

Climate Change Adaptation Guidance – Places

Wildfires

Climate change vulnerability: high

### Wildfires – introduction

Wildfires, and their causes and catalysts, are likely to increase in frequency and impact due to increasingly dry and hot periods of weather. Wildfires usually start as a result of carelessness and are often not truly 'wild' in origin.

Wildfires at our places are usually to do with people and particularly with their rubbish: left-over disposable BBQs, fires that have been left unattended or placed too close to vegetation, or glass bottles left in tinder-dry habitats such as heath and grassland. Remember, it does not have to be hot for wildfires to start.

Wildfires can be defined straightforwardly as unplanned, unwanted or uncontrolled fires occurring in areas of combustible vegetation. A study in Wales showed that between 2014 and 2019, only 5 per cent of fires in crops, grassland and woodland started naturally.<sup>1</sup> Almost all outdoor fires are likely to be impacted by weather conditions, with winds and heat contributing significantly to spread.

As climate change exacerbates the risk of wildfires, we are increasingly aware of the challenge these unpredictable hazards pose to our historic and beautiful places.

<sup>1</sup> Clifford, S. 2019 Statistical Bulletin: Grassland fires, 2018–19 Statistic for Wales, Welsh Government [online]. Available at: <u>https://www.gov.</u> wales/sites/default/files/statistics-and-research/2019-10/grasslandfires-april-2018-march-2019-751.pdf

Image credit: Wildfire at Brancaster Marshes ( $\bigcirc$  National Trust Images/ Christopher Bielby).



# Wildfires – why do they matter?

Wildfires are indiscriminate in the way they affect our places. When considering the impacts of wildfire on one asset or activity, we should think about their simultaneous impacts on other aspects of a place.

The National Trust's approach to wildfires is particularly centred on countryside, and more specifically on peat. Seventy per cent of National Trust peatlands are in poor condition, making them more vulnerable to wildfire. Yet our places also suffer the effects of fires on their woodlands, moorland, meadows and parkland. Wildfires have even been known to threaten our historic buildings.

In the United Kingdom, wildfires tend to spike in April (when dry and dead vegetation from the previous year causes fire to spread). A resurgence follows in July during periods of hotter weather. With worsening climate scenarios, and predictions of more pronounced and prolonged spells of drought and heat, the risk of wildfires affecting structures, people and other aspects of our sites is heightened. We need to think more holistically about adapting to this threat and increasing resilience.

Wildfire management plans, developed in partnership with neighbouring land owners/managers, can be instrumental to the introduction of resilience-building measures into the landscape. This in turn helps to protect buildings, infrastructure and users of places from the risk of wildfires. The principal considerations for preventing wildfires and building resilience are those elements that enhance wildfire conditions: fuel, topography and wind. Rate of spread is particularly linked to the moisture content of an area, so rewetting of peatland, for example, is an effective resiliencebuilding measure for sites with a higher fire risk.

Management plans need to be developed in partnership with consultants for heritage and nature. This is to make sure that any resilience-building action does not harm the assets we are attempting to protect; for example, habitat connectivity, enabling access to sensitive areas, key views interrupted by striking landscape changes and impacts on setting.





Image credit, middle column: WWII weapons pit revealed after fire at Studland, National Trust (© Jeremy Lake Heritage).

Image credit, right: Tinder-dry landscape surrounding Grade I-listed Ickworth (Photo by Howard Cook MA FRGS, historic aircraft pilot and historian).

