

Lake
District
Foundation

JBA
consulting

Climate Change Risk Assessment & Adaptation Actions



April 2026

Produced by JBA Consulting on behalf of the Lake District Foundation

Introduction

This document seeks to provide a high-level, structured overview of how climate change may affect the attributes that underpin the Outstanding Universal Value (OUV) of the English Lake District World Heritage Site (WHS). It identifies where the landscape, its cultural traditions, and the experiences it offers are most sensitive to the changing climate.

Outstanding Universal Value: *cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity*

Attributes: *features of interest or traditions that are aspects of a World Heritage Site that are associated with or express the Outstanding Universal Value*

Put simply: Outstanding Universal Value explains why the place matters to the world, and the Attributes are the specific landscapes, buildings, traditions and experiences that show this value in practice.

The assessment has three main purposes:

To describe climate-related vulnerabilities for each OUV attribute

For each attribute, the assessment outlines the climate hazards most relevant to the Lake District (e.g., rising temperatures, drier summers, wetter winters, intense rainfall events). It then describes:

- the **vulnerabilities** of the physical landscape, cultural practices, built features and experiential qualities, and
- the **likely impacts** on how the attributes are expressed and experienced.

To set out cross-cutting adaptation themes and actions

Rather than listing actions for every hazard and every attribute, the assessment presents a set of practical, cross-cutting adaptation themes that apply across the world heritage site.

Each theme outlines:

- potential adaptation actions,
- the vulnerabilities or impacts they help address,
- potential heritage conflicts and how these can be mitigated, and
- examples of relevant projects from the Lake District or comparable protected landscapes.

To support decision-making and prioritisation

The document is designed to be used by the Lake District National Park Partnership, land managers, conservation bodies, community groups and project partners to:

- understand climate pressures on the outstanding universal value of the world heritage site,
- identify where action is most needed, and
- guide the design of adaptation measures that fit the cultural character

Emerging priorities

This assessment is a first step in understanding how climate change may affect the landscapes, communities and cultural heritage that define the Lake District World Heritage Site. While the assessment is not designed to produce a ranked list of priorities, a series of recurring vulnerabilities and impacts appear consistently across the OUV attributes. These emerging priorities highlight where climate change is likely to affect the widest range of values and parts of the WHS and have informed the cross-cutting adaptation themes identified.

1. Changing vegetation patterns and landscape structure

Drying, heat stress, changing species composition, scrub encroachment and woodland decline appear across almost all attributes.

These changes affect views, valley character, agro-pastoral practices, biodiversity, traditional skills, and the settings of historic houses, villas, settlements and industry.

2. Erosion and disruption to access routes

Flooding, landslides and intense rainfall repeatedly affect fell paths, rights of way, gathering routes, viewing points, bridges, and valley-side tracks.

This has implications for residents, farmers, commoners, visitors, emergency services, and for the continuation of early tourism and outdoor movement traditions.

3. Increasing pressure on water systems

Climate hazards commonly affect lake clarity, river flows, waterfalls, wetlands, valley-floor soils, waterlogging, and fluvial processes. This can result in flooding or drought.

These changes influence scenic qualities, tourism, heritage settings, farm operations, settlements and nature recovery.

4. Rising risk to small-scale heritage features and historic fabric

Drystone walls, barns, farmsteads, mills, charcoal platforms, terraces, bridges and other dispersed features are frequently highlighted as vulnerable to heat, damp, erosion, cracking and storm damage.

Damage to these features reduces the recognisability and legibility of the cultural landscape.

5. Pressures on living heritage, traditions and experiences

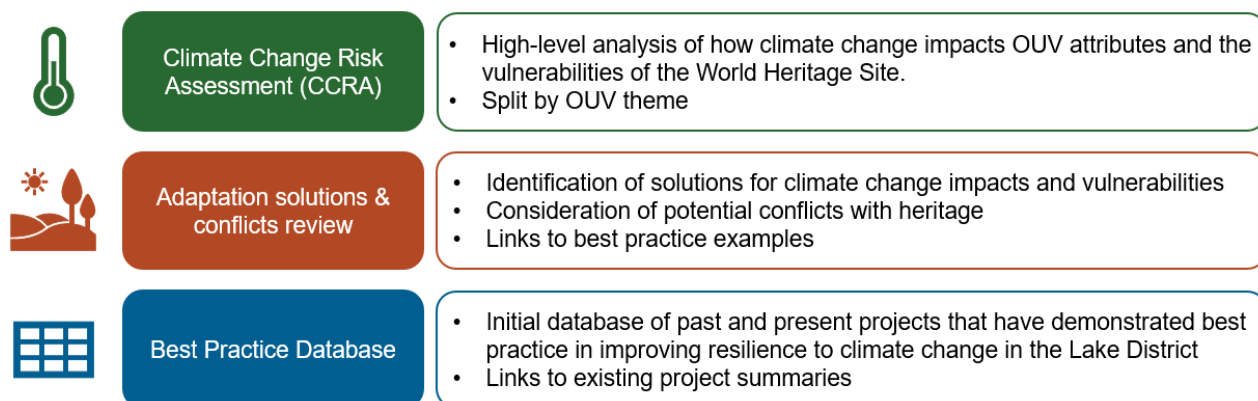
Climate change has implications for:

- shepherding routes and seasonal livestock movement
- continuity of hefts
- timing of shows, gatherings and hill-farming traditions
- tranquillity, quiet enjoyment and access to key viewpoints
- the walking, climbing and recreational experiences historically associated with the Lakes

These cross-cutting climate impacts are intended to support partners in developing ideas, guiding discussions and shaping funding bids, rather than providing a definitive hierarchy of risk.

Output structure

To make the findings from this assessment easy to use, the work has been divided into a small set of focused outputs. Each output has been designed so partners can quickly access the information most relevant to them. The diagram below summarises what each output contains and how the different parts fit together.



Navigating this document

To navigate to the different sections, use the hyperlinks below. The Best Practice Database is a separate Excel document and available upon request from the Lake District Foundation.

Climate change risk assessment

- [Theme 1: A landscape of exceptional beauty, shaped by persistent and distinctive agro pastoral and local industry which gives it special character](#)
 - [Extraordinary beauty & harmony](#)
 - [Agro-pastoral system](#)
 - [Local industries](#)
 - [Towns & settlements](#)
- [Theme 2: A landscape which has inspired artistic and literary movements and generated ideas about landscapes that have had global influence and left their physical mark](#)
 - [Early tourism](#)
 - [Villas, gardens and formal landscapes](#)
 - [Sites and collections associated with Picturesque and Romanticism](#)
- [Theme 3: A landscape which has been the catalyst for key developments in the national and international protection of landscapes](#)
 - [Landscape conservation](#)
 - [The ability of people to experience the spirit and feeling of the Lake District](#)

Adaptation actions

- [Land management & vegetation resilience](#)
- [Water, wetlands & catchment resilience](#)
- [Woodland, tree health & historic woodland features](#)
- [Animal health & biodiversity](#)
- [Access, rights of way & recreational infrastructure](#)
- [Built heritage, farmsteads & cultural features](#)
- [Views, landscape experience & “spirit of place”](#)
- [Community resilience](#)

Theme 1: A landscape of exceptional beauty, shaped by persistent and distinctive agro pastoral and local industry which gives it special character



Attributes

[Extraordinary beauty and harmony](#)

[Agro-pastoral system](#)

[Local industries](#)

[Towns and settlements](#)

Click on the links above to navigate to the climate risk assessments for each attribute.

Extraordinary beauty and harmony

- The physical natural landscape of mountains, rivers, lakes, and valleys.
- The physical cultural landscape in the main the product of agro-pastoralism, settlements and local industry, including woodlands.
- The variety and combination of differing landscape characters and physical attributes of each of the 13 valleys.



Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Fell slopes, pastures and meadows increasingly vulnerable to both prolonged and acute heat stress, leading to drying and browning. - Woodlands, trees on valley sides and hedgerows sensitive to repeated canopy stress and dieback, especially during heatwaves. - Lakes, tarns and becks vulnerable to warming and eutrophication. - Soils on steep or exposed slopes prone to severe drying and heat-driven erosion, exacerbated by vegetation stress. - Vegetation and tree species increasingly vulnerable to pests/diseases favoured by warmer conditions. - Decline or loss of key pollinator species or shifts in insect emergence due to warming - Pastures vulnerable to reduced summer productivity, affecting traditional land-use patterns.	- Browning slopes and patchy vegetation reduce scenic harmony and weaken seasonal landscape character. - Canopy thinning and loss of drought-sensitive species change key views across valleys. - Water warming and eutrophication reduce clarity and reflective water surfaces. - Increased erosion creates visible scars and damages iconic skyline and valley-side features. - Changes in vegetation composition and land management disrupt the scenic mosaic of natural and cultural elements across valleys and fells. - Reduced pasture productivity impacts agro-pastoral practices, changing the visibility of practices and their influence on the landscape.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Upland grasslands, heath and peat vulnerable to ignition. - Wetlands, flushes and valley meadows sensitive to drying. - Streams, tarns and watercourses sensitive to reduced summer flows. - Exposed slopes and crags vulnerable to severe drying and erosion.	- Wildfire scars create long-lasting visual damage on fells, reducing scenic harmony. - Loss of wetland textures diminishes the valley-floor mosaic of the landscape. - Lower water levels alter the appearance of lakes and becks, changing well-known views. - Increased erosion creates visible slope scars affecting iconic skylines.
Warmer winters Fewer frost events Reduced snow Longer growing season	- Winter views of peaks and ridges sensitive to reduced seasonal snow and frost. - Fell-side vegetation vulnerable to expansion of scrub and bracken. - Woodland growth patterns shift under longer seasons, resulting in reduced seasonality.	- A reduction in winter contrast affects seasonal scenic variety and features people notice when experiencing the landscape at different times of the year. - Scrub encroachment obscures views, and softens the clarity of glacial valley forms. - Less seasonal vegetation cover impacts experiences of the patterns and textures of the landscape.
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Valley floors, lakeshores and river margins vulnerable to flooding and saturation. - Paths, slopes and viewpoints exposed to erosion and instability. - Meadows, woodlands and farmland more prone to prolonged wetness.	- Changes to valley floor and lakeshores affect the structure and recognisability of views. - Erosion and flooding restricts access to iconic viewpoints and reduces ability to enjoy landscapes. - Waterlogged vegetation shifts the colour and texture of valleys, reducing current diversity.

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Steep slopes, crags and path edges vulnerable to rapid erosion. - Becks and lakes sensitive to sudden increases in sediment. - Walls, bridges and access structures vulnerable to hydraulic damage and from mobilisation of gravels, rocks and boulders.	- Visible slope scars and damaged paths reduces the experience of beauty and harmony. - Sediment deposition alters water colour, lakeshore lines and valley-floor character. - Damage to cultural landscape features weakens the balance of natural and agro-pastoral elements.

