

# Wetlands for flood resilience

Creating wetlands to slow  
the flow of flood water  
and protect communities  
and businesses.

## A Route Map

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Executive summary





**Incredible things happen when land and water meet to create wetlands. Wetlands teem with biodiversity, providing homes for endangered and much-loved species. They are vital 'service stations' for millions of migratory birds, enabling them to rest and refuel. For us, they provide essential protection against the impacts of the climate crisis, floods, droughts and pollution. Living near or visiting a wetland and its wildlife is also good for our wellbeing.**

**Wetlands are the lifeblood of the planet, but they need our help. They are disappearing at a rate three times faster than forests<sup>1</sup>.**

The UK's wetlands need strong and effective laws to protect them from harm. They need careful and well-resourced approaches to manage them and they also need restoring. Over the last 300 years the UK has lost over 75% of its wetlands<sup>2</sup>.

In more recent times their continuing absence – coupled with further loss and degradation – has helped to fuel some of the greatest challenges we face: the escalating climate crisis, plummeting levels of biodiversity, a rapid decline in our own wellbeing, as well as increased flood risk.

But there's hope: WWT are pioneers in wetland conservation. We bring species and wetlands back from the brink and restore, protect and create wetlands around the world.

In 2020 WWT joined calls for a green recovery to build back better out of the COVID-19 pandemic and, crucially, for a 'blue recovery' to be at

its heart. We have set out proposals for the creation and restoration of 100,000 hectares (ha) of wetland in the UK on the advice of the Government's advisers, the Natural Capital Committee. Every single hectare will be filled with wildlife, providing a much-needed boost to biodiversity and to the Government's pledge to halt and reverse the decline of our natural world by 2030.

We are now setting out further details of how this blue recovery needs to happen. This route map is the fourth to be published in our series. It follows route maps on creating wetlands for urban wellbeing, carbon storage and water quality.

Each route map sets out our proposals, the purpose the wetlands will serve, the potential they offer, and the partnerships and policy frameworks required to make them happen.

WWT hopes you enjoy reading our route maps. We look forward to working with you, so that together we can create and restore wetlands that encourage economic prosperity, build resilient communities, protect our wellbeing and improve the health of our planet.



*Sarah Fowler, Chief Executive, WWT*

<sup>1</sup> <https://unfccc.int/news/wetlands-disappearing-three-times-faster-than-forests>

<sup>2</sup> <https://www.nature.com/articles/s41586-022-05572-6>





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## Executive summary

**The risk of flooding is increasing and the UK is not equipped to deal with the impacts. Creating more wetlands can build our flood resilience by helping us manage the flow of water more effectively. Creating wetlands for this purpose is known as Natural Flood Management (NFM).**

The UK is experiencing more frequent and more intense flooding due to the heavier rain and stronger storms caused by climate change<sup>3</sup>.

**Extended periods of extreme winter rainfall are now seven times more likely<sup>4</sup>**



Around 5.2 million properties in England – one in six – are at risk of flooding<sup>5</sup>. By the 2050s the annual average economic losses from coastal and river flooding in England and Wales could amount to between £1.6 and £6.8 billion<sup>6</sup>.

But climate change isn't the only reason we're experiencing more flooding. Over the centuries, we have removed many of our greatest flood alleviating

habitats – wetlands. Over 75% of the UK's wetlands have been degraded or destroyed in the last 300 years<sup>7</sup>. This has wrought havoc on people's lives and will continue to do so.

The UK Government recognises that traditional flood defences like concrete dams, embankments and walls will no longer be enough to protect us, and that in some circumstances they may actually exacerbate the problem. We need alternative, long-term solutions that put our communities and businesses on a sustainable footing.

**It might sound counter-intuitive but adding water in the right place using NFM techniques can be a natural, sustainable and cost-effective way to manage flood risk.**



<sup>3</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/292928/geho0609bqds-e-e.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/292928/geho0609bqds-e-e.pdf)

<sup>4</sup> <https://www.metoffice.gov.uk/research/climate/understanding-climate/uk-and-global-extreme-events-heavy-rainfall-and-floods>

<sup>5</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/292928/geho0609bqds-e-e.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/292928/geho0609bqds-e-e.pdf)

