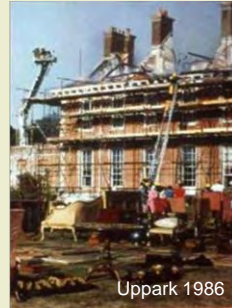




Fire Protection for Heritage Buildings

Steve Emery
National Fire Adviser for
Historic England



How many fires are there
in heritage buildings?







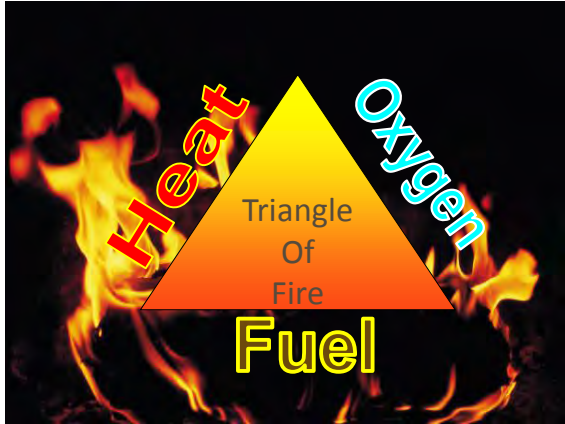
We do not know how many fires we have in heritage buildings !

- There are no statistics



90% of accidental fires self-extinguish or are dealt with by occupiers

- Not enough fuel
- Not enough oxygen
- Switching off electrical circuits
- Water
- sand



Historic England

Auto Ignition Temperatures

The temperature when an item will automatically ignite in air without the presence of a flame

- Petrol 400 C
- Pine 427 C
- Oak 482 C
- Propane 540C
- Pitch 500C
- Insulating Foam; Non Flammable
- Melting Point of Lead; 327.5 °C



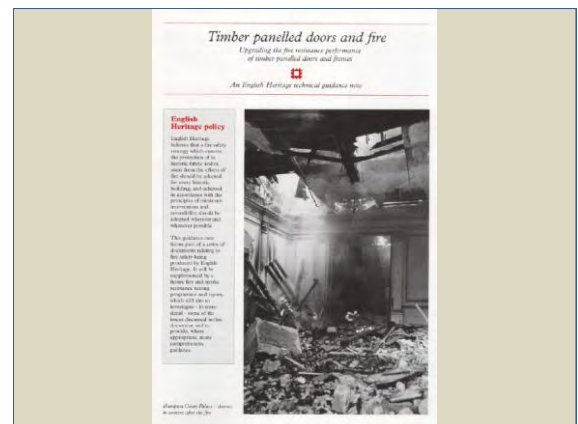
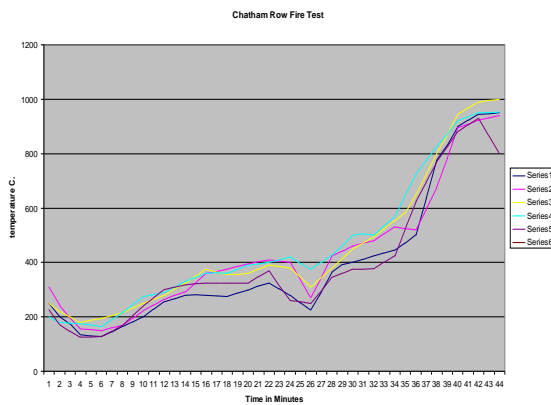
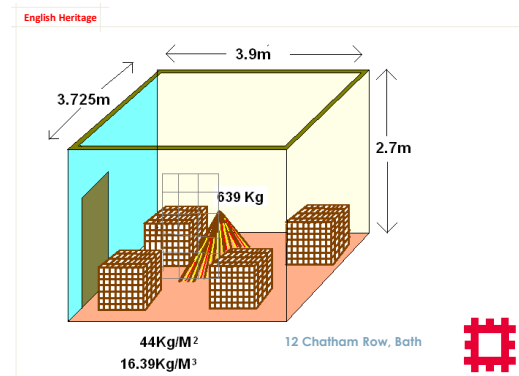
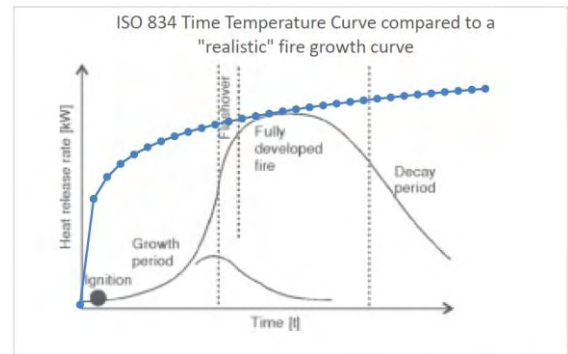
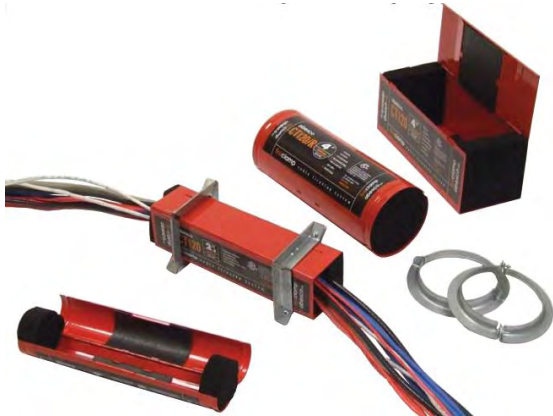
Historic England

