

Lake District National Park Climate Change Adaptation Report – 2nd update – December 2015

This template is based on the guidance contained in Climate Change Adaptation Reporting Power – How to Report your Progress in Planning for Climate Change (Defra, December 2013). It is adapted for use by National Park Authorities whereby the adaptation reporting relates largely to effects on the National Parks themselves rather than effects on the National Park Authorities. It is envisaged that explanations / examples would be provided when answering each question. The intention is that the update report would be read alongside the original adaptation report so that the information in the original report does not need to be repeated.

Introduction – Lake District National Park Context

Adaptation to the risks posed by climate change is a key area of activity for the Lake District National Park Authority and the Lake District National Park Partnership. This has been brought home at the time of preparing this report by the December 2015 flood events in the National Park and Cumbria. These events have increased the awareness of the need to adapt to extreme weather events that are predicted to become more frequent and more extreme with climate change. We would welcome further support from Defra to continue to improve the contribution the Lake District National Park can make to lowering flood risks to Cumbrian communities.

We may decide to carry out a further review of our climate change risk assessment and adaptation actions in the near future in the light of the recent flood events. We anticipate that an event such as this will lead us and the National Park Partnership to develop our adaptation approach and priorities further.

General questions

1. How has the adaptation reporting influenced projects / actions within the National Park?

Adaptation reporting has enabled the National Park Authority to work through the risk assessment process helping us to think broadly about the risks and opportunities of climate change across all aspects of the National Park's environment, communities and economy. This has highlighted some particular areas of higher risk. It has also enabled us to audit how current, planned and potential actions are contributing to climate change adaptation. This awareness has helped to shape the new Management Plan for the Lake District and the design and prioritisation of projects and actions led by the National Park Authority and other partners.

2. How has the adaptation reporting influenced the way the National Park Authority works?

The awareness developed during the first adaptation reporting process has informed the National Park Authority's Business Plan and business strategies and the influencing role that we have with partners in Cumbria and more widely. For instance how we manage the risks and opportunities for our property and people, and influencing the Cumbria Local Enterprise Partnership's Strategic Economic Plan to recognise and address climate change adaptation.

3. How is adapting to climate change being addressed within the National Park Management Plan?

The National Park Management Plan is written by the Lake District National Park Partnership, the partnership of 25 organisations with active influence in the Lake District across private, public, and third sector interests and across environmental, community and economic themes. Climate Change adaptation is embedded throughout the Partnership's Plan, particularly in the risks, strategies and actions. The Partnership's Plan identifies climate change as one of the key risks facing the Lake District National Park. The risk of more frequent and severe flooding is identified in particular. Climate change adaptation has been embedded into the plan across all four themes of the Vision: Spectacular landscape, wildlife and cultural heritage; prosperous economy; world class visitor experience; and vibrant communities. All of the 34 strategies in the Plan directly or indirectly will make a positive impact in reducing the Lake District's contribution to global climate change or to assist in adapting to the effects of climate change. The Partnership has identified 8 areas of "breakthrough" actions, where the partners need to work collectively to make progress on a particular priority area. Many of these will have a direct positive effect on the adaptation and resilience of the Lake District to the effects of climate change. The Partnership's Plan also contains an audit of activity that partners are delivering in the National Park, many of which also help resilience and adaptation in the National Park. The relevant breakthrough actions and key examples of partners' other activity are included in the Actions Table below.

4. Has understanding and analysis of climate risks developed / advanced in any way since the first round of reporting? Has further evidence or research become available? Has this helped to address uncertainties?

Since the first adaptation report in 2012 many of the statutory and strategic documents steering activity in the National Park have been renewed. Key examples of these strategies and plans are listed in the New Actions table below. These recent documents have been able to take account of the most up-to-date climate change projections, risk assessments and understanding of adaptation measures.

A number of UK records were broken leading up to the December 2015 floods, including the UK record for rainfall in a 24 hour period of 341mm at Honister in the Lake District, breaking the previous record from 2009 of 316mm at Seathwaite, also in the Lake District. This experience may well lead us to considering greater extremes than anticipated in our risk assessments and planning adaptation measures. The lessons learned from 2009 floods are now informing the recovery programme for the December 2015 Cumbria floods.

5. In light of question 4, are there any areas of the risk assessment that have been further developed (either within the assessment itself or through other areas of work)?

