



House of Commons
Environment, Food and Rural
Affairs Committee

Flooding

Fifth Report of Session 2007–08

Volume I



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Report, together with formal minutes

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Environment, Food and Rural Affairs Committee

The Environment, Food and Rural Affairs Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department for Environment, Food and Rural Affairs and its associated bodies.

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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].

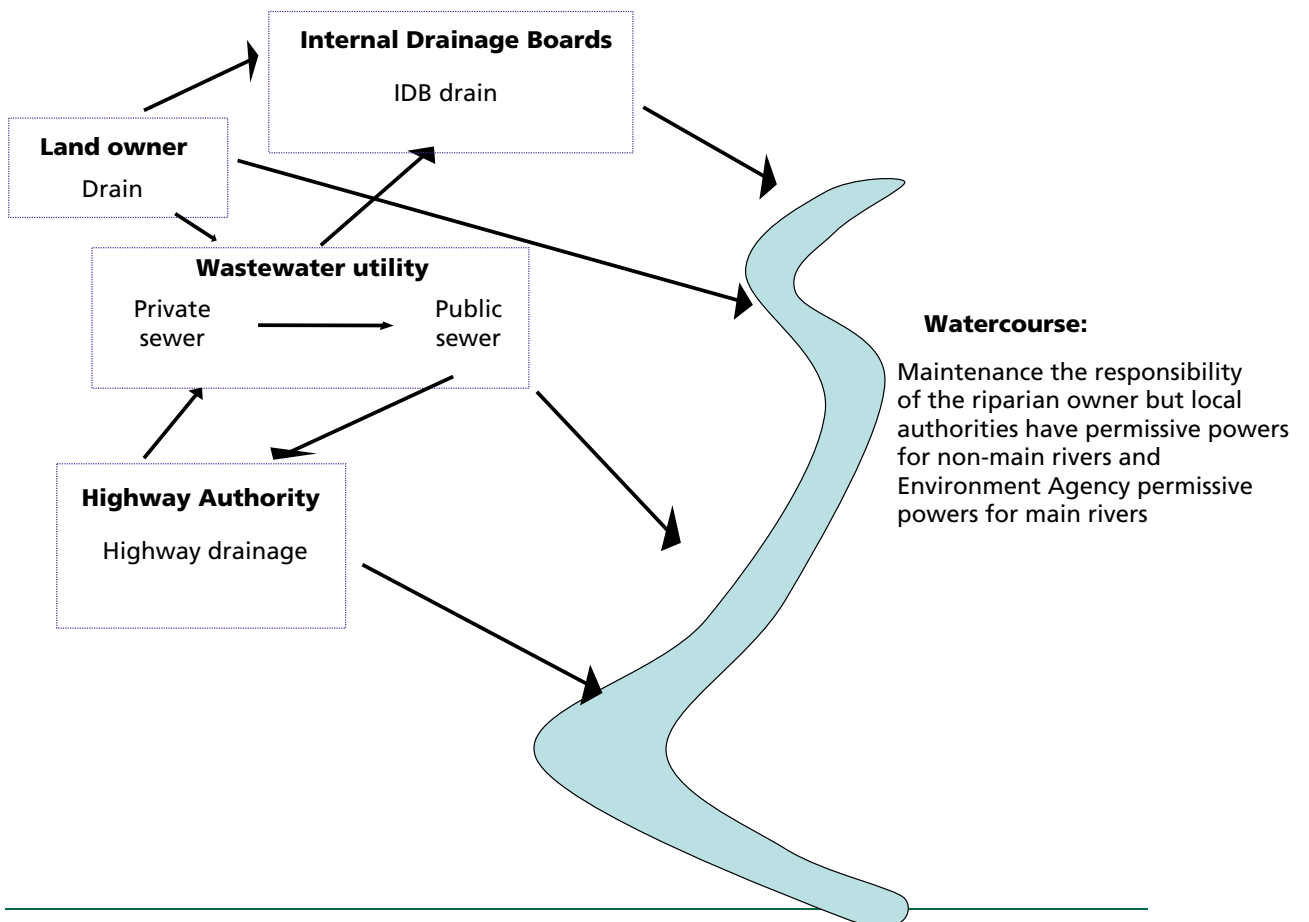
52 Q 190; Ev 250, para 9.

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.**

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].

