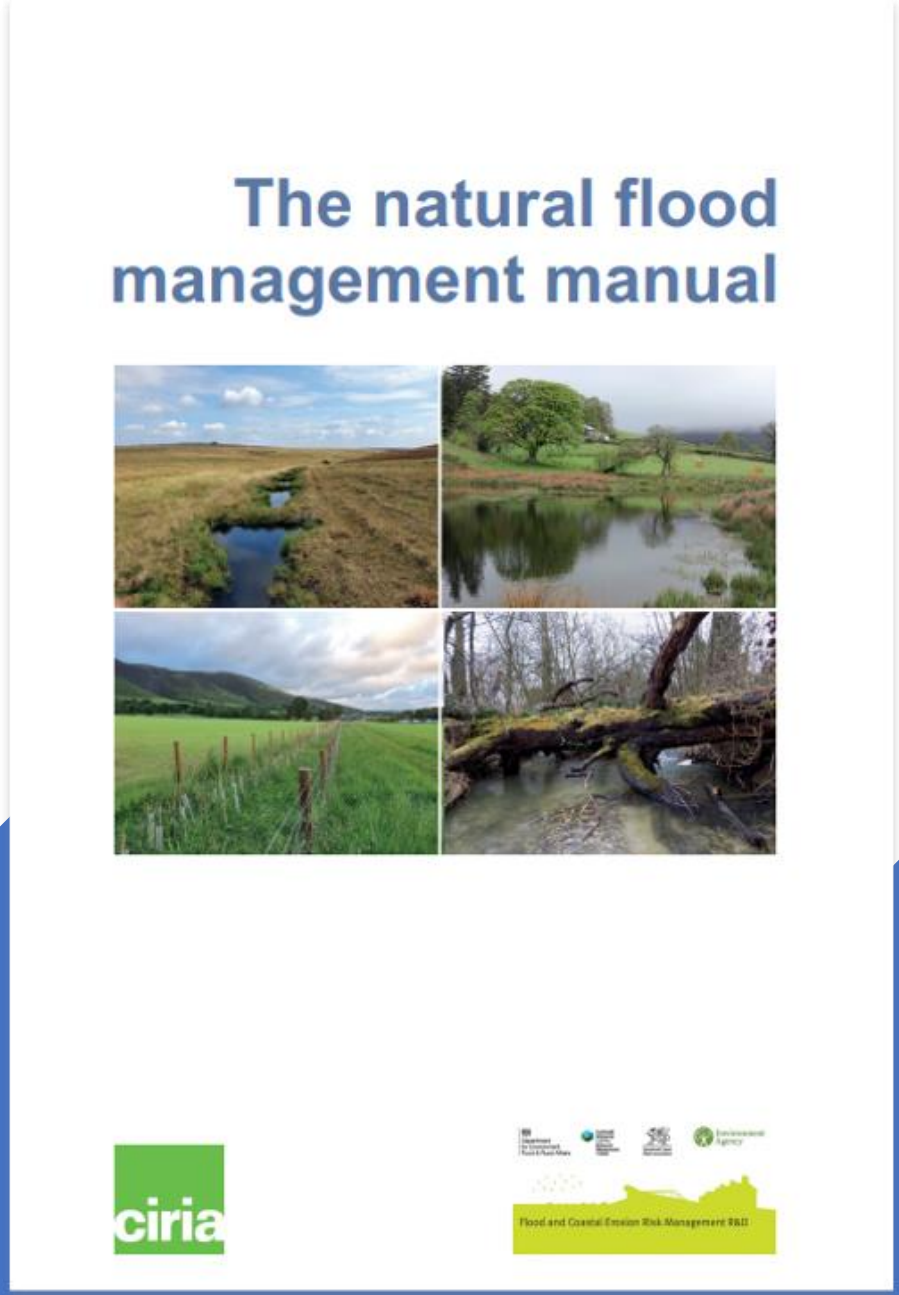
Update on the CIRIA NFM Manual

Emma Wren

Natural Flood Management Manual

Update for Yorkshire NFM CoP

Emma Wren, Lead Author



The vision

The aims for the NFM manual

1

Support delivery

2

Provide confidence

3

Maximise outcomes

The CIRIA NFM Manual

Timeline

Start up

Autumn 2019

Develop consortium

Scoping

Spring/Summer 2020

Literature review
Project steering group

Engagement

Autumn 2020