Maps

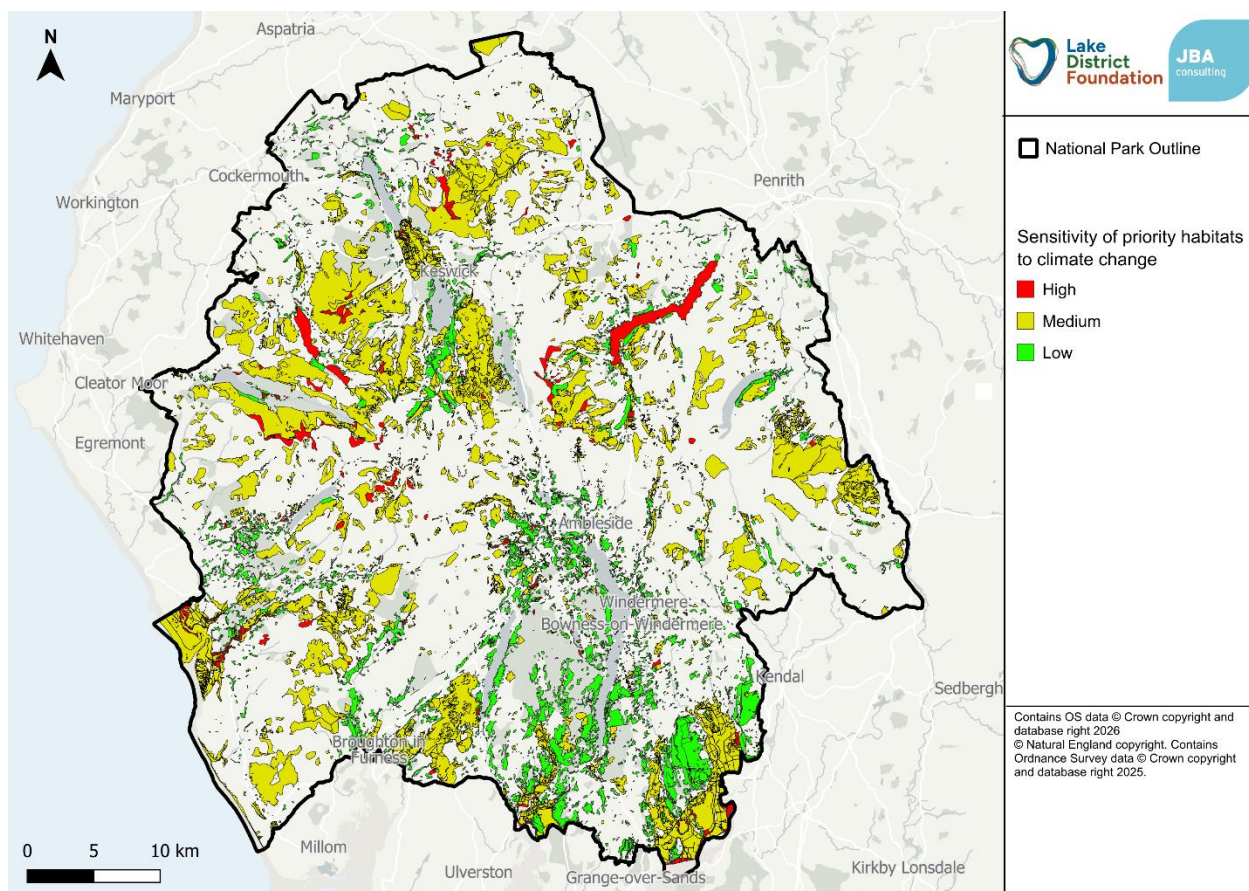


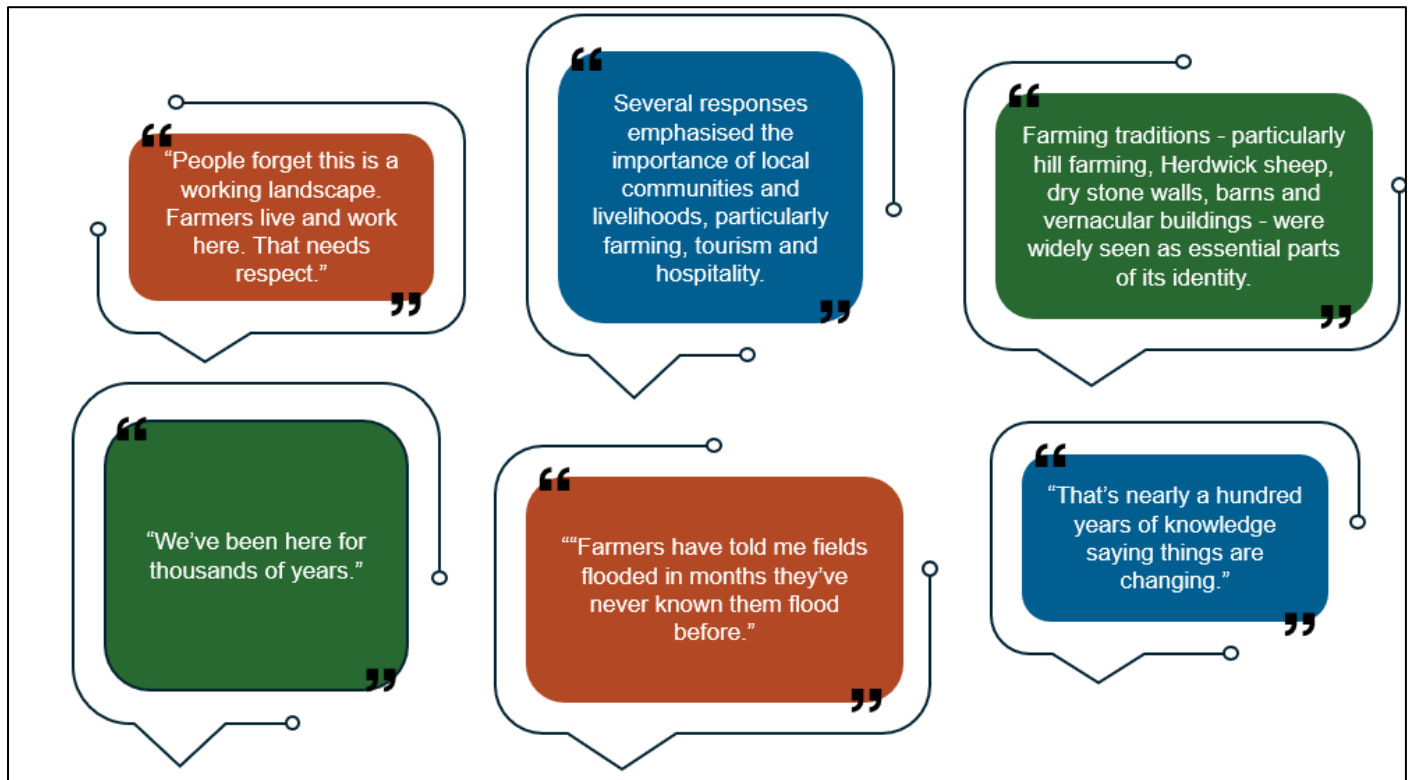
Figure 1 Priority habitats in the Lake District and their relative sensitivity to climate change according to the Climate Change Adaptation Manual NE751 (Natural England, 2020). Note that all lakes will have high sensitivity to climate change; the Priority Habitat input layer does not include all lakes therefore they have not been mapped, but the sensitivity will remain the same.

Attribute: Agro-pastoral system

- Evidence, intactness, and legibility of settlements and the agro pastoral character and function of the field systems and their waterways.
- Farmsteads and Farmhouses.
- Shepherds meets/shows and traditional sports.
- The unique practices of the agro-pastoral farming system.
- The surviving physical and social elements of hill farming e.g. shepherding and common gathering.
- Local techniques of landscape maintenance (stonewalling, hedging, pollarding).
- Local management and governance of Lake District farming systems, e.g. activities of breeders associations and commons committees.
- Common land and the long standing and continuing traditions of Common land management.
- Semi-natural habitats created and sustained as a result of a continuing agro-pastoral systems, for example hay meadows, pollards, wood pasture, and coppiced woodland. The mosaic of semi natural habitats above the fell wall within an actively grazed landscape.
- Ancient Semi-Natural Woodlands.



Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	• Upland pastures and in-bye fields increasingly vulnerable to drying and reduced forage quality. • Hill flocks vulnerable to heat stress on exposed fells and may be housed in barns as a result. • Risk of disruptions to heft patterns if livestock and fell ponies are repeatedly removed from the fell during hot periods. • Field systems and tracks vulnerable to severe drying out and thermal weathering. • Hay meadows and wood pasture sensitive to heat stress. • Woodlands supporting agro-pastoral systems vulnerable to pests and disease. • Seasonal festivals, shepherds meets or shows may be delayed or postponed due to risk of heat stress	• Reduced forage quality undermines the viability of traditional grazing patterns and established hefts. • Heat-stressed livestock drive changes in shepherding practices and gathering timings. • Extended periods in barns or lower-level pastures increase risk of livestock and fell ponies losing their heft. • Accelerated deterioration of drystone walls affects the structure of historic field systems. • Decline in meadow and wood-pasture condition weakens the visual and ecological character shaped by farming. • Changes in vegetation composition alter the mosaic central to the agro-pastoral landscape. • Loss of long-standing traditions and impacts to local non-tangible heritage.

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Upland grazing areas vulnerable to wildfire; bracken and rough grass dry rapidly. - Wet meadows, flushes and wood pasture prone to drying. - Water availability for livestock is reduced. - Increased fire risk to outbuildings and historic farm clusters.	- Wildfire damage alters open grazed fell character critical to agro-pastoral identity. - Loss of wet habitats affects diversity of hay meadows and the mosaic above the fell wall. - Reduced water for flocks changes gathering routes and seasonal movements. - Loss of historical structures synonymous with the agro pastoral character
Warmer winters Fewer frost events Longer growing season	- Scrub and bracken expansion increases without winter die-back. - Livestock parasites and diseases persist longer. - Traditional winter pasture conditions change.	- Encroaching scrub diminishes open fell character created by grazing. - Higher parasite loads increase pressures on flocks and labour, threatening livestock management traditions. - Altered winter conditions disrupt established shepherding routines and stock movements.
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Waterlogged in-bye fields reduce winter grazing capacity and livestock may be housed in barns as a result. - Valley-bottom farmsteads and infrastructure vulnerable to flooding. - Drystone walls and tracks vulnerable to saturation and erosion.	- Reduced in-bye productivity undermines the seasonal balance of upland and lowland grazing. - Livestock housed in barns may forget hefts if housed over extended periods. - Flood-damaged farm buildings reduce operational capacity of traditional farms and increased costs could impact viability. - Collapsed walls and eroded tracks reduce the structure and function of the field system.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Flash flooding results in a loss of livestock. - Steep access routes, intakes and banked field boundaries vulnerable to rapid erosion. - Gathering routes and shepherds' meeting places exposed to storm damage.	- Loss of livestock impacts farm viability. - Access disruption affects the viability of common gatherings and shepherding practices. - Structural failure of wall systems erodes the visual pattern of enclosed valleys. - Loss of paths and enclosures reduces the overall pattern of the traditional farming landscape.

Maps

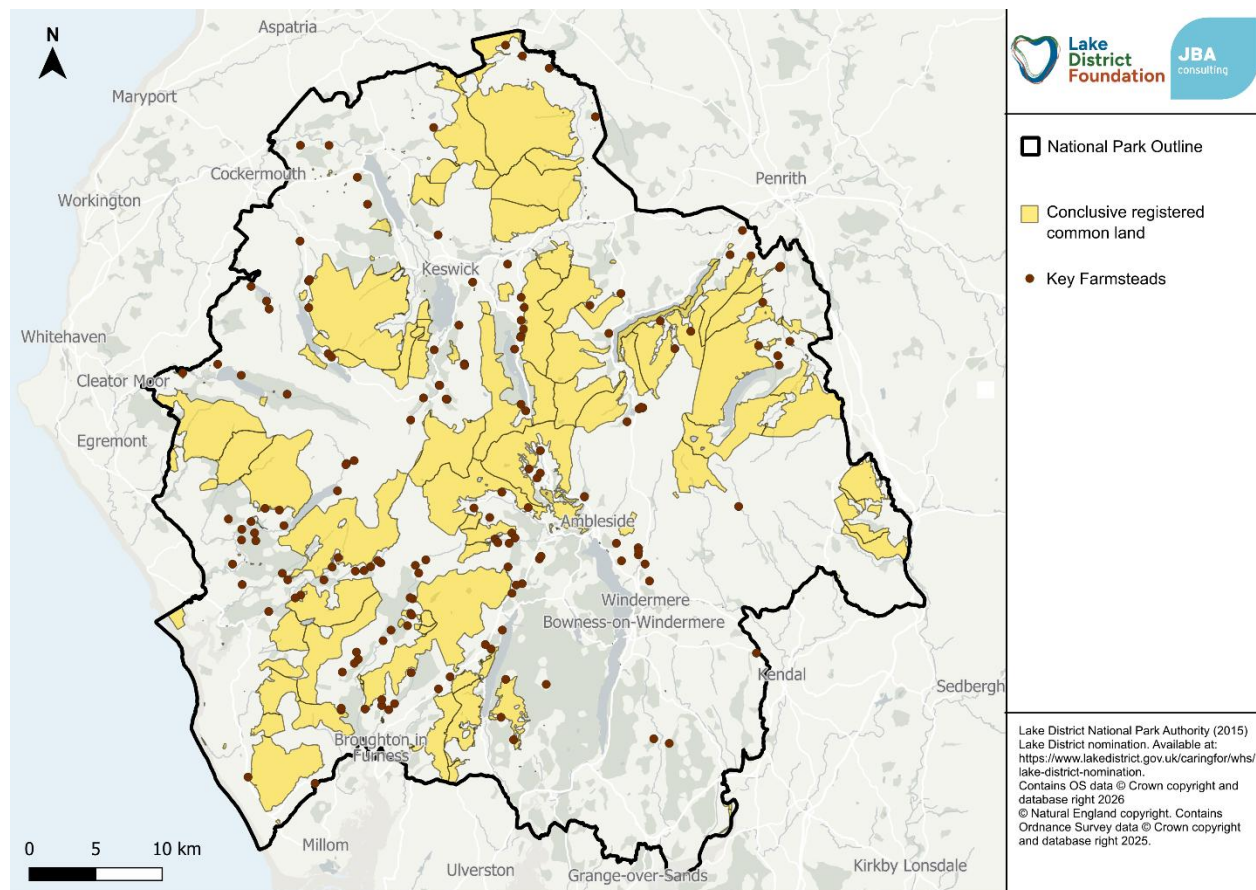


Figure 2 Key farmsteads and Registered Common Land in the Lake District

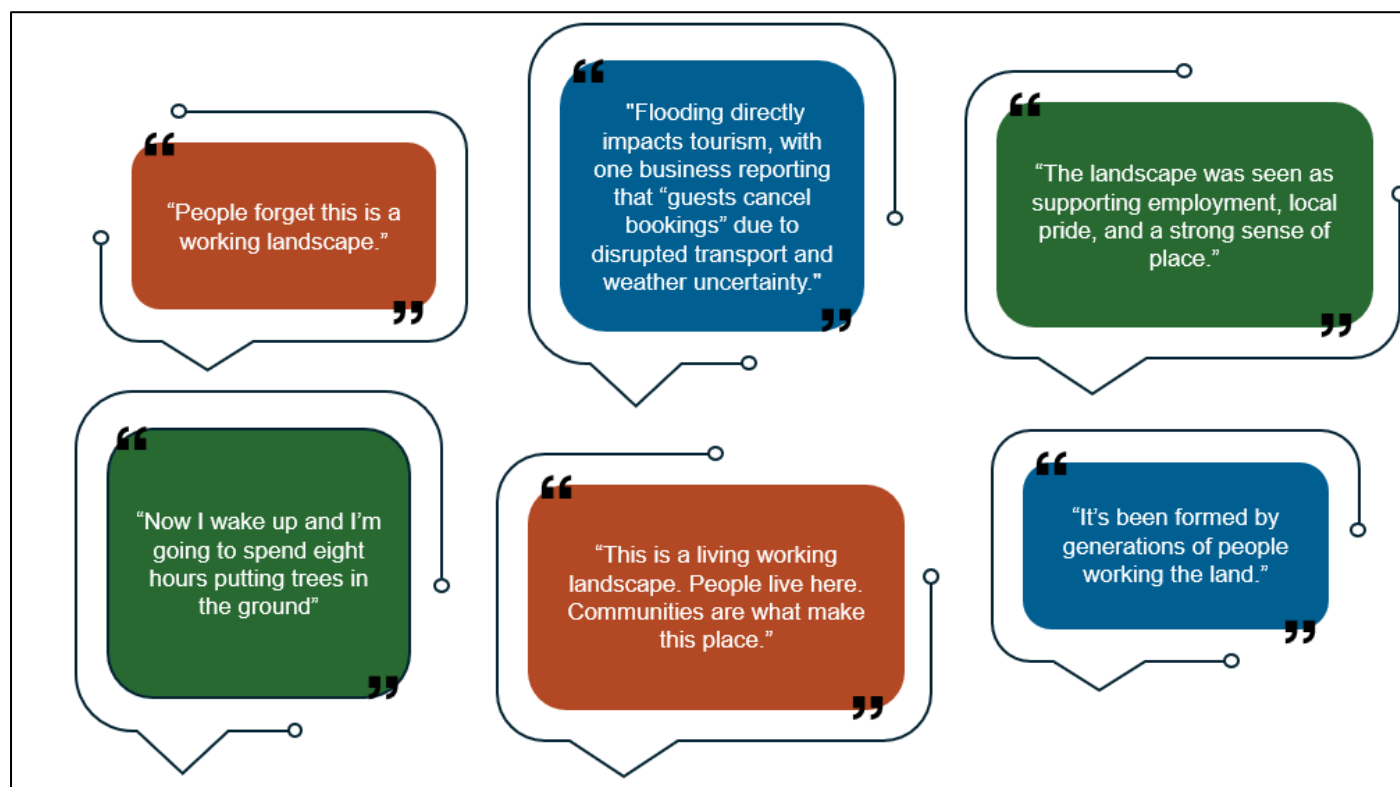
Attribute: Local industries

- Traditional local woodland industries, people and skills.
- The physical remains of past woodland industries, buildings, structures (i.e. Bark Barns, Charcoal Sheds).
- The physical remains of historic mines and quarries which have shaped the landscape



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Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Timber-based industry built heritage assets (charcoal sheds, bark barns) vulnerable to cracking and thermal deterioration. - Change in species composition may result in a loss of tree species used in timber and woodland industries. - Industrial woodland and water-powered settings sensitive to drying and heat stress. - Mine spoil heaps, adits and earthworks vulnerable to severe drying erosion, and dust. - Stone and metal remnants vulnerable to large temperature fluctuations and weathering.	- Accelerated decay of woodland industry structures reduces their recognisability as heritage features. - Loss of appropriate species results in a decrease in scale of timber and woodland industries and an associated loss of skills and heritage. - Drying and erosion destabilise mining and quarrying remains, leading to loss of archaeological detail. - Heat-driven vegetation change alters the character of woodland-industry landscapes. - Lower flows and water quality degradation diminish the setting of water-powered industry sites.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Woodlands formerly used for coppicing or charcoal vulnerable to fire ignition. - Disused mine tips, spoil heaps, and open quarry faces vulnerable to severe drying and erosion. - Earthwork features dependent on stable moisture regimes vulnerable to cracking or erosion.	- Wildfire risks permanently scarring or destroying charcoal platforms, bark-peel areas and industrial woodland archaeology. - Drought-driven erosion exposes or destabilises mining/quarrying remains, accelerating material loss. - Change in vegetation cover reduces the visibility and interpretability of historic industrial landscapes.
Warmer winters Fewer frost events Longer growing season	Increased vegetation growth around disused industry features (woodland scrub, bracken).	Increased scrub obscures charcoal platforms, quarry faces and spoil heaps, reducing their legibility and historic visibility.

