

# CAPITA



## Fire Compartmentation

Issues and ad-hoc testing

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I have worked at Capita since 2008, from 2014 as the Senior Fire Safety Consultant, from 2018 as the Associate Director for Fire Safety, leading the in-house Fire Safety Team.

In February 2015 I achieved Fellowship of the IFE for my contribution to the fire safety community.

I have since passed the examinations to FRACS, (Fire Risk Assessors Certification Scheme, managed by Warrington Certification).

Previously I worked for the London Fire Brigade for 31 years. 19 years as a specialise Fire Investigator.



## What is compartmentation?

A building is divided up into fire compartments to prevent a fire from spreading unchecked throughout the building. The elements of a fire compartment are the walls, doors, floors and ceilings that enclose an area.

The compartment boundary must not only stop the spread of fire but it must also serve as a function to resist the spread of fire for a set time. Typically this can be for 1, 2 or 4 hours.

The compartment boundary's must provide stability (no collapse) integrity (not to crack and allow smoke and hot gasses to pass) and insulation (prevent heat from the fire side passing through via conduction to ignite items on the non-fire side).

## **Not identifying compartmentation issues can lead to prosecution.**

**Graham Foote, prosecuted in 2016 for failings identified in 2011, following an FRA at Croftwood Care Home, Runcorn. Fined £1,600 and a 4 month suspended prison sentence.**

**Minster Care Management were fined £40,000 and £15,000 in costs.**

**The main issues:**

- Gaps between rooms in the care home would have allowed fire and smoke to spread putting residents at risk of death or serious injury**
- The home had ill-fitting doors and gaps around pipes and above doorways that would allow smoke and fire to spread and block escape routes in the event of a fire.**
- No compartmentation in the roof void (not inspected)**
- The home did not have a smoke and fire detector in the roof space, nor was its detection system linked so that an incident in one area would be relayed across the premises.**

**Compartmentation- the use of walls ceilings and floors to prevent fires spreading.**



# What is good compartmentation?

Generally fire compartmentation is not obvious or explicitly sign-posted as you make your way through the premises.

You will be familiar with

- fire doors
- Walls
- Floors
- Ceilings

However you will not always recognize compartmentation issues as they are hidden in false ceilings, backs of cupboards and hidden void areas.

## Did you know:

If a square room measuring '6m x 6m x 3m' has a pencil hole between compartments and fire breaks out in one of the rooms, it will take less than 4 minutes for the adjacent room to fill with smoke to such a thickness that you cannot see your hand half a meter in front of you. If this concentration of smoke compromised an escape route, it would render it unusable with occupants unable to escape.



*4 minute statistic provided by ASFP - Passive fire protection guidance for the fire risk assessor. – Niall Rowan, technical Officer -*



