

#ClimateHeritage

HISTORIC ENVIRONMENT SCOTLAND



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@DMHarkin



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CLIMATE CHANGE AND THE HISTORIC ENVIRONMENT

Using GIS to understand the risk



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Who We Are

Historic Environment Scotland is the lead public body for Scotland's historic environment.

Our mission is to **protect, conserve** and **manage** the historic environment for the enjoyment, enrichment and benefit of everyone.

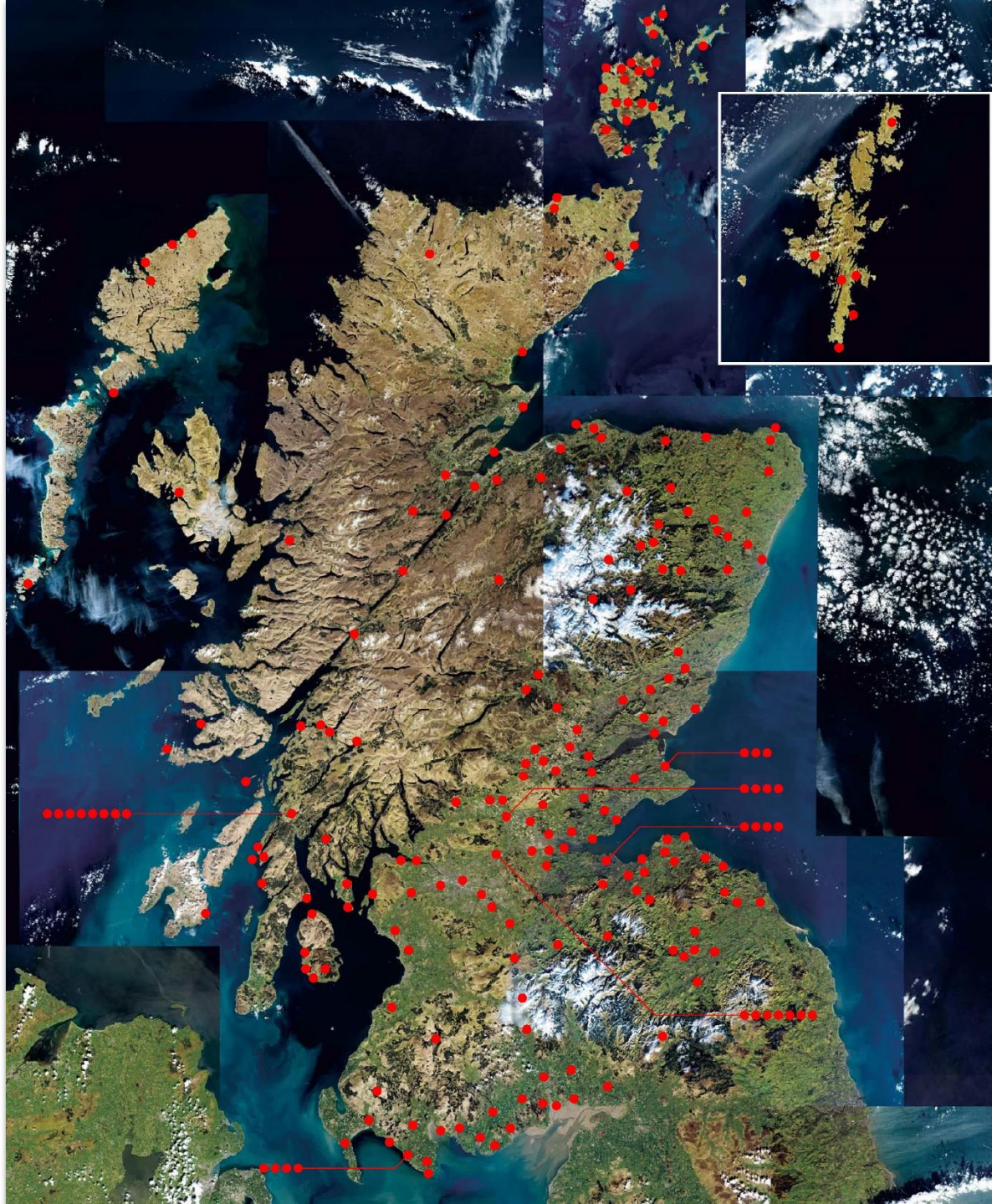
We have in our direct care over **300 properties** of national and international importance.

