Introduction to fire in heritage buildings and emergency planning for fire

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Research themes/publications

- An investigation into the fire safety management of historic buildings (2012, journal article)
- The Upgrading of fire safety in historic buildings (2017, journal article)
- Emergency planning for fire in historic buildings (2018, journal article)
- Fires in historic buildings: the importance of emergency planning (2019, IHBC Yearbook)
- Post-fire conservation decisions (current research theme)
Today:

– Why are we bothered about heritage?
– What's going on?
– What does it look like?
– What can we do about it - one aspect: planning
– The bigger picture
Why should we be concerned about heritage?

- "We construct our identities from stories, objects and buildings that conjure up our ancestors' past: their glories, tragedies, or simply their day-to-day lives." (British Council, 2016)

- Good rate of survival of important buildings in the UK

- Overall, estimated 500,000 listed buildings on National Heritage List for England (Historic England)

- Once we lose original historic fabric its gone forever

- Heritage tourism sector is an important part of the UK economy, contributing £20.2 billion to GDP and supporting 386,000 jobs
Haddon Hall, Derbyshire  13th-16th Century  Grade I
Clandon Park, Surrey   1725-1731   Grade I
After the fire of April 2015

• https://www.youtube.com/watch?v=lyfhJQgh61c&t=23s
Ship Inn, Levington, Suffolk, March 2019
The background

• “fire is still the greatest single threat to our heritage” (Kidd 2003)

• “the number, authenticity and quality of European historic buildings is being steadily reduced as a result of fire” (Maxwell & Westerlund Bjurstrom 2007)
Numbers

• Not fully quantified, due to problems with accuracy and lack of heritage-specific reporting

• National Trust recorded 887 fires 1991-2005

• Scottish Historic Buildings National Fire Database recorded 509 fires in listed buildings in Scotland in 2007/8

• Figures collated by Historic England for 2018 recorded 355 fires in heritage buildings + estimated 100-150 additional fires missing from data set
Fires in historic buildings: causes

- Data for 2018 courtesy of Charlie Harris, Historic England
Accidental fires in historic buildings: causes

- deliberate fire-starting and unknown causes excluded
- therefore particular attention must be paid to both the use of chimneys and the condition of the electrical systems in historic buildings
Why is fire in heritage a concern?

• The bottom line:
  – Original historic fabric is often unique and “the loss of any authentic fabric in a fire is irretrievable” (BSI 1998)
Emergency planning for fire in heritage

• Despite all the careful attempts to prevent a fire, one has now occurred.

• What planning has been done to make sure that there is an effective response to the fire and to minimise its impact?
Emergency planning for fire in heritage

Research strategy:

- Looked at previous key fires - Hampton Court Palace, Uppark, Windsor Castle, Glasgow School of Art, Clandon Park.

- Talked to a wide range of expert stakeholders - National Trust, Historic England, Historic Royal Palaces, Historic Houses (HHA), National Fire and Rescue Services Heritage Protection Groups, Chatsworth, Castle Howard, Oxford University, etc.

- Attended Historic England/West Midlands Fire Service Salvage and Disaster Recovery course as an observer.
Impact of size on emergency planning

- Wide range of requirements and available resources
- From Historic Royal Palaces and National Trust down to single owner-occupier
- Public access (visiting/sleeping) or private use only
- Possibility of sharing resources/expertise
What is significant?