Workshops
Survey
Interviews

Drafting

Autumn 2020 to end 2021

3 drafts reviewed by PSG

Launch

May 2022

Online
600 attendees

What is natural flood management

Working with natural hydrological processes

A continuum

Protect

Protect the hydrological processes that naturally function well

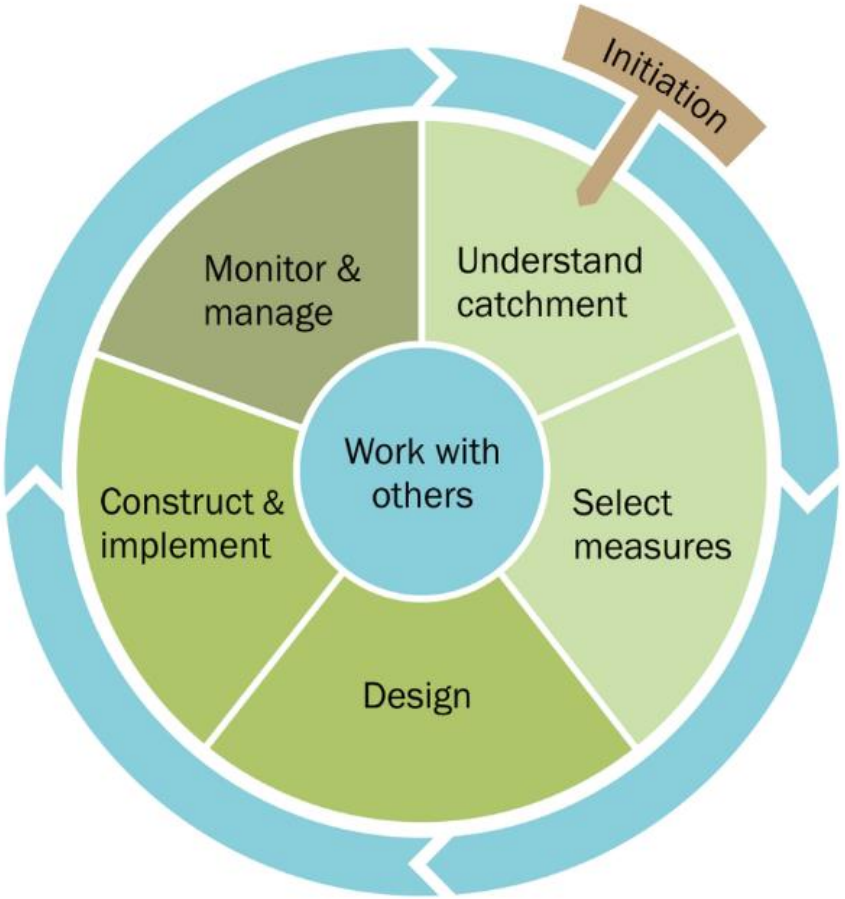
Restore

Work with nature to restore good hydrological processes. Enhance or add to what is already present

