



## Working with natural processes to reduce flood risk – research and development framework

### Project Summary SC130004

Working with natural processes (WWNP) involves taking action to manage fluvial and coastal flood erosion risk by protecting, restoring and emulating the natural regulating function of catchments, rivers, floodplains and coasts.

This project has produced a framework for a comprehensive and prioritised programme of WWNP research and dissemination to allow flood and coastal erosion risk management to be carried out sustainably, improving the environment for people and wildlife.

The project was completed in three stages between 2013 and 2014. Stage 1 included a comprehensive review of WWNP research and a stakeholder workshop to establish:

- what research had been completed to date
- gaps in our knowledge
- future research needs

Stage 2 involved refining the research gaps, making links with other research programmes, and identifying and prioritising a set of potential research projects that could be undertaken by the Environment Agency/Defra joint flood research programme, other risk management organisations, public sector bodies, non-governmental organisations, academic institutions and other research funders. Stage 3 was producing this report, which has been independently peer-reviewed.

Existing information and tools covering a range of different topic areas were reviewed to help identify potential research gaps. A stakeholder workshop reduced the initial list to eight main gaps:

- understanding approaches to community and stakeholder engagement
- understanding and changing cultural and institutional barriers to WWNP

- integrated guidance and/or training in WWNP for practitioners
- learning lessons from past and existing pilot/case studies
- new or continued studies to improve the WWNP evidence base
- national prioritisation of catchments where the greatest benefits might be obtained from WWNP
- collecting data about natural processes at a catchment scale
- developing more adaptive/resilient green engineering technologies

Building on these emerging research priorities, a series of reviews and a scoring approach was used to identify 14 highest priority projects. Short business cases were written for these projects to form a basis for future R&D project proposals.

Projects in the final list include:

- using a series of catchment laboratories to trial, test and monitor the effects of WWNP measures and demonstrate how WWNP works in different environments
- national mapping to identify priority catchments where WWNP measures have most potential to deliver flood and coastal erosion risk benefits
- modelling the effects of WWNP measures on flood and coastal erosion risk
- developing a blue-green engineering rating and design guide for FCERM practitioners
- examining attitudes, cultural and scientific barriers to WWNP
- using the ecosystem approach for funding opportunities in WWNP
- developing operational guidance to deliver FCERM using WWNP
- joining up how the requirements of the Water Framework and Floods Directives are met
- assessing the costs and benefits of fish and eel screening measures at river and coastal engineering structures

The next steps are to publicise the framework; obtain funding for the projects; carry out the research projects; and monitor progress of the framework. It will be important to communicate the project results and to ensure the outputs can be used by a wide audience.

This summary relates to information from project SC130004, reported in detail in the following output(s):

**Report:** SC130004/R1

**Title:** Working with natural processes to reduce flood risk. R&D framework: initiation report

**Report:** SC130004/R2

**Title:** Working with natural processes to reduce flood risk. R&D framework: science report

## July 2014

**Internal Status:** Released to all regions

**External Status:** Publicly available

**Project manager:** Lydia Burgess-Gamble, Evidence Directorate

**Theme manager:** Jacqui Cotton

**Research Collaborators:** Alastair Driver, Andy Disney, Colin Thorne (peer Reviewer), Greg Whitfield, Jenny Mant, John Oldfield, John Rees, Lydia Burgess-Gamble, Mark Ross, Mark Wilkinson (peer reviewer), Nicola Rimington, Peter Downs, Rob Cathcart, Rob Collins, Ruth Ashton-Ward, Vicki Rhodes and Vince Carter

**Research Contractor:** Black & Veatch, 38 City Road, Chester CH1 3AE, Tel: 01244 304100

This project was commissioned by the Environment Agency's Evidence Directorate, as part of the joint Environment Agency/Defra Flood and Coastal Erosion Risk Management Research and Development Programme.

Email: [fcerm.evidence@environment-agency.gov.uk](mailto:fcerm.evidence@environment-agency.gov.uk).

E: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk).

© Environment Agency.