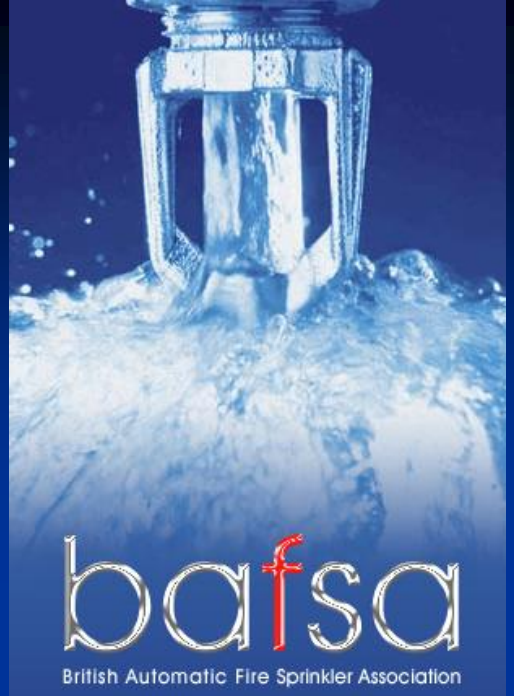

Implementing the Domestic Fire Safety (Wales) Measure 2011

Presented by: Ian Gough MIFireE MBEng

Implementing the Domestic Fire Safety (Wales) Measure 2011

- **30 April 2014:**
  - for care homes (as defined in the Care Standards Act 2000), children's residential homes, hospices, halls of residence, boarding houses and hostels other than hostels intended for temporary accommodation for leisure purposes.

- These projects are likely to be completed by existing contractors with both the resources and necessary design and installation skills required.

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Implementing the Domestic Fire Safety (Wales) Measure 2011

- **1 January 2016:**
  - for houses and flats (including sheltered houses and sheltered flats).
- These projects are likely to be completed by new entrants into the fire sprinkler industry and therefore poses a number of challenges.
- Engagement of housebuilders is required.
- Suitable training and qualifications must be in place.

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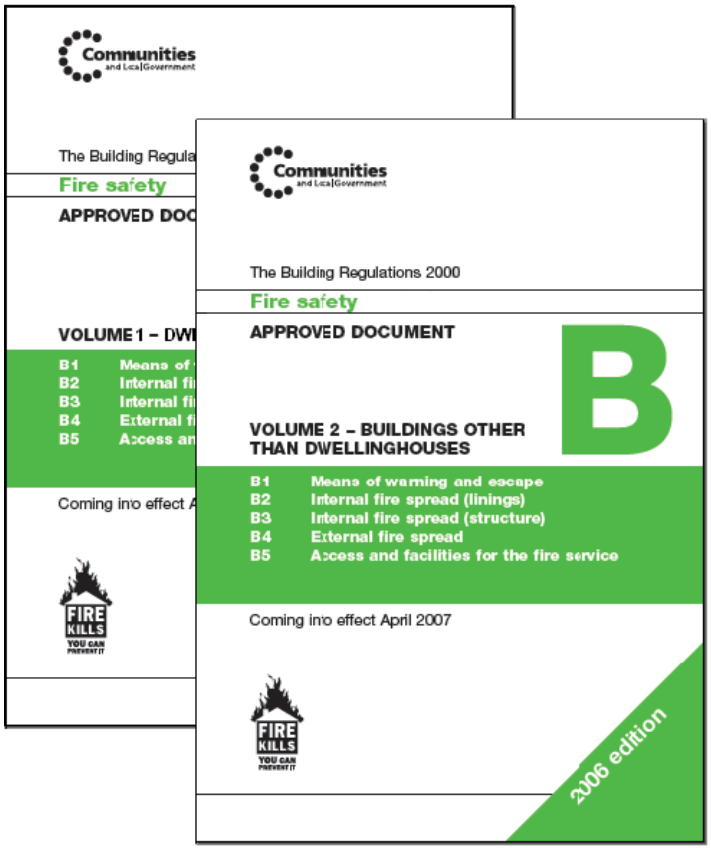
New Approved Documents



- Similar to existing Approved Documents issued by DCLG
- Vol 1 – Dwellinghouses
- Vol 2 – Buildings other than dwellinghouses
- (Vol 2 includes guidance for flats etc)

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Key issues

- Approved Documents to refer to BS 9251 as being the main standard;
- Where residences fall outside the scope of BS 9251 then the relevant standard will be BS EN 12845;
- However, the guidance retains the flexibility to refer in the future to other full British Standards or other appropriate technical standards for other fire suppression systems (e.g. water mist).