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Damp warm conditions increase biological growth on stone and metal industrial remains. - Waterlogged soils undermine spoil heaps and earthwork features. - Mine entrances, adits and small quarry faces vulnerable to collapse. - Bark barns and woodland-industry structures at valley bottoms prone to repeated wetting.	- Biological decay accelerates on heritage structures, reducing their longevity and interpretability. - Structural collapse or slumping of mining remains reduces their archaeological value and distinctiveness. - Increased erosion along access routes damages interpretation of woodland-industry landscapes. - Waterlogging accelerates decay of timber-based industry features.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Industrial woodland sites (charcoal platforms and bark-peel areas) susceptible to sudden slope and soil erosion. - Disused mines, adits, spoil heaps and exposed quarry faces are vulnerable to collapse or wash-out during intense rainfall. - Structures associated with historic industry (e.g., small bridges, paths, access routes) are sensitive to damage by fast-flowing water and mobilised gravel, rocks and boulders. - Riverside or gill-side industry remnants are vulnerable to scour and undercutting.	- Loss or damage to industrial heritage features reduces their visibility and makes them harder to interpret. - Wash-out or collapse of spoil heaps and earthworks removes physical evidence of historic mining and quarrying. - Erosion of access paths makes it harder for people to reach or understand these sites. - Changes to the surrounding landscape alter the setting of historic woodland and mineral industries, reducing how clearly the industrial past can be appreciated.

Maps

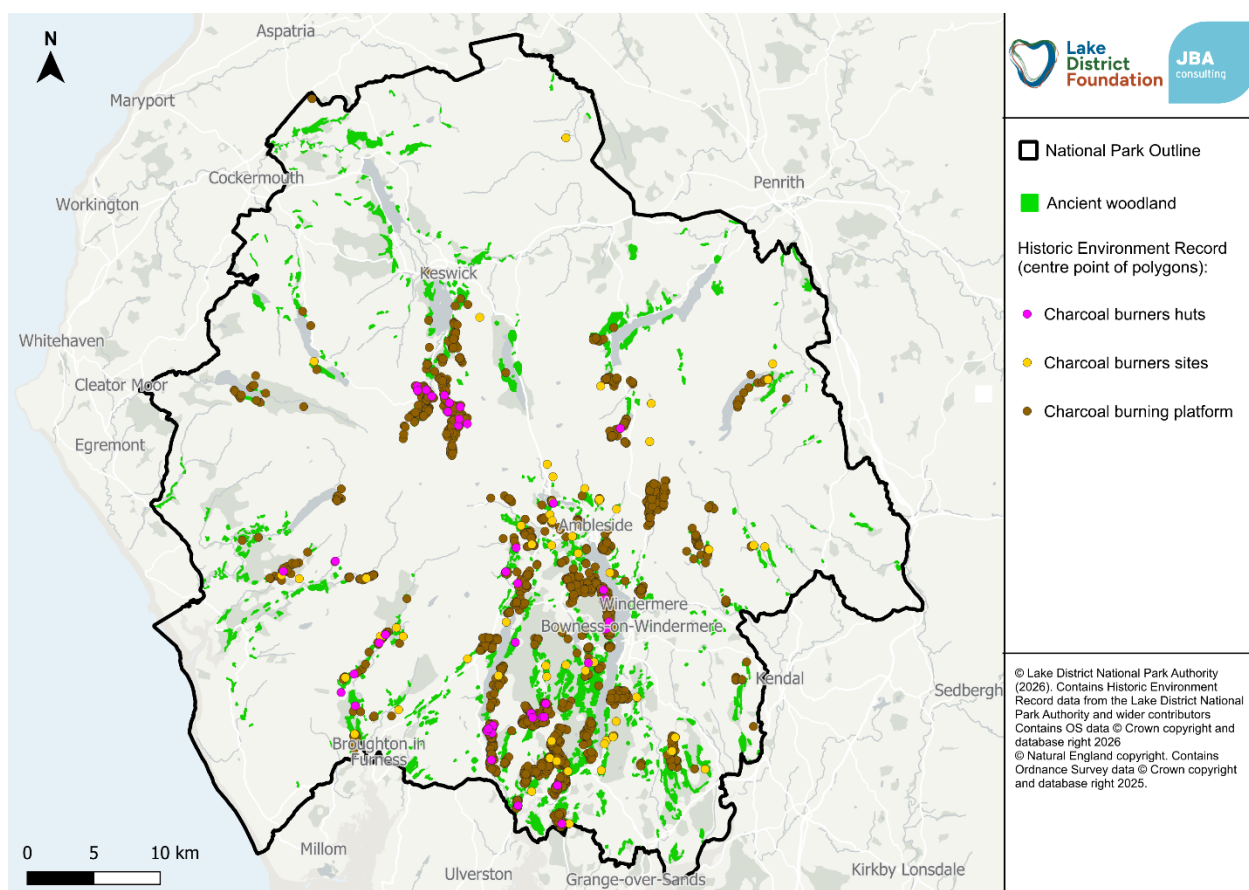


Figure 3 Local woodland industry heritage in the Lake District

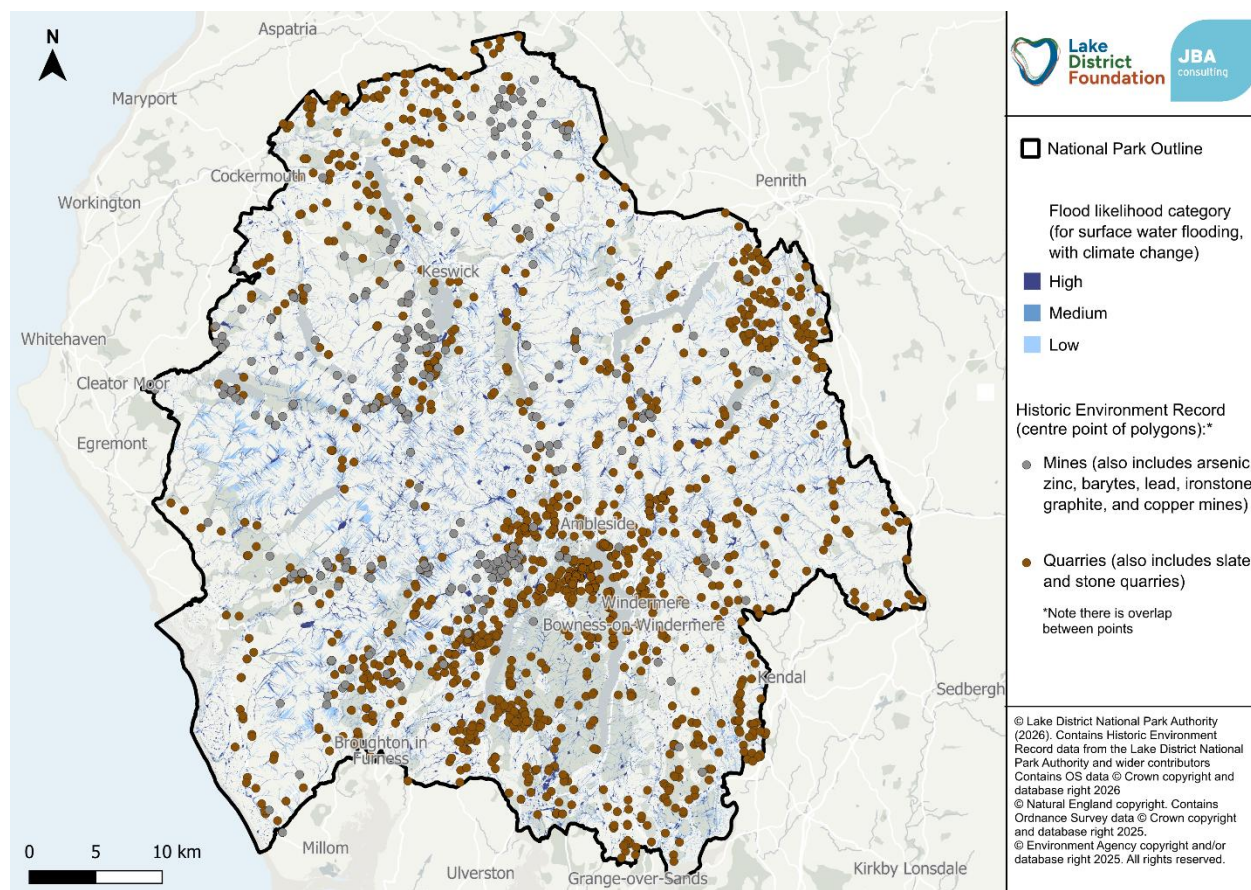


Figure 4 Surface Water Flood likelihood shown alongside mines and quarries in the Lake District. Note that mine and quarry data show the centre points only and therefore the extent of these features may be misrepresented.

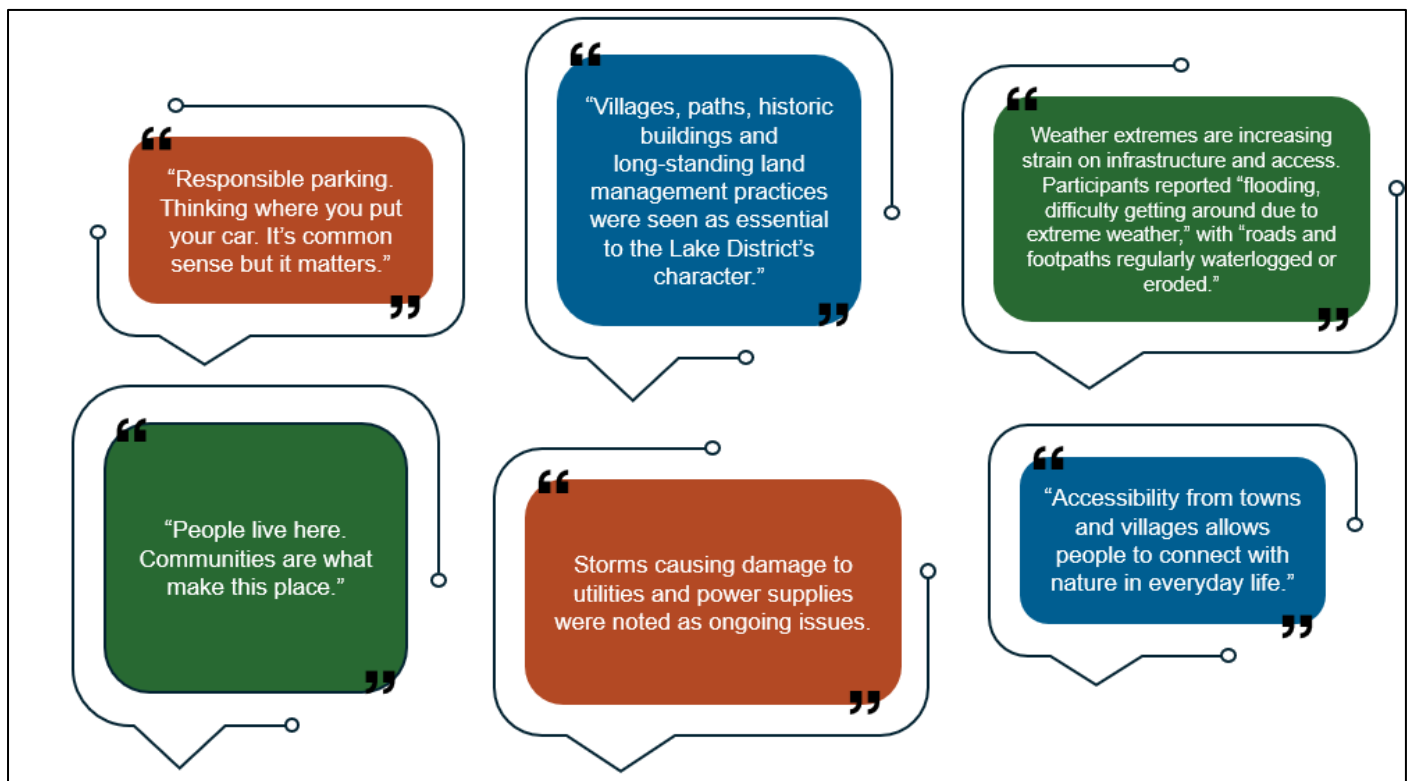
Attribute: Towns and settlements

- The English Lake District's settlement pattern of individual farms, small hamlets, large villages and market towns, historically derived and functionally.
- Medieval buildings.
- Vernacular buildings



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Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Traditional, historic buildings may need to be adapted or retrofitted so that they remain fit-for-purpose and comfortable in higher temperatures. - Plants, trees and gardens surrounding settlements vulnerable to heat stress or pest outbreaks. - Stone, mortared walls and settlement boundaries vulnerable to drying and cracking. - Historic streets and squares vulnerable to increased visitor pressure during prolonged warm spells.	- Damage to building fabric during adaptation/ retrofitting reduces authenticity and longevity of medieval and vernacular buildings - Loss of characteristic trees and vegetation alters settlement character and views. - Subsidence or wall collapse weakens historic settlement form. - Reduced comfort and increased crowding impact the heritage experience of villages and market towns.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Dry soils around settlement edges increase risk of subsidence for traditional, historic buildings. - Stone walls and settlement boundaries vulnerable to shifting or collapse. - Increased fire risk to outbuildings and historic farm clusters.	- Cracking or subsidence damages farmsteads, barns and cottages, reducing building integrity. - Decline or collapse of drystone walls affects structure of historic settlement patterns. - Wildfire damage to buildings and surrounding fields changes the character of views into/out of settlements.
Warmer winters Fewer frost events Longer growing season	- Increased vegetation growth around settlements (hedges, scrub, trees). - Pests and fungi affecting timber and stone more persistent.	- Overgrowth obscures settlement edges, altering historic visual relationships between farms, fields and surrounding fells. - Greater biological weathering accelerates deterioration of traditional materials.
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Valley-bottom villages and farms at higher risk of fluvial/surface water flooding. - Traditional, historic buildings vulnerable to material flaking and prolonged damp in the building fabric. - Lanes, tracks and rural settlement access routes vulnerable to wash-out.	- Flood events damage historic buildings, streets, markets and farm clusters, threatening settlement integrity and architectural fabric. - Persistent damp deteriorating stonework, plaster, lime mortar and timber of medieval and traditional buildings. - Access disruption weakens connectivity between rural settlements.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Beckside settlements, bridges and mills highly sensitive to sudden flows. - Drystone walls, culverts and retaining structures on steep settlement approaches vulnerable to collapse. - Flooding of historic buildings and consequent damage to historic building fabric	- Flash-flood damage alters historic settlement layouts and features (bridges, lanes, stepping stones). - Loss of walls or supporting structures disrupts the characteristic settlement morphology. - Damage to mills, leats, culverts reduces understanding of historic water-powered industry within settlements.