## How are issues identified ? Holes in the ceiling, the floor and the walls



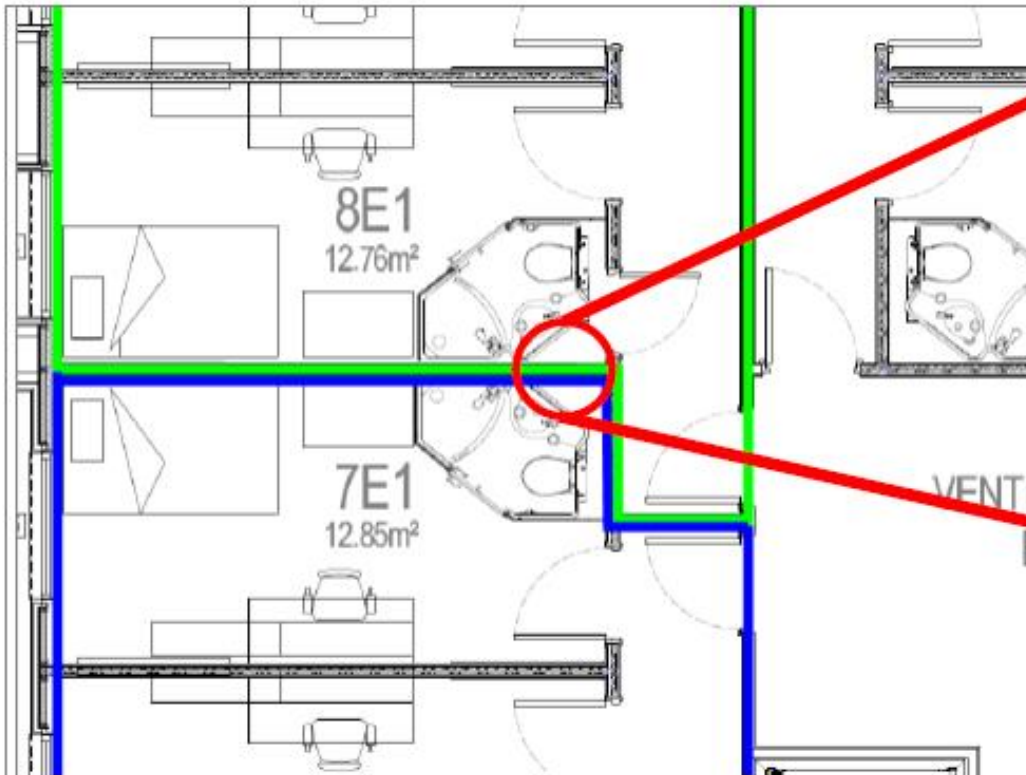


## Where are the breaches found?



**Often in difficult to reach places,  
photograph taken from floor  
level access, around a pipe  
looking to ceiling and high wall  
breaches**

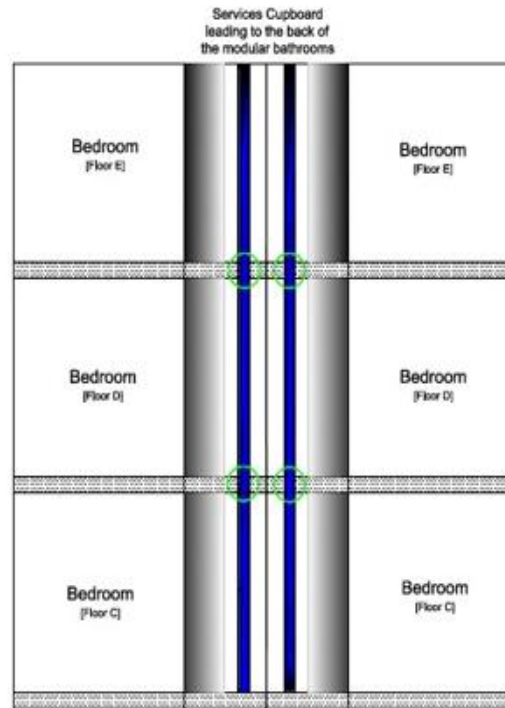
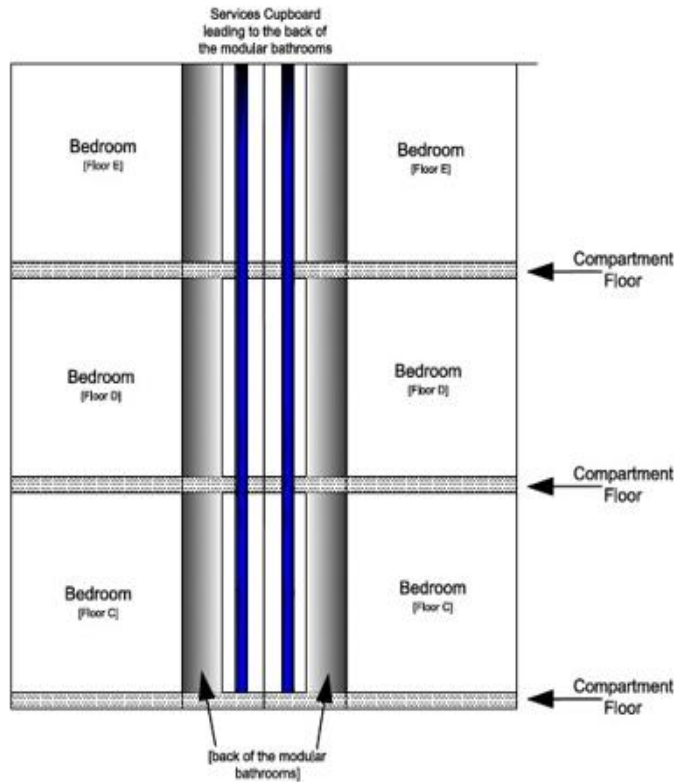
Other times the breaches are surprisingly easy to reach, in this case linking two compartments and two fire alarm zones