- Heritage value is based on 'cultural significance'
- Understanding of what exactly is of key significance informs priorities for emergency planning
- Fabric of building? Contents? Something else?
The planning process

• Identify and work out all the required procedures + talk to insurer
• Work out a 'command structure'
• Develop supporting documentation - Emergency Response Plan
• Train staff to carry out and drill regularly
• Table-top exercises for different scenarios

A work in progress!
Emergency planning for fire in heritage

Three areas identified as being of prime concern:

- **first actions** in the event of fire
- interacting with the **fire and rescue service**
- **salvage** of artefacts from the building

- All required detailed planning

- Something is better than perfection!
- First actions in the event of fire
  - evacuation
  - contacting the fire service
  - first-aid firefighting
- Life safety is obviously the paramount concern
- but.. others need to be carried out simultaneously since both are time-critical and could have a big impact on the outcome
- Treat all historic building fires as serious initially (rapid fire spread; unseen fire spread)
• **First actions in the event of fire** - evacuating people from the building

- Work out what you're going to do and practice doing it

- Tweak and repeat

- Should be realistic to occupants - eg: public visitors on site, practice with public (or closest fit)

- Goal is to confirm that the building is empty
First actions in the event of fire - contacting the fire service

- This seems obvious, but are your communications systems going to work in an emergency situation?

- Clandon Park example: power switched off early in fire (fire in distribution board) - this disabled phone system; mobile signal was poor - manager delayed in contacting fire service trying to get phone signal & ARC couldn't contact property to confirm alarm.

- Training is really important & 'sole task' if possible
First actions in the event of fire - first-aid firefighting

- Can have a decisive impact on the outcome
- Assume self-sufficiency will be required in the early stages
- Correct training of staff is crucial (and turnover!)
- Only to be used where it can be effective and if it is safe to do so
- Problem of 'invested' staff and thus management of actions
Biertan, Transylvania, Romania - 15th century fortified church - UNESCO World Heritage Site
Planning with the fire service
Planning with the fire service

Creating and maintaining a working relationship with the fire service and developing a plan together

- Making use of the fire service's knowledge and expertise
- Exchanging information
- Understanding exactly what will happen on both sides if there is an emergency
- Who instigates this?
Planning with the fire service

Key points to consider:
- When will there be a response? Automatic/confirmation required; Daytime/night-time
- Response times
- Access to site
- Hardstanding for vehicles
- Water supplies
- Access to building
Planning with the fire service

Key points to consider:

- Risks to firefighters
- Layout of building
- Interaction with site staff / duplicate command role?
- Communications (channels, etc.)
- Agree salvage strategy/operations
- Information available to attending crews
Planning with the fire service - orientation visits & exercises
Planning with the fire service - orientation visits & exercises
Salvage of artefacts from the building

Experience has shown that it is sometimes possible to remove a significant proportion of important artefacts from a building.

Good examples from Uppark, Windsor Castle and Clandon Park.
Salvage of artefacts from the building

- Note (possible confusion): senior fire officer present has the power to prevent access. Must be clearly understood by building owner/manager in respect of own trained salvage team and by team themselves.
Salvage of artefacts from the building

(Following is applicable to buildings with important contents or collections)

- Identify and record what is valuable, and merits removal in a fire emergency
- Establish priority of item
- Document each item (use templates)
- Ideal output - packs of laminated sheets (description, photo, location, details for removal)
Salvage of artefacts from the building

- Important to keep up to date!
- Make items easy to remove (or in-situ protection?)
- Have all necessary equipment stored locally (not too locally!)
- May need a big team - removal/treatment (triage)
- Consider sharing resources where properties are nearby
An example: the country house conundrum

Country Houses love to burn!
An example: the country house conundrum

There is a lot of important heritage in rural locations!

- Retained crews; travel distance; quality of roads
- Access to location (topography/roads on-site/obstructions) and to building (walls/gardens)
- Hardstanding for vehicles
- Quite often lack of firefighting water
- Complicated layouts
- Rapid fire spread - lack of compartmentation, materials
- Unseen fire spread - voids, etc.
An example: the country house conundrum

What is required:

✓ Early-stage self-sufficiency
✓ Planning with fire service to make response and firefighting operations as efficient as possible
✓ Comprehensive information available on arrival
✓ Careful consideration of salvage of artefacts from the building
Emergency Planning - part of a bigger picture.

Holistic fire safety management

- Housekeeping
- Upgrading of fire protection
- FRA
- Training
- Emergency Planning
- Maintenance