



## DEBATE PACK

Number CDP 2017/0122, 24 April 2017

# Upper catchment management

## Summary

This debate pack has been prepared ahead of the debate to be held in Westminster Hall on Wednesday 26 April at 4.30pm on Upper catchment management. The Member in charge of the debate is Rachael Maskell MP.

The House of Commons Library prepares a briefing in hard copy and/or online for most non-legislative debates in the Chamber and Westminster Hall other than half-hour debates. Debate Packs are produced quickly after the announcement of parliamentary business. They are intended to provide a summary or overview of the issue being debated and identify relevant briefings and useful documents, including press and parliamentary material. More detailed briefing can be prepared for Members on request to the Library.

Sara Priestley and  
Alison Pratt

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# 1. Summary

A catchment is a geographic area of land defined naturally by the flow of rainfall into a body of water, such as a river. The specific pressures on a catchment vary depending on the geology, climate and environmental sensitivity of the catchment, as well as the type of land and water uses in the catchment (for example: farming practices, water supply, recreation and industrial activity).

The type and extent of land and water uses in a catchment, as well as the state of the natural environment, has an impact on matters such as:

- the quality and quantity of water within the catchment;
- the extent to which the land can be effectively drained;
- the goods, services and wildlife that the catchment area can sustain.

Catchment management can therefore involve a range of different approaches across a catchment in order to achieve a number of different outcomes. These include flood risk management, managing and improving water quality, water abstraction management, improving habitats or restoring landscapes and soil quality.

Upland or upstream management can refer to the location of the relevant measures within the catchment. For example, a measure such as managing peatland and forestry at the upstream point of the water body to mitigate the impacts of flooding. There are a number of pilot schemes looking at the science and evidence around such measures. More information on the example of flood risk management is provided below.

## 1.1 Useful resources

Some useful resources on this topic are:

- For general context and background on flooding, including information on Catchment Flood Management Plans, see the House of Commons Library Briefing Paper on [Flood risk management and funding](#) (December 2016).
- For information on catchment-based approaches employing a range of natural flood management measures, see [POSTNote on Catchment-Wide Flood Management](#) (December 2014).
- For general context and background on water quality, including information on the catchment-based approaches, see the House of Commons Library Briefing paper on the [Water Framework Directive: achieving good status of water bodies](#) (November 2015).

- For information on managing catchments as a whole in the context of water abstraction, see POSTNote no.546 on the [Reform of Freshwater Abstraction](#) (January 2017).
- For information on upstream catchment management in the water industry, see Ofwat's paper [From catchment to customer](#) (2011).
- For information on land management and soils, see the Environmental Audit Committee Report on [Soil Health](#) (June 2016).

See also Section 5 (*Useful links and further reading*) below.

## 1.2 Example of flood risk management

Catchment management is commonly referred to in the context of flood risk management, with a particular focus on natural flood management measures in recent years.

Box 1 provides an example of a catchment-based approach using natural flood management measures.

### Box 1: Slowing the Flow

The *Slowing the Flow* project at Pickering in North Yorkshire aimed to work with nature to try and store more water in the landscape and slow its passage downstream. It was not expected to prevent *all* flooding but to reduce the frequency of flooding as well as delivering wider benefits to the local environment and community.

The range of measures applied included:

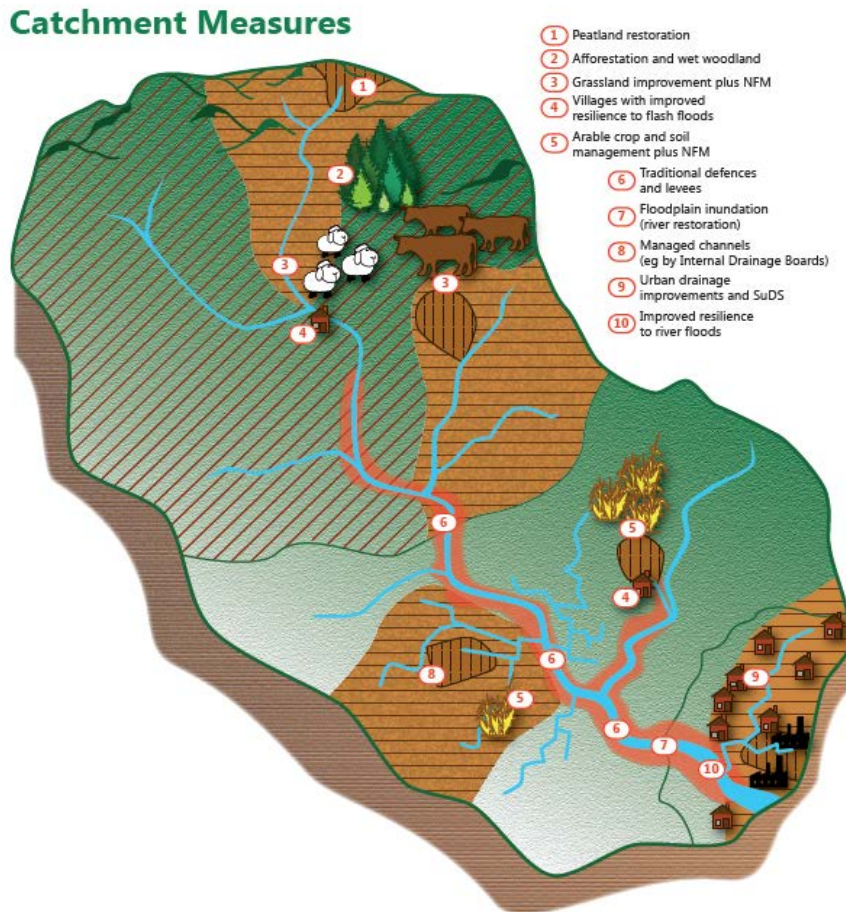
- construction of large woody debris dams – to provide a 'leaky' framework of logs and branches which cross the water course;
- construction of timber bunds (a bigger version of the dams);
- planting woodland on farms, floodplains and on land next to the water courses;
- establishing no-burn buffer zones alongside watercourses to protect vegetation and soils and reduce surface water run-off; and
- farm-scale measures including sediment ponds, swales and small scale storage.<sup>1</sup>

More information on this project is available on the [Forest Research webpage](#); the [Institution of Civil Engineers webpage](#); and the [Environment Agency blog](#).

An example of the range and location of natural measures that can be used across a catchment to reduce the risk of flooding is provided in the

<sup>1</sup> See Forest Research page on [Slowing the Flow at Pickering](#) for more detailed examples.

diagram below.