Mimic

Mimic or reinstate hydrological processes

The NFM delivery proce

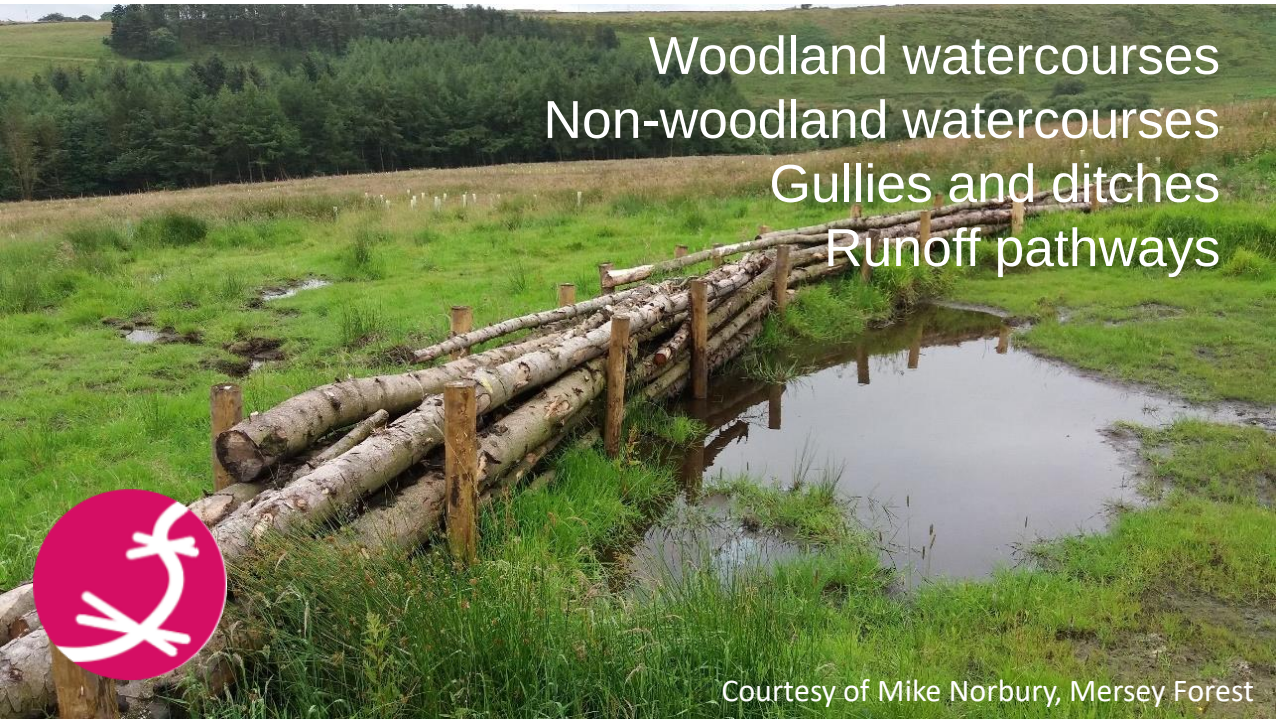


Progress through a project

Delivery stage	What is needed?
Initiation	Understand the NFM delivery process, agree project aims, raise support and understand wider aspirations
Understand catchment	Gather information to understand issues and opportunities in the catchment
Select measures	Select sites and measures to target the catchment issues and maximise outcomes
Design	Develop appropriate NFM designs
Construct and implement	Deliver the NFM
Monitor and manage	Aftercare for the NFM delivered
Work with others	Integral to maximise outcomes and co-benefits


Cross drains/deflectors
Cross slope hedgerows
Buffer strips
Courtesy of West Cumbria Rivers Trust


Ponds
Scrapes
Swales
Bunds
Courtesy of Yorkshire Dales Rivers Trust


Woodland watercourses
Non-woodland watercourses
Gullies and ditches
Runoff pathways
Courtesy of Mike Norbury, Mersey Forest


Lower, remove or set bank embankments
Palaeochannel reconnection
In channel features
Floodplain wetland restoration
Courtesy of Summit Fever Media

Runoff management

Chapter 7 provides more detail

What is runoff management?

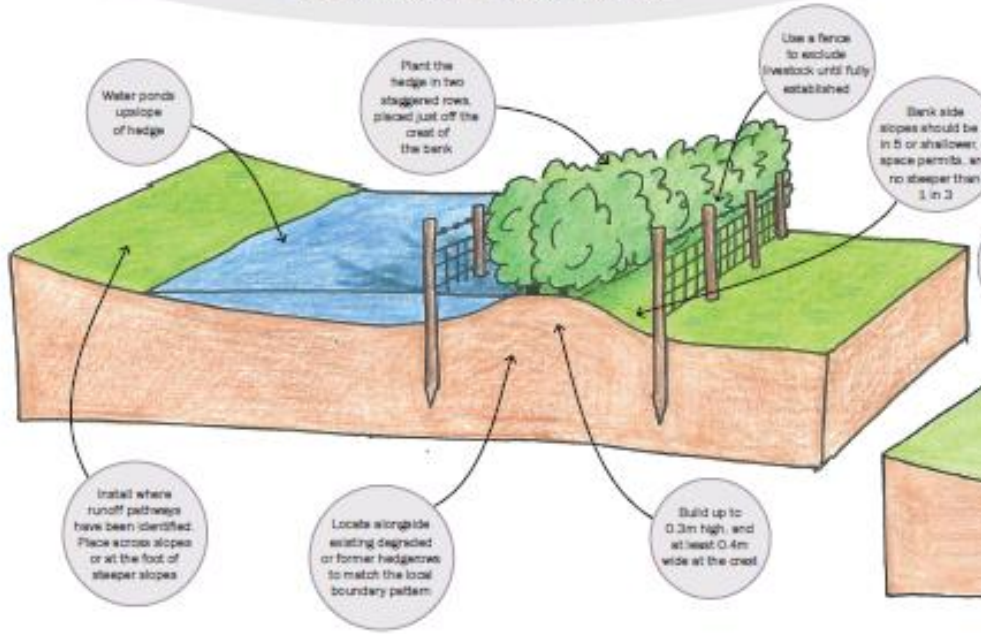
- Aims to interrupt, slow or divert overland flow pathways across the landscape
- Encourages infiltration into the ground and diverts water away from challenging locations
- Includes cross drains and deflectors; cross slope hedges and buffer strips

