



House of Commons

Committee of Public Accounts

Environment Agency: Building and maintaining river and coastal flood defences in England

Fourth Report of Session 2007–08

*Report, together with formal minutes, oral and
written evidence*

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The Committee of Public Accounts

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Publication

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the Internet at <http://www.parliament.uk/pac>. A list of Reports of the Committee in the present Session is at the back of this volume.

Committee staff

The current staff of the Committee is Mark Etherton (Clerk), Philip Jones (Committee Assistant), Emma Sawyer (Committee Assistant), Pam Morris (Committee Secretary) and Alex Paterson (Media Officer).

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Summary

Some 2.1 million properties, affecting 4.3 million people, are in flood risk areas. The widespread flooding across the Midlands, Yorkshire and Humberside in June 2007 and in the South and South West of England a month later, demonstrated the real danger, damage and misery such events cause. The temporary closure of road and rail links and the loss of mains water and electricity supplies in some areas showed the vulnerability of our key infrastructure to flooding.

The Environment Agency is the principal authority responsible for managing the risk of flooding from main rivers and the sea in England and Wales. It took the Agency six years to complete its first six Catchment Flood Management Plans (which set out a long term strategic plan for how flood risk should be managed in a catchment or river basin). The entire programme of 68 plans is unlikely to be completed until December 2008. In addition, early reports suggest that 80% of flooding in the June 2007 event was the result of urban drainage system failure, but there is little evidence of co-ordination between the Agency and other organisations on how to manage the impact of such volumes of rainfall. Drainage lies outside the Agency's remit, but it is taking part in a £1.7 million pilot project, run by the Department, to identify the best ways to prepare long term (25 year) drainage plans.

Despite an increase in funding from £303 million in 2001–02 to £550 million in 2005–06, spending fell to £483 million in 2006–07 (an increase in real terms of some 40% in five years), the state of flood defences in England has not improved markedly. The funds available for starting new defence schemes are limited, as most are already committed to ongoing schemes. In 2007–08, only 33 new projects are expected to start, at a cost of £20.2 million, with 84% of funds utilised on existing schemes. Some flood defences remain in a poor condition and over half of the high risk flood defence systems, such as those protecting urban areas, are not in their target condition, with consequent risks should a flood occur.

The Agency was not able to show that its maintenance teams were deployed efficiently or that they focused their resources on high risk flood defence systems. The Agency maintains 62% of the total length of raised defences and 37% of the 46,000 flood defence structures. Flood protection also relies in part upon defences owned by private landowners, but whilst the Agency inspects third party maintained defences, it does not necessarily notify the relevant parties of defects identified during its inspections.

Taken together, the problems set out above played an important part in contributing to the Agency's failure to protect homeowners sufficiently from flooding in summer 2007. The Agency estimated that an additional £150 million a year was needed to bring flood defence systems up to their target condition. On 2 July 2007, the Secretary of State for Environment, Food and Rural Affairs announced that by 2010–11, total expenditure on flood risk management would rise to £800 million. Whilst an independent inquiry into the summer floods will seek to establish the causes and adequacy of actions taken in response to the floods in summer 2007, the onus is on the Agency to assure homeowners that the additional funding will be used cost-effectively to minimise the likelihood of similar events

in future. The Agency could make more effective use of the funding already available to it:

- through better prioritisation aided by enhanced management information systems;
- by better targeting of resources available based on flood risk in different parts of the country; and,
- by reducing the programme and project development costs when constructing defences.

The Agency also needs to improve its longer term strategic planning. On the basis of a report by the Comptroller and Auditor General,¹ we examined how well the Agency carries out its role to protect people and properties from the risk of flooding, and whether it adequately monitors and maintains the standards of existing flood defence systems.

1 C&AG's Report, *Building and maintaining river and coastal flood defences in England*, HC 528, Session 2006–07

Conclusions and Recommendations

- 1. The Environment Agency set a target to maintain 63% of flood defence systems in target condition by March 2007, but only managed to maintain 57% of all systems and 46% of high risk systems at target level by that date.** The Secretary of State for Environment, Food and Rural Affairs announced on 2 July 2007 that the total annual budget for flood risk management would rise to £800 million by 2010–11 from £483 million received in 2006–07. The Agency needs to target its resources based on thorough assessments of the priority areas. It should categorise the state of each group of flood defences, according to whether they are high, medium or low risk systems, and estimate the increased risk of flooding where they are not in target condition.
- 2. There are significant shortcomings in the Agency's ability to prioritise expenditure on the highest risk areas and assets.** The risk to life and damage to property were well illustrated by the floods in summer 2007, but the Agency has not targeted high risk flood defence systems adequately, and two areas spent less than 40% of maintenance funds on such assets. The Agency should allocate maintenance funds to each of its areas on the basis of the estimated risk of flooding and the potential cost if a flood were to occur.
- 3. Too much of the Agency's construction funding in 2005–06 (£76 million) was spent on programme and project development.** The Agency spends a significant percentage of its funding for improvements on development, some of which goes on schemes which are unlikely to go ahead. Since most funding is already committed to existing projects and relatively little is available in any one year for new project starts, such development can put scarce resources into schemes which have little prospect of being built while raising false hopes in the affected communities. Detailed planning work on each proposed scheme should only be undertaken once the Agency is reasonably confident that the project is likely to go ahead.
- 4. The Agency is unlikely to meet its earlier commitment to complete Catchment Flood Management plans by 31 December 2007.** These plans should be reviewed to identify structures most at risk: some of the worst damage in the summer floods affected structures in areas where plans had been completed but the structures not identified as at risk. The plans are designed to set out the policy for managing flood risk in a catchment over the next 50 to 100 years, taking into account various factors over the long term, such as climate change and property development, so that decisions about construction and maintenance can be made in the context of the catchment as a whole. In the face of the heavy costs and disruption from recent flooding this delay is unsatisfactory, and any further delay beyond the Agency's new estimate for completion of the work by December 2008 would be unacceptable.
- 5. The different bodies involved in water management appeared quick to absolve themselves of any responsibility for the floods in 2007 and there is little evidence of collaborative working with the Agency to minimise the risks of such events.** Developers, local authorities, drainage boards and water companies are involved in enhancing drainage to handle rising demand, whether from rainfall or new

development, but proposals to improve drainage to hold excess water have been held up by discussions over the responsibility for subsequent maintenance work. The Agency should lead in preparing and agreeing local drainage plans which set out the specific responsibilities of all relevant parties. It should seek new powers if the deadlock cannot otherwise be broken.

- 6. The Agency's asset database should provide a national picture of the state of flood defences, but it is cumbersome to use and the difficulties in extracting timely performance data are hindering efforts to keep these defences in their target condition.** The Agency's inspectors use the database to record their inspection results, but local managers were unable to use the computer system to subsequently check whether faults identified had been remedied. The system can fail when users seek to extract large volumes of data, and only 80 local authorities have used the database to monitor the state of their non-main river defences. The Agency should establish whether the technical problems can be overcome to allow users' ready access to the data. If not, the Agency should prepare a business case for developing a new computer system more suited to user requirements.
- 7. The Agency does not routinely notify third party owners of flood defences of any defects found.** The Agency should formally notify all third party owners of the remedial action needed to maintain defences in appropriate condition and follow up whether necessary action has been taken. In the wake of the floods this summer, the Agency should also consider whether there is a case for extending its powers to compel third party owners to take action.
- 8. The Agency's warning system to notify residents of the imminent risk of flooding relied on email and telephone messages, but such warnings may not be appropriate late at night or early in the morning if residents are asleep.** As part of its lessons learned review, the Agency should establish whether residents received adequate warning of the risk of flooding and whether existing methods of communication were sufficient.

1 Protecting people and properties from the risk of flooding

1. Some 2.1 million properties in England, affecting 4.3 million people, are at risk of flooding from rivers and the sea. 48.5% of these properties are at risk of flooding from the sea, 48% from rivers and 3.5% from both (**Figure 1** shows the Environment Agency's flood zones). England has not experienced major coastal flooding since 1953, but inland flooding in 2000, prior to our 2002 report, affected some 9,000 properties.²

2. Widespread flooding affected properties in the Midlands, Yorkshire and Humberside in June 2007 and in the South and South West of England a month later, and at least four people tragically lost their lives. There was also significant disruption to infrastructure. The risk that part of the Ulley reservoir near Rotherham might collapse due to the increased volume of water led to 250 people living downstream being evacuated from their homes and the temporary closure of the M1 motorway. At one stage, up to 140,000 properties in Tewkesbury, Gloucester and Cheltenham lost mains water as a result of the flooding of the Mythe water treatment plant in Tewkesbury and around 48,000 properties in Gloucestershire were without power at one stage when a number of sub-stations were inundated.³

3. Flood water can cause extensive damage to property, ruining soft furnishings, carpets and electrical goods and can also cause structural damage to buildings. The experiences of those affected by events in June 2007, many of whom have had to move into temporary accommodation while their homes are cleaned, allowed to dry out and repaired, show how traumatic and unpleasant the effects of flooding can be.⁴

4. The Environment Agency (the Agency) is the principal authority responsible for managing the risk of flooding from main rivers and the sea in England and Wales.⁵ The Agency planned to undertake a review of the June 2007 floods to consider the causes and the adequacy of the actions taken. The Secretary of State for Environment, Food and Rural Affairs has also commissioned an independent Lessons Learned Review.⁶

2 C&AG's Report, para 1.1; Ev 7

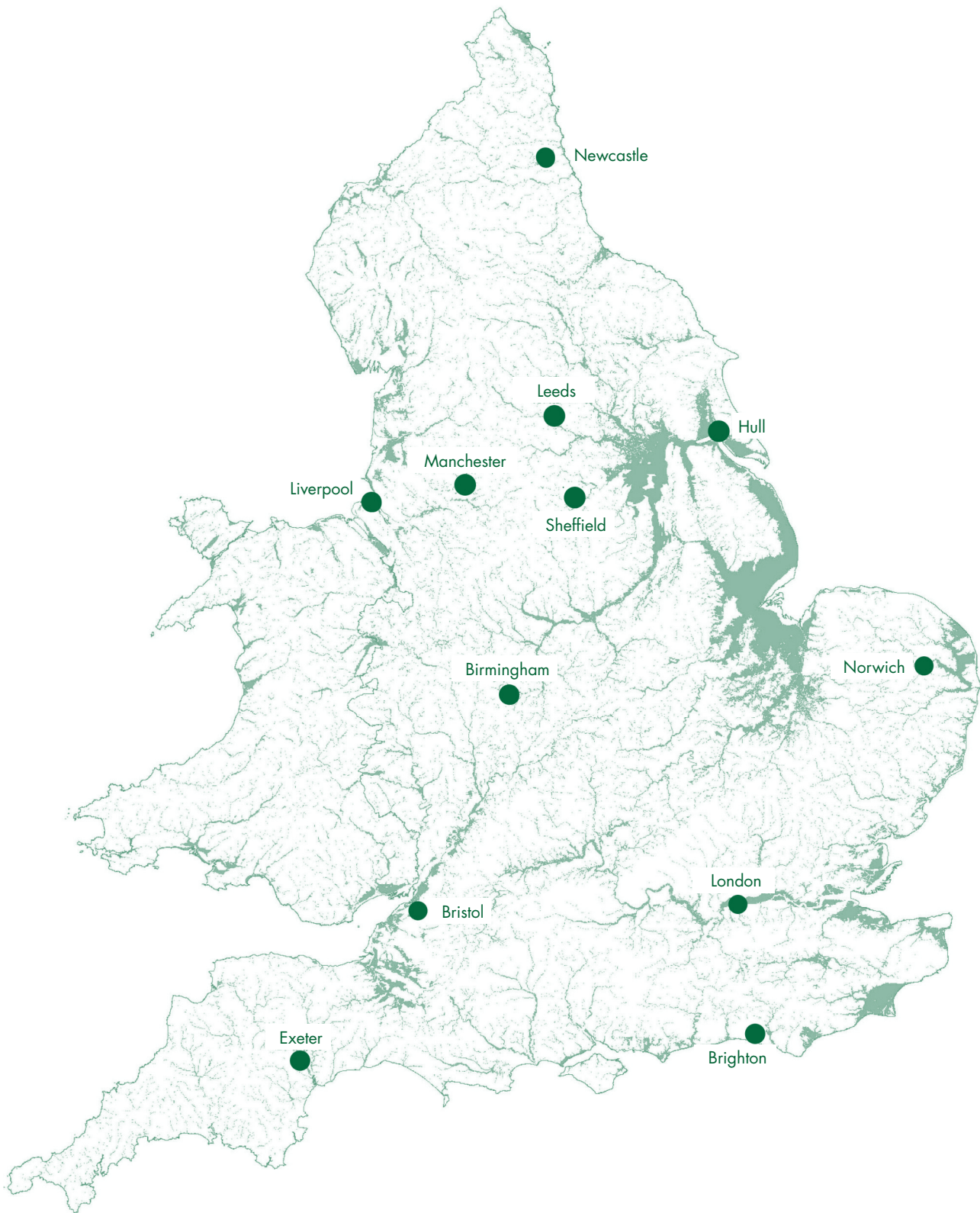
3 Oral Statement to the House by the Secretary of State on flooding in England, 26 June 2007; Oral Ministerial Statement by the Secretary of State on Flooding, 24 July, 2007

4 C&AG's Report para 1.4; Qq 4, 8

5 While we refer to the Agency as responsible for flood risk management in England, it actually has permissive powers under the Water Resources Act, 1991, to manage flooding from designated 'main' rivers and the sea. The legislation confers no right to protection or to any particular standard of defence. Where the Agency does not exercise its permissive powers, any flood defence remains the responsibility of the relevant landowner.

6 Ev 29, Ministerial Statement by the Secretary of State on learning lessons from the recent floods, 12 July 2007; Oral Ministerial Statement by the Secretary of State on Flooding, 23 July 2007

Figure 1: The Environment Agency's analysis of flood zones in England and Wales



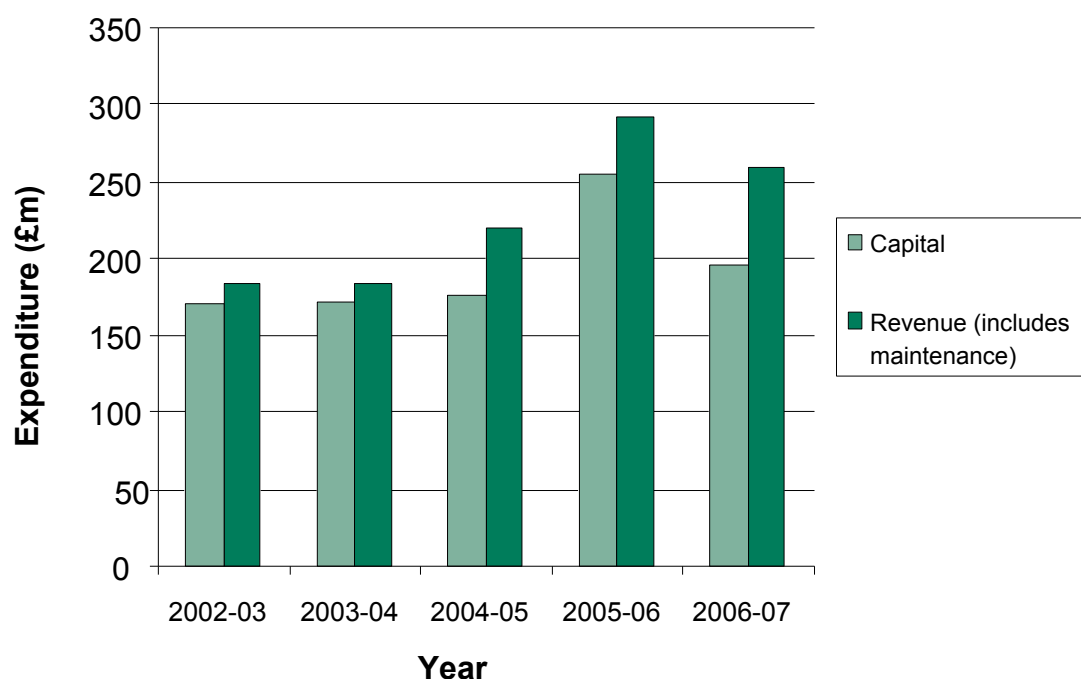
Note: This map does not take account of flood defences.

Source: Environment Agency

5. The level of rainfall in summer 2007 may have been unprecedented, but there are lessons to learn from the Agency's immediate response to the situation. The Agency did not deploy temporary flood defences in Worcester, but the water levels rose above predicted levels on one river, resulting in the flooding of some 30 homes. The Agency had a warning system to notify residents of the imminent risk of flooding and in just one week (25 June–2 July 2007), Floodline Warnings Direct sent out over 90,000 messages. But sending out warnings by email, fax or telephone at certain times of the day, for example, late at night or early in the morning might not be adequate if occupants are not alert to receive them.⁷

6. The Agency received £483 million from the Department for flood risk management in 2006–07, including £25 million in local levy from local authorities, compared to a total of £303 million in 2001–02. Since its inception in 1996, the Agency has spent £3.4 billion on flood risk management. **Figure 2** shows expenditure each year since 2002–03.⁸

Figure 2: Environment Agency Expenditure on flood risk management 2002–03 to 2006–07⁹



Source: Environment Agency

7. Commercial and housing developments in the 1960s, 1970s and 1980s resulted in the inappropriate construction of many properties in the flood plain. Under the Government's latest agreement with the insurance industry, known as the Statement of Principles, insurers will offer flood cover to those with a less than 1 in 75 year risk of flooding and to existing customers at greater risk where planned work will bring them into the 1 in 75 year category. Where no defences are planned, insurers will work with existing customers on a case by case basis. The agreement (renewed in November 2005) depends on the Government reducing the flood risk to 100,000 homes in the next three years; sustaining adequate investment in flood defences which take account of climate change;

7 Ev 28; Qq 60, 99–104

8 C&AG's Report, para 1.8; Ev 17

9 Ev 23

strengthening land use planning to limit new development in flood risk areas; providing more detailed information on flood risk and flood defence schemes; and alleviating the risk of sewer and flash flooding.¹⁰

8. The Agency has improved the flood protection for an additional 100,300 households between 2003–04 and 2005–06 by investing £900 million on the construction of new defences. The 169 construction projects completed between 2003–04 and 2005–06 included new sea and river defences and the reconstruction of existing defences.¹¹ The Agency aims to start as many new construction projects as funding constraints permit. It was not clear, however, that the Agency was in a position to determine the right balance between funding new construction projects and ongoing maintenance work. The Agency had put in place a science programme which included projects to gather data on the typical lifespan of each asset type, the influence of maintenance measures on flood risk and to what extent the visual inspection of a flood defence provides a suitable assessment of its structural integrity.

