

Extracts from Learning Lessons from the 2007 Flood

An independent review by Sir Michael Pitt

Including:- Executive Summary
 Interim Conclusions
 Recommendations

Executive Summary

Background

During August 2007, Sir Michael Pitt was asked by ministers to carry out a review of the flood-related emergencies which occurred during the summer of 2007. This is the interim report of the Review. It is being published now to achieve three objectives:

- to identify issues which need urgent action;
- to set out the direction for the remainder of the Review; and
- to provide a document for consultation before the final report is published next summer.

The floods during June and July 2007 were a wake-up call. The three months from May to July were the wettest since records began and the events that followed have been linked to the deaths of 13 people. They also resulted in damage to approximately 48,000 homes and 7,000 businesses. Power and water supplies were lost, railway lines, eight motorways and many other roads were closed and large parts of five counties and four cities were brought to a standstill. From an emergency response standpoint, this was a new level of challenge. The flooding triggered a series of emergencies which stretched local resources to the limit.

Conversations with victims illustrated the scale of distress and human misery experienced by many people. Even considering the extraordinary degree of disruption caused by the floods, the country was fortunate that the impact was not much more severe. There were several near disasters of an even greater magnitude. While the scale of loss and damage was massive, the crisis would have been worse had it not been for the dedication, quick thinking and effective action of those involved in the rescue and recovery operation.

Flood risk is here to stay. The Review recognises the findings of other reports, such as Stern and Foresight, which predict climatic change and state that this country can expect more extreme weather, with periods of intensive rainfall. The Review proposes that the country should confront these mounting challenges and adapt accordingly, recognising that this process of adaptation will take place over a generation. The impact of the floods and the high level of risk involved could have been significantly reduced with stronger local leadership of flood risk management, clarification of roles, more effective cooperation between responsible organisations, better protection of infrastructure and wider and deeper public engagement.

Given the severity of the emergencies this summer and the risks we face in future, the over-riding purpose of the Pitt Review is to learn lessons from the

floods of 2007 and to bring forward recommendations that will help the country adapt and deal more effectively with future flooding incidents.

The findings

The Report contains a total of 15 recommendations and 72 interim conclusions. They are strategic in nature but with implications for every locality in the country. The Report also considers one or two of the 'myths' surrounding flooding. These include strongly held views about standards of waterway maintenance and the belief that some communities were deliberately allowed to flood to reduce the impact on places further downstream.

Chapters 1 and 2 provide the context for the Review, describing the severity of the emergencies and their wider social and economic impacts. They summarise the events of June and July and the effects the floods had on individuals, their families, businesses and communities. They are drawn from social research commissioned specifically for the Review, published in full as a supporting document to this Interim Report.

Climate change and the risk of flooding are discussed in **Chapter 3**. Ideally, experts would be able to accurately forecast bad weather and predict well in advance which properties will flood even more effectively than they already do. Doing so would give the emergency services and others more time to respond and to make the right decisions in a crisis. In practice the distribution, timing and intensity of rainfall and the dynamics of water flow once rain hits the ground are notoriously complex to model. Also, the nature of flooding is changing. In the past, considerable attention has been paid to the risks of coastal and river flooding. However, the greater intensity of rainfall and increasing urbanisation are leading to more flash floods caused by water running off the surface of the land. River, surface water and groundwater flooding all took place this summer, adding to the complications.

During the emergencies, the Met Office and the Environment Agency worked well together, but the limitations of some existing processes, together with technical limitations of flood prediction, meant that many property owners received warnings after their property had already flooded or not at all. Research into flood prediction is advancing and we believe this should be a priority subject to feasibility and cost effectiveness. Rapid progress must be made over the next few years to ensure that flood risk planning and management, including public warnings and emergency response, is underpinned by an improved understanding of when and where flooding will occur.

There are obvious concerns about the large number of properties currently at risk of flooding and the likelihood of further significant development in flood risk areas. **Chapter 4** discusses the need to strengthen and enforce the provisions of PPS 25 and Building Regulations to ensure that flood resistance and resilience measures are fully built into all new development where necessary.