Flashpoint

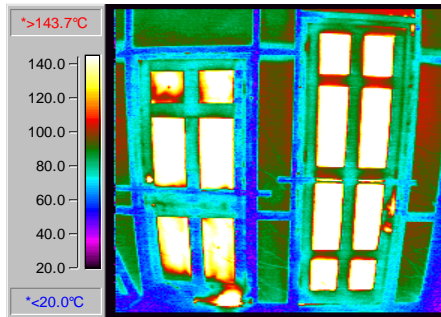
The temperature when an item is warm enough to give off flammable vapours that will ignite with a flame

- Petrol 18C
- Pine 250 C
- Oak 300C
- Propane -130C
- Pitch 200C
- Temperature of propane flame tip 1995c +

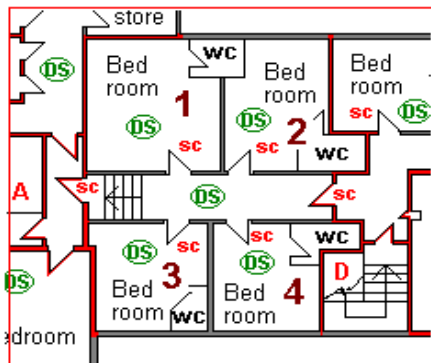




Start plus 37 minutes



Determination by Secretary of State 2008



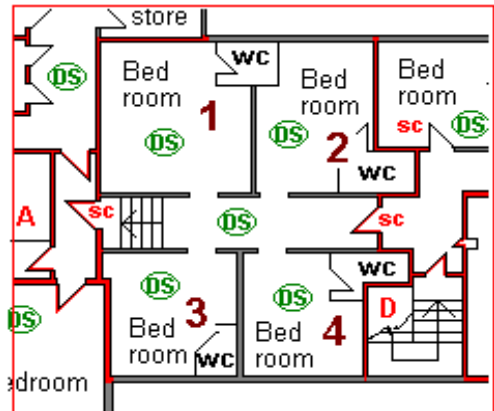
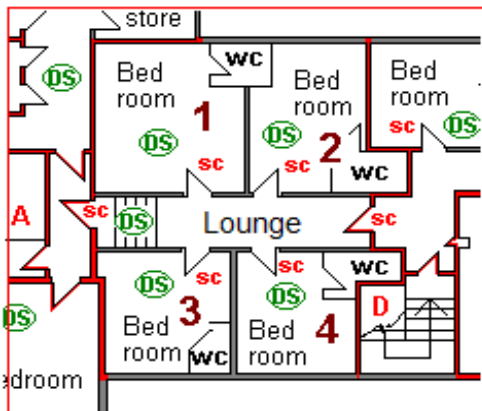
It is considered that the existing doors (even with self closing devices fitted) cannot be relied upon to prevent the egress of smoke at the early stages of a fire.