We care for approximately **38,000 objects**, from 170 of our Properties in Care.



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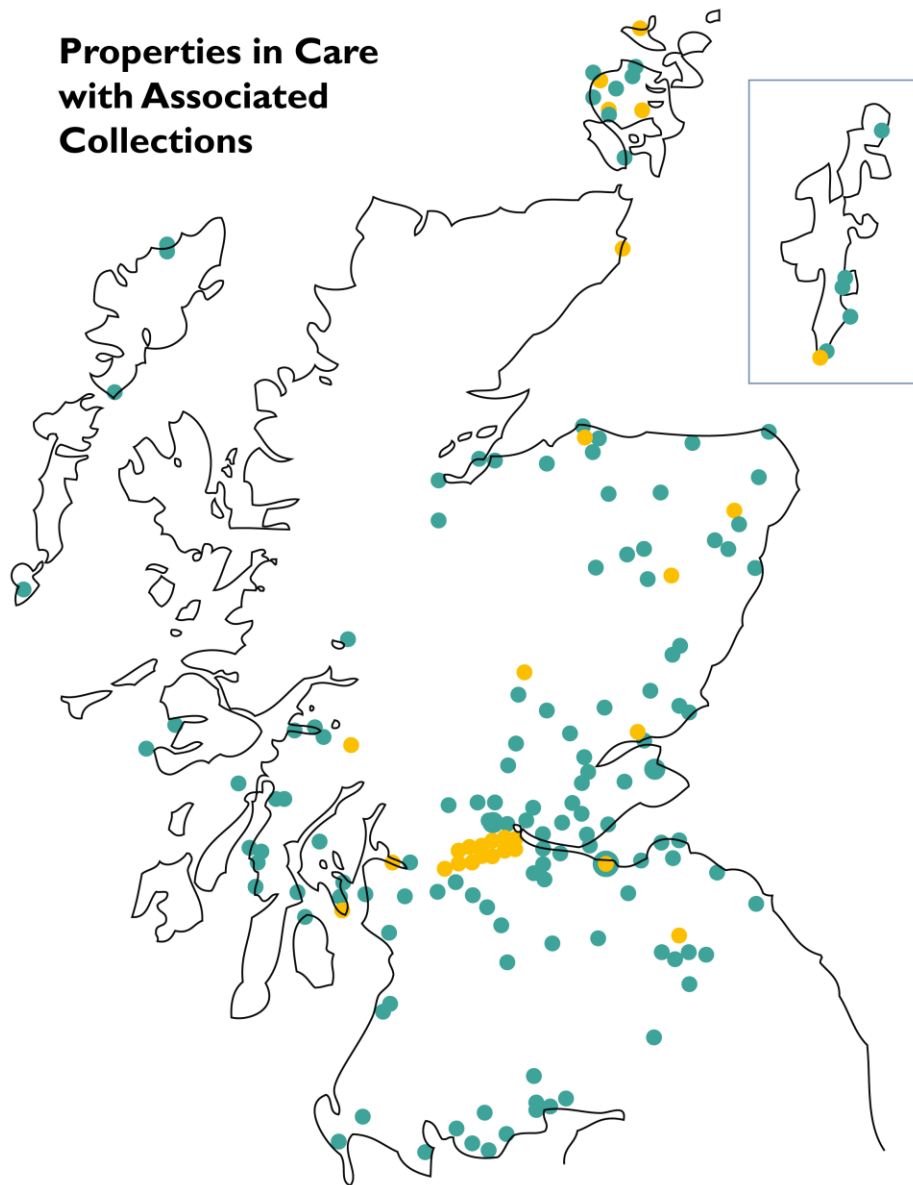
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Properties in Care with Associated Collections