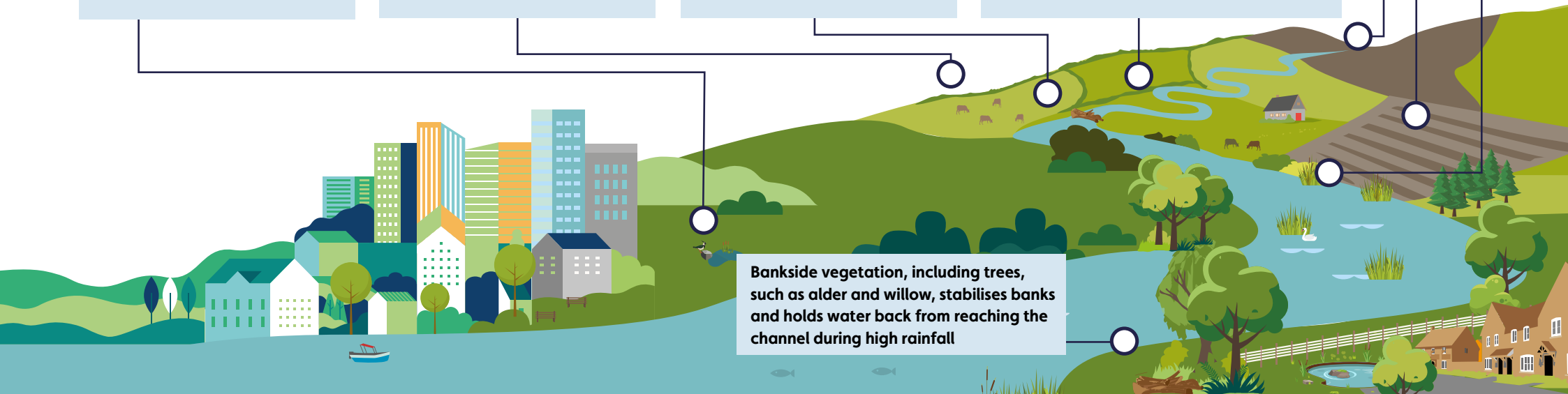
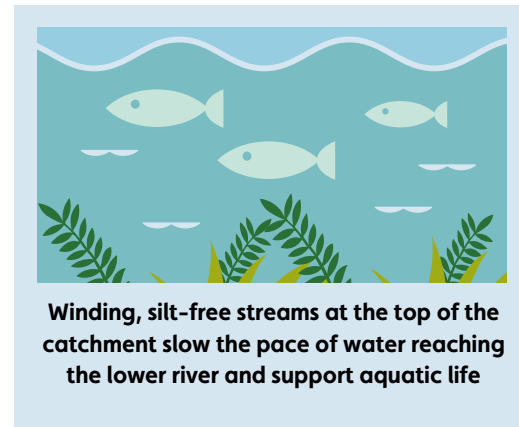
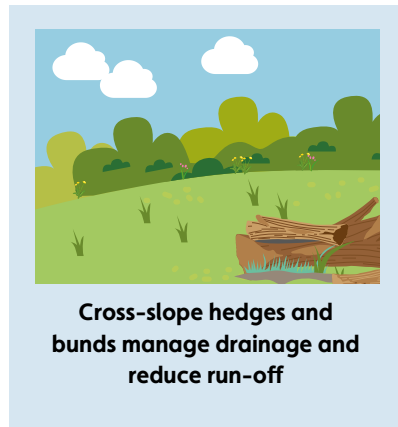
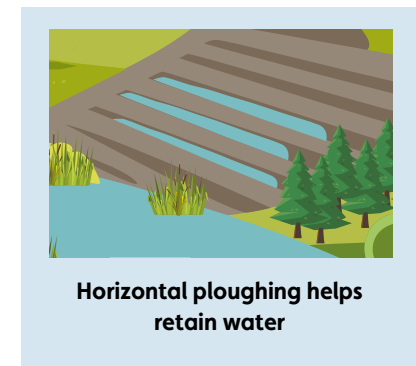
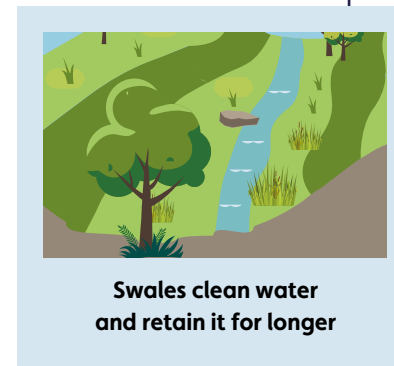
<sup>6</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69487/pb13698-climate-risk-assessment.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69487/pb13698-climate-risk-assessment.pdf)

<sup>7</sup> <https://www.nature.com/articles/s41586-022-05572-6>

### How wetlands for flood resilience work

NFM is an approach that uses natural features in the landscape, such as wetlands, to slow down or store flood waters. The result is greater resilience to flooding.

