House of Commons

Environment, Food and Rural Affairs Committee

Flooding

Fifth Report of Session 2007–08

Volume I

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Environment, Food and Rural Affairs Committee

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The current staff of the Committee are Chris Stanton (Clerk), Nerys Welfoot (Second Clerk), Sarah Coe (Committee Specialist—Environment), Marek Kubala and Joanna Dodd (Inquiry Managers), Professor Frank Farquharson and Professor Colin Green (Specialist Advisers), Andy Boyd and John-Paul Flaherty (Committee Assistants) and Mandy Sullivan (Secretary).

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Summary

The floods that occurred across several areas of the country in June and then July 2007 were shocking. The geographical scope of the floods, and the physical and economic damage they caused, were on a scale not seen for sixty years. The human effect was very distressing: thirteen people lost their lives; thousands of people lost either their electricity, water supply or both; and 44,600 homes were flooded. Nine months later, the misery continues for the thousands of people who have still not been able to return to their homes. The economic impact was also very severe: at least £3 billion worth of damage was caused, and 7,100 businesses were flooded. Those affected, and many others, now suffer the worry that such damaging floods could happen again.

The 2007 floods revealed that, to date, most organisations—including Government—have focussed almost exclusively on river and coastal flooding, and much less so on surface water and groundwater flooding. Coastal flooding does remain the most serious threat. But about two thirds of the summer 2007 flooding was caused by surface water flooding, often after intense heavy rainfall overwhelmed drainage systems. No organisation currently has responsibility for surface water flooding, at either the national or local level. This lack of responsibility must be addressed by Government. We believe local authorities should be given a statutory duty for surface water drainage in their area, working in partnership with other bodies with drainage and flood risk responsibilities. Local authorities are both the highways authority in their area and are responsible for land use and planning and control. They also have the advantage of local democratic accountability. Local authority leadership would also follow the approach successfully adopted elsewhere in Europe, such as Germany and France. The Environment Agency should have an over-arching role to provide advice and guidance to local authorities.

Regulatory changes are needed to ease pressure on the existing public drainage and sewerage system. We welcome the Government's Water Strategy policies to change householders' rights to allow them to pave over their front garden without planning permission only if the surface is porous and to review the automatic right to connect surface water drains and sewers to the public sewerage systems. We also strongly support greater use of sustainable drainage systems (SUDs), but agree that a lack of clarity about the ownership and long-term maintenance of SUDs is a barrier to their wider implementation. We believe local authorities should be responsible for the ownership and maintenance of SUDs, as happens elsewhere in Europe. Local authorities already have a number of key roles that link to SUDs, in land planning, managing open spaces, as highways authority, and their wider responsibilities for local sustainability issues. There also needs to be a stronger requirement on local authorities to insist developers install SUDs on new development, as often as is feasible. A presumption in favour of SUDs should be included in the Planning Bill, to add weight to Planning Policy Statement 25. The Government needs to resolve these issues as a matter of urgency to enable the current house-building and eco-towns programmes to incorporate maximum use of SUDs.

The Government has announced it will increase expenditure on flood risk management from £600 million in 2007–08 to £800 million by 2010–11, as part of its Comprehensive Spending Review 2007 settlement. However, this settlement looks far less impressive under

close analysis, and inadequate to cope with both the traditional and new risks the country faces.

We welcome the Government and the Environment Agency's work to develop a long-term investment strategy for flood risk management. However, we reject the idea of a dedicated Flood Agency. This strategy should provide some answers about the level of flood risk protection that the public should expect, the research and organisation involved, the number of flood prevention and alleviation schemes required nationally, and how much this would cost. The strategy should also take account of the effect of climate change on the frequency and intensity of rainfall and storm surges.

The summer floods exposed the vulnerability of the nation's critical infrastructure to flooding. The Government should re-examine the current statutory duties on utilities in relation to emergency planning. A specific duty should be placed on utilities to ensure their critical assets are protected from flooding and that they have adequate business continuity plans in the event of a flood. This should include ensuring supply system resilience so that the failure of a key asset can be substituted by other means with a minimum interruption of service. The Agency should advise on plausible scenarios, taking into account climate change impacts. This work will cost money, but consumers should not foot the bill for any past failure by utilities to give their initial assets the protection they should have had in the first place.

We want to ensure that the Government implements the findings of the Pitt Review in a robust and transparent manner. The Department of Environment, Food and Rural Affairs (Defra) should publish a costed and prioritised action plan to set out the timetable for implementing Sir Michael Pitt's findings, once known. A progress-chasing team, led by a high-profile non-Defra figure—we suggest Sir Michael Pitt himself—should be appointed within the Environment Agency to co-ordinate implementation and to monitor and report progress at given periods.

1 Introduction

The summer 2007 floods

1. England is accustomed to wet weather. But the floods that occurred across several areas of the country in June and then July 2007 shocked the nation. The geographical scope of the floods, and the physical and economic damage they caused, were on a scale not seen for sixty years. They occurred, unusually, in the summer rather than the winter. Some of the places they affected had not been thought to be at special risk from flooding and were therefore not well prepared.

2. The human effect was very distressing: thirteen people lost their lives; thousands of people lost their power, their water supply or both; and 44,600 homes were flooded.[1] Nine months later, the misery continues for the thousands of people who have still not been able to return to their homes. The economic impact was also very severe: at least £3 billion worth of damage was caused, and 7,100 businesses were flooded.[2] Those affected, and many others, now suffer the worry that such damaging floods could happen again.

3. Two separate major flooding events occurred during the summer: one in late June, the other in late July. The June floods primarily affected parts of Yorkshire and the Humber, Derbyshire, Lincolnshire and Worcestershire, after a deep and slow-moving area of low pressure brought prolonged heavy rain on 24–25 June.[3] Up to 111mm (4½") of rainfall fell, with some places receiving over four times the average monthly rainfall.[4] Urban northern cities Hull and Sheffield were particularly badly affected. A 'one in 150 year' rainfall event in Hull overwhelmed the city's pumped drainage and sewerage system, resulting in over 7,000 houses, 90 local schools, and dozens of businesses being flooded.[5] In the Sheffield area, about 2,200 homes and businesses were flooded, and 40,000 people lost power in the South Yorkshire region after an electricity sub-station was shut down.[6] Sheffield city was effectively divided in half by floodwater, along a corridor some 23km in length.[7]

4. The second flooding event occurred a month later in central England, particularly the counties of Worcestershire, Warwickshire, Herefordshire, Gloucestershire, Lincolnshire, Oxfordshire and Berkshire. On 19–20 July, a slow-moving depression centred over south-east England, and moved gradually northwards. Up to 157mm (6") of rain fell in 48 hours, with some places receiving nearly six times the average monthly rainfall.[8] About 7,000 homes and businesses were flooded in Gloucestershire, and a further 5,700 properties in

1 Ev 2 [Environment Agency]

2 Ev 120 [ABI], 2

3 Ev 180 [Met Office]

4 The 111mm of rainfall was recorded in Fylingdales, North Yorkshire. Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 12.

5 Ev 54 [Hull City Council], para 1. Hull City Council described it as the "most devastating flood in living memory".

6 2007 summer floods: What happened near you? www.environment–agency.gov.uk. Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp 149–150.

7 Ev 60 [Sheffield City Council], para 2.2.

8 Ev 180 [Met Office]. The Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp 12–13.

the Thames Valley area.[9] 350,000 people across the Gloucestershire area lost mains water—some for up to 17 days—following the flooding of the Mythe water treatment works at Tewkesbury.[10] The local water company, assisted by the armed services, had to provide water through bottles and bowsers to numerous locations across the county. Several local electricity substations were also affected: over 40,000 properties in the area lost power, including at Castle Meads and Tewkesbury.[11] A major National Grid switching station at Walham, Gloucester, was under threat, which could have resulted in 500,000 people losing their supply.[12] The armed services were called in to prevent the station from flooding by erecting a temporary barrier around the site.

5. The summer 2007 flooding was unusual because it was predominantly caused by surface water flooding. Many major English floods in the past have been river floods, such as in 1947, or coastal floods, such as in 1953.[13] About two thirds of the summer 2007 flooding was caused by surface water flooding.[14] In northern England the situation was more extreme with 95% of the flooding in Hull coming from surface water flooding, and Sheffield experiencing a combination of river and surface water flooding.[15]

6. Surface water flooding occurs when a high volume of rainfall falls on an area in a short time but it is unable to drain away effectively. It is a particular problem in urban areas, where much of the land is impermeable. Surface water flooding often happens quickly and is difficult to predict because it is dependent on the particular features of certain streets, drains, and the topography of urban areas. It is expected to become a more common type of flooding event than we have seen in the past—partly because more land has been paved over with impermeable materials and also because of the more intense rainfall expected as a result of climate change.[16]

7. After the first set of floods, the Secretary of State for Environment, Food and Rural Affairs, the Rt Hon Hilary Benn MP, announced that an independent 'lessons learned' review would be held to look at how the floods were managed and responded to by the Environment Agency, local authorities, the emergency services, and others.[17] The review also aimed to establish why the flooding was so extensive and whether the scale and impact

9 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp. 151, 153.

10 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p. 152.

11 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p. 152; Oral Ministerial Statement by the Secretary of State for Environment, Food and Rural Affairs [Rt Hon Hilary Benn MP], HC Deb, 23 July 2007, c163–4.

12 Oral Ministerial Statement by the Secretary of State for Environment, Food and Rural Affairs [Rt Hon Hilary Benn MP], HC Deb, 23 July 2007, c163–4.

13 The coastal flooding of 1953 took place along a thousand miles of the east coast in 1953 and killed 300 people. Cabinet Office, *The National Security Strategy of the United Kingdom*, Cm 7291, March 2008, p 15.

14 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 15.

15 Q 26 [Environment Agency]

16 The Greater London Authority said that surface water flood risk in London was predicted to increase, and was a greater potential threat than river flooding [Ev 209; Q 608]. The Centre for Ecology & Hydrology also said climate change would increase the risk of surface water flooding more than traditional river flooding [Ev 172]. Defra's *Future Water* stated that, with climate change, winter rainfall could increase in some regions by as much as 30% by the 2080s, while rainfall intensity could increase both in winter and summer [Defra, *Future Water: The Government's Water Strategy for England*, Cm 7319, p 57].

17 HC Deb, 12 July 2007, cols 63–4WS

of the flooding could have been predicted, prevented or mitigated. Sir Michael Pitt, chair of the South West Strategic Health Authority, was appointed to head the review.[18]

Our inquiry

8. In July 2007, we decided to hold an inquiry into the 2007 floods and the Government's response to them. Our work was intended to contribute to the recently-announced Pitt Review. The inquiry sparked an unprecedented level of interest, with 187 written memoranda submitted from various interested parties, including many members of the public and MPs whose constituencies had been affected by the summer's flooding (see box below). Our Chairman, the Rt Hon Michael Jack MP, also appeared on the radio programme *You & Yours* on 22 January 2008 to discuss flooding-related issues with callers to the show. The programme received 101 emails and 79 calls and texts.[19]

Evidence from members of the public

43% (80 memoranda) of the total written evidence we received came from members of the public. The comments most frequently made were:

- poor maintenance of drains had contributed to local flooding;[20]
- poor watercourse maintenance and lack of river dredging had contributed to local flooding;[21]
- "riparian" owners, such as farmers and other landowners, were unaware of their responsibilities for watercourse maintenance;[22]
- development on the flood plain should be stopped;[23] and
- houses built on the flood plain had to be properly flood resilient and resistant.[24]

18 "Appointment of independent chair for the Flooding Lessons Learned Review", Department for Environment, Food and Rural Affairs press release 2007/252, 8 August 2007.

19 Ev 586 [BBC Radio 4 – You & Yours]

20 For example, Peter Collier [Ev 388], Judy Chipchase [Ev 389], Rev Stephen Cope [Ev 394], Colin Newlands [Ev 394], Gill Pett [397].

21 For example, Christine Adamson [Ev 396], Graham Shelton [Ev 414].

22 For example, Janet Marrott [Ev 391], James Harris [Ev 396].

23 For example, Lorraine Smith [Ev 389], Roger Hendry [Ev 394].

24 For example, Roger Martin [Ev 389], Dudley George [Ev 391].

Evidence from Members of Parliament

We received 20 memoranda from MPs whose constituencies had been affected by the flooding. We also took oral evidence from five of those Members (Mr Richard Benyon MP, Mr David Curry MP, Mr Martin Horwood MP, Mr Laurence Robertson MP, and Ms Angela C Smith MP) at Westminster. Some of the main points raised by Members included:

- there was a lack of clarity about responsibility for certain drainage assets;[25]
- poor watercourse maintenance could contribute to local flooding;[26] and
- critical infrastructure needed to be protected from flooding.[27]

9. From October 2007 to February 2008 we took oral evidence at Westminster from a number of witnesses. We also held three visits as part of the inquiry. We visited Gloucester in August 2007 to witness the aftermath of the flooding in the region; whilst there, we observed what measures had been put in place at Walham substation following the summer's events. In December, we visited Lyon, France, to see how regional authorities, and others, were addressing flooding problems in their area through the use of sustainable drainage systems and a strategic approach to development and planning. Finally, we visited Lincoln in January 2008 to see the city's flood defences and one of the Environment Agency's two 'washlands' schemes in the area. We took further oral evidence in Lincoln, including from local bodies and members of the public with personal experiences of flooding. We are very grateful to all those who gave evidence or otherwise assisted with our inquiry. We wish to give special thanks to our two flooding specialist advisers, Professor Colin Green and Mr Frank Farquharson.

The Pitt Review's interim report

10. On 17 December 2007, Sir Michael Pitt published an interim report on the lessons learned from the summer floods.[28] This followed the publication of several other similar 'lessons-learned' reports by the Environment Agency, the Audit Commission, Hull City Council, Gloucestershire County Council, the Association of British Insurers, Water UK, Ofwat and Severn Trent Water. Sir Michael Pitt's report contained 72 interim conclusions and 15 urgent recommendations addressed to a variety of relevant parties, including central and local Government, insurance companies, utilities and members of the public. It focussed not only on the need to improve flood risk management, but also on emergency response and post-flood recovery. The Government announced that same day that it agreed with all of the 15 urgent recommendations and would work with other

25 For example, Colin Burgon MP [Ev 370], Graham Stuart MP [Ev 372], Clive Betts MP [Ev 376].

26 For example, Nigel Evans MP [Ev 370], Richard Benyon MP [Ev 155], David Heathcoat-Amory MP [Ev 379].

27 For example, Chris Huhne MP [Ev 371], Graham Stuart MP [Ev 372], David Cameron MP [Ev 376].

28 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007.

organisations in implementing them.[29] The 72 interim conclusions, which form the bulk of the report, are subject to a consultation process to determine issues of feasibility, practicality, and cost. Sir Michael Pitt's final report is scheduled for summer 2008.[30] To date, Government has allocated £34.5 million from funding retained in Defra to implement Sir Michael Pitt's final recommendations. We discuss funding of the Pitt Review later in our Report (paragraphs 56–58).