The existing bedroom doors cannot be described as smoke stopping doors and the corridor is not adequately protected from smoke.

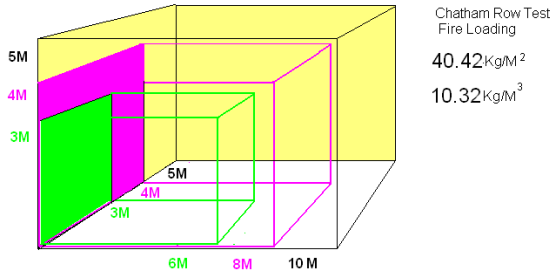
If the rooms in dispute are continued to be used as bedrooms it is considered appropriate to undertake the following measures which enable an appropriate balance to be struck between ensuring sufficient fire safety measures are in place for the safety of people and maintaining the historic fabric and character of the building:

(i) Upgrade the doors to achieve a period of fire resistance of 30 minutes, with smoke seals; and self closing devices

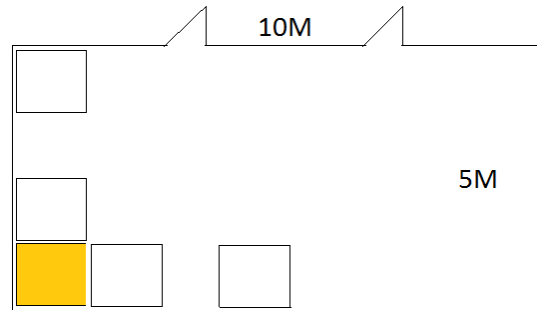
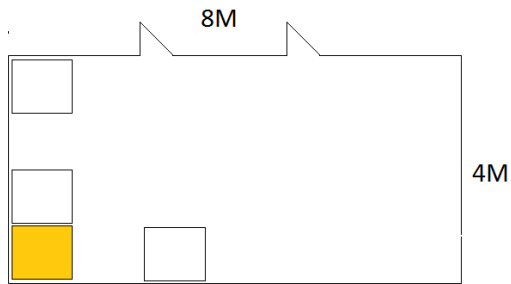
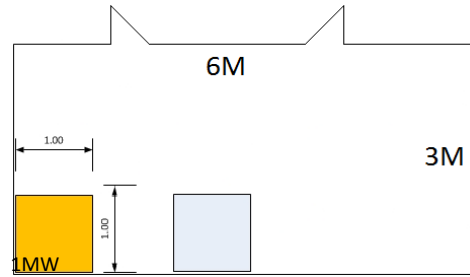
4.6. The above measures are commensurate with the enforcement notice issued by the Fire and Rescue Authority.

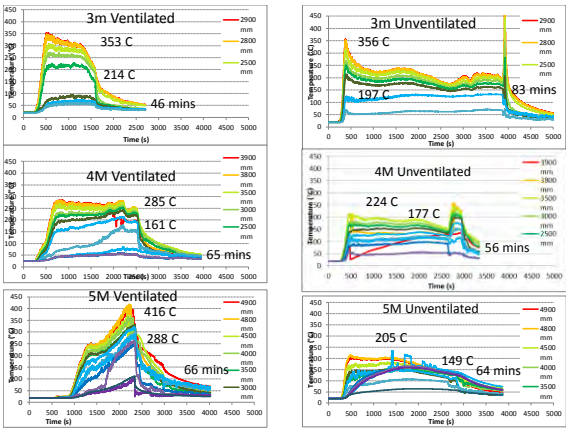


Proposed Room Size for Fire Testing



BRE Fire Testing 3M Double Cube





Approved Document B v2
Buildings of special architectural or historic interest

- **0.35** Some variation of the provisions set out in this document may also be appropriate where Part B applies to existing buildings of special architectural or historic interest, where adherence to the guidance in this document might prove unduly restrictive.
- In such cases it would be appropriate to take into account a range of fire safety features, some of which are dealt with in this document and some of which are not addressed in any detail and to set these against an assessment of the hazard and risk peculiar to the particular case.

