

# **Dangerous Assumptions**

**In light of the lessons learned from the Lakanal House fire, the on-going competent inspection of passive fire protection is crucial to safeguarding those who put their trust in social housing.**

*Jeremy Ockenden, Principal Fire Engineer at BRE Global*

The UK approach to fire safety in housing design is highly dependent on compartmentation as a strategy for inhibiting the spread of fire and managing the safe evacuation of occupants.

Inadequate installation of passive fire protection, or subsequent damage to it, can however have fatal consequences as the Lakanal House fire in 2009 so tragically highlighted.

Compartmentation should have protected residents who were told to 'stay put' while the fire brigade responded. Yet the fire spread with alarming ferocity through the 14-storey block of flats in Camberwell, South London, claiming six lives, including three children.

BRE Global, who assisted the London Fire Brigade and Emergency Planning Authority (LFBEPa) with its enforcement action against the London Borough of Southwark, identified major contributing issues arising from deficient passive fire resistance.

Despite the warnings, problems with compartmentation are far too common, both in new builds and the existing housing stock, where errors are easily overlooked during construction. In working with clients on fire risk assessments and post-fire investigations, BRE continues to see a number of prevalent problems.

Poor practice with fire resisting battens is common; typically they have not been installed in accordance with tested specifications, or are missing altogether. Fire-stopping around service cut-outs is often inadequately sealed or completed with the wrong type of batten material. Similarly, pipe seals may be missed and the use of incorrect damper fixings frequently observed.

## ***Responsibility***

While these defects may have slipped through the net at construction stage, the on-going fire safety risk they pose falls squarely on the shoulders of the building owner or manager – the 'Responsible Person' as identified under the Regulatory Reform (Fire Safety) Order 2005.

The Responsible Person has a clearly defined duty of care to ensure that buildings are managed appropriately with regard to fire risk. This includes those risks associated with inadequate passive fire protection even if they date from the time of construction, however long ago.

Even if compliance certificates are held, it is unsafe to assume that a building is fully compliant with fire design standards, or that it continues to comply following historical alterations or maintenance.

Managers of social housing should understand the fire safety of properties in their guardianship by carrying out a thorough assessment of passive fire protection.

### ***Identification***

The first challenge is to identify if there is a problem and the extent of it.

This can be difficult as access to inspect integral fire protection in social housing flats, particularly within walls between dwellings, is not always straightforward, often relying on tenant cooperation. It is best timed when tenants are moving out, but this can slow down the completion of potentially life-critical improvements. Housing managers should be prepared to invoke the powers at their disposal to negotiate expedient access for the fire risk engineer.

A large proportion of fire-stopping defects lurk above false ceilings and in areas that are out of sight and difficult to access. It means that many potential weaknesses and gaps in passive fire protection will not be spotted even during a routine fire risk assessment.

A suitably qualified specialist should be called in to carry out an initial sample survey of the building. This is a starting point that will give an indication of the quality and condition of passive fire protection to identify any deficiencies and make an expert judgement about whether there is probable cause to suspect widespread defects.

### ***Assessment***

If evidence of a systematic problem is found, what should follow is a rigorous process of determining the overall level of risk that these defects pose to the building. This will involve an understanding of fire dynamics, smoke movement, and the likely impacts on the building occupants, requiring expertise in fire behaviour and fire risk management.

Such technical judgments rely on a forensic level of fire behaviour understanding and risk appraisal generally outside the expertise of a contractor installing passive fire protection or risk assessor. Without this insight, unqualified decisions may be taken to rip out and replace fire-stopping, involving unnecessary disruption and expense.

Extensive replacement of fire-stopping may not actually be necessary, or it may be impractical if it causes undue disruption to occupants.

A competent fire engineer should have the in depth knowledge of fire behaviour in order to make technical assessments of the impacts of a fire on a building and likely fire spread in its present condition. This risk assessment is paramount to the planning, design and cost rationalisation of efficient interventions to minimise intrusion on building activities.

First and foremost, it provides a clear qualification of the current fire risk. Even if a defect has been identified, it may not have compromised the specified fire performance of the compartment. Can corrective work be targeted to avoid wholesale upgrades? Does the problem need action now or can treatment be safely managed in phases?

## ***Planning***

A robust understanding of fire risk impacts will provide the scope and confidence to prioritise and plan a programme of work. This is especially important in tackling remediation in social housing settings with vulnerable residents such as extra care housing or accommodation designated for assisted living, where work should be implemented to minimise disruption and not introduce any new risks.

It is advantageous to work with a fire risk specialist that can also provide coordinated expertise in planning interim strategies for fire risk management.

This involves a range of often complex risk considerations. Will the current fire strategy and fire protection still function safely during a phased scheme of works, or do fire management systems need to be adjusted to address changing fire risks as work progresses? They can also advise on the implementation of suitable evacuation strategies in line with the changing logistics of work on site.

## ***Testing***

If an installation defect could require extensive replacement of fire protection, then testing of the current system may be advisable.

Although a system may not have been installed in accordance with the tested specification, this does not necessarily mean that it will not achieve the intended standard of performance.

Where it is considered plausible that a system may demonstrate the expected level of performance, it may be possible to test a sample section removed from the building to demonstrate whether the existing installation is acceptable and may be safely retained.

A competent fire testing specialist may be able to assess whether a system is likely to perform to the expected standard, avoiding potentially significant costs and disruption of refurbishment for the client. Equally, they may be able to judge whether a simple modification is possible, via a desktop assessment involving professional judgment based on experience and previous test evidence. The process can help decide whether further verification of the performance (via standard testing) of an installed system is worthwhile, ensuring that time and resources are not wasted where a passive fire protection system is unlikely to perform.

## ***Resolution***

In summary, the following five key steps are recommended in addressing and remediating passive fire resistance risks:

- Survey the building to identify the presence, nature and extent of any problems with passive fire resistance.
- Identify the level of associated risk including:
  - Likely spread of smoke and fire
  - Persons at risk due to mobility, medical dependency or other circumstances
  - Presence of active fire safety systems and their reliability
  - Staffing considerations and safety
  - Other potential consequences of the risk

- Compile a clear risk register to assess and prioritise works.
- Determine action: does passive fire protection need remediation or will existing installations, though not in accordance with specification, achieve the intended level of performance?
- Formulate a clear plan of remedial works which does not introduce new risks to the building.

Inspection and treatment of passive fire resistance problems can be a major operation in terms of the cost and logistical impacts on facilities management.

The best outcomes will be achieved by engaging a full service fire specialist who can provide a holistic, coordinated appraisal and strategy for risk management and treatment.

This offers the most effective route to quantifying the problem, understanding the risk, controlling the cost of remediation and minimising the impacts on resident safety and comfort.

## ENDS

**[www.bregroup.com](http://www.bregroup.com)**

Jeremy Ockenden, a Principal Fire Engineer at BRE Global, will be speaking at the third annual BRE Fire Research Conference on June 8th.

Further details here: <https://www.bre.co.uk/eventdetails.jsp?id=14702>

*Images (credit: BRE Global)...*



(Img 1): The west face of Lakanal House showing the extent of fire spread, which started on the 9th floor, spread up to the 10th and 11th and dropped down to the 5th and 7th floors.



(Img 2): Fire damaged "boxing in" along the 11th floor corridor at Lakanal House.



(Img 3): The suspended ceiling structure on an unaffected floor at Lakanal House.



(Img 4): Inadequate fire-stopping of service penetrations is a prevalent defect observed during inspections of passive fire protection.



(Img 5): BRE Global's 5-step plan to safeguarding passive fire protection in existing buildings.