Key metrics

- Low cost
- Easy to build
- Moderate maintenance requirements
- Indefinite design life if maintained

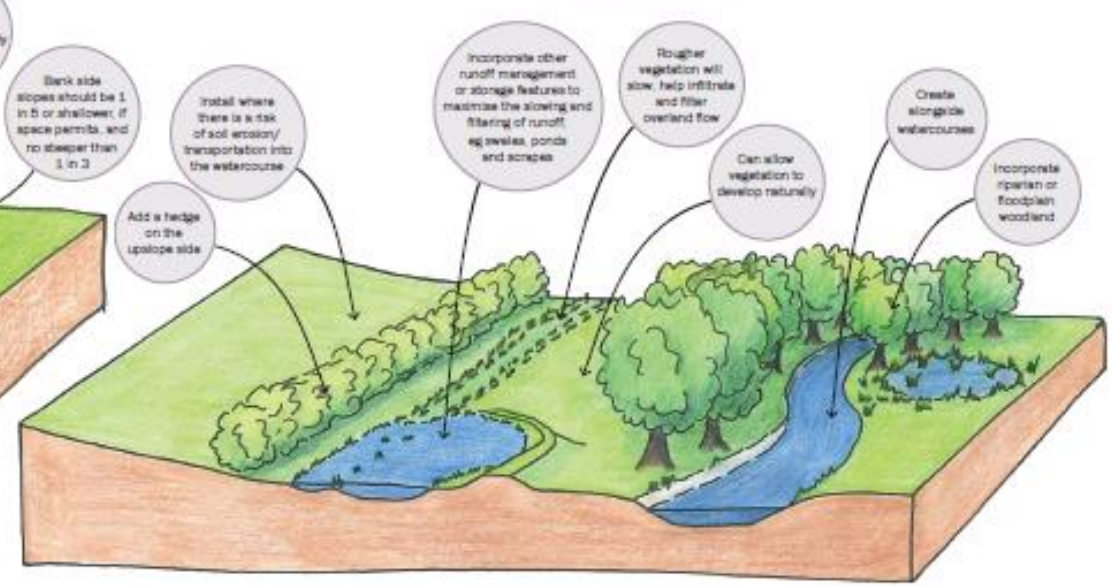
Banked hedge

Hedges planted cross slope on a raised bed or bank, to intercept flow pathways and store water, to increase infiltration and transpiration



Enhanced riparian buffer strip

Linear features strategically placed across a slope alongside a watercourse to allow the establishment of rougher vegetation to slow, and help infiltrate and filter overland flow



Key benefits:

- **Flood risk reduction:** measures divert, infiltrate and store runoff, to reduce downstream flood risk and divert water away from challenging areas such as highways and infrastructure
- **Water quality:** measures can be designed to trap and filter contaminated runoff
- **Climate regulation:** hedgerows and buffer strips can capture and store carbon
- **Habitat creation:** hedgerows and buffer strips create habitat which can be used as wildlife corridors to link existing habitats
- **Soil health:** help retain soil on the land rather than it being washed into watercourses
- **Farm operation:** hedgerows can be a long term field boundary and are beneficial to livestock health