- Collections held off site
- Collections displayed or stored

**WHY WE DO
WHAT WE DO**



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OUR CLIMATE IS CHANGING



IT'S GETTING WARMER

Annual average temperatures have risen by **0.9°C**.*



THE HOTTEST DAYS ARE GETTING HOTTER

The hottest day of the year is now on average **0.8°C** hotter.*



IT'S GETTING WETTER

Over the last decade, summers have been **13%** wetter and winters **12%**.*



THE WETTEST DAYS ARE GETTING WETTER

36% more rainfall is now recorded on the wettest days in the West of Scotland.*



OUR COASTS ARE CHANGING

Sea levels are rising **3mm** per year and the rate of erosion increasing.



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* Compared to 1961 to 1990

CLIMATE CHANGE RISK ASSESSMENT



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CLIMATE CHANGE RISK ASSESSMENT

The Properties in Care of HES are on the front-line of our changing climate:

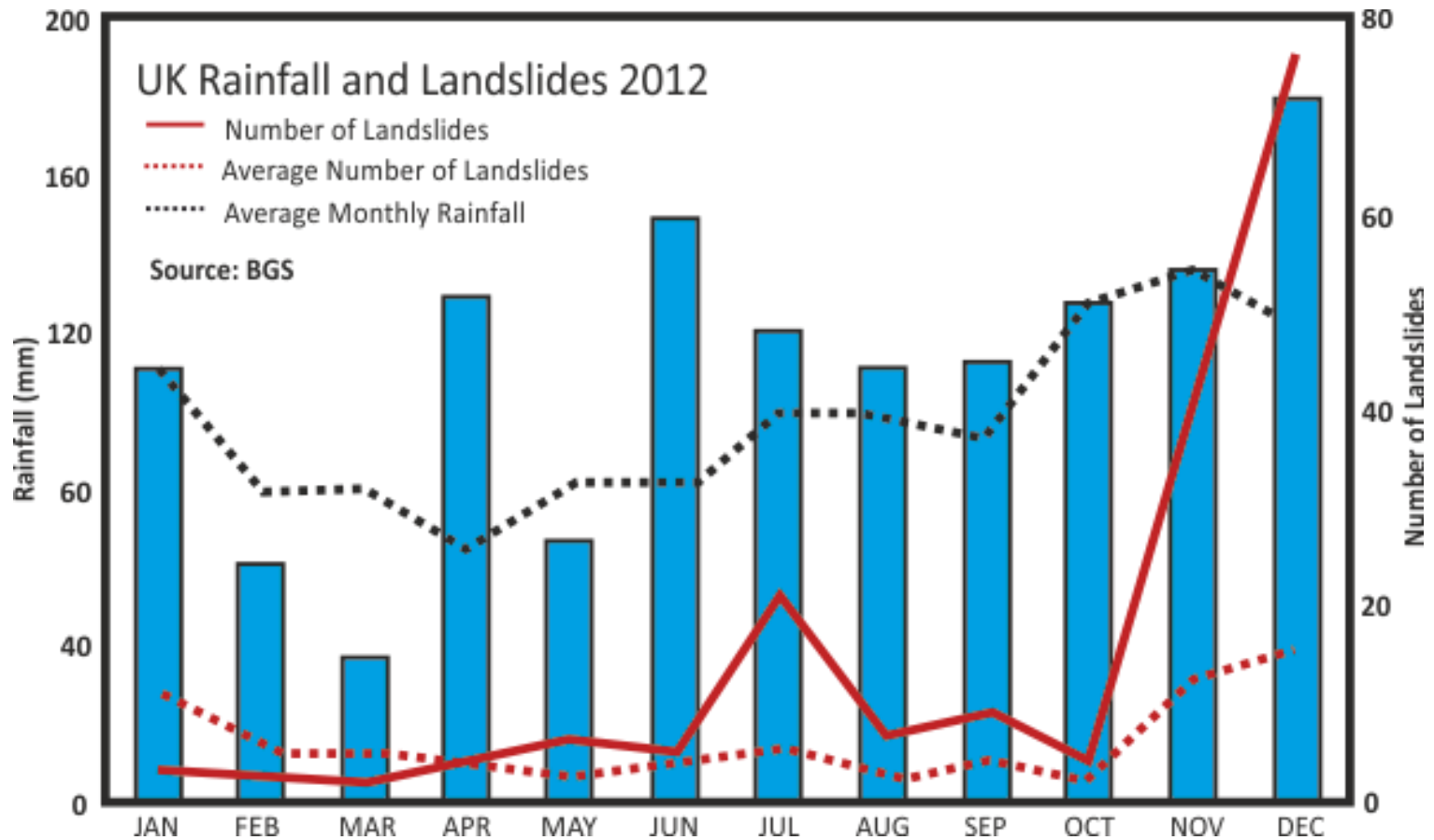
- Many are situated in landscapes very susceptible to natural hazard risk.
- This project is an assessment of natural hazard risk at HES's sites.
- GIS based study, pulling together data from SEPA and the BGS.
- Looking at natural hazard risk from Coastal Erosion, Ground Instability and Flooding (Fluvial, Pluvial, Coastal and Groundwater).