# Wildfires – character areas, impacts and options

Character Area	Impacts	Options
Historic estates	Partial or total damage to buildings, interiors, archaeological features, boundaries, infrastructure and access.	Preventative firebreaks; development of place-based wildfire management plans; raising awareness of staff, visitors and volunteers; collaborative working with neighbouring landowners/managers.
Farmland	Death or injury to livestock and people; damage to crops; long-term effects on soil health; indirect impacts on resource protection.	Preventative firebreaks; development of place-based wildfire management plans; collaborative working with neighbouring landowners/managers; changing land use to reduce vegetation loading of fields and boundaries in a formulaic manner.
Visitor facilities	Limited or cut-off access; partial or total damage to associated buildings and infrastructure.	Preventative firebreaks; development of place-based wildfire management plans; emergency plans for reactive approaches; vegetation management and maintenance along all access routes (prioritising those with higher vegetation loading adjacent).
Heathland	Damage to habitat; death or injury to livestock, wildlife and people.	Preventative firebreaks; development of place-based wildfire management plans; collaborative working with neighbouring landowners/managers; changing land use practices to avoid fire setting (traditional heathland management practice); increasing restrictions (access, activity).
Wooded areas	Damage to habitat; death or injury to wildlife and people.	Preventative firebreaks; development of place-based wildfire management plans; vegetation management and maintenance along all access routes; management of understorey where adjacent to wildfire hotspots; increasing restrictions (access, activity).
Gardens and parks	Damage to ancient trees, plants and built structures.	Preventative firebreaks; development of place-based wildfire management plans; raising awareness of staff, visitors and volunteers; reducing vegetation loading of certain fields/spaces in a formulaic approach to reduce likelihood of impact/total losses.
Grassland	Death or injury to livestock and people; long- term effects on soil health; indirect impacts on resource protection.	Preventative firebreaks; development of place-based wildfire management plans; collaborative working with neighbouring landowners/managers; changing land use to reduce vegetation loading of fields and boundaries in a formulaic manner; increasing restrictions (access, activity).
Visitor activity	Visitor safety; blocking of escape routes; panic.	Emergency plans; maintenance of access routes; increasing restrictions (access, activity).
Peatland	Carbon release; damage to habitat; death or injury to livestock, wildlife and people.	Preventative fire breaks; development of place-based wildfire management plans; collaborative working with neighbouring landowners/managers; changing land use to reduce drainage; re-wetting areas; increasing restrictions (access, activity).

## Wildfires – options and thresholds

A risk assessment methodology, developed by the Uplands Management Group and implemented at Marsden Moor, looks at factors which could increase risk and possible mitigations. We are also learning from other countries, where wildfire is more prevalent and frequent, about how to build place-based adaptation measures and thresholds for change to protect our estates.

### Specific options for effective place-based management of risk from wildfire:

**Firebreaks** – these are established practice on National Trust land. Firebreaks can vary in size from footpath width to 4m wide, depending on the height of vegetation either side. On peatland they can be up to 10m wide. The position of firebreaks will be determined partly by topography and landscape, but the division of the countryside into regular hectare blocks can have a very striking visual impact on the landscape. To counteract this, countryside managers in Pembrokeshire have cut irregular breaks into heather, making them less visible to visitors. Fields, with grass kept well grazed, can also act as effective firebreaks. In contrast, areas with tall grass and diverse vegetation are not effective firebreaks.

**Grazing and cutting** – fields and areas with lower vegetation are naturally more resilient to wildfire spread. Keeping vegetation in coastal habitats more trim prevents the cumulative impact of offshore winds, which can exacerbate coastal fires. **Paths and routeways** – where possible, footpaths should be kept free from vegetation as these are effective, existing firebreaks in most places. Widening footpaths for access can have the dual benefit of increasing fire resilience.

**Collaborative approaches** – developing firebreak/wildfire management strategies in isolation is far less effective than working cooperatively with neighbouring landowners/ managers. A place-based approach to wildfire risk is key to the effective deployment of physical resilience-building options.

**Signage** – while truly natural fires are on the rise, data for the UK show that most fires which end up out of control have a human source, such as BBQs and campfires. Repeat signage appropriate to place, or temporary signage at times of peak risk (prolonged dry and hot periods) can help reinforce messaging around these risk factors.

Education and awareness-raising – working with audiences to places (visitors, schools, communities through fire safety groups and local fire services) is key to raising awareness and educating local people about the risk of wildfire and associated land management approaches.

**Generally** – have a wildfire plan for your place, identifying the highest areas of vegetation loading, and the assets and activity most at risk from spread. Ensure access and safe escape routes are built into spatial plans.

#### **Thresholds & tipping points**

At what point might you diverge from your current management strategy? What are the events/factors that may trigger this change of approach?

- The introduction of firebreaks and a change in management approach is most likely to be triggered by a fire event.
- Complaints/concerns raised by neighbouring landowners/site users.
- Known fire outbreaks in the vicinity (recent or previous years).
- Opportunity/invitation by local fire service to participate in resilience strategies.
- Particularly for options relating to awareness and signage, periods of hot and dry weather should be monitored to change approach proactively before fires break out.

### Act now to reduce wildfire risk, maintain fire breaks and increase resilience

One option is **do nothing**, and another will be to **maintain** your site as it is. The most effective approach to resist wildfire risk and impacts, and improve your site's adaptive capacity, is to **activate a regular maintenance regime for existing breaks**. If we do not actively manage and maintain known firebreaks, we cannot effectively manage the risk of wildfire. Management is known to be most intensive after fire events, but maintenance tends to drop off when fires are less frequent.

# Wildfires – worked pathway example

This application of pathways and thresholds to a real site example shows how and when you might wish to make changes to your adaptive response to climate hazards.