We have not re-run the full risk assessment for this report. We may choose to re-run the risk assessment with partners in the near future in the light of the experience of the December 2015 floods.

6. To what extent have any of the risks and opportunities identified in the adaptation report become apparent?

The most immediate risks that have become apparent are those of the impact of extreme weather events, especially periods of intense rainfall leading to flooding, as in December 2015. We have also experienced extended periods of dry weather in recent years and storm events with associated high winds.

7. What were / are the main barriers / challenges to implementing adaptation actions and how are these being addressed? Were these barriers / challenges expected?

Some of the main challenges to implementing adaptation actions are coordinating, prioritising, and resourcing actions between a large number of partner organisations. The Lake District National Park Partnership is becoming an increasingly effective mechanism for overcoming these challenges. The new Partnership's Plan is evidence of this. Some adaptation actions are challenging to wider communities. For example potential adaptation actions in the landscape for flood alleviation: these may be challenging to farmers in terms of farmers traditional land use and management systems. The National Park Partnership is working at ways of working with farmers and farmer groups to work through these options and implications to try to achieve win:win solutions.

8. Has any action been taken to exploit opportunities?

We do not have specific examples of action to exploit opportunities listed in the first adaptation report in 2012. However increasing flood resilience in Cumbrian communities, infrastructure and landscape are high on the agenda of the Cumbria flood recovery programme. We are optimistic that the recovery programme and the legacy of the 2015 floods will result in a more flood resilient Cumbria.

9. How is progress towards adapting to climate change being monitored?

We produced a first update in November 2014 following our 2012 Climate Change Adaptation report. This update is a further monitoring stage on progress. The National Park Partnership has a monitoring framework for the Partnership's Plan. Progress in delivery of the breakthrough actions is monitored and reported quarterly by the Partnership with lead partners identified for each action. Individual projects have their own monitoring and reporting processes.

Review of Actions

The table below is based on the table in the Defra guidance but has been adapted to better relate to the focus of the National Park reports whereby actions relate largely to projects in the National Park rather than organisational change.

Summary of actions (as set out in first round report)	Timescale (where specified)	Progress	Outcomes / benefits	Future action
Community Resilience planning – e.g. Keswick Flood Action Group	Ongoing	Action with Communities in Cumbria is promoting Community Resilience Planning through events, workshops and mailings to community groups and Parish Councils. And through a Toolkit available through www.cumbriaaction.org.uk . The District Councils also support and facilitate community-led resilience planning.	Communities that are resilient to impacts of extreme weather events	Continue to support communities.
Delivery of Agri-environment schemes	2015 onwards	<p>Natural England is leading on implementation of existing Environmental Stewardship Schemes and new Countryside Stewardship schemes. Forestry Commission is leading on implementation of woodland management and woodland creation.</p> <p>Adaptation to climate change is an overarching priority of the new Countryside Stewardship and its consideration has been built into the target framework that will inform delivery of the scheme.</p> <p>Countryside Stewardship identifies flood resilience issues in its national targeting framework and will encourage group applications that aim to mitigate flood risk through land management (for example scrub and woodland protection and establishment).</p>	Habitats and landscapes more resilient to climate change and contributing to mitigating the effects of climate change including flood alleviation	Implement schemes across the National Park. Environmental Stewardship Scheme agreements will expire between 2016 and 2024 and Countryside Stewardship scheme agreements will expire between 2020 and 2030.

		Natural England will also advocate flood risk mitigation methods such as soft engineering, river restoration and reconnection with floodplains where appropriate.		
Cumbria Peat Partnership – Partnership’s Plan breakthrough action 5a	2014 onwards	6 peatland restoration sites are being surveyed and restored, including 2 pilot sites for the National Peatland Code. Restoration on four sites will be completed by 2018.	More resilient peatlands contributing to carbon sequestration and flood alleviation. Opportunities for developing new models for investment in peatland restoration and management.	Complete pilot of 2 Peatland Code Restoration sites and 2 other sites by April 2018.
Cumbria Wildfire Group	ongoing	Cumbria Wildfire Group assists others to create fire plans for certain vulnerable sites, procure fire-fighting equipment and train partner staff.	Reduce risk of wildfires to people, businesses and environment	Further public awareness raising, training and fire plans for private landowners
Cumbria Freshwater Invasive Non-Native Species Initiative	ongoing	The Initiative is a collaborative project currently funded by the Environment Agency, Natural England and DEFRA. It is a pilot for a county-wide, multi-catchment project for freshwater and riparian invasive non-native species (INNS). The Initiative’s vision is to achieve a sustainable county-wide management framework that will prevent the introduction of, or detect, control and/or eradicate specified INNS throughout Cumbria. The CFINNS Initiative is aiming to promote awareness and management of Freshwater INNS issues from promoting biosecurity to training volunteers and coordinating removal of certain species.	Increase the resilience of freshwater ecosystems to increased threat of invasive species and climate change	Continue with delivery of its action plan.