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Source: Environment, Food and Rural Affairs Committee Report on Future Flood Prevention<sup>2</sup>

## National Flood Resilience Review

The Government's [National Flood Resilience Review](#) reconsidered the Government's approach to assessing flood risk, to reducing the likelihood of flooding and to making the country as resilient as possible to flooding. In relation to catchment management, the resulting Report published in September 2016 stated:

The Government's future 25 year plan for the environment will aim to achieve these effects by managing whole river catchments intelligently, developing sophisticated modelling to work out what can be done in each part of the catchment to minimise flooding. A 'pioneer' pilot project in Cumbria will test and demonstrate the power of this approach across the different river catchments there.<sup>3</sup>

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<sup>2</sup> Environment, Food and Rural Affairs Committee, Second Report of Session 2016-17, Future flood prevention, [HC 115](#), 2 November 2016

<sup>3</sup> HM Government, [National Flood Resilience Review](#), September 2016

The Government's 25 year environment plan has not yet been published.

## EFRA Committee report

The Environment, Food and Rural Affairs Select Committee (EFRA) published a report on [Future flood prevention](#) on 2 November 2016 which examined natural flood management at a catchment-scale level in detail.

The Committee made a recommendation to Government aimed at gathering more evidence on the effectiveness of catchment-scale approaches:

Managing water flows from the top to bottom of river catchments helps to reduce flood risk, in many cases more cost-effectively than simply building flood defences in cities, towns and villages. Early results of trials are encouraging for smaller river catchments: there is sufficient evidence to roll-out 'catchment scale' approaches for a far greater number of small river basins. Agencies need more evidence, however, on how effective these measures might be at a larger scale. The Environment Agency must work with academics and with other flood risk management bodies including Internal Drainage Boards and local catchment partnerships to fill this evidence gap: we recommend that Defra commission by July 2017 a trial on a large catchment of 100–200 km<sup>2</sup>. Defra should also set out clearly the auxiliary benefits it requires when adopting catchment approaches.<sup>4</sup>

The [Government response](#) to the Committee's recommendation explained that the Government supported a catchment approach alongside engineered defences and set out more information on how it is doing this:

We support both a catchment approach to planning and greater use of natural flood management measures alongside hard, engineered defences. This will be at the heart of the Government's 25 Year Environment Plan which will focus on maximising the multiple benefits the environment provides within and across catchments, landscapes and marine areas as the basis for enhancing everyone's lives and livelihoods, whilst improving the environment. In the Autumn Statement, we announced funding of £15m specifically for Natural Flood Management schemes across England and further details on where this money will be spent will be announced in due course. There is also a natural flood management component to many of the schemes in our £2.5 billion capital programme. Together, these represent a significant investment in natural measures, which the recently announced dedicated fund will build on.

We agree that it is important to build up more evidence to support the catchment based approach. Defra, the Environment Agency, Natural England and the Forestry Commission are strengthening their approach to catchment level modelling and flood mitigation. This will ensure that government, communities, businesses and individuals are better informed, and empowered to put appropriate risk management and resilience measures in place. Existing projects are already expanding and are upscaling

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<sup>4</sup> Environment, Food and Rural Affairs Committee, Second Report of Session 2016-17, Future flood prevention, [HC 115](#), 2 November 2016, para 17

catchment approaches to develop the evidence for more natural flood management interventions in small and larger catchments. Several projects have been completed including at Belford in Northumbria and Pickering in North Yorkshire.

Building on the Cumbria and Calderdale Partnership Plans, the Cumbria Pioneer project is an important step in understanding the value of catchment management in larger catchments and will help us to identify good practice and innovative solutions that can be adopted across the country to deliver our long-term vision. This work will demonstrate the benefits that we would encourage from integrated catchment approaches in terms of flood risk reduction as well as associated benefits to the environment such as improved water quality, carbon sequestration, biodiversity and habitat creation which can have a profound effect on the quality of life and economic wellbeing of areas.

Defra and the Environment Agency are working with the Natural Environment Research Council (NERC) on a new £4m research programme that aims to improve our understanding of the effectiveness of different natural flood management measures for a range of flood risk scenarios.<sup>5</sup>

## Environmental Audit Committee Report

The Environmental Audit Committee published a report on [Flooding: Cooperation across Government](#) in June 2016 which included recommendations on catchment management and natural flood measures, including that the Government should fund more pilots of catchment based approaches but that current flood risk management approaches should “continue to be the focus”:

The majority of the witnesses we heard from during this inquiry supported natural flood risk management. Some of the pilots demonstrating this approach, including in Pickering, have been successful. We look forward to seeing the results of the pilots in Cumbria at the end of this year and hope that decisions on further roll out will follow soon afterwards. The Government should make sure that funds are available to fund more pilots to continue to make the case for this approach and to protect those places like Pickering which might benefit from a cheaper natural flood management project. However, to roll this out nationally will take time and people want their homes protected today. It is only right then that current flood risk management approaches should continue to be the focus.<sup>6</sup>

The [Government response](#) to the Committee’s recommendation identified the challenge of identifying land management measures in catchments which would reduce the risk and impacts of floods—normally in conjunction with traditional (i.e. engineered) flood defences:

The Government agrees with the importance of maintaining a balance of more traditional measures and natural flood management approaches to ensure the most effective flood risk management locally and nationally. We are committed to getting the most for people and the environment from our investment, and this includes securing wider environmental benefits from

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<sup>5</sup> Environment, Food and Rural Affairs Committee, Future flood prevention: Government’s response to the Committee’s Second Report of Session 2016-17, Fourth Report of Session 2016-17, [HC 926](#), 24 January 2017, para 1

<sup>6</sup> Environmental Audit Committee, [Flooding: Cooperation across Government](#), Second Report of Session 2016-17, [HC 183](#), para 98

flood defence spending. We are determined to see that natural flood management solutions are fairly assessed and supported where they offer a viable way of reducing the damaging impacts of flooding.

We want to see a coordinated and integrated approach, including natural flood management measures to reduce flood risk, in the context of whole catchment-planning. The challenge will be to identify where in catchments land management measures can reduce the risk and impact of floods – normally in conjunction with traditional flood defences – and the extent of land management change that is required.