9. Existing commitments accounted for nearly £105 million (representing 84%) of the 2007–08 construction budget. Only £20 million of the 2007–08 budget was therefore available for new projects. The Agency noted that the amount committed varied from year to year depending on the portfolio of projects and that projects often take several years to complete. For example, any major remedial works resulting from the June 2007 floods, would have to be funded by deferring or slowing down work on existing construction schemes.¹²

10. Funding for new construction projects is determined using a priority score system developed by the Department for Environment, Food and Rural Affairs. Each potential project was assessed against three factors: the financial benefits of a proposed flood defence compared to the estimated cost of construction; the number of houses protected for each £1,000 spent; and the impact of a scheme on wildlife habitats and conservation areas. In 2006–07 any project which scored 25 points or more out of a possible 44 was likely to receive funding. In 2005–06 the Agency spent £76 million, representing 29% of its construction budget, on project development. Funding limitations meant that potential projects were developed which were unlikely to go ahead. Since relatively little funding is available in any one year for new project starts, the development of such schemes, including for example, the potential flood defence scheme in Ripon, consumed resources and raised the hopes of communities when there was little likelihood of construction. The Agency was acting to improve efficiency and expected to achieve a reduction of 3% a year in expenditure on study work and other development costs over the next two years.¹³

11. Climate change may lead to changes in typical weather patterns across the country including the risk of more intense periods of rainfall in parts of the country. The major flooding in summer 2007 illustrates the damaging consequences of such events. Flood

10 Q 32; Statement of principles on the provision of flood insurance updated version, Association of British Insurers, November 2005

11 C&AG's Report, para 3.1

12 Qq 21–25, 52–55; C&AG's Report, paras 2.6, 3.7

13 C&AG's Report paras 3.8–3.10; Qq 24–25, 42–43, 51–53; Ev 25

defences were typically built to withstand the risk of a one-in a hundred year flood, but the Agency estimated that some of the June 2007 floods were in excess of one-in-140 year to one-in-150 year events. Flood water had flowed over barriers such as those near Doncaster and Sheffield. Drainage systems had also been overwhelmed.¹⁴

12. The Agency was researching the extent to which climate change affected the volume of water flowing in rivers and existing defences were being rebuilt to withstand projected flood requirements in 50 years time. Best estimates indicate that the Agency needs to allow for a 20% increase in flow to take account of the predicted change in rainfall pattern. Future flood risk might, however, depend upon the broader management of land in river catchment areas, for example using water storage areas to hold excess water upstream temporarily during periods of heavy rain to protect urban areas.¹⁵

13. At the time of the Committee's previous report on inland flood defences in 2002, the Agency had started to develop catchment flood management plans and later set a target to complete 68 plans by December 2007. These plans are designed to set out the policy for managing flood risk in a catchment over the next 50 to 100 years, taking into account various factors over the long term, such as climate change and property development, so that decisions about construction and maintenance can be made in the context of the catchment as a whole.¹⁶

14. The Agency's intention was that proposed construction projects would be based upon catchment modelling and the policies set out in the river catchment flood management plans. Only six of the catchment plans had been completed by June 2007, however, and the Agency did not expect to complete all plans until the end of 2008. Budget cuts imposed by the Department in 2006–07 were said to have slowed progress on developing plans. Meanwhile, the Agency was continuing with its construction programme. £232 million of work was, for example, planned for the Humber Estuary over the next 25 years. The catchment flood management plans for the Rivers Don, Rother and Ouse in North East England were, however, still being developed and would not be completed until July 2008.¹⁷

15. Existing drainage systems are often put under strain when new housing developments are built, as usually the system is extended to include the additional properties with limited consideration given to the impact on the capacity of the whole drainage system. The adequacy of urban drainage was becoming an increasing concern, particularly with more intense rainfall adding to the risk that drainage systems would be overwhelmed.¹⁸

16. The Agency was involved in a number of pilot projects to develop 25 year drainage plans, but their success would depend upon the collaboration of water companies, local authorities and developers. The Agency was pressing for greater use of sustainable urban drainage systems in its discussions with planners and developers, for example, using permeable concrete and creating water holding areas so that water could be contained

14 Qq 2–4, 27

15 Qq 2, 4, 27–30, 36–37, 44

16 C&AG's Report, para 2.24

17 C&AG's Report, para 2.24; Appendix 1; Qq 5–8, 29–30, 37, 51–52, 67

18 Qq 32, 36, 38

without entering the drains and causing flash flooding. The difficulty with these systems was agreeing who would maintain them in the future. The Agency pointed out that none of the proposals in the White Paper on Planning for a Sustainable Future, published in May 2007, specifically addressed flood risk or sustainable drainage systems. The White paper did, though, propose a more strategic, clearer and focused national policy framework. Planning Policy Statement 1—Delivering Sustainable Development, was central to the paper and gave policy support to sustainable urban drainage systems.¹⁹

19 Qq 32–33, 36–38; Ev 22; Planning for a Sustainable Future White Paper, CM 7120

2 Monitoring and maintaining the standard of existing flood defence systems

17. The Agency's National Flood and Coastal Defence Database indicates that there are 24,000 miles of flood defences and 46,000 flood defence structures protecting properties in England. The substantial increase compared to 2001 (when there were 11,000 miles of defences and 23,000 structures), was due to the inclusion of coastal defences, better record keeping, and the transfer of critical ordinary watercourses from local authority and internal drainage board control. The Agency regularly assessed the condition of flood defences by visual inspection and classified each defence as:

- **Very good:** Cosmetic defects which will have no effect on performance.
- **Good:** Minor defects which will not reduce the performance of the asset.
- **Fair:** Defects that could reduce the performance of the asset.
- **Poor:** Defects that would significantly reduce the performance of the asset; further investigation required.
- **Very poor:** Severe defects resulting in complete performance failure.²⁰

18. 5% of linear defences and 8% of structures remained in very poor condition in April 2007, a proportion similar to when this Committee last reported on this issue in 2002, although the total number of defences and structures has increased considerably over this time. The Agency's records indicated that assets on critical ordinary watercourses acquired from local authorities and internal drainage boards had been generally in a poorer condition than other flood defences. There is, however, an absence of reliable inspection data from the time when responsibility for their maintenance was transferred to the Agency, which means that it is not clear to what extent the transfer is the reason for the largely unchanged proportion of defences in a very poor condition.²¹

19. Since the Committee's report in 2002, the Agency had moved towards a risk-based approach to setting target conditions for its flood defence assets and aimed to set target conditions for each asset so as to achieve a balance between the costs of maintaining the condition of an asset and the risk of its failure. The target condition for individual assets varies depending on the consequences of failure. Where the consequence of failure is low, such as a defence protecting poor quality agricultural land, the target condition could be as low as fair or even poor. The Agency had also assigned assets to flood risk management systems, which are groups of assets protecting a particular area from flooding.²²

20 C&AG's Report, paras 2.1–2.2

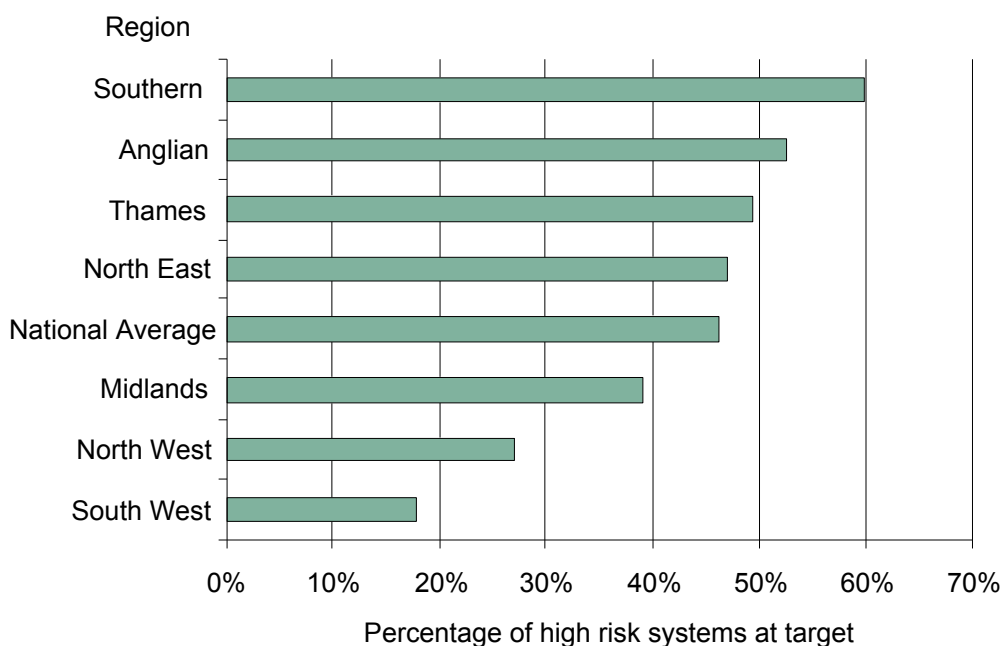
21 Qq 14–19; C&AG's Report, paras 2.4–2.5

22 Qq 19–20, 93–96, 107; C&AG's Report, para 2.3

20. The Agency aimed to maintain 63% of flood defence systems in a target condition in 2006–07 but failed to meet this target.²³ On the basis of the estimates from the Agency’s area managers, only 46% of high risk defence systems, which protect major risk areas such as towns and cities, were in their target condition (see **Figure 3**). According to the Agency’s review of the autumn 2000 floods, less than 1% of flooding during that event was due to failure of defences. The Agency suggested that the target condition of some defences might therefore be over-specified.²⁴

21. Nevertheless, the Agency’s reports from its area managers indicate that it had maintained a much higher proportion of low risk systems (71%) and medium risk systems (62%) at their target condition. It is questionable therefore whether the Agency prioritises its maintenance work effectively. Two of the Agency’s seven regions in England (North East and Southern Regions) spent less than 50% of maintenance expenditure on high risk flood defence systems and the average spending on high risk systems by regions across the country was only 55% (see **Figure 4**). A further 27% of maintenance expenditure had been on non-system specific work, but in the absence of any reliable evidence, the Agency could not show that the additional resources were devoted solely to high risk systems.²⁵

Figure 3: Percentage of high risk systems at target condition in 2007



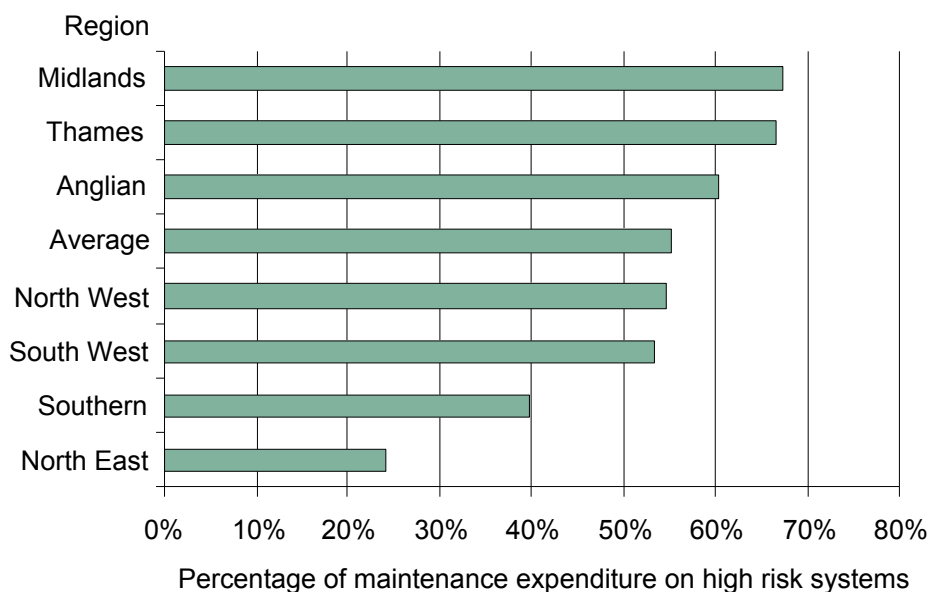
Source : National Audit Office analysis of Environment Agency data

23 The assets in a system are inter-dependent and a system meets its target condition only if at least 95% of all assets in the system meet their own target standard and no asset is more than one grade away from its target standard.

24 C&AG’s Report, paras 2.3, 2.7, 3.20; Qq. 22,

25 C&AG’s Report, paras 2.9–2.10 ; Figure 11; Qq 71–74

Figure 4: Proportion of maintenance expenditure on high risk flood defence systems in Environment Agency regions in England in 2005–06 and 2006–07



Source : National Audit Office analysis of Environment Agency data

22. The Agency considered that the large proportion of resources devoted to lower risk flood defence systems was partly due to historical funding arrangements. In 2004–05, the previous funding mechanism of capital grants on a scheme by scheme basis combined with levies on local authorities raised by the Regional Flood Defence Committees had been replaced by a single grant in aid from the Department for Environment, Food and Rural Affairs. Since then, the Agency had started to move towards prioritising maintenance nationally based on risk and had sought to divert a greater proportion of maintenance work towards high risk systems. The proportion of planned expenditure on low risk systems in 2007–08 had reduced to 8% of the maintenance budget, with 18% on medium risk and 74% on high risk.²⁶

23. The Agency estimated that an additional £150 million a year is needed to bring flood defence systems up to their target condition. On 2 July 2007, the Secretary of State for Environment, Food and Rural Affairs announced that by 2010–11, total expenditure on flood risk management would rise to £800 million. There is still scope to improve the cost effectiveness of the Agency’s maintenance work. The Agency was not able to show that its maintenance teams were deployed efficiently or that they focused their resources on high risk flood defence systems.²⁷

24. The Agency’s asset database should provide a national picture of the state of flood defences, but it is cumbersome to use and can be difficult to extract management data from easily. The database could not handle reports of more than 300 defences at a time. Only 80 local authorities use the database to monitor the state of their non-main river assets. The Agency’s inspectors use the database to record inspection results, but local managers have to rely on paper based records of maintenance work which would need to be reconciled to

26 Qq 21, 68, 111, 117; C&AG’s Report, para 2.11; Ev 17

27 C&AG’s Report, para 42.17; Oral Statement to the House by the Secretary of State, updated statement on flooding in England, 2 July 2007; Qq 71–74, 97–98

data on the computer system in order to check whether problems identified during an inspection had been remedied.²⁸

25. Some 9,000 miles (38%) of linear defences and 29,000 flood defence structures (63%) are owned and maintained by third parties. Many such parties are private land-owners, who have properties on the edge of rivers which form part of the flood defence for an area. The Agency inspected all such assets, but did not necessarily inform the owner of any defects which its visits identified. The Thames River (Prevention of Floods) Act 1879 to 1962 enabled the Agency to compel owners on the River Thames to remedy faults identified. The Agency had not, however, determined whether similar statutory powers would be effective elsewhere in the country. The Agency was nevertheless implementing new procedures to notify third party owners, where they could be identified. The Agency planned to put pressure on third parties to comply.²⁹

28 Qq 9, 75, 105–106, 138; C&AG's Report, paras 2.13–2.15

29 Qq 69–70, 130–133; C&AG's Report, paras 2.6–2.8

Formal Minutes

Monday 10 December 2007

Members present:

Mr Edward Leigh, in the Chair

Mr Richard Bacon
Mr Ian Davidson
Mr Philip Dunne

Mr Austin Mitchell
Dr John Pugh
Mr Alan Williams

Draft Report (*Environment Agency: Building and maintaining river and coastal flood defences in England*), proposed by the Chairman, brought up and read.

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

Paragraphs 1 to 25 read and agreed to.

Conclusions and recommendations read and agreed to.

Summary read and agreed to.

Resolved, That the Report be the Fourth 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.

[Adjourned until Wednesday 12 December at 3.30 pm.]

Witnesses

Wednesday 27 June 2007

Page

Baroness Young of Old Scone, a Member of the House of Lords, Chief Executive, **Dr David P F King**, Director of Water Management, **Mr Tim Kersley**, Head of Asset Management and **Mr David Rooke**, Head of Flood Risk Management, Environment Agency

Ev 1

List of written evidence

Environment Agency

Ev 18

List of Reports from the Committee of Public Accounts 2007–08

First Report	Department for International Development: Tackling rural poverty in developing countries	HC 172
Second Report	Department of Health: Prescribing costs in primary care	HC 173
Third Report	Building for the future: Sustainable construction and refurbishment on the government estate	HC 174
Fourth Report	Environment Agency: Building and maintaining river and coastal flood defences in England	HC 175

Oral evidence

Taken before the Committee of Public Accounts

on Wednesday 27 June 2007

Members present:

Mr Edward Leigh, in the Chair

Mr Richard Bacon
Mr David Curry
Mr Ian Davidson
Mr Philip Dunne

Dr John Pugh
Mr Alan Williams
Mr Iain Wright

Sir John Bourn KCB, Comptroller and Auditor General and Mr Philip Gibby, Director, National Audit Office, were in attendance and gave oral evidence.

Mr Marius Gallaher, Alternate Treasury Officer of Accounts, HM Treasury, was in attendance.

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL

BUILDING AND MAINTAINING RIVER AND COASTAL FLOOD DEFENCES IN ENGLAND (HC 528)

Witnesses: **Baroness Young of Old Scone**, a Member of the House of Lords, Chief Executive, **Dr David P F King**, Director of Water Management, **Mr Tim Kersley**, Head of Asset Management and **Mr David Rooke**, Head of Flood Risk Management, Environment Agency, gave evidence.