As climate change intensifies, increased occurrence rates of natural hazard events should be expected.



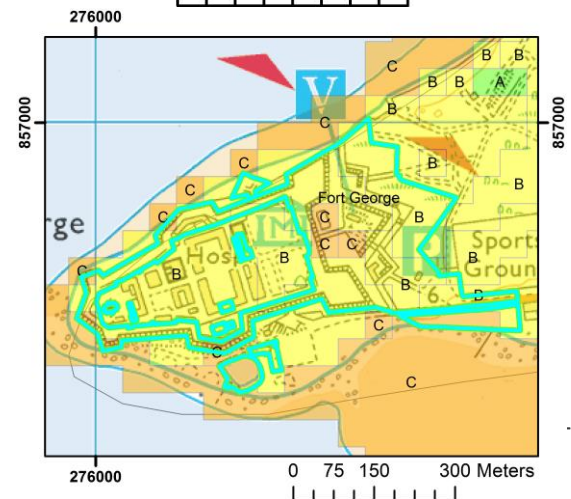
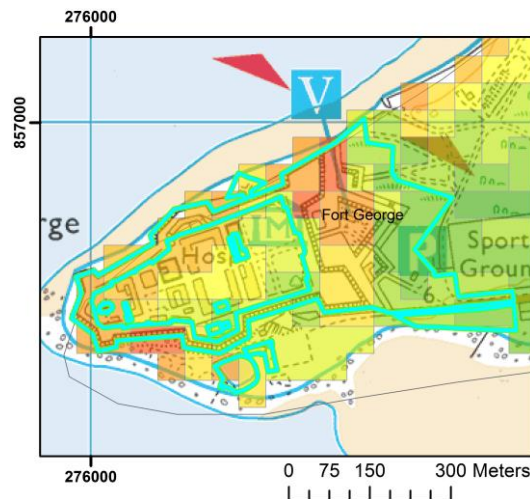
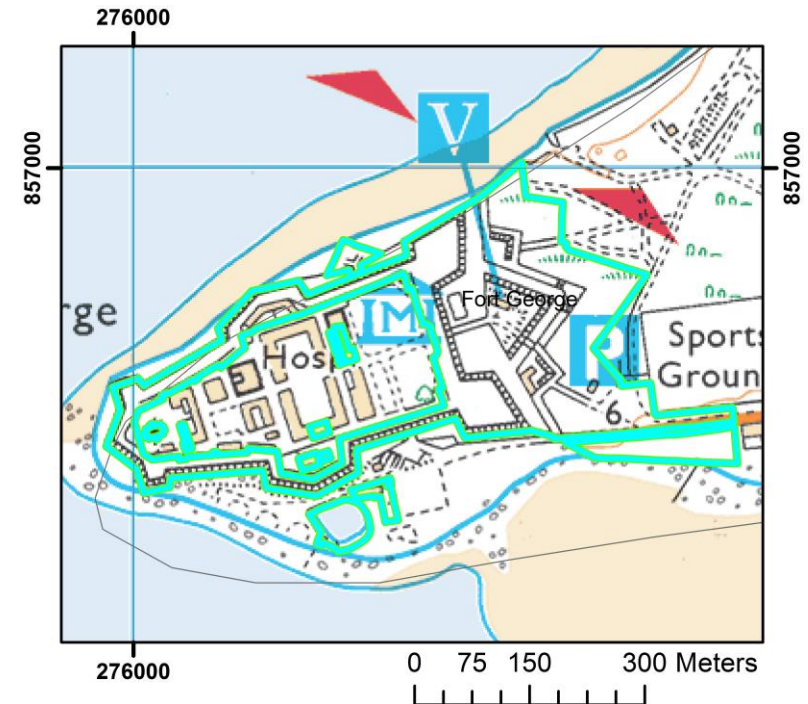
Tantallon Castle