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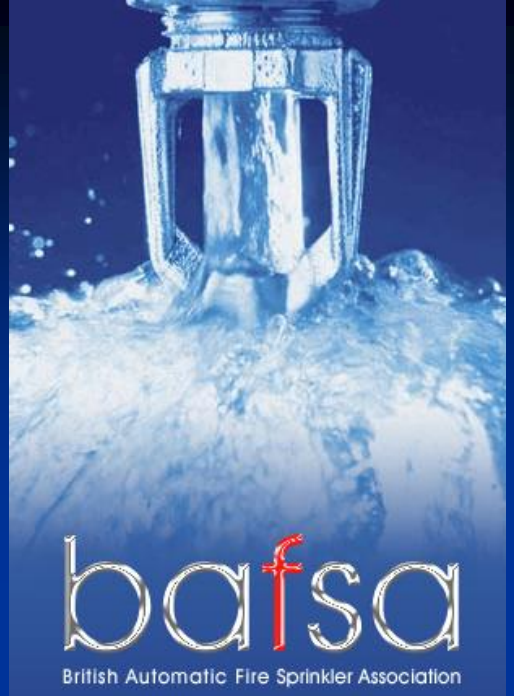

BS:9251:2005
Sprinkler Systems for Residential & Domestic Occupancies

Presented by: Ian Gough MIFireE MBEng

PROTECTING PEOPLE, PROPERTY AND THE ENVIRONMENT

BS 9251 Classification

Installed for **life safety** purposes with additional benefits for property protection in residential and domestic occupancies. These include:

- Apartments
- Residential homes
- Houses in multiple occupancy
- Blocks of flats
- Boarding houses
- Aged persons homes
- Nursing homes
- Residential rehabilitation accommodation
- Dormitories

‘Residential’

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BS 9251 Classification

Installed for **life safety** purposes with additional benefits for property protection in residential and domestic occupancies These include:

- Individual dwelling houses
- Individual flats
- Maisonettes
- Transportable homes

‘Domestic’

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BS 9251 Classification

- **Residential:**
- With a maximum individual room size of 180m^2.
- With sufficient water flow to operate a min of 4 heads @ 42 l/min each simultaneously.
- Therefore a flow of 168 l/min necessary.

- **Domestic:**
- With a maximum individual room size of 40m^2.
- With sufficient water flow to operate a min of 2 heads @ 42 l/min each simultaneously.
- Therefore a flow of 84 l/min necessary.

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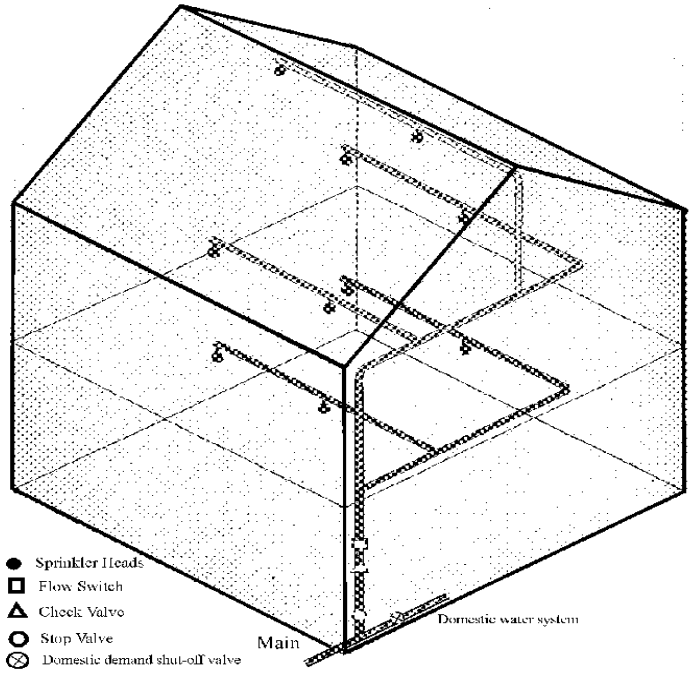
Extent of Sprinkler Protection



- BS 9251 sprinkler system should be provided in all parts except:
- Bathrooms less than 5m^2
- Cupboards & pantries less than 2m^2
- Non communicating attached buildings e.g. garages
- Crawl spaces

Common parts of flats?