It is this mosaic of features, rather than individual interventions, that together reduce flooding further downstream.



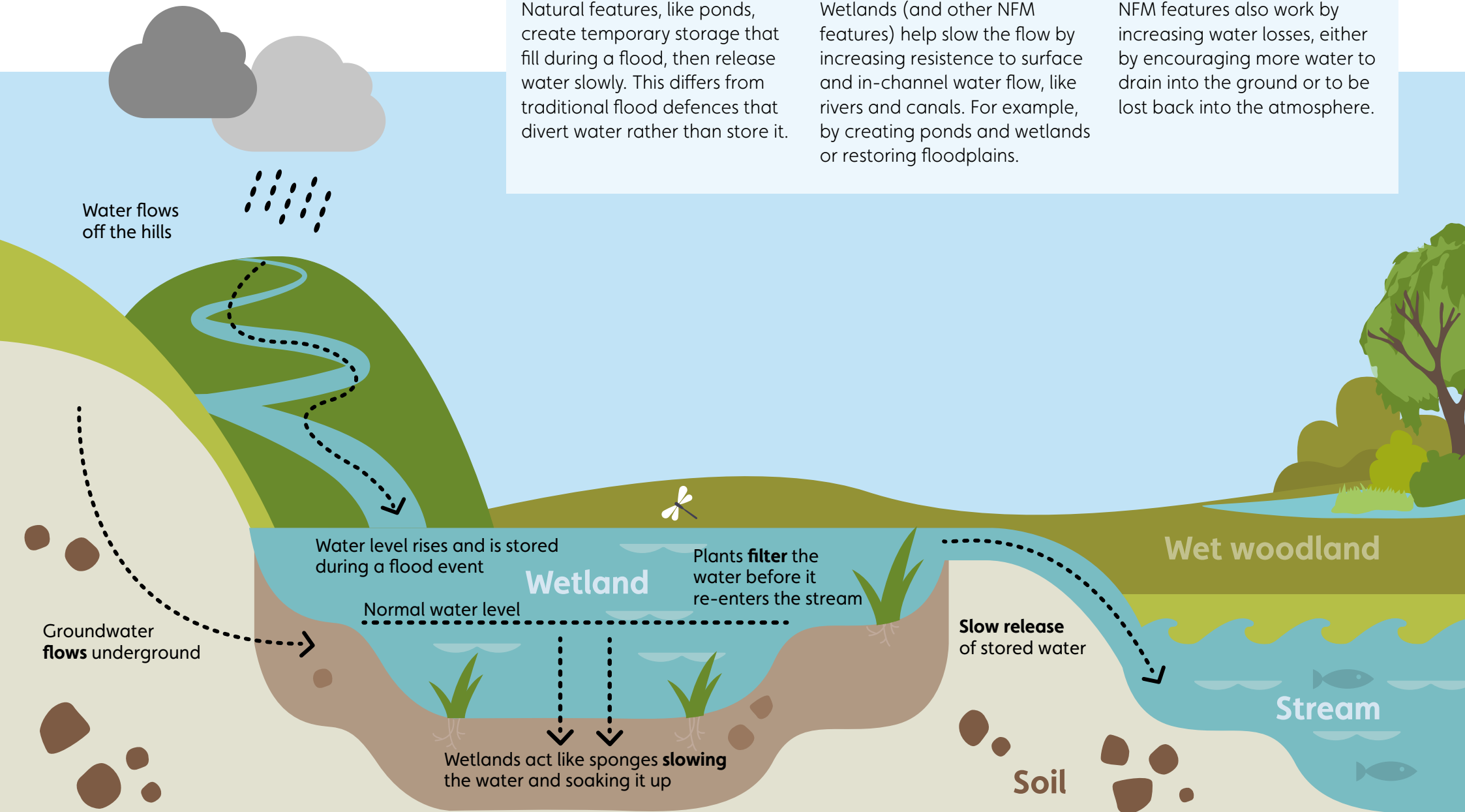
**Bankside vegetation, including trees, such as alder and willow, stabilises banks and holds water back from reaching the channel during high rainfall**

**How NFM works:**

Natural features, like ponds, create temporary storage that fill during a flood, then release water slowly. This differs from traditional flood defences that divert water rather than store it.

Wetlands (and other NFM features) help slow the flow by increasing resistance to surface and in-channel water flow, like rivers and canals. For example, by creating ponds and wetlands or restoring floodplains.

NFM features also work by increasing water losses, either by encouraging more water to drain into the ground or to be lost back into the atmosphere.





