# National Trust

For caretakers of historic and beautiful places

How to Use this Climate Change Adaptation Guidance



# Basic navigation

This guidance is designed to be easily navigable for managers and caretakers looking after historic and beautiful sites. Although our places and assets, and how people interact with them are all connected, we need to be able to deal with climate change adaptation in manageable pieces.

Although not directly transferable to all similar organisations and places, we hope this guidance will contain useful and practical information about options, thresholds and methods for decision-making relating to climate adaptation pathways.

The guidance consists of 14 chapters, divided by asset and activity type based on the National Trust's operations, consultancy and central teams. The sections within each chapter are focussed on detailed asset and activity types that may be impacted by climate hazards along with information on measures to adapt to such hazards, with key examples.

### Each guidance section is broken down into:

- · background information on that asset/activity
- an explanation of why we should consider this asset/ activity in the context of climate hazards
- · a table of hazards, impacts and potential options
- detail on adaptation measures and potential thresholds for a change in approach
- a worked example of the range of adaptive pathways for that asset/activity
- case studies and other useful information (signposting, references, etc.).

The guidance is not intended to be detailed, technical instruction, but is aimed at the practitioner (operations manager, climate adviser, generalist) who is faced with taking decisions about looking after a place in the face of climate hazards and uncertainty.

It has been developed with advice from the four UK government and advisory bodies for heritage: Historic Environment Scotland, Historic England, Cadw and Department for Communities, Northern Ireland. Further advice and case studies have been contributed by English Heritage Trust and National Trust for Scotland.



## How to respond to hazards

As well as providing site managers and decision-makers with a suite of options for adapting to climate hazards (which are based on the three concepts of climate adaptation: resist, accept, direct a change), this guidance explains when and why a response may change from the current approach.

Climate change acts as a risk multiplier of existing and future probable hazards (such as flooding, heat, landslip, etc.). The risk is based on the level of exposure, which includes the possible scenarios facing an asset, activity or place, and the compounding impacts of risks, alongside other threats/changes that may occur. The vulnerability and sensitivity of assets and activity affects the level of risk and associated impacts, and will vary widely based on the context of what is potentially impacted. Once we understand the likelihood of a hazard impacting a site in the future, and the vulnerability, we can look at measures for adapting to potential hazards and when these might be triggered.

Choices and change for our significant places generally follow the inverted pyramid shown in the Adaptive Release diagram opposite. Nevertheless, triggers and thresholds for change are likely to be site specific depending on multiple drivers and factors associated with an asset's composition, context and use. Using a dynamic adaptive policy pathways approach to plan how and when a change may be triggered can help formulate long-term conservation planning and principles for a site. It can also target condition/state based on the inevitability of climate change and its associated impacts. In this simple example, a footpath on a principal visitor route in a designed landscape is adequate until compounding pressures trigger a different approach to its management:

#### Maintenance

The path is satisfactory and simply requires occasional pothole repairs, vegetation clearance and surface washing; drains also need to be cleared out alongside the path. The threshold for change may be related to the patchwork appearance caused by the maintenance, the lack of resilience of the material to shrink/swell impacts, or number of health and safety incidents associated with distorted path surfacing.

### Conservation

As a result of more frequent wet and dry periods, shrink/ swell incidents distort surfaces to the point where health and safety is impacted. The additional need for improved access and capacity means the path surface is changed and its area widened.

**Before any action is taken**, knowledge of the existing system is required to understand the problem, what has gone wrong and what makes the footpath special in the context of the designed landscape. This information will help to inform the method and option of the change in approach.

For a building, a coastal asset or an asset more connected with the natural environment, such as a woodland or reservoir, the change in response is likely to be more complex and follow a number of different pathway options.

### Adaptation response options: from maintenance to adaptive release

The outputs from research on how to manage sites in a more holistic and sustainable manner are shown in the diagram below with the usual option of maintenance at the top of the inverted pyramid and the infrequent option of Adaptive Release at the bottom.<sup>1</sup> The collaborative research was carried out with Historic England, National Trust and Exeter University.



<sup>1</sup> Caitlin DeSilvey, Harald Fredheim, Hannah Fluck, Rosemary Hails, Rodney Harrison, Ingrid Samuel & Amber Blundell (2021) When Loss is More: From Managed Decline to Adaptive Release, The Historic Environment: Policy & Practice, 12:3-4, 418-433, DOI: 10.1080/17567505.2021.1957263, 2012

# Methods for developing pathways

### Several options exist for pathway planning using the stages described in the Adaptive Release pyramid, starting from its top or bottom.

To develop options, a multi-disciplinary team should consider the acceptable outcomes for an asset and its tipping point to arrive at an agreed pathway. This should be based on the list given in each section of the guidance. These lists are not exhaustive and there are likely to be further options for change in each context. This should be a continual review process, with checks in place to determine when thresholds are reached. If statutory protections apply, we recommend involving relevant stakeholders in the pathway planning process. Once all options for pathways are identified, a costbenefit analysis of different pathways can be tabulated and analysed to help arrive at a preferred approach.

