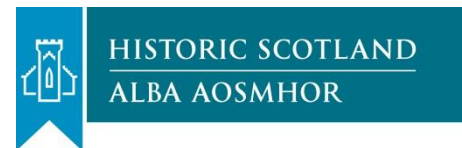


ADAPTATION LEARNING EXCHANGE WORKSHOP

Edinburgh 27th October 2014

Climate Change Adaptation in Historic Scotland: First Steps

Ewan Hyslop
Historic Scotland



Objectives of the presentation

Policy background/organisational buy-in: progress in gaining buy-in for policy & actions to increase resilience to climate change impacts.

Examples of actions that are being implemented at different locations: case studies?

- How to move forward from planning to implementation when lack of funding for infrastructure investment?
- How to ensure a spread of quick wins (making the arguments in the language of decision-makers/align with priorities)?
- How to learn from past experience and develop evidence base (recording and monitoring consequences of impacts)?

Scottish Climate Change Adaptation Programme 2014

Actions on Historic Scotland

OBJECTIVE	POLICY	DELIVERABLES	YEAR 1 HS work programme
B1: UNDERSTAND THE EFFECTS OF CLIMATE CHANGE IMPACTS ON BUILDINGS	B1-2: Research to identify resilience measures: <ul style="list-style-type: none"> • Energy efficiency/thermal performance; • Physical impact of changing weather patterns; • GIS quantification of heritage assets; • Collate action on coastal erosion and flooding. 	<ul style="list-style-type: none"> • Develop methodology for assessing climate change risk; • Creation of Climate Change Risk Register for HS Estate and incorporation into planning and resource allocation; • Publication of guidance and dissemination of advice. 	<ul style="list-style-type: none"> • Award contract/establish project board for revision of Guide For Practitioners 6; • Create/collate datasets for GIS layers and establish risk assessment criteria; • Publish Short Guide "Increasing resilience in traditional buildings"; • Publish Inform Guides "Flooding and traditional buildings" & "Climate change and the historic environment"; • International conference on energy efficiency in urban districts.
B2: PROVIDE KNOWLEDGE, SKILLS & TOOLS TO MANAGE CLIMATE CHANGE IMPACTS ON BUILDINGS	B2-4: Implement HS Climate Change Action Plan		<ul style="list-style-type: none"> • Report progress through annual HS Climate Change Report and Public Sector Sustainability Reporting; • Annual Agency Key Performance Target on climate change (reported to Ministers) • Re-convene Four-Agency Climate Change Group to share information/datasets and joint working.
	B2-5: Joint agency programme		
B3: INCREASE RESILIENCE OF BUILDINGS	B3-1: New and revised Building Regulations	SG Building Standards to lead	<ul style="list-style-type: none"> • Feed into Building Standards work as required

Strategic Themes and Actions

4. Building resilience: preparing the historic environment for climate change

Climate change models predict that the trends seen during the latter part of the 20th century will continue through this century. For example, under a low emissions scenario winter rainfall in the west coast of Scotland will increase 40-50% by the 2080s, and 50-60% in a high emissions scenario. Temperature increases across Scotland are likely to be 3-3°C (low emissions scenario) and 3-4°C (high emissions scenario).

Existing evidence indicates that parts of the historic environment are poorly prepared for climate change. For example, the Scottish House Condition Survey has identified that 75% of pre-1919 buildings are already in a critical state of disrepair. Historic Scotland's role, as stated in our Corporate Plan, to improve the condition of the historic environment and reduce the number of historic buildings and monuments at risk, requires that we take a proactive approach to "future-proof" the nation's historic environment assets. This means working not only with our own estate of properties in the care of Scottish Ministers, but also to providing support and guidance on appropriate strategies to increase the resilience of the broader historic environment, including individual buildings and urban areas, infrastructure, monuments, landscapes and archaeology.

Duffin Castle



"A proactive approach to 'future-proof' the nation's historic environment assets."

OUR RESPONSE & ACTIONS

- We will develop a methodology for assessing the impact of climate change on heritage assets including historic buildings and monuments, buried and submerged archaeology, historic landscapes, plantings and battlefields.
- Undertake a climate change risk assessment across the Historic Scotland estate to evaluate which sites are most at threat from issues such as coastal erosion, flooding, rainwater penetration etc.
- Work with a range of external partners to research and evaluate specific threats to buildings and monuments, such as increased biological growth and enhanced stone decay, and develop strategies to manage impacts.
- Review Historic Scotland's on-going maintenance and condition survey programmes in the light of climate change predictions to modify conservation strategies and target priority sites where necessary.
- Input climate change factors into estate management strategies and business continuity planning, for example where threats to sites are likely to affect future visitor numbers and income.
- Respond to current and emerging climate change threats by prioritising our grant funding.

