2030 target, and a SCORS rating of 'B' puts the structure 40% ahead of the IStructE decarbonisation trajectory for 2023. Embodied and WLC were tracked through the design stages to inform decision making.

The façade geometry adds 12% to the façade area, which increases embodied carbon significantly. Lean design in the frame and finishes, and low carbon materials, were able to mitigate this impact and achieve a WLC ahead of industry decarbonisation goals.

The steel frame was constructed offsite, which enabled the construction to progress during COVID-19 with minimal delay (site shut down for 3 days only) and required a few workers onsite, so the pandemic protocols could be maintained.

The structure maximises design for disassembly by avoiding toppings on precast concrete planks. The highly optimised trusses provide a 'light structural feel', increase the perceived clear height and are used to achieve clear-span floorplates with minimum steel. T-plate bottom chords minimise visual appearance, whilst facilitating simple welding of truss nodes. The visual impact of the trusses is reduced by integrating the top chord box section into the slab depth. The highly efficient steelwork trusses are integral to the architectural feel of the space and are achieved by advanced structural analysis and design, resulting in a steel weight of 60kg/m².

Advanced footfall analysis supported omitting toppings on slabs. A base case that followed SCI-P354 was supplemented with sensitivity models, using different walking speeds, defined routes, and varied damping. The results were combined in a Monte Carlo probabilistic risk analysis to demonstrate very low probability of adverse footfall response.

The primary frame geometry is linear and regular for direct load paths and ease of construction. The zigurat is formed using 7 shaped secondary steel members. This

enabled primary frame fabrication to start while final façade coordination continued, shortening the critical programme path by two months.

Splay columns reduce bending stress and deflection in the primary beams, improving footfall response of the slab and providing stiff landing points for atrium stairs connecting onto the floorplate. This saved 19% CO₂e compared with vertical columns.

Beautifully detailed trusses, elegantly tapering splay columns and flat soffits provide Sky's desired 'sophisticated industrial' look and feel. The team could design out ceilings and other finishes, thereby substantially reducing the overall embodied carbon.

A timber-hybrid mezzanine enables disassembly and reconfiguration in the atrium, without raising significant insurance concerns. The client wanted adaptability for their mezzanine level that weaves around the atrium, so cross-laminated timber (CLT) slabs were proposed on the steel frame. Due to limited headroom, the CLT planks are integrated into the steel beam zone at this level. The mezzanine grid is distinct from the primary grid, with planks spanning 6-7.5m onto steel beams, which are then directly supported on the mezzanine column lines. The modest column grids achieve a 300mm structural zone without excessively heavy beams and can be supported through the ground slab.

Underfloor air ventilation provides a clear floorplate and enables layout reconfiguration with minimal services strip-out, re-routing and commissioning. Exposed ceilings with exposed services and an 'open' truss structure, enables flexible services distribution and simple relocation of partitions.

The mezzanine framing was a late addition to the project, so designed to be constructed from lightweight components that could be installed with low-level handlers, after the roof was constructed. This also avoided the risk of water damage to CLT during construction and allowed time for the fit-out package coordination. With simple stack connections, the framing and planks could be easily disassembled and reconfigured in the future enabling circular economy benefits.



Judges' comment

This minimalist structure, comprising highly optimised steel floor trusses supported on splay columns to reduce bending, maximises design for disassembly. A key aim of the client, adopted throughout the supply chain, was to minimise environmental impacts. The result is a very adaptable, high quality workspace with excellent sustainability credentials.