The law relating to drainage systems is complex and numerous bodies are involved including the Environment Agency, water companies, local authorities, internal drainage boards and private owners. It is not surprising that the public are confused and that they wonder who is accountable. There is room for improved inter-agency cooperation. This Review recommends that the Environment Agency should take strategic direction of managing inland flood risks, while local authorities should adopt a new leadership and scrutiny role overseeing flood risk management within their local area.

In general, insurance companies responded quickly and effectively to the emergencies despite the vast number of claims they received from residents and businesses. However, some were less efficient than others and some people have received an unsatisfactory level of service. The Review is discussing with the insurance industry ways of achieving uniformly high standards and this subject will be reviewed again next year.

Chapter 5 deals with the calling of Gold, Silver and Bronze Commands and the response to the flooding emergencies. Relevant aspects of the Civil Contingencies Act were put into practice effectively and there is admiration for the way in which the emergency services and other responders worked tirelessly throughout one of the most complex, challenging and lengthy series of emergencies for many years. However, the Review also believes that the country was not as well prepared as it should have been.

Responders were surprised by the scale and duration of the emergencies and they often found themselves reacting to unexpected events. Sometimes basic information about operation and characteristics of the local drainage systems was unavailable when needed. The vulnerability of critical infrastructure and consequences of its failure were not fully appreciated in advance. The country must be better prepared and the Review makes a series of recommendations about national and local leadership, emergency planning, protection of local emergency facilities, water supplies, rescue and funding mechanisms.

In **Chapter 6** the Review is concerned about the major loss of essential services during the floods. Sites containing critical infrastructure were poorly protected. For example, tens of thousands of people found themselves without tap water and power, 10,000 were stranded on the M5 motorway overnight and 500 were left stranded at Gloucester Railway Station. Even greater loss of essential services was only narrowly avoided and there were major concerns about the complete failure of Ulley Reservoir. The Review makes recommendations on sharing information, building greater standards of protection and the closer involvement in preparedness planning of essential service providers, such as the water and power companies.

People depend on warnings and advice during an emergency. They will have important decisions to make about their safety and that of others, and about the risk of damage to their property. **Chapter 7** describes the efforts made by responders to keep the public informed and the contribution of local media – especially the ability of local radio to transmit up-to-the-minute broadcasts. The public appreciated the efforts of local

authorities and other organisations which systematically knocked on doors and checked on the well-being of residents and businesses. The Report sets out proposals for ensuring that advice and warnings from various agencies are better coordinated, that councils play their full part in reassuring the public and that people are made fully aware of any flood risk when they buy or rent property. It also makes clear that individuals and communities must share responsibility for actions to deal with flooding.

Next steps

This first Report sets out the Pitt Review's initial thinking and proposals after just four months' work. The Review has benefited from the extensive evidence already submitted, but much more needs to be considered before the final Report will be ready next summer.

In particular, further work needs to be done to consider the costs, benefits and feasibility of the interim conclusions. Interested individuals and organisations should let us have their views and join in a discussion over the coming months. You can find different ways to contact the Review Team set out in **Chapter 8**. The deadline for comments and further evidence is 31 March 2008.

Full List of Interim Conclusions

Chapter 3 – Building a better understanding of the risk

IC 1 - The interim conclusion of the Review is that Government takes the lead in making the case for the need for adaptation to climate change and particularly in mitigating the potential impacts on communities.

IC 2 - The interim conclusion of the Review is that the Government develops a clear strategy and action plan to deliver the provisions of the Climate Change Bill to support adaptation to increasing impacts from flooding.

IC 3 - The interim conclusion of the Review is that the Environment Agency further develops its tools and techniques for predicting and modelling river flooding, especially to take account of extreme and multiple events; and takes forward urgently work to develop similar tools and techniques to model surface water flooding.

IC 4 - The interim conclusion of the Review is that the Environment Agency revises its flood maps to identify areas where there is a risk of significant depths and velocity of water, to improve the effectiveness of emergency planning.

IC 5 - The interim conclusion of the Review is that the Environment Agency works more closely with Local Resilience Forums to provide information drawn from flood risk modelling and mapping tools to improve the accuracy and consistency of flood risk information in Community Risk Registers.

