



House of Commons
Environmental Audit
Committee

Flooding: Cooperation across Government

Second Report of Session 2016–17



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*Report, together with formal minutes
relating to the report*

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Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

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Committee staff

The current staff of the Committee are David Slater (Clerk), Carl Baker (Second Clerk), Tom Leveridge (Senior Committee Specialist), Stanley Kwong (Committee Specialist), Talia Dundoo (Committee Researcher), Ameet Chudasama (Senior Committee Assistant), Baris Tufekci (Committee Assistant), and Nicholas Davies (Media Officer).

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Summary

Between December 2015 and January 2016 storms Desmond, Eva and Frank caused flooding in the north of England and Wales and parts of Scotland and Northern Ireland. Insured losses totalled £1.3 billion.

Every major flood event in the last 20 years has been followed by a review and this year was no exception. In January the Government launched a National Flood Resilience Review which will assess how the country can be better protected from future flooding. The aim of this report is to inform that Review.

Communities and taxpayers have the right to know that they are being protected from flooding and that their taxes are being spent efficiently on sustainable flood defences. Overall, we found that there was a lack of effective long-term strategic planning about how to manage flood risk. Despite efforts to improve, the Government appears to be reactive rather than proactive. We focused on two areas of government policy which demonstrated this: investment and planning.

We found that Government spending on flood defence tends to fluctuate year-on-year. During the last Parliament funding was initially cut and only increased due to the reactive funding injection following the winter 2013–2014 floods. This is worrying because the independent Worsfold review demonstrated a relationship between flood maintenance spending and the good condition of critical flood defences. As the money required to maintain these defences fell, so did the number of these defences which meet the Environment Agency's required condition. Any decline in the condition of critical assets represents a real world and unacceptable risk to local communities at risk of flooding. We are concerned that the Government only released this review when we requested it and it has been published only on our website.

We note the Government's commitment to spend £2.3 billion on building new defences and protect spending to maintain existing defences. We are sceptical, however, that the Government will reach its target of protecting 300,000 properties, based as it is on an inherently optimistic forecast that assumes optimal efficiency in spending decisions. We were also surprised to hear that the additional £700 million of funding, announced in this year's Budget, was based on a "political calculation" and may not be allocated using the same methods as the £2.3 billion which could lead to inefficiencies in flood investment, poor decision making and potentially geographically unfair outcomes.

Nationally significant infrastructure is not currently protected to a consistent standard. Infrastructure companies should be mandated to report their target resilience level, why this target is appropriate and what progress they are making to achieve it.

While there was national policy in place to plan for future flooding events this did not always translate through to the local level. Government should, in the short term, provide more support to local authorities to enable them to adopt a plan and, in the medium term, support and encourage local authorities to develop joint local plans that properly take account of flood risk management.

In 2013/14 almost 10,000 properties were built in high flood risk areas. We are pleased to hear that Environment Agency advice on whether, or how, to build in high flood-risk

areas is almost always followed. But we are concerned that this is not systematically monitored, reported or followed up through the planning system. Similarly, the number of local flood plans under the National Planning Policy Framework and flood strategies is worryingly low. We are concerned that local councils are not receiving the support they need to develop them and ensure they are fit for purpose.

Despite sustainable urban drainage systems being widely acknowledged to be an efficient way of dealing with surface water, successive governments have been reluctant to mandate them as the default option in new developments. We are disappointed that the Government has kicked this into the long grass by commissioning another review. This is an issue that now requires action.

There is currently a lack of transparency demonstrated by the Government's unwillingness to publish the results of past reviews and to track in an open way how it has implemented them. Greater transparency will also be necessary from Government and the Environment Agency over the allocation of flood defence spending to ensure there is no actual or perceived unfairness in allocating money. It is critical that the Government undertakes its current review in an open and transparent way to allow stakeholders, including Parliament, to monitor its progress and hold it to account.

1 Introduction

1. Between December 2015 and January 2016 storms Desmond, Eva and Frank caused flooding in the north of England and Wales and parts of Scotland and Northern Ireland. In England 16,000 properties were flooded.¹ Insured losses across the UK totalled £1.3 billion.² The Committee on Climate Change (CCC) highlighted in its 2015 *Progress in preparing for climate change* report, that the frequency and severity of flood events in the UK is likely to increase in the future as a result of climate change.³ In January the Government launched a National Flood Resilience Review. We hope that this report will help to inform the Review.

2. This report looks at the actions taken by Government and other relevant bodies involved in flood risk management to mitigate the impacts of flood events similar to those seen last winter. In chapter 3 we look at whether the Government has adequately implemented the recommendations from reviews of previous floods. In chapter 4 we examine government funding for flood risk management. In chapter 5 we explore the extent to which national planning policies enable planners at a local level to protect communities and nationally significant infrastructure from flooding. In chapter 6 we explore natural flood management approaches.

3. The Environment, Food and Rural Affairs (EFRA) Committee is also conducting an inquiry into *Future flood prevention*. In addition to the issues we have looked at, their inquiry will also look at predicting future floods and flood insurance. More details are available on their [website](#).

4. During this inquiry we held four public hearings. We received 11 written submissions. All the evidence received during this inquiry is available on our website. We also visited Leeds to hear directly from businesses and other stakeholders who had been affected by the winter floods. A summary of this meeting can be found at the end of this report. We are grateful to all those who gave their time and effort to contribute to the inquiry, including Government Ministers.

1 HC Deb 5 Jan 2016: [Col 69](#) [Commons Chamber]

2 Figure provided by the Association of British Insurers (ABI).

3 Committee on Climate Change, [Progress in preparing for climate change: 2015 report to Parliament](#), June 2015, page 6,9, 10

2 Impacts

5. In early December 2015, Storm Desmond brought severe gales to the UK. Flooding following this storm caused road and rail closures. About 40 schools in Cumbria were closed and appointments across NHS hospitals were cancelled. Many homes and businesses also lost power due to unforeseen flood damage at a substation in Lancaster. Over Christmas 2015, further heavy rainfall and severe flooding occurred as a result of Storm Eva. On Boxing Day, residents in West Yorkshire and Lancashire were evacuated from their homes and flooding hit Leeds, Greater Manchester and York. Hundreds of people were evacuated from their homes in York and the Foss barrier was raised due to flooding of its electrical controls. In late December, Storm Frank affected western parts of the UK, particularly north-west Scotland. Further flooding occurred, leading to many homes being evacuated.⁴

6. During this inquiry we visited Leeds to meet stakeholders from the surrounding area, including local businesses, who had been affected by the flooding in that area. During our visit we heard concerns that the Government had not fully appreciated the extent of the impacts felt by businesses in that area (see appendix 1).

7. Several businesses highlighted that during the flooding event there was a lack of communication between organisations responsible for coordinating the response to the floods. Business owners had little warning of the scale of the floods and were unable to take appropriate mitigating actions in time. In Calderdale Valley, one business suggested that the response of the emergency services was reactive rather than proactive, arguing that the police, in particular were too slow to respond.

8. In Calderdale the economic impact on small and medium-sized enterprises (SMEs) was estimated to have cost £47 million with indirect costs totalling £170 million.⁵ Calderdale Council estimated that 70 to 80% of businesses had been affected and the recovery could take two years. This included many local SMEs and their local supply chains. We were told that there were little to no government funds to support future higher insurance costs in that area and that, as result, many businesses might not survive. In place of government support some local organisations including the Community Foundation for Calderdale had established a local 'flood save' scheme.⁶ This is a match funded savings scheme for business and homes not covered by the Government's Flood Re scheme. To date it has awarded £2.4 million in aid. We were told that businesses might not want to remain in these areas unless the issue of flood protection and availability of insurance at realistic prices are resolved.

9. In Leeds, flooding on the scale experienced last winter had not been seen since 1866. The flooding had a significant impact on businesses, including a number of national and well-known names. This caused significant economic cost and put many local jobs at risk. Leeds City Council were hopeful, however, that the Government's commitment to fund a new £40 million flood defence scheme in Leeds would protect parts of the city in the future.

4 *Winter floods 2015–16*, Briefing paper [CBP7427](#), House of Commons Library, January 2016

5 University of Leeds, *Economic Impact Assessment of the Boxing Day Floods (2015) on SMEs in the Borough of Calderdale*, April 2016, p 3

6 Community Foundation for Calderdale, '[Flood save](#),' accessed 19 May 2016

10. The overriding issue of concern was insurance. No businesses are covered by the Government's Flood Re scheme. Leeds University described how 60% of businesses were now unable to get (a quotation for) insurance. Of the rest, 20% could not afford the quote provided. One local business described how his flood excess had risen from £1,000 to £250,000 following the floods. This would go down to £70,000, but only once a new wall had been built at the company's expense. Another small business described how their buildings insurance premium had risen 60% to £10,000 and their excess had increased 40% to £10,000. This was based on building flood defences worth £400,000 which they would have to pay for. Another business had been flooded seven times in 12 years.

11. The 2015–16 winter floods caused significant damage in south-west Yorkshire. During our visit to Leeds we heard concerns that the Government had not fully appreciated the extent of the impacts felt by businesses in that area. In Calderdale alone the cost to SMEs was estimated to be £47 million with indirect costs totalling £170 million. If the Government is serious about seeing these areas recover then concerns about lack of flood protection and affordability of insurance need to be addressed.

3 Reviews

Current review

12. There are four main types of flooding; groundwater, surface, coastal and fluvial. They often happen together but strategies for dealing with them can differ.

13. Every major flood event in the last 20 years has been followed by a review (see table 1). Dieter Helm, an economist and professor at Oxford University who specialises in utilities, infrastructure, regulation and the environment, described this reactive pattern as “normal” but questioned its effectiveness:

The normal way of dealing with flood events is as follows: you have an unexpected disaster; a lot of people are terribly inconvenienced and suffer accordingly; money is thrown at the problem in emergency funds; there is a call for a review; there is a review; the review recommends spending some more money and a lot of other sensible measures; some of these things get implemented and—as I would describe them—many of them are very useful but they are essentially sticking plasters. So you wait until the event happens again and then you go through exactly the same process [...].⁷

14. In response to last winter’s floods, the Government announced a new national review and provided additional funding.⁸ This National Flood Resilience Review (“the Review”) will assess how to ‘better protect the country from future flooding and increasingly extreme weather events.’ It will focus on four key areas:

- Updating our climate modelling and stress-testing the nation’s resilience to flood risk;
- Assessing the resilience of the UK’s critical infrastructure like electricity substations;
- Assessing the resilience of the UK’s temporary defences; and
- The Government’s future investment strategy.⁹

15. This reflects exactly the process described by Dieter Helm. As he explained:

We have had a really horrible event for people. We have had some emergency money thrown at it. We are now going to have a review and so the question is: is this an opportunity, the third time round, to get it right and realise that there are substantial and structural things that ought to be done? Or do we simply say, “Look, it is bad luck. These things should not happen this often. I am sure we could find some more measures to do and a bit more money and it will be fine”?¹⁰

16. John Curtin, then acting Executive Director of Flood and Coastal Risk Management at the Environment Agency argued that the Government’s approach was “perfectly valid”:

7 Q44

8 The Government also announced a review in Cumbria.

9 “A country more flood resilient”, Department for Environment, Food & Rural Affairs [press release](#), 13 December 2015

10 Q44

The cycle of reviews is we have a long strategic plan for flood risk and have done for a number of years and when that meets events, you do reflect and see whether that is still the right plan.¹¹

17. Sir James Bevan, Chief Executive Officer of the Environment Agency, set out how the Government's latest Review would differ from past reviews:

[...] It feels to me like a genuine and serious attempt to think deeply and long term about the consequences for our country of climate change and changing weather patterns. The fact that we are taking our time about it, the fact that a large bunch of stakeholders from around Government are contributing, the fact that the review will want to issue a call for evidence from others I think is evidence of seriousness to do this in an intellectually robust way. Certainly, I am interested in practical outcomes, but I think it is right that we step back and take a serious look at what conclusions we draw from December before we make those decisions.¹²

18. Lord Krebs, Chair of the Adaptation Sub-Committee at the CCC, who published his first statutory progress report to Parliament on the National Adaptation Programme in June 2015, criticised the Government for its lack of a long-term approach to flood risk management:

[...] having done a very thorough analysis and come to the conclusion that [...] there was a need to look again at the whole strategy that the country has for managing flood risk, the Government basically said, "No, we are perfectly happy with what we are doing". What we have seen as a result of the December and early January floods is that the Government is now undertaking a review [...]. So perhaps some of the questions that we raised in our June report last summer will now come back on to the table and we will have a further opportunity to press the Government to reconsider their position that they were taking sufficient action already. [...].¹³

19. Sir James Bevan disagreed, arguing the Government and the Environment Agency were taking a long-term approach:

[...] The Environment Agency developed in 2009 and refreshed in 2014 its long-term investment scenarios. They look forward from now until 2065 at the flood risks that we are likely to face over the coming decades, factoring in what we know about climate change and seeking to ask what that means in terms of how we manage that flood risk. That is a pretty strategic and long-term approach. We have a six-year investment programme designed to improve flood protection for 300,000 houses over the next four to five years. That is putting a lot of money over an agreed fairly lengthy period into investment in new flood defences and, as you know, the Government has committed that it will also protect in real terms the money that we spend over the next four

11 Q97 [John Curtin]

12 Q103

13 Q17 [Lord Krebs]

years in terms of maintaining our flood defences. From my background in Government, that is quite a long-term commitment and I think that is very helpful in terms of our strategic planning.¹⁴

20. During the inquiry we asked our witnesses what they would like to see come out of the Review. Almost all shared a common desire to see improvements in communication and collaboration between key organisations involved in or affected by flooding. Sir James from the Environment Agency said he would like to see moves to “think bigger and more holistically about flood risk” and involve a wide range of stakeholders in flood risk management.¹⁵ This was echoed by representatives from a range of infrastructure companies who highlighted specific issues which needed to be addressed such as funding and planning, as well as improving partnerships and collaboration between different organisations.¹⁶ Similarly, the Association of British Insurers (ABI) told us in written evidence that the Government should encourage greater co-ordination between relevant organisations to support community level resilience measures which could help raise greater awareness of flood risk within local communities, and incentivise resilience action in local and neighbouring communities.¹⁷

21. During our visit to Leeds, most businesses felt that there was a lack of communication and coordination both between frontline response organisations (for example police and fire services) and between water companies, the Environment Agency and local businesses (see appendix 1).