Action for vulnerable species	ongoing	Carry out measures that improve the resilience of arctic alpine plant species and montane heath on the high fells and arctic charr and vendace in the lakes.	Improve viability of vulnerable species	Continue with interventions
Pearls in Peril project	2012-2016	EU LIFE+ funded project restoring habitat on the river Ehen to enable freshwater pearl mussel population to flourish.	Improve viability of vulnerable species	Complete habitat restoration actions by September 2016 and plan for post-project.
Programmes of conservation by Lake District Archaeology Volunteers Service, in partnership with English Heritage and the National Trust, to remove Scheduled Monuments and Listed Buildings from high risk status.	ongoing	The number of sites on English Heritage's Heritage at Risk Register has reduced from 59 sites in 2014 to 47 sites in 2015.	Conservation of our historic environment and increasing its resilience to the likely impacts of climate change	Continue to implement the programme
Fix the Fells	Ongoing	Since 2011 Fix the Fells has focussed on maintaining the existing fell path network and surveying paths for the next phase of restoration.	Increased resilience of the upland environment and access routes to the effects of climate change.	A further 120 paths that the project plans to work on over the next 10 years costing approximately £5 million.
GoLakes Travel Programme	2012-2015	A £6.9 million initiative which aimed to generate a step-change in how visitors travel to and around the central and south eastern Lake District, including integrated high quality cycle routes, a network of jetties for lake services, buses and boats that carry bikes, improved train station facilities, electric car hire and charging points.		Bidding for future funding for improving sustainable transport infrastructure.

		The infrastructure aspects of this work have been built with climate resilience in mind. For example, where possible floating jetties have been installed to be useable in a wider range of lake levels.		
Optimising Connectivity – Lake use developments	2015 onwards	Improving lake use infrastructure for a greater range of water levels, for instance through construction of floating jetties.	Reducing the impact of high and low lake levels on visitor experience and the tourism economy.	Continue to develop and implement appropriate improvements
Recovery of LDNPA operational property following the December 2015 floods incorporating adaptive measures where possible	December 2015 onwards		Increased resilience of LDNPA properties to future flood events	
LDNPA monitoring and review of wildfire risk to moorland and woodland properties.	ongoing		Reducing risk of wildfire to LDNPA moorland and woodland properties	

New Actions

The table below focuses on new actions identified since the publication of the adaptation report which have either been implemented or are planned.

Summary of action	Timescale	Reason for action	Progress	Outcomes / benefits	Future action
Cumbria Flood 2015 Recovery including increased resilience to future high rainfall and flood events	December 2015 onwards	Significant flood event on Rivers Derwent, Eden, Lune, Kent and Leven and Winster catchments	At time of writing the National Park and Cumbria are still in the emergency recovery period. The LDNPA and other partners are working together on the Cumbria Flood Recovery Group.	Cumbria will be more resilient to future high rainfall and flood events, reducing risks, damage and costs to people, businesses and the environment.	A Cumbria Flood Partnership will be established bringing together the Environment Agency, local communities, local authorities and other stakeholders to improve Cumbria's future flood resilience.
National Park Management Plan 2015-2020	2015-2020	5-yearly review of the Management Plan for the Lake District National Park	The Partnership's Plan – The Management Plan for the English Lake District 2015-2020 was endorsed by the Lake District National Park Partnership in May 2015 and adopted by the Lake District National Park Authority in December 2015	Climate change is embedded throughout the Plan, in particular in the risks, strategies and actions.	Implement the strategies through the action plan and the partners' and others' activities in the National Park.
Local Plan Review (The Development Plan)	2015-2017	5-yearly review as required by national good practice.	Started in November 2015 with scoping of issues and process.	A reviewed Local Plan in 2018 which will have taken into account developments in climate change mitigation and adaptation knowledge since the Local Plan 2010.	Complete review by 2017.

