



# Climate Change: Operational Risk Considerations

Stuart Blackie MRICS MIFireE

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Background – why are we here?

The Risk Lens

Climate Adaptations

Looking to the Future

Maintaining the Now

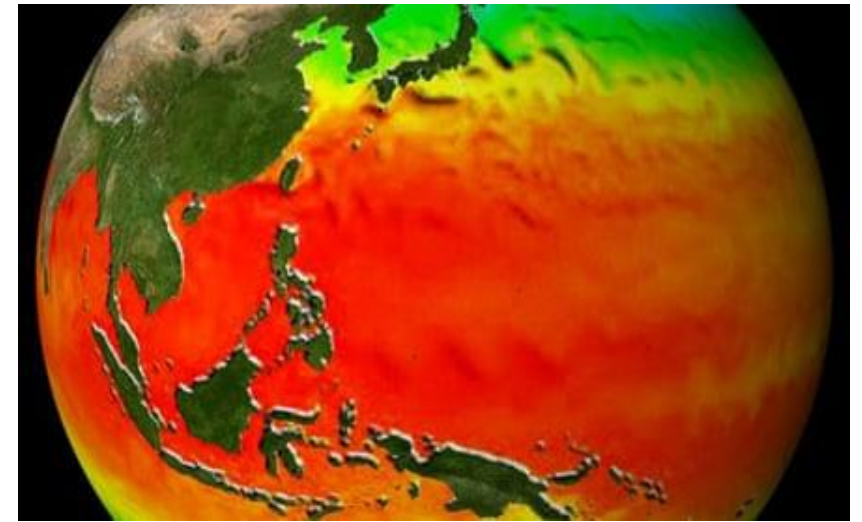
How can we support from a Risk Perspective?

Discussion

# Background – why are we here?



- ▶ Known to many of you and privileged to be insuring many of these wonderful buildings
- ▶ Recognise and appreciate the challenges and complexities that heritage properties present in respect of climate adaptation
- ▶ Desire to collaborate around emerging and evolving risks
- ▶ Collective support in the drive towards Net Zero
- ▶ To invite early conversation regarding climate adaptation proposals
- ▶ To support in identifying suitable risk mitigations



# The Risk Lens

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- ▶ An absolute need for action in respect of Climate Change
- ▶ Great examples of positive change, investment, and commitment to Net Zero
- ▶ Complex buildings of significant importance
- ▶ Vast array of benefits resulting from a range of changes
- ▶ **Need to contrast the benefits with potential risks**
- ▶ **Consider what could go wrong?**
- ▶ **Are there any broader implications?**



## Key questions may include:

- What are the lifecycle implications?
- Are there any increased fire risks?
- Possibility of escape of water losses
- Vulnerability to surface water flooding?
- Are there any increased risks from a security perspective?
- Suitable location of equipment?
- Has the 'technology' been proven?
- **How can we mitigate?**



# Looking to the Future



Absolute need for a forward-looking approach



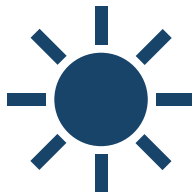
Significant focus on energy performance, consumption and source



Look at how and when the building is used



Energy efficiency is an essential aspect that forms part of the route to Net-Zero



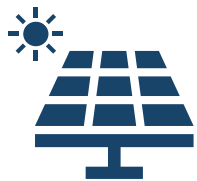
Alternative and renewable energy approaches are often longer-term solutions



With all such measures there remains the need for a holistic approach



# Examples of some broader considerations



## Photovoltaic Panels



## Considerations:

Roof mounted PV arrays – consider fire separation / compartmentation that exists beneath

Can arrays be broken up with breaks aligning with fire compartment / fire break lines?

Location of isolators at ground floor level, and readily identifiable

Are access routes available to F&RS – do you have a marked up plan?

Does the system incorporate battery storage? Consider isolation in terms of fire spread, but also access for fire fighting purposes, and potential impact of thermal runaway



## Thermal Insulation



## Considerations:

Combustibility and overall fire performance

Breathability to avoid condensation and dampness

Maintaining essential ventilation measures

Consider location of pipework to ensure wet services are not on 'cold side' of insulation

Ensure cabling and electrical services are not likely to overheat

# Maintaining the Now



Looking to the future is essential in combatting Climate Change



We must however maintain a focus on the now



Is there a need to change maintenance programmes – both short, medium and long term?