There is a huge range of work being taken in the country on natural flood management, often led by local authorities, as well as the Environment Agency, including the Defra funded demonstration projects in Upper Derwent, Pickering and Holnicote. In addition, actions under the [Cumbria Flood Action Plan](#), published on 30th June, include increasing the uptake of natural flood management measures through schemes as part of an integrated approach to managing catchment areas. The Plan sets out in one place what the Environment Agency, working with local partners, has done since December, and how we are starting to plan and invest for the future.<sup>7</sup>

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<sup>7</sup> Environmental Audit Committee, Flooding: Cooperation across Government, Government response to the Committee's Second Report of Session 2016-17, Second Special Report of Session 2016-17, [HC 645](#), 9 September 2016, para 14



## 2. Press Articles

Times

### **Scientists issue warning over planting trees to stop floods**

Ben Webster 15 March 2017

<https://www.thetimes.co.uk/article/scientists-issue-warning-over-planting-trees-to-stop-floods-5fzx6q7rh>

Halifax Courier

### **Scheme to plant 200,000 trees aims to reduce Calder Valley flood risk**

Joseph Keith, 24 February 2017

<http://www.yorkshirepost.co.uk/news/natural-defences-no-silver-bullet-on-flooding-academics-warn-1-8438856>

Stroud News and Journal

### **Natural flood management: a look at one of Stroud's shining sustainable schemes**

Jamie Wiseman, 18 January 2017

[http://www.stroudnewsandjournal.co.uk/news/15029172.Natural\\_flood\\_management\\_a\\_look\\_at\\_one\\_of\\_Stroud\\_s\\_shining\\_sustainable\\_schemes/](http://www.stroudnewsandjournal.co.uk/news/15029172.Natural_flood_management_a_look_at_one_of_Stroud_s_shining_sustainable_schemes/)

Guardian

### **Government commits £15m to natural flood management**

25 November 2016

<https://www.theguardian.com/environment/2016/nov/25/government-commits-15m-to-natural-flood-management>

BBC News

### **MPs call for major reform of flood risk management**

Roger Harrabin 2 November 2016

<http://www.bbc.co.uk/news/science-environment-37840482>

Independent

### **Flood defences: We must not miss the boat on using nature to reduce peak flooding**

Geoffrey Lean 12 March 2016



<http://www.independent.co.uk/voices/flood-defences-we-must-not-miss-the-boat-on-using-nature-to-reduce-peak-flooding-a6927826.html>

Guardian

**£500,000 tree-planting project helped Yorkshire town miss winter floods**

13 April 2016

<https://www.theguardian.com/environment/2016/apr/13/500000-tree-planting-project-helped-yorkshire-town-miss-winter-floods>

BBC News

**Tree planting 'can reduce flooding'**

Roger Harrabin, 11 March 2016

<http://www.bbc.co.uk/news/science-environment-35777927>

Scotsman

**Andrew Heald: Trees offer cheap and effective flood prevention**

28 January 2016

<http://www.scotsman.com/news/opinion/andrew-heald-trees-offer-cheap-and-effective-flood-prevention-1-4014829>

Farmers Weekly

**Exclusive: Truss to enlist farmers to combat floods**

Philip Case, 24 January 2016

<http://www.fwi.co.uk/news/exclusive-truss-to-enlist-farmers-to-combat-floods.htm>

Guardian

**Liz Truss is choosing to protect farmers over flood victims**

George Monbiot, 7 January 2016

<https://www.theguardian.com/environment/georgemonbiot/2016/jan/07/liz-truss-is-choosing-to-protect-farmers-over-flood-victims>

North Norfolk News

**Integrated wetland project on the River Mun reduces phosphates from sewage effluent**

Chris Hill, 29 August 2015

<http://www.northnorfolknews.co.uk/news/integrated-wetland-project-on-the-river-mun-reduces-phosphates-from-sewage-effluent-1-4213236>

## 3. Press releases

### Rewilding Britain

#### **A new report from Rewilding Britain highlights the positive impact which rewilding the UK's landscapes can have upon flood risk**

**6 September 2016**

A new report from Rewilding Britain highlights the positive impact which rewilding the UK's landscapes can have upon flood risk. The report comes as MPs on the Environmental Audit Committee consult on better ways to manage the UK's environment post-Brexit, with many calling for an approach which places nature centre stage.

Flooding costs the UK economy more than £1 billion annually, a figure which can rise to nearer £5 billion in a bad year. Traditional approaches to flood defence have focused on managing flood risk using hard defences such as flood walls and river revetments.

While mitigating some of the worst consequences of flooding, these solutions do little to challenge underlying causes and when they fail, the consequences can be devastating. A growing body of evidence suggests that managing flood risk naturally, by restoring natural processes, can be cheaper and more sustainable.

Alongside being cost effective, rewilding has the additional benefit of creating vibrant natural landscapes which stimulate tourism and ecological awareness, while also soaking up greater quantities of CO<sub>2</sub>, helping bring the economy towards carbon neutrality.

Helen Meech, Director at Rewilding Britain, said: "With one in six properties in the UK currently at risk of flooding, a situation likely to be exacerbated by climate change over coming decades, it is time to rethink our approach to managing flood risk.

"Flooding is a natural part of a river's annual cycle but problems occur when land is overgrazed, rivers are straightened and trees and wildlife removed. Such measures reduce the capacity of the landscape to absorb excess water and slow floodwater flows. Our report highlights the ways in which rewilding can substantially reduce flood risk downstream, protecting communities at a fraction of the cost of traditional flood defences. Rewilding also has benefit of improving water quality and stimulating the revival of vibrant ecosystems rich in wildlife.

"With MPs currently consulting on new approaches to management of Britain's natural environment post-Brexit, we feel it is high-time we allowed landscapes the space they need to rewild, creating natural wetlands and bringing back the wildlife that was once common to Britain."

Examples of rewilding projects which have already significantly reduced flood risk in communities across the UK include;

- **Moorland restoration at the Holnicote Estate in West Somerset** including the recreation of flood meadows and making woody dams to mimic beaver activity. During winter 2013 unprecedented rainfall there was no flooding in villages that regularly suffered in the past. There was also a 10% reduction in flood peak in late December 2013 on an already saturated catchment containing over 90 properties at risk.
- **Uplands Projects:** At the headwaters of the River Derwent, on the highest plateau in the Peak District National Park, peat bogs were re-planted with moorland grasses, heathers and other plants. Average peak flows reduced by 30% and average run-off slowed by around 20 minutes.
- **Beavers and other wildlife:** A beaver reintroduction trial in Devon has seen beavers dramatically alter the landscape, stimulating the revival of a natural wet woodland – home to a diverse range of wildlife. They have significantly increased water storage while slowing the flow of water downstream – valuable services both at times of drought and after storms. During storm events there was on average 30% lower peak volume of water leaving the site, compared with entering, reducing flood risk downstream.
- **Sussex Flow Initiative:** replicating nature by placing ‘leaky dams’ composed of tree branches and trunks upriver along the River Ouse. Alongside this, floodplain woodlands have been created with the planting of 23,000 trees and 3.5 kilometres of hedgerow. This increases the landscapes natural ability to absorb excess water and reduce flood. Floodplain meadows have become one of Sussex’s most threatened habitats, but left alone can support diverse and dynamic ecosystems and store carbon. Such measures are also substantially cheaper than traditional flood defence schemes.

