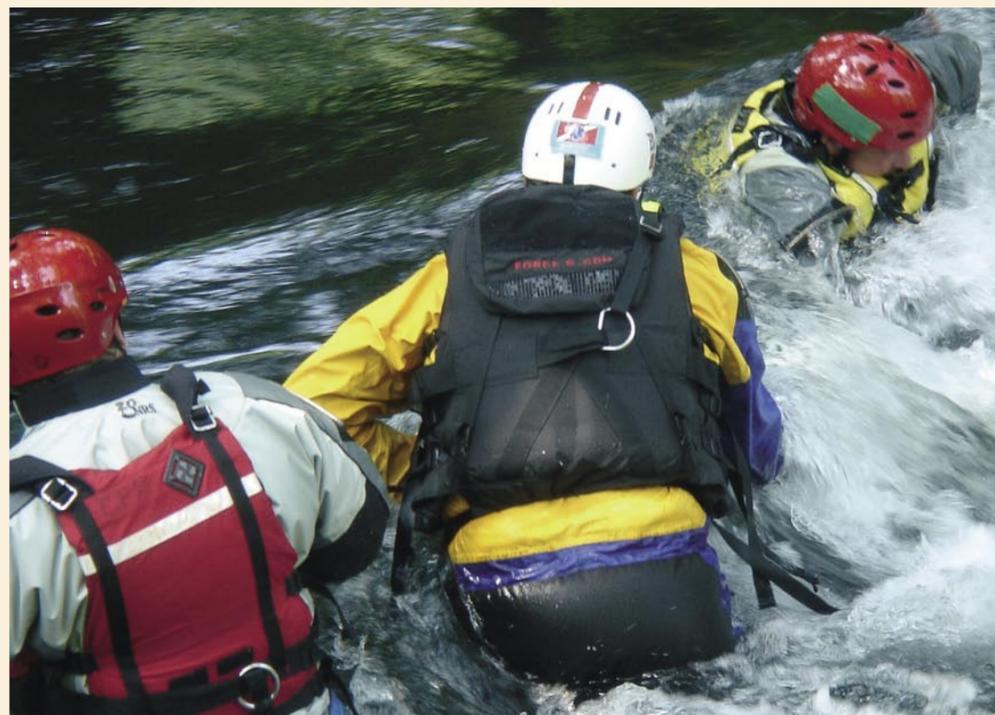


# Management of flood emergencies – part II

Following his visit to the US, as documented in the first article in this series, Fire Chief **Paul Hayden** explains the strategies espoused by the Management of Major Flood Emergencies project, which aims provide a single set of working principles for responders



**UK fire officers, here training for hurricane season in North Carolina, USA, learnt from communities affected by major flooding events. See CRJ Vol 2, Issue 4**

**T**HE MANAGEMENT OF major flood emergencies (MMFE) is recognised as a truly multi-disciplinary issue, affecting not only blue light services but all category one and two responders, along with a range of government and voluntary agencies.

As described in the previous article, flooding presents one of the most significant natural risks to communities in Europe, perhaps with a greater potential threat than terrorism or man-made disasters. Flooding has caused widespread death and destruction in Europe during the last century, and with climate change issues affecting severe weather events, is likely to do so again.

Despite this potential, Fire and Rescue Service (FRS) capability in the UK to respond to the rescue phase of any major flood event is variable and lacks co-ordination at a local, regional and national level. This situation has arisen historically due to a lack of any statutory direction or empowerment for FRS to deal with water related incidents.

In the UK, the Chief Fire Officers Association has acted by pulling together the Inland Water Strategic Group (IWSG), chaired by the author, which looks at FRS involvement in water rescue at a strategic and tactical level. IWSG will also provide a focus for a wider forum of interested parties, including equipment and other service providers and the structure will provide the long term focus for FRS water related activities. This MMFE research is a project carried out under the auspices of, and reporting to, the Chief Fire Officers' Association (CFOA) IWSG.

