

## Fire Risk Assessment and Engineering in Historic Buildings: Summary Recommendation:

*Simple compliance with current legislation, will not sufficiently protect cultural buildings from fire: a more comprehensive approach is called for.*

### But, who needs to be involved?

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Consider how long will it take to respond to an emerging incident?  
A basic question for Historic Property Owners:  
**What do you want left after your fire?**

**Some Key Issues:**

- Fire can start very easily in most cases
- It can reach 1000°C in just 4 minutes
- Fire and Rescue response times are generally greater
- A degree of Cultural Heritage Loss will always occur with each incident

**So, regarding fire incidents:**  
Two Questions can be asked of ALL parties concerned with the future wellbeing of European Cultural Heritage:

- What do you want left after your fire?  
*(Some illustrative answers follow!!)*
- **How honest will your answer be?**

**Hampton Court 1986**  
6 year rebuild

**Windsor Castle 1992**  
€56 m 5 year rebuild

**Hofburg Palace 1992**

**Katedral Church 1960**

**Christiansborg Palace 1992**

**Oddfellers Palace 1992**

**LUZERN Pont de la Chapelle 1983**

### Some UK Fire Statistics

**UK Quality of Life:**

During 2014-15 in England, Wales and Scotland there were:

- 325 fire related fatalities
- 8,210 non-fatal casualties

During 2014-15 in England, Wales and Scotland there were:

- 577 homicides

**UK Church Fires:**

2001: 1,450 incidents of accidental damage (cost £4.3m)  
64 arson incidents (cost £4.1m)

2002: 2,439 incidents of accidental damage (cost £5m)  
67 arson incidents (cost £1.1m)

**UK School Fires:**

Between 1,400 and 1,800 fires/annum (2007 estimate)

Financial cost to insurance companies (2002 estimate)

- £100,000,000 (up from £50,000,000 over 4 years)

Does the visual evidence and the above statistics help provide an answer to the question?

**Key underlying questions:**

- Are we serious about protecting Europe's patrimony?
- Are we content to remain in the dark about fire loss statistics to the built heritage and its contents?
- Do we want to continue to let the heritage burn?
- How do we address the 'heritage complacency'?

**Key underlying issues:**

- Better building protection automatically improves life safety
- Retrofitting modern technology helps assure building safety
- Immediate suppression is less damaging than full scale fire fighting
- Much can be achieved through mutual collaboration if a balanced, sensitive and strong lead is planned for and adopted that integrates an better understanding of the historic fabric, its significance, value and authenticity

**Issues that need to be considered**

- Fires respect only walls and water
- In historic buildings, compartmental integrity is rare
- Introducing segregation can result in unwanted impact on the building micro-climate
- Who will respond to alarms? What will be the response time/weight of attack by Fire + Rescue Services?
- The quantity of water used by F+RS can have serious side effects with major 'post-fire' incidents seriously impacting on structural stability, stonework, timber and foundations
- But, supplies of fire fighting water may be limited - this is invariably a problem in rural areas - so the right choice of a relevant suppression systems is important

Timed Comparison with Protection

Un-sprinkled room (2 mins) Sprinkler protection

Increasing fire damage

Un-sprinkled room (2 1/2 mins) Sprinkler protection

Un-sprinkled room (3 mins) Sprinkler protection

Increasing degrees of water damage

Hoses Sprinkler systems Misting Systems

Discrete Sprinkler suppression systems

Available Guidance requires greater acceptance, understanding and promotion

**High Level Considerations**

**Political Direction should note:**

- Fires in Cultural Heritage Properties occur regularly: But -

**Comprehensive and unified data sets are required**

- The full extent of the physical and cultural loss to European society by fire to the built heritage is unknown

**Elected Members should be encouraged to adopt an integrated and ameliorating approach**

- Historic buildings are of considerable significance and economic value, especially to the tourist industry, but this can be readily debased by fire loss

**Governmental Considerations**

**Policy Making in Central Governments:**

- Policy should be informed by more accurate data and information

**Pre-disaster considerations should be encouraged**

- Effective integration of collated data should help determine Legislation, Directives, Standards and Guidance

**Post-disaster reactionary training, facilities and resources should be enhanced**

- Relevant Departments should be better informed in their promotion of a wider perspective of influences

### Regional Considerations

Administrative Direction in Regional Authorities

- Departments should be adequately resourced to deal with the challenges

Securing full fire protection measures requires all involved to understand what constitutes historic value and significance

- Risk analysis of historic buildings should describe and promote their special characteristics

Maintained pools of Disaster-Preparedness equipment and expertise should be established

Any partial or total reconstruction work should preferably be carried out with the same materials, skills and construction technologies as the original

### Operational Considerations

Practical Applications and Operational Activities

- Improved integration of the emergency services with building owners/users

For Owners: More can be achieved in a pre-planned risk analysis and preventative approach to ameliorate the consequences of a fire incident from occurring, involving the production of:

- A Fire Safety Handbook and Incident Record Log
- A Damage Limitation Plan
- Appropriate Insurance coverage
- Staff and occupancy training
- Additional, achievable and practical measures (e.g. Update Electrics)