Past reviews

Pitt review

22. The most significant and high-profile review following a major flood event was the 2008 Pitt review. The then Government commissioned Sir Michael Pitt to “undertake a comprehensive review of the lessons to be learned from the summer floods of 2007.” The Pitt review called for “urgent and fundamental changes in the way the country is adapting to the increased risk of flooding and called on the Government to set out publicly how it will make rapid progress, and be held to account, on improving the country’s flood resilience.” Among other things, it recommend the Government should:

- Establish a Cabinet Committee dedicated to tackling the risk of flooding, bringing flooding in line with other major risks such as pandemic flu and terrorism;
- Publish monthly summaries of progress during the recovery phase of major flooding events, including number of households still displaced;
- Ensure proper resourcing of flood resilience measures, with above inflation increases every spending review;
- Establish a National Resilience Forum to facilitate national level planning for flooding and other emergencies;

14 Q98

15 Q104

16 Qq206–208

17 Association of British Insurers ([FDG0009](#)) para 2.6

- Have pre-planned, rather than ad hoc, financial arrangements in place for responding to the financial burden of exceptional emergencies;
- Publish an action plan to implement the recommendations in this review, with regular progress updates.¹⁸

23. Successive governments published responses and progress reports to the Pitt review in 2008, 2009 and 2012. The Coalition Government stated that “it supports changes in response to all of the recommendations in the review.” While 83 of the 92 recommendations had been implemented by the time the final 2012 progress review was published, recommendations 87 and 88 which suggested establishing a Cabinet Committee and a National Resilience Forum were not implemented. These were intended to help to ‘improve the country’s ability to deal with flooding and implement the recommendations from the review’ and ‘facilitate national level multi-agency planning for flooding’.

Table 1: national flooding events and their associated review.¹⁹

Date	Flood event	Response
Easter 1998	Wide spread flooding. Thousands evacuated. Insured losses totalled £210 million.	1998 Easter Floods, Final assessment by the Independent, Review Team for the Environment Agency.
Autumn/winter 2000	10,000 homes and businesses were flooded at 700 locations. Insured losses totalled £1.1 billion.	Lessons learned, Autumn 2000 floods by the Environment Agency.
Summer 2007	55,000 homes flooded. Gloucestershire, Yorkshire, Hull and Worcestershire heavily affected. Insured losses totalled £3.4 billion.	Review of 2007 summer floods by the Environment Agency and the independent Pitt Review .
Winter 2013–14	Persistent flooding on the Somerset Levels and in Southern England. Insured losses for flooding totalled £460 million. Briefer coastal flooding and wave battering damage in Dorset, Devon and Cornwall. Insured losses from storm damage totalled £640 million.	Government ‘annual resilience review’ (“never reported”, Daniel Johns, CCC, Q40) and the independent Worsfold Review .
Winter 2015–16	Flooding in north of England, Scotland, north Wales and parts of Northern Ireland. Insured losses totalled £1.3 billion.	National Flood Resilience Review and a specific review on Cumbria. Due to report in summer 2016.

18 “Sir Michael Pitt publishes final report: ‘learning lessons from the 2007 floods’”, The Pitt Review [press release](#), 25 June 2008

19 Insured losses figures by the Association of British Insurers (ABI).

24. Rt Hon Oliver Letwin MP, Minister for Government Policy and Chancellor of the Duchy of Lancaster, said that this recommendation had not been taken up because, “it would be a very ungainly way to try to manage Government’s business.” He argued:

If you had a committee that was just dealing with floods without any very precise agenda, you would have a lot of spinning of wheels and you would then end up with a committee on each different risk and that is not a sensible way to manage things.²⁰

Instead the Minister described the use of the National Security Council a Cabinet Committee, chaired by the Prime Minister, which looks at “risks in the round.” It was this Committee that had decided to establish the flood review and the Government’s 25 year plan for a healthy natural economy.²¹

Government’s ‘annual resilience review’

25. Following the 2013–14 winter floods the Coalition Government established a Cabinet Sub-Committee on flooding with the aim to “coordinate strategic long-term plans on flood recovery and flood resilience, following the severe weather.” When this Committee was established it was agreed that:

The government, led by Oliver Letwin and supported by the Cabinet Office, will instigate an annual review in to the resilience of our nation. The review will consider the local, regional and national response to the extreme weather, identify blockages to effective and decisive action and make recommendations for the government’s long and short-term resilience strategy.²²

At that time, Lord Krebs wrote to the Prime Minister on behalf of the CCC offering to assist the Government by providing evidence and data to support this new Committee.²³ The new Committee reportedly only met three times and did not publish a report. Daniel Johns, Head of Adaptation UK at the CCC told us that the lack of a report meant that it was unclear how prepared the UK was for future flood events:

We had a formal letter in reply essentially saying that Oliver Letwin was taking forward the annual resilience review and we had meetings. It is also worth noting that the annual resilience review—which was a real review, because we have talked to the team involved—was never reported. So, even eight years or so on from the Pitt Review, we still don’t know to what extent infrastructure in this country is better prepared now than it was back then, for the kind of flood events we are seeing increasingly frequently.²⁴

26. Oliver Letwin told us that it was never the intention of that Committee to produce a report. The Minister admitted that a lot of people were anticipating a report and that there was a failure of communication on Government’s part. The Minister however argued that what it did was more important than producing a report; “it produced a better

20 Q219

21 Q221, Defra, *The government’s response the Natural Capital Committee’s third state of Natural Capital report*, September 2015, p 1

22 “First meeting of new Cabinet Committee on Flooding”, Prime Minister’s Office [press release](#), 13 February 2014

23 “Evidence to support the work of the new Cabinet Committee on Flooding”, Committee on Climate Change [letter](#), 19 February 2014

24 Q40 [Daniel Johns]

response to flooding.”²⁵ The Minister set out a series of actions including the creation of the Ministerial Recovery Committee; the creation of a package of measures designed to replace the Bellwin Scheme which had been judged to be inadequate; the establishment of the Somerset Rivers Authority and a new flood action plan for Somerset and something similar for the Thames Valley; and improvements in how information is shared with Cobra when flooding occurs.²⁶

Worsfold review

27. Another review was carried out after a major flood event in 2014 by Mark Worsfold, Chief Engineer at Ofwat. He was asked by the Coalition Government to carry out an independent peer review of the maintenance of the Environment Agency’s flood and coastal erosion risk management (FCERM) assets. The Worsfold review compared and contrasted the Environment Agency’s asset management practices, policies and procedures with those in place by the Water and Sewerage companies in England and Wales. The review highlighted that this sector had, since privatisation, delivered significant improvements in efficiency and service. Based on this work the review made 33 observations and 11 key recommendations.

28. The Worsfold review was never published. When asked about the review some witnesses including the CCC and the Environment Agency appeared reluctant to talk about its contents only providing high-level summary and telling us that we had to approach Government before we could see the findings from the report.²⁷

29. The Government subsequently shared the report with us and a copy is available on our website. When asked why the report had not been put into the public domain, Rory Stewart MP, Parliamentary under Secretary of State at the Department for Environment Food and Rural Affairs, told us:

The answer is no reason at all. As you know, having read it, it is a very technical report that basically looks at the accountancy procedures and the asset management registers and the way that the economic calculations and efficiency calculations with the Environment Agency flood management system works. We commissioned it for internal purposes, but it is absolutely not a secret and we are very happy to share it with anyone. Indeed, that has been the case since it was produced 18 months ago.²⁸

But when we asked whether it had been shared with anybody else prior to us the Minister said “no”.²⁹ The Government has subsequently shared the Environment Agency’s original response to the Worsfold review with us. The Environment Agency has also provided us with an update on its progress towards implementing the review’s recommendations. Both are available on our [website](#).³⁰

25 Q218 [Oliver Letwin]

26 Q217

27 Qq33–35, Q105–107

28 Q209

29 Q210

30 Environment Agency (FDG0014), Environment Agency, [Response to the Infrastructure UK peer review of flood and coastal risk management](#), November 2015

30. Over the last 20 years there has been a review following every major flooding event. Failure to take a long-term approach to flood risk management and implement fully the recommendations from these reviews - especially from the Pitt Review - may have affected the Government's ability to respond effectively to last winter's floods. We support the Government's original idea from 2014 that there should be an annual national review of the nation's resilience. The Government should work with the Committee on Climate Change to produce this. In the interests of transparency and accountability the Government should also publish an action plan alongside this yearly review setting out, using measurable objectives, its progress. The Government's current review would be a good starting point upon which to build. This will enable the Government and the Environment Agency to be held to account for its performance in delivering those actions particularly in light of future flooding events. During this inquiry a diverse range of stakeholders shared a common desire to see improvements in communication and collaboration between key organisations involved in or affected by flooding. We hope that the Government will take this into account.

4 Investment

Past investment

31. Funding of flood risk management is complex. More information about how the Government funds flood risk management is set out in a House of Commons Library Briefing paper available [online](#).³¹

32. The independent 2008 Pitt review argued that, while it was not its role to consider precise levels of future flood defence spending, ‘with the evidence of increasing risks from climate change and the additional challenges identified’ it would be ‘sensible for the Government to plan on the basis of above inflation settlements in future Government spending rounds.’³² Similarly the independent 2014 Worsfold review argued that ‘levels of investment should not be lowered below 2014–15 levels due to potential risks around uncertainty and climate change.’³³

33. Funding figures (see figure 1) show that at the beginning of the last Parliament there was a substantial drop in annual funding which remained until the winter floods of 2014–2015 at which point the Coalition Government responded with a one-off funding injection. This highlights a potential disconnect between what the Coalition Government planned to spend and what it actually ended up spending on flood defence. Rory Stewart acknowledged that governments tend to spend more in years immediately following a flood but argued that expenditure had increased in real terms over the five-year period:

If you look at the five-year period rather than annual spikes, the 2005 to 2010 period, approximately £1.8 billion was spent; 2010 to 2015 the figure will be approximately £2 billion, so the amount is going up over those five-year periods. It is correct that in that individual year more was spent, but if you average it over the five-year period and do not take into account the tendencies of Governments to spend more in the year immediately following a flood, you will find that flood expenditure has gone up year on year over the last 15 years in every five-year period and will continue to do so now.³⁴

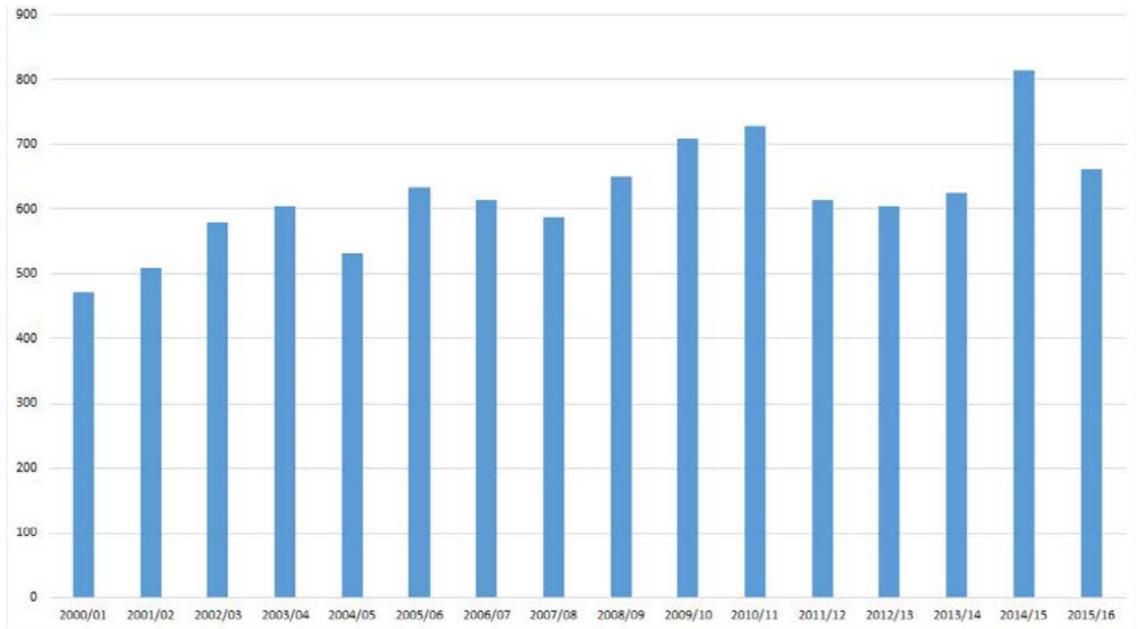
31 *Flood risk management and flooding*, Briefing paper [CBP07514](#), House of Commons Library, March 2016

32 The Pitt Review, *Learning lessons from the 2007 floods*, June 2008, p xviii

33 Environment Agency, *Flood and Coastal Erosion Risk Management (FCERM) maintenance review*, September 2014, Page 7

34 Q212

Figure 1: Total expenditure on flood and coastal erosion risk management in England 2000/01 to 2014/15 and 2015/16 budgets (£m). Real terms (2015/16 prices).



