St. Werburgh’s.
Fire, Smoke & Water Damage.
Threats to Faith, Fabric & Future.
Joseph A Gannon. FRIA, MUBC(UCD) I.Eng.MIFire E
Problems facing St. Werburgh’s Church.

1. An overview of the possible fire related problems facing the Church and how these could best be managed

2. Phases in development of a full risk assessment project and recommendations for ways in which the levels of risk can be reduced and other observations

3. Implementation in terms of likelihood and probability
Context

- The impact of fire safety legislation on the interior fabric of the church.
- The need to balance conservation and the safe use of the existing building.
- Identify /resolve conflict of conservation principles and fire safety requirements.
- Develop fire safety management procedures.
- Address both life safety and property protection.
- Engineers view “Potential hardcore”
Small fire - quickly discovered and contained:

- Minor damage to single compartment/room
- Low probability of spread to other levels
- Minor injury to occupants/visitors
- Minimal cost/financial loss
- Minimal smoke damage to neighbouring areas
- Minor water damage
- Minor publicity/financial loss

Vulnerability of historic buildings:
Impact of Fire
Impact of Fire (2):

- Large fire - delayed discovery; late containment:
  - Major damage to more than one room/contents
  - Probable spread to balconies/other levels
  - Loss of 30% of roof
  - Severe smoke damage
  - Significant water damage
  - Serious injury to occupants/firefighters
  - Negative publicity
  - Loss of revenue
Quantify Work Done to Date

- Re-wiring
- Compartmentation
- New detection throughout
- Extensive staff training
- Improved security and surveillance
- Formation of Damage Limitation Team
- Fire Safety Management Policies
- Control of hazards and good housekeeping
- Phased introduction of sprinklers?
Areas Outstanding

- Roof spaces
- Security
- Arson
- Other areas (Adjoining Premises)
- Interdependencies: moe
- B4: radiation, flying branders
Vulnerability of historic buildings to fire

COST Action C17: Built Heritage:

Fire Loss to Historic Buildings

- risk assessment methodologies
- protection of fabric and content
- prevention of fire and fire spread
- detection and suppression requirements
- training and management of staff
- insurance considerations
Assess the specific risks to a historic building

- Define possible, or expected damage due to a particular hazard or phenomenon.
- Pre Determined Attendance (PDA) for the building to be established/revised
- Include concerted action to influence future developments in technology;
- Develop a relevant understanding in the financial protection of historic properties;
- Use guidance on the sensitive integration and retrofitting of fire protection measures.
Balance fire safety requirements with the special interests of our heritage.

Conservation principles

- Concept of minimum intervention.
- Carry out research and analyse the history of the building
- Survey the building and identify original materials
- Plan work in accordance with conservation principles
- Avail of expert advice
- Record all work
- Set up maintenance procedures
Balance fire safety requirements with the special interests of our heritage

- **Fire Safety Requirements**
- Alternative methods to achieve appropriate, and cost effective standards of fire safety.
- Analysis and evaluation of problems that are building specific
- Alternative approaches placing more emphasis on early detection to provide for early evacuation of occupants
- Standards to provide a level of safety to that envisaged in the Building Codes/ Regulations
Balance fire safety requirements with the special interests of our heritage

- Minimise the risk of a fire occurring and mitigate losses in the event of a fire.
- Traditional fire protection based on structural or “passive” fire protection where the spread of fire and smoke is controlled by walls, floors and doors.
- Method involves upgrading of these elements to achieve specific periods of fire resistance.
- Involves degree of disturbance to its fabric.
- Acceptable or Unacceptable???
Balance fire safety requirements with the special interests of our heritage.

Conservation principles

- The first of these principles, minimum intervention, is likely to give rise to the most conflict in the resolution of fire safety requirements.
- Upgrading of existing facilities may be required to meet minimum statutory requirements.
Balance fire safety requirements with the special interests of our heritage

- Measures to improve fire safety to be arranged according to priority
- Careful and sympathetic design of unavoidable fire precautions in order to minimise the impact on architectural and historic character of building
- Avoid the circumstances that bring about the requirements for alteration
Property Protection: Additional measures to minimise the potential for loss in respect of building and contents

- The legislative objective: to protect life and restrict the spread of fire
- Property protection not a direct objective, can be achieved, to some extent, as a consequence of providing for life safety.
- Protection of the interior fabric and building fabric and its contents are also important in historic buildings.
- Fire/water damage can cause the total destruction of the building and its contents.
- Loss of the building/contents is loss of cultural patrimony, which is finite and irreplaceable.
A Fire Safety Action Plan: Sir Alan Bailey’s report

“Each historic house, building or premises should have a written fire safety policy statement. Effective internal mechanisms should exist to ensure that the policy is properly implemented, and the policy should cover not only the normal operating regime of the location but take into account special or occasional events”.
Fire Safety Management

Carry out Fire safety inspections on a regular basis to audit the fire safety arrangements within the building by a designated member of staff.

Inspections need to cover all aspects of the fire safety arrangements.

- Fire and Rescue service to be provided with guidance on heritage buildings for their IRMPs.
- Framework for Major Emergency Planning.
- Provide a standardised training course for salvage and first aid treatment for water or fire damaged art + a standard template for emergency plans.
18 measurable components of fire safety and their contribution to property protection.