Considering resilience to surface water flooding – lower floor levels etc



Maintenance regimes for guttering, rainwater pipes, hoppers, gargoyles, parapets and valleys



Thermal stresses on leadwork and other roof coverings



Wind and storm conditions impacting on the building fabric, also on trees in close proximity



Gullies and watercourses may require additional monitoring and maintenance



# Further considerations...



## Increased Rainfall

**Considerations:**

Increased rainfall and surface water flooding caused by weather extremes

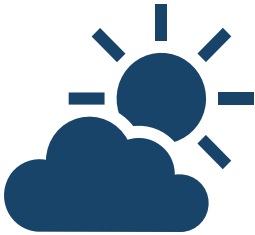
Flash flood risk likely to increase

Increased pressure on existing drainage systems

Tree roots searching for water can lead to ineffective drainage systems, further reducing capacity to deal with high rainfall events

Review frequency and timing of gutter maintenance and drainage inspections

Consider tree species and likely root behaviour as part of planting schemes



## Weather Extremes

**Considerations:**

Increased weather events causing stress on building fabric

Continued deterioration of masonry presenting opportunity for water ingress, dampness and thermal weaknesses

Freeze / thaw behaviours could result in accelerated spalling of masonry



# How can we support from a Risk Perspective?

## Welcome and encourage early discussions regarding Climate Adaptation proposals

- ▶ Specific Climate Change Risk Guidance?
- ▶ Views on Emerging Technologies?
- ▶ Risk Insights and Loss Lessons?
- ▶ Risk Considerations?
- ▶ Guidance on Standards?

Ecclesiastical Preferred Supplier for Renewable Energy Systems:



[www.isoenergy.co.uk](http://www.isoenergy.co.uk)

Contacts: Ed Levien / Will McCarthy 01293 821 345 - [consult@iso.co.uk](mailto:consult@iso.co.uk)

Church Guidance Note  
**Storm safety**

**Photovoltaic Systems**

The UK, as with many other countries in the world, is striving to increase the proportion of energy that is obtained from green or renewable sources, such as the sun, wind or biomass.

Church Guidance Note  
**Flood – protecting your church property**

Flooding can be caused either from overflowing natural watercourses such as rivers and streams (fluvial), or as a result of surface water run-off (SWRO) after rain (pluvial). The latter is more commonly known as flash flooding.

Flooding in your church and associated properties can cause heartache to your church community. Though it's impossible to flood-proof your church properties, there are some simple action you can take to reduce the damage flood may cause.

If you're going to make permanent changes to protect your church against flooding, such as installing walls, gates and additional drainage to site perimeters, we strongly recommend that you seek professional advice from your church architect, building surveyor or other professional. Remember, you may need a faculty to undertake this work.

**Find out if you're at risk of flooding**

Statistics show that 1 in 6 properties in England and Wales will be directly affected by flooding in the future. Due to climate change and increased land development, it is estimated that more properties are likely to be affected by surface water flooding than traditional (fluvial) flooding. It is important that you understand the risks to your church properties from both.

Both fluvial and surface water flooding risks can be assessed at postcode level using the Environment Agency (EA), Scottish Environment Protection Agency (SEPA) or National Resources Wales websites.

Due to their very nature, none of the agencies mentioned can issue flash flood alerts. The EA has published a national flash flooding map for England, which identifies four levels of risk:

A popular source is producing electricity from solar energy using photovoltaic (PV) panels. Following government incentives and support there has been a significant increase in the number of these systems installed in recent years.

Any new technology will introduce new challenges and new fire risks for property owners, installers, Fire and Rescue Services and insurers to consider. Fires involving PV systems are rare but incidents have been increasing in line with the growth in this sector. Much can be done to ensure the risk of a loss occurring is reduced to as low a level as possible.

Solar photovoltaic (PV) systems, often known as solar panels, directly convert the sun's light into electricity using solar cells. PV systems only require daylight, rather than direct sunlight to generate electricity so they can work even on a cloudy day.

Please note: Photovoltaic should not be confused with Solar Thermal which is indirect energy generation where the modules (panels) collect the heat from the sun, capture it and transfer it, for example for heating water. Solar Thermal does not present the same issues as there is no Direct Current (DC) electricity involved.

**How does a photovoltaic system work?**

In simple terms, when light shines on a solar panel it creates an electric field across layers of silicone in the cell. The stronger the light, the greater the flow of electricity. PV cells produce electricity in the form of Direct Current (DC), which is in contrast to the power used by conventional mains electrical equipment where the power is Alternating Current (AC). A device called an inverter is therefore needed to convert this electricity to AC which can then be used immediately in the building or stored in batteries for future use. Alternatively, the electricity can be exported to the National Grid.

**What you need to know**

PV systems now come in various forms to suit all applications, from grey 'solar tiles' that look like roof tiles, to panels and transparent cells. Solar panels are heavy and the roof must be strong enough to take their weight, especially if the panel is mounted on top of existing tiles. Remember to take into account the possibility that the panels may be covered with snow, imposing an additional load.

[risk.advice@ecclesiastical.com](mailto:risk.advice@ecclesiastical.com)  
and one of our experts will call you back within 24 hours.





# Discussion....

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**Stuart Blackie – Principal Risk Management Surveyor 07880 500970**  
**stuart.blackie@ecclesiastical.com**



**Claire Attenborough – Principal Risk Management Surveyor 07771 878412**  
**claire.attenborough@ecclesiastical.com**