Further information about these projects and the impact of rewilding on flood risk is available via Rewilding Britain’s flooding report – [downloadable here](#).

#Rewilding

@RewildingB

For further information, or to arrange an interview, please contact:

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<http://rootandbranchpr.co.uk/>

**Scottish Wildlife Trust**

**Scottish Wildlife Trust sets out a vision for Scotland’s uplands**

**4 July 2016**

The Scottish Wildlife Trust has set out a new approach to the way that Scotland's uplands are managed, including financial incentives to encourage good environmental stewardship and regulations that achieve more sustainable management of deer and upland grouse moors.

The Trusts' publication *'Living Landscapes in the Scottish Uplands'* recommends ten key changes that are needed to reverse decline in important habitats and ensure that people continue to enjoy the benefits provided by these areas.

The paper will be launched on Wednesday 6 July at an event held at the Scottish Wildlife Trust's Woodhall Dean reserve. Speakers include Susan Davies, the Trust's Director of Conservation; Graeme Dey MSP, Convenor of the Scottish Parliament's Environment, Climate Change and Land Reform Committee; and Tim Baynes, Director of the Scottish Land & Estates Moorland Group.

Almost half (44%) of Scotland's land area is classed as upland. This area contains important habitats that are in a state of decline including peatland, heather moorland and native woodland.

**Susan Davies, Director of Conservation at the Scottish Wildlife Trust said:** "With a shift in public attitudes and changes in how we manage our land, we could transform Scotland's uplands. Sadly, our uplands are currently under threat on a landscape scale from a wide range of pressures including intensive land management, invasive species and poorly-targeted public subsidies. This is bad for wildlife, bad for communities and bad for Scotland.

"Changing our relationship with the natural environment in the uplands could reverse the decline in wildlife and habitats, and ensure that the uplands can deliver a wider range of benefits, including natural flood risk management, enhanced opportunities for tourism and recreation, and high-quality sustainably produced food.

"We aim to show leadership in this area by addressing these issues on our three upland reserves, Largiebaan, Rahoy Hills and Ben Mor Coigach. Ben Mor Coigach is part of the wider Coigach-Assynt Living Landscape Partnership, a ground-breaking community partnership initiated by the Scottish Wildlife Trust that aims to bring environmental and economic benefits to this iconic part of north west Scotland."

**Anne Gray from Scottish Land and Estates said:** "There are many different thoughts on how Scotland's uplands should look and what they should deliver. The Scottish Wildlife Trust is naturally focussing on environmental outputs and we can certainly agree with their overarching desire for systems in upland areas to take proper account of, and deliver improvements to, the natural environment. We might not always agree however with their proposals on how to get there.

We want to see landowners and managers properly rewarded for delivering environmental benefits but that does need to occur alongside delivery of landowners' aspirations for their land, rather than instead of. Owners and managers' decision-making around land use choices is

complex and much more nuanced than just being about financial reward. We look forward to having constructive discussions on this and other issues highlighted in the Trust's strategy with them going forward."

**Graeme Dey MSP, Convenor of the Scottish Parliament's Environment, Climate Change and Land Reform Committee said:**

"The worsening impacts and incidents of flooding, the debate around grouse shooting and the management of moorland to accommodate this, the pressing need to plant more trees, and the fact the deer management issue is coming to a head make the timing of this report very apt.

"Living Landscapes in the Scottish Uplands represents a positive contribution to the discussions we need to have around the future role of our uplands and I look forward to working with the Scottish Wildlife Trust and others in a co-operative way to secure real and appropriate progress."

Between the 1940s and 2007, more than 20% of heather moorland cover was lost, mainly due to afforestation and conversion to rough grassland. Blanket bog decreased by 21% between the 1940s and 1980s and lowland raised bogs by 44%. While these habitats have begun to recover in recent years, fens, swamps and marshes have continued to decline.

The extent of native woodland in the uplands is relatively small, and the Native Woodland Survey of Scotland suggests that significant losses have occurred over the last four decades. Commercial plantations cover an area ten times the size of the extent of upland woodland.

**Ten key recommendations from the Trust's publication, 'Living Landscapes in the Scottish Uplands':**

- Incorporation of Ecosystem Health Indicators (EHIs) and Natural Capital Valuations (NCVs) into all relevant policy instruments.
- Integrated Land Management plans that secure sectoral cooperation to improve the condition, services and benefits from upland ecosystems.
- Reform of subsidy regimes for upland sheep and cattle farming to encourage low stocking densities and 'agro-forestry' systems.
- Financial incentives for low-impact forest management in commercial upland plantations.
- Wildlife-rich networks in areas between protected sites that support natural dynamic processes and succession.
- Regulation of deer and upland grouse moor management to encourage more sustainable management practices.
- Re-introduction of lost species such as Eurasian beaver and Eurasian lynx.
- New statutory guidelines to mitigate the impacts of energy developments

[Read the full \*Living Landscape in the Scottish Uplands\* policy here](#)

[Read our one-page \*Nature in Brief\* summary here](#)

## **SEPA publishes guidance on natural flood management**

**21 January 2016**

The Scottish Environment Protection Agency (SEPA) has published a new handbook to help local authorities and landowners implement natural flood management measures.

The Natural Flood Management Handbook was launched at an event held by the Chartered Institution of Water and Environmental Management. The impact of recent flooding has shown that new ways to manage flooding are needed, and the handbook details how natural flood management can contribute, as part of a suite of measures, to help reduce the impact of frequent flooding on a smaller scale.

A key element of sustainable flood risk management involves finding ways to manage flooding at its source, rather than solely focusing on traditional engineering further down the catchment. This can include, for example, riparian planting, reinstating flood plains, restoring coastal areas or returning watercourses back to their natural shape.

These measures can play an important role in reducing flooding during smaller, more frequent, events while simultaneously delivering many other benefits.

SEPA has responsibility, under the Flood Risk Management (Scotland) Act 2009, for co-ordinating the delivery of sustainable flood management in Scotland, and in particular to set objectives and identify actions to manage flood risk with relevant partner organisations, including natural flood management.

Heather Forbes, Senior Policy Officer in SEPA's Flood Risk Management team, said:

"Flooding has caused devastation and misery for many people across Scotland in recent weeks, and highlighted the increasing pressure on flood risk defences. To continue to focus only on managing flooding through these traditional means is not sustainable. By managing the sources and pathways of flood waters further up the catchment, we can help to reduce the impacts on any defences downstream.

