

AOSH @ BAWA

Fire Safety Controls-where next?

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Introduction

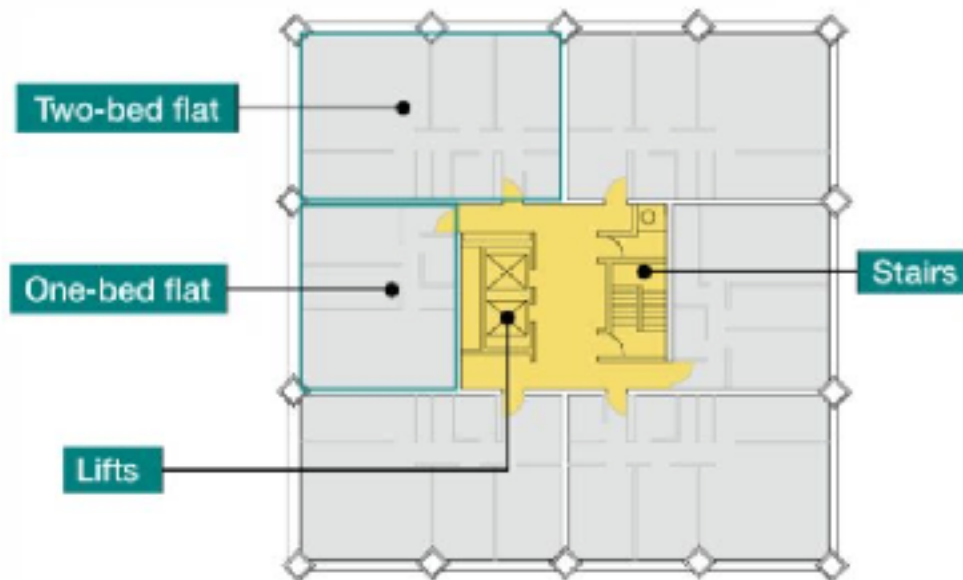
- The views expressed are my own, particularly those ref Grenfell, drawn from my own experience but also from the numerous published reports on the event & recent FPA Fire Summit
- 33 year operational career in F&RS specialising in Fire Safety, H&S & Emergency Planning.
- 14 years as an independent fire safety consultant including 2.5 years as Emergency Planner for NHS and 3 years as fire safety manager for airbus at Filton.
- Have undertaken numerous Fire Risk Assessments for local authorities , H&S consultants and national companies, now engaged on FRAs for a property management company.

Requested Fire Safety Topics!