<p>Delivery of the North West River Basin Management Plan and Solway Tweed River Basin Management Plans</p>	<p>2015-2021</p>		<p>Led by the Environment Agency progress has been made in the objectives for the water environment set out in the 2009 River Basin Management Plans. The EA has led the update process and the updated plans refresh the objectives and issues and action plans for the period from 2015 to 2021.</p> <p>The Lake District Still Waters Partnership has developed the Lakes Score Card to inform the prioritisation of actions on water quality in the lakes.</p>	<p>Improving the water quality and the condition of the water environment improving it's resilience to climate change.</p>	<p>Implement the 2015-2021 action plan using the catchment partnership approach led by EA and the Rivers Trusts. Measures are proposed to deal with significant water management issues such as diffuse rural pollution, waste water pollution, physical modification, pollution from mines, changes in natural water levels/flows and invasive non-native species. The Lake District National Park forms an important part of the NW River Basin District and is identified as a Priority Place for the EA within the Cumbria and Lancashire Area.</p>
<p>Implementation of the North West Flood Risk Management Plan (Draft October 2014)</p>	<p>2015-2021</p>		<p>The consultation stage on the draft North West Flood Risk Management Plan finished in early 2015. The Final Plan is due to be published in December 2015.</p>	<p>Reducing risk posed by flooding to people and property.</p>	<p>The Environment Agency will lead on implementing many flood alleviation schemes and appropriate catchment scale measures to reduce flood risk for our communities within the LDNP, as identified in the NW Flood Risk Management Plan. Delivery of these schemes</p>

					will be via a partnership approach wherever practical.
United Utilities' Water Resources Management Plan	2015-2040		The final version of the Plan was published in March 2015 following an Examination in Public.	Balancing the demand for water resources with future uncertainty and climate change, protecting the water environment and protecting landscape and amenity	United Utilities will lead the implementation of its strategy for water resources and demand management. Water supply to West Cumbria is a particular issue affecting the National Park
United Utilities Final Drought Plan	2014 onwards				Maintain drought plans to manage the extremes of water levels. The plans are fully reviewed and publicly consulted on every 5 years, unless there is a material change in circumstances warranting an earlier review. The last review was the 2014 Final Drought Plan that is published on the UU website.
North West England and North Wales Shoreline Management Plan SMP2	2010 onwards		Delivery of actions in the SMP2 Action Plan. Need evidence of delivery.	Strategic management of coast in response to impacts of climate change and other issues	Delivery of actions in the SMP2 Action Plan and review of SMP2
Influencing investment of UK Treasury	2015-2020	Opportunity to influence hundreds of millions of pounds	The Lake District National Park Partnership has influenced the Cumbria LEP's Strategic Economic	A more resilient county across its environment,	Encourage and submit applications that deliver against the LEP's strategic

and European funding through the Cumbria Local Enterprise Partnership – Partnership Plan breakthrough action 8b		of investment into Cumbria.	Plan and its European funding Plan to include investment in the rural economy and environment that will contribute to climate change resilience.	communities and economy	plans and improve Cumbria's climate change resilience.
Improvement of Natura 2000 sites	2015 onwards	Improvement of Natura 2000 sites	Natural England will work with land managers, partners and stakeholders to deliver actions from Site Improvement Plans (SIPs) for each Natura 2000 (SAC and SPA) site in England as part of the Improvement Programme for England's Natura 2000 Sites (IPENS).	Improvement of Natura 2000 sites	The SIPs will direct future action on the sites.
Improving the National Park's biodiversity evidence base – Partnership's Plan breakthrough action 3b	2015-2016	The need for accurate, up-to-date, coherent data on the extent, condition, and management of priority habitats	The Partnership has agreed to pilot this action in the Rusland Horizons HLF project. The LDNPA will be the accountable body. We are awaiting confirmation from HLF of the funding decision.	Improved knowledge of priority habitats on which to base land management decisions affecting future resilience of habitats and landscapes.	Review the pilot project and decide on roll-out to other parts of the National Park.
Ecosystem Accounting – Partnership Plan breakthrough action 5a	2014 onwards	Identifying and valuing ecosystem assets and services in the National Park	The Lake District has been one of 4 pilot protected areas in England to participate in the Defra funded pilot project. This has produced asset and flow accounts and valuations for 15 ecosystem services based on 6 habitat types.	Understand the range and value of ecosystem assets and services in the National Park.	Decide on next steps for ecosystem accounting. Climate change adaptation issues will be an important consideration in deciding next steps. Flood alleviation was one of the ecosystem services that