"This new handbook has been produced to guide those responsible for implementing natural flood management approaches, and provide them with the necessary information. This document will be updated as our understanding of natural flood management develops."

Minister for Environment, Climate Change and Land Reform, Dr Aileen McLeod said:



“Having met with many people who have seen their homes and livelihoods damaged due to flooding over recent weeks, I am all too aware of the devastation that flooding can cause.

“The Scottish Government is working with SEPA to ensure that local authorities have the information they need to deliver flood risk management actions on the ground and last week we announced Scotland’s first national flood plan.

“The launch of this new handbook will also provide practitioners with valuable information on how best to implement natural flood management measures.”

<http://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf>

## **Forest Research**

### **Pickering ‘Slow the flow’ project complete**

**September 2015**

An innovative and long awaited [project to reduce the risk of flooding in Pickering](#) is complete – in time for winter.

The Environment Agency is now making the finishing touches to a flood storage area in Newtondale, upstream of Pickering, which is the final piece in a range of measures to slow the flow of water from the North York Moors into Pickering Beck and subsequently down into the town.

‘Slowing the Flow’ partnership chairman, Jeremy Walker, said:

“Completion of the flood storage area is the final element in a new approach to flood management at Pickering, which will improve protection for 50 properties in the town. The flood storage area will temporarily hold a large volume of flood water that would otherwise rush down into the town and cause flooding.

It has taken much effort to get to this point, which has only been possible through strong partnership working and with funding support from many sources – particularly Ryedale, North Yorkshire and Pickering Councils, the Environment Agency and Defra, as well as the Yorkshire Regional Flood and Coastal Committee. We are very grateful for their support, and also to the residents of Pickering, for their patience with the associated additional traffic and disruption.”

Defra’s pilot ‘Slowing the Flow’ project has been led by Forest Research and closely supported by Forestry Commission England, the Environment Agency, the North York Moors National Park, Natural England, North Yorkshire County Council, Ryedale District Council, Pickering Town Council, Sinnington Parish Council, the North Yorkshire Moors Railway, Durham University and the wider community. The partnership has taken an innovative approach, by working with the natural environment in order to reduce flood risk. This has included planting trees, constructing ‘woody debris dams’ in becks and streams,

establishing no-burn buffer zones, and targeted blocking of moorland drains.

All of these measures are helping to hold water in the landscape and delay its passage downstream. Work began in January 2014 on building the flood storage area to hold back 120,000 cubic metres of water at times of peak flow. While this won't prevent all floods, it will significantly improve the standard of protection for Pickering and move the town from the previous 25% chance of flooding in any given year, to a 4% chance or less.

Pickering has a long history of floods, caused by the fact that Pickering Beck flows through a steep sided valley for much of its length, funnelling water from the hillsides down towards the town. The most recent major flood, which took place in 2007, saw 85 properties and the main A170 flooded, causing around £7m of damage.

The work undertaken by the 'Slowing the Flow' project will not prevent the most severe floods such as that in 2007, but will greatly reduce the frequency of floods in the town. Local residents are encouraged to find out about their flood risk, and to register for the Environment Agency's free flood warning service. More information is available on [www.gov.uk/floodsdestroy](http://www.gov.uk/floodsdestroy), or by calling Floodline on 0845 9881188. More information about the project can be found at [www.forestry.gov.uk/fr/slowingtheflow](http://www.forestry.gov.uk/fr/slowingtheflow)

## 4. Parliamentary material

### 4.1 PQs

#### [Topical Questions](#)

**Asked by:** Kevin Hollinrake (Thirsk and Malton) (Con)

Will the Secretary of State agree to visit the “Slowing the Flow” project in Pickering? It is a natural flood alleviation scheme part-funded by DEFRA, which saves the taxpayer about £15 million compared with a similar, traditional scheme. Will she meet the local flood authority and the Yorkshire dales partnership to see what has been done and what could be done with some of the £15 million that the Department has allocated to other, similar projects?

Oral questions - 1st Supplementary

**Answering member:** Andrea Leadsom | **Department:** Environment, Food and Rural Affairs

I would, of course, be delighted to visit my hon. Friend’s constituency. If we can get our diaries to work, that would be truly delightful. I would particularly like to see the success of the Pickering project, which has been one of the building blocks in securing the £15 million of funding that we announced in November last year, which is dedicated specifically to natural flood management schemes across the UK. This money will let us test new approaches to see how natural flood resources can help us in the future.

**19 Jan 2017 | Oral answers to questions | House of Commons | 619 c1058**

#### [Flood Control](#)

**Asked by:** Creagh, Mary

To ask the Secretary of State for Environment, Food and Rural Affairs, pursuant to her oral contribution of 24 November 2016, Official Report, column 1004 if she will publish a list of projects including their locations that will be supported by the £15 million investment.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

Natural flood management solutions are an important part of our approach to reducing flood risk. The recently announced £15m investment specifically for natural flood management schemes across England presents an important opportunity to further develop the evidence base around working with natural processes to reduce flood risk. We are, therefore, thinking carefully about where these schemes are based, and so have not yet announced specific locations that will be supported by the fund.

The Environment Agency will be administering the £15m investment, and have already been working with Natural England, Forestry

Commission and local partners to identify project proposals. Following the announcement of the fund they can now begin to work with partners to fully scope these opportunities, which will then need to be robustly assessed against a set of agreed criteria. Further details of the process for confirming projects and their locations will be announced in due course.

**06 Dec 2016 | Written questions | House of Commons | 55751**

[Flood Control](#)

**Asked by:** Flynn, Paul

To ask the Secretary of State for Environment, Food and Rural Affairs, what assessment her Department has made of the implications for her policies on flooding and land use of the Green Alliance Policy Insight of November 2016, entitled Smarter flood risk management in England.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

The Government notes the Green Alliance report's focus on flood prevention, including the use of natural measures and the whole catchment approach.

A combination of measures are needed to manage flood risk, including upstream activities to store or slow flood waters. The current Countryside Stewardship Scheme includes land management measures that help to prevent flooding. Our exit from the EU provides an opportunity to consider how best future agriculture and environmental policy can contribute to flood risk management. The Government recently announced £15m specifically for natural flood management schemes across England. This builds on demonstration projects at Pickering in North Yorkshire, Holnicote in Somerset and Upper Derwent, Derbyshire.

They demonstrated that natural measures can be effective in helping to manage flood risk at a catchment scale, slowing the flow of water and reducing local impacts when carefully incorporated into a wider suite of catchment measures, but were unlikely to offer an alternative to conventional defences in areas of greatest risk.