**Wetland habitats created by NFM measures also offer an array of co-benefits.**

They:

- boost biodiversity
- improve water quality
- enhance local wellbeing and mental health
- capture and store carbon

Creating more wetlands to improve flood resilience will bring these benefits to the local area.

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## Proposal

**WWT's vision is that NFM, especially where wetlands are used, is embraced as part of the UK's standard approach to flood risk management in the UK. This will require widespread acceptance of the value of wetlands for flood resilience and sufficient capacity and resources to implement and maintain them.**

Wetlands should be used across wide areas of UK countryside and in urban areas (where sustainable urban drainage systems can be created).

The widespread use of wetlands for flood resilience in both urban and rural areas is critical in adapting to the increasing risk of flooding. Working with wetlands in this way will also help tackle the biodiversity crises.

**Sustainable drainage systems (SuDS)** help manage urban rainfall. They use natural processes to control and treat storm water in towns and cities, reducing the risk of flooding and improving water quality.

## Purpose

So far the UK Government has only invested in small scale NFM schemes (that include creating wetlands). To ensure the flood resilience of communities and businesses action must be taken now across the UK. This requires sufficient funding and meaningful engagement with local communities to unlock the full range of benefits that wetlands have to offer people and wildlife.



## Potential

Traditional flood defences that use physical flood barriers play an important role in protecting homes and businesses. But they're expensive, carbon intensive and do not offer the amazing co-benefits that wetlands do.

Wetlands complement existing flood defences and increase flood protection for communities. But it is important to understand the potential of different areas. Wetlands are most cost-effective in areas where floods are more likely and where at-risk properties are dispersed. While SuDS can be used in built-up areas, other measures are more effective if located upstream of traditional flood defences because they can reduce pressure on this infrastructure.

WWT is mapping the potential of wetlands for flood resilience across the UK and assessing the extent of the natural capital to be gained with such large-scale wetland creation. This is part of our 'Roadmap to 100,000 hectares' work.

**Natural capital** refers to the world's stocks of natural assets that underpin our economy, including its geology, soil, air, water and all living things.







## Process

### Creating wetlands for flood resilience requires:

**Delivery:** Different types and sizes of wetlands must be created and restored, and the benefits they provide measured and evaluated.

**Capacity building:** Practitioners need the right information, skills and advice. It will be critical to provide advice and training to Lead Local Flood Authorities (LLFAs), other local authorities, Internal Drainage Boards, land managers and businesses. This requires clear guidance, as well as funding for both training and for dedicated locally based NFM jobs.

**Community engagement:** Projects should empower communities and engender a sense of community ownership. Communities should be involved in designing and managing the projects, allowing them to develop specialist knowledge and skills.

## Partnership

WWT cannot create wetlands for flood resilience alone. We want to work in partnership with government, businesses and wider civil society to create wetlands across the UK. Creating these wetlands at the scale required will need government and stakeholders to work closely together in embracing this new approach alongside traditional methods.



## Policy

### Creating wetlands for flood resilience at scale requires a supportive policy framework.

Information, plans and funding must be in place to allow stakeholders to create and restore these wetlands. The UK Government has recognised the importance of wetlands in improving flood resilience, but there is more to be done to deliver this at a larger scale.

#### PRIORITY POLICIES FOR THE UK GOVERNMENT:

- Produce centralised guidance and provide training for land managers, planning authorities and practitioners on how to create and manage wetlands for flood resilience.
- Produce a nationally recognised NFM accreditation scheme that sets clear standards for best practice in wetland creation, restoration and maintenance.
- Provide funding for increased NFM creation, management and facilitation via a ring-fenced pot within the Flood Defence Grant-in-Aid scheme.







Two Valleys: Slow the Flow project, Somerset





**By harnessing the power of nature alongside our traditional flood defences, we can not only help keep communities safer, but also create wildlife havens and tackle the climate emergency.**

James Bevan,  
Chief Executive, Environment Agency<sup>8</sup>

<sup>8</sup> <https://www.gov.uk/government/news/ea-chief-executive-natural-flood-management-essential-in-battle-against-climate-change>

There are many exciting opportunities to accelerate the creation of wildlife-rich wetlands. Whether you're interested in working with WWT on a project, assisting others in building the capacity of stakeholders to create wetlands for flood resilience, or helping us put in place the policies needed to do so, we'd love to hear from you.

**Together we can help secure a future where healthy wetland nature thrives and enriches lives.**

To find out more and read the full report on wetlands for flood resilience visit: [www.wwt.org.uk/our-work/projects/blue-recovery/](http://www.wwt.org.uk/our-work/projects/blue-recovery/)



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