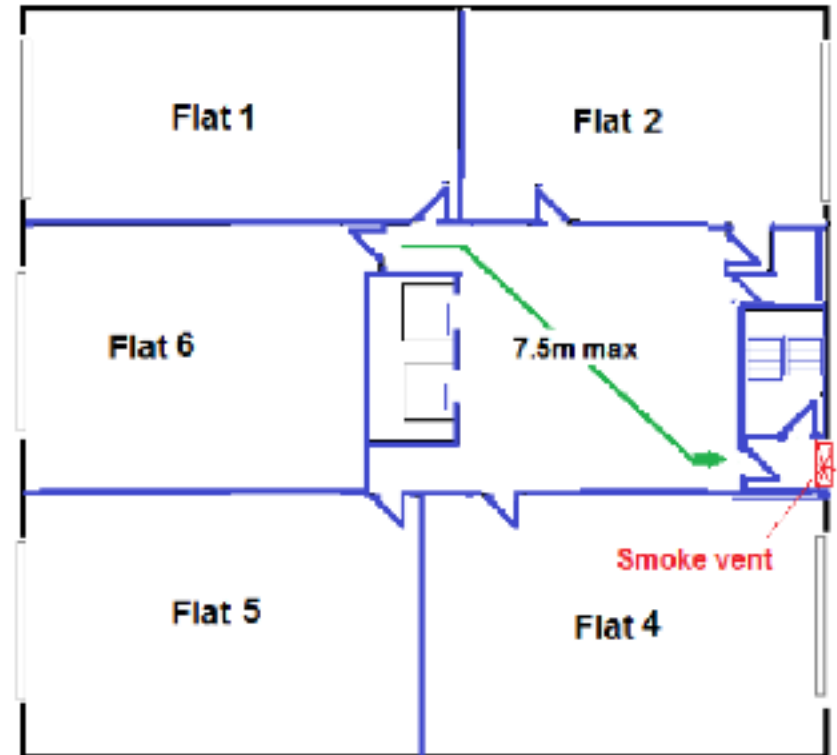
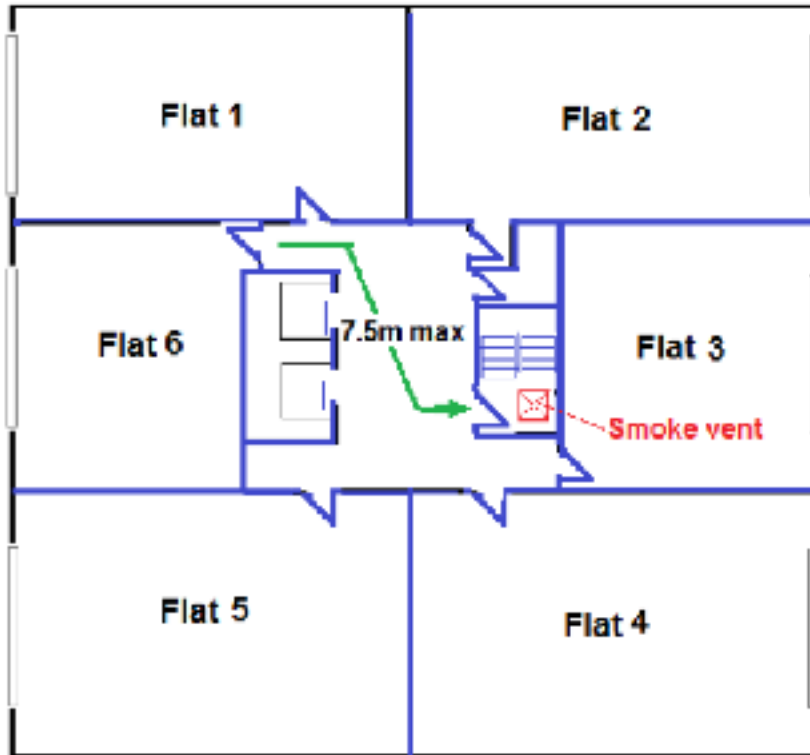
- 1. Shakedown from Grenfell, obviously.
- 2. Status of the 'Stay Put' concept.
- 3. Fire arrangements in a three-storey office block.
- 4. Whether to specify/retrofit sprinkler in flats, schools etc.
- 5. Qualifications for carrying out FRAs.
- 6. What would be helpful for Fire crews arriving on site?
- 7. Managing fire arrangements for retailers in shared environments such as the airport. eg Where do you hide or display Fire Extinguishers.
- 8. Current views on fixed arrangements for IT Server Rooms (ex-Halon etc).

1. Grenfell issues

Typical residential floor in Grenfell Tower



Alternative Tower Block Layouts



Alternative Fire Strategies

Alternative Fire Strategies

Grenfell – the facts

- Of note that fire was discovered at inception by occupier and F&RS attended initial outbreak
- The fire was reported at 00:54 BST
- The fire started in a Hotpoint fridge freezer on 4th floor, and spread (??) through window setting fire to insulation and cladding The insulation and cladding was to meet environmental standards not just for cosmetic improvement.
- the zinc cladding originally proposed was replaced with an aluminium type, which was less fire resistant, saving nearly £300,000.
- fire safety advice for Grenfell Tower residents was to "stay put" - unless the fire was affecting their own flat.
- Cladding was aluminium sheet sandwich with core of extruded polyethylene of low meltpoint giving off toxic fumes.
- Insulation was Polyisocyanurate (PIR) rigid foam, highly toxic in fire.
- SIDERISE fire barriers fitted (innovative insulation solutions for acoustic, fire and thermal applications) but overwhelmed.

