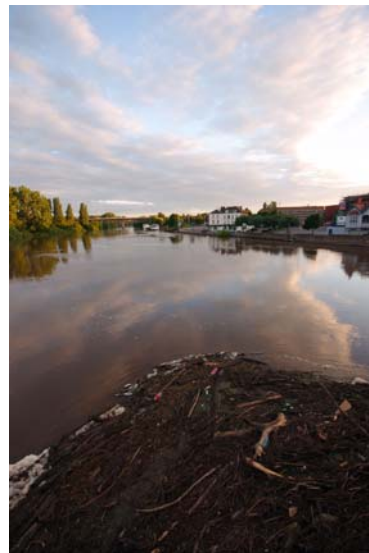


## Lessons learnt from 2007 floods

Paul Mustow – Head of the Flood Forecasting Centre UK

### Overview

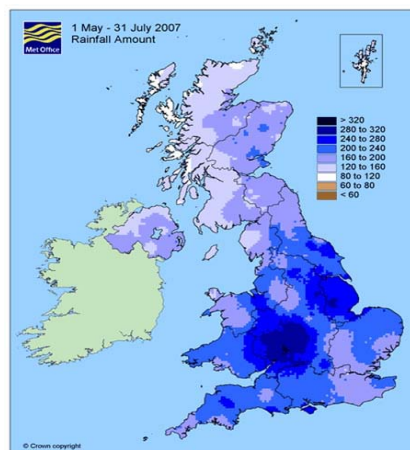
- Summer floods 2007
- Pitt Review – lessons learnt
- Flood Forecasting Centre
- National perspective on coordinating emergency response
- Summary



## UK Summer floods 2007

## Summer floods 2007 – what happened?

- Unprecedented rainfall
- 13 people died
- 55,000 homes and businesses flooded
- Around £3 billion in losses



## FLOODFORECASTINGCENTRE

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### Summer floods 2007



Thorpe Marsh sub station

Walham sub station



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### Environment Agency incident response

- Over 100,000 properties were protected from flood water by EA defences
- 206,000 calls to the recorded message service and 4 million visitors to the EA website
- Timely direct warnings to 34,000 properties
- Over 2,200 staff involved



Pitt Review

*Floods pose "as great a threat as terrorism"*

Sir Michael Pitt

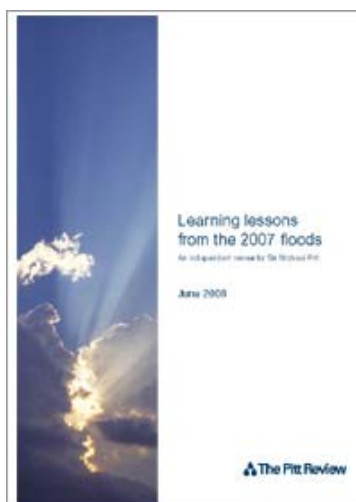


## Pitt Review – Overview

In August 2007, Sir Michael Pitt was asked by ministers to carry out an independent review of the flood-related emergencies which occurred during the summer of 2007

The Review involved:

- Extensive consultation with stakeholders over 10 months
- Examination of over 1000 written submissions
- Consideration of experience of other countries and communities affected by flooding