CLIMATE / HAZARD LINK



Assigning a Likelihood Score:

- Begins with spatial analysis by overlaying hazard maps with site boundary data.
- Running queries in GIS then generates a hazard profile for each site.
- Likelihood score of 1 to 5 assigned to each property, for each hazard with 5 being the 'most likely', 1 the 'least likely'.



METHODOLOGY

Assigning an **impact score** – based on the ‘type’ of property in question.



34% CATEGORIES A&B

ROOFED MONUMENTS



33% CATEGORIES C

UN-ROOFED MONUMENTS
WITH HIGH MASONRY

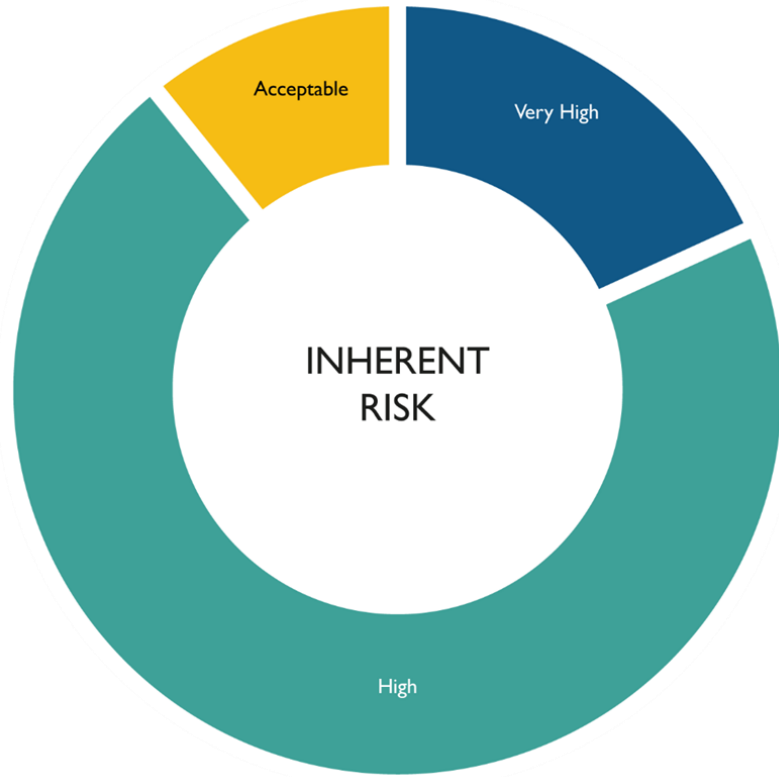