Q1 Chairman: Good afternoon. Welcome to the Committee of Public Accounts where today our hearing fortuitously is on the Comptroller and Auditor General's Report, *Building and maintaining river and coastal flood defences in England*. We welcome back to our Committee Baroness Young of Old Scone, who is Chief Executive of the Environment Agency, and David King, who is Head of Water Management at the Agency. Would you like to introduce your other colleagues?

Baroness Young of Old Scone: David Rooke is our Head of Flood Risk Management; we have brought him along today because of the current flood emergency. Tim Kersley is our Head of Asset Management.

Q2 Chairman: You can probably confirm this, but half an hour ago, according to the BBC, the River Don has now broken its banks in Sheffield and the Army has now been called in. Is that right?

Baroness Young of Old Scone: David may have more up-to-date information than I.

Mr Rooke: Yes Chairman, the River Don is over-topping flood banks as we speak in the Doncaster area and we called in the military this morning to help assure defences which are at risk of failing.

The Committee suspended from 3.35pm to 4.05pm for divisions in the House.

Q3 Chairman: If you recall, I had asked a question about what was happening to the River Don which has broken its banks.

Mr Rooke: As we speak our flood defences in the Doncaster area are over-topping. We are undertaking sand-bagging to minimise that, we are

strengthening a defence that is showing signs of weakness and we have called in the military to assist us in doing that.

Q4 Chairman: So Lady Young, do you think the residents of Sheffield are satisfied with your performance? Given the fact that there were numerous forecasts of heavy rain last week, why did you not take sufficient action in the intervening period to minimise the risk of flooding?

Baroness Young of Old Scone: As far as Sheffield is concerned, the event was an extreme weather event of a sort that has not been seen for many years. Sheffield itself has not previously been a high risk flood area and the sorts of levels we were seeing, which were five to seven feet higher than we had seen before, were going to overwhelm any defence that was there. The combined flooding in Sheffield was partly due to surface water overwhelming the drains, and that has been a common phenomenon across the country, as well as rivers over-topping. We are pleased to say that, as far as we are aware, in Sheffield there were no failures of defences and all of our warnings went out in good time. For all flood defences, we have simply got to say that there will be occasions of these extreme events, and this has been a very extreme event, when no amount of pre-planning or pre-warning will do other than help people remove themselves from the area because, although we can do much to defend people against floods, we cannot prevent those very extreme floods.

Q5 Chairman: The fact remains though that we are talking here about the River Don. Would you like to look please at appendix 1 which you can find on page 28? We had a hearing last on these issues in the year 2000. We made various recommendations and one of

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these recommendations, which we can find on page 20, paragraph 2.24, is: "The Agency commenced the development of Catchment Flood Management Plans in 2001 and aimed to have all 68 plans in England completed by December 2007". Do you see that? That was a direct result of this hearing. Obviously it would have made an enormous difference around the country, if your plans had been ready. If we now go back and look at this appendix 1 on page 28, in the North East, 19, Don/Rother, we can see that the estimated date of approval by the regional director for the catchment flood management plan area for this river is now July 2008. This is in direct contravention of the deadline that you had set yourself of December 2007. Can you please tell me what is actually going on here?

Baroness Young of Old Scone: Firstly, may I say that we are on a trajectory now to complete these plans by the end of 2008 and we think we may complete them earlier. In fact, even if these plans had been complete, that would not have prevented much of the flooding that is happening at the moment.

Q6 Chairman: Well you say that, but the fact is that this was a specific recommendation made to this Committee which you accepted and we see that there has been slippage in other areas as well. As it happens, I have given you a direct reference to the River Don. You have failed, have you not, in the management of your Agency to fulfil a specific target which you set yourself? It may be that this is an extreme weather condition but I cannot believe that things would not have been much better, if these catchment management plans had been up to speed. After all, we are now talking about a Committee Report in 2002. We are now 2007. It really beggars belief in a civilised society that we cannot protect people or even have plans in place.

Baroness Young of Old Scone: Firstly, these plans are very complex and in 2001 we had only just begun the process. The need to consult with a wide variety of stakeholders and to take communities with us has proved much more time consuming than we had anticipated.

Q7 Chairman: I am sure you need to consult, but we are talking about plans and promises which were made six years ago.

Baroness Young of Old Scone: As we worked through the initial plans, we discovered that the timescales were longer than we wanted. We have now reviewed that and have looked at ways of reducing the timescales. The second issue was, of course, that one of the casualties of our cuts mid-year last year was the pace at which we were able to do catchment flood management plans. Thirdly, even if we had completed those plans, the next hurdle is drawing up strategies below those and schemes. The biggest brake on adequate protection for those communities who do not have schemes at the moment is not whether we have got schemes to come forward, but whether we can fund them. We already have a large number of schemes in the pipeline which are all fully worked up and very cost effective but simply cannot be funded.

Q8 Chairman: Talking of funding Lady Young, would you like to look at paragraph 1.8 which you can find on page 12? "Expenditure by the Agency on flood risk management has increased from £303 million in 2001-02 to £483 million in 2006-07. The increased funding was announced by the Government in the 2002 Spending Review to improve flood defences". This is a very considerable improvement in your funding and because of shortcomings in your management of this Agency, this extra funding, which was given to you by the Treasury, way in excess of many other agencies, apparently has not delivered the goods.

Baroness Young of Old Scone: May I refer the Committee to table 6 on page 13 which describes the profile of the funding. In fact, though it was announced in 2001-02 we really did not begin to see significant uplift in funding until quite considerably later. There was some uplift in 2002-03 and then it bumped along before we got the big uplift in 2005-06. We have delivered a huge amount with that funding. We have improved the standard protection for 100,000 houses between 2003-04 and 2005-06. We are going to exceed the target of 85,000 properties in the period 2005-08. We have mapped all of the area of England and Wales more effectively in order to be able to predict the probability of flooding and we now are able to give very detailed information to householders free on our website.

Q9 Chairman: The fact remains, as this Report shows, and there may not be time for me to ask you in detail all of these points but they are in the Report, that there are shortcomings in your management systems, there are shortcomings in your allocation of funds between areas, there are shortcomings in terms of budgeting for cost and maintenance staff, there are shortcomings in terms of the lifespan of assets and there are shortcomings in terms of construction costs. All these shortcomings are detailed in the Report. The fact remains and it is there, you yourself have referred to figure 6 as I have referred to paragraph 1.8, that you have had considerable improvement in your funding and because of these shortcomings in your own Agency, for which you are responsible as Accounting Officer, you have not delivered protection for the British people.

Baroness Young of Old Scone: We have delivered a considerable amount of protection. We have exceeded all of the targets set to us by Defra in terms of our mapping, our warning and our construction of flood defences. We are well on the way to improving the quality of our defences, though we are learning more about the quality that is necessary to withstand floods and to give us a fit-for-purpose service. Our management systems are good, our asset database is now fit for purpose and is able to deliver a wide range of information and our construction and procurement was indeed praised by the National Audit Office in a previous Report.

Q10 Chairman: Are you satisfied with the condition of the dam on the Ulley Reservoir? Is this not a graphic illustration of what has gone wrong and of the concerns that we raised in 2001?

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Mr Rooke: The situation is stable at the Ulley dam at the moment. The emergency services and professional engineers appointed by the owners of the dam, Rotherham Borough Council, are on site and they are taking emergency measures to try to draw down the reservoir water levels to make it even safer. Of course, there is still a significant risk that the dam may fail and there is still a risk that the rain that is forecast for the weekend will exacerbate the situation.

Q11 Chairman: I understand that you are not directly responsible for this reservoir, is that right?

Mr Rooke: No, we are not.

Q12 Chairman: But you are responsible for regulating and keeping an eye on the local authority. If there are any weaknesses, or if there had been any weaknesses in the reservoir, should you not have done more to do your job and to ensure this reservoir was up to scratch?

Mr Rooke: The reservoir is compliant with the Reservoirs Act, the legislation that governs this area.

Q13 Chairman: It is apparently being pumped out at the moment. Why did you not think of starting to do this last week?

Mr Rooke: The event was so severe that it appears to have over-topped the face of the dam and caused damage to the downstream face.

Q14 Chairman: Lady Young, let us go down to your management of this Agency. We made specific recommendations. We would have expected a marked improvement in flood defences. Let us look at figure 9, page 15. You can see the figure relates to linear defences and structures. You are now responsible for a greater length of defences, but if we look at the end of those columns, that is the linear defences in poor or very poor condition, we see, compared with 2000 and 2007, 500 miles in 2000, 1,900 miles in 2007. You are actually going backwards, are you not?

Baroness Young of Old Scone: We have, of course, got in these two graphs a very different set of assets. We have taken on a considerable number of assets, we have learned a lot more about our own assets, so we now are in a much better position to be able to take a risk-based approach to asset condition.

Q15 Chairman: I am sorry, these figures relate to 2002 and 2007. You are actually going backwards. It is not just linear defences; you have made no progress either in terms of the overall percentage in poor/very poor condition in structures. What have you been doing?

Baroness Young of Old Scone: If, however, you take the absolute length of the asset or the numbers of assets the two columns cover, miles of assets and numbers of structures, you can see that there is more blue on each occasion.

Q16 Chairman: I do not know what that means.

Baroness Young of Old Scone: As a proportion it is not improving.

Q17 Chairman: What does: "there is more blue on each occasion" mean?

Baroness Young of Old Scone: We have more length of asset and more numbers of structures in better condition.

Q18 Chairman: I did not ask that question. What the public are concerned with is why, under your management of this Agency, comparing 2007 and 2000, you are actually going backwards? In terms of linear defences, there are more miles now in poor or very poor condition. This is a severe indictment of your management of this Agency.

Baroness Young of Old Scone: The number of assets we have under our charge is now more than double the number of assets we had then. We have taken on others from other operators.

Q19 Chairman: Well it rather begs the question why you have, if you are not capable of running them.

Baroness Young of Old Scone: We have also learned considerably about our assets and we no longer count asset condition in the way that it is done in table 9. We now look at whole asset systems so that we can see how the system operates together which may mean that some elements of the system are in poorer condition but they may be fit for purpose because they are not a crucial part of that system.

Q20 Chairman: What does the NAO say to that point?

Mr Gibby: This is where we refer to the proportion of high risk flood defence systems and condition. We included this graphic to show a comparison with the previous Report.

Q21 Chairman: Exactly, trying to compare like with like. I thought as much. My last question relates to the northern area which covers the whole of Lincolnshire and Cambridgeshire, obviously an area of very high risk. If we look at paragraph 2.9, we can see "The Agency estimates, based on information from its area managers, that 46 % of high risk systems were at target at the end of 2006-07". That still means that there is a very large number of high risk systems which are not in an adequate condition and it is actually higher in my area than the figures given in that Report. Why is this? Why is there still a large number of high risk flood systems that are not in an adequate condition in my area and the areas of colleagues?

Baroness Young of Old Scone: We do have some variation between areas as a result of a number of issues. One is that the historic pattern of spending was decided by regional flood defence committees and raised from local authorities. In some parts of the country, there was a much greater emphasis on new capital build than there was on maintenance and that is an issue we are now trying to resolve since we achieved a single block grant for funding three years ago, which allows us to move money more flexibly between capital and maintenance and between parts of the country.

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Q22 Chairman: Are you prepared to give a list of the systems in the northern area and Lincolnshire and Cambridgeshire which are not in an adequate condition?

Baroness Young of Old Scone: We would certainly be happy to provide you with an account of where we believe the areas of risk are.¹ One of the other things we are achieving, as a result of our improved asset management process, is an understanding of exactly what the nature of risk is. We have a large science programme trying to investigate that and also the experience we have, now that we have a better asset management process, is that where high risk systems are not in adequate condition, we may actually be over-specifying the condition and they could well be fit for purpose at a lower condition. In some parts of the country that is the case, though not in the two areas that you quote. We would certainly be very happy to talk you through all of the assets. Unfortunately, if we provide you with a list of the assets in bald terms as it were, it really gives no feel for whether, in fact, they represent a risk for the public. In our view, if you look at both the pattern of floods that we have experienced over the last few years and indeed this flood, a very, very small proportion, less than 1% of all floods are caused by asset failure. Even though these figures seem to imply that the quality of assets is not adequate, in practice asset failure is not what causes floods and therefore we believe that we have more to find out about the relationship between asset—

Q23 Chairman: The figure I was looking for in the northern area is risk category not on target, 52 systems, that is 51%. My last question then to Lady Young. In view of the fact that you have manifestly failed to carry out the promises given to this Committee, do you think the time has come to consider your own position?

Baroness Young of Old Scone: Chairman, I am immensely proud of what we have achieved for flood risk management over the last seven years. If we have one major problem, it is simply that there is much more we could do if we had adequate funding. We juggle day in day out and make very hard choices between maintenance and new schemes for communities that have no defences. My heart goes out to the people we have seen on the television over the last two, three, four days. We believe we can do more. We have become much more efficient, we are praised for our capital programme processes and our procurement and I would not consider considering my position, because I am proud of what we have done.

Q24 Mr Curry: How long is it on average between agreement on a scheme, a scheme has been designed, the plans are in place, everything is awaiting the bulldozers as it were, and work actually starting on those schemes?

Baroness Young of Old Scone: It will vary dramatically and it has lengthened considerably in the last two years as a result of our ability to direct

funds to different parts of the country and to make a more flexible allocation between maintenance and capital. I do not know whether David wants to comment on average, how long between approval and going ahead on the ground, but the problem at the moment is that we have a number of schemes that have been worked up and insufficient funding for them to go ahead and that is something that we want to avoid for the future. It has partly been caused by the squeeze; it has partly been caused by the fact that as we get our needs-based programme further developed, we understand more clearly how many communities could benefit from cost effective schemes. The one thing we must not do is work up too many schemes that then cannot be funded because we raise the hopes of communities that they are going to get some solution, as indeed has happened in your own community.

Q25 Mr Curry: Thank you for giving me the lead-in on that. In Ripon we had a serious flood in 2000 and were badly flooded again a week ago, though the epicentre was a sufficient number of miles east to spare us *nobbut just*, as we say in Yorkshire, this time. Then a flood defence scheme was agreed and all the plans are in place, we have the points as well so we are over the magic 30 out of 44, or whatever the figure is, but each time for three years in a row that has been bumped down the list of priorities and all the houses which were flooded in 2000 were of course flooded again just a week ago. You can understand the frustration of communities when they feel the problem has been solved, they are told that the problem is about to be solved and then it does not happen. Money I know, but what can we do to make sure that communities are not left with this sort of sense of frustration and increasing anger?

Baroness Young of Old Scone: Our plan very much for the future is to try to tailor the scale and pace at which we work schemes up to the amount of funding that is likely to be available in the future. At the moment we have too many schemes coming to a point where communities have hopes raised and not enough money to be able to fund them. There are things that we can do to help improve our efficiency and get more bangs for our buck in terms of our procurement process. There is always more we can do for that but that will not bridge the gap between what we think is needed to do a decent job for both maintenance and capital. About half a billion pounds a year at the moment. We believe and many external commentators have said that the more appropriate figure is somewhere around three quarters of a billion and then a review beyond that as to the impacts of climate change. There is a big, big gap and I am very sorry about what has happened with the Ripon scheme. My understanding was that it had a priority score of 16. At the moment, we are not funding anything below 25, so it would be quite a long way back in the queue, alas.

Q26 Mr Curry: On the little sheet which the National Audit Office has given us I think that scheme does actually count in the top league as a matter of fact.

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Baroness Young of Old Scone: May we come back to you on that priority?²

Q27 Mr Curry: You may; absolutely. I should be delighted, if you would come back to me because everybody else is coming back to me, so you might as well join in. If you were to take the extreme weather event, what we have just seen in South Yorkshire, and put that into your predictive model, what would it tell you about how much else is at risk?

Baroness Young of Old Scone: I shall ask the technical experts in a moment, but at the moment the Government's decision by Defra, who set our standards, is that we aim to protect populations against a one-in-a-100-year event. The events that we have been seeing over the last few days have been in excess of one-in-140-year to one-in-150-year events. If we were to protect to a level of one in 150, we would probably be at risk at the moment of over-investing in flood risk management.

Q28 Mr Curry: But if we believe everything we have been told about climate change and we get different weather, we may not get different weather patterns. As I understand it the one thing which is missing is the pattern, which creates much more of a problem, but, if we believe all we are being told about it, then 1 in 100 years may no longer be a realistic yardstick. What would be a realistic yard stick and what can you do about your model to try to build into it scenarios which reflect what has now become common debate about climate change?

Baroness Young of Old Scone: We already do take account of potential climate change issues because many of our defences particularly are being built for 50 years forward. David or Tim may want to talk about what we are doing on the climate change predictions.

Mr Kersley: Just to reinforce that we have a science programme looking at the extent to which climate change will increase the flow, which is the amount of water in the rivers. The best evidence on that at the moment is that we should carry out sensitivity tests on all of our works to factor in a 20% increase in flow to take account of the predicted change in rainfall pattern that is foreseeable. I do not know whether David wants to come in to talk about our ability to have that foresight. Our new capital schemes factor in the extent to which the 20% would make a difference and, where it is appropriate, we actually invest and ensure that our assets accommodate the changes that would be necessary to contend with that flow.

Baroness Young of Old Scone: In terms of the longer term, not just on the riverine systems, but particularly for the coastal systems because the big risk in the coasts is that a big storm surge coming down the east coast or along the south coast could potentially be very, very damaging both economically and in terms

of loss of life, we do need to begin to think about whether we are seeing a permanent shift in weather patterns as a result of climate change.

Q29 Mr Curry: To what extent is government policy joined-up in terms of the range of options to mitigate extreme weather conditions, for example, the soft defence as opposed to the hard defences, allowing areas to flood, dealing with issues in agriculture where vehicles have compacted ground or areas on uplands where peat has been removed for various purposes and no longer then serves its purpose as a sponge to absorb the water? Is there scope for the agri-environmental schemes which are now very much all the rage and for which farmers are paying an increasing amount in modulation? Have they been directed towards flood containment in any way up to now?

Baroness Young of Old Scone: We do, through our catchment food management plans and strategies and indeed through the work we are doing on the water framework directive, look at those issues of broader management of land around catchments as part of a flood risk management approach. At the moment the agri-environmental schemes are so much in demand for a whole variety of outcomes, biodiversity, access, recreation, environmental quality, water quality, that they are heavily pressurised. We are certainly in discussion with Natural England about how the things that we need delivered through the agri-environmental funding, which include flood risk management and containment of water up in catchments, can be taken account of in the agri-environmental funding.