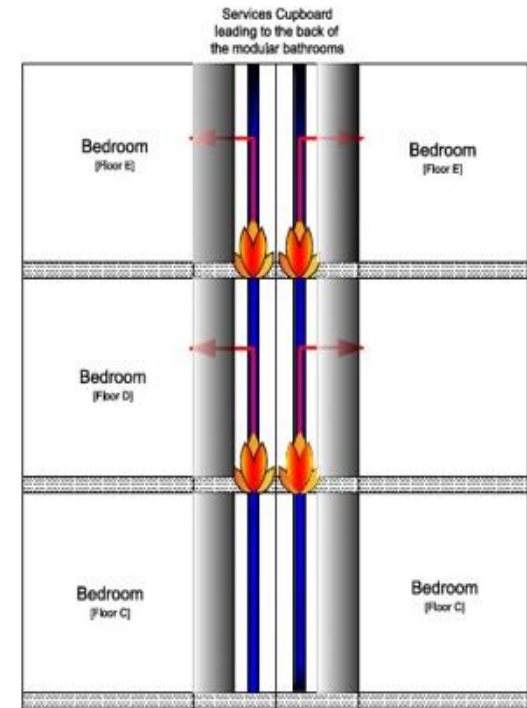
The hand is from a capita consultant located in the 8E cluster – The picture was taken from a 7E cluster. There are 2 breaches like this on each floor. These are:

- Between clusters 7 and 8
- Between clusters 4 and 5

In this example both vertical and horizontal compartment breaches were found throughout the building.



Incorrect fire stopped utility pipes breach the compartment floors. In a fire situation, this would allow fire to pass from floor to floor.



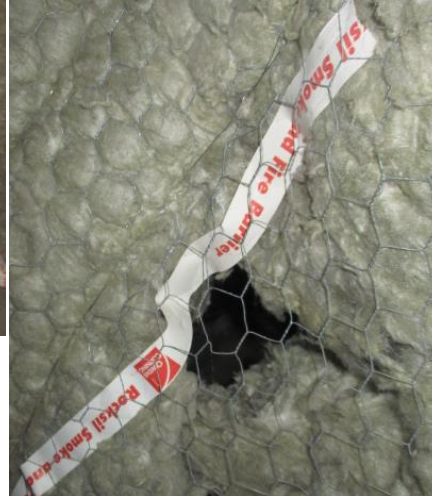
As fire breaches each floor, this would likely spread through the composite modular bathrooms in to the adjoining bedrooms due to the thermoplastic materials the bathrooms are constructed of.

Fire curtains in loft/ roof or ceiling spaces are only effective if complete, gaps left by service engineers negate their effectiveness.

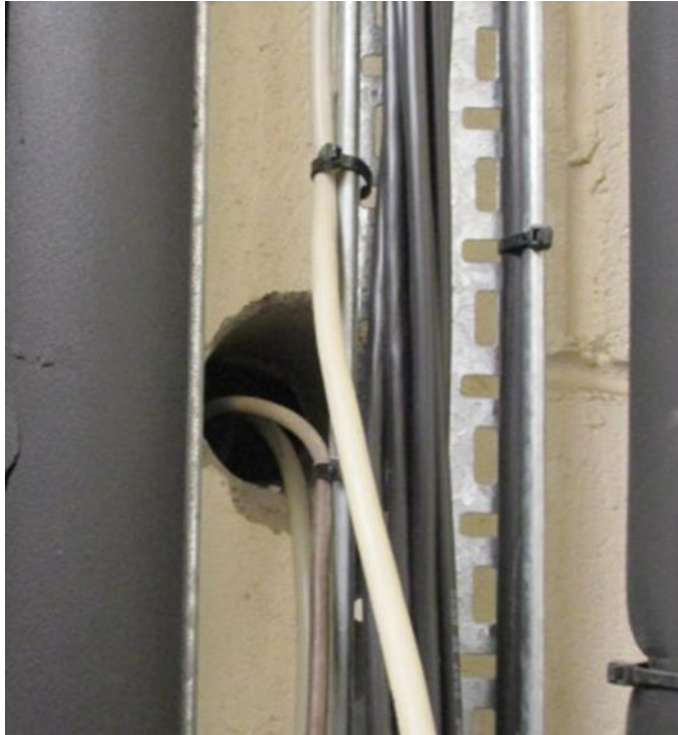




Fire curtains must be complete and with timber roofs extend to the first rafter.