Our report

11. Our recommendations and conclusions are aimed at a narrower audience than those in Sir Michael Pitt's interim report. Our job is to scrutinise the work of the Department for Environment, Food and Rural Affairs (Defra) and its associated public bodies. We therefore address our recommendations and conclusions primarily to Defra and the main Government agency responsible for flood risk management, the Environment Agency. The issues we cover largely reflect Defra's remit in this area—that is, managing flood risk. Unlike the Pitt Review, we do not examine post-flood recovery, a responsibility of the Department for Communities and Local Government (DCLG). We are also particularly interested in the political dimensions of this issue, such as the level of flood protection the public can expect from public bodies, and how they balance and assess risk. Our report reflects our primary interest in the political aspects of flood management and prevention, and responds to public concerns about this issue.

2 Current management of flood risk

12. Defra is the lead Government department for all flood risk in England. In practice, however, the Department's day-to-day involvement with flooding is limited. Responsibility for flood risk management has now almost entirely been devolved to the Environment Agency ('the Agency'), an associated public body of Defra. Flood risk management consumes over half of the Agency's £1 billion budget, which it spends on building and maintaining flood defences, producing flood maps of areas at high risk and running its flood warning system.[31] The Agency is also currently developing Catchment Flood Management Plans, to cover all of England (and Wales) by 2009.[32] These are strategic plans intended to assess current and future flood risks across a whole river catchment area, and to co-ordinate action accordingly. It is also developing 11 River Basin Management Plans for completion by 2009, as required under the Water Framework Directive.[33] Defra's main flooding responsibilities now involve providing funding to the Agency, and setting the Agency targets (such as the number of houses to be protected for a certain investment).

29 HC Deb, 17 December 2007, cols 89–91WS

30 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp 129–132.

31 2006–07 figures. Taken from: Environment Agency, *Annual Report and accounts 2006–07*, July 2007, HC 834, p 4. The Agency's flood maps are available at Flood, Environment Agency website, www.environment-agency.gov.uk/subjects.

32 Committee of Public Accounts, Fourth Report of Session 2007–08, *Environment Agency: Building and maintaining river and coastal flood defences in England,* HC 175, Ev 26.

33 A map of the River Basin Districts is available at Water Framework Directive: Find Out About Your River Basin District, Environment Agency website, www.environment-agency.gov.uk.

13. The summer 2007 floods highlighted two overarching weaknesses with the general approach to flood risk management in England. The first relates to flood risk type. There are four main recognised types of flood risk—river flooding, coastal flooding, surface water flooding, and groundwater flooding. The 2007 floods revealed that, to date, most organisations have focussed almost exclusively on *river* and *coastal* flood risk, and much less so on the risks associated with surface water and groundwater flooding. This is apparent even in the current Governmental organisational structure. The Environment Agency is the lead delivery body for flood risk management. However, many of its main responsibilities—including its flood defences, maps and warning systems—are geared to river and coastal flooding only. We also received criticism that Catchment Flood Management Plans and River Basin Management Plans did not effectively address typical 'inland' kinds of flood risk, such as surface water flooding.[34] These limitations were apparent during the events of summer 2007—the largest surface water flooding event ever experienced in the UK.[35] The Government has acknowledged that the experience of 2007 "suggests that surface water flooding may be more of a problem than was once thought to be the case".[36] We discuss surface water flooding in more detail in Chapter 3.

14. The second main, broad, drawback with the management of flood risk in recent times—again accentuated during the events of the summer—is that flooding, as a policy issue, has tended to be dealt with largely in isolation from other issues. For example, the Government strategy document *Making Space for Water* (2004) did not explore in detail how flood risk management could be combined effectively with some other aspects of water management, such as water reuse. Some other European countries have a more 'integrated' approach to water management, whereby several water-related issues (water demand and supply, flooding, drought, pollution caused by runoff, and so on) are considered together. In Germany and France, there has been widespread diffusion and adoption of sustainable water practices since the 1980s, including common use of sustainable drainage systems which often have multiple benefits related to flood risk, water supply and water quality. The recent strategy document *Future Water* (2007) shows that Defra recognises the benefits of an integrated approach to water management, but the UK is still lagging behind other European countries in some regards.[37] We discuss some practical policies that can arise from an integrated approach to water management in Chapter 3.

3 Surface water flooding

15. Our inquiry shows that two broad, but inter-linked, issues needed to be addressed in relation to surface water flooding: organisational responsibility and improving surface water drainage.

34 Q 308 [Lindsey Marsh Internal Drainage Board]

35 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 67.

36 Defra, *Future Water*, Cm 7319, February 2008, p 57.

37 Integrated Water Management is generally considered to cover integration across catchments, between functions, and between land and water management. Whilst the UK has developed integration across catchments over the last 70 years, with the end of the experiment of Regional Water Authorities, functional integration weakened and integration of land and water management has always been weak.

Organisational responsibility

16. No organisation either nationally or locally has overall responsibility for surface water flooding. The consequences of this were apparent in Hull, and parts of Sheffield, in June 2007. When the Meteorological Office forecast exceptionally heavy rainfall over the region, local authorities lacked information to help predict which streets or drains in the city were vulnerable to flood. When the heavy rain started, nobody was responsible for issuing flood warnings to those people whose properties may be affected. When drains in areas of the city began to overflow, it was difficult—and sometimes impossible—to determine who was responsible for certain drainage assets.

17. In England and Wales, the Environment Agency has a general supervisory and management role for river and coastal flooding. In addition, regional bodies (local authorities, Regional Flood Defence Committees, and others) all have some input into the process. Surface water flooding, however, is a very different beast. Whereas a river can be managed as a whole system, surface water flooding is a more fine-grain, localised phenomenon, highly dependent on the urban landscapes and drainage systems of individual towns and cities. To be managed effectively, surface water flooding has to be addressed principally at the local level. Nevertheless, there is an argument that some body should have an over-arching responsibility for surface water flooding at the national level, to ensure consistency in practice and to offer guidance and advice.

National level

18. As part of its 2004 *Making Space for Water* strategy, the Government announced that the Agency should be granted, by 2009, a "strategic overview" role for inland flood risks, including surface water flooding, similar to the Agency's current responsibilities for river and coastal flooding.[38] Defra carried out an initial consultation with "key stakeholders" on this matter in summer 2007, and a more comprehensive public consultation will begin in June 2008.[39] In evidence, the Agency told us it welcomed being given a strategic overview for all flood risk, and believed it was necessary:

> With no single organisation having the strategic overview role for all flooding issues the differing approaches and responsibilities mean that there is no common approach to the management and operation of drainage systems, a lack of joint strategic outcomes and failure to optimise expenditure, particularly within urban drainage systems.[40]

The Agency believed, however, that local authorities would need to take the lead role for surface water flooding at the local level: they were the "folks with levers in their hands", particularly for the local drainage and planning systems.[41] Sir Michael Pitt's interim report,

38 Defra, *First Government response to the autumn 2004 Making Space for water consultation exercise*, March 2005, p 17. Defra intends to adopt a "staged approach to implementation, where possible by administrative action". Other changes, however, may require amendments to primary legislation, which could take a longer time [Water: Flood Management: *Making Space for Water*: Programme of work: Environment Agency Strategic Overview: Inland Flood Risk, 22 June 2007, www.defra.gov.uk/environ].

39 Water: Flood Management: *Making Space for Water*: Programme of work: Environment Agency Strategic Overview: Inland Flood Risk, 22 June 2007, www.defra.gov.uk/environ.

40 Q 904; Ev 335.

41 Q 27

published in December 2007, echoed the Agency's views. His preferred structure was for local authorities to lead on the management of surface water flooding and drainage at the local level, with the Agency having a "national overview" for surface water flood risk.[42]

19. The scope of the Agency's potential strategic overview for inland flooding, and the additional tasks this will involve, are not yet known, and will be soon subject to Government consultation.[43] The Agency told us, however, that it saw the role strictly as being one of "national leadership, co-ordination and advice to bodies".[44] It did not envisage, or want, to have a regulatory role over local authorities, or others.[45] It also was cautious about the Pitt Review's suggestion that the overview involve "developing maps [and] warning systems" for surface water flood risk, similar to its current river and coastal flooding responsibilities.[46] Although the Agency acknowledged that indicative maps could be produced of some areas by August 2008, it would be "extremely difficult" in the short-term to produce the sort of models and maps that could enable the issuing of surface water flood warnings, because the technological forecasting capabilities of the Met Office were not developed enough yet and urban settings were too complex.[47] The Agency said it was "less sanguine than Sir Michael about what is or what is not possible at this current time".[48]

20. Several witnesses, including Water UK (the representative organisation for all UK water and wastewater suppliers), the Association of British Insurers, the Mayor of London and the Chartered Institution of Water and Environmental Management (CIWEM), supported the Government's proposals to grant the Agency an overview for surface water, and other types of inland, flood risk.[49] The Defra Minister of State for Environment also told us he had every confidence the Agency could take on the new role successfully.[50] Other witnesses highlighted the need for an over-arching national organisation for surface water flooding, but were not specific about which organisation should have this role.[51] An alternative approach would be to establish a separate flood control agency to handle all aspects of flood emergency management from forecasting and warning through to crisis management, community support and post-flood recovery, although this did not receive widespread support from witnesses. Sheffield City Council did not want a "huge reorganisation of responsibilities", and the Chairs of Regional Flood Defence Committees believed "far reaching organizational change" could make matters worse.[52] The Agency itself believed such organisational restructuring would be a "backward step", because other

42 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp 46–47.

43 Defra, *Improving surface water drainage* [consultation document], February 2008.

44 Ev 335

45 Q 72

46 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 47.

47 Qq 885, 930. The indicative maps are being produced following the Pitt Review's urgent recommendation 2 that "the Environment Agency, supported by local companies and water companies, should urgently identify areas at highest risk from surface water flooding where known, inform Local Resilience Forums and take steps to identify remaining high risk areas over the coming months" [Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 37]. In evidence, Defra acknowledged the maps would be fairly crude (Q 1031).

48 Q 885

49 Q 651; Q 483; Ev 480, para 11; Ev 209.

50 Q 1028

51 For example, Jaqui Taylor [Ev 412], Dr Susan Juned [Ev 417].

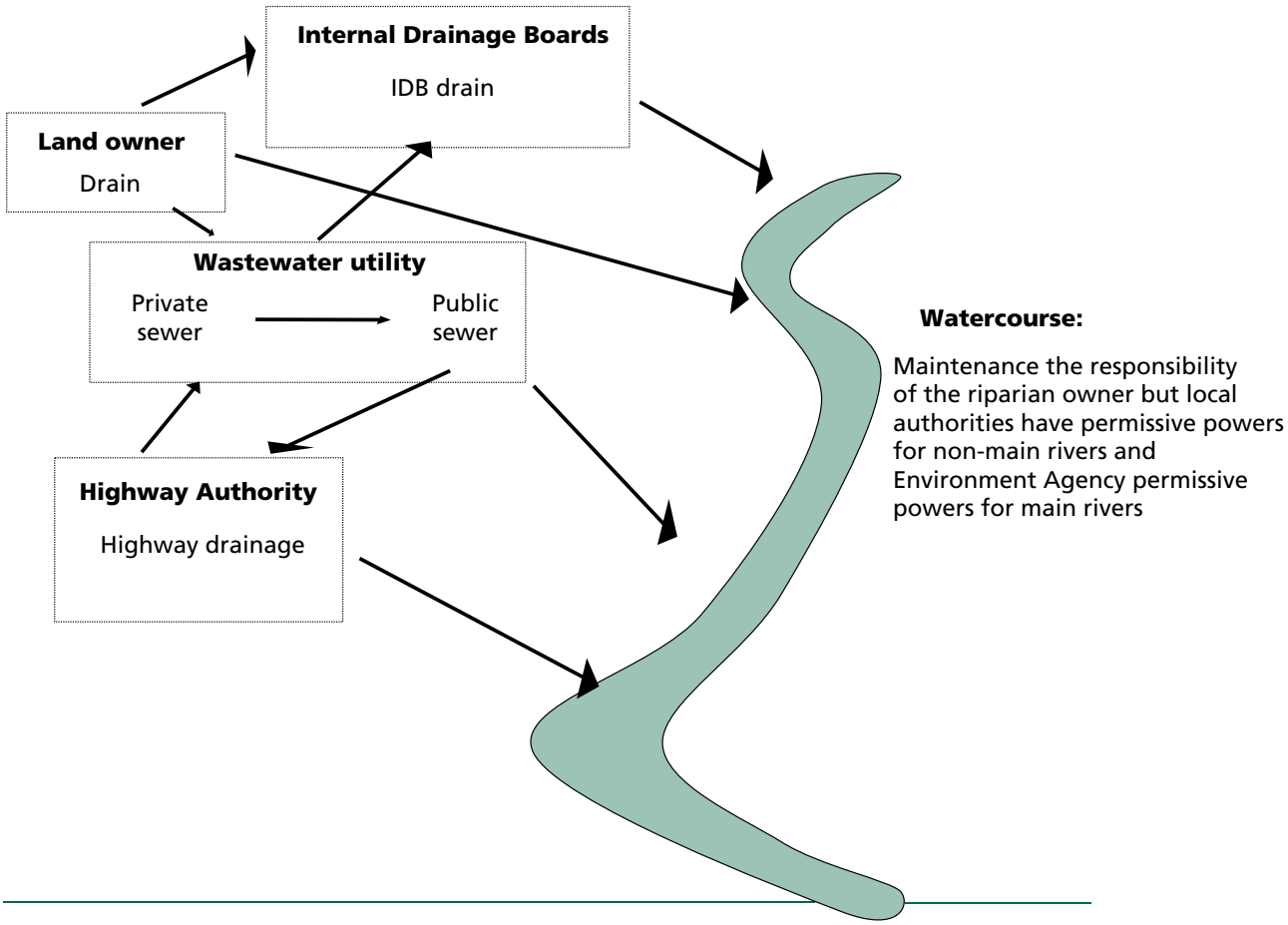
52 Q 190; Ev 250, para 9.

European countries were only just beginning to emulate the English model of a single agency responsible for land, air and water.[53]

Local level

21. Managing surface water flood risk is intrinsically linked to managing surface water drainage at the local level. Responsibilities for surface water drainage systems are split between various organisations, partly as a consequence of the privatisation of the water industry. Water and wastewater companies are required under the Water Industry Act 1991 to "effectually drain" the areas for which they are responsible, such as public sewers.[54] Local authorities (including highways authorities), Internal Drainage Boards and private owners are also responsible for other drainage assets.[55] Figure 1 provides one interpretation of current responsibilities.