Work well with:

- **Soil and land management** to reduce runoff and soil loss at source
- **Runoff storage** to store water alongside measures to slow runoff
- **Woodland** across the landscape to reduce the rate of runoff
- **Leaky barriers** to slow the flows in watercourses or on runoff pathways
- **River channel restoration and floodplain reconnection** to provide further benefit in the river corridor

Design notes common to all runoff management measures:

- The appropriate runoff management measure is dependant on location, purpose and construction method
- Living and natural materials should be used where possible
- Consider access requirements for maintenance and livestock access for grazing or water needs
- Bunds, swales, ponds or scrapes require earthworks. Bunds need compaction in layers
- Protect new trees from pests for the first two years
- Consider adding hedgerow trees to increase biodiversity, variation and structure
- Plant hedges or trees between October and March
- Use native trees similar to species present in the local landscape
- Connect existing habitats and/or create wildlife corridors
- Avoid sites where invasive species are a known issue
- Consents may be required for these measures. Refer to the manual for further detail

What’s next?

Looking forward

1.

Talk about it

Tell people!

Talks and social media

2.

Training

In preparation

3.

Implement it

Increase uptake of NFM

4.

Gather feedback

Good and bad

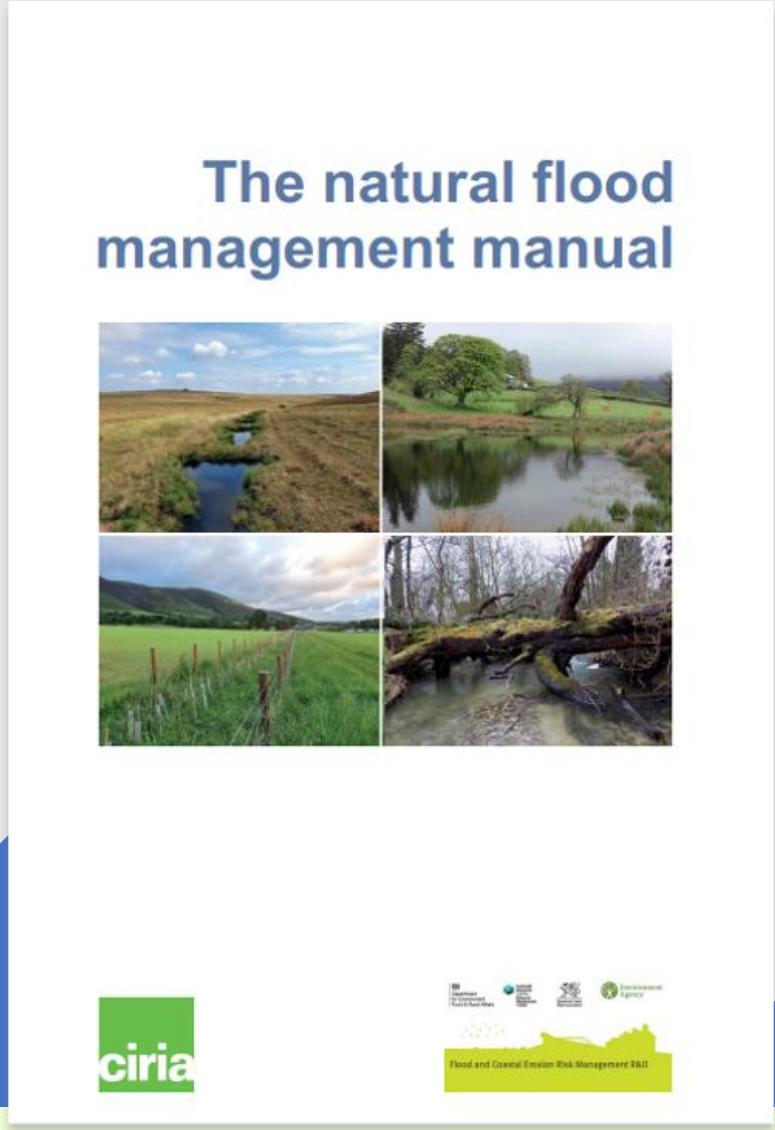
5.

Update and expand it

Dependent on support and funding

MOTT MACDONALD

Thank you



Item Detail (ciria.org)