Maps

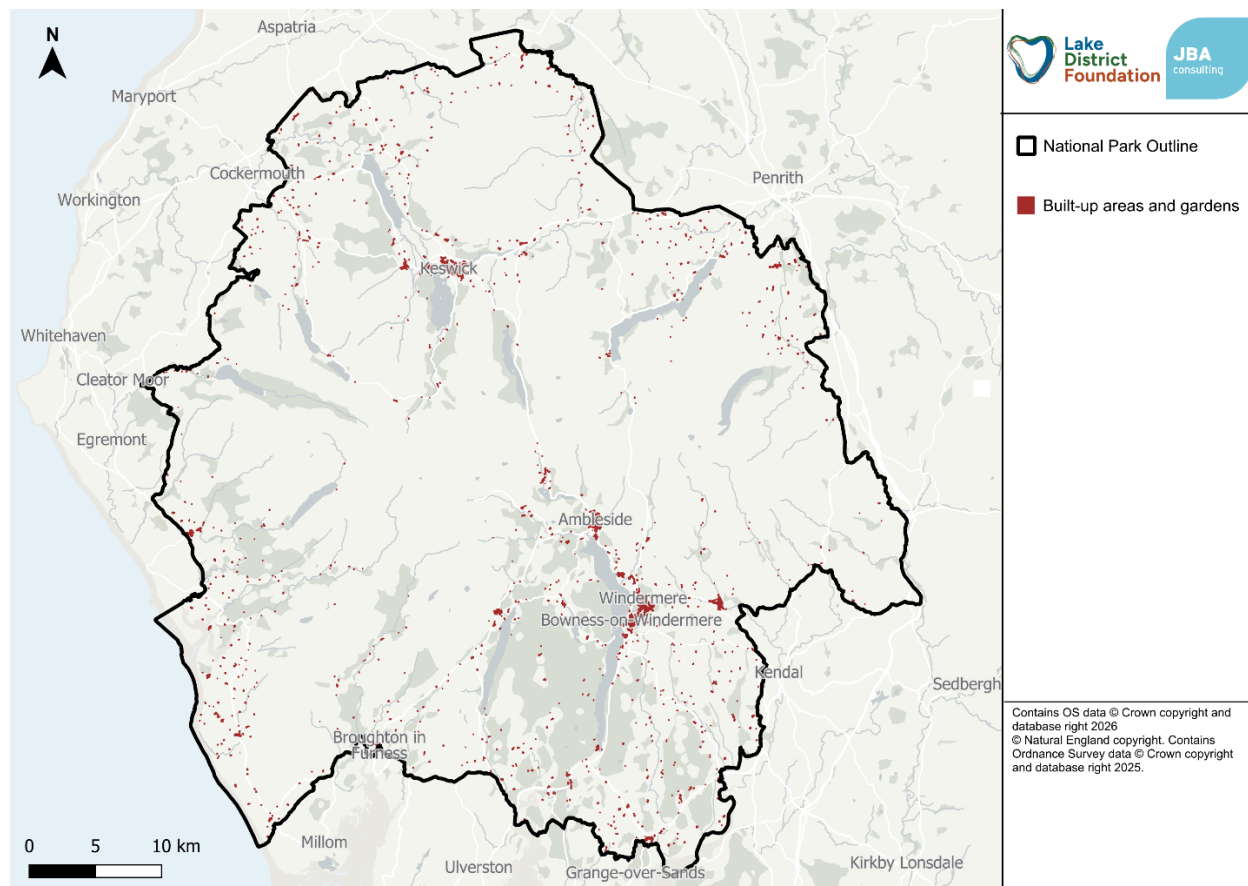


Figure 5 Built-up areas and gardens in the Lake District

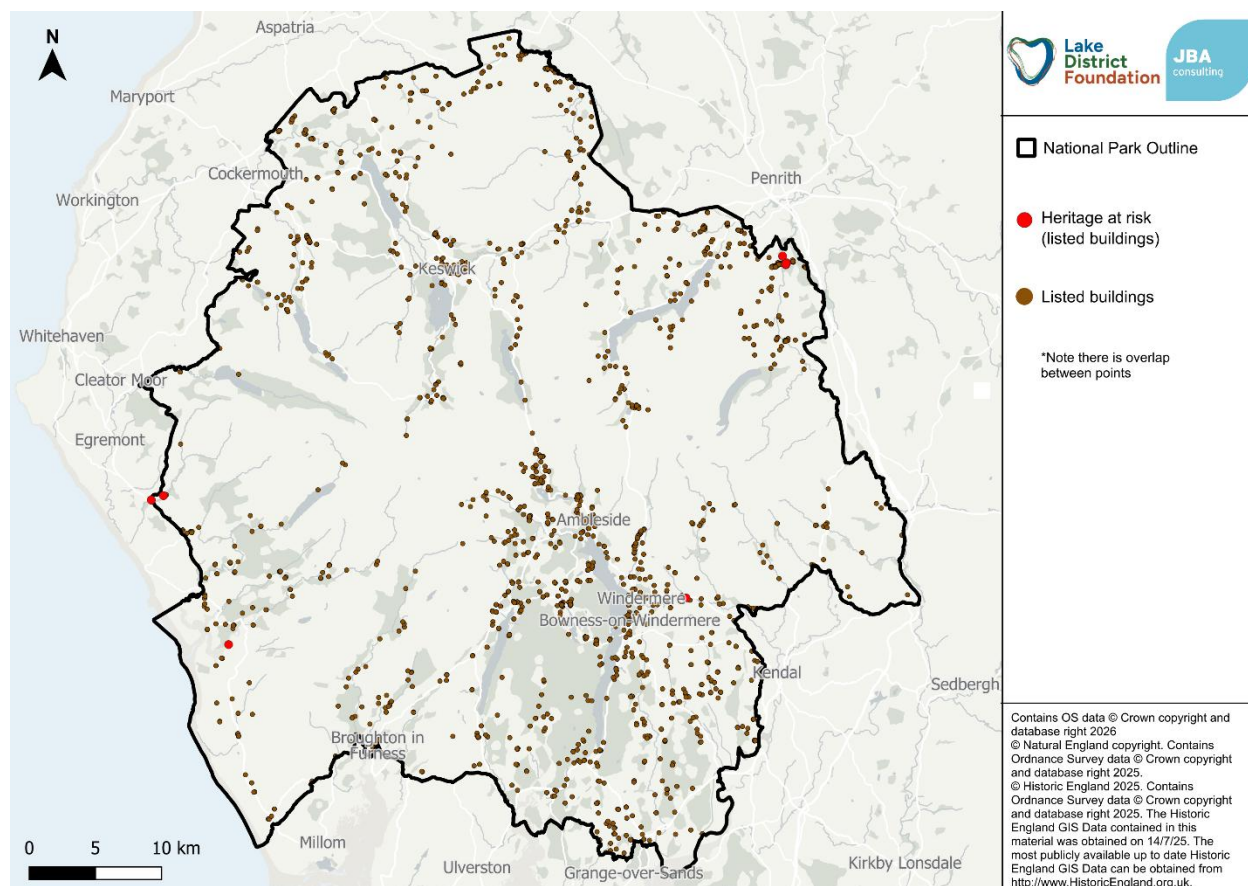


Figure 6 Listed buildings and heritage at risk in the Lake District

Theme 2: A landscape which has inspired artistic and literary movements and generated ideas about landscapes that have had global influence and left their physical mark



Attributes

[Early tourism](#)

[Villas, gardens and formal landscapes](#)

[Sites and collections associated with Picturesque and Romanticism](#)

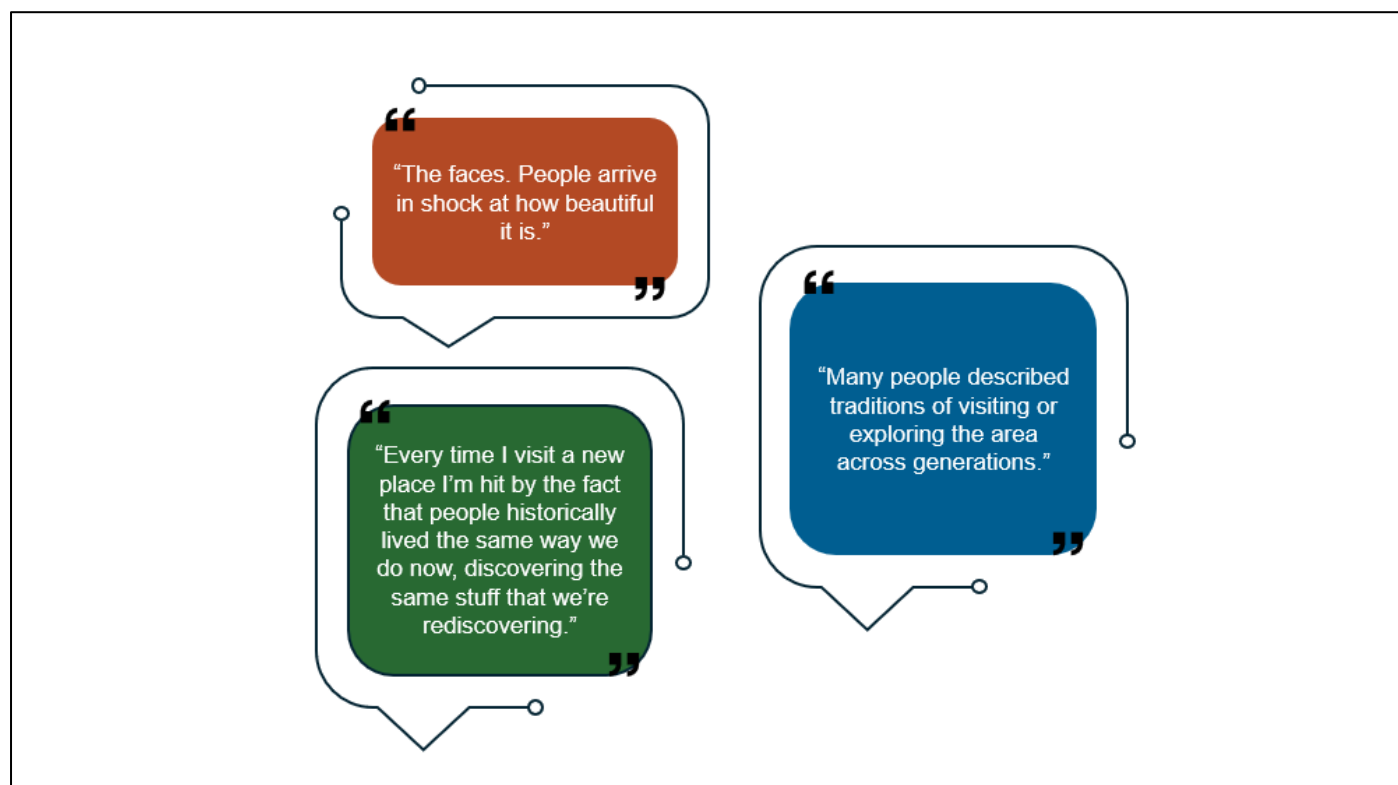
Click on the links above to navigate to the climate risk assessments for each attribute.

Early tourism

- Places and collections associated with early tourism.
- Early tourist infrastructure.
- The location of viewing stations, including structures in very limited cases.
- Other key views that form the image of the Lake District.
- The values, aesthetic ideals and perceptions which led to the creation of early tourism.



Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Woodland and vegetation that frame or form classic viewpoints vulnerable to heat stress, leading to drying and browning. - Paths, viewpoints and fell routes vulnerable to reduced comfort and safety due to heat. - Lakes and tarns vulnerable to warming and algal blooms. - Historic viewing stations and structures vulnerable to thermal deterioration.	- Loss of scenic quality at early tourism viewpoints. - Reduced comfort makes people spend less time at the viewpoint, reducing the quality of the experience. - Declining water clarity diminishes the reflective qualities central to early landscape appreciation. - Deterioration of viewing structures reduces interpretive value.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Fell-side vegetation near classic viewpoints vulnerable to drying and wildfire. - Changes to vegetation communities and species composition as drought-sensitive species are lost. - Woodlands and trees around popular vantage points vulnerable to dieback. - Waterfalls and becks visited by early tourists vulnerable to reduced summer flows.	- Wildfire scars create long-term visual disruption of iconic views. - Loss of characteristic species associated with early tourist experiences of the Lake District. - Drying of woodlands reduces the aesthetic diversity. - Reduced flows diminish the spectacle of waterfalls and cascades celebrated by early visitors.
Warmer winters Fewer frost events Less snow Longer growing season	- Increased vegetation growth obscures viewpoints and sightlines. - Fell-side vegetation vulnerable to expansion of scrub and bracken.	- Blocked or softened views diminish the clarity of landscape composition admired by travellers and artists. - Scrub encroachment obscures views and softens the clarity of glacial valley forms.

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Reduction in winter snow on fells alters seasonal contrasts that were important to early tourism. - Viewing paths, river-edge walks and lakeshore promenades vulnerable to erosion or wash-out. - Sites associated with early visitors (e.g., bridges, landing points, paths) vulnerable to flood damage. - Waterlogged soils change and reduce vegetation around viewpoints.	- Loss of winter scenic character reduces the seasonal variety documented by early guidebooks and sketchers. - Damaged paths limit access to traditional viewpoints central to early tourism. - Flood-damaged infrastructure reduces the ability to follow historic routes used by early travellers. - Excess vegetation growth or reduction affects key views and landscape legibility.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Fell-side viewing points vulnerable to sudden erosion and slope failure. - Historic viewpoints near becks and ravines exposed to undermining. - Bridges, steps and access structures on early tourist routes vulnerable to damage.	- Loss of access disrupts the experience and interpretation of early tourism landscapes. - Erosion reshapes vantage points, altering views. - Damage to small bridges, steps and rails reduces the authenticity and continuity of early tourist paths.