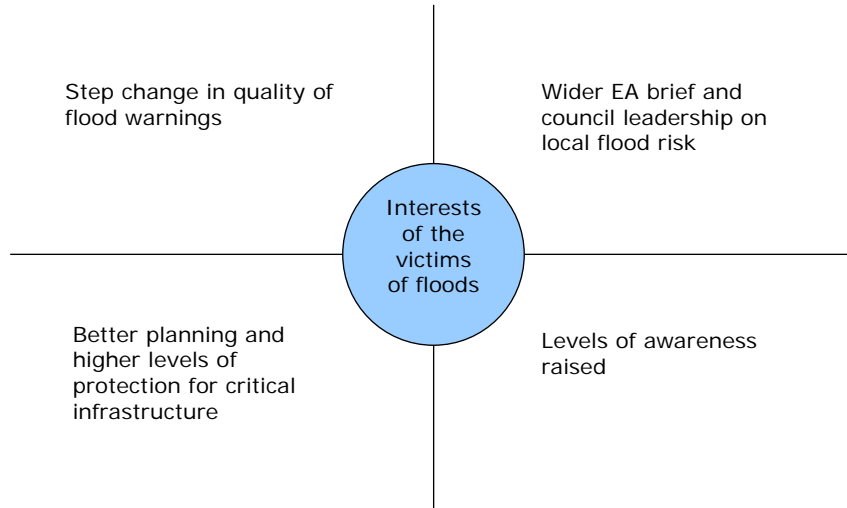


## Pitt lessons from 2007 floods – what people need

- Reduce the risk of flooding and its impact
- Knowing when and where it will flood
- Being rescued and cared for during an emergency
- Maintaining power and water supplies and protecting essential services
- Staying healthy and speeding up recovery
- Providing better advice and help for people to protect their families and homes



## Pitt Review headline findings



## Key Recommendations

The Review put forward 92 recommendations, highlighting the need for:

- Flood rescue statutory duty for Fire Services – currently on voluntary basis
- Environment Agency to take overview role of all inland flooding, including surface water
- Local authority to lead on local flood risk management
- Environment Agency and Met Office to work together in a joint centre – FFC
- Individuals to play a more active role in preparing for and responding to flood events



## Need for collaboration of key 'actors'

### Current structures under the Civil Contingencies Act

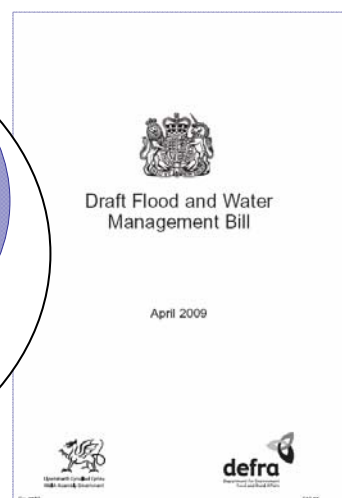
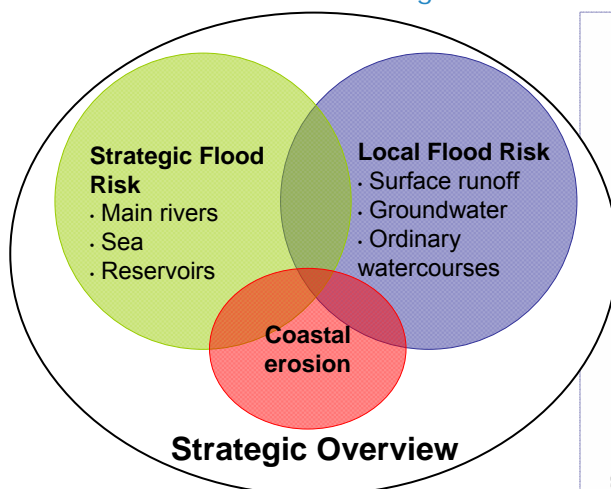
• Local Resilience Forums vital in driving collaborative actions between:

- Defra
- Environment Agency
- Met Office
- Local Government
- Insurance industry
- Utility companies
- Emergency services
- Transport agencies



• LRFs enhance co-ordination and communication across and between regions and Central Government as well as regions and their respective local responders

## Putting recommendations into legislation – Draft Flood and Water Management Bill

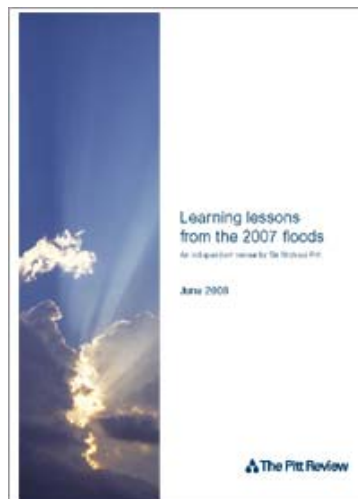


## Flood Forecasting Centre

### How the FFC came to be

#### Pitt Review key recommendation (6)

*“The Environment Agency and the Met Office should work together, through a joint centre, to improve their technical capability to forecast, model and warn against all sources of flooding.”*