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Water Supply

- BS 9251 assumes that direct connections (bypassing any meter) will be possible – subject to consultation with Water Supplier.
- If mains pressure exceeds 2 - 3 bars at a 32mm supply, this is probably adequate for a two storey house.

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Water Supply

- However, most new build premises will be metered.
- Meters used for domestic installations can:
  - Cause flow restrictions/pressure drop;
  - Cause potential obstructions/blockage due to inlet filters being affected;
  - Larger meter sizes not widely available for domestic use at present (NB: Thames Water are currently trialling a new meter);
  - However, ‘electronic’ meters are now a possibility.

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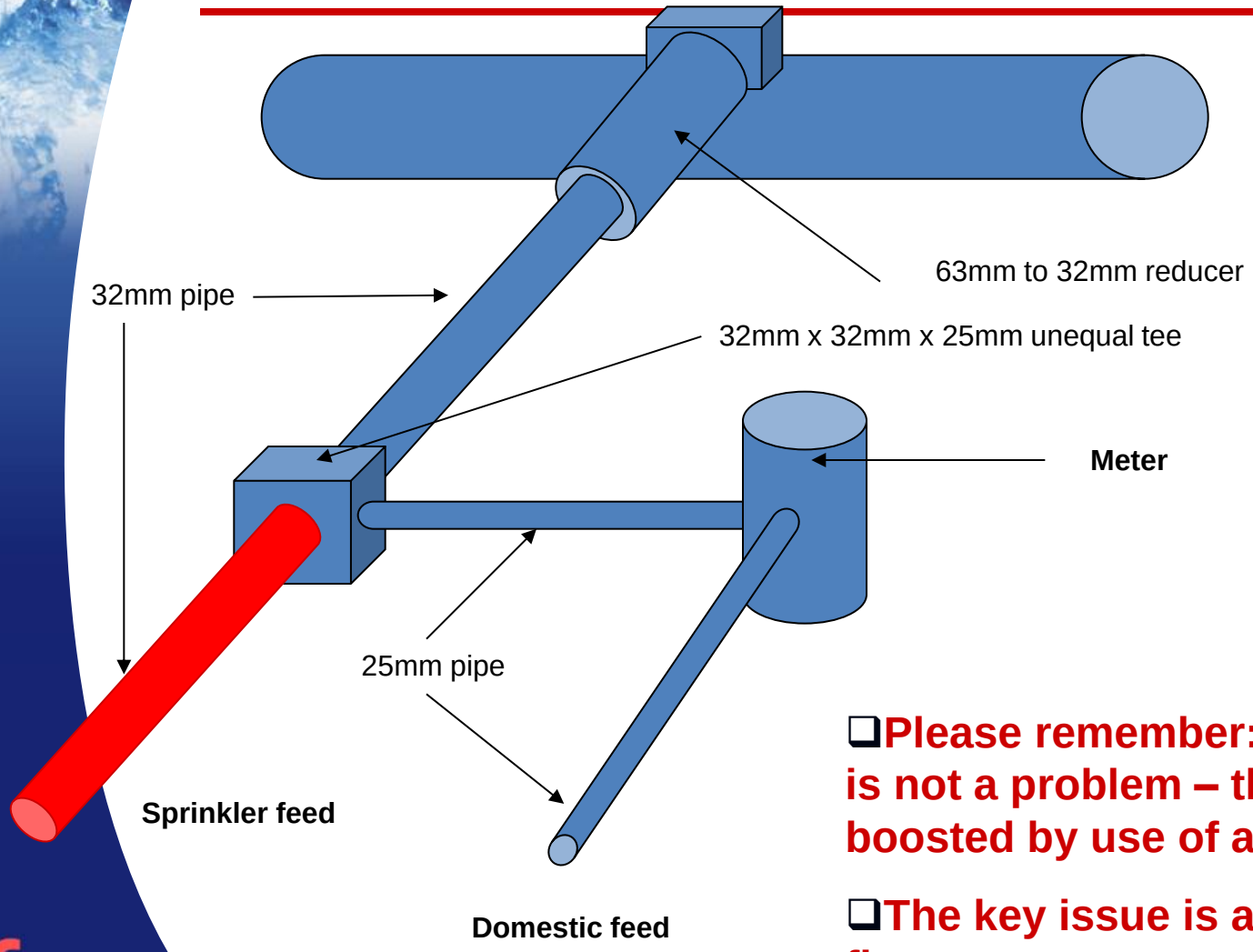
Direct Connection



- Please remember: pressure is not a problem – this can be boosted by use of a pump.
- The key issue is adequate flow.

