



# Quantifying the benefits of Flood and Coastal Erosion Risk Management: stakeholder and community engagement; and modelling, mapping and data

## Project Summary SC130008

### Aim of the project

The Environment Agency needs to be able to transparently determine and quantify the contributions made by its Modelling, Mapping and Data (MMD) and Stakeholder and Community Engagement (SCE) teams to flood and coastal erosion risk management (FCERM) outcomes.

This project has trialled the use of dependency modelling to establish whether it can provide a clear and evidence based explanation of how MMD and SCE activities contribute to FCERM outcomes. This would:

- help the Environment Agency communicate how these activities contribute to improved outcomes
- help senior managers understand how changes in resource allocation could affect achievement of these outcomes
- help identify where more effective or efficient ways of carrying out activities and realising outcomes could deliver better value for money

This report presents the findings of this project. It introduces the concept of dependency modelling, describes the methodology used, and presents the outputs of the dependency modelling process.

### Approach

The dependency modelling was carried out using a highly participatory workshop led approach involving three basic steps:

- identifying outcome measures that are most relevant
- identifying influences that affect these outcome measures
- quantifying the importance of the cause and effect relationships

### Findings

The project has demonstrated that the dependency modelling approach is useful in the FCERM field.

It has helped those involved in developing the models to understand the complex relationships between FCERM activities and outcomes, and how the models can be used to help communicate and then quantify these relationships.

Qualitative models have been produced for both MMD and SCE teams. These models help illustrate the activities carried out by these teams and how they contribute to important FCERM outcomes. This has already shown that the activities of MMD teams are critical in achieving FCERM outcomes.

The project has also developed quantitative models for both MMD and SCE. The models developed at this stage are simple, yet demonstrate how the approach can be used to identify the activities that contribute most to outputs.

The SCE model has shown that, in communities where there has not been recent engagement or where they have not previously been affected by flooding, community engagement work is likely to be needed to make improvements in:

- the development and implementation of the capital and maintenance programmes
- flood warnings or community awareness and action
- customer enquiries and complaints

Improving the specific community engagement planning activity results in the greatest improvements to the outputs listed above.

The process of developing the models is often as valuable to the participants as the end product. In this project, the participants found it very helpful to articulate their activities and the outcomes using dependency maps.

These models are being developed further by the Environment Agency for use in the 2015 Spending Review, emphasising that this approach has been

successfully adopted as a means of articulating the complex structure of FCERM.

## Recommendations

1. The qualitative maps are of considerable benefit. MMD and SCE staff should continue to develop them as 'live' documents to help them communicate widely within the Environment Agency and externally how their activities contribute to flood and coastal erosion risk management outcomes.
2. The approach is a viable way of quantifying the benefit of SCE and MMD activities. The Environment Agency should continue to improve them by
  - consulting more widely to add detail to the models
  - gathering cost and benefit data to make use of the cost–benefit assessment capabilities of the software
3. The journey for the participants is just as valuable as the end models. Other Environment Agency teams should adopt this approach to understand how their activities contribute to Environment Agency outcomes.
4. An early stage in developing the quantified models includes a structured exercise focused on identifying potential improvements to achieve better outcomes. Model development should be taken to at least this stage in each case if full quantification cannot be achieved.

This summary relates to information from project SC130008, reported in detail in the following output(s):

- Evidence Summary
- Science Report
- Science Report and Appendices

**Report:** SC130008

**Title:** Quantifying the benefits of FCERM: stakeholder and community engagement; and modelling, mapping and data

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