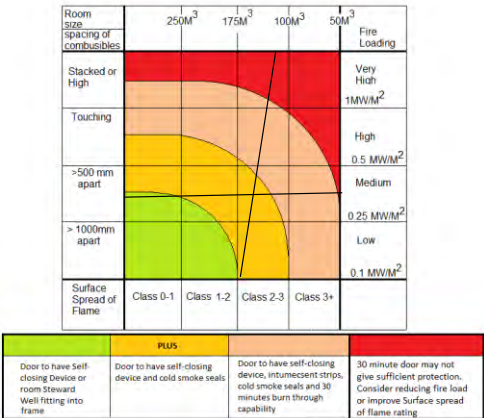
Approved Document B

- **0.32** Factors that should be taken into account include:
- The anticipated probability of a fire starting
- The anticipated fire severity
- The ability of the structure to resist the spread of fire and smoke and;
- The consequential danger to people in and around the building



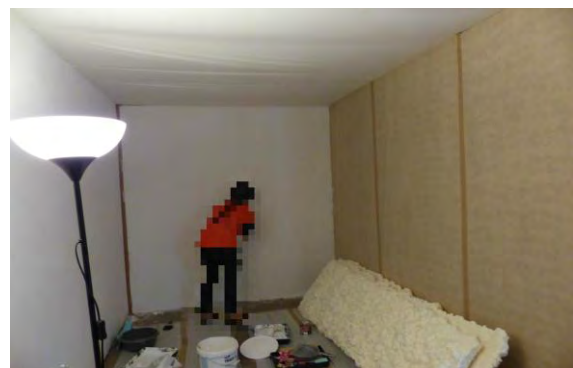
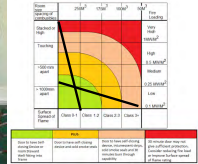
Determination on the suitability and sufficiency of a fire risk assessment in a hotel in respect of the adequacy of the existing bedroom fire doors

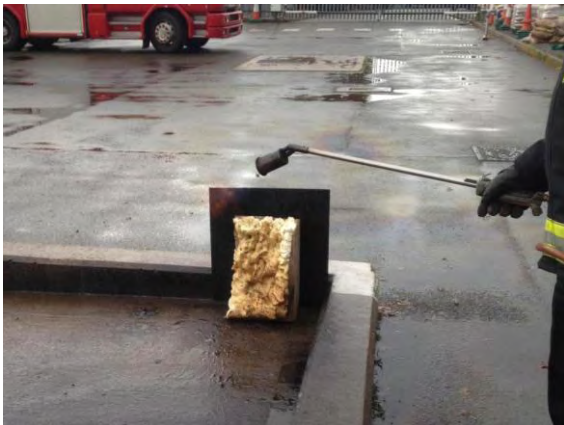
The Secretary of State has determined that the appropriate remedy, is for the responsible person to prepare a new risk assessment in which the absence of intumescent strips and cold smoke seals on the existing bedroom fire doors is recorded and justified.