Maps

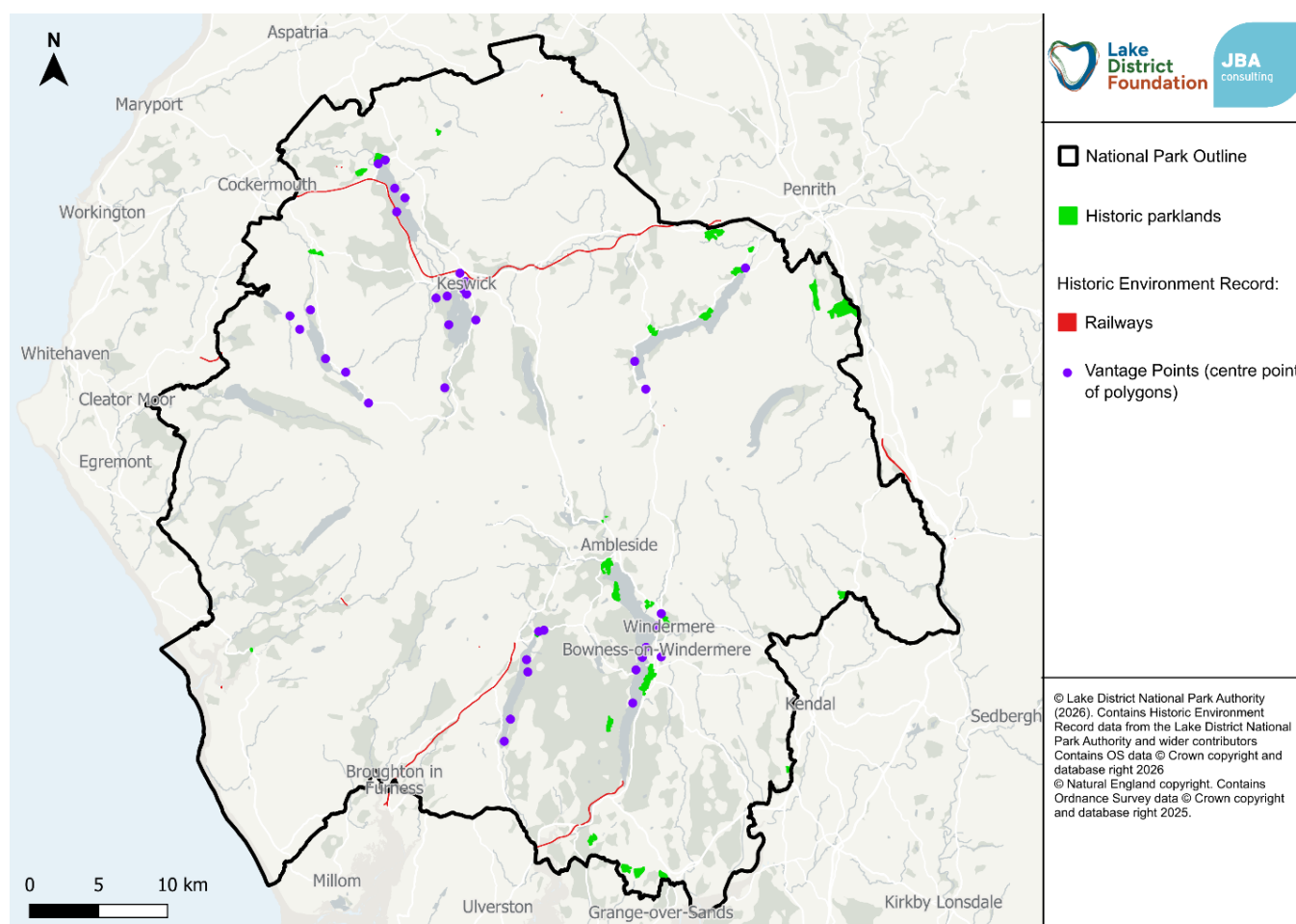


Figure 7 Historic parklands, Railways, and Vantage points in the Lake District

Villas, gardens and formal landscapes

- Villa Landscapes – their buildings, gardens and surrounding designed landscapes.
- The values, aesthetic ideals and perceptions which led to their creation.
- Physical designed landscapes.



Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Ornamental planting, lawns and formal borders vulnerable to heat stress, drying, and pests and diseases. - Shade-dependent and historic planting schemes sensitive to heatwaves. - Villa and garden architecture vulnerable to temperature-driven material expansion. - Garden water features vulnerable to evaporation and algae. - Historic houses vulnerable to overheating, particularly during busy visitor periods.	- Loss of key ornamental plants disrupts designed patterns and aesthetic. - Drought stress alters historic planting patterns and seasonal changes. - Overheating accelerates decay of villa buildings and garden structures. - Loss of water clarity or reduced water volume affects reflective and aesthetic functions. - Reduced comfort when visiting historic houses.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Wooded edges and tree belts around villas more fire-prone. - Ornamental gardens may have species highly vulnerable to drought. - Steep garden terraces or banks vulnerable to drying and erosion.	- Wildfire risk threatens woodland settings that form part of villa garden design. - Shrubs, borders and formal plantings die back, eroding garden patterning and colour, and changes to planting patterns may be required for drought-sensitive species. - Dried, unstable terrace banks affect both aesthetics and structural safety.
Warmer winters Fewer frost events Longer growing season	- Longer growing seasons alter pruning needs, growth rates and seasonal cues of designed planting. - Less frost control increases pest load and disease on ornamental species.	- Loss of winter structure and contrast reduces the designed “year-round interest” of villa gardens. - Increased pests alter viability of traditional species used in planting schemes.
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Valley-floor villas and gardens vulnerable to waterlogging and drainage failure. - Terraces, walls, steps and paths vulnerable to saturation-related erosion. - Historic planting beds prone to rot or root damage. - Traditional buildings more susceptible to issues with damp, rot, and fungus. - Flooding of traditional buildings.	- Waterlogged gardens lose structure and texture, reducing intended visual coherence. - Damage to retaining walls, steps and terraces alters formal garden structure. - Loss of planting form or species disrupts historic layering of villa landscapes. - Damage to villas and traditional buildings affecting both aesthetics and structural safety. - Damage to buildings and the historic fabric.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Steep designed gardens (terraces, slopes) vulnerable to sudden erosion. - Gardens and ornamental planting susceptible to flooding. - Small bridges, steps, statuary and paths susceptible to wash-out. - Garden buildings (summerhouses, gazebos) vulnerable to water damage.	- Loss of paths and steps reduces the intended movement through and interpretation of historic gardens. - Damage to vegetation and loss of waterlogging-intolerant species. - Erosion reshapes character-defining landforms, undermining the composition of designed landscapes. - Damage to ornamental features reduces heritage integrity and authenticity.

Maps

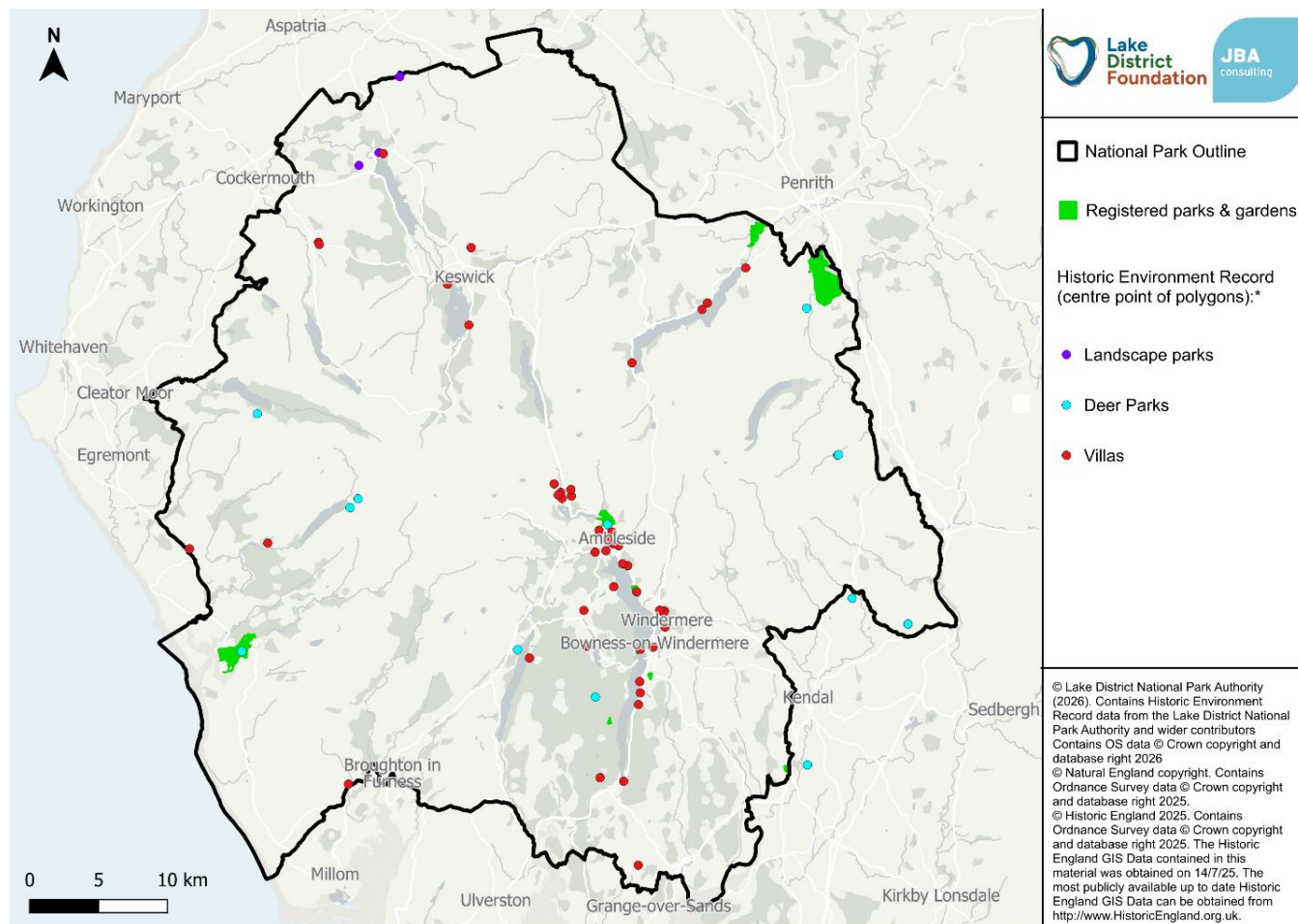


Figure 8 Registered parks and gardens, Landscape parks, Deer parks, and Villas in the Lake District

Sites and collections associated with the Picturesque and Romanticism

- Residences and places associated with significant writers and poets.
- Key literary and artistic associations with Landscape. Surviving landscape which inspired literature and art.
- The value and significance of ideas and writings of writers and poets and artist.
- Perception and enjoyment of sites and collections associated with Picturesque and Romanticism.
- Key associations with the origins of the outdoor movement.
- Buildings linked to early outdoor holiday movement.
- Surviving landscape which inspired early climbing, outdoors recreation and the early outdoor holiday movement.
- The Romantic emphasis on outdoor activity and experience – principally walking.
- The open access to the Lake District Fells and lakes for recreation.



© Lake District National Park Authority

Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Woodland and vegetation that frame or contribute to classic views vulnerable to heat stress - Paths to Romantic and Picturesque viewpoints vulnerable to reduced comfort due to heat. - Lakes and becks vulnerable to warming and loss of clarity. Historic houses, museums and collections vulnerable to overheating. - Traditionally popular outdoor recreation locations (viewpoints, summits, shorelines) vulnerable to increased crowding during heat, affecting tranquillity.	- Changes to the trees and vegetation that frame or contribute to Romantic or Picturesque views alter the scenery. - Reduced comfort at scenic destinations reduces how long people stay and enjoy the view. - Water quality decline weakens sensory and symbolic values. - Heat damage to collections risks loss of literary/artistic heritage. - Increased crowding reduces sense of quiet enjoyment central to Romantic outdoor experience.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Upland and fell-edge landscapes vulnerable to wildfire, affecting scenic ridges and open access fells. - Vegetation at classic viewpoints (e.g., tree groups, shrubs) vulnerable to dieback. - Waterfalls, cascades and becks celebrated in Romantic art vulnerable to reduced flows. - Open access fells and commons exposed degraded ground conditions.	- Wildfire scarring disrupts Romantic landscapes and scenic harmony recorded in paintings and literature. - Dieback of vegetation alters celebrated viewpoints. - Reduced waterflow diminishes spectacle of waterfalls admired by early travellers and poets. - Degraded fell surfaces affect the quality and safety of walking/climbing experiences linked to the origins of the outdoor movement.
Warmer winters Fewer frost events Less snow	Increased scrub and bracken growth obscures iconic Picturesque and Romantic viewpoints.	Loss of clear sightlines reduces appreciation of Picturesque and Romantic landscapes.

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Longer growing season	- Less winter snow on fells reduces seasonal contrasts described in literature and historic accounts. - Historic paths and vantage points increasingly overgrown. - Winter walking routes associated with early outdoor recreation become muddier and less appealing.	- Decreased seasonal variation weakens the emotional and sensory qualities central to Romantic experience. - Overgrown paths limit access to places historically important to early outdoor recreation. - Changing winter character alters traditional outdoor experiences (e.g. crisp fell walks, snowy ridges).
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Riverbank paths, lakeshore walks, and historic viewpoints vulnerable to erosion or flooding. - Access to fell-side viewpoints and early climbing areas disrupted by waterlogging and path degradation. - Literary/artist-associated landscapes (gardens, grounds, small structures) and buildings prone to saturation. - Historic bridges, stepping stones, or access structures at iconic sites vulnerable to damage.	- Erosion restricts access to key viewpoints central to early tourism and Romantic appreciation. - Waterlogging damages the buildings and grounds of literary residences, impacting settings important to Romantic movement. - Flood damage to access structures reduces ability to follow early tourist routes or reach Romantic-era locations. - Degraded paths reduce the quality, safety and accessibility of outdoor experiences linked to the early outdoor movement.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Steep paths to vantage points vulnerable to wash-out. - Fell-side and panoramic viewpoints vulnerable to slope failures. - Small structures associated with early outdoor movement (shelters, steps, footbridges) sensitive to flash flows and floods. - Historic routes used by writers, early climbers, and walking clubs at risk of sudden damage.	- Sudden loss of access impairs the public's ability to experience Picturesque and Romantic landscapes. - Slope failures reshape vantage points, altering the composition of celebrated scenes. - Damage to routes and structures weakens connection to early outdoor recreation heritage. - Reduced route continuity affects walking and climbing traditions associated with the development of outdoor culture in the Lakes.