Figure 1: Responsibilities for drainage



53 Q 72

54 Section 94 of the Water Industry Act states: "It shall be the duty of every sewerage undertaker to provide, improve and extend a system of public sewers (whether inside its area or elsewhere) and so to cleanse and maintain those sewers as to ensure that that area is and continues to be effectually drained". In February 2007, the Government announced that existing private sewers and lateral drains that are connected to the public sewerage system should be transferred into the ownership of water and sewerage companies. In its Water Strategy, the Government says its is considering how and when the transfer will take place [Defra, *Future Water*, Cm 7319, February 2008, p 61].

55 Internal Drainage Boards (IDBs) are independent statutory bodies responsible for land drainage in areas of special drainage need that extends to 1.2 million hectares of lowland England. They are long established bodies operating predominantly under the Land Drainage Act 1991 and have permissive powers to undertake work to secure drainage and water level management of their districts. They may also undertake flood defence works on ordinary watercourses within their districts (i.e. watercourses other than 'main river').

22. Witnesses told us that the current fragmented responsibilities for surface water drainage meant that measures to tackle flood risk were often applied in a piecemeal fashion. Hull City Council described how the same piece of water could flow through the assets of several organisations, yet there was a "clear lack of co-operation […] and joined-up thinking" between the owners.[56] Thames Water said the current situation meant that the various organisations would simply "shift the problem from one place to another".[57] Witnesses also highlighted some areas of the confusion with the current system. Water UK—who described the system as a "muddle"—said it was impossible to determine when, for example, a highway drain (the responsibility of the local authority as a highways authority) became a public sewer (the responsibility of a water company).[58] Hull City Council had produced a map of the city's drainage system since the summer floods, which showed there was "some ambiguity" about ownership of certain assets.[59]

23. Several witnesses, including local authorities, wanted an organisation to "take the lead" on co-ordinating surface water drainage in local areas.[60] Gloucestershire County Council said the law should be changed to grant top-level local authorities (at unitary or county level) a power to take responsibility for surface water drainage. Adequate resources would need to be provided, and this power should include the ability for local authorities to undertake maintenance work on certain parts of the system even though not legally responsible for that part, and then recharge the costs from the owner.[61] CIWEM also wanted local authorities to "grasp" flood risk issues within their area and take a "long-term leadership role".[62]

24. The Water Strategy, published in February 2008, sets out the Government's preferred approach to managing surface water drainage. It also advocates local authorities having a lead role.[63] In evidence, the Minister told us that the local authority, "as the democratic local body", was the "obvious choice" to lead on surface water drainage.[64] The Government's main emphasis, however, appears to be on better *co-ordination* between the various organisations responsible for surface water drainage, particularly through the use of Surface Water Management Plans (SWMPs). SWMPs were introduced in December 2006 as part of the Planning Policy Statement 25 (PPS25) process, but the Government wants to enhance their role in relation to surface water drainage.[65] The Strategy states:

56 Q 170, Q 172. The Council said the various organisations had only convened for discussions for the first time *after* the June floods.

57 Q 397

58 Qq 647, 650.

59 Q 207

60 For example, Hull City Council [Q 209], Sheffield City Council [Q 192].

61 Qq 357–358

62 Ev 480

63 Defra, *Future Water*, Cm 7319, February 2008, p 58.

64 Q 1022

65 Defra, *Improving surface water drainage* [consultation document], February 2008, p 19. Defra says that the strengthened framework "should allow for the resolution of existing surface water problems, as well as ensuring that new development does not increase flood risk". Where little development is taking place, SWMPs "should be targeted to resolve existing problems".

> In critical drainage areas, where the risk from surface water drainage is significant, the local authority should prepare a Surface Water Management Plan. This would be an action plan, agreed by all local stakeholders with drainage responsibilities, to clarify responsibilities and manage these risks.[66]

Sir Michael Pitt's interim report also advocated the SWMP model; he calls for the action plans to be "developed in partnership with the relevant organisations and led by the local authority".[67]

25. One drawback with the current SWMP model is that it is not clear how a local authority can persuade, say, a water company to carry out its responsibilities as identified in the plan. A suggested solution by Sir Michael Pitt was for local authorities to set up "scrutiny committees" to review progress against actions set out in SWMPs.[68] The Government has acknowledged such committees could represent a "potential route for local authorities to use local democracy to encourage participation by all key stakeholders".[69] Another potential problem relates to which authority should be responsible for preparing SWMPs, in the case of two-tier authorities. Where flooding issues cut across district boundaries within a county, the Government's preferred approach is for district councils (as the local planning authority) to prepare SWMPs, with county councils "potentially exercising a scrutiny function across several local authorities, and of course managing highways drainage".[70] The Government is currently consulting on such issues as part of its Water Strategy.[71]

Our views

26. The events of summer 2007 show that surface water flood risk can, on occasions, be as devastating and destructive as traditional river or even coastal flooding. Surface water flood events may also become a more common occurrence in the future, as a result of the intense rainfall expected from climate change. We are not suggesting, however, that as a result the Environment Agency reorder its flood risk priorities. We recognise that the scale of river and particularly coastal events means that they remain the greatest flood risks to England, and continue to represent very substantial challenges for the Agency. The Government's recent National Security Strategy confirms the scale of the risk posed by coastal flooding has the "potential to exceed" the kind of flooding experienced in the summer of 2007.[72] **It is right that the Environment Agency continue to devote the majority of its resources into river and coastal flood risk management, and the building and maintaining of river and coastal flood defences. However, management of surface water flood risk can not remain in its current unclear and chaotic state. A key first step for Government must be to determine organisational responsibility for surface water flooding. We reject the idea of a dedicated Flood Agency.**

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66 Defra, *Future Water*, Cm 7319, February 2008, p 58.

67 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 49.

68 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 54.

69 Defra, *Improving surface water drainage* [consultation document], February 2008, p 27.

70 Defra, *Improving surface water drainage* [consultation document], February 2008, p 27.

71 Defra, *Improving surface water drainage* [consultation document], February 2008.

72 Cabinet Office, *The National Security Strategy of the United Kingdom*, Cm 7291, March 2008, p 42.

27. The local authority must be the key player in managing surface water flood risk. However, we see the sense of an over-arching body having responsibility for surface water flooding at the national level, to provide best guidance and monitor progress. **We agree that the Agency is the best-placed organisation to take a strategic role at the national level in relation to surface water (and other inland) flooding.**

28. The Environment Agency—as with several Defra-affiliated agencies—is already experiencing budgetary pressures. It also has problems recruiting and retaining certain professions, such as flood risk engineers. **The Agency's overview role needs careful specification. The Government must not add further responsibilities and functions to the Agency at a rate greater than it can absorb through recruitment, training and other preparatory measures. Increased responsibilities must be adequately funded. The Government must also not place unrealistic expectations on the Agency in relation to the modelling and mapping of surface water flood risk, as this will raise public expectations unrealistically.**

29. **In determining an overview role, the future relationship between the Agency and local authorities must be carefully articulated and defined in order to produce lines of accountability. This relationship is key to the future management of surface water flood risk. We believe the main purpose of the Agency's overview role should be to provide guidance and advice to local authorities on managing surface water flood risk, to provide quality-assurance of local authorities' plans to manage surface water flood risk, and to ensure consistency in practice between local authorities.**

30. We agree that local authorities are the most appropriate organisation to take on the management of surface water drainage at the local level. Local authorities are often the highways authority in their area and are responsible for land use and planning and control. They also have the advantage of local democratic accountability. Local authority leadership would also follow the approach successfully adopted elsewhere in Europe, such as Germany and France.

The French surface water drainage system

In France, local authorities at the commune level have significant responsibility for the management of surface water drainage in their areas. They are responsible for the provision of water and sewerage services, although 80% of the communes contract part of these services out to private companies. Under the 1992 Water Quality Law, communes have powers to determine areas where measures must be taken to limit impermeable areas, and to ensure control of the rainwater flow and runoff. They can also determine areas where sustainable drainage systems must be provided to ensure collection, eventual storage and, if necessary, treatment of rainwater and runoff. Local authorities may also form local community water associations, bodies with powers to maintain and improve private drainage assets, if it deems necessary. Communes also have a duty to inform residents when they are aware of a flood risk to the community.

31. We are not convinced, however, that more plans are, on their own, the answer. Even if local authorities are granted the lead in carrying through an enhanced Surface Water

Management Plan (SWMP), we have doubts about their abilities to persuade other organisations—such as water companies, who own most of the drainage assets—to carry out their surface water drainage responsibilities identified in the SWMP. We are also not convinced that establishing "local authority scrutiny committees" will be sufficient to enforce action by others, without a duty being placed on responsible organisations. **The model for Surface Water Management Plans (SWMP) currently advocated by Government lacks clarity about how co-ordination will be achieved between organisations responsible for surface water drainage in a particular area. In particular, the model does not explain how organisations can be persuaded to fulfil their responsibilities under such plans. In its response to our Report, the Government should set out clearly how the benefits of co-operation will be turned into action. It should also explain how it intends the enhanced SWMPs to fit alongside the existing system of Catchment Flood Management Plans and River Basin Management Plans.**

32. From our standpoint, we believe a stronger legal requirement will be necessary to ensure that action happens on the ground. **Local authorities should have a statutory duty for surface water drainage. It should be the duty of a local authority to ensure its area is, and continues to be, effectively drained of precipitation to an agreed national standard of service.** This duty would be similar to the duty water companies have under Section 94 of the Water Industry Act, to drain the areas for which they are responsible. It is likely local authorities would need to employ a risk-based approach to allocate their limited available funds.

33. **Where the local wastewater utility and/or Internal Drainage Board has ownership of, or responsibility for, parts of the drainage system, local authorities should have the power to sub-contract part of their responsibility for ensuring effective drainage to those organisations, and to require their co-operation in managing surface water drainage on an area basis.** This co-operation should include sharing data on assets and flood risk. In extreme cases this could include re-design and replacement of sewer systems to higher standards, or changed management of public green spaces to protect them as overland flood routes.

34. A first necessary step to ensure local authorities can fulfil these responsibilities is clarity about the ownership of the different drainage assets in an area. **The Government should accept the Pitt Review's interim conclusion that local authorities be required to compile a register of all the main flood risk management and drainage assets (overland and underground), including an assessment of their condition and details of the responsible owners. The register should also determine physically where one organisation's responsibility ends and another one's begins. It should be available to the public as a web-based resource. Local authorities could also provide information to members of the public through a one-stop shop telephone number. Local authorities should receive co-operation from other organisations in compiling this register. Upper-tier local authorities should take the lead and, where they exist and where they wish to, parish and town councils should be involved.**

35. **Following its consultation, the Government must provide a clear steer about which local authority, in two-tier authorities, should take the lead in co-ordinating the management of surface water flooding and drainage at the local level.**

36. We recognise that these new responsibilities on local authorities will require a secure funding stream. We suggest one possible solution in the form of reviewing the current arrangements of charging for surface water in paragraphs 44–49 below.

37. We also note that local authorities have very limited water engineering capacity and will initially rely heavily on the advice of the Agency. The Agency itself is suffering from a shortage of flood risk engineers.[73] **We recommend that the Department for Innovation, Universities and Skills and the Environment Agency develop, and publish, a strategy to address the national shortage in flood risk engineers. If the national shortage in this profession is not addressed, much of the Pitt Review may be impossible to implement.**

Improving surface water drainage

38. There are several specific measures that could be taken to improve surface water drainage, including: greater use of sustainable drainage systems; changing the current water charging system to take more account of surface water drainage; and abolishing certain rights in relation to connecting new drains and sewers to the existing public sewerage system, and the paving over of front gardens with impermeable surfaces without planning permission. Many witnesses highlighted these issues, and they were also addressed in both the Pitt Review's interim report and the Government's Water Strategy.

Sustainable drainage systems (SUDs)

39. A "sustainable drainage system" (SUDs) is a generic term to describe several different physical drainage schemes that can be installed or retro-fitted onto individual properties, or in neighbourhoods. SUDs aim to mimic natural processes by absorbing and slowing down water, thus easing the pressure on the traditional public drainage and sewerage system. They can operate at the level of individual properties (green roofs, water butts, soakaways in garden areas and porous paving of driveways), within neighbourhoods (swales, detention basins and porous paving of highways), and at the strategic level (through features such as large balancing ponds).[74] SUDs can sometimes provide other benefits, such as improving water quality, protection of water resources and groundwater recharge, amenity and biodiversity.[75]

40. The UK's approach to SUDs is not as advanced as several other European countries, although some examples of SUDs infrastructure have been implemented in recent years.[76] Germany, for example, has been at the forefront of encouraging property owners to install SUDs. Some 13.5 million square metres of green roofs (about 14% of the total area of roof in the country) had been constructed by 2003.[77] This was achieved by different measures in

73 Q 927

74 Defra, *Future Water*, Cm 7319, February 2008, pp 60–1. Soakaways may take the form of stone filled trenches or porous chambers. They can be used for draining surface water from roofs, or run-off from roads and other surfaces. Green roofs are partly or wholly covered by a growing medium, such as soil, and vegetation on top of a waterproofing membrane.

75 Defra, *Improving surface water drainage* [consultation document], February 2008, p 38.

76 Lamb Drove, Cambourne, Cambridgeshire; Manor Park, Sheffield; Elvetham Heath, Hampshire. Defra, *Improving surface water drainage* [consultation document], February 2008, p 37.

77 Gail Lawlor, Beth Anne Currie, Hitesh Doshi and Ireen Wieditz, *Green Roofs: A Resource Manual for Municipal Policy Makers* (Canada Mortgage and Housing Corporation, 2006), p 22. Robert Herman, "Green Roofs in Germany:

each municipality, including through planning requirements (a given proportion of a site must be green), subsidies for green roof construction, and charging for surface water drainage and providing discounts for green roof adoption.[78] The extent of the use of rainwater harvesting in Germany, whereby rainwater is captured and 'recycled', is estimated to be about 100 times that in the UK; the market was worth €340 million per annum in 2005.[79] In evidence, the Minister acknowledged that a "great lesson" could be learnt from Germany about sustainable water practices.[80] We were also impressed by the use of various SUDs techniques at the neighbourhood or strategic level, such as swales and balancing ponds, in Lyon during our visit to the region.

41. The vast majority of submissions to our inquiry supported more widespread use of SUDs in England.[81] However, a number of barriers were said to prevent wider use of the systems. First, the current lack of clarity about who was responsible for the ownership and long-term maintenance of communal or public SUDs was said to deter developers.[82] Many witnesses were themselves undecided about who should have this responsibility—local authorities, water companies, or others—but almost all wanted Government to clarify the issue as soon as possible.[83] The Government has since announced in its Water Strategy that it will consult on options for resolving the barriers for greater take-up of SUDs, including options for ownership and adoption of SUDs.[84] Second, we were told that current planning requirements, under Planning Policy Statement 25 (PPS25), were not strong enough to encourage more widespread adoption of SUDs.[85] Severn Trent Water believed legislative changes were needed to ensure local authorities had the power to *insist* developers install SUDs on new buildings.[86] Third, some witnesses noted that it was easier and cheaper to incorporate SUDs in new development, but it was often difficult to retro-fit onto existing houses and other developments.[87]

Yesterday, Today and Tomorrow" in *Proceedings of the Greening Rooftops for Sustainable Communities Symposium.* Hosted by: Green Roofs for Healthy Cities and City of Portland, Oregon, 29–30 May 2003.