Q30 Mr Curry: I remember when I chaired the Environment Committee we did a report into the water framework directive and at that stage we said clearly there are implications for agriculture of run-offs into the waters and the other agri-environmental schemes could well be designed in order to give farmers the incentive for the sort of behaviour which would be helpful. That has not happened yet, has it? You are thinking about it and there are other issues, but I am not aware the agri-environmental schemes have yet been designed to take account of that.

Baroness Young of Old Scone: We have had some use of agri-environmental schemes, not particularly in terms of upstream catchments, but in terms of flood storage areas and in terms of softer defences on the coast. I do not know whether David wants to talk about upstream.

Dr King: What is worth mentioning is that the Government's strategic framework, which was published about two years ago, called *Making Space for Water* very much enshrines the principle that you have just laid out which is about looking for more sustainable solutions and making better use of land management, setback, *et cetera*. The actual framework is there and there has been a number of pilots but those pilots have always been on quite a small scale. It is when you move from a small scale to a catchment that it is much more difficult.

² *Note by witness:* We have investigated the likelihood and consequences of flooding at Ripon. This work has been undertaken rigorously and in accordance with our nationally consistent appraisal guidance. From this we have established the economic, environmental and social benefits that would be delivered from implementing a flood relief scheme.

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Mr Rooke: We have a research project with the Government on the River Skell in your own constituency which is looking at these very issues.

Q31 Mr Curry: That is the one which flooded.

Mr Rooke: Yes.

Q32 Mr Curry: Let us move from farming to concrete, shall we? Clearly, the more areas are built up—and we are already being told that I ought to store the water which comes off my roof and use it up to flush the loos, et cetera—the greater must be the amount of water which runs off from a major supermarket’s car park and other installations, all of which is going into drains as opposed to being perhaps absorbed by the ground. On top of that, we have the arguments about houses which are being built on the flood plain and we all know about the huge numbers which are now being spoken of for places like the Thames Gateway, often on areas which might have been brownfield, but they were not developed sites in the past. What can be done to deal with those issues, either in planning terms or the powers you can exercise in the planning process? What is the situation as far as the volume of house-building is concerned in relation to the situation, both in terms of water need and in terms of flooding?

Baroness Young of Old Scone: We have been working very hard with the Department for Communities and Local Government over the proposition for additional housing and, particularly in the Gateway, with the Gateway authorities, but also in the growth zones and with the Prime Minister’s new eco-towns to make sure that they are both located and designed in ways that are as efficient as possible in terms of water and do not increase flood risk and on occasions may even reduce flood risk. We are more successful now in preventing inappropriate development on the flood plain than we have ever been. A very small number of developments go ahead against our advice these days, but if you look at the television pictures over the last week, it is quite clear to see that many of the places that are flooding are industrial and commercial developments and housing developments that have taken place in the 1960s, 1970s and 1980s, where there is a considerable legacy now of inappropriate development in the flood plain. In terms of what we call sustainable urban drainage systems, trying to make sure, if there is concrete, that it is permeable, that we have water holding areas to prevent it from running straight off into the drains and causing flash flooding, that is certainly something that we are pressing in all of the areas where we are working with planners and developers. The difficulty with some of the sustainable urban drainage systems is that they do need maintenance for the future and they need to be adopted by somebody once they have been created. We can persuade developers to put them in, but then we need to be able to get local authorities to say that they will maintain them, or indeed water companies as part of the sewerage systems. That is something that we have not yet got a policy way forward. I know we have a number of both research projects and pilots on this at the moment, but we do need to make progress on this issue of adoption.

Q33 Mr Curry: We had a planning White Paper recently and we will have planning legislation presumably quite soon. Are there things which ought to be in that planning document which would address this issue?

Baroness Young of Old Scone: It would certainly be a good idea to try to hijack the document as it goes through and see whether we could get some clarity on this.

Mr Curry: It would be very useful to have a note on that.³

Q34 Dr Pugh: A slightly fatuous question to begin with. How does the Environment Agency define a flood?

Baroness Young of Old Scone: Water out of its normal channel, whether or not it causes damage.

Q35 Dr Pugh: It could in fact be something on the soles of your shoes or it could be up to the bedroom height, it could be either of those things and it would still be a flood on your definition.

Baroness Young of Old Scone: Yes.

Q36 Dr Pugh: In terms of your risk management and your modelling, there is obviously quite a difference between rainfalls: abundant rainfalls on farming lands get absorbed, it is flat, it goes everywhere but it does not actually accumulate in any one spot; in an urban environment where the ground may be hard, the drainage may be poor and there are all sorts of recesses into which it can go. Is your modelling sensitive enough in terms of identifying risk to take that into account? Can you take in those factors in terms of both identifying risk and in terms of committing expenditure?

Baroness Young of Old Scone: We can certainly talk to you about how we do our modelling for our mapping which shows where we anticipate flooding will occur.

Q37 Dr Pugh: The point I am making is that a lot of your mapping is topographical really. That is not informative enough, is it? That does not enable you to predict some of the events happening in Doncaster and Sheffield and Rotherham with any degree of precision.

Baroness Young of Old Scone: Do you want to talk about how we put together a strategy and a capital scheme within it? Looking at a particular area we would take the strategy which looks at a broadish area and within that there would then be individual schemes and those schemes would very carefully model impacts of a variety of things, taking account of the exact topography and the nature of the individual location, to make sure that when we look at a range of options we are assessing what particular events would do to those particular locations.

Q38 Dr Pugh: Within that data, how conversant are you with the capacity of drainage systems in an urban environment? Do you have any information in

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municipal authorities that would enable you to know whether they will sustain some of the events we have seen recently or not?

Mr Rooke: We identified, through the Government's *Making Space for Water* strategy, that urban drainage is a real and a growing issue. In fact the Government's own Foresight Report published in 2004 identified urban drainage as being a big issue, particularly as climate change starts to impact. We have undertaken with Defra a number of pilot studies which are underway across the country to look at this very issue in terms of risks to people living in urban areas. We are going to take the findings from those research pilot projects, analyse them and then come forward with policy proposals to improve policy to deal with this growing issue.

Baroness Young of Old Scone: Our focus primarily historically has been on flooding from the sea and from rivers and in fact in many cases at the moment areas are flooding which are quite remote from rivers and seas which are simply failures of the drainage system to cope. As a result of these pilots we want to try to push forward 25-year drainage plans. At the moment, we have water companies with 25-year water supply plans but no long-term drainage plans. We believe that there needs to be long-term drainage plans which will allow both the water companies and local authorities and developers to anticipate, to plan for the total needs for drainage for an area rather than it all being piecemeal. At the moment, if you turn up with a development proposition for a few houses, you will simply glue yourself onto the end of the drains and there is very little way of taking a strategic look at the moment. These 25-year plans would help very much with that.

Q39 Dr Pugh: Would it be fair to say there has been some refocusing of energy? It says in the Report in front of us that there has not been a major sea flood since 1953, notwithstanding the current threats from global warming and the like, and all the events we have heard of recently tend to be in line, in urban environments and so on, to be riparian and so on. Has there been any redirection of energy and could you give some indication of how you are currently spending your money? How much are you spending on the coast and how much are you spending on protecting people from river flooding?

Baroness Young of Old Scone: Though it is true to say we have not had a major flood since the one in 1953, we have had floods on the coast in a number of places since then and indeed we had a very high storm surge just within the last six months. I personally could not assess the spend on riverain and coastal because we do tend to take a view that we are aiming to get the maximum benefit for our investment rather than have a notional split.

Q40 Dr Pugh: They are not totally disconnected as in some places rivers run into the coast.

Dr King: I do not have a feel but would I would like to say is that it would be totally wrong to think that the coast was lower risk. If you look at the Government's Foresight study, the two things that it is telling you is that risk will increase against the background of sea

level rise and climate change and in some places, depending on the emissions scenario, it could be as much as 25-fold. The issue about the coast is that if you get a tidal surge, it can be much more devastating than the floods we have seen over the last few days.

Q41 Dr Pugh: Obviously it would be very interesting for this Committee to see how much you are spending protecting us against rivers and how much you are spending protecting us against the sea and also where the floods actually occur, to see whether you are spending money in the most pertinent places.

Baroness Young of Old Scone: I am not sure we would want simply to follow floods. One of the problems that we had in the past was that schemes tended to take place where floods had been. They had flooded and therefore a scheme was done. What we are trying to do now is to assess risk and sometimes risk is not what is likely to be happening, but what the results would be if it did happen. On the coast the likelihood may be slightly lower at the moment, but if it does happen, it has a heck of an impact and it is much more far reaching.⁴

Q42 Dr Pugh: I looked at the model available to us on page 24 of the NAO Report where you have a priority score system with a maximum score of 44 points, obviously for the most vulnerable places. I understand what factors that system is made up of, but is there a kind of situation you can get into where you look at the score for a place, you look at the cost of securing that place against flooding and you decide that it is not worth doing? Or do you simply always act like King Canute and try to preserve every single stretch of the current British coastline? The reason why I say that is because the Communities and Local Government Select Committee recently produced a Report on coastal towns and they did suggest there were certain situations where essentially one had to call it a day rather than throw more and more money into protecting the coast against the sea. Are there places in your model that simply would not be value for money?

Baroness Young of Old Scone: Certainly there will be places where either the scheme does not achieve a sufficient priority score or is not value for money that

⁴ *Note by witness:* Over the last five years, we have spent around one third of our capital investment on sea defences, the remainder being spent on river and estuarine defences.

There is no firm distinction between expenditure on sea flooding and river flooding. This is because most of the low lying areas around the coast are at risk from a combination of sea flooding and river flooding. For example the Norfolk Broads are at risk from flooding through extreme sea water levels flooding up river or breaching sea defences and also also susceptible to flooding from fluvial events alone.

Notwithstanding the difficulty in differentiating between areas of flood risk through Sea and River we do model risk on a national basis and are able to confirm the following proportion of properties at risk as follows:

48.5% at risk from sea flooding;

3.5% at risk from both sea and river flooding;

48% at risk from river flooding.

Since before the 2000 major floods, the majority of actual flooding has been inland, with a substantial proportion from urban drainage systems rather than rivers. It is estimated that 80% of the current floods are as a result of urban drainage system failure.

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would lead us to believe that we simply were not going to provide a scheme. Indeed, as climate change increases, we will be looking particularly at some of the smaller coastal settlements as part of the shoreline management planning process which is run by local authorities.

Q43 Dr Pugh: You do not have a formula of points per pound and then it is not worth doing?

Baroness Young of Old Scone: No, it would be a case of looking at coastal stretches because quite often individual locations have to be seen in the context of the stretch as a whole because you cannot simply say you are going to abandon this bit but hold the line either side of it. Clearly it has to be done to reflect the coastal processes and the morphology and the shoreline management plan process has gone through its first cycle and is now moving on to its second cycle and that process will be the strategic look at the coast.

Q44 Dr Pugh: Just following on a point Mr Curry made earlier, there is a danger of looking at the past and assuming that the future is going to be very similar when in fact there is little reason to think that will be the case. However, there are certain areas that are graded as flood risk by the Environment Agency that have not had a flood for a very, very long time; historical records show that there has not been much incidence of trouble. Are you not then guilty in that circumstance of a kind of blight being put upon that area, putting their insurance premiums up, putting the cost of their houses down on the basis simply of topographical evidence which is rather crude?

Dr King: The first point I would make is that we can never stop floods, we can only mitigate against them and if you look at what has happened over the last few days, Sheffield has been a good example. Sheffield has certainly not seen the likes of that flood in living memory and unfortunately it is the nature of probability that it could happen again within a short timescale. It may be a one-in-200-year event, but that does not stop us from having another one-in-200-year event next week or the week after.

Q45 Dr Pugh: Would the lack of historical evidence not indicate to you a flaw in your modelling, that you had missed out something, you had forgotten something about the terrain or whatever? You back your maps against experience of centuries.

Baroness Young of Old Scone: We have a post-event review of all floods, a lessons-learned process, which allows us to look at what did happen and to take the data from the floods that happened and insert them back into our models so that we get a better perception of whether our risk assessment was right or not. All of the information from floods will be fed back in to allow that process to get refined more. There will be some areas where, quite frankly, the risk is so high, the probability may not be high but the impact is so high, that that means we do have to take pretty strenuous measures, for example, in London where we protect somewhere between a one-in-a-1,000-year and one-in-2,000-year event because of the economic value in the capital. At one stage when

we were looking at the future of London's flood defences for the sake of completeness we looked at a *Move London* option, but we had to discount it very rapidly because clearly economic issues were huge.

Q46 Mr Dunne: Lady Young, may I ask you to turn to page 13 and look at table 6 which shows that expenditure by the Agency was static for the first five years out of the last ten and then rose and yet last year declined significantly; looking at the table roughly £70 million. Could you confirm whether that was the case and explain why?

Baroness Young of Old Scone: Last year we had some reduction in our spending as a result of a short-term squeeze from Defra mid-year cuts in our budget, but that did not account for the totality. The previous year had been a very good year because in the process of changing the system for accountability for flood risk management the Government gave us block grant rather than it being raised from local authorities as was the case in the past. Many of the balances that the local flood defence committees had accrued were spent on schemes so they were put into useful use and the balances inflated the 2005-06 provision.

Q47 Mr Dunne: What is your budget for the current year?

Baroness Young of Old Scone: For 2007-08 it is roughly £500 million.

Q48 Mr Dunne: It is roughly the same as last year.

Baroness Young of Old Scone: Yes. We had a reinstatement of our Defra cuts to a small extent, but not totally.

Q49 Mr Dunne: I was just going to ask you about the Defra cuts and the extent to which Defra has sought savings across agencies. Am I right in saying it was £15 million last year?

Baroness Young of Old Scone: Yes.

Q50 Mr Dunne: How much of that has been restored since?

Baroness Young of Old Scone: £6 million.

Q51 Mr Dunne: Does that impact on capital expenditure by the Agency or just on revenue?

Baroness Young of Old Scone: The theory was that we were to protect capital and simply take it from revenue, but in reality it did mean that some of the precursors to capital expenditure had to slow down, things like the catchment flood management plans and some of the work-up of schemes for the pipeline. That is no hardship because we have so many schemes in the pipeline that we cannot fund them anyway.

Q52 Mr Dunne: Can you confirm to the Committee today that some of the feasibility studies, in particular in the York/Humber area, were cut as a result of the Defra cuts?

Mr Rooke: We did slow down our production of catchment flood management funds.

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Q53 Mr Dunne: Could I ask you to kindly write to the Committee, in particular in relation to York/Humber where the allegation has been made that the Defra cuts did lead to the feasibility cuts applying there, which obviously may have an impact on your ability to remediate the problems that we are seeing there right now?⁵ May I ask you then to turn to page 23 and look at table 15? In paragraph 3.7 the NAO refers to £125 million of funding available for new or improved defences, this is for the current year, but of that funding only some £20.2 million is set aside for new schemes and most of these are schemes which have been in the pipeline for some time. Given that there are only 33 such schemes available, the average expenditure will be of the order of £750,000 both for the urgent and high priority schemes. Do you regard that as remotely adequate for the urgent work that you will be required to undertake in view of current events?

Baroness Young of Old Scone: Our programme of funding has always got a number of schemes ongoing because these are multi-year schemes and because of that high level of expenditure with the balances that we talked about a large number of schemes were going through the programme at this stage. We try to get as many new starts as possible and to leave a modest amount for urgent works and they are truly urgent works where there is danger of something going completely wrong if we do not address it quite quickly. We have taken a view in the past about how much it was necessary to allocate to urgent works. It would be unwise of us to reserve funding for a very unusual event like the one we have had in the last two weeks because we would simply be leaving money fallow.

Q54 Mr Dunne: Does that mean you do not have any contingency funds for emergencies?

Baroness Young of Old Scone: We have the ability to control our programme by starts, so there will be a number of starts and a number of stages in each of these many schemes that we can use to slow down or speed up. If we did have a huge amount of remedial work to do as a result of this flood, and I am sure we will have a large amount of remedial work to do, we will have to slow down some of the capital programme, but we can do that.

Q55 Mr Dunne: You can to the extent of £20 million of the uncommitted schemes.

Baroness Young of Old Scone: There are ways in which, with the phasing of many of our schemes, that we are able to—

Q56 Mr Dunne: Can you confirm whether or not the BBC report that you have applied for £150 million of emergency funding from the Government is correct or not?

⁵ *Note by witness:* The Defra funding cuts had little effect on the Yorkshire RFDC feasibility programme. Two small studies (with a combined cost of £50k) at Borrowby in North Yorkshire, and Ruswarp on the North Yorkshire coast were postponed.

Baroness Young of Old Scone: To my certain knowledge we have not applied for any money for emergency funding. We are not eligible for Bellwin money. We will, once we have assessed the impact of the event, have to look at what remedial work we have to do and at that stage we will be talking to Defra about our budget. However, in their current parlous state I find it difficult to believe that we will get much from them, so it may well be we have to seek Treasury funding. I suspect we will have to swallow quite a large proportion of it from our own resource.

Q57 Mr Dunne: How do you expect to be able to do that? Have you any estimate at this point, ballpark, of how much the current floods are going to cost?

Baroness Young of Old Scone: We are up to the neck, if you will pardon the pun, in just coping with the emergency. The most important thing is to protect property and life at the moment.

Q58 Mr Dunne: I understand. Are you at all involved in allocation of funding under Bellwin? You said you are not eligible yourselves.

Baroness Young of Old Scone: No.

Q59 Mr Dunne: Could I turn to the emergency awareness? On page 32 of the Report there is a reference in section (vi) under “Flood warning and preparedness” that as at 31 March 2006, 78% of households had been offered a suitable flood warning service and the NAO comment is that at that time only 41% were actually even aware that there was this warning service available. Can you give the Committee any update on how many people actually take advantage of the warning service? Do you have a proportion of population that is actually signed up to it?