33% CATEGORIES D, E & F

LOW MASONRY MONUMENTS / STANDING /
CARVED STONES AND FIELD MONUMENTS

RESULTS

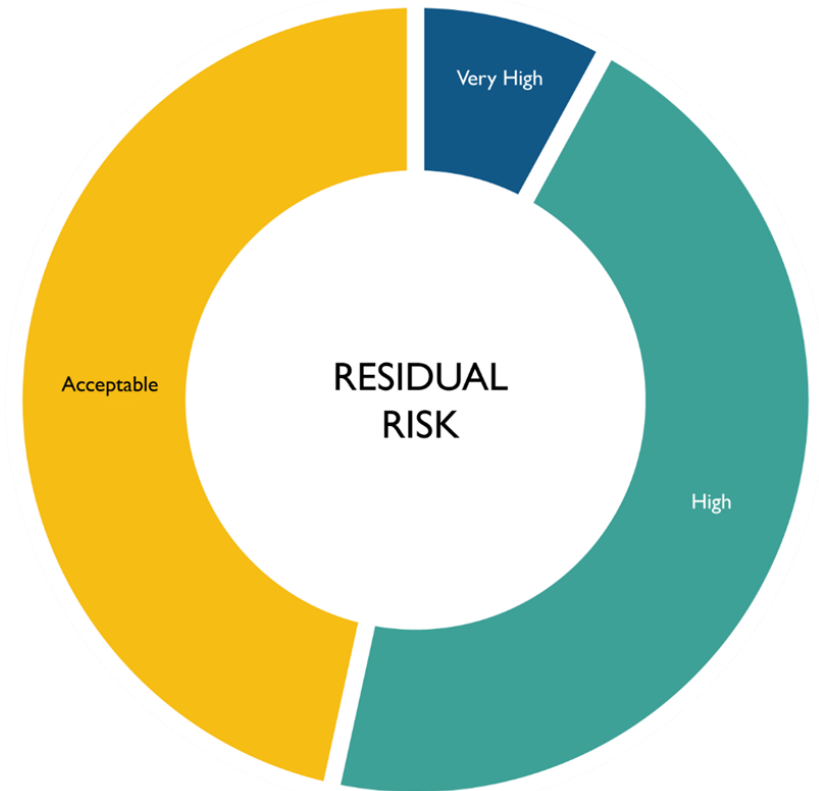
Of the 352 sites analysed in this assessment:



89% are exposed to hazards in a way we think is unacceptable.



When we consider mitigants and controls already in place the number of sites at risk is reduced.



53% are at risk from hazards in a way we think is unacceptable.



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WHY IS THIS IMPORTANT?

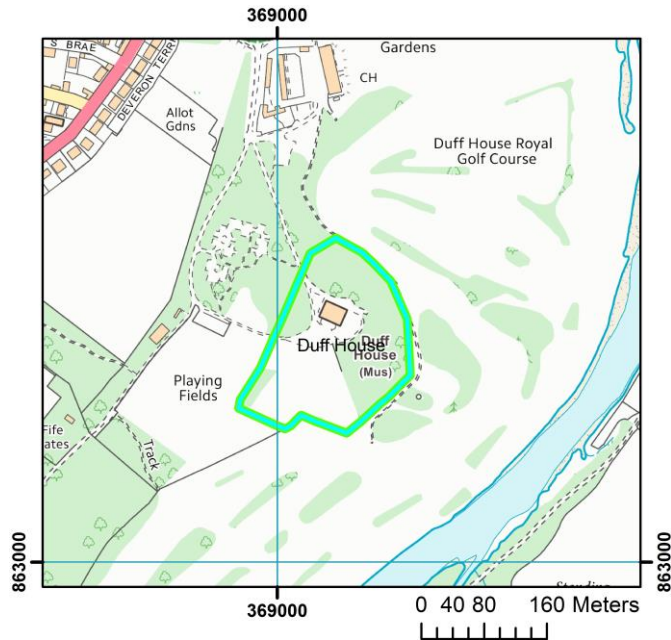
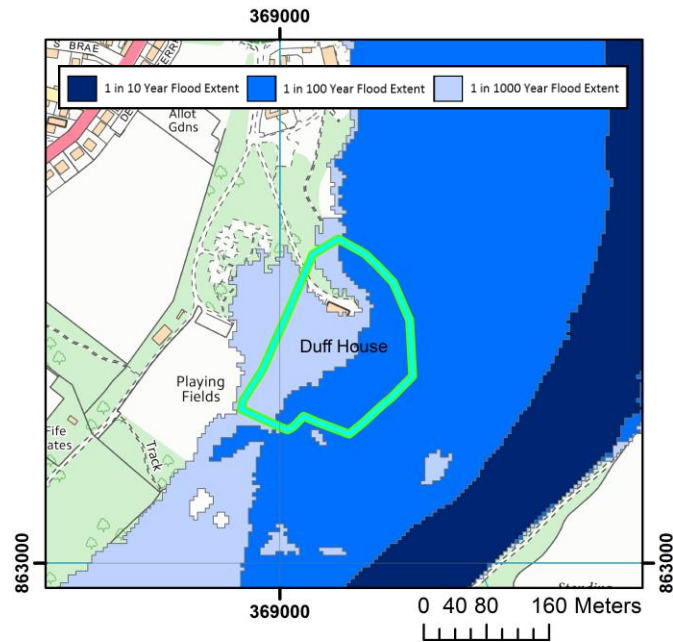