WHAT WILL THESE ACTIONS ACHIEVE?

Evaluation of climate change risk for the Historic Scotland estate will improve decision-making for prioritising the on-going conservation and maintenance programmes, thus ensuring the long term survival of the most valuable assets in our care. It will enable better use of resources which can be targeted to particular priority sites. This strategic approach will benefit the wider historic environment through the development of methodologies to assess risks and plan for future impacts, thus strengthening capacity and building resilience throughout the sector.

MEASURING PROGRESS

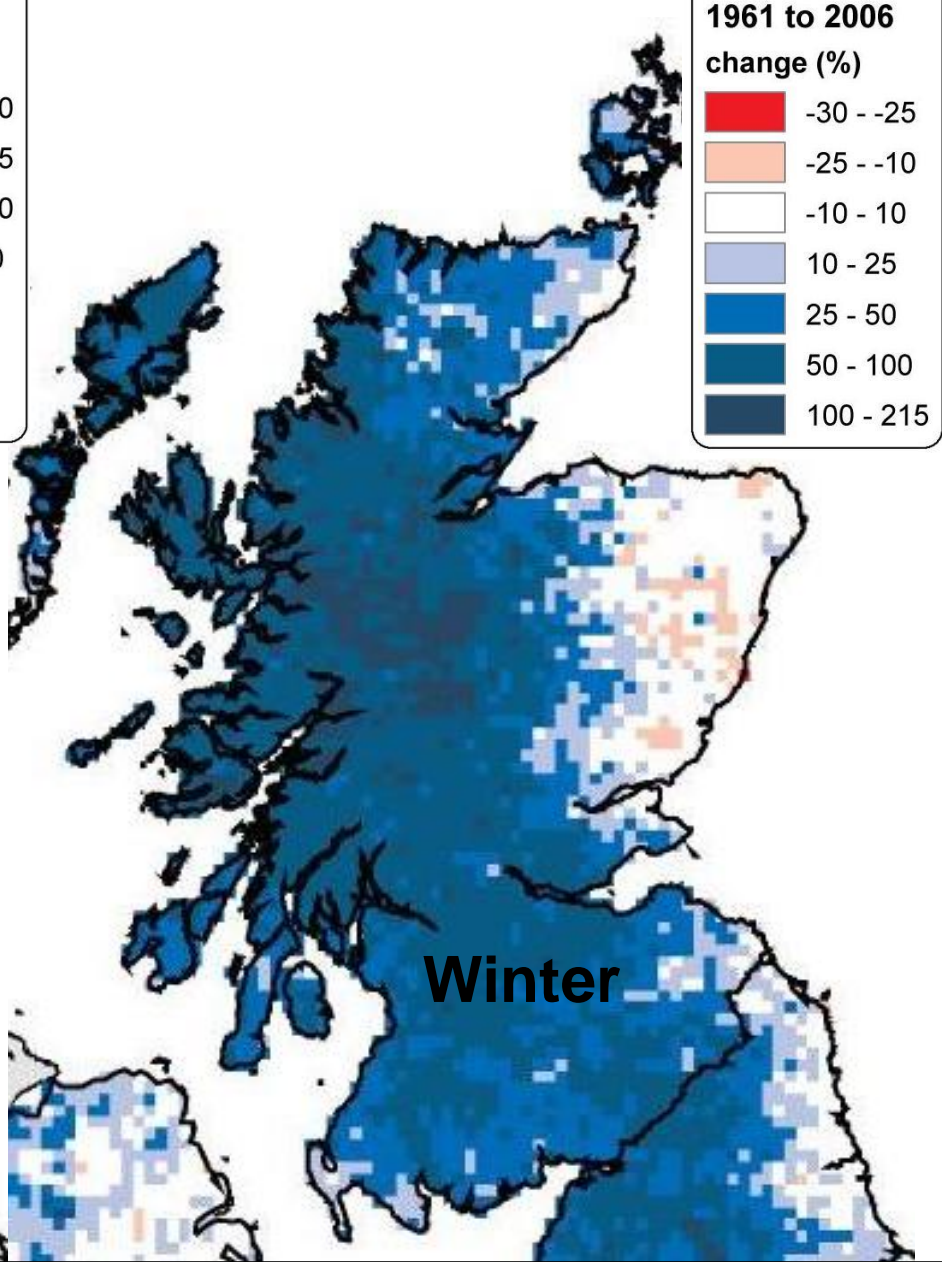
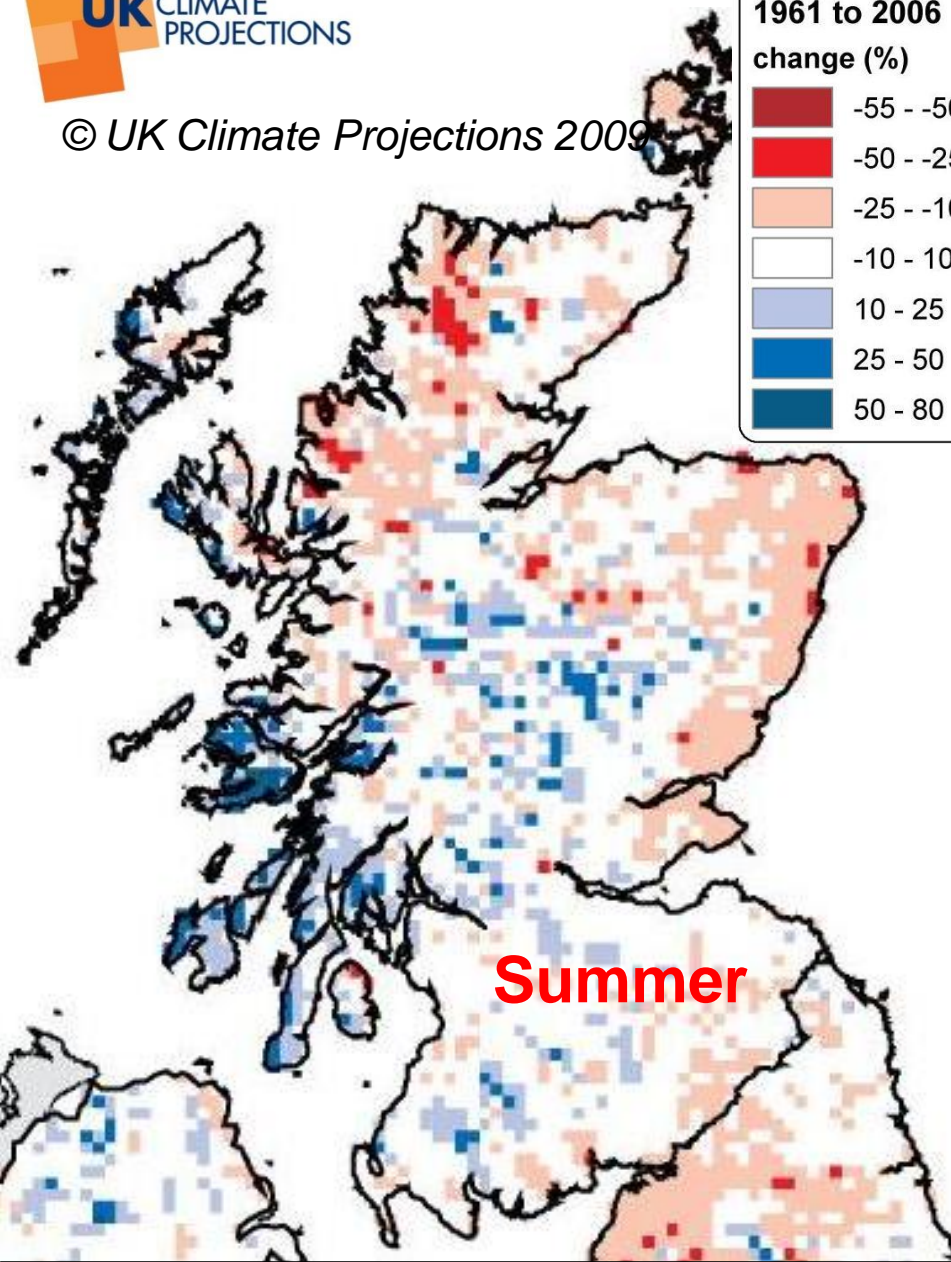
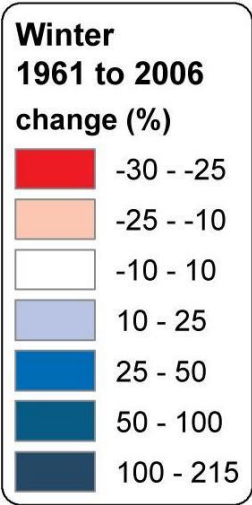
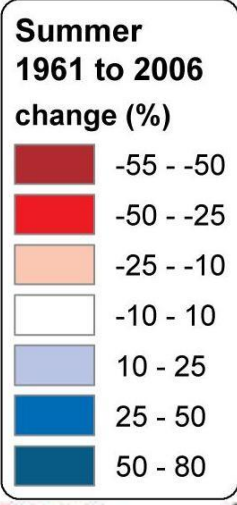
Progress will be measured by the development of a methodology for assessing climate change risk to historic sites, the creation of a climate change risk register for our properties and the incorporation of these into management planning and resource allocation. We will publish the results of research into climate change threats to the historic environment and amend current guidance where appropriate.