Dr King: We do have detailed breakdowns. We offer three levels of services depending on the risk involved. For a high risk there is an opportunity for people getting direct warning either through fax, telephone, internet, et cetera. In medium risk bands, there is the opportunity of using loudhailers and sirens. In the low risk it is really about encouraging people to be vigilant and listen to local radio. If you take the high risk, up to about 12 months ago we had about 120,000 people receiving direct warning. Because of the introduction of the new system we have grown that now to nearly 300,000 people receiving direct warning in a variety of different forms.

Q60 Mr Dunne: I am sure all Members of Parliament would be keen to encourage take-up of awareness amongst the general population. Undoubtedly in my constituency, which has suffered particularly badly, I anticipate there will be an increased interest in this service. I would urge you to do all you can to publicise it. Could I also point out that in connection with this week’s events, in Ludlow I understand that the warning code was issued at 12:20, 20 minutes after midnight? Of course many of the means of communication would not actually be of much use; not many people are on their emails at 20 past

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midnight, unlike many MPs who are. I just urge you to reconsider your cover in high risk areas at times of the night like that. Just turning to the Severn Basin, I am aware from appendix 1 that you have a pilot plan now completed and approved for the Severn Basin and that also the responsibility was taken over for critical ordinary water courses for the Severn and its tributaries. Are you aware whether the River Teme and the River Clun were a part of your responsibility or not?

Baroness Young of Old Scone: The River Teme certainly is.

Q61 Mr Dunne: Could I ask you to confirm that to me? I believe the Clun is now part of your responsibility, but I would like you to confirm that⁶. If so, what does this mean in relation to responsibility for clean-up costs where you are responsible for maintaining the ordinary water course and flooding occurs? Does it have any impact?

Baroness Young of Old Scone: Is this clean-up of the floods?

Q62 Mr Dunne: The impact of the floods for waters where you have responsibility.

Baroness Young of Old Scone: We do not have any responsibility.

Q63 Mr Dunne: You have no responsibility?

Baroness Young of Old Scone: No responsibility.

Q64 Mr Dunne: We have had a useful note from the NAO which indicates that of the high risk category defence systems 46% are not at target, that is 18 individual systems. What are you proposing to do about those systems, particularly where there has been evidence, as this week and last week, of system failure?

Baroness Young of Old Scone: We are not aware of system failure in our systems in your constituency at the moment. We know that the bridge collapsed, but that was not one of our flood defence structures.

Q65 Mr Dunne: Excuse me, just to be clear then, incidents like the collapsed bridge had not been identified as at risk under your management.

Baroness Young of Old Scone: I am assuming that the bridges are the responsibility of the Highways Agency or the local authority and therefore would not be seen as a flood risk management structure of ours. It may well be that as part of their contingency planning, they should have taken account of that, but this has been a very high impact event and we know quite often from our own work that the ability to predict the impact of floods in these structures is comparatively unpredictable when we have these high levels. Our knowledge of your systems is that all

of your high risk systems were actually up to standard. If you have different information from that, perhaps we should write to you.⁷

Q66 Mr Dunne: Could I ask you to look at the material that the NAO have provided for us by constituency, which indicated that 46% within the high risk category were not. In relation to the pressure on house-building, which we know is nationwide, you are a statutory consultee for planning applications. What evidence do you have that concerns that you express to planning committees about new housing applications are respected and if they are not, what are you going to do about it?

Dr King: Firstly, we saw considerable strengthening of the legislation in 2001 with the introduction of PPG25 and we report annually on local authorities' performance and identify those local authorities that went against our advice. We saw consistent improvement year on year and if you look at 2005–06—which is the latest figure we have as we are just “QAing” the most recent data—ten major developments went ahead against our advice. From December last year, we have seen a strengthening again with the introduction of PPS25, that not only made the Agency a statutory consultee but also gave us the power to request call-in. The PPS25 has strengthened in a whole variety of different ways and we will Report on that at the end of the year. We have seen an improvement.

Baroness Young of Old Scone: The one thing we do need to be aware of in terms of the Planning Bill when it comes through is that the high level planning statements have got to be flood risk assessed and indeed strategically environmentally assessed, if they are going to be valid. If we simply see the high level planning statements as a means of ignoring some of these real risks to property and people, it would not be a good idea.

Q67 Mr Wright: May I start at the beginning? Paragraph 1.1 states: “Large parts of England are at risk of flooding from rivers and the sea. Areas particularly at risk include the Humber corridor”. Yet we turn to appendix 1 on page 28 and Hull and Coastal Tributaries Catchment Flood Management Plan is not going to be approved by the regional director until July 2008. We have seen real devastation in Hull over the past week and I understand that somebody has died as well. Why are you not doing more to make sure there is a coastal management plan in place there?

Dr King: The first point I should like to make is that we shall certainly deliver all of the catchment flood management plans by December next year and hopefully before that. Catchment flood management plans and shoreline management plans are a very important part of strategic planning but

⁶ *Note by witness:* The rivers Teme and Clun are main river, and therefore our responsibility.

⁷ *Note by witness:* We do not hold such data at parliamentary constituency level and the information provided to the NAO was given by Environment Agency totalling data Area by Area. Within the West Area of Midlands Region, there are currently 34 High Risk Systems, of which 59% are at target condition.

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they are not the sole tool that we have at our disposal, nor does it mean that in the absence of catchment flood management plans that there is no activity because schemes do go ahead and have gone ahead in the absence of the catchment flood management plan. We do have a Humber strategy that has approved in principle some £232 million over the next 25 years, so quite a lot of strategic planning has already gone in. Certainly we have not delivered the catchment flood management plans, but it would be wrong to think that that is the sole tool that we have in terms of our strategic planning.

Baroness Young of Old Scone: By way of illustration, we were looking recently at those local authorities with the highest proportion of their population in flood plain and at risk and Hull has one of the highest proportions of its population in the country in the flood plain but was one of the best protected. Alas, some of the things we are seeing at the moment are not because we do not have defences, but because we have just seen an event that is very, very extreme.

Q68 Mr Wright: It has been mentioned by the Committee Members before, but is it not the case that with climate change, with greater unpredictability, things that would have been classed as a one-in-100 chance are now going to be much more frequent? I am very much struck by the fact that you are saying spending cuts have had a direct impact on your ability to carry out flood defence and maintenance, yet it seems to me the whole theme of this Report is that you are not focusing on the high risk areas. You are doing it along the traditional way that you have done before and you are not focusing on the areas most at risk. I do not get any sense of urgency that you are going to focus on those high risk areas. How do you answer that?

Baroness Young of Old Scone: Until about three years ago we had no means of moving money across the country or really shaping priorities because they were very much shaped by independent local flood risk management committees. Now that we have had for the last three years the ability to move money, we are steadily moving our funds towards high risk systems and the highest priorities. Indeed at the moment we are only spending about 8% of our maintenance funding on low risk systems and some of that funding is because, if we do not do some of the low risk system work, it can have an impact further down the river. For example, if we do not clear weeds in a low risk system and they then all go down the river and catch on the trash screens of the high risk systems, we immediately start to have problems there. Now that we are able to make these movements between capital and maintenance and move money across the country between different parts of the country, we are able increasingly to focus on those high risk systems.

Q69 Mr Wright: Is organisation hindering you? Figure 4 on the right hand side, "Flood risk management activities", says: "... general supervision over matters relating to flood defence" seem to be the responsibility of the Environment

Agency and yet the Report says that many of the difficulties arise from the fact that a lot of flood defences are owned by third parties. The Secretary of State in his statement to the House yesterday said the local authorities are responsible for the short- and longer-term recovery effort in the affected areas. Mr Curry talked about joined-up government. I do not get the sense that there is an element of joined-up thinking with regards to this. The Committee considered and produced a Report on water management and I would have thought the Environment Agency would have been much hotter in trying to get water companies, in line with Ofwat, to deal with deficiencies in pipes, because that must have a risk. I would have thought you would have been having much closer liaison with local authorities to make sure things were in place. Dr Pugh mentioned urban areas. I had a flood in Hartlepool three or four years ago, exacerbated by the failure of gully cleansing. You do not seem to be talking to various agencies. Local authorities do not seem to be talking to you as much as they should. Why is that, because you are compromising people's homes here?

Baroness Young of Old Scone: We work very closely with local authorities and traditionally the focus has very much been on the major floods from rivers and from the sea. It is only as increasingly we have had these stormy events and also as a result of development and more concrete, where drainage is becoming a major problem which it was not previously, that we really started to press for these long-term drainage plans to become statutory, to become part of legislation so that we can ensure that the local authorities, development bodies, planning authorities and the water companies work together to resolve the problems of flash floods and inadequate drainage.

Q70 Mr Wright: Do you think the Environment Agency needs more powers to compel these third parties to do more for flood defence? Paragraph 2.7 mentions the River Thames legislation and obviously I understand the importance of London as a commercial and economic centre, but do you think that should be used so that you can actually force local authorities or water companies to do more?

Baroness Young of Old Scone: Generally speaking when we are talking about third parties local authorities and water companies are not the issue. It is individual private land owners who have properties on the edge of rivers, part of whose property forms the flood defence there and often it is quite difficult to track down who is actually the owner. Once we have done that, we need to make sure that our systems inform them of any deficiencies. We have done that on a risk basis to date. We want to up the pace of that and then we need to find out whether the very modest levers we have at the moment and indeed persuasion can make those third party owners who are not willing to bring their defences up to standard and who are part of high priority systems and are a real part of that risk, to take action. If we cannot get them to take action, we may well have to call for further powers.

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Q71 Mr Wright: I think the theme of this Report is that you do not concentrate on risk areas or high risk areas. Paragraph 2.11 states quite starkly: “There appears to be little relationship between the amount of revenue funding allocated to each region in England and risk of flooding”. The Chairman mentioned this as well. Again, I do not see any evidence that there is a relationship between mitigating actions commensurate with the level of risk.

Baroness Young of Old Scone: May I turn you to table 11, which is a quite difficult table to understand because it is about proportions of maintenance expenditure? You need to take the grey bar, which is high risk systems, and the bright blue bar, which is non-system specific maintenance expenditure, together. Many of these bright blue bars are high risk systems.

Q72 Mr Wright: Why is that not identified as such then?

Baroness Young of Old Scone: The definition of a non-system specific maintenance is that it covers a number of systems, so it is difficult to chop it up and decide how to apportion it across systems. Some of it will be on medium and low risk, but not much. Most of it we are pretty sure is high risk stuff.

Q73 Mr Wright: In my own area, the North East, 24% is on the high risk, but there is an enormous amount in terms of the bright blue bar. Can you reassure me that work is being done with regard to flood defence maintenance that is directly proportionate to the level of risk?

Baroness Young of Old Scone: It is not yet completely proportionate to the level of risk because we are moving towards that as we are able to understand the level of risk, as we know about our assets better and also as we are able to move money.

Q74 Mr Wright: That is hardly reassuring is it?

Baroness Young of Old Scone: If you take the bright blue and the grey, with the exception of one region, we are now spending in excess of 74% of our maintenance funding on high risk systems.

Q75 Mr Wright: How do you know what is being done anyway because paragraph 2.13 says: “We were assured that the issues identified during the inspection were dealt with” but there is no audit trail. There is no saying: “Yes, that has been done; we have mitigated the risk through this action”. You say that your systems are adequate: your systems are rubbish.

Baroness Young of Old Scone: Our systems are improving; they are not rubbish. They are good and improving and Tim will tell you how.

Mr Kersley: I am just going to reinforce the point that local records are held to confirm that that is the case, that the work has been carried out where it was directed to be carried out. The problem is that we did not have a means on our asset register to hold a centralised record of that and we have plans afoot to insert a field in the database to enable that to be locked off and centrally recorded.

Q76 Mr Bacon: I did not hear the answer to the question which Mr Dunne asked about what your budget is now. You turned to Dr King and it sounded like you said £500 million, but then it sort of trailed off. Did you just mean £500 million?

Dr King: It is of the order of £500 million.

Q77 Mr Bacon: Could you turn to page 13 where there is a figure 7 listing various different kinds of expenditure? Development control and regulation is £12 million; building new and replacement defences, £162 million; then maintaining existing defences is £176 million; administrative costs, £64 million; flood warning and incident management, £39 million. That adds up to £453 million and it says at the bottom: “Figures only include expenditure funded by the Department for Environment Food and Rural Affairs and exclude ‘local levy’ expenditure funded by local authorities through the Regional Flood Defence Committees”. Am I to take it then, because paragraph 1.8 refers to £483 million, not £453 million, that the money funded through regional flood defence committees is the difference, the £30 million? Is that correct?

Dr King: It is in the order of £25 million from the local levy.

Q78 Mr Bacon: So if we look at paragraph 1.8 it says “Expenditure by the Agency on flood risk management has increased . . . to £483 million in 2006-07 (including the local levy)” you are saying the local levy in that sentence is £25 million.

Dr King: Around £25 million

Q79 Mr Bacon: Not £30 million.

Dr King: It is in the order of £25 million.

Q80 Mr Bacon: Presumably the two, that chart on the bottom right-hand corner and this, should add up to £483 million, because that is what the Report says, should they not?

Dr King: There are other sources of income.

Q81 Mr Bacon: You sent a document to the regional flood defence committees recently in which you said, and I quote, “Our planning assumption is that our resource settlement over the next three years will be flat cash in line with our current 2007-08 baseline (a real-time reduction in funding) with any growth limited to capital investment”. Is that still your planning assumption?

Baroness Young of Old Scone: It is indeed our planning assumption until such time as we get an outcome from the Comprehensive Spending Review.

Q82 Mr Bacon: So you are hoping and expecting that you will do well out of the Comprehensive Spending Review, but until such time, that is your planning assumption.

Baroness Young of Old Scone: We felt it was the safest assumption to go forward with.

Q83 Mr Bacon: So your budget now is what, £500 million?

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Baroness Young of Old Scone: Yes; or thereabouts.

Q84 Mr Bacon: When the secretary of state yesterday, at column 166, said that it was £615 million. What was he referring to?

Baroness Young of Old Scone: I suspect he was referring to expenditure on flood risk management and on coastal management which currently is funded with local authorities.

Q85 Mr Bacon: Just through local authorities?

Baroness Young of Old Scone: Yes and I suspect there may well be some funding in that amount for some central Defra functions as well. I am not entirely sure what he was quoting there. We can certainly try to rationalise that for you.

Q86 Mr Bacon: If there are various sources of funding, a clear note that sets out in a chart where they all come from and what they all add up to so we know what we are talking about. Could you also, within that, specify capital expenditure, maintenance expenditure and new expenditure and do it for each of the last five years and what your planning assumptions are going forward?⁸ That would be great. Could I ask about the administrative cost of £64 million, which it says is 14% of the total? 14% sounds quite high. Can you briefly say what administrative costs cover?⁹

Baroness Young of Old Scone: Administrative costs cover a number of functions both nationally and regionally. At the regional level they cover regional and area support staff, human resources, finance, legal facilities, accommodation, with costs of supporting our flood risk management committees, which are the not quite democratic but para-democratic process, and support services. At national level they cover our flood risk management policy and process costs, our computing costs, overheads of our head office and also national centres as well as our national corporate costs of running a board and paying me and things like that.

Q87 Mr Bacon: Which obviously adds considerably to the total cost!

Baroness Young of Old Scone: Absolutely; hugely!

Q88 Mr Bacon: Can you just remind us what the total number of staff employed by the Agency is?

Baroness Young of Old Scone: It is just under 13,000 at the moment.

Q89 Mr Bacon: How many of those work in the HR department?

Baroness Young of Old Scone: We have recently benchmarked our HR function and it benchmarked very well against external benchmarks.

Q90 Mr Bacon: Do you know how many?

Baroness Young of Old Scone: About 200 I think.

Q91 Mr Bacon: I just have a figure in my mind that the Immigration and Nationality Directorate with 14,000 staff employed 540 in HR, so if you are on 200, you are doing quite well.

Baroness Young of Old Scone: We compare very well with external commercial benchmarks.

Q92 Mr Bacon: Is it possible you could send us a note with a detailed breakdown of the costs you have just been describing, the administrative costs?

Baroness Young of Old Scone: Yes, indeed.

Q93 Mr Bacon: That would be very helpful. Could I ask you to turn to page 5 where it describes in paragraph 4 and I quote “The Agency has not met its target to maintain 63 % of flood defence systems in target condition”? Could you just briefly explain what is “target condition”? What is meant by the phrase “target condition”?

Mr Kersley: We assess a preferred condition that we would like our assets to be at and that is informed by our science R&D programme that basically finds the optimum point between the costs of maintaining the fabric condition of an asset and the risk of its failure.

Q94 Mr Bacon: So “target condition” means optimum condition, preferred condition?

Mr Kersley: Yes.

Q95 Mr Bacon: But your target is not to have all your assets in their target condition, it is only to have a percentage, in this case 63% of your assets, in their target condition. That is right, is it not?

Baroness Young of Old Scone: Our target is a progressive one in that over successive years we would aim for a higher target.

Q96 Mr Bacon: Presumably, if it is your preferred optimum condition, you would aim for 100%, would you not?

Baroness Young of Old Scone: We would aim for 100%.

Q97 Mr Bacon: Budgetary restrictions stop you.

Baroness Young of Old Scone: Our estimate is that in order to be able to break the backlog of poor condition, and we do have a backlog of poor condition which we have inherited, we would need £150 million a year to do so. We do not think it is realistic to set a 100% target at a time when we are not likely to have a hope in hell of completing it.

Q98 Mr Bacon: So your estimate is that you want £150 million extra a year, but you did say in answer to an earlier question that you have not asked for an extra £150 million a year yet.

Baroness Young of Old Scone: We have asked for a settlement under the Spending Review which is primarily focused on capital but inevitably in our allocation we look at what is the most cost-effective investment strategy and increasingly, as we know our assets better and we have a better asset

⁸ Ev 23–24

⁹ Ev 24–25

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management process, we can take a judgment as to whether we get a better bang for our buck from a maintenance investment or a capital investment.

Q99 Mr Bacon: A couple of weeks ago when the Committee visited a couple of Environment Agency assets, the people showing us around talked about temporary and demountable barriers. In paragraph 3.14 there is reference to that in various places including in Worcester where barriers were purchased. I remember reading some years ago how delighted the folk of Worcester were that they were to get these temporary barriers. How much does it cost in the case of a city like Worcester to get temporary barriers set up and available or demountable, whichever they are, available? Do you know what was spent in that case? Do you have a rough idea?