However, we refute the assertion that twice as much is spent on dealing with the after-effects of a flood than is spent on hard flood defences. In 2014/15, the year the report is referring to with respect to hard defences, of the £802.6m spent on flood risk management, £145m was for flood response and repair costs and £657.6m for routine flood risk management measures.

Moreover, in our current 6-year capital programme, we are investing £2.5 billion over six years on flood defences (up until 2021). This is a real terms increase in capital investment. We are exceeding our manifesto commitment by building 1,500 new flood defence schemes that will better protect 300,000 more homes.

**05 Dec 2016 | Written questions | House of Commons | 55376**

[Flood Control](#)

**Asked by:** Creagh, Mary

To ask the Secretary of State for Environment, Food and Rural Affairs, with reference to her oral contribution of 24 November 2016, Official Report, column 1004, whether that investment is in addition to the investment in flood defences announced in the March 2016 Budget.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

The £15m announced by the Secretary of State to be spent on Natural Flood Management is included within the £700m for flood defence and resilience funding announced in the March Budget.

**01 Dec 2016 | Written questions | House of Commons | 54981**

[Flood Defences](#)

**Asked by:** Richard Benyon (Newbury) (Con)

Given that more than 5 million homes are at flood risk in Britain, is it not important that the Department continues its excellent work, not just in building flood defences with concrete, steel and earthworks, but in looking at how nature and land managers can be incentivised to create greater protection for households?

**Answered by:** Andrea Leadsom | **Department:** Environment, Food and Rural Affairs

Yes, my hon. Friend is quite right. There are concrete barriers, which are very important, and we have had 130 new schemes since January, better protecting 55,000 homes. However, natural flood management—slowing the flow, and looking at ways to work with the contours of our environment to improve protection—is also vital. I can announce that we have been given £15 million to invest in further projects to do just that.

**24 Nov 2016 | Oral questions - Supplementary | House of Commons | 617 c1004**

[Flood Control: Trees](#)

**Asked by:** Fitzpatrick, Jim

To ask the Secretary of State for Environment, Food and Rural Affairs, whether the Government plans to conduct further research on the utility of trees in flood prevention.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

The Government continues to fund and support research into the utility of trees in flood prevention through the Defra/Environment Agency

'Working with Natural Processes' research programme, and the Forestry Commission's Science and Innovation Strategy.

Forest Research, the Forestry Commission's Research Agency, is conducting a number of medium and long-term projects on this topic, often in partnership with water regulators, universities and end users. These cover process, modelling, economic and mapping studies designed to quantify and demonstrate how woodland can contribute to flood risk management. Operational synthesis of existing research is currently being used as the basis for designing and targeting forestry's contribution to help protect 'communities at risk' under the Cumbria Floods Action Plan.

One flagship project led by Forest Research is the 'Slowing the Flow' at Pickering study. This is evaluating how the integrated application of a range of land use and management measures can alleviate flooding, including woodland creation and the use of large woody structures.

Other studies are underway in the catchments of the River Parrett in Somerset, River Irthing in Northumberland and River Usk in Wales, to provide evidence of how woodland and woodland management can affect flood risk.

**18 Nov 2016 | Written questions | House of Commons | 52344**

### [Flood Control](#)

**Asked by:** Lucas, Caroline

To ask the Secretary of State for Environment, Food and Rural Affairs, what funding her Department has allocated specifically for natural flood management projects; what proportion of the additional funding referred to in paragraphs 1.242 and 1.301 Budget 2016, HC 901, for flood risk management has been allocated to natural flood management projects; and which Department will have lead responsibility for the dispersal of that funding.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

Between 2009 and 2015 Defra and the Environment Agency contributed some £4.1m to natural flood management demonstration projects at Holnicote (Somerset), Pickering (North Yorks) and Upper Derwent (Derbyshire). In addition, natural flood management measures are integral to many wider Flood and Coastal Risk Management schemes.

Defra has the lead responsibility for the £2.5bn committed to the Flood and Coastal Risk Management Capital programme, which includes the £150m announced in the 2016 Budget to be invested in flood defence schemes in Leeds, Cumbria, Calder Valley and York, which will better protect 7,400 properties.

Defra Grant-in-Aid for Flood and Coastal Erosion Risk Management Capital projects is available for any project that meets the objectives of

reducing flooding or erosion risk based on the economic benefits and damages avoided. Payment rates are based on outcomes not methods, an approach designed to avoid discriminating against any particular approach to reducing risk.

Defra delegates the dispersal of this grant to the Environment Agency, with oversight from the Regional Flood and Coastal Committees.

Whilst there is no funding yet allocated from the 2016 Budget announcement specifically for Natural Flood Management (NFM) projects, both the Cumbria and Calderdale Flood Action Plans include actions to explore how to manage the landscape to slow the flow of water using NFM solutions, including, for example, peatland and bogland restoration, tree planting and woody dams.

### **21 Nov 2016 | Written questions | House of Commons | 52818**

#### [Peat Bogs](#)

**Asked by:** Lynch, Holly

To ask the Secretary of State for Environment, Food and Rural Affairs, what analysis the Environment Agency has conducted on the condition of blanket bog on moorland currently managed for grouse shooting; and the condition it believes to be optimal for slowing water flows.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

It is Natural England that has a duty under the Habitat Regulations to review any consents/permissions which were issued prior to designation as a European Site. Previously there was discretion as to whether the activities covered by the consents could be tackled through incentives and/or advice rather than formally affirming, modifying or revoking the consent. This discretionary aspect has been removed and under the 2012 amendment of the Habitats Regulations 2010 (Section 23) Natural England now has the legal duty to affirm, modify or revoke any consents issued on European sites, as soon as reasonably practicable.

As part of an England-wide strategy to restore blanket bog to Favourable Conservation Status, Natural England is currently reviewing all consents on blanket bog in line with the duty above (including those which permit burning) and working with landowners to put in place sustainable management and use of these sensitive areas. This will include completing the necessary programme of capital works such as grip-blocking to restore the natural hydrology of the bog and seeding/planting of peat-forming species such as cotton grasses and sphagnum mosses.

Blocking moorland grips (drainage channels) can slow overland flow and reduce the speed at which water enters rivers and streams, especially in small catchments and the upper reaches of larger ones.

Recent research sponsored by Defra shows that restoring moorland habitats can slow overland flow leading to delayed and reduced peak



discharge in small catchments. However, it remains difficult to demonstrate the benefits of land use change in larger catchments.

Any upland land management measures introduced to help mitigate flooding need to be considered alongside a full range of other options including hard and soft engineering solutions and other floodplain management options.?