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DUFF HOUSE

SALVAGE PLANNING



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KILMARTIN GLEN

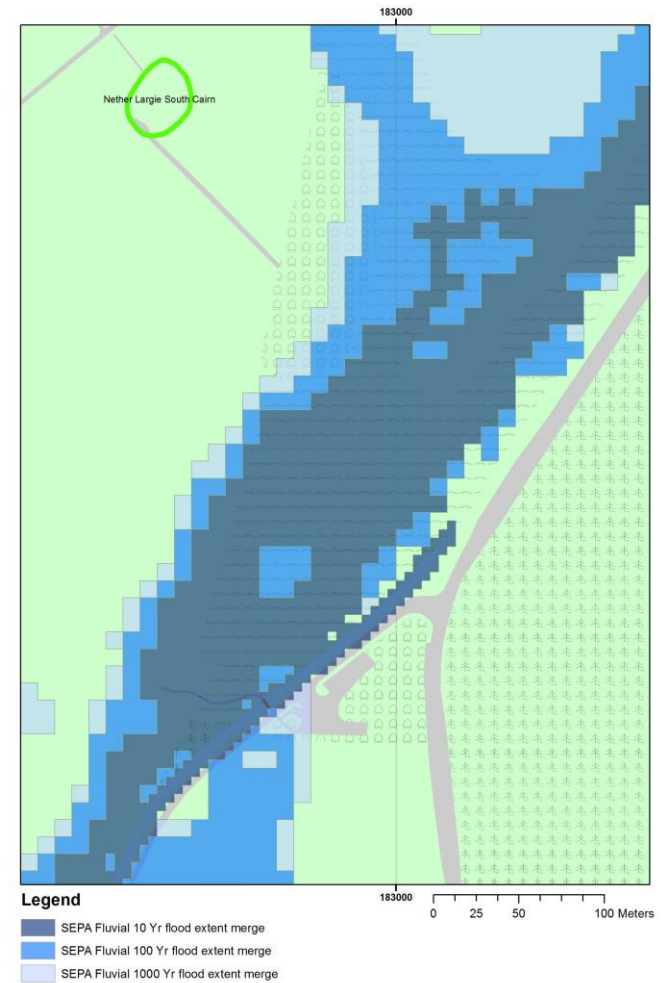
IMPROVING ACCESS





KILMARTIN GLEN

IMPROVING ACCESS



LINKS OF NOLTLAND

EMERGENCY EXCAVATIONS



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(Left) Bone pin found September 2017. (Right) The Orkney Venus, found 2009 – to date it is the earliest depiction of a face found in the United Kingdom.



Dune stabilisation and digital documentation.