- Management systems ......................... 13%
- Fire brigade ................................... 12%
- Suppression systems ........................... 8%
- Housekeeping ................................. 7%
- Manual fire fighting equipment .......... 7%
- Building services ............................. 6%
- Detection and communication .......... 6%
- Furniture and fittings ....................... 5%
- Fixtures and fittings ......................... 5%
- Passive protection ............................ 5%
- Smoke Control ............................... 5%
- Building structure ........................... 4%
- Interior finishes ............................. 4%
- Retrieval training and practice .......... 4%
- Security ...................................... 4%
- Access routes and exits .................... 2%
- Emergency lighting .......................... 2%
- Spatial configuration ....................... 1%
Balance fire safety requirements with the special interests of our heritage

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Management
The protection of occupants, contents and building fabric will also depend on the implementation by management of the fire prevention strategy

- The Fire Safety Manual is an essential element of the fire safety strategy for a building and a formal record of the arrangements which have been devised for its protection.
- It covers structural fire protection, fire safety systems and management policies.
- The document is the statement of management policy and its implementation is mandatory.
Management: Fire Safety Manual
Record the fire safety strategy consisting of a defined set of objectives and a coherent set of measures to achieve the Life Safety and Property Protection objectives.

*Manual used for buildings subject to any control under the:*

1. Building Regulations,
2. The Fire Services Act 1981 or to fulfill responsibility under
3. The Health, Safety and Welfare at Work Act 1989 in respect of fire safety and a general duty of care to both its employees and to visitors to the buildings.

*The standards of fire safety contained in the manual, are considered to be essential to meet these statutory obligations.*
Fire Safety Manual

- Adequate provision to be made so that in the event of fire all occupants of the building are able to leave the building safely by their own unaided efforts.
- Elderly or disabled persons will need special consideration.
- Fire damage to the fabric and contents to be controlled.
- Damage to the building and its contents to be controlled in the aftermath of a fire.
- The measures intended to achieve these objectives must take account of the need to maintain the architectural and archaeological integrity of the building.
Policies and procedures in relation to fire risk management include:

- Safe working practices
- Standards for housekeeping
- Fire emergency procedures
- General maintenance of building fabric
- General maintenance of building services
- Building works
Fire Safety Manual: Protection against Fire

- Establish written fire safety policy.
- Appoint a named person to be responsible for all fire matters.
- Prepare a fire safety manual
- Prepare a risk assessment.
- Install FDAS
- Review fire separation and compartmentation.
Fire Safety Manual: Building Works

- Develop procedures to ensure that adequate standards of fire safety are enforced and that the fire safety arrangements for the building are not compromised when building or maintenance works take place within the building.

- The use of heat producing apparatus during building works shall only be permitted subject to compliance with the Irish Insurance Federation’s ‘Hot Work – General Guidance’ and ‘Model Hot Work Permit’ procedures. Copies of all hot work issued shall be retained in the Log Book.

- Building works shall not compromise or adversely affect any of the structural fire protection arrangements.

- Care should be taken that any holes that are formed in walls or floors are adequately fire stopped, and that the passage of any services through a wall or floor will not result in a loss of integrity under fire conditions.
Fire Safety Manual: Special Events:
The building and its contents must not be placed at risk of damage by any events either in or around the building. Special attention is drawn to the risks of the use of high intensity lighting for film or TV productions.

High intensity lights are not allowed unless the following requirements are met:

• Lights are a minimum of 2m from any combustible surface.
• A baffle against heat must be placed behind lights.
• A lens must cover lights.
• Lighting shall be turned on only during rehearsals and actual filming
• Adequate fire extinguishing equipment must be to hand.
• No temporary overloads on the building’s electrical wiring system shall be allowed, and

One or more members of staff are always in attendance.
Fire safety Manual: Log Books

The Log Book is to contain details of:

- Evacuation drills
- Fire safety inspections
- Fire safety training
- Fire precautions for special event
  - Visits by the fire brigade
Fire Safety Manual: Training Syllabus

- The training syllabus is to include instructions on:
  1. good housekeeping, safe working practices and fire prevention
  2. designated escape routes
  3. actions to be taken on hearing fire alarm
  4. location, types and use of fire extinguishers
Fire Safety Manual: Persons with Disabilities

- Personnell are to be trained in assisting persons with disabilities to access escape routes in the event of fire or other emergency. Whenever the building is open to members of the public, or whenever a physically disabled person is present, at least two able-bodied persons for each disabled person are to be present.
Management must also be familiar with how to deal with fire, its effects and aftermath.

- The objectives of this strategy cover life, safety and the protection of the building and its contents during and after a fire. (ingress of water)
- An important aspect of the Fire Safety Strategy is the need to achieve and maintain high standards of management. Management must recognise and accept their responsibilities, as described in the manual, for the effective operation of the Fire Safety Strategy
Compensating Factors: Initial trawl

<table>
<thead>
<tr>
<th>Highly professional and committed approach to fire safety by senior management.</th>
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<tr>
<td>Staff support and enthusiasm</td>
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<td>Very good housekeeping e.g.: work on clearing roof spaces</td>
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<td>Comprehensive structural survey</td>
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<td>Initial work on re-wiring</td>
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<td>High quality new fire detection system. FDAS.</td>
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<td>Collaboration with Dublin Fire Brigade</td>
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<td>Good on-site water supply</td>
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Conclusions

- Quantify the work done to date to reduce the risk from fire

**If** the recommendations made are carried out then:

1. The chances of a fire will be reduced
2. If a fire does take place, it will almost certainly be contained
3. If it is not quickly contained then its impact and consequential damage will be minimised
Conclusions

- Water damage: 1000 gallons/minute
- Smoke damage
- Fire damage Undiscovered small fires have high probability of spreading. Allow for best possible fire brigade response, effective intervention may take 15 - 20 minutes from time of discovery
- Building open to elements
- Contamination, Run-off water and Pollution
- Threat to business continuity
- Loss of cultural patrimony
Workshop

- Workshop to develop thinking for effective risk assessment techniques and risk mapping using insurance company and other data

- Promoting findings and benefits of relevant risk assessment methodologies and property management support

- Effecting know-how dissemination through publishing proceedings and recommendations