**WHAT DOES FLOOD RISK MEAN: CO-CREATING MEANINGFUL COMMUNICATIONS TO ENABLE RESILIENCE**

**LITERATURE REVIEW: NON-TECHNICAL SUMMARY**

### Introduction

The project: *What does flood risk mean? Co-creating meaningful communications to enable resilience* seeks to build on existing knowledge about people’s understandings of flood risk and the way they respond to information about it and to generate practical outputs designed to increase awareness, encourage engagement and improve response to flood risk, which will be tested through dialogue with members of the public. The results of this project will inform the way that the Environment Agency presents its new maps of flood risk and the way it coordinates with other agencies over these kinds of communications. The project is also intended to help agencies to adopt a consistent approach to conveying flood risk and likelihood, enabling them to join up their actions.

This non-technical summary provides the main findings from a review of relevant literature on public understanding and engagement with risk and the techniques for promoting it. This will be used to set the context for developing materials, designing and delivering the public dialogue.

The review of existing literature was supplemented by interviews with key providers in flood risk communications in the UK: the Environment Agency, Met Office, Flood Forecasting Centre and Cabinet Office.

### Definitions

We see *flood risk communication* as a social process which is made up of a number of different components (message, sender, audience, social context of the communication, etc.), all of which affect the nature, form and impact of the communication. It is intended to produce a response which will help to prevent or reduce the possible or likely negative impacts of flooding. However, it has become increasingly clear that there is no direct causal relationship between ‘transmitting information’ about risks and taking individual or collective decisions or action to manage them.

For the current project, there is a strong focus on the relationship between flood risk communication and response. The term ‘*understanding*’ is used here to describe the whole process, going from awareness to consideration of the need to take action and possible options, to actually taking action. The term ‘*engaging*’ is used to cover the part of the process that starts with an individual considering action, and includes thinking about possible responses (response perception), deciding whether or not to act and acting on the decision (see Figure 1). This usefully broadens the concept of “understanding flood risk” from a largely information-based process to one that encompasses the deliberation and action (or inaction) that follow on from information or awareness. However, it is important to note that the representation of a linear process does not reflect the way that contextual and other factors can cause feedback loops or interruptions.



**Figure 1: Representation of risk response as a linear process – the entire model represents our interpretation of ‘understanding flood risk’. Our interpretation of ‘engaging’ with flood risk is considered to be from Box 2: Consider action to Box 3: Act/Decide not to act (Harries, 2007 cited in Rose, Proverbs, Manktelow, & Booth, 2009)**

One aspect of the context in which flood risk communications are received which we consider throughout the review is whether communications are received when flooding is imminent or actually occurring (‘*live’ risk*) or whether they refer to potential or future flood risk (‘*static’ risk*).

### Characteristics influencing response to information about flooding

A variety of social factors influence response to flood risk communications, including: role of and trust in flood and emergency management agencies, media reporting.

The following characteristics of the situations in which flood risk communication occurs influence the type of response required (Twigger-Ross et al, 2009):

* Characteristics of the flood (e.g. source or type of flood; depth and velocity; timing; and type of catchment)
* Social characteristics of those affected (e.g. hard-to-reach groups such as low income groups, non-English speakers; low social connectivity; lack of awareness or experience of flooding);
* Characteristics of the area (e.g. urban versus rural; location, such as riverside properties; building characteristics – properties such as basement flats or bungalows);
* Risk communications contexts (e.g. the extent of trust in authorities, the existence of informal communications networks, etc.)

Interest in the social characteristics that influence response has prompted work by both the Met Office and the Environment Agency to get a better understanding of the different audiences (audience segmentation) for their risk communications.

A great deal of research has been done on communications in the context of flood warnings (i.e. live risk) and there is considerable evidence about what works or doesn’t work. Attributes of good practice risk communications in a context of ‘live’ flood risk have been identified as:

* Factual information
* Action advice (information on what people should do)
* Source of message (coming from identified and credible sources)
* Consistency
* Clarity
* Tone (positive rather than negative, encouraging interaction rather than isolation, etc.)
* Alerting function (conveying a sense of urgency, use of visual prompts like colours and icons, etc.)