Dr King: We do have the figures, though I am not sure whether we have them here. It is important to differentiate between demountable barriers and temporary barriers. Demountable barriers are highly engineered aluminium structures.

Q100 Mr Bacon: Yes and the foundations stay in place. I understand the difference. I am just asking, without signing your name in blood, you can always send us a note, what roughly do those barriers cost?
Mr Kersley: It is about £180,000.

Q101 Mr Bacon: To buy them?
Mr Kersley: Yes, to buy them.

Q102 Mr Bacon: So you spent £180,000 buying them but last night you did not deploy them, so Hilton Road Worcester flooded and it would not have flooded, would it, if you had deployed the barriers?
Mr Rooke: My understanding is that the road flooded, but no property flooded. We did deploy sandbags. What has happened in that particular case is that a tributary of the Severn was higher than was predicted by the models that we use to determine whether or not to deploy the defences. We have to deploy them many hours in advance because of the time it takes to mobilise and do all that. At the time to take the decision based on the forecast, the decision was taken that it was not necessary to deploy them. Because one river was higher than had been predicted by the model and there was some flooding, temporary sandbagging was taking place and my understanding from the briefing today is that there was no flooding to property.

Q103 Mr Bacon: The Environment Agency was quoted on BBC television news at lunchtime as saying that what had happened at Worcester with the Teme and the Severn was totally unprecedented. Is that an accurate quote? Is it the Environment Agency's view that what has happened in Worcester is totally unprecedented?
Mr Rooke: Certainly the tributary was higher than what has happened before and our models did not predict that accurately.

Q104 Mr Bacon: I was talking to people in Worcester at lunchtime today who said it was not unprecedented and in February 2004 it was worse.

Mr Rooke: Yes, that is the case, but on this particular event in terms of whether to deploy or not, given we have to take this decision a considerable number of hours in advance, the decision was taken not to.

Baroness Young of Old Scone: May I just say that temporary and demountable defences are not necessarily the answer to many situations? They are pretty expensive because they are heavy on staff and storage costs and maintenance for the future. Although we have a number of demountable defences in place and though we have temporary defences available for specific situations, they are not necessarily going to be the panacea. Many communities are looking to them in the absence of a proper flood defence scheme and we do not want to encourage them to believe that they are the best answer.

Q105 Mr Bacon: One last question on paragraph vii, page 7, where one of the recommendations is that you should: "Assess the long term suitability of the current computer database". This Report was published in mid-June, so not that long ago, but you have known about this recommendation for a while when the Report was in draft. Where are you in terms of assessing the suitability of the current database in terms of either improving it or replacing it?

Baroness Young of Old Scone: I should say that we have made substantial improvements on the database over the last two or three years to the point now where it is actually a very effective data repository for our flood defences and can generate a significant number of management reports to us to manage more effectively, but we are aware of the fact that the next generation of systems is available and we will need to look at the longer term, how we can move to the next generation.

Q106 Mr Bacon: Are you saying that the sentence: "The database... or the work management system... it cannot hold data on the maintenance history of each flood defence or clearly link the inspection results to records of maintenance carried out" is no longer true?

Mr Kersley: It is true. It was built as an asset register and we have continuously improved it and we have completed a review of the scope to which we can improve it further. Further work is planned this year and in fact some progress has already been made which Lady Young alluded to there. In addition to that we have scoped out further feasibility work, which we shall be doing to complement our asset register, on how we can further develop it and add further tools in so we end up with a full asset management system. That work is due to report back in the autumn.

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The Committee suspended from 5.25pm to 5.32pm for a division in the House.

Q107 Mr Williams: On page 6, paragraph 5, it says: "... the Agency has only recently adopted a risk-based approach". What does that mean?

Baroness Young of Old Scone: In terms of our maintenance system, it means that instead of scoring our assets as either very good, good, fair, poor or disastrous, we now look at a whole system and try to establish what the quality of the asset is that will be fit for purpose. So in some low risk situations a fair condition of assets is fine because it is not a huge risk if it fails. In some high risk systems we would want them to be very good, so we take a fit-for-purpose view, a risk-based view.

Q108 Mr Williams: This sounds quite a useful innovation. How recently have you adopted it?

Baroness Young of Old Scone: Tim is the man who has introduced the vast majority of it.

Mr Kersley: We have been working on this for two years now.

Q109 Mr Williams: Two years? How long has your organisation been in existence?

Baroness Young of Old Scone: This is our eleventh year in existence.

Q110 Mr Williams: So for the first nine years you have operated without a proper risk analysis?

Baroness Young of Old Scone: For some considerable period we did not have the full responsibilities that we do now. We only acquired them sequentially. Since the severe floods in 1998 we have acquired more responsibilities and as a result it is only within the last two to three years that we have had the ability to make judgments.

Q111 Mr Williams: Did you not say it took two years, you have worked on it for two years, so that means for nine years you did not work on it and you worked on some jottings on the cuff for what the priorities might be.

Baroness Young of Old Scone: Up until 2004-05 priority decisions were made within budget by a series of autonomous regional defence committees spending what they saw as their own money because it was raised by the local authorities who were the primary members of those flood defence committees.

Q112 Mr Williams: This is chaos, is it not? It was and it probably still is.

Baroness Young of Old Scone: That is precisely the point we made after the 2000 floods and indeed were successful in getting Government to change the systems that we had.

Q113 Mr Williams: After seven years of existence you discovered something you should have identified within the first year or two years of existence. Why did it take all these extra years to start developing a risk analysis.

Baroness Young of Old Scone: I am afraid that in the early stages of the Agency's existence, which I cannot speak of because I was not there, the role of the Agency was not as full as it is now. In fact the supervisory duty which meant that we had to take—

Q114 Mr Williams: Do you mean they could not do it?

Baroness Young of Old Scone: It meant we had next to no powers.

Q115 Mr Williams: You may not have had powers, but you could have started a risk analysis, could you not? Let us ask a simple question. How do you deal with risk without a risk analysis? You are dealing with risk, are you not?

Baroness Young of Old Scone: Of course one must remember that the whole philosophy of risk-based maintenance and capital funding is a comparatively recent philosophy across all of those organisations which deal with asset management.

Q116 Mr Williams: That is strange. If you talk to an insurance company, they work out the risk and they work out your premium based on the risk. It is not a new concept. Whoever set up this organisation should have started with the proposition that the risks should be evaluated and the priorities relating to risk should be identified. Is that not the first question that anyone should ask?

Baroness Young of Old Scone: Let me describe the situation in one of the parts of the country which is currently flooded and where the quality of our assets is not as high as we would like.

Q117 Mr Williams: I am afraid you are going to depress me. Go on.

Baroness Young of Old Scone: It that area the flood defence committee chose as a matter of policy to spend its money on creation of new defences rather than maintenance of old defences on the basis that, if it did not maintain its defences, they would decay and they would have a stronger case for getting more capital funding for new defences. We had no means of preventing that because it was local authority money disbursed by a regional committee.

Q118 Mr Williams: Perhaps if they had been better informed on better ways of doing it and if your organisation had identified risk as a surprisingly important thing earlier on in its existence and started giving advice to the organisations concerned, they might have recognised the use of risk analysis. Is that not so?

Baroness Young of Old Scone: I am sure that in the work that we were doing on capital schemes full account was taken of risk because that was one of the bases on which we prioritised capital schemes for the future and they were handled on a national level. They were approved at Defra level. On maintenance, it is only as we have been able to record all the assets that we have—and we have had a huge task because we were given responsibility for twice as many assets as we had in the early part of the decade, so there was a big task of simply establishing the register of these

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assets, understanding what the assets were, collecting data on their quality—it is only as we have been able to get that information into shape, that we have been able to take a risk-based approach.

Q119 Mr Williams: What is the good of you doing risk analysis now then, if they all do their own thing?

Baroness Young of Old Scone: They do not. The Government mercifully changed the system at our instigation.

Q120 Mr Williams: It is a circle. Might they not have done so, if your predecessor had done a proper job from the start and said this was your remit, you had to try to address the priorities across the country and asked what you needed in order to address priorities? Like any insurance company one would have thought you would say you needed a risk analysis. It is not anything terribly revolutionary, is it?

Baroness Young of Old Scone: We should not underestimate the strong politics which existed around flood risk management at the time before the money was centralised nationally.

Q121 Mr Williams: Say that again. Do you mean internal politics?

Baroness Young of Old Scone: Local politics.

Q122 Mr Williams: I know how cussed local politics can be, but that is not the point. I am talking about you in a leadership role. You were the national body. It was for you to go out and fight your corner, to do things you felt necessary, so at least you could turn around and say: “It’s not our fault gov. We told them, but they refused to do it”. Instead of that what you are saying is that you did not even bother to try to find out.

Baroness Young of Old Scone: Most of our work over the last few years has been focused very heavily on improving our knowledge of the assets, getting them registered, getting their condition assessed and onto the asset system so we can take a risk-based approach.

Q123 Mr Williams: You have been going for 11 years. How much money have you spent in 11 years? What is your annual budget?

Baroness Young of Old Scone: Our annual budget at the moment is £1 billion, but on flood risk management it is £500 million and that has been a huge increase.

Q124 Mr Williams: So over 11 years what would you say is a ballpark figure for what you have spent in achieving relatively little?

Baroness Young of Old Scone: We have achieved a huge amount.

Q125 Mr Williams: What have you spent in achieving it?

Baroness Young of Old Scone: My maths are not up to that on the hoof, but I would have thought that we are probably talking about somewhere between £200 million and £300 million for many, many years until it was increased to £500 million in the last year.

Q126 Mr Williams: You have been there seven years, so in your spell what has been spent?

Baroness Young of Old Scone: We have achieved a huge amount. We have protected over 100,000 people; we have achieved all our targets.

Q127 Mr Williams: I am not asking what you have achieved. I am asking a simple question: how much have you spent?

Baroness Young of Old Scone: I would say about £2.5 billion.

Mr Kersley: On an average of £300,000 a year £2 to £2.5 billion.

Q128 Mr Williams: You have spent £2.5 billion and you are only just coming around to doing it according to a sensible priority.

Mr Kersley: May I come in and clarify a point because I may have led us down a blind alley here for which I apologise? In terms of capital, which is a significant element of our investment, at least half over that period, we have prioritised since we were created in the late 1990s. Therefore capital investment was always being allocated according to risk and over that period we have improved progressively, with our sponsor department, our prioritisation of that. The point I was making about asset systems is that it allows us for the first time to have a clean joined-up look at the components in the chain that provide an overall service to a community and therefore assessments. Before that we used to use a surrogate for that because we were unable, for reasons already expressed, to join up the chain and the past indicators of condition were themselves a surrogate measure for risk. So we have always undertaken an approach which has been risk based. We are at a more advanced stage and we shall continue to progress in that arena.

Q129 Mr Williams: So you spent all that capital. Give me the figure again. What was the gross figure on capital? Over £1 billion? You spent over £1 billion of capital but you spent it still not having any risk information on which to address your priority for spending that capital.

Mr Kersley: No. I explained that in the capital environment we have always appraised the system at risk and we have been able to look at the contribution towards that system that a single asset makes when we are investigating whether to replace it or improve and enhance it. Our analysis and assessment currently is that the return we get from our capital investment is incredibly strong but we are only able to fund projects which have a benefit/cost ratio in excess of six and that is a demonstration of the extent to which we do prioritise our capital.

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Q130 Mr Williams: Lower down the page you complained about the obduracy of the local government but I look at the final paragraph and it says: “The Agency has very limited powers to force other bodies to improve the condition of their assets” that is what you have been saying all along “but does not necessarily notify the relevant third party when Agency inspections identify faults””. You go along and inspect, you find a fault, I assume a fault is something which needs to be addressed, and you do not even bother to tell the person responsible that the fault exists. What is the good of you?

Baroness Young of Old Scone: We have in the past taken a risk-based approach to that so that if the fault was one we believed was material to the integrity of the flood defence system and needed to be addressed, we would.

Q131 Mr Williams: Answer my question. Why is it not standard? You have identified risk for a couple of years, you have been working on a system to address risk, but you still, currently as far as I can gather, inspect third party defences and you do not even bother to tell people, or do not necessarily tell them, even when you discover faults. How do you justify that?

Baroness Young of Old Scone: We took a risk-based approach to that because in the case of many of these owners of third party assets it is difficult to establish who owns them and they are not willing to do very much about it. The amount of effort and resource we have available—

Q132 Mr Williams: Do you not see that the fact that they are not willing to do something about it means there is certainly a liability issue here? If you had notified them that you had found a fault and if that fault subsequently led to damage to someone else, someone else could have a case against the owner, if the owner were aware of it. If you have not bothered to tell the owner, the case is probably against you for neglecting your duty.

Baroness Young of Old Scone: Increasingly and already in two of our river systems we do have powers to be able to do something about it and we did notify third party owners. We are now in the process of implementing a new policy which will ensure that third party owners, where they can be identified, are notified and that where we believe these are of risk to the integrity of the system, we can increasingly put pressure on them to comply. If they do not comply, and we have very few legal ways of making them comply, we may have to seek additional powers.

Q133 Mr Williams: If you do not notify them and they do not comply and you are aware of it, are you not guilty of negligence?

Baroness Young of Old Scone: Not if we have taken an appropriately based risk assessment which says that we do not believe that the quality of that asset was going to be a risk to the integrity of the system as a whole.

Q134 Mr Williams: May I say I find this astonishing? An organisation set up with your remit, with a couple of billion pounds and you are only just coming around to addressing the priorities which should have been addressed right from the start.

Baroness Young of Old Scone: I should be very pleased to send you a list of the achievements over the last seven years that we have made in flood risk management. We have achieved a huge programme of change and development and we have delivered an improved standard of flood defence and flood warning to a large proportion of people in this country. We are on the move to improving some of the other things which are part of our programme. We have delivered a very substantial programme.

Q135 Mr Williams: That would be more impressive, if we did not find in the same paragraph as the original information that the spending share: “. . . on high risk systems varied from 24 % in the North East to 67 % in the Midlands”. To my mind you have failed to address issues you should have addressed earlier. How do you account for the fact that you can have such an incredible variation?

Baroness Young of Old Scone: May I turn you to table 11 again?

Q136 Chairman: You have already given this answer.

Baroness Young of Old Scone: The grey band, which is the high risk systems and which looks very low in the North East, needs to be taken into context with the navy blue band which is also spend on systems which are for the most part high priority and therefore, with the exception of one of our regions, over 74% of our main expenditure is on high priorities.¹⁰

Q137 Mr Bacon: Could you send us a note? Looking at your figures for government spending on flood management over the last ten years, which are on the website, it looks as though you have spent £2.5 billion just going back to 2002-03 and going back to 1997-98 it looks to me more like £4.2 billion roughly—I have just totted it up—than £2.5 billion. Could you send us a note on that and explain how much of it is flood and how much is coastal erosion? That would be very helpful.¹¹ You were founded in 1996, were you?

Dr King: Yes, 1996.

¹⁰ *Note by witness:* Figure 11 in the National Audit Office Report provides the proportion of expenditure on High, Medium and Low risk systems. However some 27% is shown as Non Systems specific expenditure, much of which also goes towards high-risk systems. This increases the levels of expenditure on high-risk systems substantially in all Regions.

¹¹ *Note by witness:* The Environment Agency came into being on 1st April 1996. Since this time we have spent in total £3.429 billion on flood risk management. We do not keep separate records for the amounts spent on inland as opposed to coastal flood risk management. Our estimate is that over the last 5 years, we have spent around one third of our capital investment on sea flood defences. The Environment Agency until very recently had no role in coastal erosion.

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Q138 Mr Bacon: Why do you not send us that breakdown from your inception?

Baroness Young of Old Scone: Yes.

Q139 Chairman: I was going to ask questions but time is pushing on so I am going to ask for notes. I want to know, reference paragraph 3.8 on page 24, why you spent so much developing plans for new flood defences rather than actually building them?¹² I want to know, in relation to figure 17, how many of the projects which you did not fund are in areas affected by floods at the moment.¹³ I want to know why such a small proportion of your construction budget is available for new projects, with reference to figure 15 on page 23.¹⁴ I want to know why it is that six years after the last NAO Report, your data systems are still of such poor quality, with reference to summary paragraph 5, final bullet on page 7.¹⁵ I have to say, Lady Young, that although you say you need more money, following this hearing I do not

think we are convinced that you can guarantee to us that you will spend it more effectively than the extra money you have already received. I say to the Treasury that when Lady Young says she needs more money, which she doubts Defra will supply, she says she will come to you. We hope that you will require from her, if you grant her request, that these monies are actually wisely spent. I do not think, following the answers we have heard today, that we can be entirely convinced of that. I go back to my original question about these plans which were promised as long ago as 2000 and we are still waiting for them. Contrary to what Lady Young said in her answer to us, I would have thought that if these plans had been started earlier then property could have been saved which has been badly damaged in these floods. You personally have been in charge of this Agency now for seven years, which is quite rare in government, you undertook to improve flood defences. It is my impression that you have not adequately done it, nor have you warned the National Audit Office of your shortcomings and you have broken specific commitments given to this Committee and you have not learned the lessons of New Orleans, that adequate planning is absolutely essential. The exchange that you had with Mr Williams, in terms of the shortcoming of your risk assessments, was devastating. Thank you very much.

¹² Ev 25

¹³ Note by witness: The only unfunded scheme on the list in figure 17 that is in an area affected by the current floods is Ripon. Ripon has a priority score of 16.35, and was approved in 2005 (£11m total cost). The relatively low score means that it has yet to receive funding to deliver the scheme.

¹⁴ Ev 26

¹⁵ Ev 26

Supplementary memorandum submitted by the Environment Agency

Question 22 (Mr Edward Leigh): *Are you prepared to give a list of the systems in the northern area and Lincolnshire and Cambridgeshire which are not in an adequate condition.*

We are currently reviewing what our 'fit for purpose' standards ought to be. The fact that an asset is not at our 'preferred' condition does not mean that it is inadequate—less than 1% of floods result from asset failure, a fact borne out in the recent floods.