Maps

No suitable spatial dataset was available at the time of this assessment for this OUV.

Theme 3: A landscape which has been the catalyst for key developments in the national and international protection of landscapes



Attributes

[Landscape conservation](#)

[The ability of people to experience the spirit and feeling of the Lake District](#)

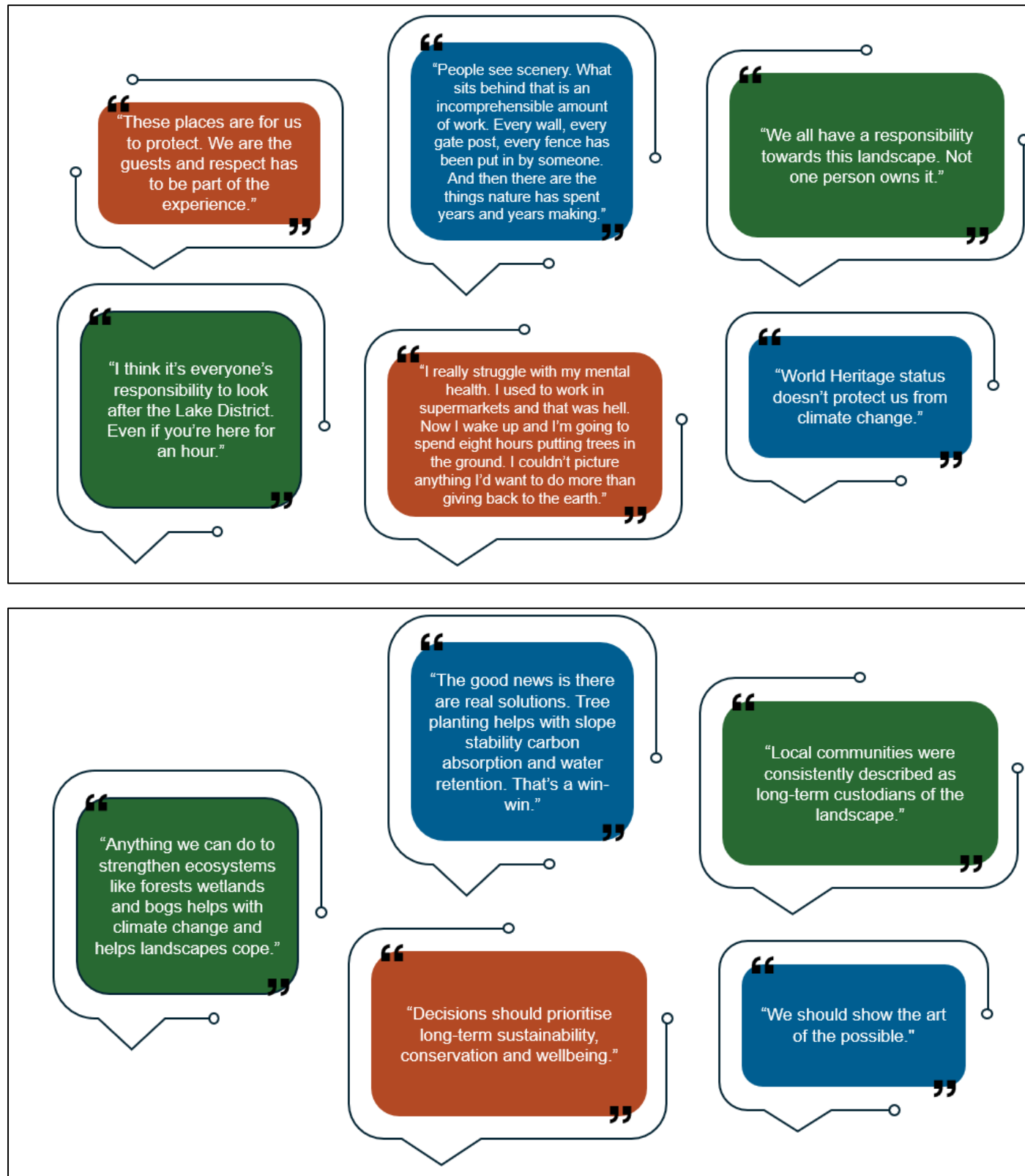
Click on the links above to navigate to the climate risk assessments for each attribute.

Landscape conservation

- Areas of the World Heritage property where historic landscape conservation battles were both won and lost.
- The idea of landscape conservation inspired by the English Lake District landscape and the universal value of scenic and cultural landscape transcending traditional property rights.
- The landscape is protected for its scenic and cultural value and is protected for the Nation.
- The perception that the landscape is protected for its scenic and cultural value and is protected for the Nation by public and state support.
- Properties owned or managed by the National Trust.
- The knowledge and perception that the creation of the National Trust was inspired by the English Lake District.
- Landscapes owned and sympathetically managed to sustain our Outstanding Universal Values by the Partnership and other landscape conservation bodies.
- Farms and land purchased by individuals and public subscription to protect the landscape and our Outstanding Universal Values e.g. traditional farming.
- Organisations and public participating in landscape conservation.
- The perception and enjoyment of an open landscape.



Community quotes



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Protected scenic landscapes or those associated with the conservation movement vulnerable to drying and vegetation decline. - Tree lines, hedgerows and woodland edges on National Trust land and other conservation-driven estates sensitive to heat stress and pests. - Conservation volunteer capacity stretched by heat-related impacts. - Open access land vulnerable to browning, reducing perceived landscape quality.	- Loss of vegetation and scenic quality undermines the symbolic value of conserved landscapes. - Decline in woodlands affects places central to the conservation movement's history. - Reduced visitor experience weakens public support for conservation aims. - Increased maintenance burden challenges long-term stewardship.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Open access land, fells and conservation-owned habitats vulnerable to wildfire. - Degraded landscapes from drought or wildfire affect public appreciation. - Wetland and valley-floor habitats conserved for biodiversity and landscape character vulnerable to severe drying.	- Wildfire scars undermine the qualities the conservation movement seeks to protect. - Diminished public appreciation may reduce subscriptions, charitable giving and volunteering. - Loss of wetland textures or habitats alters cherished scenes, weakening public attachment to protected places.
Warmer winters Fewer frost events Longer growing season	- Increased scrub and bracken growth encroaching on open views and iconic "uncluttered" landscapes. - Faster vegetation growth requiring more intensive maintenance by conservation organisations. - Characteristic species that rely on frost or cold stratification for germination may have reduced germination success.	- Obscured views diminish the sense of an open, accessible landscape at the heart of conservation identity. - Increased maintenance demand places strain on volunteer and conservation bodies. - Limited regeneration of characteristic species results in shifts to vegetation composition and landscape character.
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Conservation-owned valley floors, rights of way and riverside reserves vulnerable to flooding and waterlogging. - Slopes in key scenic valleys vulnerable to landslides. - Historic access infrastructure (bridges, paths, stiles) vulnerable to repeated repair need.	- Flooding reshapes conserved valley-floor landscapes, altering their historical form and character. - Increased costs and labour needs threaten long-term resilience of conservation agencies. - Damage to rights of way reduces public enjoyment and access.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Footpaths, fell routes, bridleways and historic access routes vulnerable to wash-out. - Slopes near iconic viewpoints vulnerable to failure. - Conservation features (drystone walls, hedges) vulnerable to collapse, erosion or landslips.	- Severe erosion limits public access to places representative of the conservation story. - Damage to stone walls and field boundaries undermines landscape character protected "for the nation." - Slope failures change the shape of the land, affecting how the landscape is understood.

Maps

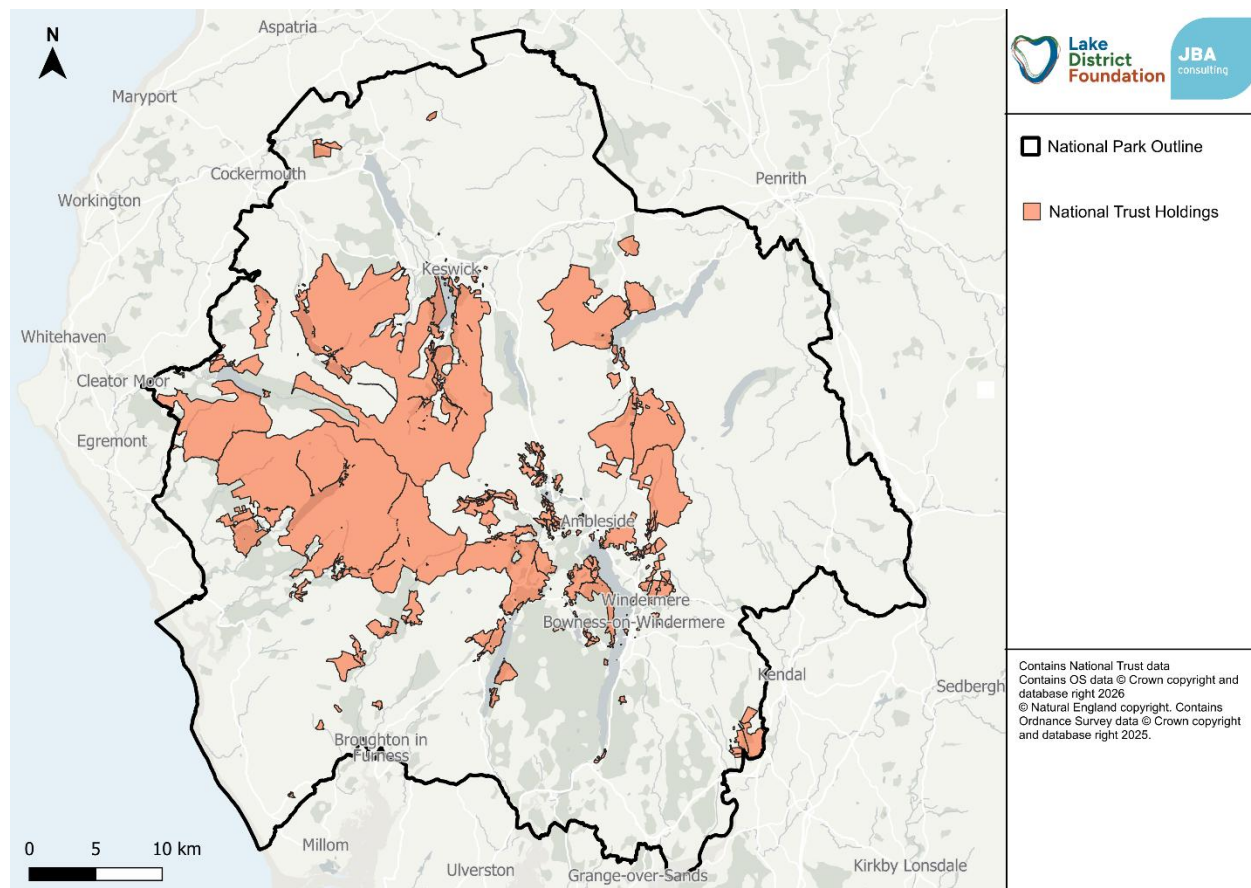


Figure 9 National Trust land holdings in the Lake District

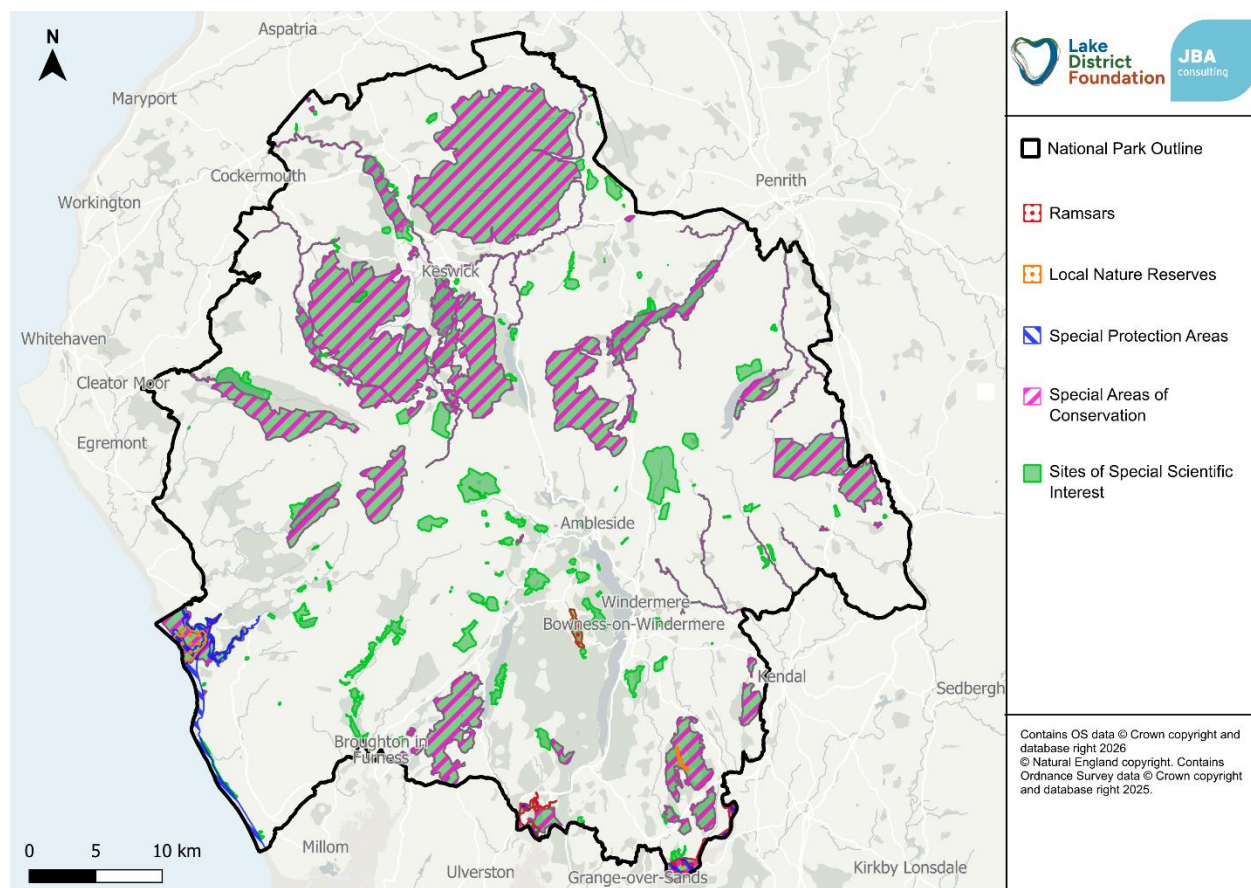


Figure 10 Designated sites in the Lake District

The ability of people to experience the spirit and feeling of the Lake District

- The ability to feel the values, ideas and perceptions of harmonious beauty and other significance derived from the Picturesque and Romantic traditions specific to the English Lake District.
- The value of landscape for restoring the human spirit and wellbeing.
- Opportunities for quiet enjoyment and spiritual refreshment.