(Haggart, 2004 cited in Orr & Twigger-Ross, 2009)

Other factors known to influence response to risk communications include:

* Two way communication is preferred to one way.
* Even in situations of immediate risk, people generally seek social confirmation of warnings before taking protective action

There is less evidence and clarity about what works in contexts of static risk. Research across Europe suggests that there is a need for a more sophisticated approach to getting people to ‘face up to’ their flood risk and think about what they can do to prepare for it. O’ Sullivan et al (2012) highlight a tendency for respondents to leave mitigation to external agencies rather than taking ownership of the risk themselves, despite their having high levels of awareness and worry. They suggest that flood risk communication ought to clearly outline the remit and responsibilities of all agencies involved in flood risk management in order to encourage reflection on what individuals can do for themselves (reported in Twigger-Ross et al. 2014:53. *draft*)

There is a lot of interest currently in the extent to which social media such as Twitter, Facebook and Instagram, through their challenge to one-directional, expert- or professional-led communications media, are opening up opportunities for more effective communication of risk. These media tend to be more collaborative, decentralised, networked and community-driven. People are no longer dependent on hierarchical communications systems but communicate through their own networks, giving them greater access to information, more quickly and from more sources (Sutton.2009:10). On the other hand, there are a number of concerns about the increase in communication of risk information through social media, from the possibility that misinformation can become established and lead individuals to make mistaken responses to the lack of access to these media by significant sectors of the population.

In a context of reduced trust in public authorities, the new communications technologies have created an information market place, where official communications have to compete with information from other sources. This gives rise to challenges and opportunities for those responsible for managing risk. (DFUSE Project, 2013:5)

### The current flood risk communications system in England

The current chain of flood risk communications from the key providers to members of the public in England was developed after widespread flooding in 2007 flooding. The review by Sir Michael Pitt of the way the flooding was managed identified a need for closer cooperation between the Environment Agency and the Met Office. This led to the creation of the Flood Forecasting Centre (FFC), which combines meteorology and hydrology expertise. It aims to deliver longer lead time flood forecasts and more accurate information to Category 1 and 2 emergency responders (Flood Forecasting Centre, 2014).

The current flood risk communications system involves the Met Office, FFC and Environment Agency as providers of information as well as emergency responders and many other organisations and members of the public.



**Figure 5: Overview of flood decision-making, actions and dissemination (Environment Agency , 2013a)**

Flood warnings are disseminated by the Environment Agency through a number of communications routes to their three audiences: members of the public (residential or business), their emergency response partners and the media. The warnings are issued to members of the public through television (weather and news bulletins), radio (local stations give information on current warnings), direct calls, text messages, emails and faxes. Partners can use a new system to track warnings against assets and things in their jurisdiction that they need to keep an eye on (Environment Agency, 2013b). Organisations and individuals can also seek flood risk information from the Environment Agency website, social media channels, and by registering to receive warnings from Floodline Warnings Direct.

The system described focuses on flood warnings, i.e. communications in the context of ‘live’ flood risk. Awareness campaigns are also used, such as the Floodwise campaigns, to get people to register for flood warnings and to improve their own flood preparedness (Environment Agency, 2013b). The Environment Agency has the main national role in developing awareness of flooding. Other authorities and organisations also communicate about background or ‘static’ flood risk: these include local authorities and voluntary organisations such as the National Flood Forum. Much of this communication links or refers to Environment Agency information and services such as Floodline and flood maps and there is a significant degree of consistency in messages.

### Techniques for flood risk communication

In this review we have differentiated between a flood risk communications *channel* (understood as a way that a flood risk technique is communicated to particular audiences e.g. via the organisation’s own communications, established media, etc.) and communications *techniques*, which are defined as actions or activities to describe or talk about flood risk in order to promote understanding and engagement, including, but not confined to, language, numbers, representations and any other content, products or activities that express flood risk.

Communications routes have diversified considerably in recent years. Whereas the main routes ten years ago would have been through the press and broadcast media, the Environment Agency’s telephone warning service and through direct local contacts (e.g. door knocking by local authorities, emergency services or voluntary agencies), the proliferation of internet and mobile phone coverage has meant that people can receive communications through many different routes (e.g. flood websites, online widgets, SMS, Twitter, YouTube, etc.) Organisations and individuals can use these routes in disseminating messages, which increases the amount and variety of information available.