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Booster Pump

- Low pressure can easily be overcome by an inline booster pump.
- Providing adequate flow is available (i.e. suitably sized supply pipes).
- This alleviates the need for a tank.
- However, it is important that any such pump does not create a vacuum.

Images courtesy of Triple P Projects Ltd

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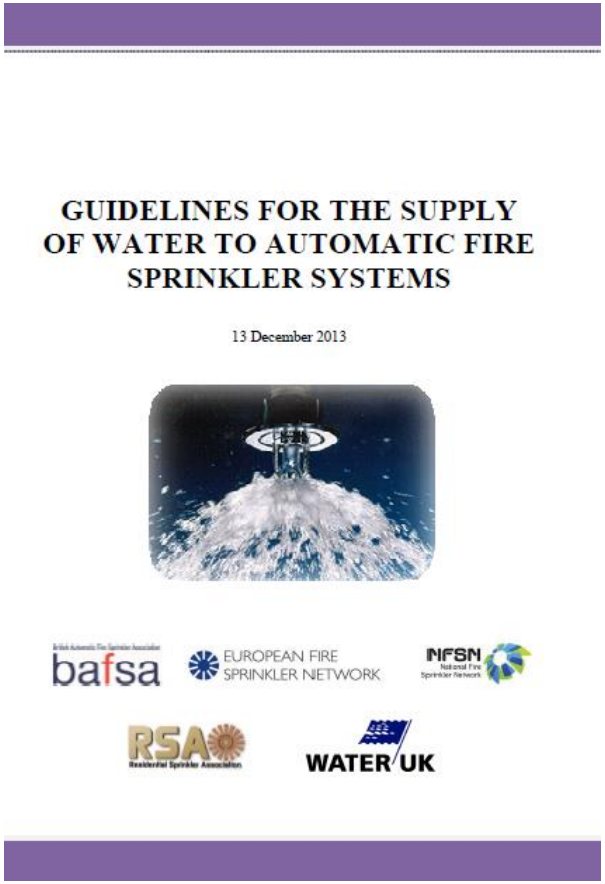
Water Supply

- A protocol exists between the fire industry and water industry regarding fire sprinklers.
  - Welsh Water is a key member of the ‘Water Liaison Group’.
  - The protocol has recently been updated.



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Stored Water Capacity

- Where a direct connection is not possible a tank and pump will be required
- Domestic occupancies should be calculated on the basis of maintaining actual pressures on all floors for 10 mins
- Residential occupancies should be calculated on the basis of maintaining actual pressures on all floors for 30 mins
- However, the anticipated attendance time of the fire & rescue service should be considered
- Allowance can be made for any inflow into the tank

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Stored Water Capacity

- For a ‘Domestic’ risk approx one cubic metre of water is required

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Pumps

Image courtesy of Grundfos Pumps

- BS 9251 only requires a single pump
- These are usually always electrical
- However, for ‘higher risks’ sometimes a battery back-up supply is provided
- Only in exceptional circumstances is a second pump necessary
- All fire pumps do require periodic testing
- However modern sprinkler pumps have a ‘self-test’ capability
- Do not create a negative pressure i.e. vacuum.

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Fire Sprinkler Supply Pipes

- Traditionally steel
- However, for residential and domestic installations:
  - Copper
  - CPVC – ‘approved products’ e.g. Blazemaster

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Sprinkler Heads

- Should be “quick response” [fast response] rated ‘Residential’ pattern
- These can be ‘concealed’
- Note: 68°C is hot! It takes only seconds to get 3rd degree burns in 68°C water!

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Sprinkler Heads

- Spot the sprinkler head?