Source: *Flood risk management and flooding*, Briefing paper [CBP07514](#), House of Commons Library, March 2016

34. *The Government's claim that spending on flooding has increased every five years does not reflect the fact that funding was initially planned to decline over the 2010–2015 Parliament and was only higher due to the reactive funding injection following the winter 2013/2014 floods. This approach is inefficient and goes against the advice of Sir Michael Pitt and Mark Worsfold in their reviews. We recommend that the Government adopt a more strategic approach to funding flood risk management which avoids such fluctuations in funding.*

35. FCERM total expenditure can be broken down into capital and resource expenditure - broadly this means funds for new defences and maintenance of existing defences respectively. Daniel Johns from the CCC said it was important to sustain flood spending:

[...] we have about £20 billion-worth of flood defence assets already out there in the country. That takes money just to keep going, not only to maintain and upgrade those defences over time, but to build new defences in parts of the country that are currently pretty exposed and undefended. You need to run, in flood defence terms, just to stand still. [...].³⁵

36. Daniel Johns also pointed out that maintenance funding in particular was at the lower end of what the Environment Agency (responsible for assets with a replacement value of over £20bn) needed:

The number that the Environment Agency say is sufficient to maintain defences over time is somewhere between £170 million and £190 million per year. That is the revenue cost of defence maintenance. They are currently spending £170

million per year and have said they will protect that in real terms over the course of this Parliament, so I guess you could say they are spending at the lower end of the ideal range.³⁶

It is clear that there was underinvestment over the course of the last Parliament. We valued that at about £200 million in total over the five years. That was because of the significant reductions in both capital and revenue spending that were made in 2010.³⁷

37. This was supported by a 2014 National Audit Office (NAO) report, *Strategic Flood Risk Management*, which highlighted that spending on managing flooding in England was “insufficient” to maintain defences. It reported that funding for maintenance had fluctuated. For example, between 2010–11 and 2013–14, within the 10% overall revenue reduction, the Environment Agency’s funding for maintaining flood assets had reduced by 14%. The report stated:

An additional £35 million allocated for 2014–15 and 2015–16 as part of the £270 million has, in cash terms, restored maintenance funding to 2010–11 levels. In real terms, this equates to a 6% decrease between 2010–11 and 2014–15. The Agency has reduced and prioritised its maintenance regime and also made efficiencies, including a £44 million saving on capital construction costs between 2011 and 2014.³⁸

38. The result of this reduction was highlighted in the Worsfold review which showed that as maintenance spending declined so did the percentage of critical assets that met the Environment Agency’s required standard from 99% to 94% (see figure 2).³⁹ The current target for Environment Agency maintained high consequence assets is to achieve 97% at or above the required condition by April 2017.⁴⁰ The Worsfold review showed that between 2009 and 2013 the number of assets which met the required standard were totalled at or above 97%. Any decline below 97% represents a real world and unacceptable risk to local communities at risk of flooding. The Government has taken steps to rectify this, confirming in the 2015 Autumn Statement that flood defence maintenance spending will now be maintained. The Environment Agency said that it thought it was making good progress against its target but last winter’s floods had affected progress. It was confident that it would achieve its target by April 2017.⁴¹ Given the increasing risk from climate change we urge the Government to see the 97% as a minimum and to have the ambition of 99% of critical asserts meeting the required condition by 2019. We heard some evidence that previous under-investment could have contributed to the impact of last winter’s floods.

36 Q36

37 Q38

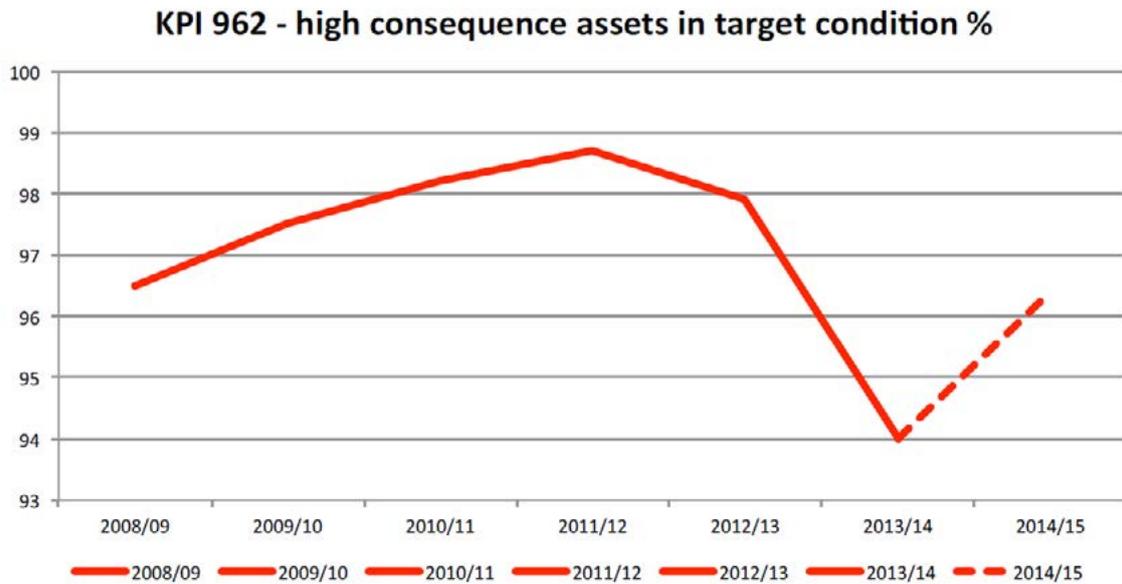
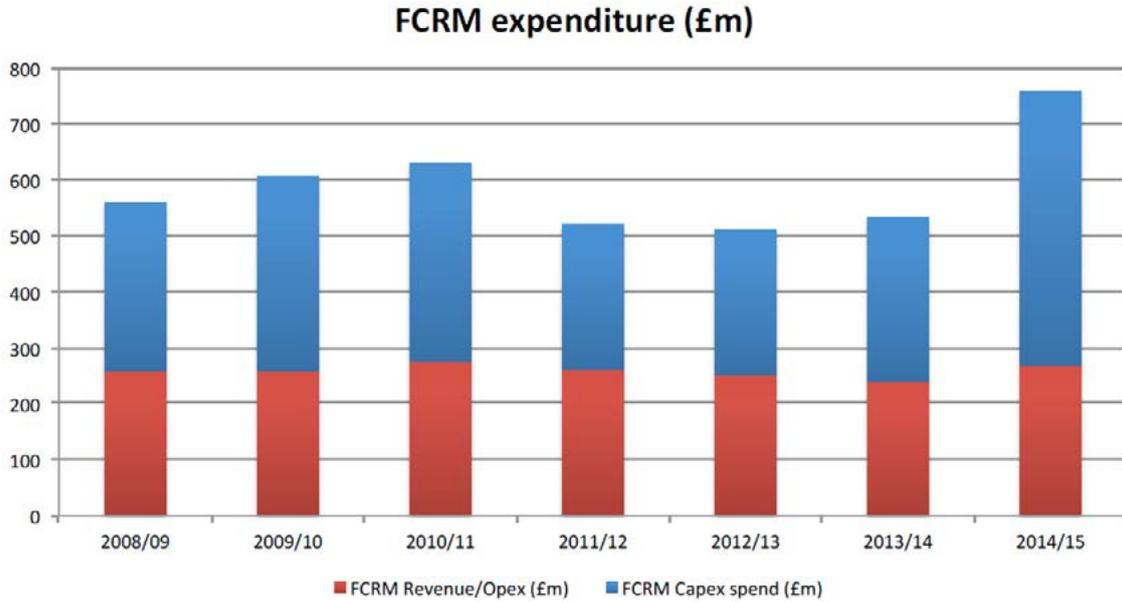
38 National Audit Office, *Strategic Flood Risk Management*, November 2014, p 24

39 Environment Agency, *Flood and Coastal Erosion Risk Management (FCERM) maintenance review*, September 2014, p 11

40 Environment Agency ([FDG0013](#))

41 As above

Figure 2: FCRM expenditure for the period 2008/9 to 2014/15 and high consequence assets in target conditions (%)



Source: Environment Agency, [Flood and Coastal Erosion Risk Management \(FCERM\) maintenance review](#), September 2014, p 11

39. The Foss barrier, a 16.5 tonne gate near York, is designed to prevent high water levels in the River Ouse entering the River Foss in a highly urbanised area. Last winter the barrier was overwhelmed causing flooding along the River Foss. Since its construction in 1987, the barrier has protected York on a number of occasions, including the floods of 2000, 2007 and 2012. It forms part of York’s city-wide defences.

40. During our visit to Leeds, we heard about the failure of the barrier during the winter flood. In May 2016, the Environment Agency published an investigation report examining the reasons for this failure.⁴² It reported that water leaked into the control room putting

⁴² Environment Agency, [Foss barrier and pumping station - factual report of flooding on 26 December 2015](#), May 2016, p 1

the power supply to the building at risk. Representatives from the Environment Agency told us that the 30-year-old barrier had recently been reviewed and £3.5 million had been allocated to repair it by 2020 (see appendix 1). These repairs would bring it up to withstand a one in 100 year event. They subsequently submitted written evidence stating that they had ‘started works to upgrade the facility with new pumps and an improved resilience using the £10m additional money allocated by the Government following the floods so that it can pump the flows from the River Foss experienced in December 2015.’⁴³

41. *The Worsfold review demonstrated a relationship between maintenance spending and the condition of critical assets which protect people and property from flooding. As maintenance spending has fallen so to have the number of critical assets which meet the Environment Agency’s required condition. Any decline in the condition of critical assets represents a real world and unacceptable risk to local communities at risk of flooding. Given the increasing risk from climate change we urge the Government to see the 97% target as a minimum and to have the ambition of 99% of critical assets meeting the Environment Agency’s required condition by 2019. The Foss Barrier in York provides a cautionary example of what could happen in other parts of the country when ageing defences fail. We note the Government’s commitment to sustain maintenance spending over this Parliament. However, it is worth noting that, since there are more new flood defence assets being built, maintenance spend needs to increase simply in order to stand still.*

Current and future investment

42. At the end of June 2013, the Government committed to providing £2.3 billion in capital funding for flood defences for the period 2015–16 to 2020–21 in order to invest in over 1,500 flood defence schemes across the country, protect a further 300,000 properties, reduce flood risk by 5% and save the economy £2.7 billion by 2021. Following the 2015/16 winter floods the Government announced additional funding of about £200 million as a direct response to aid recovery. Further funds may also be granted from the EU solidarity fund. In the Budget 2016, the Government announced an additional £700 million for flood defence by 2020–21. Some of this additional money will build flood defence schemes in areas affected by the December floods, including Leeds, and some of it will boost the maintenance budget to keep existing defences operational, including York.