An alternative method to this dynamic adaptive policy pathways approach is that used by University College London's Climate Action Unit, in which operators and decision-makers think of the most extreme/worst-case scenario option/outcome for an asset/activity and work backwards along the thresholds for change and less extreme options/outcomes until a pathway is formed and the current state of action/inaction identified.

### Dynamic adaptive policy pathways: Tipping points

In this example, tipping points occur when the current/proposed policy ceases to be possible/ effective based on impacts of risk and/or time. The lines representing the potential pathway are either whole (action effective in all scenarios) or dashed (action potentially ineffective based on other pathway scenarios).2 The key with adaptive pathway planning is to avoid being locked into an irreversible course of action that would prevent the exploration of alternative pathways in response to an uncertain future.





Scorecard pathways

 Describe current situation, objectives.

& uncertainties

**Development of** 

dynamic

adaptive policy

pathways

6 Select preferred

pathway(s)

2 Analyze the problem.

opportunities using transient scenarios

3 Identify actions

4bReasses

vulnerabilities

& opportunities

vulnerabilities &

4a Assess efficacy.

sell-by date of

transient scenarios

5 Develop adaptation

pathways and map

actions with

10 Monito

7 Determine contingency

actions and triggers

9 Implement the

8 Specify a dynamic

adaptive plan

plan

# Communicating change

The National Trust Climate Change Programme has been structured to address the technical aspects of climate action through our climate RACE:

- **R** reduce carbon emissions and carbon equivalents
- A adapt to climate hazards and build resilience into our beautiful and historic places by understanding measures and thresholds for change
- C capture carbon through more of our land which we will achieve through land use changes, tree planting and restoring our peatlands
- E engage people in the conversation to provide permission and agency, and raise awareness in ways relevant to our members, supporters, staff and volunteers.

The last of these is key when driving change in philosophy of approach to conservation. People find climate data difficult to engage with and tend to be put off by what might be perceived as extreme views and a focus on the environment, rather than recognise that these hazards have the potential to affect everyone and everything.

The National Trust is currently investigating and trialling different approaches to explain the changes that come with climate adaptation to the people and users of those places which are impacted. Some change is incremental and almost goes unnoticed, while other changes come in waves and can shock people through their impacts (particularly when these are land form shifts such as cliff collapses, landslides, subsidence events and large-scale storm throw/damage).

We are currently conducting research at our places on the psychology of change and how decision-making is impacted by the uncertainty of climate change. This can often cause operational paralysis for properties in care where the change is virtually undetectable and where regulatory requirements demand a like-for-like replacement which leaves little room for interpretation or adaptation other than the 'resist' approach.

Other initiatives for communicating change directly at properties have included spaces for visitors to contribute their concerns and understanding around climate issues, and organised climate 'take overs'. In these, a venue (such as a café or pub) is themed around climate adaptation for a week. The space is fitted out with interpretation and live experts discuss climate issues with visitors and how they may be impacted in the comfort of a friendly and relaxing space.



# Glossary of terms mentioned in the guidance

Aspect – a feature/asset or activity (e.g. monument, building, habitat, visitors, commercial activity).

**Climate Factor** – this is the meteorological term for the climatic aspect of climate change (e.g. rain (precipitation), wind, temperature).

**Climate liability** – output from the exposure exercise as ranked risk and/or prioritised list of climate challenges to develop adaptation approaches to mitigate and/or change an aspect's function/feature/existence.

**Exposure** – the exposure level is an extrapolation of the overall vulnerability of aspects multiplied by the level of potential impact from the hazard factor, multiplied by the significance of the aspect.

Hazard Factor — is a singular or combination of climate factors and/or the interaction of other aspects (e.g. soil, riverbed, geomorphology). Storm, for example, is a combination of wind and rainfall climate factors beyond certain limits (mm per hour and metres per second): this equals a storm hazard.

Hazard Map – the hazard factor fixed to a place. The National Trust has worked with partners to produce 65km2 hexagrid mapping for England, Wales, Scotland and Northern Ireland. The hazard factor is filtered to the hexagrid.

Impact – is the level of change that the hazard factor inflicts on an aspect (everything from mild or none to complete loss). For example, income drop from less visitors to a complete loss of a village on the coast as a result of coastal erosion. **Risk** – this is typically defined as a level of exposure to a threat or danger, and in climate terms is associated with a range of hazards. Some risks are slow in their onset such as heat and humidity, and others may be sudden such as coastal change and flooding. The level of risk is impacted by the vulnerability and sensitivity of an asset or activity to that hazard. Understanding risk can help to inform adaptation measures that build resilience.

Significance – how important the aspect is to the core purpose of the organisation. At the National Trust this is measured as the sum of an asset's values (aesthetic, evidential, value to people and historical value, as well as nature value and contribution of setting), and similar values apply to other countries and designations (e.g. Outstanding Universal Values for World Heritage Sites; architectural, artistic and archaeological interests in England, and recognition of communal value in other countries.

Threshold – the trigger point at which the agreed approach is no longer viable/working. This does not have to be related to climate hazards and may be concerned with maintenance cost, health and safety or other operational considerations.

Vulnerability – is the susceptibility of an aspect to the hazard (e.g. heat and visitors, flood and monument). Factors such as current management and an aspect's condition are important multipliers here to the degree of an aspect's vulnerability.