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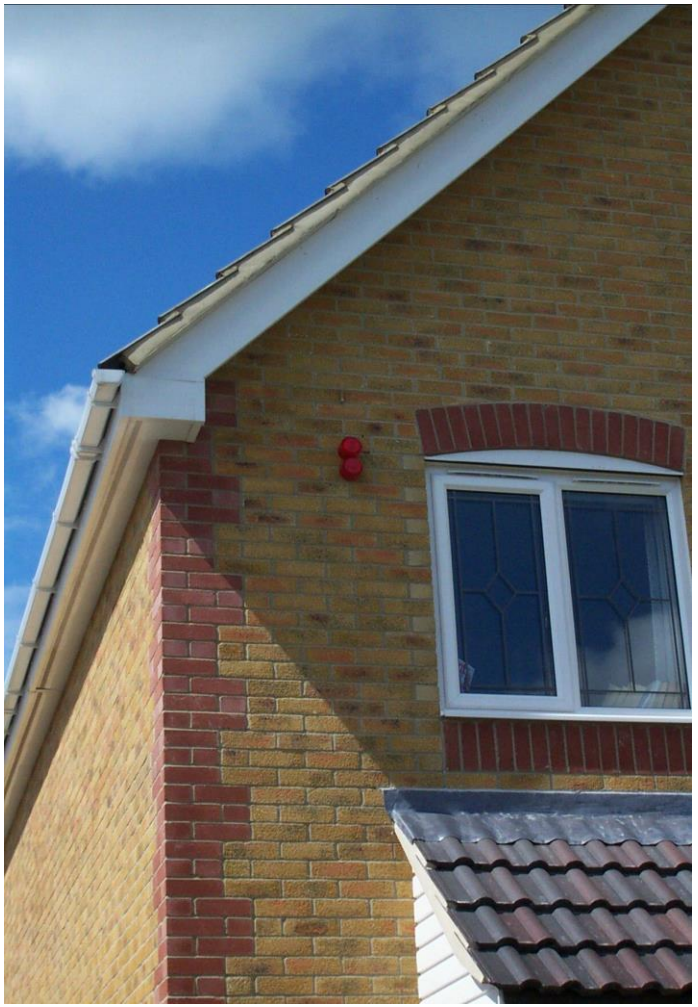
Alarms

- The system should have one of the following alarms triggered by water flow to one sprinkler:
- Mechanical driven alarm; or
- Electrically operated flow switch connected to an audible alarm; and
- At least one internal alarm; and
- An audio-visual alarm positioned externally in a prominent position and labelled “FIRE ALARM”



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Valves

- A residential/domestic sprinkler system should have the following:
  - An appropriate backflow prevention device to prevent mains water contamination
  - A stop valve of the full bore lever type to isolate sprinkler pipework from mains water supply – the valve should be locked in the open position
  - Where appropriate a priority demand valve

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Documentation

- Details of authorities consulted
- General description of system & any agreed deviations in the form of a ‘Compliance Certificate’
- Layout plan
- Details of water supplies
- Inspection & checking programme
- List of components
- 24 hr emergency number
- Log book
- Essential information - e.g. “Do NOT paint sprinkler head!”

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Maintenance

- Annual inspection and test by a suitably trained person to ensure:
  - The sprinklers' heat sensing capacity and spray pattern are not impeded
  - The minimum flow rate is achieved at the drain and test valve
  - The alarm is effective and can be heard in all parts of the building
  - No modifications have been carried out – except in accordance with the BS

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Further Guidance

- BAFSA Technical Guidance Note No 1
  - The Design and Installation of Residential and Domestic Sprinkler Systems

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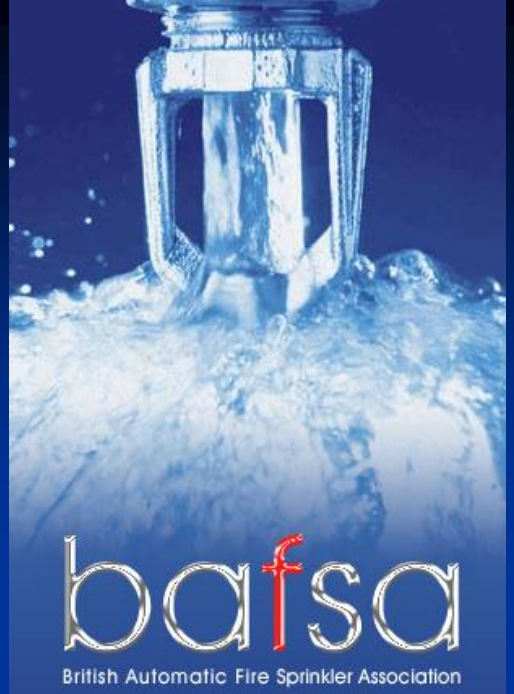