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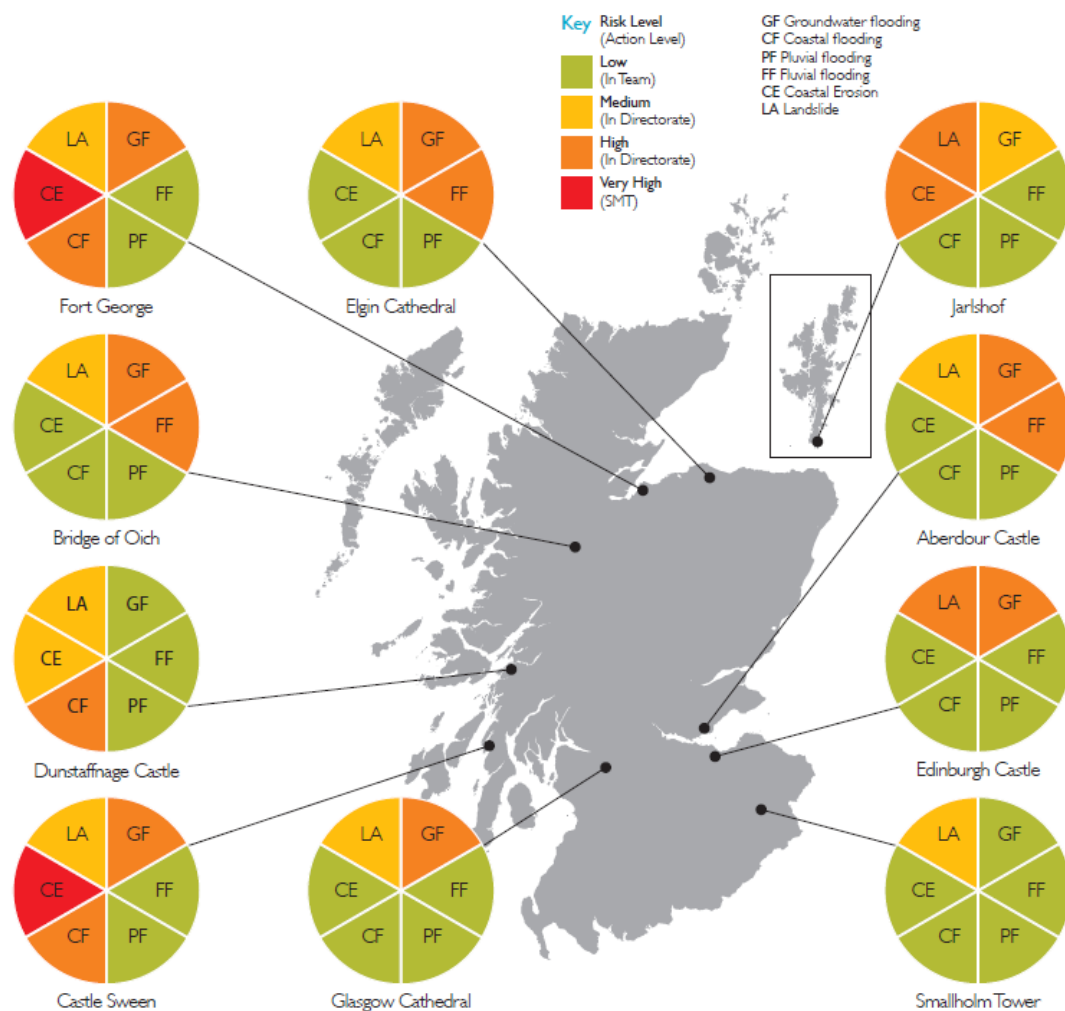
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NEXT STEPS

PRIORITISING ACTION

This data can now help us take a more proactive response to risks, such as those faced at Links of Noltland, rather than a reactive response.



Refining the risk assessment – potential additions to the risk assessment include:

- Re-running the risk assessment with a buffer around the property boundaries.
- Addition of UKCP18 projection data.
- Site visits of priority sites / speak to staff on the ground
- More in depth desk based studies of priority sites.

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GET IN TOUCH



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