## Examples of over generously unstopped compartmentation holes

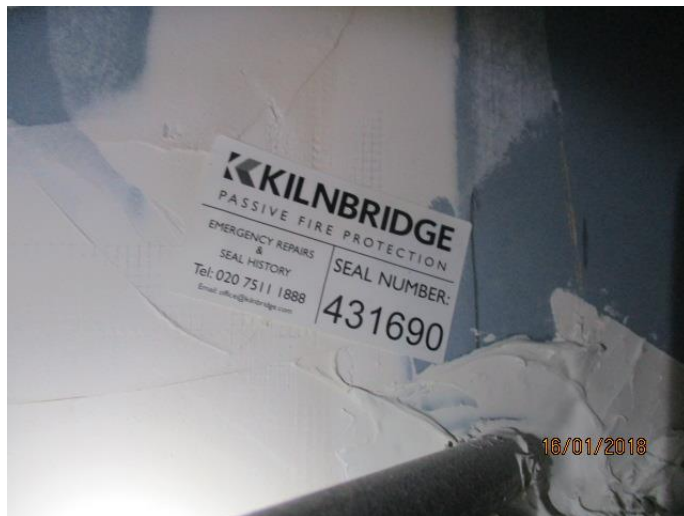


# The use of fire stopping material.

This can be in the form of 'ablative batts' compressed mineral wool fiber coated with an intumescent finish.

Once installed the barrier should be identified with a 'who, when & how' Label.

However there is no reliability that contractors will respect the compartmentation when fitting additional services.





## Plastic pipes can be fitted with intumescent collars

When correctly sized and fitted the pipes will close shut and prevent the spread of fire. The clamp must be clamped tight and mechanically fixed to the wall.



**It goes without saying that the intumescent material must be left in the clamp, stripped out on these two clamps as the pipe joint makes it impossible to wrap the metal clamp around the pipe**



Wrapping two collars without securing them will just push the metal restraining rings away and not seal the pipe.



Leaving an opening in the plasterboard is a waste of everyone's time.



What is a good repair? It is not accepted practice to 'rob out' areas of compliant wall for plasterboard to repair holes in the ceiling.

At least back fill the pipes that you have attempted to make good



# If in doubt 'pink foam' can always be used? Cant it?

## Pink fire stopping foam from above



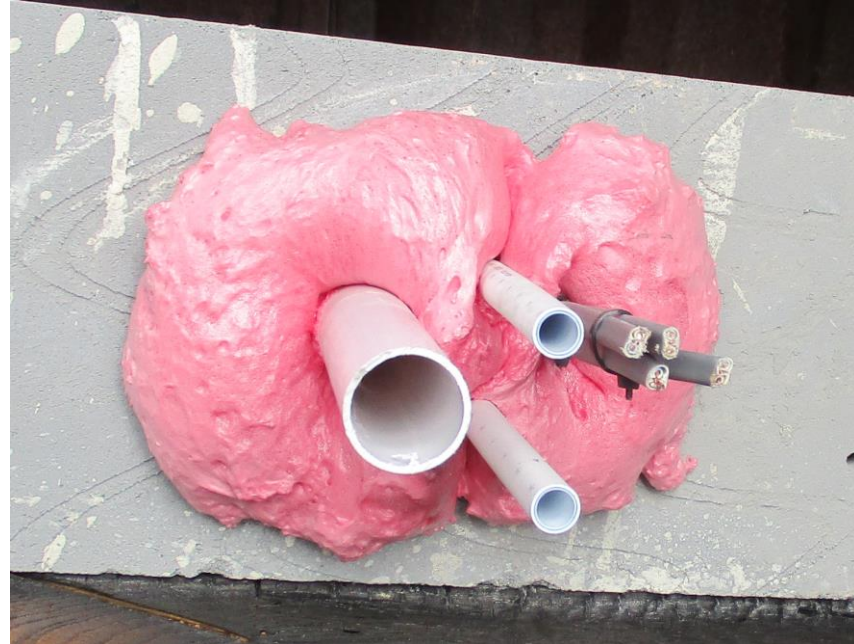
with 'pink' and none fire rated foam below.

It must work?





## 'Pink foam' and collars in a series of ad-hoc tests, conducted by the Fire Safety Team



<https://www.constructionenquirer.com/2017/12/04/fire-break-scare-forces-100m-student-scheme-refit/>



Paragon Student scheme near Brentford completed in 2007 now needs £8m worth of retrofit work  
The development near Brentford came under scrutiny after the Grenfell Tower disaster



<https://news.sky.com/story/fire-crew-watches-slough-tower-block-247-because-of-unsafe-cladding-11090755>

A fire engine and crew are being paid to park outside the privately owned Nova House in Slough, Berkshire, after fire brigade and council inspections revealed multiple fire safety failings.



## A fire in a school (Dorset Area) with an un-compartmented roof void





## How do doors perform?

