Buildings are becoming bigger, taller, deeper and more complex with multiple functions and occupancies. Fire engineering is increasingly providing architects and contractors with design solutions that facilitate function and aesthetics and reduce costs.

Where fire engineers have used analysis or computational methods or are proposing innovative fire strategies, it is often difficult to judge whether equivalency with approved codes and standards has been achieved, particularly in complex buildings such as:

- Airports
- Shopping Centres
- Stadia
- Tall buildings
- Stations
- Tunnels
- Museums and Art Galleries
- Healthcare
- Schools
- Industrial
- Ships

Services provided by BRE include:

- Independent review of fire strategies
- Design review
- Design advice
- Design fire analysis
- Expert witness
- Smoke movement modelling and management
- Fire detection and suppression
- Structural fire engineering
- Evacuation modelling and means of escape
- External fire spread modelling
- Fire service intervention modelling
- Probabilistic fire risk analysis
- Cost-benefit analysis
- Testing

BRE is at the forefront of research and has long been invited to apply its unique skills and knowledge to review and evaluate construction projects, including Dublin Port Tunnel, Hilton Hotel Manchester, Heysham Power Station and Canary Wharf to name a few.
Case Studies

Queen’s Medical Centre NHS Trust Nottingham
Trent Region of the NHS appointed BRE to undertake a strategic review of fire precautions and fire engineered solutions for smoke management and ventilation. This resulted in improved fire safety, equivalent to FIRECODE, and significant cost savings.

Wembley Stadium
BRE were appointed by Wembley Borough Council to review fire safety measures (based on CFD modelling) for the trade access tunnels beneath the stadium. A robust fire safety solution was found and accepted by the relevant approval authorities.

Beetham Hill Hotel, Manchester
Manchester Building Control appointed BRE to review the fire strategy and computer fire and risk modelling to support an innovative atrium design and structure without protection. Ultimately, equivalency was demonstrated subject to some protection to structure.

Major Sporting Venue
A major sporting venue wished to confirm that it had adopted a safe and cost-effective approach to the design of areas and concourses surrounding the sports ground. BRE Global was appointed to review the evacuation modelling for the project. The review also considered recommendations with the potential to reduce the costs of construction.

Arrowhead Office Block
The building control officer for a new office block development requested that BRE Global review the projects structural fire engineering strategy document to confirm that a safe and robust approach had been adopted. The time equivalence studies undertaken and the parametric design fires were reviewed. Through early consideration of our observations, the structural fire strategy was approved in a timely and cost-effective manner.