**07 Nov 2016 | Written questions | House of Commons | 51612**

[Flood Control: Calderdale](#)

**Asked by:** Lynch, Holly

To ask the Secretary of State for Environment, Food and Rural Affairs, with reference to policies 52, 53, 57 and 62 of the Calderdale flood action plan, published in October 2016, what assessment she has made of the effectiveness of the Environment Agency's models for effective management of moorland in Calderdale on peak river flows in (a) Hebden Bridge and (b) Sowerby Bridge.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

The Environment Agency is currently modelling catchments in the Calder Valley to assess sites where natural flood management can be most effective and it is too early to comment on how these measures may affect peak river flows at Hebden Bridge and Sowerby Bridge.

Natural England leads on Policy Numbers 52 and 62. As part of the England-wide strategy to restore blanket bog across the uplands, Natural England is working with moorland managers and other stakeholders to agree long-term plans that address the wide range of interests and benefits that functional blanket bogs provide. Through this process and its review of consents on blanket bogs Natural England will be advocating the use of heather cutting as a preferred management tool. In the Calder Valley Natural England is working closely with the Environment Agency, Yorkshire Water and others to understand how and where such changes in management can be introduced to best effect.

Natural England has a duty under the Habitat Regulations to review any consents/permissions which were issued prior to designation as a European Site. Previously there was discretion as to whether the activities covered by the consents could be tackled through incentives and/or advice rather than formally affirming, modifying or revoking the consent. This discretionary aspect has been removed and under the 2012 amendment of the Habitats Regulations 2010 (Section 23) Natural England now has the legal duty to affirm, modify or revoke any consents issued on European sites, as soon as reasonably practicable.

As part of an England-wide strategy to restore blanket bog to Favourable Conservation Status, Natural England is currently reviewing all consents on blanket bog in line with the duty above (including those which permit burning) and working with landowners to put in place

sustainable management and use of these sensitive areas. This will include completing the necessary programme of capital works such as grip-blocking to restore the natural hydrology of the bog and seeding/planting of peat-forming species such as cotton grasses and sphagnum mosses.

The Natural Flood Management Operational Group, a sub-group of the Calderdale Flood Partnership, leads on Policy numbers 53 and 57. The Calderdale Flood Partnership is chaired by Councillor Tim Swift, Leader of Calderdale Metropolitan Borough Council. The Environment Agency and the Calderdale Flood Partnership remain committed to taking a catchment wide approach to reducing flood risk in the Calder Valley.

**08 Nov 2016 | Written questions | House of Commons | 51843**

#### [Flood Control](#)

**Asked by:** Lucas, Caroline

To ask the Secretary of State for Environment, Food and Rural Affairs, what assessment her Department has made of the potential of rewilding to reduce the risk of flooding in the UK.

**Answering member:** Dr Thérèse Coffey | **Department:** Department for Environment, Food and Rural Affairs

Rewilding techniques, such as woodland creation, leaky debris dams and peatbog restoration can have an impact in slowing the flow of flood water downstream. The Government's natural flood management demonstration projects, including those at Pickering in Yorkshire and Holnicote in Somerset, have demonstrated that these types of measures can be effective in helping to manage flood risk at a catchment scale, slowing the flow of water and reducing local impacts when carefully incorporated into a wider suite of catchment measures

The Government's long term plan for the environment will look at how to deliver benefits across wider landscapes and whole water catchment areas through more integrated catchment management. Incorporating natural flood management measures is at the heart of this.

**13 Sep 2016 | Written questions | House of Commons | 45440**

#### [Water: Pollution Control](#)

**Asked by:** The Marquess of Lothian

To ask Her Majesty's Government what action they are taking to protect the UK's rivers, lakes and wetlands from agricultural pollution, and what assessment they have made of whether the water protection zones are being used effectively in this regard.

**Answering member:** Lord Gardiner of Kimble | **Department:** Department for Environment, Food and Rural Affairs

Given that environmental protection is a devolved matter, I am replying in regard to the position in England.

This Government is committed to protecting and improving our water environment and supporting competitive agriculture. The recently published river basin management plans set out the actions that we will take over the next six years to improve water quality. The plans promote integrated catchment management and local decision making.

We have a wide range of actions to tackle water pollution from agriculture ranging from advice, voluntary and incentivised rules to regulation. For example, there are regulations to reduce the risk of nitrate pollution in Nitrate Vulnerable Zones.

Building on these regulations, Countryside Stewardship supports farmers who want to do more than the legal requirements and good practice by providing £400 million in funding to helping improve water quality and to manage flood risk.

We are also working towards better targeting of farm inspections with risk based enforcement that recognises good performance.

In addition to Government action, the agricultural industry is playing its part by developing an offer, explaining how it will help farmers to better protect the water environment.

All of this is underpinned by advice to farmers which is delivered through the Farming Advice Service and Catchment Sensitive Farming, £106 million has been invested through Catchment Sensitive Farming over the past 8 years to mitigate the impact of agricultural activities on the water environment

Further actions at national and local level are planned. Defra recently consulted on new rules to address sediment and phosphate pollution from agriculture. The consultation proposed some clear, simple and basic rules for all farmers, which would make a contribution to further protecting the water environment. Ministers are considering how to proceed in light of this consultation.

We are using a wide variety of measures to protect and improve our water environment. Water Protection Zones (WPZs) are a further tool. The Government is currently considering what further action will be required to meet the conservation objectives for our most precious protected sites. This will consider the full range of mechanisms, including WPZs.

**29 Apr 2016 | Written questions | House of Lords | HL7774**

[Water: Pollution Control](#)

**Asked by:** McCarthy, Kerry

To ask the Secretary of State for Environment, Food and Rural Affairs, with reference to her Department's Single departmental plan: 2015 to 2020, published in February 2016, what targets she has set for the number of kilometres of fresh water to be enhanced in each year to 2020; and how her Department plans to achieve those targets.

**Answering member:** Rory Stewart | **Department:** Department for Environment, Food and Rural Affairs

River Basin Management Plans provide the framework for protecting and improving the water environment. Updated Plans covering the period 2016 to 2021 were published by the Environment Agency (EA) on 18 February. They complement Defra's 25 Year Environment Plan by promoting integrated catchment management of water and local decision-making, as well as contributing to flood resilience.

The Plans for England confirm over £3 billion investment in the water environment by 2021 leading to improvements in at least 680 water bodies by 2021, including an overall target to enhance at least 8,000km of fresh waters by 2021. The EA is currently working with Defra to profile the delivery of this target over the six years that the River Basin Management Plan covers, and are also working with partners to explore opportunities to deliver more.

The EA coordinates action by water companies, farmers, local groups, businesses and councils to achieve the targets set out in the Plans. These actions include reducing pollution from sewage treatment works, managing water abstraction, opening up rivers to salmon and other fish species, and improvements to the physical habitat.

