

**Minutes from 1st Meeting of the SAGE - Flooding Group
held on 14 February 2014
BIS Conference Centre, London, SW1**

Attendees:

Chair

Mark Walport GCSA

Attending

Jeremy Benn JBA Consulting Engineers & Scientists
Derek Bickers DECC
Chris Binnie Independent Consultant (by telecom)
Ian Boyd DEFRA CSA
Hannah Cloke University of Reading
Roger Falconer Cardiff University (by telecom)
Jim Hall Oxford University
Karel Heynert Deltares, Netherlands (by telecom)
Frans Klijn Deltares, Netherlands (by telecom)
Owen Lewis Environment Agency
Philippa Makepeace CCS
Alastair Moseley H2O
Nick Reynard Deputy Director, Centre for Ecology & Hydrology
David Rooke Environment Agency, Director of Flood & Coastal Risk
Management
Stephen Rowan DfT
Julia Slingo Met Office
Ian Townend HR Wallingford
Colin Thorne University of Nottingham
Rob Ward British Geological Survey
Jeremy Watson Director of Science and Engineering, ARUP
Doug Wilson Environment Agency

Secretariat

Ben Edmonds GO-Science
Nicholas Moiseiwitsch GO-Science
Giles Robertson GO-Science
Andy Ryan GO-Science
Elizabeth Surkovic GO-Science
Elizabeth Warham GO-Science

1. Welcome

The Chair welcomed participants. The primary purpose of the meeting was to provide a worst case scenario for the UK in regard to the current extreme weather situation.

2. Situation Report

2.1 Met Office

The forecast suggested a return to more normal, but still unsettled, February weather. The probability of exceeding 8 mm/day was low and the likelihood of accumulations exceeding 40 mm in a 5-day period was small. Beyond the end of February, storms were more likely to follow the climatological track to the north of the UK. Rainfall would accompany the storms and so further accumulations were likely.

The projected rainfall for the Somerset Levels for the next five days indicated a high probability of exceeding the drainage rate, though only modestly so. For the following 10 days, the probabilities of exceeding the drainage rate were low.

The projected rainfall for the Thames catchment area for the next five days indicated a medium to high probability of exceeding the drainage rate. Beyond that time it was predicted that it was unlikely that there would be high levels of rain.

2.2 CEH

Projections on the impact of a range of rainfall scenarios and river flows were provided. In summary, river flow rates around 3.5 – 4 times normal are likely for current predicted rainfall levels. These flow rates would return to normal in around one month in the West of England, but take several months in the East and Lower Thames.

2.3 BGS

Groundwater flooding was reported as likely to persist well into the spring on Southern chalk slopes (eg Chilterns and Downs). On the chalk of East Anglia and Yorkshire, although drier, levels have now started to rise but currently remain below average.

Groundwater flooding associated with the superficial sands and gravels has exacerbated the river flooding in the Thames catchment.

In the Midlands and North Wales, water levels were generally rising, with levels well above normal. Groundwater alerts were issued early in the month in Surrey.

2.4 EA

EA provided information and data regarding a number of options for pumping and removing water from the Somerset Levels. Of these options, a proposal to use pumps provided by a Dutch firm, was seen as a useful step and would be pursued. Other options were not seen as viable at this point, due to technical, logistical and economic considerations.

Three non Somerset key flooding risks were identified and these related to:

- Coastal, with Spring tides in addition to damaged sea defences.
- Rivers, with the Severn and Thames in flood; this was likely to last until Friday 28 February.
- Groundwater impacts in affected areas were likely to last to the end of March. The level of groundwater was also going to lead to issues with drains.

During discussion, it was reported that a coordination group across CEH, EA, Met Office and BGS had already been established. It was agreed the group would focus on developing an initial view on 'Most Likely' and 'Worst Case' Scenarios for meteorological, geological and hydrological issues in vulnerable catchments. These scenarios would then be further developed in a second phase to address critical sectoral and infrastructural issues.

3. EA Hydraulic Models

3.1. EA reported that they have hydrological models for all major water catchments, monitoring groundwater levels and associated river tributaries. The Thames was noted as complicated in that it cannot be treated as a single basin. The model for the Somerset Levels had been created by consultants, Black and Veitch. This latter model had been the subject of appraisal by a number of the SAGE experts.

3.2. Those experts present reported that the model for the Somerset Levels was considered generally fit for purpose upstream of Bridgwater following peer review. It was, however, noted that the downstream boundary of the model needs to include the Severn Estuary, where the interaction between the tidal surge and river flow is significant, to inform worst case breach scenarios. It was also emphasised that there was a need for a 2D model to see how the floodplains drain and account for both storm surge and bank stability.

4. Impact of Geological and Sectoral Factors

4.1. DECC, DfT and Defra provided their views on potential impacts for key sectors.

- **Bridges** – Concerns were raised in the context of potential bridge scour due to very high river water and debris levels for long periods of time. Bridge asset responsibility is spread across a number of different owners (Highways Agency, Network Rail, Local Authorities, and the Canal and River Trust) making systematic monitoring and evaluation complex.

- **Thames Barrier** – Concerns were raised with regard to the usage that the Thames Barrier was being subjected to with such frequent opening and closing. EA commented that there were fail-safe measures to ensure its robustness, making operational failure of the Barrier highly unlikely. Concern was also raised with regard to river traffic management at this time.
- **Embankment failure** – Network Rail were currently monitoring around 200 vulnerable sites relating to groundwater flooding, and cutting and embankment failure, compared to a more normal five. The Canal and River Trust are similarly monitoring potential failures along the English canals.
- **Private drinking water boreholes** – DWI noted that the very high levels of rainfall were likely to impact on the water quality of the many private boreholes in use in England. The situation was complicated by the transitioning regulatory framework for such boreholes, though it was hoped that this would improve over time.
- **Sinkholes and Landslides** – Significantly higher than normal numbers of sinkholes and landslides were being observed across several parts of the country, which BGS are registering and currently assessing against their geological mapping.

5. Concluding Remarks

5.1 The Chair thanked everyone for attending and acknowledged the hard work in preparing briefings for the meeting. He noted that there was still a huge amount of work to do, not least in providing a worst case scenario for vulnerable catchment areas for COBR.

5.2 The Chair reported the next meeting would be in the following week, and the GO-Science team would be in touch with those participants who would be invited to attend.

5.3 It was acknowledged that individuals had been approached by the media to explain their engagement with Government on flooding issues.