We have produced a Report from our asset register, the National Flood Coastal Defence Database (NFCDD) of all asset systems in Northern Area Anglian Region. This comprises the county of Lincolnshire, parts of Northamptonshire and Northern Cambridgeshire. We record below the headline details of systems that pass our preferred target condition. In addition we provide a complete schedule of each system that does not achieve our target.

Anglian Region Northern Area
System Details (as at 31/03/2007)

1. *Summary*

high risk systems total 101
passed 49
did not pass 52

medium risk systems total 44
passed 35
did not pass 9

low risk systems total 50
passed 30
did not pass 20

2. *Schedules of Systems that do not meet our preferred condition target.*

We provide below a complete list of all systems in Northern Area Anglian region that are not at our preferred condition. The lists are separated into High, Medium and Low risk.

Notes:

The following information is provided

- (a) The unique system reference. This is provided under the heading “FRM system”
- (b) A brief description of the location and extent of the system, headed ‘Group Description’.
- (c) Confirmation of the ‘Catchment’ in which the system sits headed ‘Catchment’.
- (d) Confirmation of the consequence of failure of the system, Headed ‘consequence rating’. The measurement of risk takes into account the likelihood of a flood occurring combined with its possible consequences.

HIGH RISK SYSTEMS

<i>FRM System</i>	<i>Group Description</i>	<i>Catchment</i>	<i>Consequence Rating</i>
FR/01/S003	EAST DRAIN, Humber to top end of wrawby catchwater and Little carr drain, also including bonby, worlaby catchwaters and land drain	Lincolnshire	HIGH
FR/01/S004	L ANCHOLME, Harlem hill lock to bishopbridge, including Kingerby beck, east drain upper and east drain trib	Lincolnshire	HIGH
FR/01/S005	M ANCHOLME, bridge st, brigg to Harlem hill lock, including all the major tributaries along this length	Lincolnshire	HIGH
FR/01/S022	STALLINGBOROUGH, stallingborough north beck, Humber to stallingborough road and Oldfleet drain, humber to healing road	Lincolnshire	HIGH
FR/01/S023	R FRESHNEY, Alexandra road bridge to Laceby bypass bridge including full length of new cut drain	Lincolnshire	HIGH
FR/01/S026	BUCK BECK, Humber to toll bar road bridge	Lincolnshire	HIGH
FR/01/S028	LOUTH CANAL, tetney lock to riverhead road, including mother drain, poulton drain, black dike and parts of mother drain, new dike and oldfleet diversion	Lincolnshire	HIGH
FR/01/S032	GREAT EAU, great eau, tidal outfall to belleau bridge and long eau, great eau to A157 and muckton beck	Lincolnshire	HIGH
FR/01/S034	WOLDGRIFT DRAIN, Tidal outfall to upstream limit at saleby	Lincolnshire	HIGH
FR/01/S036	R STEEPING, wainfleet clough to Mill bridge including wainfleet relief channel and burgh relief channel	Lincolnshire	HIGH
FR/01/S042	Maud Foster Drain carries highland water past Stickney & Sibsey before passing through Boston and discharging into the Witham Haven	Lincolnshire	HIGH
FR/01/S043	RIVER BAIN carries water past the villages of Kirkby-on-Bain, Tattershall and Coningsby	Lincolnshire	HIGH
FR/01/S045	HORNCastle is a market town through which the Rivers Bain and Waring pass.	Lincolnshire	HIGH
FR/01/S055	South Forty Foot Drain is a large rural catchment draining over 30 IDB pumped catchments and upland villages such as Helpringham, Swaton Pointon and Billingborough.	Lincolnshire	HIGH
FR/01/S062	SLEA drains Sleaford, Ruskington and Leasingham	Lincolnshire	HIGH
FR/01/S067	Lincoln City system protects the city and numerous elements of major infrastructure	Lincolnshire	HIGH
FR/01/S075	GRANTHAM large market town protected by raised defences private structures	Lincolnshire	HIGH

HIGH RISK SYSTEMS

FR/01/S078	Witham Haven tidal channel draining large market town of Boston and extensive fen floodplain	Lincolnshire	HIGH
FR/01/S079	Winteringham to Ferriby Cliff, entire length protects winteringham and arable land	Lincolnshire	HIGH
FR/01/S080	Ferriby Cliff to EH Skitter, entire length entire length protects numerous small towns Barton-on-Humber, Barrow-on-Humber internationally designated sites and nationally important industrial areas	Lincolnshire	HIGH
FR/01/S081	EH Skitter to Pyewipe, entire length protects numerous small towns Barton-on-Humber, Barrow-on-Humber internationally designated sites and nationally important industrial areas	Lincolnshire	HIGH
FR/01/S085	Mablethorpe NE to Sandilands, entire length protects Mablethorpe, Trusthorpe and major tourist industry	Lincolnshire	HIGH
FR/01/S087	Chapel Point to Lagoon Walk, entire length protects Ingoldmells and major tourist industry inc Butlins Holiday camp and several thousand caravans	Lincolnshire	HIGH
FR/01/S089	Gib Point to Horseshoe Tidal defences protecting large areas of high grade arable and villages including Friskney, Wainfleet St Mary	Lincolnshire	HIGH
FR/01/S090	Horseshoe to Hobhole Tidal defences protecting large areas of high grade arable and viallages of Wrangle, butterwick and Freiston Shore and HMIP North Sea Camp	Lincolnshire	HIGH
FR/01/S091	Frampton Tidal defences protecting large areas of high grade arable and RSPB reserve. Would flood land fill tip and industrial area of Boston	Lincolnshire	HIGH
FR/01/S099	River Welland from the A427 to the disused rail bridge in Market Harborough, and the entire lengths of the River Jordan, Dingley Dyke, West Brook and Brookfield Drain.	Welland and Nene	HIGH
FR/01/S104	North Brook from Greetham Pumping Station to the Main River Limit.	Welland and Nene	HIGH
FR/01/S119	Fluvial Welland, from its outfall into the Tidal Welland to the A15 road bridge upstream of Market Deeping.	Welland and Nene	HIGH
FR/01/S122	Includes Car Dyke Eye, Folley River, Brook Drian (excluding the Woodcroft Arm), Werrington Brook, Paston Brook, and Marholme Brook and also includes the Paston and Marholme COW's, in Peterborough.	Welland and Nene	HIGH
FR/01/S124	Maxey Cut, entire length.	Welland and Nene	HIGH
FR/01/S126	Tidal Welland, entire length	Welland and Nene	HIGH
FR/01/S127	Tidal Nene, entire length and Main River section of the North Level Main Drain.	Welland and Nene	HIGH
FR/01/S134	River Nene, Dog in a Doublet to Orton Dyke Outfall, and the entire lengths of Fletton Springs, Stanground Lode, Orton Dyke, Thorpe Meadows and Thorpe Drain, in Peterborough.	Welland and Nene	HIGH
FR/01/S136	River Nene, Wansford to Warmington including Yarwell Mill Tail, Elton Mill channel and Broadreach Back channel.	Welland and Nene	HIGH

HIGH RISK SYSTEMS

FR/01/S143	River Nene, Upper Wellingborough Lock to Lower Wellingborough Lock, and Dennington Brook, Wellingborough.	Welland and Nene	HIGH
FR/01/S150	River Nene, Billing Bridge to South Bridge, including Bypass and Mill Channels, Northampton.	Welland and Nene	HIGH
FR/01/S160	Gretton Brook, Gretton Rd Bridge to Separation Chamber	Welland and Nene	HIGH
FR/01/S172	Harpers Brook, Sudborough Rd Bridge to Main River Limit	Welland and Nene	HIGH
FR/01/S180	Skew Bridge Dyke, entire length, Rushden	Welland and Nene	HIGH
FR/01/S184	River Ise, Warkton Rd Bridge to A43	Welland and Nene	HIGH
FR/01/S187	Swanspool Brook, entire length, Wellingborough.	Welland and Nene	HIGH
FR/01/S188	Harrowden Brook, entire length, Wellingborough.	Welland and Nene	HIGH
FR/01/S189	Slade Brook, Outfall to Glendon Rail Culvert, and the entire length of the East Brook.	Welland and Nene	HIGH
FR/01/S195	Ecton Brook, entire length, Northampton.	Welland and Nene	HIGH
FR/01/S202	River Nene, Kislingbury Branch, including Weedon Branch, Heyford Brook and Bugbrooke Brook downstream of the Canal, Camp Lane Dyke, Harpole Mill Bypass, Red Lion Dyke, A45 Tributary, Stowe Brook and the Wooton Brook and tributaries downstream of Quinton Rd Bridge, East of Northampton.	Welland and Nene	HIGH
FR/01/S214	River Glen, Surfleet Sluice to Kates Bridge.	Welland and Nene	HIGH
FR/01/S217	Bourne Eau, entire length including COW, Car Dyke North entire length, and the Car Dyke South downstream of Fen Rd Bridge, Bourne, Lincolnshire.	Welland and Nene	HIGH
FR/01/S224	Latimer Brook, entire length, Burton Latimer.	Welland and Nene	HIGH
FR/01/S227	Witham Top Pond	Lincolnshire	HIGH
FR/01/S997	Kibworth Brook and Meadow Brook, entire lengths, Market Harborough.	Welland and Nene	HIGH
FR/01/S998	Raunds Hog Dyke and Parallel Channel, entire length including COW	Welland and Nene	HIGH

MEDIUM RISK SYSTEMS

<i>FRM System</i>	<i>Group Name</i>	<i>Catchment</i>	<i>Consequence Rating</i>
FR/01/S037	COW CR DRAIN, Croft pump station to Bratoft road, entire length	Lincolnshire	MED
FR/01/S044	HORNCastle CANAL protects villages of Haltham and Dalderby and contributes to protection of Horncastle	Lincolnshire	MED
FR/01/S048	DUCKPOOL C 3m raised earth defences protecting high grade arable and isolated residential properties	Lincolnshire	MED
FR/01/S060	KYME EAU 3m raised earth defences protecting high grade arable and isolated village Chapel Hill	Lincolnshire	MED
FR/01/S064	BILLINGHAY N CUT 2m raised earth defences protecting high grade arable and numerous villages Billinghay, Digby	Lincolnshire	MED

MEDIUM RISK SYSTEMS

<i>FRM System</i>	<i>Group Name</i>	<i>Catchment</i>	<i>Consequence Rating</i>
FR/01/S065	CARR DYKE & DELPHS 2m raised earth defences protecting high grade arable and numerous villages Potterhanworth, Branston Timberland and Walcott	Lincolnshire	MED
FR/01/S072	CLAYPOLE defended rural channel protecting Claypole, foston and Westborough	Lincolnshire	MED
FR/01/S116	Foxton Brook, entire length.	Welland and Nene	MED
FR/01/S183	River Ise, Outfall to Warkton Rd Bridge	Welland and Nene	MED

LOW RISK SYSTEMS

<i>FRM System</i>	<i>Group Name</i>	<i>Catchment</i>	<i>Consequence Rating</i>
FR/01/S008	Grasby Beck, Howsham Road bridge to Hill Farm, entire length	Lincolnshire	LOW
FR/01/S009	CREEK DRAIN, Caistor Canal to Upstream limit, entire length	Lincolnshire	LOW
FR/01/S010	South Kelsey Catchwater, Caistor canal to Kelsey road, entire length	Lincolnshire	LOW
FR/01/S011	THORNTON catchwater drain, entire length	Lincolnshire	LOW
FR/01/S051	STAINFIELD BECK drains arable land isolated prperties	Lincolnshire	LOW
FR/01/S057	CLIFF BECK drains arable land	Lincolnshire	LOW
FR/01/S096	River Welland from Rockingham Bridge to the A427 including the Great Bowden Flood Relief Channel, and the entire lengths of Ashley Dyke, Slawston Brook, Langton Brook and Stonton Brook are also included.	Welland and Nene	LOW
FR/01/S115	Medbourne Brook, upstream of FSR embankment, east and west arms.	Welland and Nene	LOW
FR/01/S120	River Welland Millstreams and the River Welland from Tallington to Uffington Rd Bridge.	Welland and Nene	LOW
FR/01/S123	Brook Drain Woodcroft Arm	Welland and Nene	LOW
FR/01/S158	Willow Brook, Bulwick Rd Bridge to Weldon Central Stream confluence, and Gretton Brook from its outfall to Gretton Rd Bridge.	Welland and Nene	LOW
FR/01/S164	Perio Herne, entire length	Welland and Nene	LOW
FR/01/S170	Harpers Brook, Brancey Brook to Sudborough Rd Bridge.	Welland and Nene	LOW
FR/01/S179	Chelveston Brook, entire length	Welland and Nene	LOW
FR/01/S182	Knuston Brook, entire length	Welland and Nene	LOW
FR/01/S194	Barton Brook, entire length	Welland and Nene	LOW
FR/01/S211	Heyford Brook, Canal to Main River Limit	Welland and Nene	LOW
FR/01/S213	River Nene, Everdon and Newnham arms	Welland and Nene	LOW

LOW RISK SYSTEMS

<i>FRM System</i>	<i>Group Name</i>	<i>Catchment</i>	<i>Consequence Rating</i>
FR/01/S218	Car Dyke South, Fen Rd Bridge to Main River Limit.	Welland and Nene	LOW
FR/01/S996	River Nene, Church Brampton Branch, entire length	Welland and Nene	LOW

Question 33 (Mr David Curry): *We had a Planning White Paper recently and we will have planning legislation presumably quite soon. Are there things which ought to be in that planning document which would address this issue.*

The Planning White Paper was published in May 2007. It follows the previous planning reforms in the Planning and Compulsory Purchase Act 2004. It is effectively in two parts, with a number of minor reforms to the town and country planning system and a new system for dealing with major infrastructure projects. The latter could result in a Planning Reform Bill in the Autumn, subject to Parliamentary time being available.

None of the town and country reforms in the White Paper specifically cover either the issue of flood risk or sustainable drainage systems. However, one of the proposals in the White Paper is that Communities and Local Government: “produce a more strategic, clearer and more focused national policy framework with (Planning Policy Statement) PPS1—Delivering Sustainable Development at its heart”.

PPS1 provides policy support for sustainable drainage systems, along with PPS25 Development and Flood Risk which includes a key planning objective to: “reduce flood risk to and from new developments through location, layout and design, incorporating sustainable drainage systems (SUDS)”. Both PPSs provide strong policy support for the use of SUDS so it is important that in producing its ‘more strategic, clearer and more focused national policy framework’ the government does not lose this important policy advice. Equally PPS25 provides increasingly strong policy on development and flood risk and this must also be protected in any policy reforms.

With strong policy promotion of SUDS in planning and plenty of technical guidance on how to do SUDS the issue preventing the widespread use of SUDS appears to be that of adoption. There are growing signs that water companies are willing to take on the adoption of SUDS but funding their long term maintenance is a key problem. A funding solution needs to be found quickly to enable these proven systems to be used. Renewed effort is required to resolve this issue, including involvement of key stakeholders such as Ofwat, water companies and the major housebuilders.

We are building substantial numbers of new homes that will still be around in 50—100 years. The decisions we make now about their design and layout will have an impact on flooding into the future. It is important that they are designed in a way that minimises the chances of major urban flooding in the future.

Urban flooding will only be effectively tackled by key stakeholders working together to common standards. Longer term (25 year) strategic planning of drainage infrastructure that takes account of climate change and sets out responses of different organisations involved will be a key mechanism. In January this year, Defra launched a £1.7million programme to pilot this approach in 15 areas of the country. The Environment Agency is involved in all of the pilots, and is the lead organisation in Surrey, Newcastle, Lincoln and Torbay.

But we believe that Local Authorities are best placed to co-ordinate production of these plans, whereas the Environment Agency is best placed to contribute to their production, and ensure they are fit for purpose for the long term.

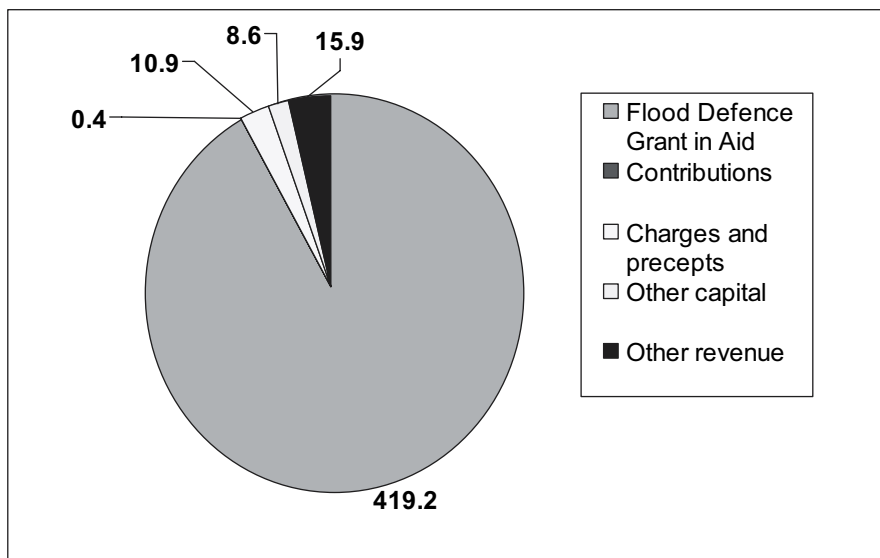
In terms of the major infrastructure proposals in the Planning White Paper, we need to ensure that major developments do not give rise to flood risk elsewhere and that they avoid high flood risk locations wherever possible. It is proposed that planning consultees, such as the Environment Agency, have a key role to play in the developments of major infrastructure proposals, and we expect developers to pay particular attention to our advice on flood risk. The Planning White Paper proposes ‘streamlining’ the planning process. Whilst we accept this is needed, we would want to avoid a watering down of the commitments secured in the Planning Policy Statement 25 and ensure that EA views are taken into account in decisions on infrastructure proposals and that the option for call in is retained where EA sustains an objection.

New National Policy Statements will be created to guide major infrastructure proposal decisions—we believe these should be subject to Strategic Environmental Assessment to help ensure these objectives are achieved. The overall purpose of the new major infrastructure process should be the achievement of sustainable development, which mirrors the purpose given to the Town and Country Planning system in the 2004 Act.