IC 6 - The interim conclusion of the Review is that the Environment Agency progressively develops and brings into use flood visualisation tools, designed to meet the needs of flood risk managers, emergency planners and responders.

IC 7 - The interim conclusion of the Review is that the Met Office and the Environment Agency produce an early assessment of the costs, benefits and feasibility of techniques which can predict where rain will fall and where surface water flooding will occur.

Chapter 4 – Managing Flood Risk

IC 8 - The interim conclusion of the Review is that PPS25 should be rigorously applied by local planning authorities, including giving consideration to all sources of flood risk and ensuring that developers make a full contribution to the costs both of building and maintaining any necessary defences.

IC 9 - The interim conclusion of the Review is that householders and business owners should not longer be able to lay impermeable surfaces as of right.

IC 10 - The interim conclusion of the Review is that the automatic right to connect surface water drainage of new developments to the sewerage system should be removed.

IC 11 - The interim conclusion of the Review is that no new building should be allowed in a flood risk area that is not flood-resilient, and that the Government should work with organisations such as the Royal Institute of British Architects and the building industry to encourage flood-resilient building and development ad development design.

IC 12 - The interim conclusion of the Review is that the Government should incorporate flood resistance and resilience requirements for new properties in flood risk areas into Building Regulations as part of the current process of revision.

IC 13 - The interim conclusion of the Review is the Government should incorporate requirements for resistant or resilient refurbishment of flooded properties in high flood risk areas into Building Regulations as part of the current process of revision.

IC 14 - The interim conclusion of the Review is the local authorities and housing associations should take a more active role in increasing the uptake of flood resistance and resilience measures, leading by example by repairing their properties with appropriate materials where it is cost effective.

IC 15 - The interim conclusion of the Review is that local authorities in high flood risk areas should extend eligibility for home improvement grants and loans to encompass flood protection and resilience products.

IC 16 - The interim conclusion of the Review is that local authorities, as they discharge their responsibilities under the Civil Contingencies Act 2004 to promote business continuity, should encourage the uptake of property-level flood resistance and resilience measures. This should be reflect in guidance from the Government.

IC 17 - The interim conclusion of the Review is that local authorities should lead on the management of surface water flooding and drainage at the local level with the support of all responsible organisations including the Environment Agency, water companies and internal drainage boards, the Highways Agency and British Waterways.

IC 18 - The interim conclusion of the Review is that local authorities in flood risk areas should assess their capabilities to deliver the wide range of responsibilities in relation to local flood risk management.

IC 19 - The interim conclusion of the Review is that the Environment Agency should have a national overview of all flood risk and that, Defra's work on the development of a national overview role for the Agency in relation to surface water flooding should be progressed.

IC 20 - The interim conclusion of the Review is that Surface Water Management Plans, as set out under PPS25, should provide the basis for managing surface water flood risk. These plans should be coordinated by the local authority and be risk-based, considering all sources of flooding.

IC 21 - The interim conclusion of the Review is that a local register of all the main flood risk management and drainage assets (overland and underground) should be compiled by the relevant local authority, including an assessment of their condition and details of the responsible owners.

IC 22 - The interim conclusion of the Review is that Defra should issue guidance on how all organisations can be brought together to work with local authorities on surface water flood risk management, sharing information, modelling and expertise on a consistent basis.

IC 23 - The interim conclusion of the Review is that the Government, as part of its Water Strategy, should resolve the issue of which organisations should be responsible for the ownership and maintenance of sustainable drainage systems.

IC 24 - The interim conclusion of the Review is that Defra should work with Ofwat and the water industry to explore how appropriate risk-based standards for drainage systems (including pumping stations) can be achieved.

IC 25 - The interim conclusion of the Review is that, as part of the forthcoming water industry pricing review, the water companies, in conjunction with local authorities and other partners, should develop proposals for investment in the existing drainage network to deal with increasing flood risk.

IC 26 - The interim conclusion of the Review is that local authority scrutiny committee review SWMPs and other linked plans, such as Local Development Frameworks and Community Risk Registers, to ensure that flood risk is adequately considered and to ensure greater transparency and progress in the management of that risk.

IC 27 - The interim conclusion of the Review is that it is appropriate for the Environment Agency and other local organisations to continue to focus investment on area of highest assessed long-term risk, whether or not they have been recently flooded.