Grenfell – the facts (Cont.)

- Bldg Regs Approved doc B (ADB) difficult to follow and offers conflicting relaxations, but not updated for more than decade.
- Suggested that current AD “B” provides ambiguity as to the recommended fire standards of cladding.
- **AD B, says – “may be alternate ways of compliance with requirements – No obligation to adopt any particular solution if you prefer to meet requirement in some other way “ !!**
- Successive governments resistant to updating.
- Both the cladding and insulation on the outside of the building failed all preliminary tests by the police. The insulation samples burned more quickly than the cladding tiles.
- The Grenfell Action Group had claimed, before and during the refurbishment, that the block constituted a fire risk (??) and residents had warned that access to the site for emergency vehicles was "severely restricted" and warned fire safety equipment, including fire extinguishers, had not been tested for 12 months. (Red herring?)

Grenfell contributory issues

- UK's government's view that the cladding added last year to Grenfell Tower did not conform to the relevant building regulations with respect to fire safety. (?)
- Failure of one building component was often symptomatic of wider weaknesses in the process'
- Poor energy performance should alert those responsible to other failings in the design and operation of the building.
- Review of Bldg Regs was recommended after the Lakanal House fire in 2009, 'but has still not taken place', and still no timetable.
- Repeated delays to the revision of regulations and the history of incidents are symptomatic of a wider culture of neglect .
- Serious questions about the fire safety of high rise residential buildings. Important that occupiers understand the fire strategy for their building.

Grenfell proposed outcomes.

- Official Review will examine a wide range of issues corresponding to the regulations, including the ‘regulatory system around the design, construction and on-going management of buildings in relation to fire safety’ and numerous professional bodies have tendered proposals:
- Regulations should be strengthened and clarified
- Bldg Reg 38 should be consolidated & reinforced “ where a building is erected or extended or relevant change of use , fire safety information shall be given to the Responsible Person at the completion or first occupation”. For a number of years , both AD “B” and BS9999 have required developers to provide the “end user” with a “Fire safety manual” (NB. This info forms the foundation of any subsequent FRA)
- 3rd party certification of protection providers should be made mandatory.
- Inspection regimes and competence to be reviewed.
- Over reliance on passive fire safety- other nations ‘take a more active approach, with buildings designed to detect and extinguish fire’

Grenfell issues (cont.)

- Despite several high profile campaigns, particularly from insurers, there has been no comprehensive review of the building regulations relating to fire since late 2005.
- The current system was designed for a quite different built environment of more resilient, non combustible structures, eg, C o P's that allowed high-rise flats to have just a single "protected" staircase.
- Given the development of modern methods of construction, and the increasing use of combustible materials in the building process in recent years, with numerous total loss timber frame building fires.
- One of the most common reasons given for the refusal by successive governments to consider a review has been the dramatic reduction experienced in the number of fires requiring fire and rescue service intervention.
- The reduction in fire deaths over the years may have led to **deregulation** initiatives based upon fire problem now solved- but led to new ones?

Grenfell issues (cont.)

- Since a peak in 2004 of almost 600,000 fires , the number requiring intervention had fallen to just over 200,000 by 2016. It would appear that those responsible for keeping regulation up to date believed that the fire problem had been solved !.
- Number of fire claims has halved in the period from 2004 to 2016 to just under 59,000 per annum, BUT over the same time frame, total gross claims have risen from £812 million to £1,273 million.
- Numerous insurer sponsored studies have examined the causes for these increases over and above the standard government response of building inflation, despite fire and rescue services' response and appetite for risk ,there is broad agreement that the biggest influence is the state of building regulations (unintentionally allowing lesser fire resistant standards ?).
- Misconception on fire safety requirements for High Rise , ie, general fire alarm & extinguishers not required,nor sprinklers at time of build.