43. Rory Stewart described how the original £2.3 billion would be allocated based on “very narrow, defined economic criteria, driven through the existing formula”. Oliver Letwin said this provided a “fair system of distributing the money”.⁴⁴ The £700 million would be allocated based on “political and sense of value judgments and broader societal impacts”.⁴⁵ Oliver Letwin told us that this additional money was in response to “the revealed preference of the British public”.⁴⁶ This “political calculation” provided the resources for more innovative approaches. Rory Stewart explained:

The additional £700 million represented a difficult, but I think correct, political calculation, which is that we decided as a Government that people want even more than that. They did not just want an increase in real terms on what had

43 Environment Agency ([FDG0011](#)) para 4

44 Q234 [Oliver Letwin]

45 Q223

46 Q234 [Oliver Letwin]

been the trend in the past, but that we need an additional injection. One of the reasons for that is in order to provide the resources for more innovative approaches, both to natural flood management and to a national resilience review, particularly looking at some of our critical infrastructure.⁴⁷

44. Rory Stewart gave a specific example in relation to Leeds which he said “famously did not stack up in economic terms if you ran it through the traditional formula that simply looks at narrow cost benefit” but which misses the “the fact that it has the third largest commuter hub in the country; it has the headquarters of major industries; it has fantastic growth potential, particularly in the finance and insurance industry; it is a very important hub for the whole of the north. These are things that cannot necessarily be squeezed into a particular cost benefit formula”.⁴⁸

45. Commenting on whether the £2.3 billion would be able to protect 300,000 properties, as claimed by the Government, Rory Stewart said, “my gut instinct is we will make that target.” He said that the 300,000 was predicated on spending the £2.3 billion on 1400 projects identified by the Environment Agency over six years in line with the formula.⁴⁹ We note that this is 100 fewer projects than when the Government originally announced the funding programme. The Minister added that the 300,000 figure was likely to be delivered, “particularly if we add in the £700 million”.⁵⁰ Oliver Letwin, however, denied that this additional money proved that previous spending levels were insufficient.⁵¹

46. Daniel Johns from the CCC told us that the Government’s assumptions that overall flood funding would deliver what the Government promised, were “brave”:

[...] the long-term investment scenarios assume that you take an economically optimal and rational approach to every single flood defence decision. [...] Certainly the assumption taken, in the long-term investment strategy, is that new [housing] development does not add to long-term costs and risks, whereas I think that assumption is quite a brave one. Also the assumption is that, at every point in the process, the economically optimal decision is made at every point in time.

[...] In rough terms, as long as you take and accept the assumptions that were made by the Environment Agency in their 2014 long-term investment scenarios, they are broadly spending an appropriate amount over the next six years. But, as I say, as soon as you start to factor in these suboptimal decisions potentially being taken, and as soon as you take into account the impacts of new development, you might come to the conclusion that we are probably again spending at the lower end of the ideal range.⁵²

47. In response to questions about a potential shortfall in funding Sir James Bevan, from the Environment Agency, told us that he thought he had enough money:

On the resource issue we did our own modelling—the long-term investment scenarios, which were updated and published in 2014. That had a figure for

47 Q215

48 Q231

49 Environment Agency, *Programme of flood and coastal erosion risk management schemes*, March 2016

50 Qq232–234

51 Q235

52 Q39 [Daniel Johns]

optimal investment in flood defence over the next several years. If you put together the money that the Government is contributing for the next four or five years, the £2.3 billion, and the investment that other partners are going to contribute [...] and the maintenance spending that has been locked in for the next four years, you are at around the figure that was identified in the long-term investment scenarios as the figure that you need to do the right sort of investment. [...].⁵³

48. The Government’s commitment to spend £2.3 billion and an additional £700 million on flood risk management is welcome. We remain sceptical that the Government will reach its target of protecting 300,000 properties, based as it is on an inherently optimistic forecast that assumes optimal efficiency in spending decisions. The Government should also clarify whether the £2.3 billion will pay for 1500 flood defence projects, as originally proposed, or 1400 projects, which the Minister said during our inquiry. We were also surprised to hear that the additional £700 million of funding was based on a “political calculation”. This is an economically inefficient way of allocating Government resources. It highlights that the Government is continuing to take a reactive rather than proactive approach to funding flood risk management by ignoring the recommendations on these issues from previous reviews. Communities deserve more certainty that they will be protected from floods.

Partnership funding

49. As part of its December 2014 flooding investment plan, the Government said the future £2.3 billion capital investment (for building new flood defences) was contingent on attracting £600 million external contributions. Oliver Letwin described how they had introduced this approach to help reduce the cost of flood protection schemes:

Before the partnership funding system was in place, it was a sort of free ride in those days. If you had your money, you had 100% of the money put up, so there was no incentive to sharpen your pencil and reduce the cost, so far as possible, of the scheme in question. Now, because you are not going to get 100% and you have to come up with some partnership funding of your own, you have a quite strong incentive to work with the Environment Agency to come up with a cheaper scheme that will deliver the results and to balance in an optimal way cost and benefit.⁵⁴

50. Sir James Bevan from the Environment Agency told us that the money that he had received from the Government and from partnership funding meant that they were “on track” for the money needed to complete their five year programme.⁵⁵ Rory Stewart updated us on how much money had been raised to date and how much was left outstanding:

[...] we have about £230 million securely tied down [for partnership funding]. The Environment Agency is pretty confident about an additional £200 million or more, probably about £250 million. [...] That leaves a remaining something in the region of £100 million that we need to pin down over the next five-year period.⁵⁶

53 Q122

54 Q234 [Oliver Letwin]

55 Q122

56 Q224

He was confident that the additional partnership funding could be raised but the Minister said that projects were only possible if “somebody is able to top it up” and that this was justified in order to be “fair to all parts of the country”. The Minister suggested that cancelling projects because of a lack of partnership funding was a “worst-case scenario” and that he was “pretty confident” it could all be delivered.⁵⁷

51. Ministers and the Environment Agency described the types of organisations that would make up the additional funds. A large part comes from other public sector bodies such as county councils and city councils. Sir James recognised however that many of these councils have “budgetary challenges” and so he was keen to “draw the net more widely”. Both he and the Minister seem to be particularly interested in growing contributions from the private sector such as water companies. In follow-up correspondence, however, the Environment Agency told us that they estimated only 15% of funding would come from private sources. It may be optimistic to assume that the private sector will be able to contribute significantly to the amount of partnership funding required.⁵⁸

52. The Environment Agency also gave some examples relating to coastal flood protection which was part funded by EU money but it was not clear whether this qualified as partnership funding. Environment Agency also reported that it had worked with local authorities and third sector partners who had secured lottery funding to ‘achieve economies and deliver heritage, environmental and socio-economic benefits that are additional and complementary to reducing flood risk.’ This distinction was made because ‘Flood and coastal erosion risk management (FCERM) and the delivery of reduced flood risk outcomes are not eligible for lottery funding’ and as such ‘where lottery funding is secured but used to deliver additional benefits beyond FCERM, it is not reported FCERM Partnership Funding.’⁵⁹

53. The Worsfold review made a specific recommendation on partnership funding. It said that:

Partnership funding delivers benefits to the overall FCERM programme. Defra and the Environment Agency should improve the process and procedures in delivering investment funded by partnerships. The primary aim of this should be to:

- reduce perceived bottlenecks in delivering the FCERM programme; and
- establish how partnership funding could be balanced with programme contingency in order to maintain a pipeline of efficient delivery.⁶⁰

54. Rory Stewart said the Government had addressed this recommendation by developing “serious” partnership funding teams which had more expertise and who were better at structuring complex deals.⁶¹ The Minister then broadened the topic and linked this issue

57 Q225

58 Qq123–127, Environment Agency ([FDG0011](#)) para 5

59 Qq123–127, Environment Agency ([FDG0006](#)) section 4

60 Environment Agency, [Flood and Coastal Erosion Risk Management \(FCERM\) maintenance review](#), September 2014, p 6

61 Q230

back to the £700 million which would be allocated politically instead of using economic criteria and appeared to dismiss Mr Worsfold's findings.⁶² The Minister explained that economic criteria were not necessarily the best way of dealing with flooding issues:

These are things that cannot necessarily be squeezed into a particular cost benefit formula, but which are the kinds of judgments that you have to make and that gets into the partnership funding. I think perhaps the one way in which my gut instinct is, we have to be honest about the fact that not everything that you do can be reduced to the kinds of engineering criteria of somebody like Mr Worsfold, who is working within the private sector water companies on the basis of cost benefit calculations, often on the basis of value for their shareholders. That isn't necessarily always how Government will do its business or ought to do its business.⁶³

55. *The Government has made good progress in raising partnership funds to support overall funding for flood protection. However, 85% of this funding is still expected to come from the public sector, which is subject to significant resource constraints, and only 15% from the private sector. Partnership funding represents a risky approach to funding flood protection. It increases uncertainty for local communities about whether they will be protected from future floods. If the Government or the Environment Agency fails to attract additional funds, important flood protection schemes will not get the go-ahead. The Government must set out how it intends to support these flood protection schemes if additional partnership funding cannot be raised.*

Efficiency savings

56. In addition to the partnership funding the Government also said its £2.3 billion capital investment was contingent on Defra working with the Environment Agency to make efficiency savings of at least 10% by 2019–20.⁶⁴

57. Sir James said that the Environment Agency would “embrace” the Worsfold review to deliver this.⁶⁵ The review's main conclusion was that ‘the management of flood defence assets is primarily driven by asset condition, which does not help the Environment Agency forecast service and expenditure requirements.’ The review suggested that this has ‘highlighted the need to improve investment planning processes and capabilities for modelling and predicting operating and capital costs’⁶⁶. John Curtin from the Environment Agency gave a specific example of how this was being addressed:

One example: we started a programme called creating asset management capacity, which the review encouraged. This includes how we use IT to better inform our inspection of assets, detection of their deterioration, and then pushing our investment into bringing them back to their standard.⁶⁷

62 Q243 [Oliver Letwin]

63 Q231

64 HM Treasury, [Spending review and autumn statement 2015](#), November 2015, p 104

65 Q105 [Sir James Bevan]

66 Environment Agency, [Flood and Coastal Erosion Risk Management \(FCERM\) maintenance review](#), September 2014, p 3

67 Q108

58. Oliver Letwin described what the Government had done to look at the “whole life cost” of projects rather than the upfront capital required.⁶⁸ Rory Stewart provided a specific example:

We have what we believe is an increasingly sophisticated integration between our calculations on the ongoing maintenance cost of something and the initial installation. To give you a concrete example, if we are building an access to a dam now, where in the past we might have looked at building a gate, which is a cheaper thing to build, we would now look at building a ramp. The ramp is more expensive in capital terms, so it is more expensive to install a ramp than a gate, but in maintenance terms it is much cheaper.⁶⁹

59. Rory Stewart confirmed that his Department was also on track to make the 10% savings. He reported that the savings are being made by bringing central services together and by people leaving the organization:

A lot of those savings at the moment are coming from a combination of bringing our central services together. [...] Some of it has come through people leaving and our organisation has become smaller. People have taken either retirement or they have taken voluntary redundancy packages and our organisation is now smaller than it was.⁷⁰

60. The Minister said that the savings would not impact Defra’s work on flooding. This element of his budget was protected. He said that “the people who are feeling the strain, are the non-flooding people.”⁷¹ He went on to say:

The funding on flooding has been an area that the Government has been determined to increase in real terms, as have certain other areas. National parks would be another example, but correspondingly that means there are other areas that have been cut.⁷²

61. We recognise that Defra needs to prioritise flooding as an issue that impacts on lives and livelihoods. However, it should be transparent about where it has had to make cuts to accommodate this. We also ask the Government to set out, in the response to this Report, the evidence-base justifying its decision to protect flooding at the expense of other parts of the Department, in order to demonstrate that this decision was grounded in evidence and not just “political calculation”.

68 Q244

69 Q243 [Rory Stewart]

70 Q227

71 Q228

72 Q229

5 Planning and strategy

Nationally significant infrastructure

62. The floods of winters 2013 and 2015 brought into focus the resilience of nationally significant infrastructure, such as airports, ports, and electricity networks. The CCC in its first statutory progress report to Parliament on the National Adaptation Programme in June 2015 said:

There is evidence that operators across most infrastructure sectors are taking steps to improve the performance of their networks and services during periods of extreme weather.⁷³

The CCC highlighted positive examples of electricity, water and transport networks. Electricity transmission and distribution companies were taking a comprehensive approach to assessing risks, investing in resilience, and reporting on the progress being made. Water companies were investing in resilience improvements following the 2007 floods. Transport resilience was improving following the Government's acceptance of all 63 recommendations in the independent Brown Review.