					was too complex to fully explore within the scope of this pilot project, but is a significant issue in the National Park.
Establish an action plan for exploring new markets using results from the RSPB Payments for ecosystems services (PES) report; carbon brokering pilot findings and the Cumbria Connections (Cumbria Farmer Network led) work. – Partnership Plan breakthrough action 5a	By March 2016	To focus the Lake District National Park Partnership future work to develop innovative ways to invest in the management of the National Park's landscape	The work to establish the Action Plan has been started in November 2015 and will be completed in March 2016.	Improved resilience of the National Park's habitats and landscapes	Action will be determined in Action Plan.
Sustainable Land Management Tool project – Partnership Plan breakthrough action 1a and	First phase of project: 2015-2016	To develop a GIS based land management decision support tool that takes account of land function and capability	The National Trust is leading this project with partner support. The James Hutton Institute is carrying out the GIS tool development for phase 1 of the project.	Better evidence of land functions including climate change adaptation functions to support land management decisions.	In 2016 the National Trust will start to use the tool on its properties. Other partners will need to decide on next steps across the National Park outside of National Trust properties.

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Landscape Change Monitoring Framework – Partnership Plan breakthrough action 1c	2016	The Partnership needs to develop its monitoring framework for landscape change	Friends of the Lake District are leading a group of partners to develop a landscape monitoring framework for the National Park based on the Lake District Landscape Character Assessment and National Character Areas.	Monitor the impacts of climate change and help to inform adaptation strategies and measures.	Complete in 2016
North West Tree Health Group	Established 2014	To coordinate stakeholder information and action on tree health issues in the North West	The group has met a number of times and is used as a communication network to respond to and manage current tree health threats to ash, juniper and larch.	Manage impacts of tree health threats and increase tree and woodland resilience	Future actions will be determined by Tree Health Group
River re-naturalisation	ongoing	Improve the sustainability of modified river channels, reducing impacts of flood events on neighbouring and downstream farmland and properties.	Whit Beck Diversion Project – West Cumbria rivers Trust - The project has restored a 350m section of heavily modified raised river channel back to a more natural self-sustainable course. The new channel is 1200m long. It has improved flood plain connectivity, boosted wildlife, improved channel morphology (shape), is natural and has significantly expanded the area and diversity of habitat. This has improved the spawning opportunities for the various fish species and increased wildlife benefits.	Improving the resilience of the National Park's river systems and reducing negative impacts of low flows and flood events.	Monitor the effects of the Whit Beck Diversion project. Catchment Partnerships will seek other opportunities to pilot these types of projects.
Lyth Valley Water Level Management	ongoing	Establishing a long term sustainable approach to water management in the Lyth Valley	Proposals for a new Water Level Management Board are being developed by stakeholders.	A sustainable approach to water management in the Lyth Valley.	Development work to continue in 2016.

University research	2015-2018	Improve understanding of National Park climate change risks and adaptation options	Durham University Department of Geography PhD research into upland river management and sustainability under a changing environment. The aim of this research is to develop a robust research methodology that provides a regional geomorphological assessment of patterns of river erosion and sedimentation.	Appropriate targeted management strategies can be implemented to address current issues and mitigate against future flood risks.	Explore other opportunities for research to improve understanding of climate change impacts and adaptive measures.
Coastal Access Project	2015 onwards	Increase coastal access in a sustainable way allowing for climate change impacts on the coast	Natural England are leading the work to implement the 55 km stretch of coast in Cumbria, as part of the long distance walking route and National Trail being developed around the entire English coast. This includes a stretch of coast within the LDNP boundary. New access rights are expected to come into force in 2016. Work to improve coastal access to Cumbria's southern coast is scheduled to begin 2015/16.	The new access route will take account of the projected changes to the coast due to climate change and coastal management strategies and plans.	Monitor and maintain coastal access provision.
Cumbria County Council, the Lead Flood Authority, United Utilities, LDNPA, the District Councils and the EA will work together to deliver better and	ongoing	To increase flood resilience of built environment	No progress information available	Increased flood resilience of built environment	Record and report on delivery of this objective

sustainable surface water management in new developments and aim to secure partnership resolution of multi-agency flooding issues.					
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