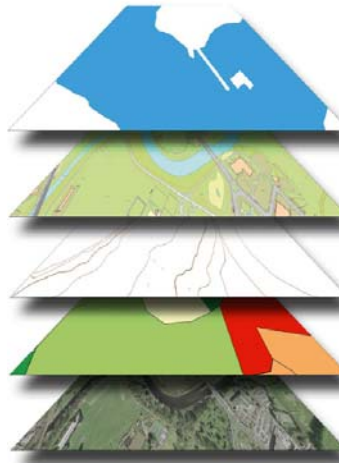


# FLOODFORECASTINGCENTRE

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## Services the FFC delivers

- 24/7 operational services to Category 1 and 2 responders, providing national flood forecasting guidance and alerts for all sources of flooding (strengthening existing Environment Agency regional services)
- A fast-track Science and Technology Development Programme to develop new flood forecasting tools and techniques
- Improvements to Communication and Engagement, speaking with one voice to educate and train our customers on how to best access and use the services available to them



# FLOODFORECASTINGCENTRE

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## Flood Guidance Statements

**FLOODFORECASTINGCENTRE**  
Flood Guidance Statement 15:00hrs 14 May 2009  
Our assessment of daily flood risk for England and Wales is below.

17:00 - 22:00hrs	00:00 - 05:00hrs	06:00 - 11:00hrs	12:00 - 17:00hrs	18:00 - 23:00hrs
Thursday 14 May 2009	Friday 15 May 2009	Saturday 16 May 2009	Sunday 17 May 2009	Monday 18 May 2009

**General Overview**  
Localized flooding is possible from 11:00 today onwards as a result of slow moving heavy showers across much of England and Wales.

**Thursday**  
There is a very low risk of river or coastal flooding, but Extreme Flood Alerts have been issued for the risk of surface water and localized flooding problems across central and east heavy showers, heavy showers are already established over the South West and these will persist into the evening, heavy showers will also become persistent into the evening across Central and Southern England and Wales. Northern parts of England are less likely to see the heaviest of the rain.

**Friday**  
There is a low risk of Extreme Rainfall Thresholds being met (10-20%). Rain, some heavy and prolonged, will affect Wales, Midlands and much of Southern England at first moving slowly north westerly during the day. This will be followed by a scattering of locally heavy showers.

**Saturday, Sunday and Monday**  
Although rain is possible almost anywhere on Saturday, the heaviest may be in the southeast of England where there is a very low risk of Extreme Rainfall Criteria being met. Sunday and Monday will see heavy showers, or spells of more persistent rain, heavy and prolonged at times, especially in the West.

There is a very low risk of coastal flooding across the whole time period.

**Weather Warnings & Flood Warnings in force as of 15:00hrs:**  
5 severe flood warnings | 2 flood warnings | 1 flood watch  
2 extreme rainfall alerts

**Best Judgement**  
The flood guidance notes are more of a reflection of the risk of Extreme Rainfall Criteria being met than river flooding. However, Thursday and Friday may see flooding from smaller, fast responding river catchments or urban catchment areas if rainfall accumulates to high enough and the heaviest rainfall is localized directly over these smaller catchments or urban areas. On Saturday and Sunday however, there is a very low risk of flooding occurring from slower responding rivers as they respond to the previous days rainfall.

- Present an overview of the flood risk across England and Wales over five days and identify developing situations that could cause flooding and significant disruption to normal life.
- Issued daily by 10.30am. During periods of enhanced flood risks, statements are issued more frequently, according to requirement.

Key	Very low risk	Low risk	Medium risk	High risk
<b>RIVER &amp; COASTAL FLOODING</b> Probability >100 properties will flood, or extreme danger to life, from rivers or the sea.	<20%	≥20% to <40%	≥40% to <60%	≥60%
<b>EXTREME RAINFALL</b> Probability that ERA thresholds will be met, leading to possible surface water flooding.	<10%	≥10% to <20%	≥20% to <60%	≥60%

## Linking with partners in the EC

- Benchmarking with best forecasting centres across the world
- Engaging with:
  - EU Commission
  - World Met Organisation
  - SHAPI
  - NOAA
  - FEMA
  - The Finnish Group
- Working with EU Floodex partners, including representatives from Germany, Poland and The Netherlands