63. The CCC also pointed out “areas where evidence of progress is lacking”⁷⁴. It noted how ports on the east coast of England were badly affected by the December 2013 tidal surge, the largest in the UK in 60 years. The Port of Immingham had to suspend its operations for a number of days following flood damage to on-site IT servers and electricity substations:

Work to assess vulnerabilities by port operators is ongoing but this appears to be focused on raising awareness of climate change; it is not clear what improvements in flood protection have been made or are planned. Having participated in the first round of ARP [Adaptation Reporting Power] reporting, some ports have decided not to provide an update as part of round two.⁷⁵

The CCC noted how passengers at Gatwick's North Terminal suffered significant disruption on Christmas Eve 2013. Flood alerts were missed by duty staff, and flood water damaged basement IT and power facilities:

The similarity between the Immingham and Gatwick incidents led the Brown Review to conclude that poor siting of critical power and IT equipment may be a common vulnerability across many sectors that should be addressed as a matter of urgency.⁷⁶

The CCC said that adaptation plans were at an early stage in the digital infrastructure sector.⁷⁷ But it thought the services should be reasonably robust, given companies compete on service reliability. The CCC hoped the sector's first ARP reports, due in 2015, would allow any specific vulnerabilities, and the actions being taken, to be better understood.⁷⁸

73 Committee on Climate Change, [Progress in preparing for climate change: 2015 report to Parliament](#), June 2015, p 78

74 As above

75 As above

76 Committee on Climate Change, [Progress in preparing for climate change: 2015 report to Parliament](#), June 2015, p 79

77 Fixed line, mobile telephony, internet and data service providers.

78 Committee on Climate Change, [Progress in preparing for climate change: 2015 report to Parliament](#), June 2015, p 79

64. Based on the CCC's assessment, we invited a range of infrastructure providers to take part in a roundtable evidence session to assess their approach to, and progress on preparing for, flood resilience.

- Tom Jeynes, Sustainable Development Manager (Humber), from Associated British Ports (ABP) said it had undertaken a thorough review of its ports' physical resilience, and the Port of Immingham was working to the resilience benchmark set by the December 2013 tidal surge, which was a one in 450 year event. He said, "ideally along the front-line of the port, we would like to aim for a one in 1,000 years standard of protection."⁷⁹ But he added that the difficult part of improving the port's flood protection was the lock pit, which affords access for deep sea shipping to the enclosed dock at Immingham, and required bespoke, expensive gates.⁸⁰ Mr Jeynes said the port was working with the Environment Agency to model future floods and invest in flood defences.⁸¹
- Chris Woodroofe, Head of Passenger Operations at Gatwick Airport, told us that prior to 2008 its South Terminal had been resilient to a one in 20-year flood event. Following investment with the Environment Agency and Crawley borough council in the Upper Mole flood alleviation scheme, to which Gatwick contributed £4 million to the £15 million programme, the terminal became resilient to a one in 50-year event. Mr Woodroofe added how, after the December 2013 floods, the airport commissioned a review which made 27 recommendations, to which Gatwick responded with a £30 million investment fund to improve resilience. Some £20 million had been spent so far. Mr Woodroofe also said that Gatwick was undertaking joint work with the Environment Agency, and that the airport had an aspiration to achieve one in 100-year resilience. This is still well below the CCC's recommendation that all infrastructure assets should meet a one in 200-year standard.⁸²
- Ian Glover, Environment Sustainability Manager at National Grid said his company's target was to achieve a one in 1,000 year standard for its large, high-voltage electricity substations and was working towards that through risk assessment and defence prioritisation projects.⁸³ Mr Glover noted that none of the Grid's substations had been affected by recent winter floods.⁸⁴ Smaller, local substations, operated by distribution network operators had, however, been affected, including in Calderdale during winter 2015.⁸⁵ Ivan Le Fevre, Head of Environment at Highways England said the road network had proved to be "reasonably resilient" and it had a longstanding programme of work to assess performance and identify flood-risk areas. It, too, was working with the Environment Agency to maintain resilience.⁸⁶ Tim Kersley, Head of Asset Management Strategy at Network Rail told us that given the scale of the infrastructure it operates, it was trying to provide more resilient performance against adverse weather, which usually occurred annually, rather than against extreme events.⁸⁷

79 Q177

80 As above

81 Q170

82 Q174

83 Q179

84 Q180

85 Q191 [Cllr Steve Sweeney]

86 Q183

87 Q185

65. The infrastructure companies we heard from referred to a range of resilience levels to which they aspired. Ian Glover from National Grid said he was seeking “a consistent picture of resilience levels that organisations are targeting, particularly among other critical national infrastructure.”⁸⁸ Daniel Johns at the CCC wanted this information to be reported annually to help understand whether improvements to infrastructure were being made.⁸⁹ He also wanted to understand, in cases where the resilience levels of infrastructure were known, whether those levels were appropriate:

Within the electricity industry, the distribution and transmission companies have a standard that says what level of resilience they want to aim for in substations. [...]. The concern is that every single flood event that occurs seems to involve a substation somewhere in the country flooding, [...]. The question again is: is the standard being implemented? Is the one in 100 flood event really the right benchmark to be protecting assets to, particularly in light of climate change?⁹⁰

In its 2015 progress report the CCC said ‘the Cabinet Office should work with all infrastructure sectors [...] to develop consistent incident reporting, together with indicators of network resilience and performance, to allow improvements to be measured over time.’ Reporting of the results should be mandatory under the third round of the ARP. It also recommended that, ‘the Cabinet Office should confirm that the services provided by all critical national infrastructure (CNI) are now resilient to a 1-in-200 year flood event.’⁹¹

66. Oliver Letwin said the Government was reconsidering what constitutes critical infrastructure and now aiming for resilience to a one in 1000-year standard for local infrastructure, such as smaller substations and mobile communications assets, which if it were to go down would affect more than 5,000, 10,000 or 15,000 people. Oliver Letwin said:

The revealed preference [...] of the British public, when it was faced with a Vodafone server switch apparatus in Leeds becoming flooded, which prevented the airwave system from operating properly and prevented people from using their mobile phones during a flood [...] was that this was a pretty poor show, in much the same way as they might have said it was a pretty poor show if water had got into a nuclear power station,⁹²

He added that, for the 40% of this infrastructure which will not have defences in place against extreme flooding in the next six years, the Government will put in temporary defences by Christmas. For the other 60%, where it says temporary defences do not make sense, it will wait to install permanent ones. He said, “we are very directly responding at a much higher level to what the Adaptation Committee has quite rightly drawn attention to”.⁹³

88 Q208

89 Q40

90 Q41

91 Committee on Climate Change, *Progress in preparing for climate change: 2015 report to Parliament*, June 2015, p 79

92 Q234

93 Q260

67. The winter floods of 2013 and 2015 called into question the preparedness of some infrastructure companies to deal with flood events. The companies we heard from were all aiming to protect their assets to different standards. We are concerned that infrastructure operators continue to adopt varying degrees of preparedness and that there is an apparent lack of Government vigour to ensure a consistent and robust approach is taken to protecting services.

68. *We therefore recommend that the Government implement the Committee on Climate Change's proposals that infrastructure companies be mandated to report their target resilience level, why this target is appropriate and what progress they are making to achieve it. The Government should also adopt the CCC's recommendation to ensure that critical assets meet a minimum of a one in 200-year event. The flooding of small-scale energy and communications assets can cause large-scale problems, as it did in Leeds in winter 2015. We therefore welcome the Government's focus on protecting local infrastructure against extreme flooding, but recommend that Ministers publish which assets comprise the 40% being protected with temporary defences and which make up the remaining 60% that will have to wait for permanent safeguards. Notwithstanding this, Ministers must also ensure that the resilience of other, larger critical infrastructure assets are improved.*

National Planning Policy Framework

69. The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. It "provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities."⁹⁴ In relation to flooding, the NPPF states:

Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Local Plans should be supported by Strategic Flood Risk Assessment and develop policies to manage flood risk from all sources, taking account of advice from the Environment Agency and other relevant flood risk management bodies, such as lead local flood authorities and internal drainage boards.⁹⁵

There is a statutory requirement for local planning authorities to consult the Environment Agency for developments in certain flood zones and Lead Local Flood Authorities (LLFAs) for major developments before granting planning permission. The Environment Agency has standing advice on its website which gives guidance to local planning authorities and developers where flood risk is an issue, including on when the Environment Agency should be consulted on planning applications. The Government's planning practice guidance states that all local planning authorities should notify the Environment Agency of the decision on any planning application to which it has objected on flood risk grounds.⁹⁶

⁹⁴ HM Government, [National Planning Policy Framework](#), March 2012, para 1

⁹⁵ HM Government, [National Planning Policy Framework](#), March 2012, para 100. One or more local planning authorities produce a strategic flood risk assessment to assess the risk to an area from flooding from all sources. Local authorities are required to produce a Local Plan, setting out the strategic priorities for development of an area and covering housing, commercial, public and private development, transport infrastructure and protection for the environment.

⁹⁶ HM Government, [Planning Practice Guidance](#), para 043, accessed 9 May 2016. The EA must be consulted on developments of 10 dwellings or more, or new floorspace of 1,000 square metres or more, or a site of 1 hectare or

70. Witnesses challenged whether local authorities did make clear what action they took in response to Environment Agency advice. Lord Krebs said:

It is not always clear what response the local authority makes to the Environment Agency’s recommendations. They do not always feed back to the Environment Agency what decision they have taken [...] in theory, yes it ought to provide a robust mechanism; in practice it probably does not.⁹⁷

In response, Sir James Bevan, from the Environment Agency, said that between April 2011 and March 2015, “99.1% of new homes had planning decisions that were in line with our advice.”⁹⁸ On the surface this figure appeared to be inconsistent with the finding that 7% of homes—almost 10,000—were built in high flood-risk areas in 2013–14.⁹⁹ But Sir James said, “they [the two figures] could certainly be consistent [...]. The fact that 99.1% of new homes have planning decisions along in line with our advice does not necessarily mean that 99.1% of new homes were not built in flood risk areas. It means that if they were built in flood risk areas they were in line with the advice that we had given about how to mitigate that risk.”¹⁰⁰

71. The 99.1% figure is not, however, based on records of every local authority decision. Lord Krebs told us, local planning authorities do not in fact always inform the Environment Agency of the outcome of their objection. The CCC has stated it is “highly likely” that the Environment Agency’s advice is followed “in the majority of cases where the local authority does not inform them of the outcome.”¹⁰¹ Nevertheless, the Association of British Insurers (ABI) recently called for “evidence of clearer engagement between the Environment Agency and Local Planning Authorities, with a responsibility to report publicly on planning decisions in a clear and transparent way,” as it said this would help empower consumers when deciding whether to purchase a particular property.¹⁰²

72. Even in those cases where the Environment Agency’s advice was followed, as evidenced in the terms of any subsequent planning permission, there were concerns about the implementation of those terms. Daniel Johns, from the CCC, explained:

The local authorities are in general applying the recommendations to individual developments, but there is no check at the end of that process that the properties being built are being built in sensible places in sensible ways.¹⁰³

more, in flood zone 2 (land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding); flood zone 3 (land having a 1 in 100 or greater annual probability of river flooding; or land having a 1 in 200 or greater annual probability of sea flooding; or land where water has to flow or be stored in times of flood); and in any flood zone 1 (land having a less than 1 in 1,000 annual probability of river or sea flooding) that has critical drainage problems.

97 Q14

98 Q153

99 “[UK building 10,000 homes a year on floodplains](#)”, Financial Times, 28 December 2015

100 Q157

101 Committee on Climate Change, [Progress in preparing for climate change: 2015 report to Parliament](#), June 2015, p 63.

The CCC says the Environment Agency’s advice was accurately transposed by planning authorities into conditions set out in the final decision notices in almost all of the 111 applications assessed by the CCC Adaptation Sub-Committee in more detail.

102 Evidence to the Environment, Food and Rural Affairs Committee ([FFP0011](#)), para 6.6

103 Q15

Elsewhere the CCC has reported that no data are available on whether developers are building in compliance with conditions set by planning authorities: “Planning authorities are responsible for enforcing planning conditions, but there is no systematic approach to recording checks and enforcement where it takes place.”¹⁰⁴

73. Available statistics indicate that Environment Agency advice on whether, or how, to build in high flood-risk areas is almost always followed by local authorities. In the interests of clarity, transparency and consistency, however, this information—the decisions on, and terms of, planning permission in such areas—should be published in full by local authorities. We recommend that DCLG publish, by the end of 2016, a proposed framework for the reporting of such information. There are no comprehensive statistics detailing whether developers subsequently build according to planning permission, however. Given that almost 10,000 homes were built in high flood-risk areas in 2013–14, we recommend that Defra work with DCLG to establish a systematic approach to ensuring that these properties are built in accordance with planning permission.