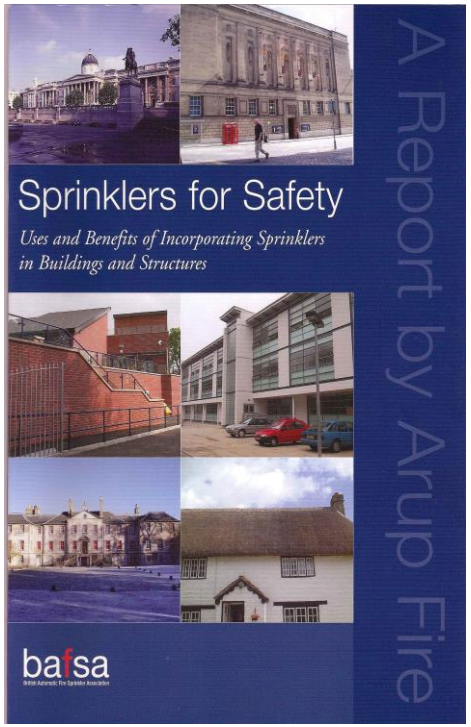
Opportunities and Added Benefits

Design Opportunities

- *Sprinklers for Safety*
- *Uses and Benefits of Incorporating Sprinklers in Buildings and Structures*

A report by BAFSA
and Arup Fire - 2006

Called up in both AD- B and BB100 and DCFS *Standard Sprinkler Specification*



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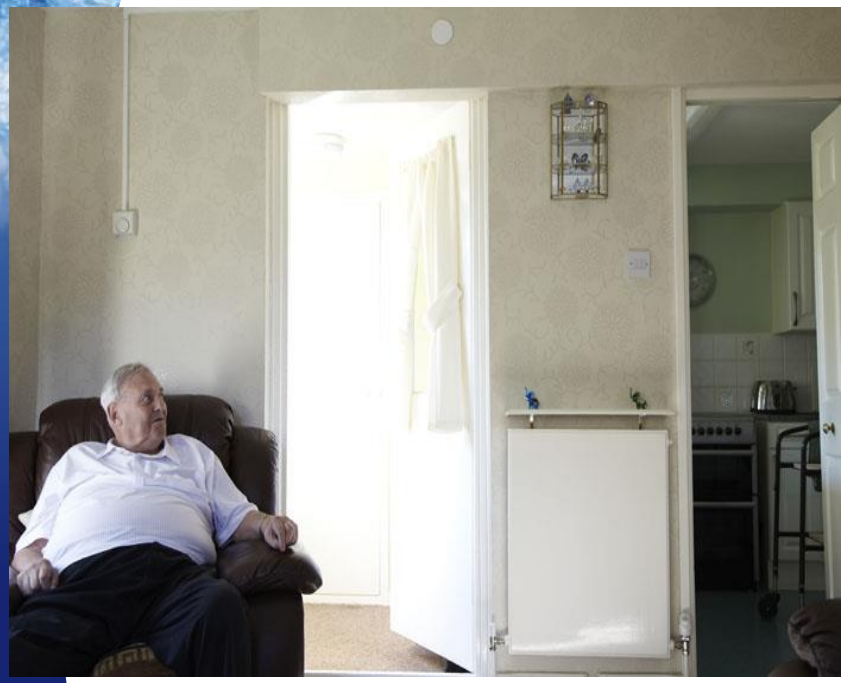
Existing Design Freedoms



It may be possible to:

- **Reduce quantity of portable fire-fighting equipment**
- **Extend travel distances**
- **Relax fire-resisting barriers**
- **Relax some self-closing devices**
- **Allow for delayed evacuation**

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45 metre rule – Fire Appliance Access

New build in Hertfordshire

Mind the gap!

Note: BS 9991 allows for up to 90m (house) – where attendance time is 10mins or less.

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Alternative Designs

- **Means of escape:**
- Other less common, arrangements (for example residences entered above or below accommodation level, or residences containing galleries or open plan layouts) are also acceptable where automatic fire suppression is provided.
- Guidance on these is given in BS9991: 2011 and The NHBC and BRE *Open Plan Flat Layouts: Assessing life safety in the event of fire*.

Should additional guidance be provided to allow for more flexible designs?