IC 28 - The interim conclusion of the Review is that the Government should commit to a strategic long term approach to its investment in flood risk management planning up to 25 years ahead.

IC 29 - The interim conclusion of the Review is that the Environment Agency should open dialogue with all those landowners who will be affected by either a withdrawal from or significant reduction in maintenance of rural watercourses.

IC 30 - The interim conclusion of the Review is that the Government should develop a single national set of guidance for local authorities and the public on the use of usefulness of sandbags and other alternatives, rather than leaving the matter wholly to local discretion.

IC 31 - The interim conclusion of the Review is that Defra, the Environment Agency and Natural England should work with partners to establish a programme and framework to achieve greater working with natural processes, including the identification of appropriate sites and the development of more incentives for creating water storage, restoring the natural course of rivers and establishing green corridors.

IC 32 - The interim conclusion of the Review is that the Environment Agency should provide an analysis of the effect that land management practices had or would have had on the impact if flooding during the summer 2007 floods.

IC 33 - The interim conclusion of the Review is that flooding legislation should be updated and streamlined under a single unifying Act that amongst other outcomes addresses all sources of flooding, clarifies responsibilities and facilitates flood risk management.

IC 34 - The interim conclusion of the Review is that the Government and the insurance industry should work together to deliver a public education programme setting out the benefits of insurance in the context of flooding.

IC 35 - The interim conclusion of the Review is that the Government and the insurance industry work together to develop options to improve the availability and uptake of flood risk insurance by low-income households and assess the costs, benefits and feasibility of these options, before the Review's final report.

IC 36 - The interim conclusion of the Review is that, in flood risk areas, a note on flood risk and the simple steps that could be taken to mitigate it should be included with all insurance renewal notices. Moreover, if Flood Warning Direct is available in a customer's area, one of the conditions of renewal could be sign-up to this service.

Chapter 5 – The Emergency Response

IC 37 - The interim conclusion of the Review is that the Met Office and the Environment Agency should produce an assessment of the options for issuing warnings against a lower threshold of probability, including costs, benefits and feasibility; this will be considered further in the final report.

IC 38 - The interim conclusion of the Review is that unless agreed otherwise locally, 'upper tier' local authorities should be the lead organisation in relation to multi-agency planning for severe weather emergencies at the local level, and for triggering multi-agency arrangements in response to severe weather warnings.

IC 39 - The interim conclusion of the Review is that where a Gold Command is established, the police, unless agreed otherwise locally, should convene and lead the multi-agency response.

IC 40 - The interim conclusion of the Review is that Gold Commands should be established at an early stage on a precautionary basis where there is a risk of serious flooding.

IC 41 - The interim conclusion of the Review is that Local Resilience Forums should assess the effectiveness of their Gold facilities, including flexible accommodation, IT and communications systems.

IC 42 - The interim conclusion of the Review is that the Local Government Association should consider how best mutual support might be enhanced between local authorities in the event of a future wide-area emergency.

IC 43 - The interim conclusion of the Review is that Cabinet Office guidance to local planners should specifically include incidents which leave large numbers of people stranded on motorways and trunk roads.

IC 44 - The interim conclusion of the Review is that, as part of their emergency plans, Local Resilience Forums should consider the vulnerability of motorways and trunk roads to flooding, and consider the potential for earlier, stronger, more specific warnings, and strategic road clearance and closures, to avoid people becoming stranded.

IC 45 - The interim conclusion of the Review is that Defra should review the current requirement in emergency regulations for the minimum amount of water to be provided in an emergency, to reflect reasonable needs during a longer-term loss of mains supply.

IC 46 - The interim conclusion of the Review is that central government crisis machinery should always be activated if significant wide-area flooding of whatever nature is expected or occurs.

IC 47 - The interim conclusion of the Review is that Defra extends its current departmental programme to share best practice and provide training in emergency response across the organisation.

IC 48 - The interim conclusion of the Review is that Defra and the Environment Agency work together to establish a single London situation room to coordinate flooding information, to act as a focal point for cross-Defra efforts, and to support Defra ministers.