78 Gail Lawlor, Beth Anne Currie, Hitesh Doshi and Ireen Wieditz, *Green Roofs: A Resource Manual for Municipal Policy Makers* (Canada Mortgage and Housing Corporation, 2006), pp 21–22.

79 UK Rainwater Harvesting Association, www.ukrha.org. Wirtschaftsfaktor Regenwassernutzung, Mall GmbH [consultants], www.mall.info. A rainwater harvesting system collects water that falls onto the roof of a property for subsequent use in non-potable applications, such as toilet flushing, clothes washing machines, car washing and garden watering. A typical domestic rainwater harvesting system provides around 50% of a household's total consumption.

80 Q 1041

81 For example, Oxfordshire County Council [Q 345], Severn Trent Water [Q 370], Stroud District Green Party [FL 57], Wildlife Trusts [Ev 489], Ashchurch Parish Council [Ev 458].

82 For example, Yorkshire Water [Q 285], Internal Drainage Boards north of the Humber [Q 288], Severn Trent Water [Q 371].

83 For example, Greater London Authority [Q 628], Royal Town Planning Institute [Q 628], Leeds City Council [Ev 503], Blueprint for Water [Ev 483].

84 Defra, *Future Water*, Cm 7319, February 2008, p 61.

85 For example, the Institution of Civil Engineers said that PPS25 was "not prescriptive enough" in encouraging adoption of SUDs [Ev 499].

86 Qq 371, 374.

87 For example, Thames Water [Q 378], Greater London Authority [Q 627].

Our views

42. The lack of clarity about responsibility for the ownership and maintenance seems to be holding back the adoption of SUDs. **We believe local authorities should be responsible for the ultimate ownership and maintenance of sustainable drainage systems (SUDs), as happens elsewhere in Europe.** Local authorities already have a number of key roles that link to SUDs, in land planning, managing open spaces, as highways authority, and their wider responsibilities for local sustainability issues. This new responsibility would be an integral part of their statutory duty for surface water drainage. **The Government needs to resolve ownership and maintenance issues as a matter of urgency to enable the current house-building and eco-towns programmes to incorporate maximum use of SUDs.**

43. There needs to be a stronger requirement on local authorities to insist developers install SUDs on new development, as often as is feasible. **A presumption in favour of SUDs should be included in the Planning Bill, to add weight to Planning Policy Statement 25 (PPS25).**

Current charging system by water companies

44. The existing charging system employed by water companies does not encourage householders, businesses, or highways authorities (typically the local authority) to minimise surface water runoff at source. The result is that much surface water is routed into public sewers, which themselves have limited drainage capacity.[88] Currently, charges for surface water drainage and highway drainage (and foul sewage) are included in the general charge for "sewerage", which makes up more than half of the average water bill.[89] There is no transparency about the proportion of the sewerage charge which is made up by each of the three elements, and equally no incentive for property owners or local authorities to minimise their runoff.[90]

45. The charging system is more transparent in several other countries, thus offering an incentive to property owners and businesses to install property-level SUDs to reduce surface water drainage charges. In Germany, for example, the adoption of transparent surface water drainage charges has encouraged a high amount of retrofitting of SUDS, particularly green roofs and water reuse systems.[91] In contrast, water companies in England offer rebates on the wastewater charge for domestic consumers who can prove that they do not make any use of the public sewer to dispose of surface water, but uptake is limited (typically 2–5% of household customers) and the rebate is modest (typically less than

88 Defra, *Improving surface water drainage* [consultation document], February 2008, p 7.

89 Ofwat estimated that the average household bill for 2007–08 in England and Wales for both water and sewerage services was £312 (£150 for water and £162 for sewerage). Ofwat, *Water and sewerage charges 2007–08 report*, May 2007, pp 13, 30.

90 Highway authorities, who manage the run-off from roads, are able to connect into a public sewer, but only pay a connection charge (typically around £250) and do not contribute to maintenance costs. Defra, *Future Water*, Cm 7319, February 2008, p 80.

91 In North-Rhine Westphalia, for example, a combination of transparent charging and subsidies resulted in approximately 6 million square metres of surface area being disconnected from the sewer system between 1996 and 2004. Charge rates vary between German municipalities: in 2004, Berlin charged €1.4 per square metre per year and Münster €0.44. Gail Lawlor, Beth Anne Currie, Hitesh Doshi and Ireen Wieditz, *Green Roofs: A Resource Manual for Municipal Policy Makers* (Canada Mortgage and Housing Corporation, 2006), pp 120–121, 115, 61.

£40).[92] Ofwat is encouraging the companies to move progressively to charging large non-domestic consumers for surface water drainage services on an area basis (only four companies currently do so).[93]

46. The Government believes charging for surface water drainage should be "more transparent" and "reward organisations that place a smaller load on the surface water drainage system". As part of its Water Strategy, the Government announced that it will "consider whether funding for surface water drainage should be changed to better reflect the polluters pays principle". This may involve "strengthening requirements by Ofwat for water companies to vary their charges to reflect more accurately the true cost of surface water drainage, including, for example, consideration of how to take account of impervious surface areas".[94]

Our views

47. We believe more must be done to reduce the volume of water run-off going into the public sewerage system by existing householders. Those flooded are often inundated by other people's water; it is therefore reasonable in principle that those who create the runoff should bear the cost of managing it. **We welcome the Government's decision to consider, as part of its Water Strategy, changing surface water charging to reflect the "polluter pays" principle. Ofwat should insist that water and wastewater companies state the proportions of customers' bills that are made up of foul water drainage, surface water drainage and highways drainage. Property owners who have, or retro-fit, SUDs should receive a rebate on the surface water component of their water company bill.** We believe this would provide an incentive for householders and businesses to adopt SUDS, such as green roofs, as has been the case in other European countries.

48. Local authorities will require funding to carry out their future surface water drainage responsibilities, as identified by the Pitt Review. Beyond making an "initial provision of £34.5 million which may be needed to implement Sir Michael Pitt's recommendations", the Government has not provided any details about how the Pitt Review will be funded in the future.[95] One possibility could be that the surface water drainage component of customers' water bills should be passed to local authorities. If local authorities had a statutory duty for surface water drainage, some of this money would be paid back to the water companies, who would often be sub-contracted by the local authority to carry out work on their parts of the drainage system. This method would at least ensure resources are allocated to water companies to spend specifically on ensuring effective surface water drainage.

49. The Government should take this aspect of the Water Strategy as seriously as some of the other proposals. It would be a more effective policy tool, in directly reducing run-off,

92 Defra, *Future Water*, Cm 7319, February 2008, p 80. Ofwat, *Water and sewerage charges 2007–08 report*, May 2007, p 33.

93 Defra, *Future Water*, Cm 7319, February 2008, p 80.

94 Defra, *Future Water*, Cm 7319, February 2008, pp 60, 82.

95 HC Deb, 4 February 2008, cols 49–50WS

than the further regulation proposed in the Strategy—which will mainly affect new development but not the mass of existing build.

Other 'Water Strategy' policies

50. The Government's Water Strategy set out other policies in relation to surface water drainage, including the abolition of the automatic right of developers to connect surface water drains to the public sewerage system and to change, by the end of 2008, householders' rights to allow them to pave over their front garden without planning permission only if the surface is porous, such as by using permeable paving or gravel.[96] Both policies were previously recommended by the Pitt Review, and received almost universal support from witnesses.[97]

51. **We welcome the Government's Water Strategy policies to change householders' rights to allow them to pave over their front garden, without planning permission, only if the surface is porous and to review the automatic right to connect surface water drains and sewers to the public sewerage systems.** We harbour some concerns, however, that the latter policy could confuse a means with the end. The end should be to prevent additional surface water runoff loads to either, or both, sewers or watercourses. Our concern is that the abolition of the right to connect to a public sewer may have an adverse effect because developers would instead connect drains to nearby watercourses. To prevent this, **we recommend that any new discharge of surface water by drain or sewer to a watercourse should require the consent of the Environment Agency.** This requirement should be included within existing planning processes.

4 Government flood risk management expenditure

Comprehensive Spending Review 07 settlement

52. On 2 July 2007—after the first floods—the Secretary of State for Environment, Food and Rural Affairs, the Rt Hon Hilary Benn MP, announced an increase in total funds for flood risk management from £600m in 2007–08 to £800m by 2010–11.[98] The full funding package for each year of the next Comprehensive Spending Review period (2008–2011) is set out in Table 1 below.

96 Defra, *Future Water*, Cm 7319, February 2008, pp 59–60.

97 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 133. For example, Water UK [Qq 676, 680], Royal Town Planning Institute [Q 615, 620].

98 HC Deb, 2 July 2007, cols 689–690

Table 1: Government expenditure on flood risk management in 2007–08 and the CSR 07 period

Year	2007–08 (current)	2008–09	2009–10	2010–11
Expenditure (£ million)	600	650	700	800

Source: Written Ministerial Statement [Hilary Benn], HC Deb, 10 October 2007, col 39WS

53. The Association of British Insurers (ABI) was initially publicly critical of the level of expenditure increase, saying in a press release that millions of homeowners and businesses had been "let down" by the "Government's failure to commit sufficient money to new and improved flood defences".[99] There was a mixed reaction from other witnesses to our inquiry, with some broadly supportive (including some individual insurance companies)[100] and others believing the allocation was inadequate.[101]

54. Since June 2007, ministers have repeatedly used the £800 million figure as evidence of the Government's serious response to the summer's flooding events, despite not providing a more detailed breakdown of the CSR 07 settlement.[102] Such a breakdown was released by the Government in February 2008, which divided the CSR settlement money into the Agency's resource and capital spend and local authorities' estimated spend (Table 2). The Government also announced it was making "an initial provision of £34.5 million which may be needed to implement Sir Michael Pitt's recommendations".[103]

99 "ABI: Government has failed on flood defence spending", Association of British Insurers press release 2007/97, 9 October 2007.

100 For example, Chairs of Regional Flood Defence Committees [Ev 251], Norwich Union [Ev 125], Royal & Sun Alliance [Ev 128].

101 For example, the Alde and Ore Association [Ev 552].

102 HC Deb, 9 October 2007, col 449W; HC Deb, 10 October 2007, col 293; HC Deb, 31 January 2008, cols 460–461.

103 HC Deb, 4 February 2008, cols 49–50WS

Table 2: Breakdown of Government expenditure on flood risk management in the CSR 07 period

	£ million				
	Local Authority Own Spend (estimated)	Retained in Defra	EA Resource (maintenance & operational costs)	Capital Programme (new & improved defences & projects)	Total
2007–08 Baseline	86	0	247	259	602
2008–09	87	4	251	308	650
2009–10	87	20.5	258	334.5	700
2010–11	87	38	279	400	804
CSR 3 year total	261	62.5	788	1,042.5	2,154

Source: Written Ministerial Statement [Hilary Benn], HC Deb, 4 February 2008, cols 49–50WS

We questioned both the Agency—who will receive the majority of the funding—and the Defra Minister for Flooding about the funding allocations. Our discussions confirmed that the settlement was not as favourable as the Government initially suggested, for a number of reasons:

- the Agency's capital funding increases over the CSR07 period, but its "Resource (maintenance & operational) costs" either decrease or remain level in real terms for the first two years of the CSR 07 period, despite the National Audit Office (NAO) identifying, in June 2007, that the Agency estimated it needed "an extra £150 million a year" over the next ten years to bring all its existing systems up to their target condition.[104] The Agency said in reply that about £64 million from the CSR07 capital programme would contribute towards asset maintenance, and that the £150 million per annum figure quoted by the NAO included "some capital money";[105]

- the estimated expenditure for local authorities declines in real terms over the whole three-year period and is not ring-fenced so may not all be spent, depending on the priorities of local authorities;[106]

104 The HM Treasury GDP deflator has been used to assess whether there has been an increase in real terms. For each of the financial years covered by the CSR 07 period the GDP deflator is forecast to increase by 2.75% on the previous financial year. Based on the table above, the Agency's resource increases by only 1.61% for 2008–09 and 2.79% for 2009–10. Report by the Comptroller and Auditor General, Session 2006–07: *Building and maintaining river and coastal flood defences in England*, HC (2006–07) 528, p 19.

105 Qq 946, Q 955.

106 The HM Treasury GDP deflator has been used to assess whether there has been an increase in real terms. For each of the financial years covered by the CSR 07 period the GDP deflator is forecast to increase by 2.75% on the previous

- construction inflation costs are rising ahead of general inflation, and could be as high as 6.5%;[107]

- an "initial provision" of only £34.5 million from within the existing settlement is made "which may be needed" to implement *all* of the Pitt Review's final recommendations (Sir Michael Pitt's interim report was not costed but he says his final report will be).[108] Defra said the £34.5 million had not been calculated in any detailed way because it did not yet know what it would be spent on.[109] The Agency has described the funding and resource requirements of future measures to tackle surface water flood risk (including the development of Surface Water Management Plans) as a "hurdle".[110]

55. Defra's Director of Water also told us that the *Foresight Report* (2004)—which recommended about £1 billion per annum be spent on flood risk management by 2015 in real terms—had been "heavily influential" in the outcome of the zero-based review that took place for the CSR 07 settlement.[111] However, we note that the oft-quoted £1 billion figure only applies to river and coastal flooding, and not surface water flooding.[112] Furthermore, Professor Penning-Rowsell of the Flood Hazard Research Centre—who had been involved with Foresight—said the £1 billion figure was "not calculated in any sophisticated way", with a "relatively small amount of investigation".[113]

Our views

56. The Government seems to have made some progress on surface water flooding issues—but the money has not caught up with the facts. The much-trumpeted CSR 07 settlement is still aiming towards a trajectory based solely on river and coastal flooding. The initial provision "which may be needed" to implement the Pitt Review is also a small amount of money for a potentially expensive programme.[114] The exact basis of the figure of £34.5 has not been publicly revealed, although the precision of the number suggests the Government does have some idea about the Pitt Review's implementation costs.

57. **Ministers have repeatedly used the £800 million allocation in 2010–11 in an attempt to convey the impression that this large amount of money will enable Government, and others, to respond effectively to the challenges posed by the summer's floods. When**

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financial year. Local authority spend remains level in cash terms across the CSR 07 period, implying a real decrease year-on-year. Q 1065 [Defra].

107 Q 944 [Environment Agency]. We have used the forecast HM Treasury GDP deflator when determining whether there has been a real increase or decrease in expenditure. The GDP deflator is forecast to increase by 2.75% for each of the years covered by the CSR 07 period, which is lower than the potential level of inflation in the construction industry of 6.5% per year. The construction materials price index from BERR includes an index for repairs and maintenance expenditure. The figures published in February 2008 indicate that the annual average increased from 123.6 in 2006 to 133.8 in 2007; inflation of 8.3%. This means inflation could be higher than the figure given by the Agency.