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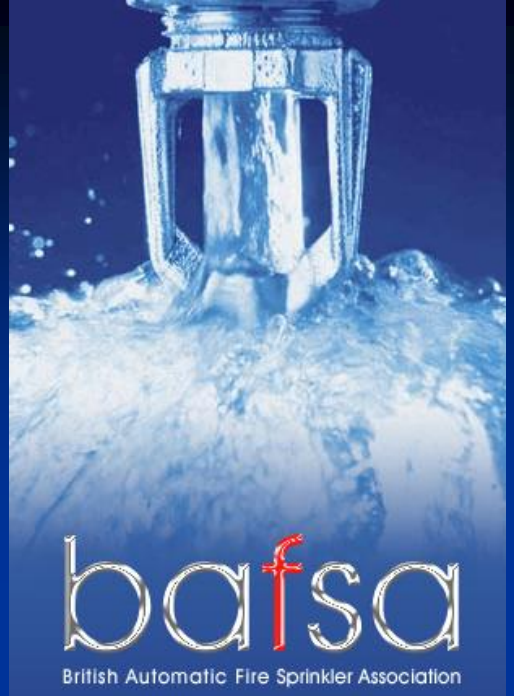

A Competent Workforce

PROTECTING PEOPLE, PROPERTY AND THE ENVIRONMENT

Workforce Development

- The Measure will increase job opportunities in Wales
- Up-skilling courses are being prepared
- Based on existing National Occupational Standards for the sprinkler industry
- New qualifications for installation and design
- Apprenticeship schemes

Neath Port Talbot College is playing a key role in providing vocational training

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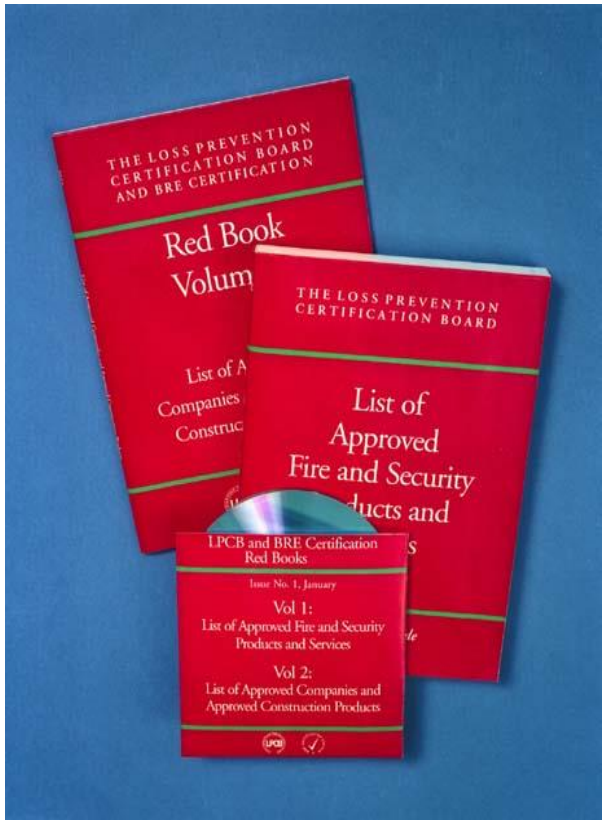
How to select a competent contractor?

- LPS 1048 (commercial & industrial systems)
- LPS 1301 (residential & domestic systems)
- FIRAS (mainly residential & domestic systems)
- International Fire consultants



Certificate of Conformity

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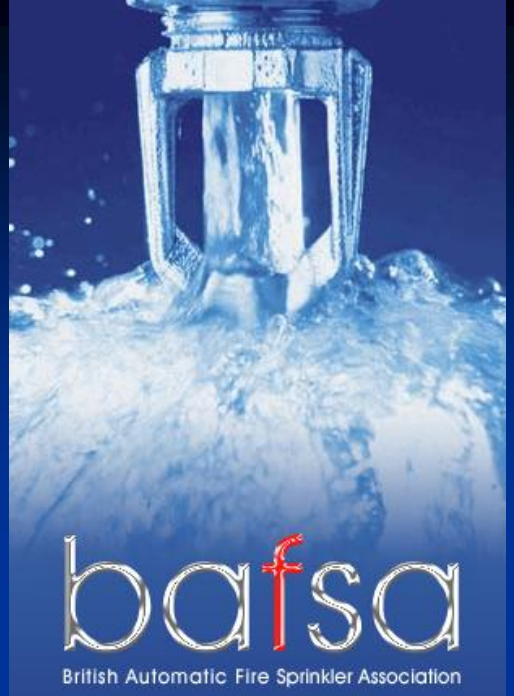

Thank you for your attention

Presented by: Ian Gough MIFireE MBEng
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