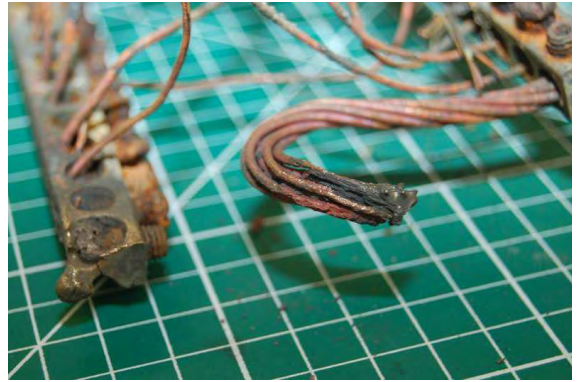
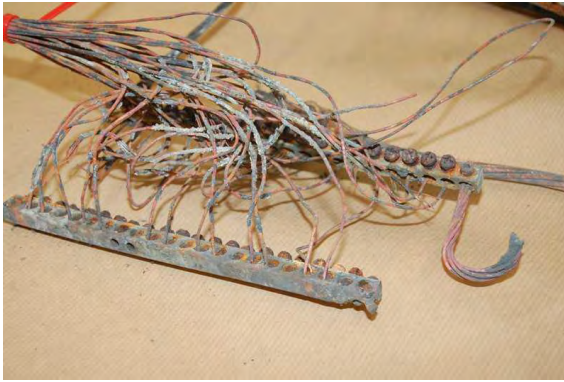


Door FR 20









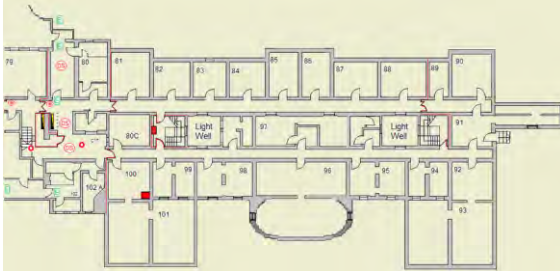
Cost of Sprinklers

£16 per square Metre

Plus tanks and pumps



Cost of Sprinklers



1155 square Metres x 5 Floors & 3 Floor voids x £16 = £155,840

Cost of Sprinklers

There are other costs!

- Moving the objects £4000 per room (£320,000)
- plus specialist conservators if carpet is fragile
- Project Collections Care Assistant and conservator for supervision (15 months for 12 month project £45,000 & £22000 for CCA
- Documentation for object movement £ 22,000
- Possibility of an electrician to move chandeliers, picture lights case lights, etc.

Cost of Sprinklers

- Protection of in situ objects
- Packing material for moving and storing small objects
- Purchase of racking within rooms used for temporary storage
- Building works, lifting floorboards, notching joists, chasing walls and making good.
- Project manager for works
- Loss of income during project

Cost of Sprinklers

~~£16.00 per
Square Metre~~

£73 per
Square Metre

~~£155,840~~

£674,520

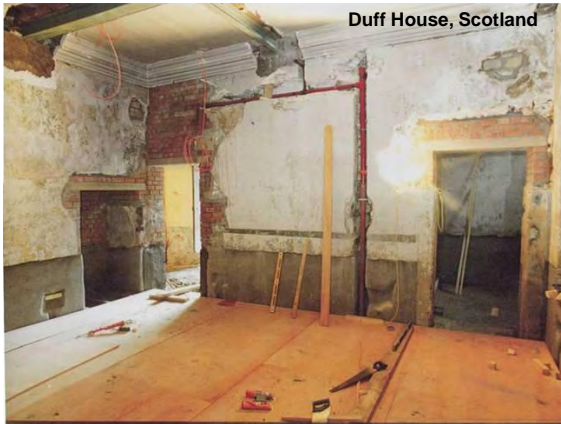
How do you prioritise?



Stokesay Gatehouse

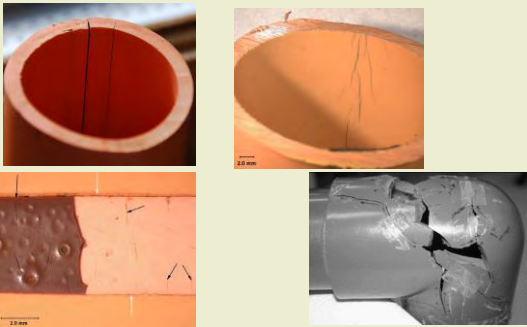


Marble Hill House



Why Do PVC and CPVC Pipes Fail?

By Dr. Duane Priddy, Plastic Failure Labs, Midland, MI



Questions

Steve.emery@historicengland.org.uk