108 HC Deb, 4 February 2008, cols 49–50WS; Qq 700–704.

109 Q 1003

110 Ev 341. The Agency estimated that each Surface Water Management Plan could cost "between £50 and £150k".

111 Q 1096

112 Q 144 [Professor Penning-Rowsell]; Q 968 [Environment Agency].

113 Q 142. He said the Foresight Report did not look in that level of detail at exactly what the level of spend might be in any catchment in any one year.

114 HC Deb, 4 February 2008, cols 49–50WS

broken down, however, the Comprehensive Spending Review 2007 (CSR07) settlement is far less impressive, and looks inadequate to cope with both the traditional and new risks the country faces. In light of the upcoming final Pitt report, and the resources that both local authorities and the Agency will inevitably require to address surface water flood risk, we recommend that the Government reappraise the adequacy of its CSR 07 settlement to combat all types of flood risk.

58. **Sir Michael Pitt should publish the full costs of his final recommendations as soon as possible. The Department should make clear in its response how it intends to fund the Pitt Review if the cost of its final recommendations exceeds £34.5 million. It should also say what options it is exploring as to how local authorities will be funded to carry out their responsibilities as a result of the Pitt Review.**

A long-term investment strategy

59. Our inquiry showed there is a general uncertainty about what level of protection the public should expect from flood risk, and consequently what was the 'right' amount to spend on flood risk management. Current investment in flood risk management is constrained by the short-term nature of the three-year CSR cycles. Sir Michael Pitt pointed out in his interim report that adaptation to flood risk will take a generation, and proposed that the Government "commit to a strategic long-term approach to its investment in flood risk management, planning up to 25 years ahead".[115] The Government's National Security Strategy also identified coastal flooding as the second highest civil emergency risk to the UK in the coming decades.[116]

60. Witnesses highlighted the need for a longer-term approach to managing flood risk. The Chairs of the Regional Flood Defence Committees said the impact of climate change required planning for "decades and not for three years".[117] Yorkshire Water said it was important to determine what exactly the country was planning for and what level of protection was required by society—because "protection costs".[118]

61. The Agency and Defra are currently involved in developing a 20-year investment strategy for flood risk management.[119] In evidence, the Agency said it recognised the importance of determining the level of flood protection that should be determined by the public purse, and told us the strategy should provide a "realistic view about what the level of funding might be over the next 20 years and how best we could spend it".[120]

115 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 55.

116 Cabinet Office, *The National Security Strategy of the United Kingdom*, Cm 7291, March 2008, p 15.

117 Q 774

118 Q 282

119 Q 944 [Environment Agency]; "Speech by Phil Woolas MP to the Association of Drainage Authorities Annual Conference, Peterborough, 30 October 2007", Department for Environment, Food and Rural Affairs press release, 5 November 2007.

120 Q 949

Our views

62. Increasing expenditure incrementally towards a £1 billion target figure that was not formulated in any detailed way is not the best approach to manage investment into flood risk. **We welcome the Government and the Agency's work to develop a long-term investment strategy for flood risk management. This strategy should provide some answers about the level of flood risk protection that the public should expect, the research and organisation involved (particularly for surface water flooding), the number of flood prevention and alleviation schemes required nationally, and how much this would cost. The strategy should also take account of the effect of climate change on the frequency and intensity of rainfall and storm surges. The strategy should be subject to a public consultation process, and published.** Traditionally, such a strategy would be difficult because of the short-term nature of CSR cycles, but we note the precedent of the Government's 2004–05 "Building Schools for the Future" programme which aimed to rebuild or renew every secondary school within a minimum of 12 years.[121]

5 Development on the flood plain

63. Building on the floodplain is an issue that often receives public attention, particularly at a local level, and via the media. This is perhaps unsurprising given that flood risk areas cover 10 per cent of land and population in England.[122] On average, 13,000 new homes per annum have been built in flood risk areas in the last nine years. The vast majority of these are deemed to be adequately protected, often by flood defences, and are not objected to by the Agency.[123] New development can also often increase the pressure on existing public sewerage systems. We have previously discussed our support of the abolition of the right to connect new surface water drains and sewers to the public sewerage system (paragraphs 50–51), and greater use of sustainable drainage systems for new properties (paragraphs 39–43).

64. Many witnesses to our inquiry—including insurers—stressed the need for strong development control to prevent the building of homes in those areas of highest flood risk.[124] The Government has recently introduced strengthened planning guidance, in the form of Planning Policy Statement 25 (PPS25), to achieve this aim. A number of witnesses directly involved with the planning system said that, given time, PPS25 should be sufficient to prevent inappropriate development.[125] The Agency described PPS25 as a "big step forward", a "significant tightening and improvement of the legislation", and said it had improved things in a number of ways. First, the Agency was now a statutory consultee for development proposals in flood risk areas. Second, the Agency had powers to "call in" the Secretary of State for Communities and Local Government if a local authority ignored its advice. Third, PPS25 was a "lot clearer and tighter" than its predecessors in steering

121 Further information on *Building Schools for the Future* is available at www.teachernet.gov.uk/management.

122 HC Deb, 8 October 2007, col 40W

123 HC Deb, 1 February 2008, cols 689–690W

124 For example, Chaceley Parish Council [Ev 402], Stroud District Green Party [Ev 419], Royal & Sun Alliance [Ev 129].

125 For example, the Royal Town Planning Institute [Q 638].

development away from high risk areas.[126] Some witnesses questioned whether local authorities had the resources or expertise to implement PPS25 properly, although the Government has since announced that it will publish a "Practice Guide Companion" to PPS25 to aid planning authorities with implementation.[127]

65. Most witnesses did not support an outright ban on development in the flood plain.[128] Hull City Council told us that 95 per cent of Hull was in a high flood risk area, and an "overcautious" approach would result in no more development in the city.[129] Similarly, Sheffield City Council also said such an approach would "risk undermining the development and economic growth of the city".[130] Both councils were instead placing emphasis on ensuring new development was properly flood-resilient.[131] Similar views were expressed by Professor Penning-Rowsell of the Flood Hazard Research Centre, who believed the focus should be on adequately protecting properties.[132] Most of Sir Michael Pitt's seven interim conclusions in this area also focussed on ensuring new properties in flood risk areas—and existing flooded properties—were properly flood-resilient and resistant, partly through changes in the Building Regulations.[133]

Our views

66. **We support the Pitt Review's interim conclusions related to development in the flood plain, to ensure new buildings in the flood plain are properly flood resilient and resistant.** It is still early days for PPS25, and those organisations who use the planning policy say it is working. PPS25 must be given time. The success of PPS25 in the long-term, however, will depend on whether local authorities have the necessary skills base to implement it properly. As a first step, **we welcome the Government's announcement to provide a Practice Guide Companion to ensure local authorities properly implement PPS25, particularly in respect of the impact of development on those downstream. We recommend that Government departments, working with the Local Government Association, carry out a survey to establish the present ability of local authorities to implement PPS25 and, should a skills deficit be identified, put forward policies to address this issue.**

126 Qq 73–74

127 For example, the Greater London Authority [Q 637]. Defra, *Future Water*, Cm 7319, February 2008, p 65.

128 For example, Margaret Bishop [Ev 409], the Institution of Civil Engineers [Ev 499].

129 Q 217

130 Q 217

131 Qq 203–204

132 Q 123

133 Interim conclusion 11, for example, states: "No new building should be allowed in a flood risk area that is not flood-resilient, and the Government should work with organisations such as the Royal Institute of British Architects and the building industry to encourage flood-resilient building and development design". Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp 133–134.

6 Flood defences

The priority scoring system

67. Defra has set the Agency a priority scoring system to determine which new flood defence schemes it should spend its capital money on (we discuss the Agency's maintenance programme in paragraphs 73–83). Defra says the purpose of the scoring system is to "ensure that the projects with the greatest benefits per unit cost are carried out first and to allow authorities to devote resources to those projects". The system is based on three criteria: economics (based on a benefit/cost ratio); people (number of people protected, including a higher scoring for the number of "vulnerable" people); and environment (for example, projects that contribute to the Government's Biodiversity Action Plan obligations receive a higher score).[134] The Agency told us the system was traditionally heavily skewed towards economic criteria, although it was reviewing whether to give more weighting to social and environmental factors.[135] Proposed projects—submitted by Regional Flood Defence Committees (RDFCs) as part of their medium-term plans—had to achieve an overall score threshold to be eligible for grant.[136] Once a total points score had been allocated, the Agency said it also undertook an additional "moderation" process to determine whether a proposed scheme was "sensible", and whether other considerations needed to be taken into account "in order to produce a balanced programme".[137]

68. A number of witnesses criticised the priority scoring system. The Institution of Civil Engineers said the priority system had resulted in some economically justifiable schemes not receiving funding, and had exacerbated a "stop-start" approach to developing flood risk infrastructure. It added that the system favoured schemes in more affluent areas and/or areas with large populations, because it was largely driven by assessment of economic impact.[138] This was a point raised by several other witnesses. The Pickering Flood Defence Group strongly criticised the system, saying it "fails to take account of the specific needs of communities in more rural areas".[139] The Country Land and Business Association said rural populations have suffered due to "priority being given to urban areas".[140] The Alde and Ore Association said the Agency had told it that little of the additional CSR 07 expenditure would be spent in Suffolk, because "priority will be given to people and property in inland areas".[141]

134 Capital Grant Allocations—2007 Medium Term Planning, Defra website, 15 August 2007, www.defra.gov.uk/environ. In terms of social considerations, many of those flooded in Hull in June were lower-income families.

135 Q 93. The Agency and Defra have been exploring the possibility of using 'multi-criteria analysis' in prioritising its flood defence programme. The Chairs of the Regional Flood Defence Committees, however, said it was "very unlikely" that a wholly objective system can or will be devised [Ev 262].

136 There are eleven Regional Flood Defence Committees (RFDCs) in England, composed mostly of local authority representatives, who advise the Agency on its plans and priorities for flood risk management investment in the region, including proposed flood defence schemes [Ev 250].

137 Q 896

138 Ev 499

139 Ev 494

140 Ev 441

141 Ev 552

69. We questioned the Agency about its priority points system, and the criticism that the system neglected the funding of schemes in rural areas. The Agency acknowledged that schemes were decided on an individual basis, and the majority of funding went towards urban areas as they were deemed to be more cost-effective. However, it told us that the system was ultimately guided by Treasury funding rules. For this to change, there needed to be a policy decision made at Government level about what the appropriate cost:benefit weighting as between urban and rural should be, and subsequent changes in Treasury rules.[142]

70. In February 2008, the Government announced "Outcome Targets" for the Agency to meet with its CSR 07 funding. One of the five targets the Agency has to meet is to protect 145,000 additional households from flooding, including 45,000 at significant or greater possibility of flooding, although it also has targets to protect natural habitats.[143]

Our views

71. Given the human suffering caused by flooding, it will always be difficult either to refuse to spend public money on flood defence in a particular area, or to fund only a lower standard of protection than those at risk would like. Some prioritisation system will always be necessary in determining which communities benefit from publicly-funded schemes. The current priority scoring system vastly favours the building of schemes in urban areas, at the expense of rural areas. On an individual basis, funding of projects in rural areas will nearly always miss out at the expense of schemes in urban areas. **The Department and the Agency should explore the possibility of ring-fencing a minimum proportion of the Agency's capital expenditure over a three-year CSR period for new capital schemes in rural areas.** Such a move would be clear evidence of the Government's commitment to "listen to the views, needs and concerns of rural people, businesses and communities".[144]

72. We also note there currently exists a tension between the national and local approach to flood risk management. The RFDCs, composed mostly of local authority representatives, are often more in touch with local issues, yet the points-based system is run nationally. **We recommend that the Government consider the possibility of ring-fencing Grant-in-aid directly to Regional Flood Defence Committees.**

Maintenance of flood defences

73. The Agency said its flood defences generally coped well during the summer, although many were simply overwhelmed by water. It said there were "no catastrophic collapses or failures", except for a few mechanically or electrically operated defences that failed because of power loss.[145] The Agency has recently been criticised for the state of its flood defences. The National Audit Office (NAO) reported in June 2007 that the Agency had not met its target to maintain 63% of flood defence systems in target condition, and that an additional £150 million per year for ten years was required to bring all flood defence systems up to

142 Q 53

143 HC Deb, 4 February 2008, cols 49–50WS

144 Rural Affairs, Defra website, 6 March 2008, www.defra.gov.uk/rural.

145 Q 7

their target condition.[146] Some witnesses believed this demonstrated that the Agency's priority should be to maintain its existing flood defences, rather than build new schemes.[147] This view appears to run counter to current Government policy. Most of the Agency's additional CSR 07 funding has been allocated for capital projects. Its resource (operational & maintenance) costs either decrease or remain level in real terms for the first two years of the period, although the Agency told us that about £64 million from the CSR07 capital programme funding would contribute towards asset maintenance.[148]

74. When questioned on this issue, the Minister told us he thought the NAO's assessment of the Agency was a "bit tough" and did not represent the "true picture".[149] He said the recent flooding events showed that maintenance levels had been "adequate to do the job".[150]

Our views

75. There is a danger that the Government and the Agency will overlook maintenance of existing flood defence schemes in favour of funding the building of new schemes. **The Agency should develop a clear strategy for expenditure on new capital works versus maintenance of existing systems. It should ensure that any proposed new scheme should have an estimated maintenance schedule in the same way that it is accompanied by a construction bill of quantities. The Agency should also ensure its maintenance budget for the CSR 07 period includes the additional maintenance work necessary on the new capital schemes it will build during the period.**

Maintenance of watercourses and rivers

76. The Agency is responsible for the maintenance of "main rivers", and a mixture of local authorities, Internal Drainage Boards (IDBs) and private—"riparian"—owners have responsibilities for other watercourses.

Inadequate maintenance by the Environment Agency

77. Many submissions to our inquiry highlighted inadequate maintenance and dredging of rivers as contributing to local floods, especially from local organisations and members of the public. Some provided photographic evidence of blocked watercourses.[151] Often, the blame was laid at the Agency's door.[152] Representatives from IDBs, for example, said that

146 Report by the Comptroller and Auditor General, Session 2006–07: *Building and maintaining river and coastal flood defences in England*, HC (2006–07) 528, pp 14, 19.

147 For example, Ewan Larcombe (Ev 541).

148 HC Deb, 4 February 2008, cols 49–50WS. The HM Treasury GDP deflator has been used to assess whether there has been an increase in real terms. For each of the financial years covered by the CSR07 period the GDP deflator is forecast to increase by 2.75% on the previous financial year. Based on the table provided by Defra on 4 February 2008, the Agency's resource increases by only 1.61% for 2008–09 and 2.79% for 2009–10. Q 946.