Historic Scotland : Corporate Risk Register Sept 2014

What has happened already: Observed climate change in Scotland since the 1960s

Temperature	Recent temperatures for Scotland are the highest in the records, with average annual temperature increasing 1 °C between 1961 and 2004. This applies across all seasons.
Rainfall	Annual precipitation in Scotland increased by 21% between 1961 and 2004, with an almost 70% increase in winter precipitation for Northern Scotland. Heavy rainfall events have increased significantly in winter, particularly in northern and western regions.
Snow cover	There has been a 25% reduction in winter days with snow cover, with even larger percentage decreases in spring and autumn. The snow season has shortened, starting later and finishing earlier in the year.
Days of frost	Since 1961 there has been a more than 25% reduction in the number of frost days across Scotland, with a downward trend since the 1980s.
Growing season	The growing season is now nearly 5 weeks longer in Scotland (comparing 1961 to 2004), with the greatest change occurring at the beginning of the season.
Sea level**	Sea level at all of Scotland's ports has been rising over the last century, with the rate accelerating over the last two decades (now exceeding 3-4 mm/yr in 9 out of 10 ports).





Observed trend: Change in average total precipitation 1961-2006



External Protection: Coastal Erosion

Fort George



An area of protective 'rock armour' has been built in front of the walls to reduce the destructive force of the waves.



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Increasing rainfall

- Increasing levels of rainfall pose a threat to semi-ruinous buildings.
- Rainwater penetration to wallheads results in disfiguring and damaging algal growth, staining and damage to stonework.

Caerlaverock Castle, Dumfrieshire (13th century)



Flooding can damage heritage and restrict access for visitors



Maeshowe Neolithic burial chamber,
Orkney World Heritage Site

Coastal Erosion

Castle Sween



Large concrete buttresses have been constructed to stabilise the rock where the cliff has been undermined by wave action



January 2012, Bo'ness



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Importance of maintenance



External protection



Kilmory Knap Chapel, Argyll

External protection: discrete roof covering



Kilmory Knap Chapel, Argyll



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Adaptive (proactive) conservation

Intervention may be necessary to prevent extreme damage to structures with exposed wallheads.

‘Soft capping’ is considered a technically effective as well as visually acceptable solution.

Castle Sween, Argyll



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Bothwell Castle, Lanarkshire 2013

Adaptive (proactive) conservation

Intervention may be necessary to prevent damage to structures with exposed wallheads.