Question 86 (Mr Richard Bacon): *If there are various sources of funding, a clear note that sets out in a chart where they all come from and what they all add up to so we know what we are talking about. Could you also, within that, specify capital expenditure, maintenance expenditure and new expenditure and do it for each of the last five years and what your planning assumptions are going forward.*

Our income comes from Flood Defence Grant in Aid (Defra), Local Authority Levies, Private Contributions, Charges and Precepts (such as drainage charges to Internal Drainage Boards), and other income (from sale of assets & rental charges).

(a) Breakdown of funding sources by type: 2006/07



Source	£m	%
FDGiA	419.2	93.9
Contrib	0.4	0.1
Charges	10.9	2.4
Other cap	8.6	1.9
Other rev	15.9	3.6
Total	454.6	100

(b) Table of expenditure 2002–03 to 2006–07 (all figures £m)

Year	2002–03	2003–04	2004–05	2005–06	2006–07
Capital	170.1	172.4	176	255.3	195
Revenue (includes Maintenance)	183.1	183.3	220.6	291.2	259.6
Total	353.2	355.7	396.6	546.5	454.6

Note: In order to enable a comparison with earlier years and alignment with the future years' Government funding figures the above table does not include Local Levy funded expenditure (Table 6 in the NAO Report is total expenditure including Local Levy)

Our planning assumption has been modest growth for capital and reduction in revenue, however recent announcements on funding have changed the degree to which capital expenditure is likely to grow and we are presently making adjustments to our forward plans. It is not yet clear how much of the new funding will come to Environment Agency and when.

Question 86 (Mr Richard Bacon): *Administrative costs*

Administrative costs in 2006–07

<i>National Costs</i>	<i>£k</i>	<i>Narrative</i>
National Centres and Services	6,197	Services, including internal audit, National Environment Assessment Services, science and fleet operations, provided for frontline staff centrally
Policy Units & Business Process Units	7,237	Develop and implement national policies, design and monitor consistent processes
Corporate Information Services	7,694	Information technology development and support for all FRM staff
National Corporate Directorate costs	7,637	Cost of the National Directorates including the cost of the Executive and Board
Accommodation and Depots (National)	10,736	All accommodation rent/rates including the costs of depots for the workforce
<i>Regional Support Service Costs</i>	14,813	Delivery management teams and their local support, including Regional Management Teams, finance, HR and facilities management
Regional Strategy Teams inc Corporate Affairs etc	6,037	Local customer and stakeholder engagement—strategic environmental and FRM planning
<i>Area Support Services</i>		
Area Customer Services	3,498	Provide a customer focus for planning and general liaison with the public and stakeholders
Total	63,849	

Question 139 (Mr Edward Leigh): *I want to know, reference paragraph 3.8 on page 24, why you spent so much developing plans for new flood defences rather than actually building them.*

Activities classified as Development.

Development costs cover all the study work, investigations and design activity that may lead to construction work. The portfolio of study work involved also contributes to actions not involving the Environment Agency in construction activity. These include:-

- Future approaches to development control
- Action by other operators (such as improved surface drainage)
- Changes to maintenance regimes
- Catchment Flood Management Plans & Shoreline Management Plans
- Detailed feasibility of ‘short listed’ priority schemes
- Planning approvals, including enquiries
- Detailed design of schemes.
- Site investigations
- Scheme drawings and contract documents

In 2005–06 we spent £64.5m on “development costs” and £161m on construction work.

Our investment in these studies yields benefit for the public purse through :-

- Work by others
- Non construction activities
- Selection of the preferred scheme option (eg water storage area or higher defences)
- Identification of highest priority works

Actions to enhance efficiency

To pursue future improvements we have:

- Focussed on improved construction delivery giving greater confidence to delivery of programme and reducing the degree of contingency schemes required as programme ‘float’. External benchmarks show that our performance on budget management places us in the top 10% of construction clients in the UK This has progressively improved and now allows us to reduce the proportion of schemes in development at any one time.

- Developed new tools to map and quantify costs, damages and risks. These enable more effective and efficient early calculation of the costs and benefits of a flood risk area, allowing early curtailment of work on low priority locations.

In combination these improvements will allow us to reduce total expenditure on study work and other development costs by 3% a year for the next 2 years. In addition we are currently developing further supporting tools on risk mapping, and longer term investment plans that will enable further efficiency savings.

Question 139 (Mr Edward Leigh): *I want to know why such a small proportion of your construction budget is available for new projects, with reference to figure 15 on page 23.*

The proportion of committed work varies from year to year depending upon the portfolio of projects that makes up the programme. Currently we have a number of multi year schemes including for example works at Nottingham (£46m over 5 years), works on the coast at Dymchurch (£54m over 10 years) and Broadland PFI (£130m over 20 years).

This year we have £104.7m committed on 163 projects, so only £20.2m is available to start 33 projects. This will change from year to year as projects end, and new, long term projects begin.

Typical Project Timeframes

In order to ensure efficient construction we are often constrained to delivering works in only part of the year (normally summer months) thus our larger projects often take a number of years to complete. Our commitment to such projects means that only limited funds are available each year to start new projects. In practice we ensure that contractual provisions exist for us to efficiently delay or curtail work and provide greater opportunity to introduce new work, however this is often undesirable and rarely offers better value for money.

Question 139 (Mr Edward Leigh): *I want to know why it is that six years after the last NAO Report, your data systems are still of such poor quality, with reference to summary paragraph 5, final bullet on page 7.*

Asset data and the National Flood and Coastal Defence Database (NFCDD)

We have worked hard to tackle the weaknesses identified in the previous NAO Report. In particular, we have

- Improved greatly the quality and completeness of the data
- Developed a standard set of Reports available nationally and regionally, including those on asset condition, asset maintenance, work planning and programming priorities, system condition target Reports and inspections due, programmed and carried out.

NFCDD is not designed as a data management system but as secure data storage. This can slightly increase the complexity of its use, but has other benefits in terms of data security.

Since completing the improvements we made in 2006, we commissioned a further review of NFCDD to tackle the issues identified in the current NAO Report, and have begun to implement many of its recommendations. For example we have improving the capacity to download data and provide nationally consistent Reports, and identified the work required to move to a full asset management system.

As we expand our business, learn from experience and evolve new techniques and approaches, so our data needs change. We are constantly working to ensure our data and systems are fit for purpose.

Additional briefing—Catchment Flood Management Plans (CFMP)

The EA is in the process of developing 68 CFMPs in England (to be completed by end December 2008) and for nine in Wales (to be completed by end March 2009). Whilst these plans are essential for long term planning of flood risk management the absence of a plan does not mean that no action is planned to be taken to reduce risk. The EA mapping systems and our National Flood Risk Analysis already drive much of our investment and are used extensively to manage our capital and maintenance programmes targeting investment where risks are highest.

The absence of a completed plan for Sheffield, Hull, Leeds or Doncaster does not mean that no solutions to flooding problems have been contemplated or acted upon. Proposals for Leeds are well advanced and much work has previously taken place around Hull. However, it has to be recognised that even with defences, much of the recent flooding would not have been avoided since it effectively resulted either from drainage systems being overwhelmed or from overtopping of flood assets due to extreme rainfall levels.

Catchment Flood Management Plans take a strategic long-term look at flood risk in a river catchment. Each plan considers the main physical processes and factors that generate flooding and evaluates flood risks. This process covers from the moment rainwater falls onto the land, via the passage of floodwater through river valleys and how it affects floodplain settlements, to the sea.

The plans set out how flood risk is likely to change over the next 50-100 years when considering the impact of climate change and how land is used and managed.

CFMPs will shape the future of flood risk management in England and Wales. They will set out objectives for the catchment and develop local flood risk management solutions. The plans develop an action plan that sets out how risk can be managed in that catchment in a sustainable way using a broad portfolio of flood risk management tools. The action plan will drive what we and others can do to reduce flood risks to people and the natural and built environments.

Why do we need CFMPs?

Catchment Flood Management Plans will support the development of better, sustainable and safe communities and we hope they will encourage people and organisations to work together to avoid, manage or live with flood risk. We know we can only produce effective Catchment Flood Management Plans with help from other organisations, such as planning authorities and other flood operating authorities. Agreeing policies to manage flood risk in a given catchment and making those policies work, requires co-ordinated action by these local organisations and groups, and we hope that they will use CFMPs to inform their own plans and activities.

What do CFMPs look at?

Catchment Flood Management Plans take a strategic approach to flood risk management by assessing the risks across the whole catchment. As part of this approach, they will focus on:

- Flood risk management planning

CFMPs will set out our objectives for the catchment, what policies will be adopted to enable us to best deliver those objectives, and outline the range of flood risk management responses that will work for that catchment. They will enable the prioritisation of actions based on risk, so we can target our investment in the highest risk locations first.

- Climate change

CFMPs include an assessment of what flood risk could look like in 50-100 years time in the catchment. By considering the long-term we can start to plan for future climates and make decisions whether they way we are managing risk now will still work in the future.

- Spatial planning

Spatial planning has a very important role to avoid new flood risks being created through inappropriate development. Flood plains are essential for rivers to live and breathe—making space for floodwaters in rural areas and through towns is essential to reduce flood risk and benefit wildlife.

Catchment Flood Management Plans will help spatial planners undertake their Strategic and Local Flood Risk Assessments and assess how safe and sustainable their development proposals are.

In England, we want Catchment Flood Management Plans to support Spatial Strategies, Local Development Frameworks and associated Flood Risk Assessments; in Wales, we want them to support the Wales Spatial Plan, Local Development Plans and associated Flood Consequence Assessments.

- Urban drainage

Poor surface water drainage in urban areas can cause local flash flooding. The increase in high intensity rainfall which climate change is expected to bring will make this worse. Catchment Flood Management Plans will indicate where this could be a problem now and where problems may occur in the future, and therefore identify where integrated urban drainage plans should be considered. Although as we have seen in the last few days traditional flood defence will not alleviate all urban flooding in face of significant rainfall.

Additional briefing—Progress since 2001

We have made significant progress since the 2001 report in areas such as gaining greater oversight of flood risks, creating new guidance on climate change, improving management of major construction projects and protecting more people (all confirmed in the NAO Report).

Strategic Planning

- We have progressed the development of Catchment Flood Management Plans (CFMPs) in partnership with other key organisations.
- We delivered the coastal strategic overview.

- We met Defra's High Level Target to develop costed action plans for all 64 priority Water Level Management Plan (WLMP) sites that we have responsibility for by the April 2007 deadline. A £14 million programme to implement those costed action plans is currently underway.

Data

- We have improved National Flood Risk Assessments (NaFRA).
- We have provided better flood risk data to the insurance industry so that they can continue to provide insurance cover to those at risk of flooding.
- We have delivered our asset register in the form of the National Flood and Coastal Defence database. Our database now includes a more comprehensive list of flood defences. We have, as the NAO report recognises, "... established a more rigorous system for classifying, recording and monitoring the condition of flood defence assets".

Flood Mapping

- We have mapped the probability of flooding for almost all of the land in England and Wales. Over 99% of properties are now covered and the information is available free to householders on our website or through our Floodline service.

Flood Risk and Development

- We have supported the development and implementation of Planning Policy Statement 25 (PPS 25) at a local level.
- We have updated guidance on the impacts of climate change on flood risk for inclusion in Planning Policy Statement 25 (PPS 25) and Flood and Coastal Defence Project Appraisal Guidance.

Flood Defences

- There are 24,000 miles of flood defences and 46,000 flood defences structures protecting properties in England, a substantial increase since 2001 when we had 11,000 miles of defences and 23,000 structures. This is due to the inclusion of coastal defences, the inclusion of defences transferred from local authorities and IDBs, as well as reflecting our more accurate and comprehensive records.
- We have inspected and classified our 3,300 systems across England and Wales as High, Medium or Low risk
- We have improved our asset inspection process. It is now recognised in the NAO report as "effective and practical".
- The replacement costs of all our assets at today's prices is £20bn.
- Over the 5 year period 2003-04—2007-08 we will have created nearly 960 hectares of Biodiversity Action Plan habitat.

Protecting Communities

- We have improved the standard of protection for 100,000 houses between 2003-04 and 2005-06 against the target set by Defra of 80,000. We are also on track to exceed the target of improving protection to a further 85,000 properties between 2005-06 and 2007-08; we will have reduced flood risk to over 164,000 houses by the end of 2007-08.

Capital Programme

- Since the publication of the last report we have dramatically improved our delivery of the capital programme. This is recognised in the NAO report, and other ‘scrutinies’ such as The NAO Report on Improving Public Services Through Better Construction (HC364 I) and the Zero Based Review (June 2006). Points to note are:
 - Better project management through a national capital project management service;
 - The development of a state of the art procurement process;
 - Full delivery of a major project programme that has doubled, from £104M in 2000-01 to £211M in 2005-06;
 - We have achieved value management savings (costs avoided and cash released) of £22.2M since 2003-04;
 - Our average project development time has reduced from by half;
 - Almost three quarters of the aggregates we now use have been recycled;

Flood Awareness, Forecasting and Warning

- We have developed and implemented a new, more effective flood forecasting service that allows us to provide greater accuracy in forecasting floods and issuing warnings;
- We launched a direct flood warning system in 2005. Almost 300,000 of properties at highest risk are now registered on it. This means more people at higher risk are receiving warnings when it really counts. During the June 2007 floods, over just one week, (25th June to 2nd July), Floodline Warnings Direct sent out 91,986 messages.
- The Environment Agency’s Flood Awareness Campaign is a programme of communications to raise awareness of flood risk, encourage people to prepare in advance and targeted campaigns to vulnerable groups and specific communities
- It is supported by our Floodline call centre in (opened in 1999) to provide the public with recorded flood warning information and access to trained staff 24 hours a day. The service has received more than one million calls in the last five years, and calls have doubled since the launch of Floodline Warnings Direct in 2005. In June 2007 the call centre was dealing with 500 calls an hour at the peak—the daily average is 256 calls.
- Floodline has responded to the challenges of efficiency, answering 95% of calls within 15 seconds (on a par with some of the top performing police authorities) and quality, reporting 84% overall satisfaction measured in our challenging “mystery shopping” quality assurance programme.
- More people than ever are going to our website for information about flooding—it is a critical service for flood warning information and advice. During the June 2007 floods we used a special version of our website to provide greater access to the public as demand increased. The website served 11,500,000 pages and had 850,000 unique visitors in 5 days (25th-29th June)—around 10 times our normally weekly traffic. During peak times we were serving over 250,000 pages to 30,000 users an hour.
- We have improved stakeholder and community engagement. We are developing toolkits to help communities adapt to flood and coastal erosion management policies and climate change, guidance for land use to mitigate flood risk, and improved evaluation of multiple benefits.
- We have carried out market research since 1997 to measure the general awareness of flood risk, our role in managing flooding, behaviours of those at risk preparing for flooding in advance and post floods surveys to find out if people took the right action in response to flooding. The public is more aware of our role in flooding (71% in 2006)—a 23% increase since 1997.
- Awareness amongst those who live in flood risk areas has fluctuated since we began the surveys in 1997. Awareness rose following the Autumn 2000 floods, then dipped and rose again following the launch of our Flood Map on the internet in 2004. The last recorded survey (2006) saw a downturn in awareness but our market research agency advised that high level of awareness are unlikely to be sustained without major flooding/mass media coverage of flooding on a national scale.

Funding

- We have successfully implemented the 2002 Spending Review and recommendations from the 2003 Flood and Coastal Defence Funding Review.
- We have restructured our emergency response teams released efficiency of £4.7m per annum without compromising standard of service provided.

- We are increasingly moving towards focusing our resources on high-risk systems. This has improved particularly since 2004 when the Environment Agency gained increased responsibility for funding decisions from the former Regional Flood Defence Committees. Moving from past conventions to the current year where we now invest approximately 3.5 times as much in maintenance and operations of High risk as we do in Medium and Low risk systems.

Additional Briefing—Lessons learned following the recent floods

As is our normal practice, we have commenced a review of Lessons Learned following the recent floods.

Meantime, it may be useful for you to have our preliminary view on some of the big issues emerging so far.

1. The weather events were severe and, in some cases, the sort of event which would be considered less probable than 1 in 150 years.

2. Our forecasting and warning worked well.

3. Inter-agency collaboration through Gold and Silver commands generally worked well, as far as our issues are concerned.

4. A major cause of floods and, in some cases, for example Hull, the prime cause was the overwhelming of surface water drainage systems by large volumes of water. We are committed to collaborating with Defra on the urban drainage pilot studies which are underway. This work needs to proceed with pace to ensure there is clear responsibility given to identified bodies, probably local authorities, working with water companies, to draw up 25 year strategies for drainage capable of withstanding an increasing number of extreme events. Climate change proofing urban drainage systems will require substantial investment and considerable lead-time to re-engineer existing drainage systems. Stronger measures need to be available to ensure new development is climate change/flood-proofed.

5. Our defences in the vast majority of cases worked to their design standard. The severity of the events meant that many floods occurred because the defences were overtopped by the extreme volume of water. The government's advised standard for riverine flood defences is to a 1 in 100 year event. There needs to be a review of what level of risk is acceptable and therefore what standard of protection is needed in view of the anticipated increased severity and frequency of such events with climate change.

6. Much of our infrastructure—roads, railways, schools, hospitals, electricity generation and distribution, police and fire stations—is in the flood plain and needs climate change/flood-proofing.

7. Though increasingly effective measures to prevent inappropriate developments in the flood plain have been provided to us, the legacy of considerable flood plain development over the last three decades remains. We need to consider how to offer better defences where appropriate and to retro-fit resilience measures to buildings to reduce the damage when floods occur.

8. We welcome the announcement of additional funds. Indications of amounts and timings are needed as soon as possible to allow us to target these at the highest priorities in a systematic way that delivers the most effective flood risk reduction.

9. There were two incidents involving reservoirs and a review of the legislation and regulatory framework would be timely.

10. Some commentators are already suggesting disaggregation of flood risk management to more local control. We should recall that government consulted on governance and funding after the extensive Autumn 2000 floods and concluded that a national approach was needed to enable effective focus on priorities and more efficient use of resources and skills.

Also, the integrated management of rivers, including pollution control, water resources, the land/water interface and biodiversity as well as flooding was an important principle when the Environment Agency was created and is even more valid now.

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