Community quotes

“The faces. People arrive in shock at how beautiful it is.”

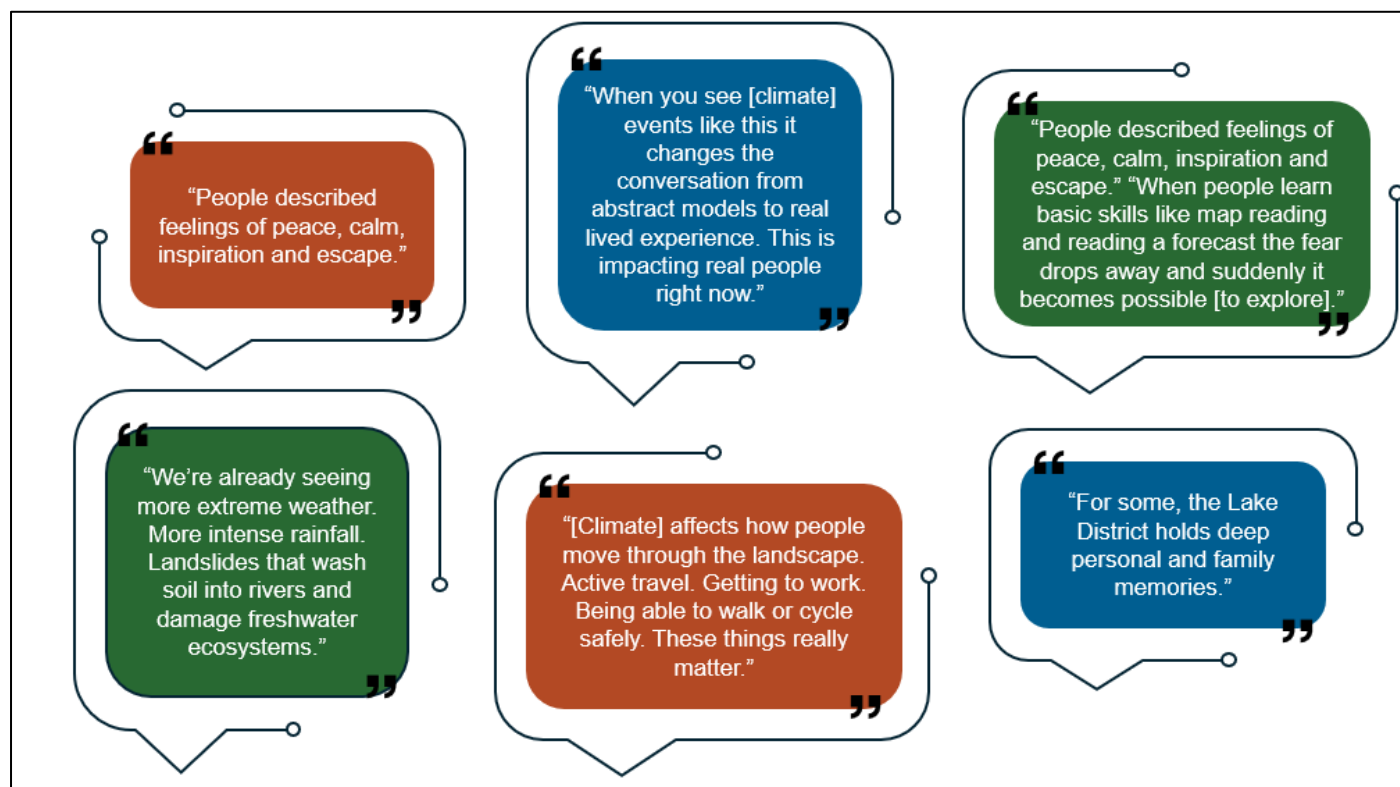
“I don't want people to be perfect. Just willing. Open minded and ready to care for the place.”

“I came to the Lakes with a massive passion for replacing human heritage with nature. Over four years I've learned that we've been here for thousands of years. Stone circles, engravings in rocks next to mines that existed 600 years ago. It's all still there and it's tangible.”

“When people experience a landscape and fall in love with it, they stop seeing it as somewhere to use and start seeing it as something to care for.”

“If the Lake District changed beyond recognition I would be absolutely devastated. It's everything to me.”

“We try to stand up for what we love. And that's what this work is about.”



Climate vulnerability

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Increased annual average temperatures & hotter summers Heatwave Heat stress Higher evapotranspiration Reduced soil moisture Eutrophication & water warming Potential for pests/disease/INNS Reduced pasture/crop productivity	- Vegetation and meadows vulnerable to browning. - Tree cover and shaded areas vulnerable to heat stress. - Lakes and becks vulnerable to warming and loss of clarity. - Loss of culturally significant species that are adapted to cooler conditions. - Visitors less able to access peaceful locations during heat extremes through impacts to transport routes (tarmac melting, rails buckling).	- Reduced vegetation and changing colours reduce the sense of beauty and people’s emotional connection to it. - Loss of shade and vegetation reduces sensory qualities central to tranquillity. - Declining water clarity diminishes reflective and calming landscape elements. - Reduced sense of naturalness and loss of continuity reduces community connection with the landscape. - Reduced time spent in peaceful locations lessens opportunities for quiet enjoyment and spiritual refreshment.
Drier summers Drought Wildfires Reduced soil moisture Reduced run off Habitat loss and degradation	- Fell vegetation, bracken slopes and meadows vulnerable to drying and fire risk. - Wetland edges and tranquil water-side areas vulnerable to drying. - Loss of lush vegetation reduces the sensory “softness” on fell-sides.	- Wildfire scars and smoke odour leave noticeable marks on the landscape, making the landscape feel less peaceful and restorative. - Drying tarns, becks and wetlands diminish calming soundscapes and textures. - Areas are at risk of losing their natural sense of quiet due to a lack of vegetation.
Warmer winters Fewer frost events Longer growing season	- Seasonal cues (snow peaks, frost in valleys) become less frequent. - Increased year-round vegetation growth can obscure cherished views and quiet resting places.	- Loss of winter contrast reduces the sense of seasonal rhythm central to Romantic and Picturesque feeling. - Overgrown viewpoints diminish the clarity and emotional resonance of key landscapes.

Climate hazard & consequences	Attribute vulnerabilities	Likely impacts
Wetter winters Flooding Erosion and landslide Increased run off Soil waterlogging	- Longer growing seasons will require increased vegetation management on paths and access routes. - Lakeshore paths, riverside walks and valley routes prone to flooding, erosion and mud deposition. - Quiet scenic areas vulnerable to flood damage and erosion. - Prolonged wetness impacts access routes.	- Impeded access to viewpoints reducing opportunities for enjoyment of the landscape. - Flooding disrupts access to peaceful, reflective places, reducing opportunities for quiet enjoyment. - Erosion scars reduce visual quality and sense of natural beauty. - Waterlogged routes restrict opportunities for restorative walking.
Higher intensity rainfall events Flash/ surface water flooding Increased run off Erosion and landslide	- Fell paths, valley-side routes and terrace walks vulnerable to wash-out. - Steep viewpoints and ridge routes vulnerable to slope failure. - Soundscape affected by storm impacts and runoff noise.	- Sudden loss of access to elevated or tranquil viewpoints reduces opportunities for emotional and spiritual engagement with landscapes. - Altered soundscapes and storm damage diminish tranquillity and “spirit of place”. - Changed landforms alter experiential qualities central to Romantic interpretations of the landscape.

Maps

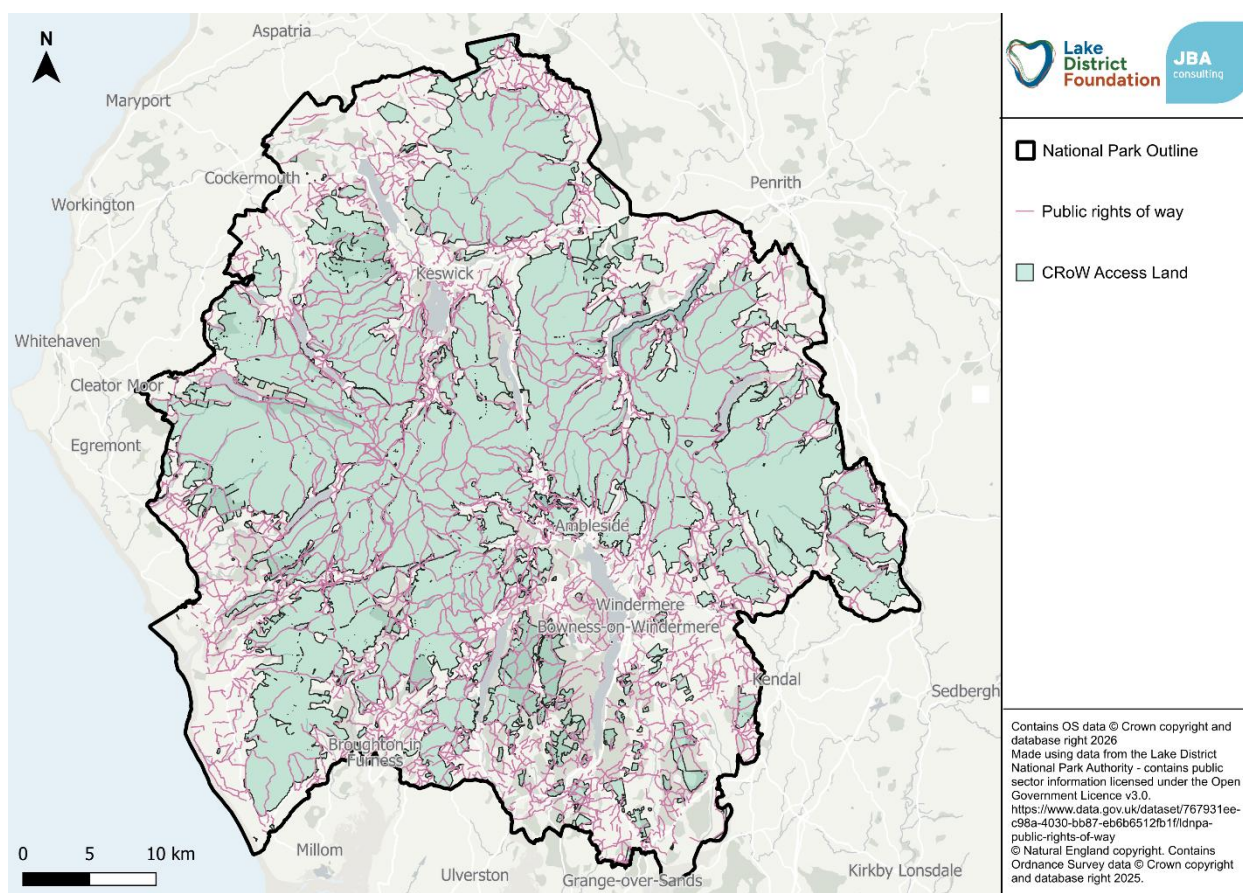


Figure 11 Public Rights of Way (PRoW) and Countryside Rights of Way (CRoW) Access Land in the Lake District

Adaptation actions

In recognition of the emerging priorities, the assessment presents a set of practical, cross-cutting adaptation themes that apply across the world heritage site.



Each theme outlines:

- potential adaptation actions,
- the vulnerabilities or impacts they help address,
- potential heritage conflicts and how these can be mitigated, and
- examples of relevant projects from the Lake District or comparable protected landscapes.

Click on each theme below to go to the relevant section:

[Land management & vegetation resilience](#)

[Water, wetlands & catchment resilience](#)

[Woodland, tree health & historic woodland features](#)

[Animal health & biodiversity](#)

[Access, rights of way & recreational infrastructure](#)

[Built heritage, farmsteads & cultural features](#)

[Views, landscape experience & “spirit of place”](#)

[Community resilience](#)

Land management & vegetation resilience

(Farms, commons, fells, meadows, wood pasture)

Adaptation actions under this theme directly support the Lake District's Outstanding Universal Value by maintaining the agro-pastoral systems and land management practices that underpin its distinctive character and exceptional scenic qualities. Measures to improve soil, vegetation and livestock resilience must balance ecological response to climate change with the continuity of traditional farming patterns that shape the living, working landscape.

Action	Impact addressed	Heritage considerations	Example project(s)
Rotational grazing to retain green mosaics	Vegetation browning; loss of seasonal pattern	Avoid altering heft patterns; minimise temporary fencing on areas of open/common land; consider the impact of grazing cattle vs sheep and the impact it can have on accessibility due to change to ground conditions	National Trust grazing trial "exclosures", Buttermere
Re-wetting, blocking grips, sphagnum plug planting on upland peat soils.	Carbon loss and wildfire risk; peat desiccation and erosion; loss of water storage capacity	Avoid damaging archaeological features; maintain open fell character	Cumbria Wildlife Trust Borrowdale Moss Peatland Restoration
Adaptive grazing management on sensitive habitats	Soil erosion; loss of dwarf-shrub heath; loss of seasonal pattern; wildfire risk	Adaptive grazing must protect fragile hefting systems and the cultural importance of commoning. Any changes to grazing pressure should be developed jointly with commoners and graziers, avoid abrupt shifts, and sustain the historic open fell landscape and traditional management patterns.	Caldbeck Common Enclosures Project
Hay meadow restoration using local provenance seed	Biodiversity loss due to drought	Preserve historic field patterns and drystone walls; retain traditional hay-cut timings where culturally linked	Swindale Beck's floodplain meadow restoration
Bracken management through rolling/cutting	Bracken expansion driven by warmer seasons; wildfire risk	Protect archaeology hidden under bracken; ensure low-impact machinery use	Managing bracken on Lowick Common
Wood pasture restoration (scattered trees, pasture beneath)	Loss of shade; livestock heat stress; reduced habitat connectivity	Retain historic parkland patterns; protect views of farmsteads and field boundaries	Gowbarrow Hall Farm
Farmer engagement/ Farm Clusters/ Land Management Group	Inconsistent land management responses to climate pressures; Habitat fragmentation across farm boundaries; Reduced adaptive capacity on small upland farms	Share best practice and lessons learnt whilst acknowledging, protecting and promoting traditional farming knowledge.	Love Windermere Farmer Engagement Projects

Lake District World Heritage Site | Climate change risk assessment

Action	Impact addressed	Heritage considerations	Example project(s)
Farm-scale soil resilience measures (winter cover crops, contour ploughing)	Soil loss from intense rainfall; soil erosion and desiccation; reduced productivity	Maintain historic field patterns; avoid altering visible ridge-and-furrow; consider crop choices so they don't impact character of landscape.	Rethinking Soil - a vital commodity in Cumbria Thirlmere Resilience Project
Catchment-scale hedgerow and wood-pasture connectivity	Habitat fragmentation; soil erosion; loss of shade	Reinforce historic field boundaries; use native species; retain visibility of drystone walls	Ullswater & Mitterdale Hedgerow and Wood Pasture Habitat Project
INNS removal	INNS expansion under warmer conditions; habitat degradation	Ensure removal protects archaeological features and historic vegetation patterns	Nature Rich Mitterdale (large-scale Rhododendron removal)
Soil carbon monitoring and management on commons	Carbon loss; soil sensitivity to drought; soil erosion	Maintain grazing patterns and hefting; protect open fell character	Kinniside Carbon sequestration

Water, wetlands & catchment resilience

(Rivers, becks, lakeshores, valley floors)

Water and wetland adaptation actions contribute to Outstanding Universal Value by protecting the physical landscape features that define valley form, historic floodplains and lake edges, while supporting ecological and hydrological resilience. Interventions must respond to increasing flood and drought risk in ways that respect historic landform, settlement patterns and long-established relationships between water and land use.