Failure to address this issue at a national level exposes the FRS to a number of risks. Firstly, it would lead to the development of entirely different planning assumptions and response capabilities within each FRS. This, in turn, would hinder effective mutual aid arrangements, increase costs

and create confusion for multi-agency partners. Secondly, without a co-ordinated FRS response to MFEs, both communities and responders would be placed at unnecessary additional risk, exposing the FRS to public criticism and potential Health and Safety enforcement action. In addition to being unprofessional, unco-ordinated local arrangements would be quickly exposed during an actual emergency.

## Unacceptable

Different levels of response to different sections of the same flood event would, rightly, be deemed unacceptable.

Adoption of a single set of working principles and a generic overarching framework within which FRS can contribute to the management of MFEs, will enable a 'joined up' local, regional and national response.

The key objectives for the MMFE project were to identify key FRS planning and operational objectives for MFE response phase; identify current good practice and disseminate this as widely as possible; produce an overarching framework model to support local FRS operations, multi-agency response and LRF/RRF response planning; produce an overarching framework model to support scaling up of FRS response to incidents requiring a regional or national response; and to share this information and good practice as widely as possible, both within the FRS and among other stakeholders.

It was recognised from the outset that this project would be both complex and far reaching, requiring analysis of a number of case studies, research papers and data. However, its overriding priority was to provide a vehicle for real improvement and practical change on the ground. In order to support this, the main factual and procedural findings will be presented in detail within two proposed new manuals. The first will capture and analyse the case studies and technical underpinning documentation considered in order to come to conclusions about MMFE. The second will contain the practical emergency management directions and tools

required to manage a major flood event, linked back to the technical manual.

Although the principles and procedures proposed in these manuals could be used exclusively by FRS, they would be of even greater value if they were to gain more general acceptance among the wider emergency planning and response community. A great deal of work has therefore gone into consultation with colleagues to ensure that final proposals recognise multi-agency requirements. Although the final report was still being finalised prior to submission to the CFOA board as *CRJ* went to press, it is already clear that recommendations will fall into five key areas.

## Recommendations

The first area is planning and preparation for flood events. Regardless of the extent of any new FRS statutory duty in the UK to respond to 'major flood events,' all FRS have an involvement in inland water incidents to some degree or another. This may range from a full inland water rescue capability, to more traditional operational capabilities such as pumping out of properties after minor flood events, or rescues from vehicles in rivers or drainage ditches and the like. In the absence of statutory clarity, it is essential that individual service Integrated Risk Management Plans (IRMP) clearly identify the extent to which the public and other partners can expect their local FRS to contribute towards the resolution of inland water related emergencies.

Addressing this issue will require a new suite of standardised IRMP guides on flood management and other inland water incidents that individual fire authorities can utilise. In support of this risk based approach, further work is ongoing to deliver a joined up multi-agency approach to data capture and analysis for inland water events in the UK.

The second area is interaction with multi-agency partners. Planning for MFEs in the UK falls to Local Resilience Forums (LRF) made up of a stakeholder group known as 'category one responders.' This group will also form the Strategic Co-ordination Group (Gold) to direct any multi-agency response to major flood events within the LRF area of responsibility during a crisis. Community Risk Registers must identify the potential for floods or inland water incidents, and local plans must be put in place to protect the public accordingly.

Every major flooding disaster and exercise we have examined has shown us that there is a need for clearer understanding about the roles and contributions of the various agencies when faced with a major flood. Case studies also indicate that success relies on all category one



**One aim of the MMFE project was to identify good practice and disseminate this information both within the FRS and among other stakeholders**

and two responders being able to communicate effectively and gain a common understanding of the situation on the ground so that they can identify risks, issues and response and recovery options available. This requires multi-agency co-ordination and training, ideally within a single overarching national framework supported by standardised check sheets, where appropriate. From a purely FRS perspective, it is vitally important that an LRF has clarity not just about local level FRS capabilities, but those available at a regional and national level, so that mutual-aid arrangements can be co-ordinated.

