

Working with Natural Processes – the evidence base

Project Summary SC150005

Background

Working with Natural Processes (WWNP) to reduce flood and coastal erosion risk (FCRM) involves implementing measures that help to protect, restore and emulate the natural functions of catchments, floodplains, rivers and the coast. WWNP takes many different forms and can be applied in urban and rural areas, and on rivers, estuaries and coasts.

Rivers and floodplain management	Woodland management
<ul style="list-style-type: none"> River restoration Floodplain restoration Leaky barriers Offline storage areas 	<ul style="list-style-type: none"> Catchment woodlands Floodplains woodlands Riparian woodlands Cross-slope woodlands
Run-off management	Coast and estuary management
<ul style="list-style-type: none"> Soil and land management Headwater drainage Run-off pathway 	<ul style="list-style-type: none"> Saltmarsh and mudflats Sand dunes Beach nourishment

Why was the study needed?

There has been much research on WWNP, but it has never been synthesised into one location. This has meant that it has been hard for flood risk managers to access up-to-date information on WWNP measures and to understand their potential benefits.

What did the study include?

This study is made up of 3 interlinked projects which together make up the WWNP evidence base (see figure).



The [Evidence Directory](#) summarises the effectiveness of WWNP measures from a FCRM perspective as well as the wider ecosystem service benefits they may deliver. It is underpinned by:

- a detailed literature review
- Guidance on project monitoring
- 65 standalone case study examples
- 14 one-page summaries of each of the WWNP measures, which provide a high level summary of the material included in the directory

We have [mapped the potential for WWNP](#). These maps are intended to be used alongside the Evidence Directory to help practitioners think about the types of measure that may work in a catchment and the best places in which to locate them. It is a useful tool to help start conversations with key partners. The maps are provided in spatial data and PDF format, and are supported by a user guide and a detailed technical guide.

We have [written a guide](#) which sits alongside the Evidence Directory and the Maps, and explains how to use them to help make the case for implementing WWNP when developing business cases. It also includes guidance on implementing WWNP in areas at risk of groundwater flooding.

The **research gaps** that need to be addressed to move this form of FCRM into the mainstream are identified in the Evidence Directory. To help fill these gaps we have:

- worked with the Natural Environment Research Council to develop a £3.4 million research call to address some of these gaps with the aim of working in partnership with projects funded through this call to help advance science in this field
- shared the list of research gaps with catchment-scale Defra-funded natural flood management projects so they can address research gaps through long-term monitoring
- developed an evaluation plan to capture the outcomes of the monitoring conducted as part of Defra-funded catchment-scale projects so that learning can be shared across the WWNP community

How will these findings be used?

The outcomes of this suite of projects can be used by those planning projects which include WWNP measures to help understand:

- their potential FCRM benefits and multiple benefits
- any gaps in knowledge
- where it has been done before and any lessons learnt
- where in a catchment they might be most effective

How can I access these products?

All of the outputs from this project which are listed below can be accessed by clicking here:

<https://www.gov.uk/government/publications/working-with-natural-processes-to-reduce-flood-risk>

Project outputs

This summary relates to information from project SC150005, reported in detail in the following output(s):

Report: SC150005 Technical Report

Title: Working with Natural Processes – Evidence Directory

Report: SC150005 Literature Review

Title: Appendix 2. Evidence Directory Literature Review

Report: SC150005 User Guide

Title: Mapping the potential for Working with Natural Processes - user guide

Report: SC150005 Technical Report

Title: Mapping the potential for Working with Natural Processes - technical report

Report: SC150005 Technical Report

Title: Using flood risk evidence to make the case for Working with Natural Processes

Spreadsheet: SC150005 Flood Risk Matrix

Title: Appendix 1. Using flood risk evidence to make the case for Working with Natural Processes – the flood risk matrix

Infographics: SC150005 1 Page Summaries

Title: Working with Natural Processes the evidence behind Natural Flood Management

Case Studies: SC150005 Case Studies

Title: 65 individual case studies

Maps: SC150005 PDF maps

Title: Mapping the potential for Working with Natural Processes – PDF maps

Shapefiles: SC150005 Shapefile data

Title: Mapping the potential for Working with Natural Processes – spatial data

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