Working with a multi-disciplinary group to think about options and thresholds for a typical site is key. This cannot be done in isolation as there are significant implications for impacts on everything from operations, to ecology, to visitors and the farmed environment. It is always most effective to bring together the right people to work together on a mutually acceptable solution for a period of time between thresholds for change. Options for adapting places to wildfire risk do not have to be physical: much of the work is about readiness and collaborative working between neighbouring landowners and communities. Wildfire is indiscriminate in its spread and while **significance should always inform the approach, so should safety and access.** 

Options for adaptation must not be selected in isolation from the unique characteristics, significance, vulnerabilities and use of your specific site. This may mean that different adaptive pathways apply to each site.<sup>2</sup> The worked example below is based on the work by the Wildfire Group coordinated by the National Park Authority in Pembrokeshire, including National Trust land. This site has historically been managed through setting fires for burning off Molinia caerula (purple moor grass).



Change land use and limit access Intensify grazing/vegetation management Introduce signage Create fire breaks based on collaborative plan Awareness raising and collaborative management Creation of wildfire management plan Time/frequency and intensity of drought conditions



(Response thresholds are most likely to be based on drought levels, linked to the risk from wildfire and associated vegetation loading of land as well as known outbreaks of fires in the area. The specific trigger points would need to be agreed by the operations decision-maker, and relevant consultants and consultees, such as the gardeners and rangers working at a site.)

<sup>2</sup> Dynamic Adaptive Pathways Approach (<u>Haasnoot, Kwakkel, Walker & Ter Maat</u>, 2013).

Image credit: Firefighters tackling Leith Hill in summer 2022, National Trust (© National Trust Images/Mark Richards).

## Case studies, signposting and references

These case studies show how devastating wildfires can be to landscapes and how places have attempted to adapt to protect certain features.

In the drought of 2022, **Hankley Common** in the Surrey Hills experienced a wildfire event. The area was previously used for WWII exercises and the additional risk of unexploded ordnance compounded that posed by the fires, making the fire itself and the clear-up very dangerous to operations teams.

In 2022, **Studland** was beset by a rapidly spreading fire. As a nature and heritage hotspot (also with legacy ordnance from practice D-Day landings) the fire caused devastation but also created an opportunity: several previously unknown archaeological features were revealed, along with small finds. The impact on reptiles and the associated habitat was not as positive.

Wales has developed a wildfire charter written by fire officers involved in tackling wildfires. In 2022, there was a 62 per cent increase in grass fires in Wales. **Port Talbot** used the 'paws on patrol' model where dog walkers were encouraged to look out for and report wildfires. This raised awareness of designated heritage asset locations and helped build resilience through human monitoring. Historic Environment Record data has been supplied to police/fire officer services to ensure they do not create inappropriate firebreaks which could damage sites. In 2023, <u>Operation Dawns Glaw</u> published updated guidance on the prevention of wildfire and protection of sites in Wales. In 2018, wildfires at **Twmbarlwm hillfort** in Wales burned away organic matter, leaving the soil vulnerable to erosion. After reseeding was adversely affected by intense storms, a grassland management plan was drawn up to increase the resilience of the site to repeat climate events through the reduction of leafy cover such as bracken and bilberry, and increased grazing.<sup>3</sup>







#### Signposting & other guidance of relevance

The National Trust has internal guidance for wildfire risk assessment at a place-specific level. This drills into the detail of threat as well as land management and associated vulnerability of land use. The National Trust also has outdoors fire safety advice. These documents can be shared upon request.

The Fire Severity Index, produced by the Met Office, is a useful tool for understanding potential wildfire severity, but is not a tool for assessing risk. Understanding exposure in the short term can come from checking this model. The <u>climate risk indicator</u> map developed by the University of Reading and the UK Centre for Ecology and Hydrology also includes a layer on wildfire risk.

Arson Risk Reduction: Preserving Life and Heritage in the North West is guidance supported by Historic England and developed by fire and rescue services. It includes useful preventative risk management information for buildings (particularly vacant buildings) susceptible to fire.

When considering a change to landscapes that comprise heritage and nature assets, or key views associated with historic features (or their setting), always consult a historic environment specialist, such as a curator and an archaeologist, to check the implications of any proposal. Fire breaks in SSSIs will need consent from the relevant regulator.

Image credits, top to bottom: WWII features revealed after wildfire at National Trust, Studland, 2022 (© Jeremy Lake Heritage); Hankley Common, Surrey Hills (© National Trust Images/Matt Cusack); Twmbarlwm hillfort after wildfire, Wales (© Terry Evans/Twmbarlwm Society).