Local planning

74. Alongside calls for clarity about whether local authorities follow Environment Agency advice, and properties are built accordingly, the CCC was also concerned to ensure the cumulative impact of individual decisions, taken in isolation, to grant planning permission for construction in high-flood risk areas throughout the country was assessed. Daniel Johns from the CCC suggested that “a simple misunderstanding of statistics” was part of the problem:

The chance of a flood event in one place might be one in 100 but there are lots of places in England that could get wet, so the chance of some part of the country flooding each year is much greater than one in 100 and, if you are building new properties in the flood plain, it is just really a question of when and where rather than whether it will flood next.¹⁰⁵

The CCC referred to this issue in its 2015 progress report, when it said: “The lack of a regional tier of planning means that local authorities are effectively planning in isolation and not considering the cumulative build-up of risk.”¹⁰⁶ The Town and Country Planning Association (TCPA) built on this point in evidence to us, noting that local plans did not look widely enough across the landscape—or far enough into the future. Hugh Ellis, Head of Policy at the TCPA, said:

The average local plan, which is the only foundation for statutory planning that we have, realistically is planning for three to five years, with maybe a 15-year time horizon. It is absolutely imperative we plan for 50 to 100 years and perfectly sensible to do so; certainly they do that in the Netherlands [...]. Does local planning reflect catchment area planning at the right spatial scale? No, it does not [...] we are planning for the wrong geography with the wrong system over the wrong timescales and, I am increasingly seriously worried, with the wrong science [...]

¹⁰⁴ Committee on Climate Change, [Progress in preparing for climate change: 2015 report to Parliament](#), June 2015, p 63
105 Q16

¹⁰⁶ Committee on Climate Change, [Progress in preparing for climate change: 2015 report to Parliament](#), June 2015, p 74

On coastal flooding, Mr Ellis added that he knew of “virtually no local plans” that were including the Environment Agency’s allowances for 1.24m of sea-level rise on the East Anglian coast by the end of the century.¹⁰⁷ He concluded that, “we need a new comprehensive form of planning to deal with climate change [... and ...] cross-catchment area planning.”¹⁰⁸ Legislation does allow, however, two or more local planning authorities to agree to prepare a joint Local Plan to address cross-boundary issues. Similarly, the duty to cooperate requires local authorities and other public bodies to collaborate on a plan when there are matters that would have a significant impact on the areas of two or more authorities.¹⁰⁹

75. Notwithstanding the content of local plans, the CCC last year also drew attention to concerns about the number of plans actually in place, noting that, “A high proportion of local authorities do not have legally enforceable Local Plans, which is undermining strategic planning.”¹¹⁰ According to the Planning Inspectorate’s (PINS) most recent figures, 29% (98 out of 338) of local authorities did not have an adopted local plan as of 30 April 2016; while more 51% of those local authorities that did have a plan (122 out of 240) adopted it prior to the publication of the NPPF in March 2012.¹¹¹ Government guidance states that most local plans are likely to require updating in whole or in part at least every five years.¹¹² Some 35% of authorities (85 out of 240) adopted theirs prior to May 2011.¹¹³ On this issue, the CCC has said:

Where an up-to-date adopted Local Plan is not in place, developers may be more likely to apply for planning permission in unallocated areas knowing that they will have a chance of their application being approved if they appeal against the refusal of permission.¹¹⁴

76. *Government should devise a means of establishing and communicating to people the cumulative impact of individual local authorities granting planning permission across the country for developments in one in 100-year areas. The chances of one of those developments flooding significantly is greater than one in 100 years and will increase as more such developments are approved. Ministers must also consider whether local plans are fit for purpose, given that the areas they cover by and large do not correspond to catchment areas and that their short timescales do not correspond to the longer-term environmental changes that local areas need to be planning for now. Given the number of local authorities that do not either have an adopted local plan or one that reflects NPPF guidance, Government should, in the short term, provide more support to local authorities to enable them to adopt a plan and, in the medium term, support and encourage local authorities to develop joint local plans that are more ambitious in time and scale.*

107 Q198

108 Q199

109 HM Government, *Planning Practice Guidance: Local Plans*, para 007

110 Committee on Climate Change, *Progress in preparing for climate change: 2015 report to Parliament*, June 2015, p 74

111 Planning Inspectorate, *Core Strategy Progress*, 30 April 2016, accessed 9 May 2016

112 HM Government, *Preparing a local plan*, para 008, accessed 9 May 2016

113 Planning Inspectorate, *Core Strategy Progress*, 30 April 2016, accessed 9 May 2016

114 Committee on Climate Change, *Progress in preparing for climate change: 2015 report to Parliament*, June 2015, p 61

Lead Local Flood Authorities

77. A lack of completed plans was also an issue in relation to Lead Local Flood Authorities (LLFAs): county councils and unitary authorities, which, under the Flood and Water Management Act 2010, are required to prepare and maintain a local flood risk management strategy, coordinating views and activity with other local bodies and communities through public consultation and scrutiny, and delivery planning.¹¹⁵

78. The Environment Agency told us that as of 31 March 2015, 59 (39%) of the existing 152 LLFAs reported that they had published a strategy, and 43 (29%) reported they had completed consultation or had a strategy out for consultation—102 (68%) in total. The remaining 50 (32%) reported they had yet to consult on their strategy. The Environment Agency added that Rory Stewart recently wrote to LLFAs underlining the importance of completing their local strategies and giving 31 March 2016 as a target date.¹¹⁶ When the Minister appeared before us, he quoted the same figures but told us:

Currently 102 strategies are either completed or drafts in consultation in the public domain. That means that we have 80% published or complete and we have 20% still in progress [...] we are in absolutely no doubt that this is a legal responsibility of the local authorities and we are pushing them hard to complete [...] If there are individual authorities [...] that require extra assistance, we can provide that from the Environment Agency.¹¹⁷

79. We were unsure where the Minister’s figures of 80% completed, or consulted on, and 20% in progress came from, given the Environment Agency’s figures of 68% and 32% respectively. The Minister’s response also suggested no plans had moved from in progress to complete since March 2015. Matthew Bell, Chief Executive of the CCC, said the number of incomplete plans raised the question of whether the system was delivering what it was supposed to in each area of the country, and asked, “are the institutional structures and the incentives in place at that local level so that the right decision emerges? It is not clear that is the case.”¹¹⁸

80. The lack of completed plans was a cause for concern, but another issue was whether finalised plans were fit-for-purpose. When we visited Leeds, we heard from Calderdale Council that following the floods in its area during winter 2015 it had had to completely revise its plan.

81. Rory Stewart said the Environment Agency could provide LLFAs with extra assistance with their plans. Sir James Bevan told us his organisation has a “dialogue” with them,¹¹⁹ and the EA added that it had built close working relationships locally with them, and worked through those channels to reach common understanding or resolve issues relating to any aspect to flood and coastal erosion risk management, including strategies, plans or actions.¹²⁰

115 Local Government Association, ‘[Managing flood risk: roles and responsibilities](#),’ accessed 9 May 2016

116 Environment Agency ([FD0006](#))

117 Q265, Q267

118 Q16, Q42

119 Q160

120 Environment Agency ([FD0006](#))

82. Notwithstanding the work that the Environment Agency said it had done to assist local authorities, the Agency suggested that the problem was lead local flood authority capacity to produce strategies. Sir James said:

I have been much struck, going around the country and talking to local authorities, that there are very big discrepancies in terms of size, and capacity, and funding. I do not get the impression that any of those local authorities does not want to do this; it is just a matter of capacity and their ability to prioritise [...] I regard it as our job to help them, particularly those local authorities who might need a bit more capacity to help them develop a plan that will work.¹²¹

83. *Almost one third of lead local flood authorities (LLFAs) still do not have a local flood risk management strategy in place, according to the most recent figures available. These figures are, however, more than one year old. This suggests that Government may not know whether progress has been made to reduce this worryingly high figure. It also suggests Government lacks a comprehensive, up-to-date overview of local authority preparedness for flood risk. Furthermore, those LLFAs that do have a plan in place may not have one that is fit-for-purpose. There is an urgent need to put the right plans in place as soon as possible, but some LLFAs may not have the capacity to do so. For strategic oversight of flood risk management throughout the country, the Government needs to have an up-to-date overview of the number of LLFAs with plans in place. But it also needs to support the Environment Agency to ensure it can support those LLFAs that lack the capacity to produce these plans, and to review existing plans to guarantee they are preparing for the appropriate risk level.*

Sustainable Urban Drainage Systems

84. After the 2007 summer floods that inundated 55,000 homes, the then Government commissioned Sir Michael Pitt to undertake a review of the lessons to be learned. In his report Sir Michael recommended that the right to connect new developments to the public sewerage system, for the purpose of surface water drainage, be repealed.¹²² Successive Governments have not accepted this recommendation in full. The CCC in its 2015 report reiterated Sir Michael's call, and also suggested making water companies statutory consultees on planning applications with drainage implications, and monitoring uptake. The Government responded:

We are confident that the changes to planning policy put in place by the previous coalition Government to promote sustainable drainage systems (SUDS) as the first option for surface water drainage for new major developments will achieve this (reduction in call on the public sewer).¹²³

That planning policy was implemented on 6 April 2015 and, according to the Environment Agency, is still in the early phases of implementation. Under national planning policy, new development must give priority to the use of sustainable drainage systems (SUDS). This

121 Q164, National Flood Forum ([FDG0001](#)) p8

122 The Pitt Review, [Learning lessons from the 2007 floods](#), June 2008, p xvi

123 HM Government, [Government response to the Committee on Climate Change: Progress on Preparing for Climate Change](#), October 2015, para 2.11

means that developers must prove that SUDS will not be a viable solution before other surface water management measures are considered. This reflects the commitment by Government towards their delivery and implementation.¹²⁴

85. We heard, however, that uptake was “disappointingly low”,¹²⁵ with witnesses citing the costs to developers as a barrier to SUDs installation. Lord Krebs said the Government’s new approach was “still not sufficient” to achieve the level of uptake that the CCC wanted, and “the resistance to it is probably that it is extra work for developers: they would have to create soft surfaces or drainage areas that use up space, and it costs them money.”¹²⁶

Hugh Ellis, from the TCPA, thought the difficulty with the new process was “the economics, because the benefits of sustainable urban drainage are long term to end users but the costs, of course, fall on developers.” As a solution, he cited the example of the Clean Air Act 1956:

When we see an environmental benefit that has a long-term benefit to people in the economy, one of the ways of doing it is simply to regulate. Within two years, the Clean Air Act solved an enormous public policy problem in the early 1950s [...] There are some cases where that [SUDS] is not appropriate, but in most cases they are. Then, of course, the market will adjust, so long as it is an even floor [...] Do your customers want to pay money to pay your insurance bills, or do they want to pay money for a better built environment?¹²⁷

86. There were, however, potential downsides to compulsion, according to the Environment Agency, which said that the conditions for controlling when a Water and Sewerage Company (WaSC) could refuse connection must be carefully developed, to avoid consequential risks:

There may be benefit in WaSCs being able to refuse connections where there is no capacity, for example to protect against increased risk to sewer flooding, combined sewer overflow spills or overloading of sewage treatment works. However, this may discourage proactive engagement, planning and investment by the WaSC. There is also potential for inconsistency by making the WaSC the decision maker in controlling where surface or foul sewage is treated. This could present significant risks to the environment, public water supply, viability of development, regulatory burden, resourcing and compliance.¹²⁸

The WaSC is not the only body on which SUDS-related powers might be conferred, however. Schedule 3 of the Flood and Water Management Act 2010, which is yet to be fully commenced, provides for the establishment of a SUDS Approving Body (SAB) within LLFAs, which would have to approve any proposed new drainage system before construction could commence.¹²⁹ When we suggested that it was easier to force developers to create sponges on housing estates, rather than connect to Victorian sewers, Rory Stewart referred to “the question of modelling [...] and the way in which you try to attach

124 Environment Agency ([FD0006](#)) section 1

125 Q39 [Lord Krebs]

126 Q39

127 Q202

128 Environment Agency ([FD0006](#)) section 1

129 Susdrain, ‘[SUDS Adoption in England and Wales](#),’ accessed 10 May 2016

cross-benefit calculations to absorbing water in a particular patch of ground and what the consequences are downstream, effectively, for flow and river level in terms of water getting into people's houses." He added:

In many cases that [SUDS] is a smart thing to do, but there are other cases where that is not the most cost beneficial intervention.¹³⁰

87. The House of Lords sought to include a new clause in the recent Housing and Planning Act to remove an automatic right to connect to the public sewer for surface water, unless a sustainable drainage system formed part of a development and was constructed in accordance with non-statutory technical standards and with the terms of the planning permission. The Government was against the amendment, stating that it was "unnecessary and unworkable" due largely to the technicalities of including planning permission in the new clause.¹³¹ The Commons subsequently disagreed to the new clause but the Government tabled in lieu the following amendment to which the Lords agreed:

The Secretary of State must carry out a review of planning legislation, government planning policy and local planning policies concerning sustainable drainage in relation to the development of land in England.