**10 Mar 2016 | Written questions | House of Commons | 29922**

[Flood Control: Farms](#)

**Asked by:** Whittaker, Craig

To ask the Secretary of State for Environment, Food and Rural Affairs, what steps her Department is taking to work with farmers and land owners in areas susceptible to flooding to encourage them to allow parts of their land to flood to avoid flooding elsewhere.

**Answering member:** Rory Stewart | **Department:** Department for Environment, Food and Rural Affairs

Temporarily storing flood water on agricultural land can be a cost effective way of reducing risks elsewhere in a catchment, and where such schemes are planned, farmers/landowners are paid to store flood water on their land in a managed way, with payments being made to offset the damages caused by additional deliberate flooding that forms a part of the flood management scheme.

**29 Jan 2016 | Written questions | House of Commons | 24300**

[Flood Control: Hill Farming](#)

**Asked by:** Whittaker, Craig

To ask the Secretary of State for Environment, Food and Rural Affairs, what assessment she has made of the potential merits of increasing the use of upland management schemes in areas susceptible to flooding as a method of flood prevention.

**Answering member:** Rory Stewart | **Department:** Department for Environment, Food and Rural Affairs

Land management change can have important benefits in reducing flood risk. We will encourage any measures that could help manage flood risk, for example management of our peat uplands and planting trees to slow the flow at the same time as providing wider environmental benefits within catchments. Flood risk management is also one of the targeting criteria for woodland creation funded through the new Countryside Stewardship scheme and the Forestry Commission also continues to undertake research into understanding what role woodlands can play in managing flood risk.

**29 Jan 2016 | Written questions | House of Commons | 24299**

### [Hill Farming](#)

**Asked by:** Flynn, Paul

To ask the Secretary of State for Environment, Food and Rural Affairs, what assessment she has made of the potential merits of implementing the Natural England report, Vital Uplands, published in 2009, in respect of restoration of deep upland vegetation to control hillside water runoff and valley flooding.

**Answering member:** Rory Stewart | **Department:** Department for Environment, Food and Rural Affairs

The Vital Uplands report of 2009 was withdrawn by the previous Natural England Board and Management Team. Natural England, the Environment Agency, Defra and by academic institutions continue to closely monitor the complex science and evidence around upstream mitigation, through peatland, forestry and other natural measures. Some such measures have now been funded by the Government and piloted in schemes such as that in Pickering in Yorkshire. Natural upstream mitigation will be a key element of our planning at a catchment level, currently being taken forward through the Cumbrian Floods Partnership and our 25-year Environment Plan.

**15 Jan 2016 | Written questions | House of Commons | 21542**

## 4.2 Debates

### Commons Chamber

#### [Future Flood Prevention](#)

27 February 2017 | Vol 622

#### [Flooding](#)

6 January 2016 | Vol 604

**Westminster Hall**

[Flood Defence Projects: South-west](#)

07 February 2017 | Vol 621

**Lords Chamber**

[Brexit: Environmental and Climate Change Policy](#)

20 October 2016 | Vol 774

[Flood Management](#)

14 January 2016 | Vol 768

## 5. Useful links and further reading

POSTNOTE, *Reform of Freshwater Abstraction*, January 2017

<http://researchbriefings.files.parliament.uk/documents/POST-PN-0546/POST-PN-0546.pdf>

Library briefing paper: *Flood risk management and funding*, 9 December 2016

<http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7514>

Environment, Food and Rural Affairs Committee, *Future flood prevention*, 2 November 2016, HC 115 2016-17

<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvfru/115/115.pdf>

Environment, Food and Rural Affairs Committee, *Future flood prevention: Government's response to the Committee's Second Report of Session 2016-17*, 24 January 2017 HC 926 2016-17

<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvfru/926/926.pdf>

Environment, Food and Rural Affairs Committee, *Future flood prevention: Government's Response to the Committee's Second Report of Session 2016-17: Government Response to the Committee's Fourth Report*, 23 February 2017 HC 1032 2016-17

<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvfru/1032/1032.pdf>

Rewilding Britain, *How rewilding reduces flood risk*, September 2016

<http://www.rewildingbritain.org.uk/assets/uploads/files/publications/Final-flood-report/Rewilding-Britain-Flood-Report-Sep-6-16.pdf>

Environmental Audit Committee, *Soil Health*, 2 June 2016, HC 180 2016-17

<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvaud/180/180.pdf>



Environmental Audit Committee, *3rd Special Report, - Soil Health: Government Response to the Committee's First Report of Session 2016–17*, 13 September 2016 HC 650

<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvaud/650/650.pdf>

Environmental Audit Committee, *Flooding: Cooperation across Government*, 9 June 2016

<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvaud/183/183.pdf>

Environmental Audit Committee, *2nd Special Report, - Flooding: Cooperation across Government: Government Response to the Committee's Second Report of Session 2016–17*, 09 September 2016 HC 645

<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvaud/645/645.pdf>

Environment Agency, *Cumbria Flood Action Plan: Reducing flood risk from source to sea*, June 2016

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/533457/cumbria-flood-plan-overview.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/533457/cumbria-flood-plan-overview.pdf)

Defra FCERM Multi-objective Flood Management Demonstration project: *Slowing the Flow at Pickering*, May 2015

[https://www.forestry.gov.uk/pdf/FR\\_STF\\_Pickering\\_P2\\_May2015.pdf/\\$FILE/FR\\_STF\\_Pickering\\_P2\\_May2015.pdf](https://www.forestry.gov.uk/pdf/FR_STF_Pickering_P2_May2015.pdf/$FILE/FR_STF_Pickering_P2_May2015.pdf)

National Trust, *From source to sea: Natural Flood Management; the Holnicote Experience*, March 2015

<https://www.nationaltrust.org.uk/holnicote-estate/documents/from-source-to-sea---natural-flood-management.pdf>

POSTNOTE, *Catchment-wide Flood Management*, 11 December 2014

<http://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-484>

POSTNOTE, *Diffuse Pollution of Water by Agriculture*, October 2014

<http://researchbriefings.files.parliament.uk/documents/POST-PN-478/POST-PN-478.pdf>

Water UK, *CAP Reform: A future for farming and water*, March 2013

<http://www.water.org.uk/sites/default/files/documents/Policy-Reports/cap-reform---a-future-for-farming-and-water.pdf>

Ofwat, *From catchment to customer*, September 2011

[http://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs\\_inf\\_catchment.pdf](http://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs_inf_catchment.pdf)

GOV.UK, *Collection: Catchment flood management plans*, December 2009

<https://www.gov.uk/government/collections/catchment-flood-management-plans>

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