Grenfell some proposed outcomes.

- Role of fire services and their involvement in ‘developing building regulations’ as well as providing ‘input into the design of individual buildings’ (has been much diluted) and should be reviewed.
- NB The F&RS does not have any legal powers to inspect cladding or structural changes to buildings nor “sign off” refurbishment and only have legal powers to act where we see internal fire safety problems such as compromised fire doors and combustible materials on staircases.
- Central alarm systems provided for multi-occupied Residential buildings over 3 stories. + more than 1 M o E route + no compensatory features to omit this.
- Review ventilation requirements for common parts.
- Repeal RRO and bring back Fire Certification for designated premises???!?

Historical Events

- Much has been made of main reason for the fire development at Grenfell but a surprise?
- Woolworths , Stardust, Summerland all multiple fatalities where materials added to the building or innovative construction was found at fault.
- Problem of types of “sandwich panels” have been known for years.
- The development of un-compartmented and un-sprinklerd sandwich panel commercial warehouse and retail premises fires causing total early collapse in 1980’s caused F&Rs to not commit crews into such fires because of the risk.
- Long period of austerity has undoubtedly led to a perception of need to cut costs.
- Unwise Deregulation has not helped.

2. Status of the 'Stay Put' concept.

- “Stay Put” policy still current. Latest guidance on “Fire safety in purpose-built” blocks of flats” 2012, maintains this. I.e.-The high standard of fire compartmentation would commonly adopt the “stay-put” principle, as considered that escaping people could be more at risk in the common parts than remaining in their flat apartment. NB. View that blind adherence to this policy discredited so should persons be at risk, call 999 and evacuate to relative safety.
- This 2012 guide also brings in new measures re auto ventilation in common parts. (?)
- A new concept of “**Defend in place**” has been introduced whereby “**stay put**” until directed to leave by F&RS. ? allows the occupants to stay put and for F&RS to extinguish the fire, but If the fire spreads and it cannot be controlled then they will initiate a managed evacuation. Occupiers must be informed of the “ fire strategy” of their building and need to call F&RS. Often an assumption that if the there’s a fire alarm system ,Brigade is auto called.

Status of the 'Stay Put' concept.