In the debate DCLG Minister Baroness Williams of Trafford said the review would be thorough, robust and look at evidence on the ground. Lord Krebs asked that it be completed in spring 2017 so that the CCC Adaptation Sub-Committee could use the findings in its progress report to Parliament in summer 2017. Baroness Williams said she would work with the Lords towards a "suitable timescale."¹³²

88. *Sustainable urban drainage systems, such as rainwater capture and storage, are widely acknowledged to be an efficient way of dealing with surface water. But successive Governments have been reluctant to commence the legal powers that would make such systems the default option in new developments. The often cited reason is cost to developers. While these should not be underestimated, if the refusal is introduced to all developments, except in very particular circumstances, a level playing field should be maintained. Developers may pass those costs on to house buyers, a concern that again should not be ignored. But the longer-term costs, directly or from increased insurance premiums, of paying to repair houses and clean up local areas can be expected to outweigh short-term expense. We question, nine years after the Pitt review recommendation that SUDS be the default option in new developments, why a further review is required. Given this has now been legislated for, however, we recommend that it be completed at the latest in time for the CCC to use the findings in its 2017 progress report to Parliament.*

130 Q273

131 HC Debates, 3 May 2016, [col 124](#), [Commons Chamber]

132 HL Debates, 10 May 2016, [cols 1715–1718](#), [Lords Chamber]

6 Natural flood management

89. There has been some criticism about the current strategic approach to flood risk management. George Monbiot, a columnist in the Guardian who has written about flooding, said that the Government's approach was 'confused, contradictory and often directly damaging'.¹³³ He highlighted in particular 'unregulated dredging of drains and small watercourses crossing farmers' lands'.¹³⁴ He proposed that 'we should start looking at catchments as a whole'.¹³⁵ He continued:

The general principle should be rather than sitting at the bottom of the catchment where the towns are, hiding behind a flood barrier and praying to goodness that flood barrier is going to be high enough to withstand the wall of water when it comes rushing down the catchment, is to stop that wall of water from gathering in the first place. There are various natural flood-management techniques that can attenuate that wall of water, reduce the flood peak, desynchronise the arrival of water in the river so that you slow it down, bring down the peak and, hopefully, then give your flood defences at the bottom of the catchment a better chance of succeeding.¹³⁶

90. This whole catchment, or natural flood management (NFM), approach to managing flood risk was supported by most of the stakeholders we spoke to during this inquiry including some of the businesses we spoke to when we visited Leeds (see appendix 1).¹³⁷ The National Farmers' Union (NFU) was cautious about this approach. It accepted that these techniques, in the right location, have a role to play. However, it also argued that a lack of maintenance of watercourse and coastal channels, banks and the fluvial assets result in more frequent, more extensive longer duration flooding which they argue is unsustainable.¹³⁸

91. Dieter Helm argued that flooding was about more than just individual houses and individual flood defences:

Flooding is about what happens to catchment systems. It is not about individual houses and it is not about individual flood defences, although they all have roles to play. To work out how much you should spend and how you should spend it on flood defence, you need to start with a proper catchment view.¹³⁹

92. Similarly, Daniel Johns from the CCC also supported adopting a much more comprehensive flood risk strategy. He said, 'within the system there is an overreliance on flood defences to provide adequate levels of protection, and we saw in December that flood defences provide only limited protection'.¹⁴⁰ He went on to say:

We need a much broader strategy that works at the catchment scale; that tries to hold water in the uplands. You provide the right incentives for landowners

133 Q70

134 Q70

135 Q71

136 Q71

137 Q30, Q45, Q71, Q131, Q256 [Rory Stewart], National Flood Forum ([FDG0001](#)) Aviva ([FDG0002](#)) Slowing the flow in Pickering programme delivery group and Ryedale flood research group, ([FDG0007](#)), Rewilding Britain ([FDG0008](#))

138 National Farmers Union ([FDG0004](#))

139 Q45

140 Q15

in the uplands and farmers in the lowlands to hold water back to avoid peaks of floodwater occurring downstream into towns and cities. We need a much more comprehensive flood risk strategy that puts as much emphasis on resilience and managing consequences as it has in the past on managing flood likelihood.¹⁴¹

93. Sir James Bevan, from the Environment Agency rejected the idea that his organisation was only focused on flood protection and not flood prevention and argued that he was already taking a whole catchment approach to the flooding issue.

[...] if the Environment Agency can see its only role in flood defence is building concrete structures it will fail because [...] if we are going to successfully manage flood risk in future, it is going to involve a catchment-wide approach enlisting all of the people in that catchment who have a stake in protecting themselves and their property against flood risk so I am absolutely for a catchment-wide approach. Building hard defences is only one part, an important part, of what we should be doing in future.¹⁴²

This has already been happening but we are certainly encouraging it to happen more, and more energetically. We are actively encouraging our leaders in the areas where they operate to think catchment-wide. Indeed the very geographical areas we use as our organising principle are based on catchments. We are encouraging them to work with all of the stakeholders in that catchment, upstream as well as downstream where the flood risk is, to pull together coalitions of people who can manage that whole catchment in a way that will better reduce the flood risk to all the people living in it.¹⁴³

94. Mike Potter from the Slowing the Flow in Pickering (STF) programme delivery group wrote to us highlighting the experience of Pickering in North Yorkshire where they had pursued a NFM approach after traditional hard defences had been rejected because they were considered too expensive. The scheme which cost £2 million and involved water storage area on a river upstream from the town, as well as tree planting and improved land management to slow the speed of rainwater coming off the surrounding moors was completed at the end of 2015. It was reported to have successfully protected the town from last winter's floods. Rewilding Britain, who also wrote to us, argued that it is the involvement of local communities that helps make projects like this successful.¹⁴⁴ While the Pickering scheme is unlikely to protect the town from extreme flooding events it has helped to reduce the instance of less extreme events which used to regularly flood the town.

95. Commenting on the Environment Agency's ability to support these projects Mr Potter was highly critical:

These measures currently fall outside the skill set of the EA - or their preferred consultants - and most will physically occur outside the boundaries of main river. My experience of working with the EA for 8 years is that they are extremely risk averse and almost exclusively think and work in an insular way, within their comfort zone of hardened flood defences. Certainly at leadership

141 Q30

142 Q131

143 Q132 [Sir James Bevan]

144 Rewilding Britain ([FDG0008](#))

level, they appear to be highly bureaucratic, theory and desk-study based and largely divorced from practicalities. They rarely embrace genuine community engagement. There is little scope for working in any remotely experimental way.¹⁴⁵

96. Commenting on the money available to support projects like those at Pickering, Mr Potter argued that the Government was unwilling to provide more money without proof and evidence despite the success of recent pilots:

Currently NFM only appears to happen with miniscule pots of specialised funding, hard fought for by committed individuals. Even now, when three small Defra pilot projects have proved themselves successful, there is a clamour for yet more proof and evidence, while denying access to the essential datasets to enable this.¹⁴⁶

97. Ministers told us that the “objective is to move the country towards a catchment-based approach to flooding.”¹⁴⁷ The Government said it would start in Cumbria as part of the Cumbrian Floods Partnership. Pilots are taking place in three catchments (Kent Leven, Derwent and Eden). Ministers described these projects as pathfinders.¹⁴⁸ Rory Stewart reported that we could expect the first draft findings in July and a more detailed picture in December this year.¹⁴⁹ Depending on the results of these pilots the Government would look to roll it out “catchment-by-catchment” across the country over a period of years. This was not expected to happen before 2017. Smaller community-based projects would not receive Government support. Local people within catchments would instead be involved in the Government’s initiative as it is rolled out.¹⁵⁰

98. 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.

145 Slowing the flow in Pickering programme delivery group and Ryedale flood research group, (FDG0007)

146 As above

147 Q256 [Rory Stewart]

148 Q251, Q257

149 Q256 [Rory Stewart]

150 Qq246–258

7 Conclusion

99. Over the last 20 years there has been a review following every major flooding event and this year is no exception. This repetitive cycle suggests that there has been a lack of effective long-term strategic planning about how to manage flood risk. Our analysis of government flood funding and its approach to planning has demonstrated that the Government could do more to mitigate the future risk of flooding. Importantly, the Government appears to be reactive rather than proactive. If the Government fails to learn lessons and improve its long-term strategy then communities and businesses which would otherwise be protected will continue to suffer the unnecessary distress of being flooded. The Government needs to ensure that local plans and flood strategies are in place to ensure resilience and that it can deliver on its long-term funding commitments by meeting targets for partnership funding and efficiency savings, without putting at risk the 1,500 flood defence projects currently being planned or negatively impacting Defra's other essential services. It is critical that the Government undertakes its current reviews in an open and transparent way to allow stakeholders, including Parliament, to monitor its progress and hold it to account.

Conclusions and recommendations

Impacts

1. The 2015–16 winter floods caused significant damage in south-west Yorkshire. During our visit to Leeds we heard concerns that the Government had not fully appreciated the extent of the impacts felt by businesses in that area. In Calderdale alone the cost to SMEs was estimated to be £47 million with indirect costs totalling £170 million. If the Government is serious about seeing these areas recover then concerns about lack of flood protection and affordability of insurance need to be addressed. (Paragraph 11)

Reviews

2. *Over the last 20 years there has been a review following every major flooding event. Failure to take a long-term approach to flood risk management and implement fully the recommendations from these reviews - especially from the Pitt Review - may have affected the Government's ability to respond effectively to last winter's floods. We support the Government's original idea from 2014 that there should be an annual national review of the nation's resilience. The Government should work with the Committee on Climate Change to produce this. In the interests of transparency and accountability the Government should also publish an action plan alongside this yearly review setting out, using measurable objectives, its progress. The Government's current review would be a good starting point upon which to build. This will enable the Government and the Environment Agency to be held to account for its performance in delivering those actions particularly in light of future flooding events. During this inquiry a diverse range of stakeholders shared a common desire to see improvements in communication and collaboration between key organisations involved in or affected by flooding. We hope that the Government will take this into account.* (Paragraph 30)

Investment

3. *The Government's claim that spending on flooding has increased every five years does not reflect the fact that funding was initially planned to decline over the 2010–2015 Parliament and was only higher due to the reactive funding injection following the winter 2013/2014 floods. This approach is inefficient and goes against the advice of Sir Michael Pitt and Mark Worsfold in their reviews. We recommend that the Government adopt a more strategic approach to funding flood risk management which avoids such fluctuations in funding.* (Paragraph 34)
4. *The Worsfold review demonstrated a relationship between maintenance spending and the condition of critical assets which protect people and property from flooding. As maintenance spending has fallen so to have the number of critical assets which meet the Environment Agency's required condition. Any decline in the condition of critical assets represents a real world and unacceptable risk to local communities at risk of flooding. Given the increasing risk from climate change we urge the Government to see the 97% target as a minimum and to have the ambition of 99% of critical assets meeting the Environment Agency's required condition by 2019. The Foss Barrier*

in York provides a cautionary example of what could happen in other parts of the country when ageing defences fail. We note the Government's commitment to sustain maintenance spending over this Parliament. However, it is worth noting that, since there are more new flood defence assets being built, maintenance spend needs to increase simply in order to stand still. (Paragraph 41)

5. The Government's commitment to spend £2.3 billion and an additional £700 million on flood risk management is welcome. We remain sceptical that the Government will reach its target of protecting 300,000 properties, based as it is on an inherently optimistic forecast that assumes optimal efficiency in spending decisions. The Government should also clarify whether the £2.3 billion will pay for 1500 flood defence projects, as originally proposed, or 1400 projects, which the Minister said during our inquiry. We were also surprised to hear that the additional £700 million of funding was based on a "political calculation". This is an economically inefficient way of allocating Government resources. It highlights that the Government is continuing to take a reactive rather than proactive approach to funding flood risk management by ignoring the recommendations on these issues from previous reviews. Communities deserve more certainty that they will be protected from floods. (Paragraph 48)
6. *The Government has made good progress in raising partnership funds to support overall funding for flood protection. However, 85% of this funding is still expected to come from the public sector, which is subject to significant resource constraints, and only 15% from the private sector. Partnership funding represents a risky approach to funding flood protection. It increases uncertainty for local communities about whether they will be protected from future floods. If the Government or the Environment Agency fails to attract additional funds, important flood protection schemes will not get the go-ahead. The Government must set out how it intends to support these flood protection schemes if additional partnership funding cannot be raised. (Paragraph 55)*
7. *We recognise that Defra needs to prioritise flooding as an issue that impacts on lives and livelihoods. However, it should be transparent about where it has had to make cuts to accommodate this. We also ask the Government to set out, in the response to this Report, the evidence-base justifying its decision to protect flooding at the expense of other parts of the Department, in order to demonstrate that this decision was grounded in evidence and not just "political calculation". (Paragraph 61)*