The table below shows a number of techniques which exist to communicate flood risk messages through language, numbers and probabilities, products, representations and innovative activities. These techniques are not used in isolation and are disseminated through various communication routes. These techniques can link risk to action and be useful in raising flood risk awareness as well as providing information on flood preparedness actions that members of the public can implement.

**Table x: Current selected communication techniques for flood risks coordinated at a national level**

| Technique | Example |
| --- | --- |
| Live Flood Maps | Environment Agency live flood warning map |
| Static Flood Risk Maps | Environment Agency: Risk of Flooding from Rivers and Sea |
| Games | LWEC's Snakes and Ladders Game |
| Educational Activities | Hull Children's Flood Project |
| Video Content | Environment Agency Flood Update Videos |
| Images | Environment Agency Flickr Account |
| Infographics | Environment Agency Tidal Surge 2013 Infographic |
| Numbers | Environment Agency ‘Risk of Flooding from Rivers and Seas’ flood risk descriptions |
| Innovative Activities | Sustainable Flood Memory Project |
| Language/  Written Communications |  |

In addition the National Flood Emergency Framework for England (Defra, 2013:51) identifies techniques for communicating flood warnings in the context of urgent live flood risks. These include: mobilising police officers to knock on doors, site sirens, loudhailers or other amplified messages, electronic message boards, e.g. at roadsides, announcements in public buildings and shopping centres, etc, automated messages to subscribers and media announcements. The Cabinet Office is currently exploring the possibility of sending automatic alerts to all mobile phones within an at-risk area, whether or not they are subscribed to a warning service.

Assessing the effectiveness of techniques for communicating risk and probability is difficult. Spiegelhalter (2011:1393) points out that: ‘*there are few reproducible experimental findings for assessing best practice in visualizing uncertainty. Instead, reviewers have emphasized how graphics can be adapted to the aims of the communicator, stressing the importance of the context of the communication exercise and the needs and capabilities of the audience.’*

Community engagement techniques have been used successfully to develop new approaches to talking about flooding in a context of ‘static’ risk, for example by bringing together local and expert knowledge to increase community resilience. (Lane et al, 2011, reported in Twigger-Ross et al, 2014:57. Draft). Similarly, mechanisms such as Community Risk Registers and Community Flood Plans can be used to institutionalise local knowledge both to prepare for flooding and enhance resilience during an emergency (McEwen and Jones, 2012:680)

Some of the characteristics that appear to contribute to the success of these approaches are their ability to build trust with local communities and their ability to empower people and create ownership. Flood risk maps and video projects, when used as participatory methods, have empowered members of the public and resulted in improvements to map content as well as increased awareness of flood risk. (Meyer et al, 2011).

Dialogue offers an opportunity to explore what can be done in relation to different contexts and objectives of flood risk communications. In its ‘Guiding Principles’ document, Sciencewise sets out the main characteristics and focus of public dialogue:

* *talking with the public about ethical and societal issues*
* *about the instigators of the dialogue being prepared to change their minds*
* *about getting public and different perspectives to help explore issues, aspirations and concerns when shaping policy*
* *gathering public experience in science and technology issues.*

### Issues for current flood risk communications practice

While recognising the considerable progress that has been made in recent years in flood risk communication, policy makers, practitioners and members of the public see the need for further improvement. The review has highlighted the following issues to be addressed:

* *Coverage*
  + There are sectors in society in which people are much less likely to receive information about flooding as they do not use either traditional or new the communications channels
  + Holding flood risk information online is a barrier to access by both IT literate and less connected audiences.
* *Communicating risk*
  + Failure to implement good practice, for example in relation to the language or flood alerts. This may be associated with a lack of training for people on the ground.
* *Understanding risk*
  + Many practitioners feel that the main problem for the communication of flood risk is about people’s understanding of risk: this is associated with ‘segmentation’ approaches which suggest that there are some social groups or segments that will never engage with this kind of risk.
* *Moving from awareness of flood risk to response*
  + Use of social media suggests a change in relationships between key providers and members of the public, with greater involvement of members of the public in sharing and creating information.
* *Improving preparedness (response to ‘static’ risk)*
  + participatory approaches appear to offer ways of increasing understanding of local flood risk and enhancing preparedness