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## EU Floodex 2009

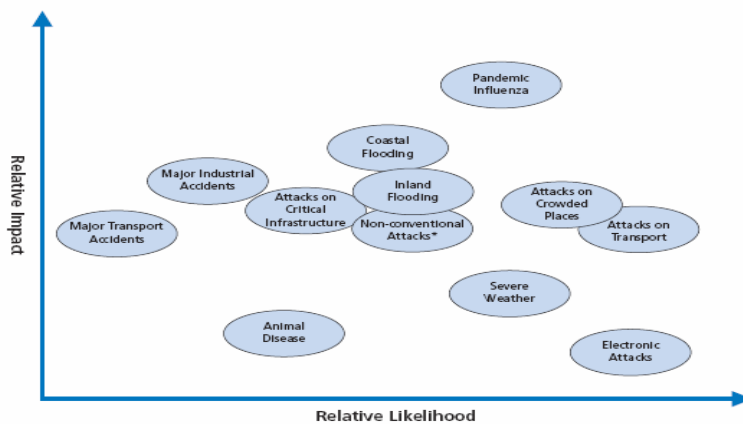
- FLOODDEX is a European project set up to test the operational and strategic procedures within the EU civil protection community during a worst credible flood (1 in 10,000 year event – 5m+ surge – on the scale of 'Katrina').
- The Flood Forecasting Centre, Environment Agency, Met Office, Cabinet Office and Fire Service are working to coordinate information from the UK for an international test in September.
- Floodex partners from Estonia, Germany, Poland, provide international assistance
- Coastal flooding a significant element of this work – particularly relevant for countries such as Germany, Holland, Belgium, France and England

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## National perspective on coordinating emergency response

## National Risk Register

Figure 1: An illustration of the high consequence risks facing the United Kingdom



\* The use of some chemical, biological, radiological and nuclear (CBRN) materials has the potential to have very serious and widespread consequences. An example would be the use of a nuclear device. There is no historical precedent for this type of terrorist attack which is excluded from the non-conventional grouping on the diagram.

## Concept of Operations (CONOPS)

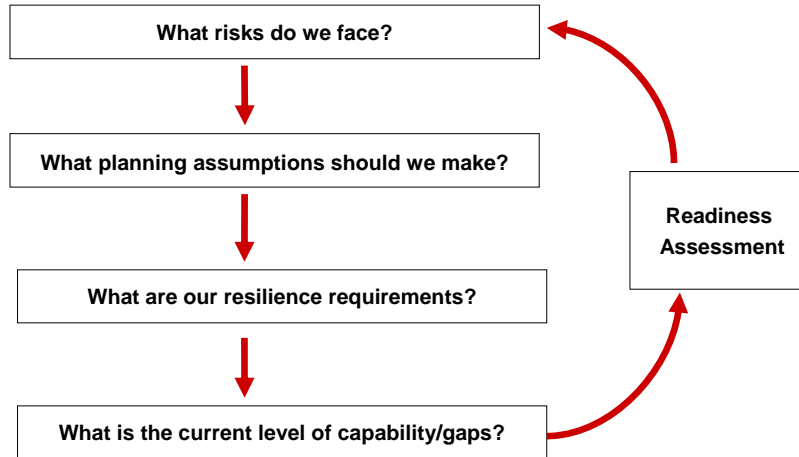
- Outlines UK Central Government response to an emergency, linking to all relevant actors.
- Defines the relationships between the UK Central, Regional and Local Government tiers.
- Defines the relationships between UK Central Government and devolved administrations in Scotland, Wales and Northern Ireland.

## Levels of emergency in CONOPS

- Level 3 – Catastrophic emergency
- Level 2 – Serious emergency
- Level 1 – Significant emergency
- Additionally, CONOPS defines local emergencies or major incidents, such as localised flooding



UK Resilience Strategy – The Resilience Planning Cycle



Summary

## Summary

- 2007 Summer floods and Pitt Review highlighted need for better collaboration between all 'actors' in flood preparation and response
- Flood Forecasting Centre is a visible example of what joint working and linking with national coordination of emergency response can achieve
- The Centre has already demonstrated the benefit of providing longer lead times, resulting in reduced impacts on the ground
- The Centre's involvement in EU Floodex demonstrates that our work goes beyond the national border

Questions?

<http://www.ffc-environment-agency.metoffice.gov.uk/>