SCREENING FOR NATURAL HAZARDS TO INFORM A CLIMATE CHANGE RISK ASSESSMENT

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

Case Study: Historic Environment Scotland

This case study explains how Historic Environment Scotland developed a GIS-based approach to screen their properties for climate-related natural hazards such as flooding, coastal erosion and ground instability. The project has been an important component of ongoing work to assess climate change risk across the Estate.

Where does this fit in the adaptation process?

The adaptation process consists of 5 stages to help you get started with adaptation, understand and assess the impacts of current and future climate change, identify your significant climate risks, and prioritise your adaptation options. It will also help you to implement your adaptation actions, evaluate them, and continuously monitor and review your work. This case study sits within stage 3 of the process. HES are identifying their significant climate risks to inform, identify and prioritise their adaptation actions.

View the adaptation process on our website and access tools such as the Five steps to managing your climate risks. www.adaptationscotland.org.uk

Adaptation Scotland
supporting climate change resilience

Who was involved?

Historic Environment Scotland (HES) have worked in close partnership with the British Geological Survey (BGS) and the Scottish Environment Protection Agency (SEPA) to conduct a Climate Change Risk Assessment for the 335 Properties in Care (PICs) on the Estate. This will improve decision-making for prioritising the on-going conservation and maintenance programmes, thus ensuring the long term survival of these monuments and buildings.

Why focus on natural hazards?

Many of the properties HES care for are situated in landscapes that are vulnerable to climate-related natural hazards. Although a number of the properties are well adapted to everyday weather events, changes in the climate are pushing the properties into unchartered territory, with many now facing challenges they were never designed to deal with. This is why this research is so crucially important.

By screening for current natural hazards we have been able to generate a set of climate-related risks across our entire Estate of 335 properties. Although these do not explicitly include *climate change* risk, it does inform us about sites that are likely to be most at threat from climate change – and enable better use of resources which can be targeted to particular priority sites.

We decided that this screening approach was sufficient for our needs in our current risk assessment process, and it was more beneficial to focus further effort on the investigation of specific properties. At the property-level we will be able to include a wider range of climate impacts, more detailed information about the property, and the knowledge and expertise of those involved with site management.

Conservation work underway at Elcho Castle, one of HES's 335 Properties in Care (©Historic Environment Scotland).

Historic Environment Scotland has presented this information as part of the Adaptation Learning Exchange (ALE). The ALE was set up by Adaptation Scotland to help organisations plan for the impacts of a changing climate.

Using a GIS-based approach

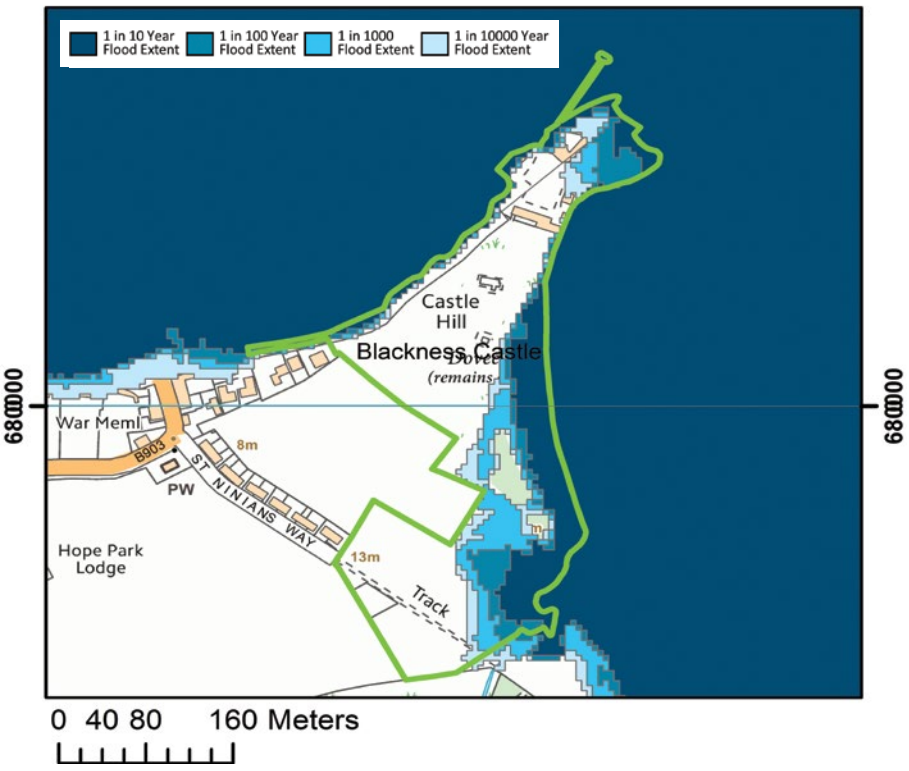
We developed a GIS-based approach to combine asset management information with natural hazard datasets obtained from BGS and SEPA. We carried out a spatial analysis by overlaying hazard layers with site specific spatial information, focusing on the area of ownership or guardianship for each site. This generated a hazard profile for each property, which we combined with information about property type, allowing an appropriate risk score to be assigned.

Our analysis provided a site-specific report on natural hazards that will be made available for use by our conservation architects and works managers. This will allow us to match up the modelled data with real-life observations, site management practices, and additional information on climate impacts.

Recommendations

Based on our experience during this project, our key lessons for those wishing to undertake a similar process would be:

- **Broaden your assessment** – we were already acutely aware of climate-related risks at specific sites, where there are existing issues. However, as a result of this project we now have an assessment that can be used to better understand climate-related risk across our Estate – as well as identify sites likely to be most at threat.
- **Seek peer support** – this project was conducted whilst part of the Adaptation Learning Exchange for Organisations, facilitated by Adaptation Scotland. Regular meetings with others undertaking a risk assessment (NHS Scotland, Scottish Water, and Aberdeen City Council) allowed us to 'sense-check' our approach at different stages of the process.
- **Develop your own approach** – each organisation should develop an approach to risk assessment based on their own operations and priorities. Our priority was to develop a consistent and justifiable climate risk scoring system to sit alongside wider environmental risk assessment for the valuable assets in our care.
- **The specific property matters** – it was a challenge to adjust risk scoring for a diverse range of property types, while remaining practical in terms of approach. For example, a flood at a field monument or stone circle will have very different consequences to flooding of an occupied castle with valuable contents and interiors.



GIS map showing Blackness Castle Coastal flooding dataset (©NERC and SEPA) indicating areas that may be vulnerable to coastal flooding and erosion. (©Historic Environment Scotland).

Next steps

The GIS-based screening of climate-related natural hazards has allowed us to identify those sites most likely to be threatened by flooding, coastal erosion, and ground instability. We are now looking at site-specific studies to further understand climate change risk.

The hazard profiles generated will also be used as part of a suite of information that we use to assess and manage our properties.

Further information

To find out more about this project, please contact:
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Adaptation support

Adapting to climate change takes time and Adaptation Scotland are here to provide support and advice with all your adaptation queries and projects. Get in touch to discuss how we can help you with your climate change adaptation work.

www.adaptationscotland.org.uk

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