149 Q 1081; Q 1087.

150 Q 1087

151 For example, Strensall & Towthorpe Parish Council [Q 843] [not printed].

152 For example, Edward Stephens [Ev 470], Pickering & District Civil Society [Ev 496], Datchet Parish Council [Ev 528], Ewan Larcombe [Ev 541].

several watercourses had received "little or no maintenance" since being taken over by the Agency for flood risk reasons, which was causing concern amongst local residents.[153] The National Farmers' Union (NFU) gave examples of "poor" watercourse maintenance by the Agency, such as on the River Millbrook near Wantage, which it said had exacerbated flooding during the summer.[154] The Institute of Civil Engineers said the Agency was "not adequately resourced" to carry out its watercourse maintenance responsibilities.[155]

78. When questioned on this issue, the Agency said it employed a risk-based approach to maintenance because it was not cost-effective to maintain all watercourses and rivers. Currently, it spent £3 million per year on dredging and about £8 million a year on cutting weeds but routine dredging and clearing carried out as "an act of faith" as in the past was "simply not good value for public money". The Agency added that maintenance and dredging would have had a limited effect on the kind of flooding seen in the summer, and dredging rivers could even sometimes exacerbate flood risk because it increased water flow.[156] Natural England told us traditional forms of maintenance—weed cutting and dredging—could be environmentally damaging by destroying habitat, and wanted some upland systems of land drainage to be abandoned.[157] The Agency said, however, that it only considered undertaking channel maintenance work where it was "environmentally acceptable and sustainable" to do so.[158]

79. Sir Michael Pitt also played down the issue of watercourse maintenance, which he described as a "myth". His single interim conclusion in this area called for the Agency to communicate better with those landowners who would be affected by either a withdrawal or significant reduction in the maintenance of rural watercourses.[159]

Our views

80. Our inquiry has showed that maintenance of watercourses is one of the major issues of public concern. Too often, local people—who are the ones closest to the problem, and with most at risk—are frozen out of the decision-making process about watercourse maintenance. **Given the enormous level of interest, we believe it is appropriate that local people have to be involved, and consulted, in the formulation of decisions about watercourse and river maintenance. The Agency, and local authorities, must open up dialogue with members of the public, through appropriate local fora, to ensure that they are part of this process.** This would at least ensure that local people have opportunity to discuss their concerns with Agency, or other, staff, and that public expectations are managed appropriately.

81. **Once decisions have been made, the Agency should make clear, via its website or other means, the maintenance programme for all its watercourses—even if this, in**

153 Q 313

154 Ev 266

155 Ev 500

156 Qq 51–52

157 Q 803, Q 826

158 Ev 338

159 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp 4, 135.

some cases, is minimal—including the risk assessment which the Agency has made in deciding its approach to maintenance of a particular watercourse. The future schedule of maintenance should be announced whenever possible.

82. **The Government should ask the Environment Agency and Natural England to agree on how to resolve any conflict between effective drainage for flood defence purposes and the preservation of watercourses as important wildlife habitats, and publish the results.**

83. **The Government should re-examine the money available for the maintenance of watercourses and produce a clear analysis, by the end of 2008, of the balance between maintenance and capital spend, bearing in mind the National Audit Office's conclusions, the scepticism of the public that not enough maintenance is being done, and the views of the Environment Agency.**

Duties of riparian owners

84. Watercourses are generally owned by a number of "riparian owners" (anyone who owns a property alongside a watercourse), often farmers or other land-owners.[160] These owners are responsible for the maintenance of that watercourse, although it appears they are sometimes not aware of these responsibilities or choose not to carry out such maintenance.[161] If the watercourse is designated as a 'main river', the Agency has permissive powers to undertake maintenance and recover the costs from the riparian owners. For non-main rivers, the relevant local authority has an equivalent power. In practice, however, this does not appear to be exercised very often.

85. When questioned on this issue, the NFU acknowledged that a minority of farmers may not carry out their maintenance duties, but said the main rivers (the Agency's responsibility), main roads and motorways (Highways Authority) were likewise not being maintained enough to encourage everybody else to fulfil their role.[162] Some witnesses, however, believed it was necessary to make some changes to the existing system. Oxfordshire County Council suggested that the Agency should take over maintenance of some of the watercourses currently in ownership by private landowners in rural areas.[163] Gloucestershire County Council said the process could be simplified by transferring the ditches next to highways from the adjacent riparian land-owner to the relevant highways agency.[164]

86. **Either the existing system of riparian duties needs to be made to work more effectively or it needs to be replaced. The Government should explore the practicality,**

160 Definition by Epping Forest District Council. Under common law, riparian owners possess rights and responsibilities appertaining to the stretch of watercourse which falls within the boundaries of their property. Where a watercourse is situated across a boundary between adjoining properties, it is normally presumed that a riparian owner owns the land up to the centre-line of the watercourse, unless records exist to prove otherwise. Taken from Riparian Owners–Guidance Notes, Epping Forest District Council, www.eppingforestdc.gov.uk.

161 See Calderdale Metropolitan Borough Council [Ev 561], Ewan Larcombe [Ev 541], Jane Marrott [Ev 391].

162 Q 826

163 Q 361

164 Q 363

costs and benefits of pursuing both courses of action. Work should begin as soon as possible to examine whether riparian ownership is fit for purpose.

87. **We previously endorsed the Pitt Review's interim conclusion that local authorities be required to compile a register of all the main flood risk management and drainage assets, including details of the responsible owners. This register should include the owners of all watercourses, and be publicly available.**

Working with natural processes to mitigate flood risk

88. An alternative flood risk management approach to building costly 'hard' defences is to work with natural processes, through better land-use planning and management. Creating washlands and wetlands, realigning river channels and reconnecting rivers with their floodplain, all help store and slow water to reduce flooding downstream. The Government stated, as part of its 2004 *Making Space for Water* strategy, that it would promote greater use of such rural land use solutions.[165] As part of our inquiry, we visited Lincoln to see one of the two washland schemes in operation in the region, where agricultural land is deliberately flooded to protect urban areas. The scheme was used to great effect during the summer of 2007 and, to a lesser extent, in January 2008.

89. Several witnesses, including Blueprint for Water and the RSPB, pointed to the multiple benefits often provided by natural process schemes, including improving water quality and biodiversity.[166] However, it was said that Government often found it difficult to put together funding packages that reflected such multiple benefits.[167] When questioned on this issue, Defra's Director of Water acknowledged that Government generally "finds it easier to do single sources of funding for single outcomes than it does for multiple outcomes". However, Defra pointed to Catchment Flood Management Plans, River Basin Management Plans, environmental stewardship schemes and catchment-sensitive farming as evidence that it recognised the need to bring agencies together to work for multiple outcomes.[168]

Our views

90. We believe that working with natural processes to mitigate flood risk, such as greater use of washlands and wetlands, is an important element in measures to reduce the risk of flooding. Most of the organisations involved in developing such schemes are Defra bodies, work very closely with Defra or are regulated by Defra. The Department should be able to bring these organisations together to ensure the common benefits of such schemes are realised. **Defra should work with its partners and bodies to decide, by the end of 2008, how natural process flood risk schemes with multiple benefits can be best funded and developed. We strongly support the creative use of the Single Farm Payment to reward**

165 Defra, *First Government response to the autumn 2004 Making Space for water consultation exercise*, March 2005, p 25.

166 Ev 483; Ev 534.

167 Q 818 [NFU]

168 Q 1101

land owners if their land is used for the purpose of natural flooding to protect people and buildings elsewhere.

91. We accept that riparian landowners need to be suitably compensated if more land is to be used for washland or wetland purposes. We also believe there is a need for proactive intervention to build in resilience by man-made measures such as the addition of balancing tanks upstream in order to prevent floods downstream.

7 Protecting critical infrastructure from flooding

92. Thousands of people lost their water, gas or electricity supplies during the June and July events after hundreds of utility assets were flooded. 350,000 people across the Gloucestershire area lost mains water—some for up to 17 days—following the flooding of the Mythe water treatment works at Tewkesbury. 40,000 customers in the region also lost their electricity supply for up to 24 hours after the Castle Meads station was flooded.[169] Without the aid of 250 military personnel, the Walham sub-station in Tewkesbury would have flooded, resulting in the loss of power to 500,000 people.[170] In Yorkshire, four major electrical sub-station and 55 secondary sub-stations were flooded, affecting the supply to 130,000 people.[171]

Duties of utilities

93. The summer's events have lead to a serious reassessment about how adequately the country's critical infrastructure is protected from extreme events. Utilities are already under a series of statutory obligations to cope with such emergencies. Water companies are required under the Security and Emergency Measures Direction 1998 to make and revise plans to ensure the provision of essential water supplies or sewerage services at all times.[172] Electricity generators, distributors and meter operators are required under the Electricity, Safety and Continuity Regulations 2002 to construct, use and protect their equipment to prevent interruption of supply so far as reasonably practicable. Gas companies are under similar obligations under the Gas Safety (Management) Regulations 1996. All these operators also have obligations under the Civil Contingencies Act (CCA) 2004, as Category 2 responders; however, these are generally minimal compared to Category 1 responders, who are required to assess risk, maintain business continuity plans and advise the public.[173]

94. Several witnesses, including a number of local authorities, criticised the performance of critical infrastructure operators during the floods. Sheffield City Council told us that the summer floods identified "significant issues" in relation to the engagement of Category 2 electricity and gas utilities in planned exercises—it said that, to date, the utilities had "not

169 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 152.

170 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 96.

171 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 18.

172 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 98; Ofwat [Ev 144].

173 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, pp 97–98.

been round the table" and were not even "entirely equipped to be round the table".[174] Hull City Council expressed doubt whether there was the same level of business continuity planning by utilities or even the "same attitude towards the protection of those assets".[175] The Hull Independent Review, commissioned by the Council, had concluded that Yorkshire Water did not have a plan for the failure of the Bransholme pumping station, which plays a key role in draining Hull.[176] Gloucestershire County Council said it had been unaware until the summer floods that there was only one source of water supply and electricity supply in the area".[177] All the utilities who gave evidence said they were now taking measures in light of the summer floods, and learning lessons.[178]

Our views

95. **The Government should re-examine the current statutory duties on utilities in relation to emergency planning. A specific duty should be placed on utilities to ensure their critical assets are protected from the effects of flooding and that they have adequate business continuity plans in the event of a flood. This should include ensuring supply system resilience so that the failure of a key asset can be substituted by other means with a minimum interruption of service. The Agency should advise on plausible scenarios, taking into account climate change impacts.** We agree with the Pitt Review that the best way to set additional duties may be through amending the Civil Contingencies Act, rather than fresh legislation.[179]

96. We strongly believe that it is a basic responsibility of water companies, and other utilities, to ensure their critical infrastructure assets are flood-resilient. It could be argued that companies have actually profited in the past by not undertaking work to ensure this happened. It is not fair, therefore, that the customer now bear most of the cost for improving infrastructure resilience, through increased bills. **We believe a proper sharing of financial responsibility is necessary between utilities' shareholders and customers in improving the resilience of utilities' infrastructure. Ofwat must ensure that the 2009 price review takes full account of the need for water companies to improve the resilience of critical assets, and of the costs this implies. But in doing so, it should also resist attempts by water companies to raise water bills, in order to pay to bring the infrastructure to the level of resilience it should have had in the first place. Consumers should not pay for companies' past inadequacies.** We welcome Ofwat's announcement that it will develop guidance during 2008 to aid companies in developing a consistent and coherent framework for assessing flood risk, identifying cost beneficial measures to improve resilience of critical assets, and setting out a timetable for action.[180]

174 Qq 181, 231

175 Q 232

176 Independent Review Body, *The June 2007 floods in Hull*, November 2007, p 7.

177 Q 342

178 For example, Qq 399, 403–405[Severn Trent Water], 249, 277 [Yorkshire Water], 880 [Central Networks].

179 Q 750

180 Ofwat, *Water and sewerage services during the summer 2007 floods*, December 2007, p 19.

Protection of reservoirs and dams

97. During the June flooding, there was a serious emergency situation when the Ulley Reservoir near Sheffield was almost breached. The M1 was closed and about 1,000 people in local villages were evacuated as a precaution. Emergency services were able to avoid a catastrophe by pumping millions of litres from the reservoir.[181] Had the dam breached, the impact would have been much wider than the flooding itself and would have inundated other critical infrastructure such as water, sewerage and communications.[182]

98. There are over 2,000 reservoirs in England and Wales, mostly owned by the private sector. The average age of reservoirs is 110 years. Since October 2004, the Agency has been the enforcement authority for the safety of reservoirs in England and Wales.[183] It still largely operates under legislation from 1930, updated by the 1975 Reservoirs Act, which states that reservoirs should be regulated on basis of size. The Agency told us it wanted the legislation to be reviewed to "move it to a modern-risk based approach", particularly in light of climate change impacts.[184] We were also told that Defra and the Agency were developing proposals to require undertakers to prepare on-site emergency plans in the event of a reservoir or dam breach.[185]

99. **We agree with the Agency that reservoir and dam safety management should shift from being based on size to a risk-based approach. We endorse the Government's plans to introduce a requirement for emergency plans for reservoir and dams. We recommend an immediate review of the existing legislation in this area.**

Protection of the railway network

100. Railway networks were also affected by the summer floods. Although railway lines are often built away from immediate flood risk, most lines have culverts and sometimes open water that passes under them. Several lines and stations around the country were closed for between two and seven days during the summer, with some out of action for longer where significant work was needed.[186] An estimated 500 people were left stranded at Gloucester Railway Station after the rail network failed.[187]

101. **We recommend that Network Rail work with the Environment Agency, local authorities and others to design solutions that will minimise flood risk to themselves and other land owners close by.**

181 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 106.

182 Ev 63 [Sheffield City Council]

183 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 107.

184 Q 36

185 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 108.

186 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 94.

187 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 17.

8 Emergency response and planning

Planning for emergencies

102. Most witnesses said the Gold and Silver Command Structure worked well during the floods, and was the most appropriate model to respond to emergencies.[188] However, it was clear that many organisations—particularly local authorities, who were at the forefront of the emergency response—were unprepared for the scale of such an extreme event. The Pitt Review noted that the scale of the 2007 floods stretched resources "to the limit and beyond", and responders in some areas "were not as ready as they might have been.[189] Hull City Council told us that the city had undergone a major training exercise for a *tidal* flooding event in recent years, but a major surface water flood had perhaps been "inadequately prepared for and inadequately thought about".[190] The Council told us:

> It came from nowhere, no-one was really expecting it.[191]

It added that practising training exercises every three years was "probably not enough", partly because staff had often moved on to different posts. Instead, it believed "in-depth training" was required on a "much more regular basis".[192] Sheffield City Council told us it had carried out a flood risk emergency response exercise a year before—Operation Loxley—which had proved "absolutely invaluable" because much of what was rehearsed turned out to be the reality during the summer.[193] It acknowledged, however, that responders had not been fully prepared, or resourced, for an emergency event that lasted for several days, which had been an "incredibly tiring" experience—a view echoed by Oxfordshire County Council who also said staff had suffered from fatigue.[194] Gloucestershire County Council told us that many emergency training exercises had taken place in the region before the floods, but not on the scale of the summer's emergency because this would have been considered unrealistic.[195]

Our views

103. In some respects, the provisions set out in the Civil Contingencies Act 2004 were not sufficient for the kind of emergency that occurred in parts of England in the summer. The Act is perhaps better suited to planning and responding to a terrorism event than to a flooding event. Local authorities—Category 1 responders under the Act—were not adequately prepared for an event on such scale. Many utilities, as "co-operating" Category 2 responders, also lacked preparedness and were unfamiliar with emergency response procedures.

