



Flooding

The real risks

Background

The floods which hit areas of the UK between June and August 2007 were the results of prolonged and persistent rainfall more often associated with the winter months than summer.

Much of the flooding that occurred was the result of flash floods caused by sudden downpours which left the ground saturated and impermeable, drainage systems unable to cope and streams and waterways overflowing.

The risk of flooding can often be higher than anticipated due to hidden factors such as land drainage and sewer systems, as well as the more obvious threat posed by rivers and to some extent, the sea. This creates a cumulative risk, with crises capable of being triggered by a variety of metrological conditions.

It is imperative that government focuses on the issue of surface water management, as well as 'traditional' flood defences. Many areas with relatively high levels of fluvial (ie pertaining to rivers) defence found themselves flooded during the summer due to the limitations of their urban drainage systems. It is impossible to completely eradicate flooding, however high the standard of flood defence and in genuinely extreme circumstances, fluvial defences are more than likely to be overtopped. It is therefore vital to improve building regulations and urban design to better manage surface water during serious conditions.

In addition to flood defence and urban design, it is necessary to confront the issue of the areas of land which, due to climate change and coastal erosion, may not be defensible in the long term. This point may be decades away, but it is important to begin engaging with the public on this matter and to address factors such as compensation, incentives to relocate and the practicalities of abandoning established settlements.

Key statistics

- Taking into account changing weather and development patterns the Foresight report states the UK may need to spend between £22bn and £75bn in the period up to 2080 on new engineered flood defences¹. This figure could however be reduced by taking an integrated approach encompassing urban design, improved drainage and designated flood plains.
- In England and Wales alone, over four million people and properties valued at over £200bn are at risk from flooding².
- In 2005, 21 major planning applications were approved against Environment Agency (EA) guidance on flood risk³.
- The UK has suffered major inland floods in 1998, 2000, 2003 and 2007. There has not been a major coastal flooding incident since the 1950s but erosion and rising sea levels remain a pressing issue. The 2000 floods caused damage estimated at £1bn⁴. The 2007 floods led to 150,000 homes temporarily losing their water supply and a further 50,000 their power supply⁵.
- The government's July 2006 Housing Green Paper⁶ increased the target for new homes to be built by 2020 to three million and reiterated that a proportion of these homes would be built on flood plains, notably in the Thames Gateway.

ICE has published a number of documents on the issue of flooding. In 2000 the government asked ICE to hold a presidential commission into flood risk management and ICE published Learning to Live with Rivers in 2001 and then Engineering Skills for Flood Risk in 2004, both of which contain further information on all the points raised.

¹ Office of Science and Technology (2004), *Foresight, Future Flooding*, HMSO, London, UK.

² Office of Science and Technology (2004), *Foresight, Future Flooding*, HMSO, London, UK.

³ Law Society (2006), *Response to consultation on PPS 25*, Law Society, London, UK.

⁴ Environment Agency (2001), *Lessons Learned: Autumn 2000 Floods*, Environment Agency, Bristol, UK.

⁵ *Flooding is a "wake up call" says Environment Agency*, New Civil Engineer, 26 July 2007.

⁶ Communities and Local Government (2007), *Homes for the future: more affordable, more sustainable* – Housing Green Paper, HMSO, London, UK.

Recommendations

Government

- An end to “stop-start” development of flood and coastal defences. A clear, securely funded, long term, forward investment programme is required. In addition to its negative effect on flood defence work overall, stop-start development makes it problematic for industry to recruit and retain skilled engineering staff in the long term
- Government must take a lead in brokering consensus on the level of defence that will be put in place and how the costs for its construction and maintenance should be divided up
- Government must ensure that businesses and the public don't end up paying the clean up costs, which are usually greater than the actual cost of providing flood defences
- Government needs to resolve the lack of clarity over whether defences should be discontinued because they are not sustainable, or whether potentially sustainable defences should not be built due to budget constraints
- The creation of a single body with strategic responsibility, authority and accountability for all aspects of flood risk management is urgently required
- Local Authorities must be given the technical and political support to effectively implement PPS25 and ensure that development and its impact in areas of flood risk is effectively managed.

Agencies

- The EA should take steps to improve the efficiency of the management of its capital programme. To facilitate this process the EA should continue to move to contractual mechanisms that provide a long-term (five to 10 years plus) commitment to investment
- A greater degree of interaction is necessary between the EA and the Met Office. The EA is responsible for giving flood warnings relating to rivers and the sea, but the Met Office is best placed to offer localised warnings using rainfall radar technology. The inadequacies of the warnings in June and July 2007 make it clear that the EA and the Met Office should work more closely in this area.

What happened in Gloucestershire

Gloucestershire was badly hit by flooding over the summer, with some 5,000 homes and businesses affected by floods, loss of power and water supply. The public sector clean-up and repair costs are estimated at over £30m, with damage to local homes exceeding £1bn.

Approximately 75% of the floods in the area were caused by overtopped drains and streams, rather than by main rivers bursting their banks.

CEO of Gloucestershire County Council Peter Bungard said: “The floods exposed the vulnerability of our critical infrastructure such as water treatment works, national grid key points and the M5, M50 and A40.

“The Victorian drainage system is already under heavy strain and our drains and sewers are simply not designed for the type of rainfall the UK is now experiencing.

“Streams, waterways and non-main rivers were the cause of much of the flooding, but it's completely unrealistic to expect riparian owners to maintain and improve flood defences – for each urban stream there could easily be perhaps 200 landowners.

“Flood prevention investment is of course welcome and relevant to coastal and main river flooding. However, bear in mind that there is probably zero investment happening today for drainage and stream upgrades, which would be the solution for flash flooding.

“We need to ask whether funding is sufficient and whether our priorities are correct.”

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