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Castle Sween, Argyll



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Smailholm Tower, near Kelso

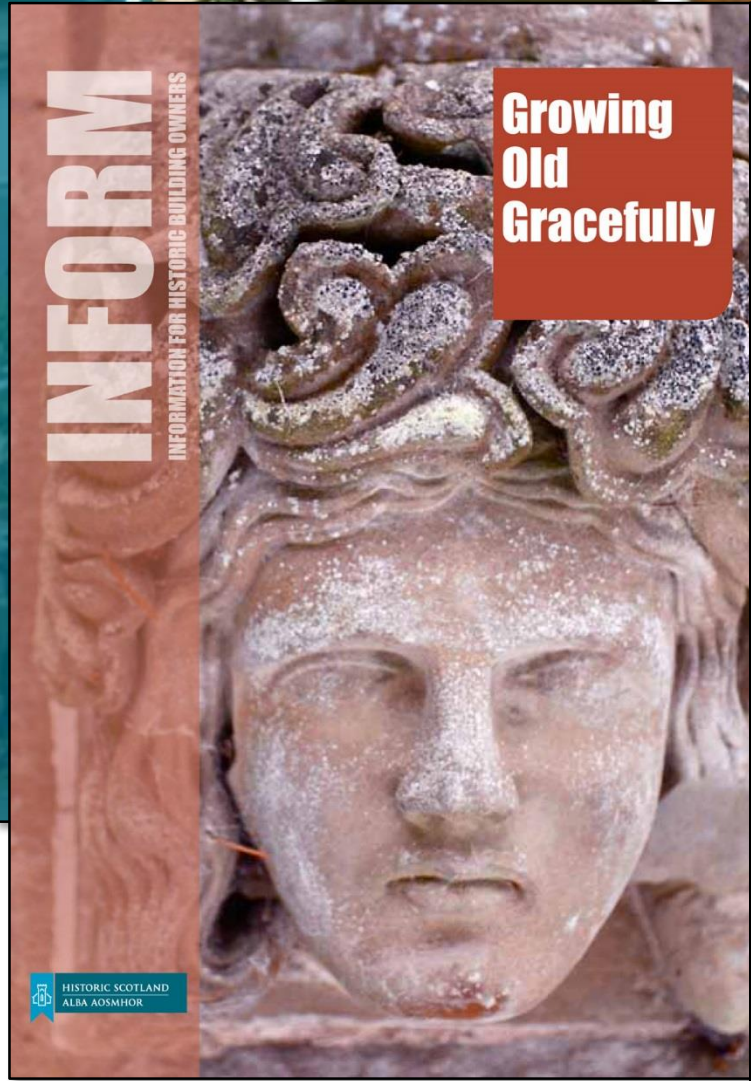




Maintaining your home
A short guide for homeowners

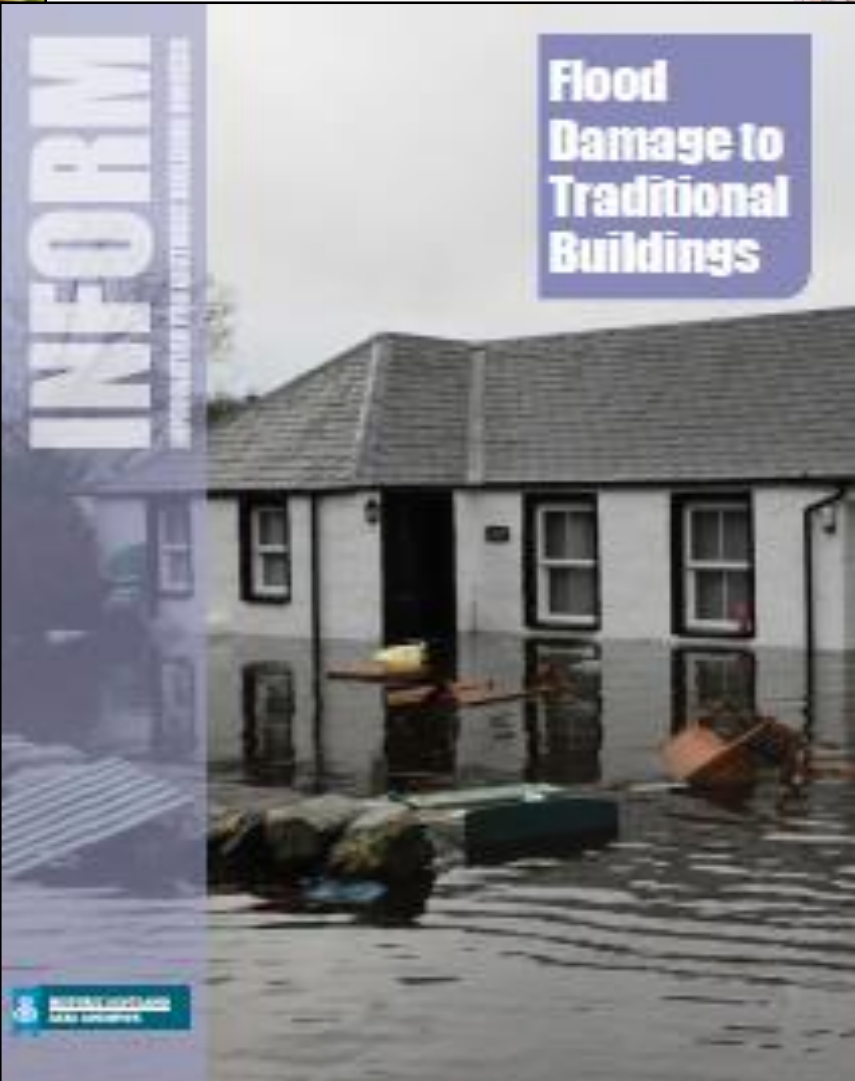


CLIMATE CHANGE
Will wetter winters change the appearance of our historic buildings?



Growing Old Gracefully

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Flood Damage to Traditional Buildings

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Historic Scotland Short Guide: Adapting traditional buildings for climate change

Draft October 2014

Roger Curtis and Jessica Snow

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Woodburning stoves

3.2 Roofs

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first steps.....

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Online Technical Resources at:

<http://conservation.historic-scotland.gov.uk/>

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