Joint Defra / EA Flood and Coastal Erosion Risk Management R&D Programme

Summary: FLOODsite liaison Interim report - February 2006

Summary SC040035/SS

A new report recommends that Environment Agency staff working on social policy, flood forecasting and flood risk management should become more involved in aspects of European research on flood management and planning, uncertainty in flood predictions and public perception of and response to flooding events.

Flood risk management is a priority area for research within the UK and in Europe. Several major research programmes have been launched including FLOODsite, *Flood risk for extreme events* (FREE) and the *Flood risk management research consortium* (FRMRC), as well as a range of projects within the *Flood and coastal erosion risk management R&D programme* run jointly by the Environment Agency and the Department for Environment, Food and Rural Affairs (Defra).

The Environment Agency has identified a need to liaise with the FLOODsite, FREE and FRMRC programmes, to avoid duplication of work and to maximise the benefits of these programmes in the general areas of flood forecasting and warning.

FLOODsite is the largest ever European research project on flood risk management, with a budget of €14 million and a timetable of five years. The programme will develop a European approach to the management of flood risks from rivers, estuaries and the sea.

FRMRC is a multi-agency research programme supported by the Environment Agency and Defra. Funded by the Engineering and Physical Sciences Research Council (EPSRC) to the tune of £6.5 million, the project is due to run until 2008 and will investigate all aspects of flood risk, including tools for more accurate flood forecasting and warning.

The FREE programme was developed in response to the threat of more frequent and intense storms, leading to more frequent flooding and more severe flash flooding. Funded by the Natural Environment Research Council (NERC), the project has a budget of £5.8 million and will run to 2010. FREE will carry out research on the following themes:

- estimation of the probability of extreme events leading to flooding within minutes, hours, days or weeks, using prediction methods and warning systems;
- changes in the intensity and frequency of flooding from climate change over the next century, along with our ability to predict the risk of flooding on timescales from seasons to decades;
- integrated 'clouds to catchment to coast' flood simulation using meteorological, hydrological and shelf ocean computer models, which will be used for holistic flooding scenarios such as combined storm surges and heavy rainfall.

The FLOODsite liaison project was established to identify the strands of these research programmes which link to the Environment Agency's work and which will feed into the joint Defra/Environment Agency *Flood and coastal erosion risk management R&D programme*. The project will allow the Environment Agency to influence the direction of research, by targeting funding and support to areas of benefit to its flood forecasting and warning work.

In 2005, four task groups were commissioned for their expertise, to liaise with appropriate strands of the research programmes and to report back to the Environment Agency. In November 2005, a meeting was held to discuss the initial findings of the task groups.

This report is a summary of the interim reports produced by the four groups as of February 2006. The tasks outlined below were selected as those which Environment Agency staff should become involved in.

Task 11: Risk perception, community behaviour and social resilience

The aim of Task 11 is to understand flood risk from the perspective of communities, by looking at the impact of flooding on these communities and their ability to respond and recover from such events.

This task takes account of Environment Agency work on vulnerable groups, but does not consider other work on projects such as *Environmental inequalities* or *Public response to flood warnings*. The report recommends that Environment Agency social policy staff become involved in this task.

Task 19: Development of a framework for flood event management planning

The aims of Task 19 are to:

- design a decision support system (DSS) which makes use of computer model results and other information to support emergency management planning, in particular evacuation and rescue planning;
- test this system on pilot sites;
- narrow down the number of forecasts by rejecting unlikely scenarios using probabilistic techniques to identify the most likely inundation scenarios, to reduce the false alarm rate;
- optimise safe escape plans in the case of disaster, for example by determining safe access routes for rescue personnel where flood warning time is minimal.

The DSS aims to provide support to authorities in deciding on evacuation instructions to the community. The DSS needs to be simple and easy to use, but sufficiently flexible to be practical for all emergency personnel, from event planners to rescue services.

The Environment Agency's vision of the DSS is a system that helps to automate procedures, allowing forecasters to make better and more rapid assessments of flood warnings. The DSS should also help to rapidly disseminate flood warnings to professional partners and the public in a clearly understandable form.

However, partners may have their own strategies for flood events, and it is not clear whether they should use the same DSS or whether separate systems might be needed which link with systems already operated by those partners. For example, the fire and rescue services may have their own systems for deciding how to deploy their resources during flood events.

This task links with work areas within the FRMRC programme. The Thames estuary will be used as a trial site, so there are also links with the Environment Agency's National Flow Forecasting System (NFFS). This is considered an important task for the Environment Agency and the report recommends that its flood risk management staff should be involved.

Task 20: Development of a framework for the influence and impact of uncertainty

The main aims of Task 20 are to:

- enable uncertainty to be propagated through integrated flood risk models, by developing uncertainty propagation software;
- provide guidance on scale, complexity and credibility in composite models of flood risk;
- provide support to decision-making in policy and emergency situations.

This task was considered important to the Environment Agency, as there are overlaps with areas within the FRMRC programme. The Environment Agency should aim to influence the outcomes of this work and should involve its flood forecasting staff.

The report further recommends that a small network of Environment Agency/Defra staff and academics be set up, to provide clear channels through which information could be disseminated. These people could be called 'social science champions'.

The Environment Agency could then liaise with these 'champions' to find out how best to disseminate information, for example by making use of Defra Flood and Coastal Erosion Risk Management R&D publication "Research News", or other information routes.

This summary relates to information from Science Project SC040035, reported in detail in the following output:-

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