188 For example, Sheffield City Council [Q 180], Oxfordshire County Council [Qq 323–324], Severn Trent Water [Q 402].

189 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 70.

190 Qq 173, 219.

191 Q 191

192 Q 219

193 Qq 181, 213.

194 Qq 219, 337.

195 Q 328

104. There seems to have been a lack of imagination, on the part of everybody, about the possibility of such an extreme flooding event occurring—and consequently a lack of preparedness by responders. We recognise that local responders can only realistically prepare for certain scenarios. When planning for emergencies, however, it is important not simply to imagine convenient scenarios. **Local authorities and other relevant local organisations need to rehearse emergency response exercises on a more regular basis. This would help to improve preparedness and also ensure people in various organisations know each other. The scale of the rehearsed emergency events should take account of the extreme weather events predicted as a result of climate change. The Government and the Environment Agency should be centrally involved in the formulation of such exercises to ensure that they are demanding enough.**

105. On a positive note, we recognise that the work of the voluntary sector was extremely important in many different ways during the summer's events. **The Government must ensure that the voluntary sector is included as part of civil contingency planning to maximise the effective use of the sector.**

Co-ordination between authorities

106. Gloucestershire County Council told us that communication between different tiers of Government—such as county council and district councils—needed to be improved during emergency events. Five districts in Gloucestershire were affected at the same time during July, but in different ways, including the closure of motorways, flash flooding, river flooding, loss of electricity and loss of water. The County Council said that this caused problems in terms of the emergency response co-ordination and communication.[196]

107. **Emergency response in two-tier local authorities can add complications to an already difficult situation. We support the Pitt Review's interim conclusion that "upper-tier" local authorities should be the lead organisation in relation to multi-agency planning for severe weather emergencies at the local level, and for triggering multi-agency arrangements in response to severe weather warnings.**

Provision of water during an emergency

108. Severn Trent Water deployed over 1,300 water bowsers—virtually the whole of the UK stock—and delivered up to 5 million litres of bottled water per day, with assistance from the armed services, following the flooding of the Mythe water treatment plant.[197] Current Government regulations require water companies to provide a minimum of 10 litres of drinking-quality water per person when mains supplies fail.[198] Severn Trent told us that the Mythe experience showed this amount was "unrealistic"; it said customers actually required about 20 litres per day.[199] The Government has since announced, as part of its

196 Q 327

197 Ev 105 [Severn Trent], 93 [Gloucestershire County Council].

198 Security and Emergency Measures (Water and Sewerage Undertakers) 1998 [SEMG(4)], Paragraph 1(2)(b)

199 Q 410

Water Strategy, that it will review the current minimum requirements of water to be provided in an emergency.[200]

109. Current planning contingency also requires water companies to prepare for an emergency event in which 200,000 people have lost supply for seven days.[201] However, we note that 1 million people lost their water supply during the 1947 English floods.

110. The biggest problem in Gloucestershire was the lack of logistical support. Until the army was deployed there was a serious shortfall of personnel capable of carrying out the necessary operations. The water companies had never carried out anything on this scale before and too many bowsers and other supplies of water were not delivered effectively until well into the crisis. Such a lacunae must not be allowed to happen again.

111. **The Government should revise upwards both the planning contingency whereby the water industry is required to prepare for 200,000 people without water for 7 days, and the minimum per capita amount of water to be provided in an emergency. It should then ensure that water companies are able to demonstrate that they have the ability to meet these minimum standards, through the provision of sufficient materials such as bowsers and/or bottled water.**

9 Public awareness

112. Our inquiry showed that public awareness about flood risk and management needs to be raised. We believe that Government—at both the central and local level—should do more to engage with the public to increase awareness of flood risk. Several measures could be taken to ensure the public are better prepared for flooding, and are able to make the right choices about how to protect themselves.

Information to the public

113. Gloucestershire County Council told us it had recently produced a flood guide that provided people with tips for what they could do themselves.[202] We would like to see more local authorities providing such information to local residents. In March 2008, the Environment Agency launched three simple flooding guides, available on its website, to offer advice to the public abut how to protect their homes—before, during and after flooding.[203] **The Environment Agency should undertake to provide copies of its three flood guides to local authorities, to be circulated for free to those houses in areas of highest risk.**

200 Defra, *Future Water*, Cm 7319, February 2008, p 42.

201 Defra/Welsh Assembly Government, *Planning for Major Water and Wastewater Incidents in England and Wales*, October 2006.

202 Q 362

203 "Environment Agency launches flood awareness guides", Environment Agency press release, 28260308, 26 March 2008. The guides are available at Advice Guides, Flooding, www.environment–agency.gov.uk.

114. **The Government should include an assessment of flood risk within the information to be included in Home Information Packs. The Environment Agency's guides should also be included in the packs for those properties deemed at risk.**

Telephone flood warnings

115. The Environment Agency's flood warning system has limited levels of uptake. In England and Wales overall, only around 41 per cent of people for whom the Flood Warnings Direct Service is available take up the service—approximately 276,000 properties.[204] **There should ideally be an opt-out for receiving flood warnings from the Environment Agency in areas of high risk, rather than the current opt-in system.** We note that the Agency has a pilot scheme automatically to register eligible households and premises for flood warnings unless they opt out. **The Agency should publish, by the end of 2008, any results from its pilot scheme to register automatically eligible households and premises for flood warnings unless they opt out. It should also set out any concerns that have arisen from the pilot.**

Flood maps

116. The Agency maps river and coastal flood risk and provides this service to the public for free, via its website. The Agency says this information is regularly updated and shared with local authorities and the insurance industry to assist in planning and insurance provision.[205] Some insurance companies, such as Norwich Union and Royal & Sun Alliance, have developed their own more detailed mapping systems, in part based on the Agency's data, to aid insurance provision.[206] Both companies' maps are able to assign flood risk to the level of individual property, whereas the Agency's maps split the flood risk into 100 square metre areas.[207]

117. We believe the variety of different flood risk maps available—with each potentially classifying a certain property at a different level of flood risk—is confusing for the public. **We understand that insurance companies will want to produce their own detailed flood risk maps for commercial reasons. The current situation, however, is a recipe for conflict. The Government should set out its policy on how it intends to resolve this potential confusion.** The necessity for clarity is even more pressing with the Agency's development of simple surface water flood maps for some "hot-spot" areas. **We recognise the production of flood maps is a dynamic process and is dependent on the best data available, but it is in everyone's interest to have the best available validated map. The Environment Agency should take the lead in pulling partners together to achieve this. The Agency should set up a standing committee that annually reviews all the available data on flood mapping, so insurance companies and the Met Office can share experience, and this committee should publish an annual report about the dynamics of the process.**

204 Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 112.

205 Ev 7

206 Ev 126 [Norwich Union]

207 Ev 141 [Norwich Union]

10 Implementation of the Pitt Review

118. The Pitt Review's final report will be published in the summer of 2008. It will produce a series of costed recommendations to Government, and other organisations.[208] Defra is responsible for co-ordinating the overall response to the Review.[209] In evidence, however, the Department was not specific about how the final conclusions would be implemented—beyond saying the Department's plans and resource allocations would be transparent, and pressure would be maintained by the public and Members of Parliament.[210]

119. Defra has received criticism for its implementation of previous flood-related reports. CIWEM told us that lessons from previous reviews had been "noted rather than actually learned or acted upon".[211] The Agency also expressed concern about the pace of implementing some *Making Space for Water* measures.[212]

Our views

120. Sir Michael Pitt's final report is likely to make a whole host of recommendations to a wide variety of organisations, and the programme of implementation is likely to last many years. It is Defra's responsibility to co-ordinate this and force the pace of implementation. We are concerned that Defra has not been able to assure us that implementation of Sir Michael Pitt's report will be monitored in a robust manner. We are also concerned that the Department's target to make £96 million of efficiency savings in its flood and coastal erosion risk management programme by 2010–11—which the Department acknowledges may impact the Agency's workforce size—may affect its ability to carry out its Pitt Review responsibilities.[213]

121. **Following the publication of the Pitt Review's final report, the Department must publish a costed and prioritised action plan to set out the timetable for implementing Sir Michael Pitt's findings.** It would also be regrettable to lose the experience Sir Michael Pitt has on this issue. **We recommend that the Government request that Sir Michael Pitt be given a role within the Environment Agency to ensure the implementation of his findings.** These measures should reassure the public—especially those who have been flooded—that the Government is addressing this issue and ensuring it remains a high priority, even when flooding has dropped down the news 'agenda'.

208 Q 700. Pitt Review, *Learning the lessons from the 2007 floods*, December 2007, p 6.

209 Q 992 [Defra]

210 Q 988

211 Ev 479

212 Q 2. Natural England also expressed concern at the slow implementation of *Making Space for Water* projects related to sustainable flood defence solutions [Ev 273].

213 Defra, Value for Money Delivery Agreement Comprehensive Spending Review 2007, February 2008, p 3.

Conclusions and recommendations

1. It is right that the Environment Agency continue to devote the majority of its resources into river and coastal flood risk management, and the building and maintaining of river and coastal flood defences. However, management of surface water flood risk can not remain in its current unclear and chaotic state. A key first step for Government must be to determine organisational responsibility for surface water flooding. We reject the idea of a dedicated Flood Agency. (Paragraph 26)

2. We agree that the Agency is the best-placed organisation to take a strategic role at the national level in relation to surface water (and other inland) flooding. (Paragraph 27)

3. The Agency's overview role needs careful specification. The Government must not add further responsibilities and functions to the Agency at a rate greater than it can absorb through recruitment, training and other preparatory measures. Increased responsibilities must be adequately funded. The Government must also not place unrealistic expectations on the Agency in relation to the modelling and mapping of surface water flood risk, as this will raise public expectations unrealistically. (Paragraph 28)

4. In determining an overview role, the future relationship between the Agency and local authorities must be carefully articulated and defined in order to produce lines of accountability. This relationship is key to the future management of surface water flood risk. We believe the main purpose of the Agency's overview role should be to provide guidance and advice to local authorities on managing surface water flood risk, to provide quality-assurance of local authorities' plans to manage surface water flood risk, and to ensure consistency in practice between local authorities. (Paragraph 29)

5. The model for Surface Water Management Plans (SWMP) currently advocated by Government lacks clarity about how co-ordination will be achieved between organisations responsible for surface water drainage in a particular area. In particular, the model does not explain how organisations can be persuaded to fulfil their responsibilities under such plans. In its response to our Report, the Government should set out clearly how the benefits of co-operation will be turned into action. It should also explain how it intends the enhanced SWMPs to fit alongside the existing system of Catchment Flood Management Plans and River Basin Management Plans. (Paragraph 31)

6. Local authorities should have a statutory duty for surface water drainage. It should be the duty of a local authority to ensure its area is, and continues to be, effectively drained of precipitation to an agreed national standard of service. (Paragraph 32)

7. Where the local wastewater utility and/or Internal Drainage Board has ownership of, or responsibility for, parts of the drainage system, local authorities should have the power to sub-contract part of their responsibility for ensuring effective drainage to those organisations, and to require their co-operation in managing surface water drainage on an area basis. (Paragraph 33)

8. The Government should accept the Pitt Review's interim conclusion that local authorities be required to compile a register of all the main flood risk management and drainage assets (overland and underground), including an assessment of their condition and details of the responsible owners. The register should also determine physically where one organisation's responsibility ends and another one's begins. It should be available to the public as a web-based resource. Local authorities could also provide information to members of the public through a one-stop shop telephone number. Local authorities should receive co-operation from other organisations in compiling this register. Upper-tier local authorities should take the lead and, where they exist and where they wish to, parish and town councils should be involved. (Paragraph 34)

9. Following its consultation, the Government must provide a clear steer about which local authority, in two-tier authorities, should take the lead in co-ordinating the management of surface water flooding and drainage at the local level. (Paragraph 35)

10. We recommend that the Department for Innovation, Universities and Skills and the Environment Agency develop, and publish, a strategy to address the national shortage in flood risk engineers. If the national shortage in this profession is not addressed, much of the Pitt Review may be impossible to implement. (Paragraph 37)

11. We believe local authorities should be responsible for the ultimate ownership and maintenance of sustainable drainage systems (SUDs), as happens elsewhere in Europe. The Government needs to resolve ownership and maintenance issues as a matter of urgency to enable the current house-building and eco-towns programmes to incorporate maximum use of SUDs. (Paragraph 42)

12. A presumption in favour of SUDs should be included in the Planning Bill, to add weight to Planning Policy Statement 25 (PPS25). (Paragraph 43)

13. We welcome the Government's decision to consider, as part of its Water Strategy, changing surface water charging to reflect the "polluter pays" principle. Ofwat should insist that water and wastewater companies state the proportions of customers' bills that are made up of foul water drainage, surface water drainage and highways drainage. Property owners who have, or retro-fit, SUDs should receive a rebate on the surface water component of their water company bill. (Paragraph 47)

14. We welcome the Government's Water Strategy policies to change householders' rights to allow them to pave over their front garden, without planning permission, only if the surface is porous and to review the automatic right to connect surface water drains and sewers to the public sewerage systems. We recommend that any new discharge of surface water by drain or sewer to a watercourse should require the consent of the Environment Agency. (Paragraph 51)

15. Ministers have repeatedly used the £800 million allocation in 2010–11 in an attempt to convey the impression that this large amount of money will enable Government, and others, to respond effectively to the challenges posed by the summer's floods. When broken down, however, the Comprehensive Spending Review 2007 (CSR07) settlement is far less impressive, and looks inadequate to cope with both the traditional and new risks the country faces. In light of the upcoming final Pitt report,

and the resources that both local authorities and the Agency will inevitably require to address surface water flood risk, we recommend that the Government reappraise the adequacy of its CSR 07 settlement to combat all types of flood risk. (Paragraph 57)

16. Sir Michael Pitt should publish the full costs of his final recommendations as soon as possible. The Department should make clear in its response how it intends to fund the Pitt Review if the cost of its final recommendations exceeds £34.5 million. It should also say what options it is exploring as to how local authorities will be funded to carry out their responsibilities as a result of the Pitt Review. (Paragraph 58)