Action	Impact addressed	Heritage considerations	Example project(s)
Floodplain reconnection	Increased peak flows in rivers; habitat loss; summer drought	Avoid altering historic in-bye land important for traditional grazing systems; respect historic drainage systems	Grisedale Beck Restoration Project
River restoration (meander re-instatement, bank regrading)	Peak flow reduction; bank erosion	Consider setting of historic bridges, mills & farmsteads; maintain landscape character	Swindale Beck: a river restored
Riparian tree planting for shading and bank stability	Thermal stress on aquatic ecology; increased erosion	Maintain visibility of historic landscape features along river corridors	Williekeld Sike, Cumbria, planted by Eden Rivers Trust
Lakeshore buffer strip creation (vegetation buffers)	Lakeshore erosion; nutrient loading	Maintain historic lakeshore views; avoid obscuring key viewpoints	Esthwaite Improvement Project
In-channel woody debris placement/leaky dams	Flashiness; habitat simplification	Avoid affecting historic mill sites, bridges and weirs	Reston Scar – Natural Flood Management
Creating multi-benefit wetland mosaics on valley floors and floodplains	Peak flow reduction; biodiversity decline; drought vulnerability	Scrapes must avoid historic field drains, ridge-and-furrow patterns	RSPB Haweswater wetland scrapes
Shoreline stabilisation and lakeside erosion control	Lakeshore erosion; loss of views; water quality decline	Maintain historic open views; use discrete natural materials	Ullswater Way Shoreline Restoration
Flood resilience measures on historic routes	Repeated storm and runoff damage to paths	Maintain traditional track alignment; respect historic uses	Breasthigh Road flood-resilient route improvements

Woodland, tree health & historic woodland features

(Ancient woodland, ancient trees, coppice, wood industry heritage)

Actions within this theme support Outstanding Universal Value by safeguarding historic woodland patterns, veteran trees and wood pasture that form an integral part of the Lake District's cultural landscape. Climate-resilient woodland management must strengthen ecological function while retaining the visual, historic and productive woodland characteristics that contribute to the landscape's identity and sense of place.

Action	Impact addressed	Heritage considerations	Example project(s)
Planting climate-resilient native ancient tree mixes	Decline in species sensitive to drought/disease	Preserve ancient woodland boundaries; avoid planting on historic open fell; respect historic coppice patterns	Ancient Woodland Restoration at Thirlmere
Protecting historic veteran trees (mulching, hydrological protection)	Drought stress; root damage from extreme weather	Retain iconic landscape trees integral to "spirit of place"; avoid alteration of historic parkland design	Wood pasture restoration and creation in the Ullswater and Troutbeck valleys
Selective planting to reduce wildfire risk at woodland edges by creating mosaics of habitats	Increased wildfire incidence	Keep clear sightlines to archaeological and historic features	Mediterranean wildfires
Resilient productive woodland creation	Water quality; flood risk; habitat fragmentation; local industry	Retain iconic landscape trees integral to "spirit of place"; support for strategic timber mill industry	Creating a resilient woodland at Lowther Estate to boost diversity and timber supply
Targeted woodland regeneration to restore "lost" historical woodland types	Decline of ash/oak species; increased drought stress	Follow historic woodland maps; avoid planting on open fell	Skiddaw Forest
Disease-resilient succession planting around heritage assets	Ash dieback and other climate-driven diseases	Preserve historic framing vegetation around villas, mills, bridges	Ennerdale tree disease prevention and control work
Removal of conifer plantation encroachment to restore original woodland character	Drying soils, wildfire risk, habitat loss	Re-establish historic wood pasture and ancient woodland character	Barf Common Peat Restoration (Sitka removal)

Animal health & biodiversity

(Animal health, biodiversity and species change)

Adaptation actions addressing animal health and biodiversity support Outstanding Universal Value by sustaining the viability of traditional and original livestock breeds and species closely associated with the Lake District's pastoral heritage. These measures help ensure that ecological change does not undermine the cultural practices and landscape character created through long-standing relationships between farming, wildlife and land management.

Action	Impact addressed	Heritage considerations	Example project(s)
Parasite/disease adaptation planning (monitoring and investigating ticks, fluke, midges)	Changing parasite ranges under warmer temperatures; Increased tick burdens on sheep, cattle and ponies	Protect the viability of native and traditional breeds central to Lake District pastoral heritage	Research piece: Animal health aspects of adaptation to climate change: beating the heat and parasites in a warming Europe
Beaver feasibility/monitoring (non-release assessment stage only)	Natural flood management potential	Evaluate risks to archaeology and bridges, historic field boundaries, heritage hydrology and farming practices	Ennerdale: Feasibility for Beaver Reintroduction
Upland pollinator adaptation measures and pollinator corridors linking farms and settlements	Decline of upland pollinators due to drought and seasonality shifts	Maintain historic pasture and meadow character	Planting for Pollinators
Aquatic species recovery planning	Warming waters; phenological shifts	Protect species historically characteristic of WHS lakes and uplands	Lake District Charr Recovery & Management Project

Access, rights of way & recreational infrastructure

(Footpaths, viewpoints, bridges, valley routes)

This theme supports Outstanding Universal Value by enabling people to experience the spirit, character and scenic qualities of the Lake District in a safe and responsible way. Adaptation measures must protect historic routes, bridges and viewpoints while ensuring continued access to landscapes that have long shaped public appreciation, enjoyment and stewardship of the area.

Action	Impact addressed	Heritage considerations	Example project(s)
Footpath reinforcement, realignment and trail routes	Erosion from heavier rainfall and flooding	Maintain historic routes whilst encouraging active travel; avoid damaging archaeological features; retain surface types	Fix the Fells - Grasmere walking route
Bridge strengthening / heritage-sensitive retrofit	Increased flood scour and debris impacts	Maintain traditional bridge form; comply with landscape character	Pooley Bridge Replacement Troutbeck Ford Bridge Replacements
Improved signage and visitor flow management	Increased visitor numbers	Make sure signage respects historic landscape aesthetics	Visitor Management measures by Lake District National Park
Accessible alternative routes during extreme weather	Closures due to flood or heat; reduced inclusivity	Support equitable access without intensifying pressure on fragile areas	West Windermere Way

Built heritage, farmsteads & cultural features

(Drystone walls, farm buildings, villas, garden features)

Adaptation actions affecting built heritage contribute to Outstanding Universal Value by maintaining the material evidence of historic land use, settlement and design embedded within the landscape. Climate-resilient repairs and adaptations must preserve traditional materials, forms and spatial relationships that reinforce the Lake District's cultural identity and visual coherence.

Action	Impact addressed	Heritage considerations	Example project(s)
Dry stone wall restoration	Increased rainfall and flood damage	Maintain traditional materials and coursing; local labour and upskilling; retain historic field patterns	Using Dry-Stone Walls as a Multi-purpose Climate Change Adaptation tool (STONEWALLSFORLIFE) Ashby Parish Dry Stone Walls, Westmorland Dales Landscape Partnership
Improved drainage around historic farmsteads	Recurring flooding in settlements and farmyards	Ensure alterations do not obscure historic building form; discreet interventions respecting historic layouts	Keswick Flood Action Group's lengthsman clearing historic drainage networks
Adapting farm buildings for climate-resilient use (ventilation, shading)	Overheating	Retain character and materials	Adapting Traditional Farm Buildings
Protecting and enhancing designed landscapes (pond desilting, tree succession planting)	Drought and storm impacts at historic landscapes and gardens	Maintain original design intent and sightlines	Historic pond restoration and hedges at Foulsyke
Protection of historic roofing materials (slate retention schemes)	Storm damage; heat stress; damp	Preserve local slate character and visual continuity of farmsteads; retain traditional materials; avoid modern visual intrusion	Traditional Farm Buildings Grant Scheme
Stabilisation of mining heritage features (shafts, spoil heaps)	Increased erosion, slope instability	Retain industrial heritage significance; preserve landscape patterns	Coniston Copper Mines

Views, landscape experience & “spirit of place”

(Scenic viewpoints, tranquillity, Romantic associations)

This theme directly supports Outstanding Universal Value by protecting the visual qualities, tranquillity and experiential attributes that have shaped cultural responses to the Lake District over time. Adaptation actions must safeguard key views, dark skies and sensory experiences that allow people to connect with the landscape’s spirit and feeling, even as environmental conditions change.

Action	Impact addressed	Heritage considerations	Example project(s)
Managing scrub and INNS to maintain historic viewpoints; View-corridor restoration tied to community-led planning	Changing vegetation patterns altering iconic views	Protect landscape views central to OUV; Maintain Romantic-era sightlines; avoid over-intervention	Viewing Stations Stanley Ghyll Trees felled to restore views under the Ullswater Valley Plan
Visitor route planning and sound scaping to protect tranquillity	Increased footfall and noise impacting remoteness	Interpret routes consistent with romantic landscape associations	From noctourism to weatherproofing: Year-round strategies for visitor attractions
Carry out park-wide wildfire risk assessment; implement targeted wildfire-risk reduction around key viewpoints and scenic corridors	Drying vegetation and increased wildfire risk leading to visible scarring, degraded views, and loss of tranquillity	Maintain the natural appearance and cultural character of open fell landscapes; ensure any vegetation management or fire-break creation is subtle, proportionate, and visually sensitive; avoid intrusive engineering; work collaboratively with land managers and commoners so measures support both heritage values and traditional land use	Peak District Wildfire Risk Assessment
Seasonal visitor experience planning for heatwaves	Crowding, noise, loss of tranquillity during hot summers	Preserve sensory qualities inherent in Picturesque traditions and enjoyment of visits to heritage sites and properties	Research from University of Exeter & National Trust

Community resilience

(The communities and local networks that call the Lake District home or their place of work)

Community-focused adaptation actions reinforce Outstanding Universal Value by recognising local people as long-term custodians of the landscape. Supporting heritage skills, local knowledge and community preparedness strengthens the social systems that enable the Lake District to adapt to climate change while retaining its distinctive cultural and landscape character

Action	Impact addressed	Heritage considerations	Example project(s)
Community flood groups & training	Increased flood risk	Physical flood risks to heritage assets	CiFR Community Flood Resilience Fund Keswick Flood Action Group
Support for heritage-informed farm diversification	Economic vulnerability	Appreciation for heritage and archaeology	Nibthwaite Grange Farm
Local emergency plans incorporating heritage assets	Heatwaves, storms affecting vulnerable sites	Physical flood risks to heritage assets	Example not identified.
Youth climate-heritage training for long-term stewardship (drystone walling, woodland management, landscape training)	Loss of traditional skills; community capacity gaps	Maintaining continuity of cultural heritage practices	Heritage skills Dry Stone Walling Association Leaders' Landscape Training Green Place Project (youth training in nature & heritage)
Community-led landscape care and monitoring	Early warning for flooding, drought, path damage & erosion	Integrate traditional knowledge and place identity	Fell Care Days Landscape Monitoring Volunteers

Useful guidance:

Managing heritage conflicts/risks

UNESCO World Heritage Conservation Guidance

List of factors affecting the properties: <https://whc.unesco.org/en/factors/>

Updating of the Policy Document on climate action for World Heritage:
<https://whc.unesco.org/archive/2023/whc23-24ga-INF8-en.pdf>

UKCCRA3

Chapter 3: Natural environment and Assets: <https://www.ukclimaterisk.org/publications/technical-report-ccra3-ia/chapter-3/>

Chapter 4: Infrastructure: <https://www.ukclimaterisk.org/publications/technical-report-ccra3-ia/chapter-4/>

Chapter 5: Health, Communities and the Built Environment:
<https://www.ukclimaterisk.org/publications/technical-report-ccra3-ia/chapter-5/>

UKCCRA4

Chapter 3: Built environment:
<https://weather.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/climate-change/ccra4-ia-tr---built-environment.pdf>

Chapter 8: Land Food & Nature:
<https://weather.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/climate-change/ccra4-ia-tr---land-food-and-nature-1.pdf>

Historic England Guidance & Research

Climate change adaptation report (2022):
<https://historicengland.org.uk/research/results/reports/8614/ClimateChangeAdaptationReport>

Assessment of Heritage at Risk from Environmental Threat:
<https://historicengland.org.uk/research/results/reports/6943/AssessmentofHeritageatRiskfromEnvironmentalThreat>

Mapping Climate-Related Hazards to Historic Sites:
<https://historicengland.org.uk/research/results/reports/8678/MappingClimate-RelatedHazardstoHistoricSites>

Approaches to Heritage Climate Change Risk Assessment: an integrative literature review:
<https://historicengland.org.uk/research/results/reports/8878/ApproachestoHeritageClimateChangeRiskAssessmentanintegrativeliteraturereview>

Researching Heritage, Climate Change and Environment:
<https://historicengland.org.uk/research/current/discover-and-understand/heritage-climate-change-environment/>

The historic landscape: Assessing opportunity for environmental change. Using assessment of sensitivity and capacity of HLC types to support opportunity modelling in relation to various flood

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management and natural capital change scenarios:

<https://historicengland.org.uk/research/results/reports/8806/TheHistoricLandscapeAssessingOpportunityforChange>

Identification of Climate Hazard and Climate Change Adaptation Resources:

<https://historicengland.org.uk/research/results/reports/16-2024?q=16%2F2024&searchType=research+report>

Workflows and Hazard Data for Climate Change Risk Assessment of Heritage Assets:

<https://historicengland.org.uk/research/results/reports/32-2025>

National Trust Adaptation Guidance

Guidance for the owners and managers of historic and beautiful places: <https://www.into.org/new-national-trust-climate-change-adaptation-guidance/>