

R&D Technical Summary W5C-021

Flood Warning Management System

Background to R&D project

In response to Defra High Level Target 1 “encourage the provision of adequate and cost effective flood warning systems”, a thorough analysis of the Agency’s current Flood Warning business was recently commissioned. This identified a number of serious issues, including:

- Flood Warning Targets set by Defra are not being met – nationally the Agency is 30% below target.
- Inadequate communications were a recurring theme during the analysis, and contain the potential for tragic consequences during an incident.
- There is overload in incident rooms during flood events, with attendant stress for Flood Warning staff and the prospect of serious mistakes being made.
- Flood events are managed using paper-based systems and procedures. This creates inherent difficulties for decision support, provision of information, performance measurement, resource deployment and tracking.

Against this background, the FWMS Project was charged with defining the scope of a Flood Warning Management system that would meet the operational needs of the Agency, and address current issues.

Results of R&D project

The project comprised 3 elements:

- i) Identification and documentation of current flood warning business processes;
- ii) A survey of international good practice in this field; and
- iii) A business case for development of a flood warning management system.

During May 2002, the Midlands Regional office at Solihull, the Midlands Upper Severn Area office at Shrewsbury, the North East Regional office in Leeds and the Dales Area office in York were all visited to discuss their current ‘Flood Warning Management Systems’. Based on these interviews, the report presents a generic description of how the Agency manages Flood Warning Incidents. The description of current Agency Flood Warning Incident Management has been presented using a modern IT industry standard graphic, Unified Modelling Language (UML). This presents a set of Business Use Cases (processes), issues and opportunities.

The section of the report dealing with International Good Practice provides a description of Flood Incident Management systems and practices of organisations with a responsibility for flood management and/or warning from Australia, Netherlands, France, Germany, Poland and the USA. It also provides a description of the functionality and relevance of incident command and control systems used by other relevant organisations in the UK, specifically the Cheshire Fire and Rescue Service, the Maritime and Coastguard Agency and the Police. Comparisons are made with Agency current practice and the report concludes that the Agency would benefit from the use of an Agency wide standard Incident Management System.

Drawing on the Business Objectives produced by analysis of existing Agency practices set out above, the report presents a Business Case for the development of an Agency-wide Flood Warning Management System (FWMS). The document also considers the merits of a number of possible solutions and provides a cost-benefit analysis of those options incorporated in the recommendations.

The recommended option is Option 6 Develop a Bespoke National System – High Integration to be implemented in conjunction with Option 3 Develop and Implement National Business Processes. Although the capital cost is higher than other options considered, this option will deliver key business benefits, and costs are recovered from operational cost savings more rapidly. The proposed solution is a National Application that links several existing and proposed systems (for example Multi Media Dissemination, Flow Forecasting Modelling Systems etc). Whilst some system components will be nationally hosted, other modules will be processed locally to minimise dependence upon the Wide Area Network.

R&D Outputs and their Use

The Technical Report presents technical information and research findings from the project. It presents a review of current practice and aspirations for a system to manage flood incidents within the Environment Agency. The business and cost-benefit analyses will be used to inform the operational development of a Flood Warning Management System. The Report will be of interest to all involved in operational real time flood forecasting.

This R&D Technical Summary relates to R&D Project W5C-021 and the following output:

- **R&D Technical Report W5C-021/TR1 - Flood Warning Management System.** Published May 2004

Publication Internal Status: Released Internally External Status: Publicly Available

The Environment Agency Project Executive for Project W5C-021 was Chris Haggett and the Project Manager was John Matthews

This research project was carried out by the Environment Agency CIS Department. Part 4 – International Good Practice, was prepared by Mott MacDonald, Demeter House, Station Road, Cambridge CB1 2RS

The above output is available under the Flood Forecasting & Warning Theme on the Environment Agency website www.environment-agency.gov.uk/floodresearch. Copies are held by all EA Regional Information Centres and can be purchased from the Environment Agency's National Customer Contact Centre by emailing enquiries@environment-agency.gov.uk or by telephoning 08708 506506.

© Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury, BRISTOL, BS32 4UD Tel: (+44) 1454 624400 Fax: (+44) 1454 624409