



A Strategic Approach for Assessing and Addressing the Potential Impact of Climate Change on the Historic Environment of Wales

The CCRI, along with the Dyfed Archaeological Trust, and the Centre for Environmental Change and Quaternary Research were asked to explore the direct impacts of climate change on the historic environment of Wales.

The report suggests it is likely that historic landscapes will be affected by climate change, with the four identified climate change scenarios – warmer mean temperatures, hotter drier summers, warmer wetter winters/wetter summers, more frequent extreme weather – all having an overall adverse impact. A series of potential impacts have been identified and assessed; cumulatively, these are of high significance. Historic assets (including historic buildings, historic settlements, archaeological sites and landscapes) lying below the one metre contour are assessed as being at significant risk from rising sea levels coupled with more frequent storm surges. Parts of many urban areas of Wales lie in this zone, and thus the potential damage and loss, not just to individual historic elements, but also to the overall historic character is considerable.

The scale and frequency of flood events will potentially have severe impact on historic assets. Historic buildings (listed and unlisted) and their fittings will be significantly affected, not just by the sudden impact of a flood, but in the longer term by damage caused by fungal and insect infestation, and by compromising structural integrity. Damage may occur to historic street furniture, street surfacing and other historic elements of settlements. Archaeological sites and structures such as historic bridges will be damaged and destroyed as rivers shift their courses.

The most damaging impact on historic buildings would be caused by more frequent flooding events, as outlined above. In addition a series of moderate negative impacts on historic buildings caused by climate change have been identified, including damage caused by pests and diseases, drying and shrinking of clay soils, freeze-thaw effects on wet stone, more frequent maintenance required due to damper conditions, and damage caused by more frequent high winds and storms. Pests and diseases may be a particular issue for those historic houses that retain their original decoration, fixtures and fittings.

The predicted hotter, drier summers would cause the desiccation of some areas of upland peats making them more susceptible to erosion, erosion that will be exacerbated by the predicted higher winter rainfall and more frequent storms. In addition, over the long-term, peaty and organic soils could be transformed into mineral soils, with consequences for the historic landscape. Loss of blanket bog will expose archaeological sites and deposits that have been sealed and protected for several thousands of years, making them vulnerable to erosion.

Rising sea levels combined with more frequent and violent storms, will impact on the wide range of archaeological sites found on the foreshore, although the significance of the impact will vary widely according to local conditions. Also at risk are buildings, archaeological sites and landscapes along the coast edge, either in low-lying locations or on exposed cliffs.

The impacts of climate change on historic parks and gardens are difficult to assess as they will vary enormously according to the type of park or garden, and there will be positives as well as negatives. The most significant negative impact could occur in unmanaged parks and gardens where trees and other plants lost to pests, diseases and storm damage are not replaced, and the speed of degradation and erosion of 'hard' garden features will increase under more frequent storms. In managed parks and gardens these losses will be largely made good and in parks and gardens celebrated for their exotic, hotter, drier conditions there may be an opportunity to enhance their character.



Photo: Dyfed Archaeological Trust

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Some of the best preserved archaeological sites in Wales are located in upland environments and so by their very nature are sensitive to change. More frequent and intense storms will result in erosion of these sites, but the main threat could result from the opportunity offered by warmer mean temperatures and a longer growing season pushing back the boundaries of farmland into the margins of this zone.

The adaptive, dynamic nature of sand dune habitats makes any prediction as to how they might respond to climate change problematic. However, in general terms, it is likely that a rise in sea levels and an increase in the frequency of intense storms and gales will result in changes to dune systems, impacting on the large number and important archaeological sites within and below them. However, dune systems are generally carefully managed, and thus change might be mitigated.

A longer growing season resulting from higher mean temperatures will not directly impact on archaeological sites on farmland, but it is the opportunities offered by these changes such as increasing the amount of land under cultivation, the introduction of new crops and other changes to farming practices that could have a significant impact.

Ancient woodlands are similar to other historic assets in that they contain complex evidence for past human use. Climate change is considered the greatest threat now faced by ancient woodland. These threats include the migration of pests and diseases, stress on trees caused by hotter drier summers and more frequent and intense storms. However, woodlands are complex and varied ecosystems, and are therefore likely to respond in a variety of different ways, and although they are sensitive to climate change, this change will be mitigated to some extent by the careful management enjoyed by some ancient woodland areas. Thus, although climate change will have the greatest impact on the woodland itself, through loss of trees and subsequent soil erosion, the change of land-use and replanting could also impact on individual historic assets lying within woodland.



Photo: Dyfed Archaeological Trust



Borth Coastal Defence Construction

The construction of sea defences is likely to become more common as sea level continues to rise and storms become more frequent. This photograph shows off-shore reef construction at Borth, Ceredigion.

Photo: Dyfed Archaeological Trust

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The Climate Change Subgroup of HEG is made up of the following organisations:

CADW

Royal Commission on the Ancient and Historic Monuments of Wales

The National Trust Wales

Countryside Council for Wales

Institute for Historic Buildings Conservation.

Forestry Commission

Heritage Lottery Fund

Historic Research Wales