The third area is utilisation of weather and flood information. Given our predominantly temperate climate in the UK, it is perhaps

understandable that UK FRS have not traditionally put great emphasis on weather analysis and flood prediction modelling either for pre-planning or incident management. This is in stark contrast with other countries, such as the US, where identifiable major climatic events such as hurricanes have led to sophisticated multi-agency climatic analysis and information systems.

International research identified best practice in the area of multi-agency flood management systems in North Carolina, where the entire emergency management and multi-agency response planning systems have been built around the extensive use of both environmental modelling and 'real time' climate data. The systems in place today are a result of the lessons learnt from previous tragedies and system failures during catastrophic flood events in the late 1990s and early 2000. These resulted in extensive loss of life and billions of dollars of damage. ▶

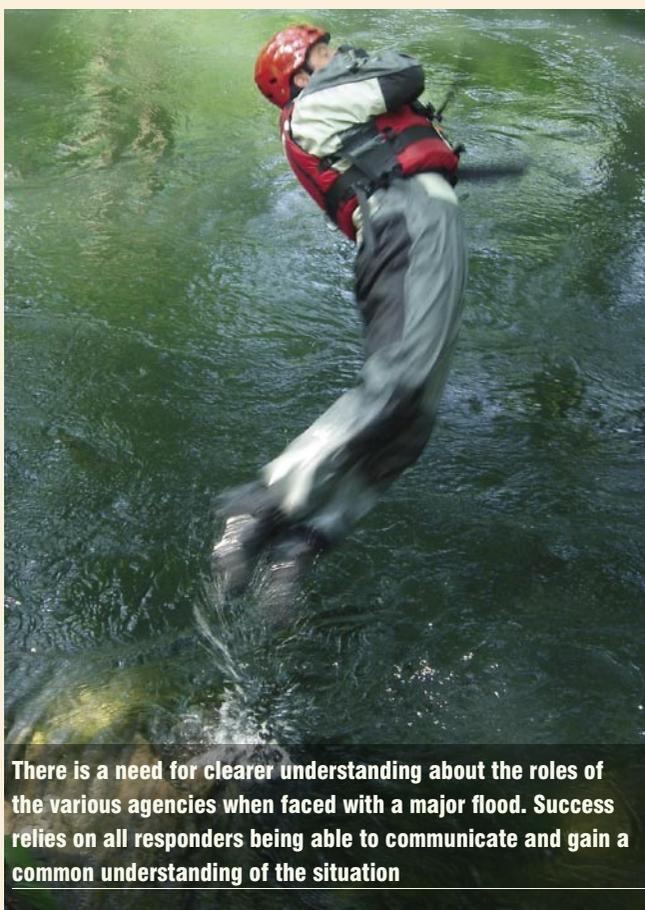
► Significant financial investment in response has resulted in world class multi-agency prediction, planning and response arrangements in North Carolina. These arrangements have already proven their worth. In stark contrast with the response made to last year's Hurricane Katrina, North Carolina's new arrangements have been tested against similar hurricane events and have dealt with them without loss of life and without the need for the assistance of out of state responders. The key element of this success has been the predictive and early warning tools that have allowed citizens to be warned or evacuated in good time, excellent multi-agency communication and understanding, and specialist rescue teams assembled and deployed to known problem areas ahead of the storm.

Having been so impressed with the use of predictive tools and data capture in the US, it was surprising to discover from UK research with colleagues from the Environment Agency that we have existing forecasting capabilities equal to or exceeding those available in North Carolina. However, it is clear that British predictive weather services have never been used to their full potential by response agencies. Equally, the societal risk data captured by UK FRS is more developed than that available to US colleagues.