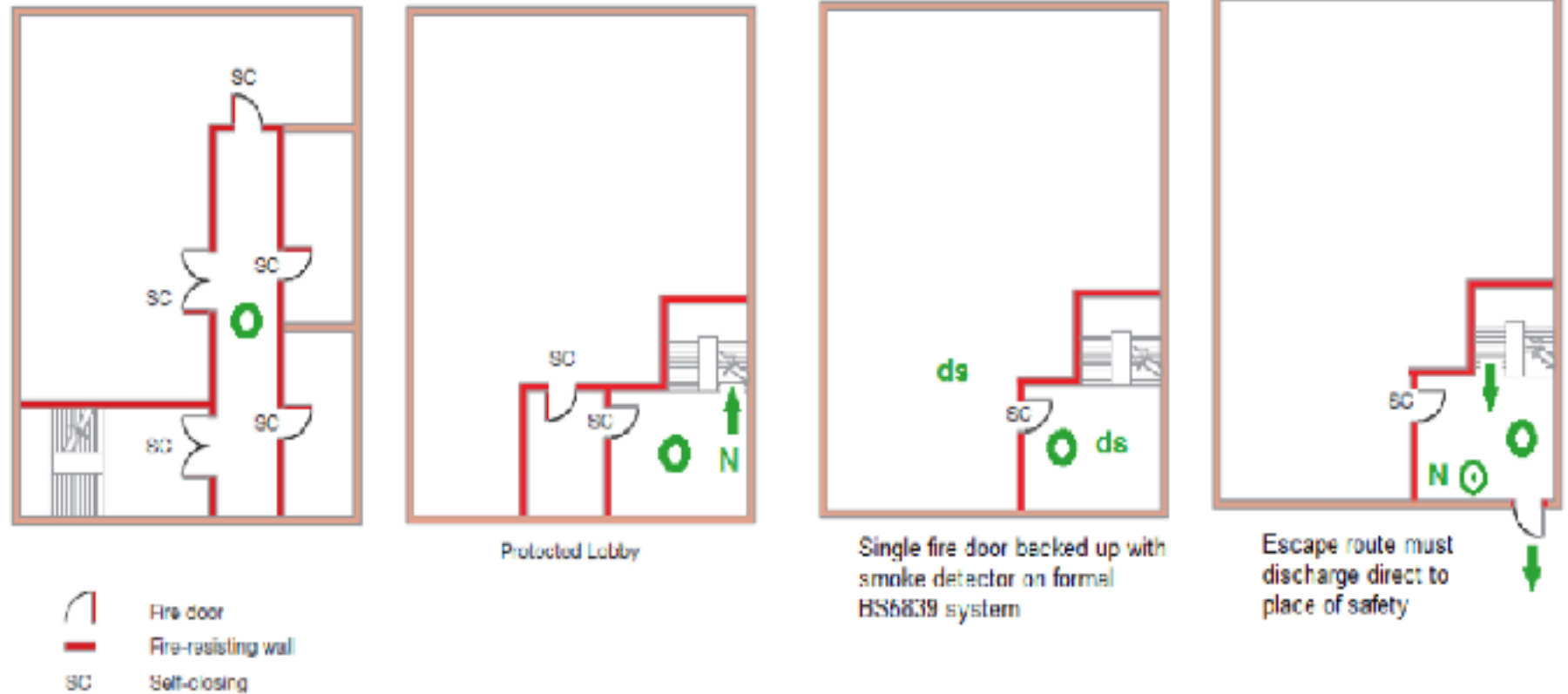
- **Delayed Evacuation Techniques** – often called a ‘**stay put**’ or a ‘**defend in place**’ approach – is particularly relevant to premises providing residential care facilities.
- **two-stage evacuation**: provides an alarm to staff, which allows for the incident to be investigated before a full evacuation takes place. It is **dependent on having an addressable fire alarm system** which will indicate at the panel where the alarm has originated from. If a fire is discovered a second alarm is activated and the remainder of the building must be totally evacuated.
- **phased evacuation**: sounds an evacuation alarm whereby those located within the zone, space or floor where the alert signal has been triggered evacuate immediately to a place of relative safety,
- The use of two-stage evacuation techniques which incorporate an investigation phase are becoming more common as businesses and fire and rescue services work to reduce the number false fire alarms.

RRO Impact re “Sleeping Accommodation”

- Realisation has led to most professional conveyancing of flat / apartment sales to require a FRA.
- The publicity following local authorities and other agencies being challenged for not understanding responsibility woke sectors up. E.g. Lakanal House.
- Lakanal findings not implemented?
- Significant sector of population either don't know or care and or chooses to ignore the law. WHY- perhaps the knowledge that no one follows up unless something goes wrong. Who polices this?
- Numerous prosecutions over worker “accommodation” – but most often found by F&RS during incidents.
- “Grenfell” has reawakened realisation!

3. Fire arrangements for 3 storey office block.

Means of escape for 3 storey single stair building



Fire arrangements for 3 storey office block.(cont)

- Refer RRO Fire Safety Guides
- For small buildings much fire safety is common sense-
- Use 5 Steps
- 1 Hazards –ignition Sources & “fuel”
- 2. Who & what is at risk- Do they have a satisfactory means of escape?- how are they warned of fire? What assets need to be protected/
- 3. What existing measures (if any)and what more needs to be done? Management ownership essential.
- 4. Record + Action plan.
- 5. Review.

