

APPOINTMENT:

Fire Strategy & Structural Fire Engineering

CLIENT

Aviva Investors

DESIGN TEAM MEMBERS:

Rider Levett Bucknall

dRMM

Hurley Palmer Flatt

TWS

PROJECT VALUE:

Over 1 Million



CASE STUDY: STRUCTURAL FIRE ENGINEERING & FIRE STRATEGY

51- 54 FENCHURCH STREET, LONDON

OVERVIEW

Trenton Fire Limited have been commissioned by AVIVA to undertake the fire strategy development at RIBA Stage C- E for 51-54 Fenchurch Street in London.

A new build office, 51-54 Fenchurch street offers a basement, ground floor and nine above ground storeys accessed via a single staircase, with top most occupied floor of the building exceeding 30m in height.

51-54 Fenchurch street is designed to work as an office building in the heart of the city whilst complementing the surrounding area, which includes the Grade 1-listed Tower of All Hallows Staining.

The buildings progressive jettying (twisting effect) increases the public space below while maximising floor plates above. In addition, a patterned glazed façade gives the appearance of no apparent windows, offering a different feel to other uniform buildings in the City.

Within the basement, occupants have access to a cycle store and shower facilities. Various plant areas include sprinkler tank room, life safety generator enclosure, oil store and refuse store. At ground floor level, Star Alley separates the ground floor office reception from two retail/catering units.

CHALLENGES

The key challenges facing the team working on 51-54 Fenchurch street included;

- Achieving a single stair arrangement to optimise the available internal area.
- Assessing the risk of external fire spread on a 'performance basis' to demonstrate that the new building could be constructed in close proximity to surrounding buildings, including Tower of All Hallows.

SOLUTION

Through their knowledge of fire safety solutions, Trenton Fire were able to offer a range of solutions to meet the challenges presented by the building.

By adopting a combination of evacuation modelling to compute total building evacuation time, and computational fluid dynamics modelling to assist in the design of smoke ventilation systems, Trenton were able to ensure the single vertical escape route was available at all material times. By Reviewing London Fire Brigade arrival statistics this single stair design was developed in a way that conflicts between egress and fire service access were resolved.

Trenton Fire additionally optimised fire resistance provisions by reviewing the likely fire sizes and severity, resulting in steel protection specifications that were commensurate with the hazards presented.