

## Flood and Coastal Erosion Risk Management Research Programme

# Communicating impacts in flood warnings and forecasting Project Summary SC150013/S

The Environment Agency and National Resources Wales recognise the need to ensure that they communicate effectively with the public about the impact of a flood and the most effective responses the public, the agencies' and their partners can take to mitigate that impact. This has proven economic and social benefits.

This project developed and tested innovative approaches to providing impact and context information in flood warnings and forecasts.

Overall the research found that impact information in flood warnings would better aid public decision-making and actions. By impact, this means a description of what (infrastructure, roads, homes) and who (specific locations) a flood will affect. Impact can also include timing of any affects. Members of the public who were already 'engaged' with the flooding warning system often supplemented warning messages with other local information. On the other hand, professional partners generally considered that impact content in warnings would not have a direct effect on their decision-making leading up to and during a flood event.

The findings of this research will be considered by the Environment Agency and its partners when reviewing its approach to the content and delivery of all types of flood warnings and forecasting. This report sets out what best practice looks like, but will take time to achieve and for the benefits to be realised. The Environment Agency will work toward achieving this across all warning areas in the country over the next few years.

### Approach to consultation and testing

The team used a phased approach to consultation and testing with 2 groups:

- residents of 'at-risk' areas who were already engaged with flooding and flood warnings
- professional partners including the police, local authorities, utility and infrastructure providers and Environment Agency strategic decision-makers and Flood Incident Management duty officers

Following an initial evidence review, 3 public focus groups and 17 telephone interviews with professional partners were undertaken to identify the current use of

warnings in decision-making and to reveal requirements and potential constraints for future warning content.

This information was combined with findings from the evidence review to develop examples of flood warning messages. This written material was tested at 3 workshops where members of the public provided detailed feedback. The public focus groups and workshops were held in locations representing a variety of flooding types and geography.

### Key findings: Views on the current approach

- The at-risk public can be divided into less engaged, engaged and highly engaged residents. Each group has different information requirements and may use the warnings differently.
- For many people, the warnings simply help to initiate awareness and the different levels inform progression in severity of the event.
- The level indicators used in flood alerts are not widely understood and are inconsistently applied. There was confusion about whether they mean 'ready, steady, go' or 'minor, bad, severe', and a wide range of views on the messages' primary purpose should be.
- Warnings are rarely used in isolation as further sources of information are generally sought. These range from Met Office weather forecasts to detailed river gauge data relevant to a person's location.
- To be more useful, the public felt that the message content should be more specific (places and timescales), locally relevant and resonant with their circumstances.
- Local impact cues used by residents to describe the possible severity of a flood for their homes included named car parks, bridges, roads, major shops and community facilities.
- Members of the public often received possible flood event information from multiple sources and based their response on this combined information.
- The consistency of information within a chain of warnings and from different sources was critical in encouraging the public to take action.
- A range of reasons were given as to why flood alerts were ignored. For example, they were too frequent, the content was too generic and not relevant to the

location, they were 'irritating' or 'worrying', recipients were unable to respond in time, and they used vague statements that did not describe what was expected to happen and did not encourage action.

- A common issue across the public and professional partners was how the uncertainty in modelling and forecasts is dealt with in flood warnings.

### Key findings: Views on the sample impact content

#### General

- The engaged residents present at the workshops supported the use of impact content for fluvial catchments.
- Impact messaging requires ongoing community engagement in advance of a flood, during it and afterwards. For example, it demands detailed local knowledge of the common 'decision triggering' locations for the community concerned.
- There was mixed feedback on the various phrases used to describe flood depth at preferred reference locations. 'Ankle/knee/waist/neck deep', for example, was seen as very descriptive but there were concerns as to how this would vary across a specific location. Hence content such as 'flooding will be ankle deep' would only be informative when paired with a specific location such as 'in the Asda car park'.
- The use of metric measurements was meaningless to many of the respondents.
- Although residents generally wanted to know what was going to happen, timing information should be used sparingly to avoid complication. Residents wanted to know the progression of events using impact descriptions. Some wanted to know what had happened and what had changed.
- There was more consistent agreement that historical comparisons of impact were likely to be confusing as the local context might have changed since the historic event and local weather events were variable.
- Achieving effective impact content for coastal flood alerts is more problematic. Such communities focus on their immediate coastal reach and the weather characteristics relevant to their home. As such, large flood alert areas rendered these alerts meaningless. It was important to include onshore wind direction and other hazard information at an appropriate scale to inform decision-making and enable action.

#### Message structure

- The message structure outlined in current Environment Agency guidance on how to write flood warning messages tends to follow a storyline approach. The feedback suggests that the public would prefer to receive headline-driven messages with the key impacts and actions at the beginning. A comparison of the current and recommended message structures is shown in the box below.

#### Structure of flood warning messages

##### Current:

Weather > River conditions > Hazard > Reassurance > Further information > Generic actions

##### Recommended:

Impacts > Specific actions > Weather > River conditions > Hazard > Reassurance > Further information

- Impact information may increase the message length and so care is needed when including this type of content.
- Messages should be kept as concise as possible, especially for flood alerts. Duplication within the message should be avoided.

#### Tone of messages

- The automated voice system often resulted in listeners 'switching off' while waiting for the key information.
- The tone needed to strike a good balance between 'informative and action prompting' versus 'panic and anxiety inducing'.
- Highly engaged residents produced examples at the workshops of direct email communications from sources such as the Met Office and flood wardens that adopted a much more human tone. The examples acknowledged local past experience and the anxieties of a flood event. They also contained locally specific locations and times, plus reassurances of further support.

This summary relates to information from project SC150013, reported in detail in the following output:

**Report:** SC150013/R

**Title:** Communicating impacts in flood warnings and forecasting

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