17. We welcome the Government and the Agency's work to develop a long-term investment strategy for flood risk management. This strategy should provide some answers about the level of flood risk protection that the public should expect, the research and organisation involved (particularly for surface water flooding), the number of flood prevention and alleviation schemes required nationally, and how much this would cost. The strategy should also take account of the effect of climate change on the frequency and intensity of rainfall and storm surges. The strategy should be subject to a public consultation process, and published. (Paragraph 62)

18. We support the Pitt Review's interim conclusions related to development in the flood plain, to ensure new buildings in the flood plain are properly flood resilient and resistant.. We welcome the Government's announcement to provide a Practice Guide Companion to ensure local authorities properly implement PPS25, particularly in respect of the impact of development on those downstream. We recommend that Government departments, working with the Local Government Association, carry out a survey to establish the present ability of local authorities to implement PPS25 and, should a skills deficit be identified, put forward policies to address this issue. (Paragraph 66)

19. The Department and the Agency should explore the possibility of ring-fencing a minimum proportion of the Agency's capital expenditure over a three-year CSR period for new capital schemes in rural areas. (Paragraph 71)

20. We recommend that the Government consider the possibility of ring-fencing Grant-in-aid directly to Regional Flood Defence Committees. (Paragraph 72)

21. The Agency should develop a clear strategy for expenditure on new capital works versus maintenance of existing systems. It should ensure that any proposed new scheme should have an estimated maintenance schedule in the same way that it is accompanied by a construction bill of quantities. The Agency should also ensure its maintenance budget for the CSR 07 period includes the additional maintenance work necessary on the new capital schemes it will build during the period. (Paragraph 75)

22. Given the enormous level of interest, we believe it is appropriate that local people have to be involved, and consulted, in the formulation of decisions about watercourse and river maintenance. The Agency, and local authorities, must open up dialogue with members of the public, through appropriate local fora, to ensure that they are part of this process. (Paragraph 80)

23. Once decisions have been made, the Agency should make clear, via its website or other means, the maintenance programme for all its watercourses—even if this, in some cases, is minimal—including the risk assessment which the Agency has made in deciding its approach to maintenance of a particular watercourse. The future schedule of maintenance should be announced whenever possible. (Paragraph 81)

24. The Government should ask the Environment Agency and Natural England to agree on how to resolve any conflict between effective drainage for flood defence purposes and the preservation of watercourses as important wildlife habitats, and publish the results. (Paragraph 82)

25. The Government should re-examine the money available for the maintenance of watercourses and produce a clear analysis, by the end of 2008, of the balance between maintenance and capital spend, bearing in mind the National Audit Office's conclusions, the scepticism of the public that not enough maintenance is being done, and the views of the Environment Agency. (Paragraph 83)

26. Either the existing system of riparian duties needs to be made to work more effectively or it needs to be replaced. The Government should explore the practicality, costs and benefits of pursuing both courses of action. Work should begin as soon as possible to examine whether riparian ownership is fit for purpose. (Paragraph 86)

27. We previously endorsed the Pitt Review's interim conclusion that local authorities be required to compile a register of all the main flood risk management and drainage assets, including details of the responsible owners. This register should include the owners of all watercourses, and be publicly available. (Paragraph 87)

28. Defra should work with its partners and bodies to decide, by the end of 2008, how natural process flood risk schemes with multiple benefits can be best funded and developed. We strongly support the creative use of the Single Farm Payment to reward land owners if their land is used for the purpose of natural flooding to protect people and buildings elsewhere. (Paragraph 90)

29. The Government should re-examine the current statutory duties on utilities in relation to emergency planning. A specific duty should be placed on utilities to ensure their critical assets are protected from the effects of flooding and that they have adequate business continuity plans in the event of a flood. This should include ensuring supply system resilience so that the failure of a key asset can be substituted by other means with a minimum interruption of service. The Agency should advise on plausible scenarios, taking into account climate change impacts. (Paragraph 95)

30. We believe a proper sharing of financial responsibility is necessary between utilities' shareholders and customers in improving the resilience of utilities' infrastructure. Ofwat must ensure that the 2009 price review takes full account of the need for water companies to improve the resilience of critical assets, and of the costs this implies. But in doing so, it should also resist attempts by water companies to raise water bills, in order to pay to bring the infrastructure to the level of resilience it should have had in the first place. Consumers should not pay for companies' past inadequacies. (Paragraph 96)

31. We agree with the Agency that reservoir and dam safety management should shift from being based on size to a risk-based approach. We endorse the Government's plans to introduce a requirement for emergency plans for reservoir and dams. We recommend an immediate review of the existing legislation in this area. (Paragraph 99)

32. We recommend that Network Rail work with the Environment Agency, local authorities and others to design solutions that will minimise flood risk to themselves and other land owners close by. (Paragraph 101)

33. Local authorities and other relevant local organisations need to rehearse emergency response exercises on a more regular basis. This would help to improve preparedness and also ensure people in various organisations know each other. The scale of the rehearsed emergency events should take account of the extreme weather events predicted as a result of climate change. The Government and the Environment Agency should be centrally involved in the formulation of such exercises to ensure that they are demanding enough. (Paragraph 104)

34. The Government must ensure that the voluntary sector is included as part of civil contingency planning to maximise the effective use of the sector. (Paragraph 105)

35. Emergency response in two-tier local authorities can add complications to an already difficult situation. We support the Pitt Review's interim conclusion that "upper-tier" local authorities should be the lead organisation in relation to multi-agency planning for severe weather emergencies at the local level, and for triggering multi-agency arrangements in response to severe weather warnings. (Paragraph 107)

36. The Government should revise upwards both the planning contingency whereby the water industry is required to prepare for 200,000 people without water for 7 days, and the minimum per capita amount of water to be provided in an emergency. It should then ensure that water companies are able to demonstrate that they have the ability to meet these minimum standards, through the provision of sufficient materials such as bowsers and/or bottled water. (Paragraph 111)

37. The Environment Agency should undertake to provide copies of its three flood guides to local authorities, to be circulated for free to those houses in areas of highest risk. (Paragraph 113)

38. The Government should include an assessment of flood risk within the information to be included in Home Information Packs. The Environment Agency's guides should also be included in the packs for those properties deemed at risk. (Paragraph 114)

39. There should ideally be an opt-out for receiving flood warnings from the Environment Agency in areas of high risk, rather than the current opt-in system. The Agency should publish, by the end of 2008, any results from its pilot scheme to register automatically eligible households and premises for flood warnings unless they opt out. It should also set out any concerns that have arisen from the pilot. (Paragraph 115)

40. We understand that insurance companies will want to produce their own detailed flood risk maps for commercial reasons. The current situation, however, is a recipe for conflict. The Government should set out its policy on how it intends to resolve this potential confusion. We recognise the production of flood maps is a dynamic process and is dependent on the best data available, but it is in everyone's interest to have the best available validated map. The Environment Agency should take the lead in pulling partners together to achieve this. The Agency should set up a standing committee that annually reviews all the available data on flood mapping, so insurance companies and the Met Office can share experience, and this committee should publish an annual report about the dynamics of the process. (Paragraph 117)

41. Following the publication of the Pitt Review's final report, the Department must publish a costed and prioritised action plan to set out the timetable for implementing Sir Michael Pitt's findings. We recommend that the Government request that Sir Michael Pitt be given a role within the Environment Agency to ensure the implementation of his findings. (Paragraph 121)

Formal Minutes

Wednesday 23 April 2008

Members present:

Mr Michael Jack, in the Chair

Mr David Drew	Dr Gavin Strang
Lynne Jones	David Taylor
David Lepper	Paddy Tipping
Miss Anne McIntosh	Mr Roger Williams

Draft Report (*Flooding*), proposed by the Chairman, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 121 read and agreed to.

Summary agreed to.

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

Ordered, That the Chairman 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.

Written evidence was ordered to be reported to the House for printing with the Report.

Written evidence was ordered to be reported to the House for placing in the Library and Parliamentary Archives.

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[Adjourned till Wednesday 30 April at 2.30pm

Witnesses

Wednesday 10 October 2007

Page

Baroness Young of Old Scone, a Member of the House Lords, Chief Executive, **Dr David King**, Director of Water Management and **Mr David Rooke**, Head of Flood Risk Management, Environment Agency — Ev 10

Wednesday 7 November 2007

Professor Edmund Penning-Rowsell, Head of Flood Hazard Research Centre, Middlesex University and **Professor Howard Wheater**, Professor of Hydrology, Imperial College — Ev 40

Wednesday 14 November 2007

Mr Kim Ryley, Chief Executive and **Professor Tom Coulthard**, Leader of the Independent Review Body in Hull, Hull City Council, **Sir Robert Kerslake**, Chief Executive, **Councillor Jan Wilson**, Leader of the Council and **Mr John Charlton**, Director of Streetforce, Development, Environment and Leisure, Sheffield City Council — Ev 64

Mr Kevin Whiteman, Managing Director and **Mr Robert Salmon**, Director of External Communications, Yorkshire Water, **Mr David Fullwood**, Clerk to Beverley and Holderness Internal Drainage Board, Preston IDB and Wilberfoss and Thornton Level IDB, **Dr Jean Venables**, Chief Executive of the Association of Drainage Authorities and **Mr David Sisson**, Engineer to Lindsey Marsh IDB, Internal Drainage Boards — Ev 80

Wednesday 21 November 2007

Mr Duncan Jordan, Group Director for Environment, Gloucestershire County Council, **Mr Richard Dudding**, Director for Environment and Economy and **Mr Dave Etheridge**, Assistant Chief Fire Officer, Oxfordshire Fire and Rescue, Oxfordshire County Council — Ev 95

Mr Tony Wray, Chief Executive, **Mr Andy Smith**, Water Services Director, **Mr Martin Kane**, Customer Relations Director, Severn Trent Water, **Mr Richard Aylard**, External Affairs and Sustainability Director and **Mr Bob Collington**, Director of Wastewater Services, Thames Water — Ev 112

Wednesday 28 November 2007

Mr Stephen Haddrill, Director-General, Association of British Insurers, **Mr Igal Mayer**, Chief Executive, Norwich Union and **Mrs Bridget McIntyre**, UK Chief Executive, Royal and SunAlliance — Ev 130

Ms Regina Finn, Chief Executive and **Mr Jonathan Hodgkin**, Director of Network Regulation, Ofwat — Ev 148

Wednesday 12 December 2007

Wednesday 9 January 2008

Wednesday 23 January 2008

Wednesday 30 January 2008

Monday 4 February 2008

Mr Alan Raymant, Director of Operations and Asset Management, Central Networks, **Mr Nick Winser**, Executive Director, Transmission and **Mr Chris Murray**, Director of Asset Management, National Grid Ev 311

Baroness Young of Old Scone, a Member of the House of Lords, Chief Executive, **Mr Phil Rothwell**, Head of Flood Risk Management Policy and **Mr David Rooke**, Head of Flood Risk Management, Executive Agency Ev 318

Wednesday 6 February 2008

Mr Phil Woolas MP, Minister of State (Environment), **Mr Martin Hurst**, Director of Water and **Mr David Wright**, Resilience and Institutional Framework Programme Manager, Department for Environment, Food and Rural Affairs Ev 350

List of written evidence

List of unprinted evidence

The following memoranda have been reported to the House, but to save printing costs they have not been printed and copies have been placed in the House of Commons Library, where they may be inspected by Members. Other copies are in the Parliamentary Archives, and are available to the public for inspection. Requests for inspection should be addressed to The Parliamentary Archives, Houses of Parliament, London SW1A 0PW (tel. 020 7219 3074). Opening hours are from 9.30 am to 5.00 pm on Mondays to Fridays.

Peter Hebblethwaite (FL 025) - Background paper
Strensall & Towthorpe Parish Council (FL 039a) - Photographs
Mike Smith (FL 043) - Background paper
Chairmen of the Regional Flood Defence Committees supplementary (FL 063a) - Map
National Grid (FL 080) - Appendix
Butler Sherborn (FL 086) - Appendices
Hesco Bastion Ltd (FL 088) - Appendix
Water UK (FL 095a) - Photographs
Sue Everett (FL 107 & FL 107a) - PowerPoint presentations
Oxfordshire County Council (FL 126) - Annex
The Alde and Ore Association (FL 136) - Annexes
O M Goring (FL 146) - Background paper
John Rossetti (FL 150a) - Background paper
Mayor of London (FL 151a) - Annex
River Dene Action Group - Wellesbourne (FL 153) - Annex
The Witham First and Third District Drainage Boards (FL 155) - Annex
Landmark Information Group (FL 163) - Map
Julian Jones (FL 165) - Appendices
Beverley & North Holderness Internal Drainage Board - Background papers
Upton St Leonards Parish Council - Background paper
Wiltshire and Swindon Local Resilience Forum - Background paper
Timothy Maddison - letter to Welsh Assembly
Dr David Stephens - letter to Chairman
Tony Cowley - letter to the Chairman
Ken & Gill Holway - letter to the Chairman
HJ Harper - letter to the Chairman
Ian Hill - letter to the Chairman
Denis Gibbs - Letter to Lynne Jones MP
David Drew MP - Notes from meeting with Tim Brain, Gloucester shire Chief Constable

List of Reports from the Committee during the current Parliament

(Government Reponses to Committee Reports appear in brackets)

Session 2007–08		
Seventh Report		
Sixth Report		
Fifth Report	Flooding	HC 49-I
Fourth Report	Badgers and cattle TB: the final report of the Independent Scientific on Cattle TB	HC 130-I
Third Report	The work of the Committee in 2007	HC 250
Second Report	Climate change: the "citizen's agenda": Government response to the Committee's Eighth Report, Session 2006–07	HC 189
First Report	The UK Government's "Vision for the Common Agricultural Policy: Government response to the Committee's Fourth Report, Session 2006–07	HC 48
Session 2006–07		
Eighth Report	Climate change: the "citizen's agenda"	HC 88-I (HC 189 07–-08)
Seventh Report	British Waterways	HC 345-I (HC 1059)
Sixth Report	The Implementation of the Environmental Liability Directive	HC 694 (HC 1058)
Fifth Report	Draft Climate Change Bill	HC 534-I (CM 7225)
Fourth Report	The UK Government's "Vision for the Common Agricultural Policy"	HC 546-I (HC 48 07–08)
Third Report	The Rural Payments Agency and the implementation of the Single Payment Scheme	HC 107-I (HC 956)
Second Report	Defra's Annual Report 2006 and Defra's budget	HC 132 (HC 522)
First Report	The work of the Committee in 2005–06	HC 213
Session 2005–06		
Eighth Report	Climate change: the role of bioenergy	HC 965-I (HC 131 06–07)
Seventh Report	The Environment Agency	HC 780-I (HC 1519)
Sixth Report	Bovine TB: badger culling	HC 905-I
Fifth Report	Rural Payments Agency: interim report	HC 840
Fourth Report	The Departmental Annual Report 2005	HC 693-I (HC 966)
Third Report	The Animal Welfare Bill	HC 683
Second Report	Reform of the EU Sugar Regime	HC 585-I (HC 927)
First Report	The future for UK fishing: Government Response	HC 532