IC 49 - The interim conclusion of the Review is that is that a national flooding exercise should take place at the earliest opportunity in order to test the new arrangements which central government departments are putting into place to deal with flooding and infrastructure.

IC 50 - The interim conclusion of the Review is that financial assistance for local responders in relation to emergency response and recovery should be revised to improve speed, simplicity and certainty.

IC 51 - The interim conclusion of the Review is that Local Resilience Forums should be aware of recent Cabinet Office guidance setting out the transition to recovery. Recovery sub-groups should be established from the onset of major emergencies and in due course there should be formal handover from Gold Command to the local Recovery Coordinating Group(s), normally chaired by the Chief Executive of the affected local authority.

Chapter 6: Critical Infrastructure: Keeping Our Essential Services Going

IC 52 - The interim conclusion of the Review is that the Government should establish a systematic, coordinated, cross-sector campaign to reduce the disruption caused by natural events to critical infrastructure and essential services.

IC 53 - The interim conclusion of the Review is that the Government should develop and issue guidance on consistent and proportionate minimum levels of protection from flooding and critical infrastructure.

IC 54 - The interim conclusion of the Review is that infrastructure operating companies should present the case for further investment in flood resilience through the appropriate regulatory process.

IC 55 - The interim conclusion of the Review is that a duty should be introduced on critical infrastructure operators to have business continuity planning to BS 25999 in places to more closely reflect the duty on Category 1 responders. This should include minimising the loss of supply as far as practicable in the event of a serious emergency resulting from flooding.

IC 56 - The interim conclusion of the Review is that, in relation to information-sharing and cooperation, the Civil Contingencies Act and Regulations should be extended to require Category 2 responders to more formally contribute information on critical sites, their vulnerability and the impact of their loss.

IC 57 - The interim conclusion of the Review is that single points of failure and the complete loss of assets need to be explicitly considered in the risk assessment and contingency planning undertaken by operators, emergency planners and responders.

IC 58 - The interim conclusion of the Review is that Local Resilience Forums should ensure that Community Risk Registers reflect risks to critical infrastructure from flooding and other hazards.

IC 59 - The interim conclusion of the Review is that Category 2 responders should be required to participate fully at the Gold and Silver Commands and that the Government should deliver this through the Civil Contingencies Act or other regulatory regimes.

IC 60 - The interim conclusion of the Review is that emergency plans and business continuity plans of essential service providers should be reviewed annually by local authority scrutiny committees.

IC 61 - The interim conclusion of the Review is that critical infrastructure planning should become a separate discipline within civil protection at the local level.

IC 62 - The interim conclusion of the Review is that the Government should implement the legislative changes proposed in the recently published Environment Agency biennial report of dam and reservoir safety.

IC 63 - The interim conclusion of the Review is that all reservoir undertakers should be required by Defra to prepare inundation maps and share them with Local Resilience Forums to improve Community Risk Registers and emergency planning.

Chapter 7: Engaging the Public

IC 64 - The interim conclusion of the Review is that the Environment Agency should produce a sliding scale of options for greater personalisation of public warning information, including costs, benefits and feasibility, before the final report.

IC 65 - The interim conclusion of the Review is that the Environment Agency works with local responder to raise awareness in flood risk areas and identify a range of mechanisms to warn the public, particularly the vulnerable, in response to flooding.

IC 66 - The interim conclusion of the Review is that advice by telephone during a flood emergency should come from just two sources – the Environment Agency for flooding information and local authority contact centres for local advice.

IC 67 - The interim conclusion of the Review is that advice disseminated via the internet should be coherent by ensuring integration and consistency between local websites, including that of the Local Resilience Forum and those of the all category 1 responders.

IC 68 - The interim conclusion of the Review is that essential service providers should maintain continuous provision of public information during an emergency, through a website linked to other responders and local authority contact centres.

IC 69 - The interim conclusion of the Review is that the Government works towards a single definitive set of flood-related health advice for householders and businesses, which can be used by media and the authorities locally and nationally.

IC 70 - The interim conclusion of the Review is that council leaders and chief executives play a prominent role in public reassurance and advice through the local media during a flooding emergency as part of a coordinated effort overseen by Gold Commanders.

IC 71 - The interim conclusion of the Review is that flood risk should be made part of the mandatory search requirements when people buy property and should form part of Home Improvement Packs.