Planning and strategy

8. The winter floods of 2013 and 2015 called into question the preparedness of some infrastructure companies to deal with flood events. The companies we heard from were all aiming to protect their assets to different standards. We are concerned that infrastructure operators continue to adopt varying degrees of preparedness and that there is an apparent lack of Government vigour to ensure a consistent and robust approach is taken to protecting services. (Paragraph 67)
9. *We therefore recommend that the Government implement the Committee on Climate Change's proposals that infrastructure companies be mandated to report their target resilience level, why this target is appropriate and what progress they are making to achieve it. The Government should also adopt the CCC's recommendation to ensure*

that critical assets meet a minimum of a one in 200-year event. The flooding of small-scale energy and communications assets can cause large-scale problems, as it did in Leeds in winter 2015. We therefore welcome the Government's focus on protecting local infrastructure against extreme flooding, but recommend that Ministers publish which assets comprise the 40% being protected with temporary defences and which make up the remaining 60% that will have to wait for permanent safeguards. Notwithstanding this, Ministers must also ensure that the resilience of other, larger critical infrastructure assets are improved. (Paragraph 68)

10. *Available statistics indicate that Environment Agency advice on whether, or how, to build in high flood-risk areas is almost always followed by local authorities. In the interests of clarity, transparency and consistency, however, this information—the decisions on, and terms of, planning permission in such areas—should be published in full by local authorities. We recommend that DCLG publish, by the end of 2016, a proposed framework for the reporting of such information. There are no comprehensive statistics detailing whether developers subsequently build according to planning permission, however. Given that almost 10,000 homes were built in high flood-risk areas in 2013–14, we recommend that Defra work with DCLG to establish a systematic approach to ensuring that these properties are built in accordance with planning permission. (Paragraph 73)*
11. *Government should devise a means of establishing and communicating to people the cumulative impact of individual local authorities granting planning permission across the country for developments in one in 100-year areas. The chances of one of those developments flooding significantly is greater than one in 100 years and will increase as more such developments are approved. Ministers must also consider whether local plans are fit for purpose, given that the areas they cover by and large do not correspond to catchment areas and that their short timescales do not correspond to the longer-term environmental changes that local areas need to be planning for now. Given the number of local authorities that do not either have an adopted local plan or one that reflects NPPF guidance, Government should, in the short term, provide more support to local authorities to enable them to adopt a plan and, in the medium term, support and encourage local authorities to develop joint local plans that are more ambitious in time and scale. (Paragraph 76)*
12. *Almost one third of lead local flood authorities (LLFAs) still do not have a local flood risk management strategy in place, according to the most recent figures available. These figures are, however, more than one year old. This suggests that Government may not know whether progress has been made to reduce this worryingly high figure. It also suggests Government lacks a comprehensive, up-to-date overview of local authority preparedness for flood risk. Furthermore, those LLFAs that do have a plan in place may not have one that is fit-for-purpose. There is an urgent need to put the right plans in place as soon as possible, but some LLFAs may not have the capacity to do so. For strategic oversight of flood risk management throughout the country, the Government needs to have an up-to-date overview of the number of LLFAs with plans in place. But it also needs to support the Environment Agency to ensure it can support those LLFAs that lack the capacity to produce these plans, and to review existing plans to guarantee they are preparing for the appropriate risk level. (Paragraph 83)*

13. *Sustainable urban drainage systems, such as rainwater capture and storage, are widely acknowledged to be an efficient way of dealing with surface water. But successive Governments have been reluctant to commence the legal powers that would make such systems the default option in new developments. The often cited reason is cost to developers. While these should not be underestimated, if the refusal is introduced to all developments, except in very particular circumstances, a level playing field should be maintained. Developers may pass those costs on to house buyers, a concern that again should not be ignored. But the longer-term costs, directly or from increased insurance premiums, of paying to repair houses and clean up local areas can be expected to outweigh short-term expense. We question, nine years after the Pitt review recommendation that SUDS be the default option in new developments, why a further review is required. Given this has now been legislated for, however, we recommend that it be completed at the latest in time for the CCC to use the findings in its 2017 progress report to Parliament. (Paragraph 88)*

Natural flood management

14. *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. (Paragraph 98)*

Conclusion

15. Over the last 20 years there has been a review following every major flooding event and this year is no exception. This repetitive cycle suggests that there has been a lack of effective long-term strategic planning about how to manage flood risk. Our analysis of government flood funding and its approach to planning has demonstrated that the Government could do more to mitigate the future risk of flooding. Importantly, the Government appears to be reactive rather than proactive. If the Government fails to learn lessons and improve its long-term strategy then communities and businesses which would otherwise be protected will continue to suffer the unnecessary distress of being flooded. The Government needs to ensure that local plans and flood strategies are in place to ensure resilience and that it can deliver on its long-term funding commitments by meeting targets for partnership funding and efficiency savings, without putting at risk the 1,500 flood defence projects currently being planned or negatively impacting Defra's other essential services. It is critical that the Government undertakes its current reviews in an open and transparent way to allow stakeholders, including Parliament, to monitor its progress and hold it to account. (Paragraph 99)

Appendix: Leeds visit

Monday 25 April 2016, Leeds City Council, 11:30–13:00

Impact

- In towns, homes and businesses were flooded. Nine electricity substations (including those which were situated underground) and 110 water assets (pumping stations and sewage treatment works) were affected. At the time, 30 of these assets were still in “intensive care”. Water supplies were, however, maintained.
- In Leeds, flooding on the scale experienced last winter had not been seen since 1866. The city has no formal flood defences. The flooding had a significant impact on businesses, including a number of national and well-known names. Some businesses were still out of action. This has been costly and put many local jobs at risk.
- In Calderdale, the economic impact on SMEs was estimated to have cost £47 million with indirect costs totalling £170 million. The Council estimated that 70 to 80% of businesses had been affected. Businesses range from manufacturing companies to guesthouses and other small businesses.
- In York, homes and businesses were flooded. The Foss barrier which protects the city failed.

Response

- Leeds City Council believed that its emergency plans worked well but acknowledged that there was room for improvement. Staff visited 60 businesses within 24 hours. It had started to allocate funds to support affected businesses within a week of the event. By April it had provided support to 220 businesses.
- Yorkshire water implemented a system of mutual aid. This involved calling on other water companies in other areas to support Yorkshire Water in resolving any problems which arose due to the floods. This system worked well.
- Several businesses highlighted that there was a lack of effective communication between organisations responsible for coordinating the response to the floods. Business owners had little warning of the scale of the floods and were unable to take appropriate mitigating actions in time. Environmental Agency said communication with affected parties could be improved in future.
- In Calderdale, one business criticised the emergency services, arguing that the police, in particular were too slow to respond. The police being based in larger towns were cut off from many of the smaller villages affected by the floods and were therefore unable to help in coordinating a response to the floods.
- For several businesses their only source of information was social media which they thought was inadequate to help them protect their properties. Others however thought the use of social media was positive and was likely to play a greater role in disseminating information during future floods.

- A large hotel in the centre of Leeds was significantly affected by the floods and had to close. Its phone line went down so that customers were unable to contact the hotel directly. The hotel manager resorted to sharing his personal phone number on social media so that customers could get in touch the hotel.

Recovery

- There was little or no support available from central government to support businesses affected by the floods. There were fears that some businesses may not be able to afford the cost of recovery. For those that can, it may take up to two years to recover.
- Local organisations including the Community Foundation for Calderdale had established a local 'flood save' scheme. This is a match funded savings scheme for business and homes not covered by the Government's Flood Re scheme. To date it has awarded £2.4 million in aid.
- Insurance was an overriding issue of concern. Leeds University described how 60% of businesses were now unable to get (a quotation for) insurance. Of the rest, 20% could not afford the quote provided.
- The excess for one local business had risen from £1,000 to £250,000 following the floods. This would go down to £70,000, but only once a new wall had been built at the company's expense.
- The buildings insurance premium for another small business had risen 60% to £10,000 and their excess had increased 40% to £10,000. This was based on building flood defences worth £400,000 which they would have to pay for.
- Another business reported that it had been flooded 7 times in 12 years.

Mitigation

- In Leeds, the Government has provided funding to complete the flood defences to protect the city. The Council said that it would reflect on its performance and revise future strategies. It was worried about its capacity to deal with flooding in the future.
- In Calderdale, the Council was going to revise its flooding strategy based on its experience of the floods.
- In York, the Environment Agency said in relation to the Foss barrier that the 30-year-old piece of infrastructure required investment. It had been reviewed prior to the winter floods and £3.8 million had been allocated to upgrade the barrier. It was hoped that this would enable the barrier to withstand a one in 100 year flood event.
- The Environment Agency and Yorkshire Water described how they were working to move towards a whole catchment approach which should involve soft and hard flood defences. This included slowing the flow of water through the catchment by creating peak bogs and planting trees.

Government actions

- The Environment Agency said it hoped that the Government's 25 year plan for nature would include flooding.
- Leeds City Council said it wanted the Government's National Resilience Review to rebalance funding between residential properties and businesses.

List of attendees

Mary Craegh MP, Chair, Environmental Audit Committee

John Mc Nally MP, Member, Environmental Audit Committee

Leeds City Council

Calderdale Council

Leeds University

Environment Agency

Calderdale Community Foundation

Upper Calder Valley Renaissance

Yorkshire Water

Ryburne Insurance Brokers

A Taylor and Sons

Morgans

Halifax Ironworks Ltd

Morton Group

Northern Powergrid

Lock Hill Mills

Formal Minutes

Wednesday 25 May 2016

Members present.

Mary Creagh, in the Chair:

Peter Aldous Peter Heaton-Jones
Geraint Davies

Draft Report (*Flooding: Cooperation across Government*), proposed by the Chair, brought up and read.

Paragraphs 1 to 99.

Summary read and agreed to.

Resolved, That the Report be the Second Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[The Committee adjourned]

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

Wednesday 27 January 2016

Question number

Lord Krebs, Chair of the Adaptation Sub-Committee, Committee on Climate Change, **Matthew Bell**, Chief Executive, Committee on Climate Change and **Daniel Johns**, Head of Adaptation UK, Committee on Climate Change [Q1–43](#)

Professor Dieter Helm, University of Oxford [Q44–69](#)

Wednesday 3 February 2016

George Monbiot, Columnist, The Guardian [Q70–96](#)

Sir James Bevan, Chief Executive, Environment Agency, and **John Curtin**, acting Executive Director, Flood and Coastal Risk Management, Environment Agency [Q97–169](#)

Wednesday 24 February 2016

Tim Kersley, Head of Asset Management Strategy, Network Rail, **Jo Harrison**, Asset Management Director, United Utilities, **Hugh Ellis**, Head of Policy, Town and Country Planning Association, **Tom Jeynes**, Sustainable Development Manager (Humber), Associated British Ports, **Chris Woodroffe**, Head of Passenger Operations, Gatwick Airport, **Councillor Steve Sweeney**, Yorkshire Regional Flood and Coastal Committee and Calderdale Council, **Eamon Lally**, Principal Policy Adviser, Local Government Association, **Ian Glover**, Environment Sustainability Manager, National Grid, and **Ivan Le Fevre**, Head of Environment, Highways England [Q170–208](#)

Wednesday 13 April 2016

Rory Stewart MP, Parliamentary Under-Secretary of State, Department for Environment, Food and Rural Affairs, and **Rt Hon Oliver Letwin MP**, Chancellor of the Duchy of Lancaster [Q209–275](#)

Published written evidence

The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

FDG numbers are generated by the evidence processing system and so may not be complete.

- 1 Association of British Insurers (ABI) ([FDG0009](#))
- 2 Aviva ([FDG0002](#))
- 3 Countryside Stewardship ([FDG0012](#))
- 4 Environment Agency ([FDG0006](#))
- 5 Environment Agency ([FDG0011](#))
- 6 Environment Agency ([FDG0013](#))
- 7 Environment Agency ([FDG0014](#))
- 8 Lancaster University ([FDG0010](#))
- 9 Local Government Association ([FDG0003](#))
- 10 National Flood Forum ([FDG0001](#))
- 11 NFU ([FDG0004](#))
- 12 Rewilding Britain ([FDG0008](#))
- 13 Slowing the flow in Pickering programme delivery group and Ryedale Flood Research Group ([FDG0007](#))
- 14 Town and Country Planning Association ([FDG0005](#))

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the [publications page](#) of the Committee's website.

Session 2016–17

First Report	Soil health	HC 180
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Session 2015–16

First Report	The Airports Commission Report: Carbon Emissions, Air Quality and Noise	HC 389
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Second Report	The Future of the Green Investment Bank	HC 536
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Third Report	EU and UK Environmental Policy	HC 537
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First Special Report	Local Nature Partnerships: Government Response to the Committee's Twelfth Report of Session 2014–15	HC 377
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Second Special Report	Climate change adaptation: Government Response to the Committee's Tenth Report of Session 2014–15	HC 590
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