4. Whether to specify/retrofit sprinkler in flats, schools etc.

- Depends on Risk. Life or “just” Assets?
- For elderly and infirm who cant (be) moved, strong case. Used to be argued to accept loss of person in room of origin.
- Case and proposal made for high rise flats over 18m to have sprinklers. Mandatory in Scotland & Wales !!
- Can same be said for a ground floor school building with alternate exits from each class?.
- NFCC & LFB call for sprinklers in schools. 10 yrs ago 70% schools built with sprinklers, in 2016 only30%.
- Last year DoE said sprinklers no longer required for life safety in schools.

5. Qualifications for carrying out FRAs.

- There has been much debate about competency in recent months, and this will clearly be an item discussed at the public inquiry in the months ahead. The Fire Sector Federation has been lobbying the government for action in the area to promote accredited assessors.
- A “competent” person is someone with enough training experience and knowledge and other qualities to assist ...
- Competence not specifically prescribed but suggest :-
 - Suitable training and experience.
 - Study & qualification by appropriate professional body, e.g. IFE, FPA, IOSH
- Self study appropriate guidance e.g. HM Government Fire Risk assessment guides & P.A.S 79 2005 (withdrawn) see Rev 2013

PAS 79 (PAS 79 :2005 / Rev 2013) & HMG FRA guides



6. What would be helpful for Fire crews arriving on site?

- Fire Wallet , containing :-.
- Floor plans + FRA copy
- Occupancy risk –persons at special risk, young, elderly or infirm.
- Fixed installations info, water mains , sprinkler valve, smoke ventilation arrangements.
- Gas & Electric isolation locations
- Have supervisor /manager meet and inform of status

7.Managing fire arrangements for retailers in shared environments such as the airport. e.g. Where do you hide or display Fire Extinguishers.

- Depends on location whether as part of concourse or dedicated shop area, but occupier will have responsibility for their domain and staff.
- Ensure staff have fire instruction training that dovetails with centre arrangements
- In a supervised location, extinguishers may be sited in staff only area.
- When in obscured supervised areas a conspicuous BS sign should indicate location



8. Current views on fixed arrangements for IT Server Rooms (ex-Halon etc).

- Size of installation will dictate handheld or fixed installation Early detection and ideally an automatic extinction of a fire is essential as is IT equipment area fire separation

Fixed installations

- choice of agent dictated partly by the nature of the fire and degree of ventilation, and also by whether it is a manned area. Total flood or rack only systems.
- Rack mounted self contained fire detection and suppression unit using FM200 extinguishing gas is safe for use on sensitive electronic equipment automatically releases within 10 seconds.
- upsurge in fixed water mist suppression systems. -highly effective as they cool the protected area, reduce smoke obscuration and suppress through a combination of direct flame cooling and local inerting by steam/water vapour. However they perform poorly on small fires and are best suited for the suppression of large fires. Therefore, water mist is not well suited for small or shielded or obstructed fires, exactly the type of fires most FM-200™ systems are designed to extinguish.
- FM-200™ belongs to the class of compounds called HFCs, or hydrofluorocarbons, which were actually introduced to facilitate the phase out of ozone depleting chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and bromine-containing fluorocarbons (Halons).

8. Current views on fixed arrangements for IT Server Rooms (ex-Halon etc).

Portable extinguishers

- Dielectrically tested aff foam spray are suitable for live electrical appliances with a voltage of up to 1000V (4x normal office voltage) at a safety distance of 1m. They are also a lot easier to use for lay people and can be used on paper and other fires as well.
- Dielectrically tested water mist types contain pure de-ionised water, which does not conduct electricity at all. The fine spray also prevents the arching of any current. Again, a limit of 1000V at 1m distance applies. Water mist extinguishers are extremely versatile and do not leave any residue and therefore cause very little damage. The mist causes very little damage to electronics and electrics. A superb all-rounder in offices.
- CO2 types starves the fire of oxygen and extinguishes it. The disadvantage is that the gas dissipates and if the source of the fire is still very hot, the fire can self-ignite again. Some evidence /concerns that CO2 can damage sensitive systems

The End!

Any Questions?