IC 72 - The interim conclusion of the Review is that the Government launches a public information campaign which draws on a single definitive set of flood prevention and mitigation advice for householders and businesses, and which can be used by media and the authorities locally and nationally.

Recommendations

REC 1 - The Review recommends that more frequent and systematic monitoring of groundwater levels at times of high risk should be undertaken by the Environment Agency, which should begin as soon as possible to predict and mitigate further serious ground water flooding from this winter onwards.

REC 2 - The Review recommends that the environment Agency, supported by local authorities and water companies, should urgently identify areas at highest risk from surface water flooding where known, inform Local Resilience Forums and take steps to identify remaining high risk areas over the coming months.

REC 3 - The Review recommends that the Environment Agency should urgently develop and implement a clear policy on the use of temporary and demountable defences.

REC 4 - The Review recommends that all Local Resilience Forums urgently review their current local arrangements for flood rescue to consider whether they are adequate in light of the summer's events and their local community risk registers.

REC 5 - The Review recommends that all Local Resilience Forums should undertake an urgent review of designated rest centres and other major facilities to ensure either that they have the necessary levels of resilience to enable them to be used in the response to flooding and other major emergencies, or that alternative arrangements are put in place.

REC 6 - The Review recommends that the Cabinet Office, with other departments, should urgently consider the costs, benefits and feasibility of establishing arrangements for the urgent acquisition of supplies during a major emergency, including the use of call-off contracts or the creation of national or regional stockpiles of equipment and consumables.

REC 7 - The Review recommends that that the Department of Health guidance clarifying the role and accountabilities of organisations involved in providing scientific and technical advice during a major incident should be implemented as soon as possible and understood by Gold Commanders.

REC 8 - The Review recommends that the guidance currently under preparation by Cabinet Office to provide local responders with advice on the definition and identification of vulnerable people and on planning to support them in an emergency should be issued urgently.

REC 9 - The Review recommends that, in order to effectively fulfil its Lead Department role for flood risk management and emergency response, Defra needs to urgently develop and share a national flood emergency framework.

REC 10 - The Review recommends that Category 1 responders should be urgently provided with a detailed assessment of critical infrastructure in their areas to enable them to assess its vulnerability to flooding.

REC 11 - The Review recommends that the Environment Agency should work urgently with telecommunications companies, consulting the Information Commissioner as necessary to facilitate the roll-out of 'opt-out' telephone flood warning schemes to all homes and businesses liable to flooding, including homes with ex-directory numbers.

REC 12 - The Review recommends that Local Resilience Forums urgently develop plans to enhance flood warnings through 'door-knocking' by local authorities based on an assessment of the post code areas likely to flood.

REC 13 - The Review recommends that that Local Resilience Forums urgently make arrangements to involve local media representatives in the local preparedness and response to support their public information role.

REC 14 - The Review recommends that members of the public make up a flood kit – including personal documents, insurance policy, emergency contact numbers (including local council, emergency services and Floodline – 0845 988 1188), torch, battery or wind-up radio, mobile phone, rubber gloves, wet wipes or antibacterial hand gel, first aid kit and blankets.

REC 15 - The Review recommends that members of the public increase their personal state of readiness and resilience to floods by following the Environment Agency's practical advice, where appropriate, as summarised below:

- Make sure you have adequate insurance. Flood damage is included in most buildings insurance but do check your home and contents are covered.
- Access the Environment Agency's website to check flood risks to property (this can be followed up by advice from the Agency, for example whether the property in question is protected to some degree by physical defences).
- Contact the Environment Agency to be registered on their Flood Warnings Direct scheme (however, this does not apply to surface water flooding or sewerage flooding and people should also make sure they remain alert to weather forecasts).
- Keep vital possessions, such as financial and legal documents and items of sentimental value, upstairs or stored as high as possible in waterproof containers and have plans in place to move items at short notice.
- Make a list of other useful numbers you may need – your local council, emergency services and your Floodline quick dial number.
- Make sure you know where to turn off your gas, electricity and water. If you are not sure, ask the person who checks your meter when they next visit. Mark the tap or switch with a sticker to help you remember.