But there is currently little understanding within either UK FRS or the Environment Agency about the ways in which information could be shared to give a more complete picture of risk to aid both static and dynamic planning situations. Thankfully, this situation is changing rapidly and given that most building blocks are already in place, there is no doubt that with a little work and co-ordination the UK could have a predictive analysis system that is second to none.

The fourth area for recommendations is service systems and protocols to support the response phase. Given the cost of providing and maintaining specialist water rescue capabilities, maximum use of mutual aid at a local, regional and national level should be encouraged. In addition it should be remembered that FRS will not be the only agency contributing rescue resources to a major event, and a range of other voluntary services, such as Royal National Lifeboat Institution and the Coastguard Agency, may also provide rescue teams and equipment.

Experience has taught colleagues in the US that the only safe way to marshal and deploy such diverse resources is a system called 'team typing'. This process allows rescue resources to be categorised by the outcome they are able to safely achieve, rather than the organisation they represent or equipment they carry. The system allows quality assurance issues surrounding use of diverse teams to be recognised and addressed



**There is a need for clearer understanding about the roles of the various agencies when faced with a major flood. Success relies on all responders being able to communicate and gain a common understanding of the situation**

through a transparent accreditation system.

Team typing greatly simplifies the management of diverse resources and ensures that rescue teams can be requested and tasked in accordance with their capabilities. This is especially important during a major emergency, as requesting authorities retain a statutory responsibility for the safety of responders regardless of the situation they face.

## Team typing

Team typing also allows maximum flexibility in the way teams are trained and equipped by individual services or organisations, as it concerns itself only with a team's capabilities, rather than standardisation of training and equipment. This would enable teams from different FRS, military and voluntary groups to complement each other and be tasked safely and efficiently. It also opens the doors to international mutual aid for specialist teams and resources.

The last area for recommendations is command and control. Exercise Triton tested both flood response and command and control arrangements at the local, regional and national levels, along with interaction between England and a devolved administration, the Welsh Assembly Government (WAG). The exercise demonstrated over a number of days the difficulties in applying our traditional principles of command at gold, silver and bronze levels when faced with a number of simultaneous national

level events across a broad geographical area.

In the exercise, ten separate Gold Command centres were established, along with four separate regional RCCs, a lead department co-ordinating control, WAG and the UK's Cabinet Office Briefing Room (COBR).

Had this been a real event of the magnitude envisaged by the exercise, a re-run of the 1953 east coast flood, the total number of Gold Commands in operation would have risen to 18.

While the traditional multi-agency Gold Command centres worked reasonably well in themselves, it was evident that existing command and control systems struggle to deal with anything beyond a single national level event. Neither UK gold, silver and bronze arrangements, nor the US NIMS system properly address these issues, although there are elements of each that could provide a future solution.

## New dimension

Following analysis of incidents and exercises in the UK and US, one issue that is beyond question is that to address challenges of this magnitude requires professional strategic multi-agency teams which are well trained and have the executive experience necessary to operate at the highest strategic level. While this is nothing new in itself, it is evident that the challenges we now face from major climatic and terrorist events represent a new dimension to incident command and control, especially when more than one national level event happens simultaneously.

Resolution of incidents of this type present very different challenges for FRS officers, schooled over many years in commanding incident scenes on the ground rather than in a multi-agency strategic setting. While the skill sets FRS officers gain from resolving ever larger and more complex incident scenes will be of value, it would be naive to presume that this experience alone, often presumed rather than quantified, is sufficient to prepare an individual to contribute professionally to a strategic multi-agency response to a major catastrophic incident.

The MMFE report has raised almost as many questions as it has found answers, unsurprising given the strategic nature of the project. Is the UK ready to deal with the worst the climate could throw at it? Probably not, but we know what needs to be done and we are getting there. CRJ

■ It is already known that one of the key outcomes from the MMFE project was the need to improve resilience and mutual aid arrangements for major incidents. Further research is needed and Paul Hayden has been instrumental in putting together a European funding bid for 'Project Resolve' to undertake this research. The next article will look at this submission in more detail.

### Author

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