Natural Flood Management Prioritisation

User guide

Natural Flood Management Review Part A:
Scoping Catchments Suitable for Natural Flood Management in Wales

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Prepared by	Eleanor Pearson PhD MbR BSc Natural Flood Management Analyst
Reviewed by	Jenny Broomby BA (Hons) MSc MCIWEM C.WEM CEnv Chartered Senior Environment & Sustainability Analyst Steve Rose BSc MSc CGeog FRGS Technical Director and Natural Flood Management Lead
Authorised by	Jenny Broomby BA (Hons) MSc MCIWEM C.WEM CEnv Project Manager

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Contract

JBA Project Manager	Jenny Broomby BA (Hons) MSc MCIWEM C.WEM CEnv
Address	Salts Mill, Saltaire, West Yorkshire, BD18 3LF
JBA Project Code	2022s0229

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Abbreviations

AONB ..... Area of Outstanding Natural Beauty
FRAW ..... Flood Risk Assessment for Wales
GIS ..... Geographic Information System
HEF ..... Historic Environment Features
HLA ..... Historic Landscape Areas
NFM ..... Natural Flood Management
RHPG ..... Registered Historic Parks and Gardens
RIGS ..... Regionally Important Geogdiversity Sites
SCCAN ..... System Cynorthwyo Cunllunio Adnoddau Naturiol
SM ..... Scheduled Monument
SPA ..... Special Protection Area
SSSI ..... Site of Special Scientific Interest
WHS ..... World Heritage Site
WwNP ..... Working with Natural Processes

Definitions

Natural Flood Management (NFM) is a process whereby measures are put in place that work with the natural environment to store, slow and infiltrate flood waters to reduce flood risk (Environment Agency, 2018).

1 Introduction

1.1 Purpose and scope of dataset

This guide introduces the Welsh Government's Prioritisation Mapping of Natural Flood Management. This data aims to identify areas of Wales which are more, or less, suitable for Natural Flood Management (NFM) using spatial data and Geographic Information Systems (GIS). It is relevant to all NFM proposals, whether publicly or privately funded as a signpost to where NFM may be most suitable. The aim of the prioritisation mapping is to help users identify the right places for NFM.

1.2 Overview of this user guide

Chapter 2 provides a brief explanation to the data layers included. This data is aimed to be a decision support tool, not a decision-making tool. The modelled data is not a substitute for a site visit and thorough desk study using all available data, together with the gathering of relevant local knowledge and information.

Chapter 3 provides an understanding of how to use the data and other considerations that are necessary when using the data.

2 Data

2.1 Prioritisation Maps

The overall prioritisation maps give a strategic overview of the areas which are more suitable for NFM. The map is colour-coded depending on the percentage areal coverage of NFM potential. The shade of colour becomes darker as there is more opportunity for NFM within a catchment.

Bear in mind that the lighter shades may have areas which provide benefits from Natural Flood Management, but they may not be suitable and provide the same level of benefit as other, darker shaded areas.

The principles behind this prioritisation were informed by current academic understanding of where NFM may be most applicable and has sought to use the latest Natural Environment Research Council (NERC) research. Four different prioritisation datasets have been created to target two different catchment scales, small surface water flood risk catchments and larger fluvial flood risk catchments and to reflect two different primary user aims, flood risk management and wider environmental benefits. The definitions for the two catchment sizes are:

- Small catchments (<10km^2) immediately upstream of communities at risk from frequent (30 year) flooding from surface water and small watercourses.

- Larger catchments (<50km^2) upstream of communities at risk from larger floods from rivers and sea.

The data layers used to create the overall Prioritisation Maps were taken from the Working with Natural Processes (WwNP) potential dataset and the System Cynorthwyo Cunllunio Adnoddau Naturiol (SCCAN) dataset. The layers are listed below, and can be viewed separately within the web-map browser by opening the "Components" sub-folder:

- Runoff attenuation features (WwNP)
- Floodplain reconnection potential (WwNP)
- Riparian woodland (WwNP)
- Infiltration improvements on slowly permeable soils (WwNP)
- Hedgerows (SCCAN)
- Bog restoration (SCCAN)
- Habitat change and improvements for increased surface roughness (SCCAN)
- Agricultural management through the retention of winter stubbles (SCCAN)

Within the maps aimed towards users wanting to deliver multiple environmental benefits, the following features were given a double weighting for potential ecosystem service provision based on an analysis of the Working with Natural Processes (WwNP) Evidence Directory (2017):

- Riparian Woodland (WwNP)
- Infiltration improvements on slowly permeable soils (WwNP)
- Hedgerows (SCCAN)
- Bog restoration (SCCAN)

Each prioritisation map has its own scoring range, calculated as the percentage of the catchment area covered by the individual opportunity maps listed above:

- <10%
- 10%-25%
- 25%-50%
- >50%

This score can be over 100% catchment areas as we believe some NFM measures are complimentary to each other and can be implemented in the same area (e.g. riparian woodland planting and leaky barriers).

These layers are relevant to all NFM schemes, regardless of funding mechanism.

2.2 Sensitivity layers

These layers indicate areas that are potentially sensitive to NFM measures and require further investigation as part of a decision-making process. These layers are available on DataMapWales for viewing alongside the prioritisation dataset.

The sensitivities have been divided into the following groups to ease identification:

- Archaeological sites
  - Historic Environment Features (HEF)
  - Historic Landscape Areas (HLA)
  - Registered Historic Parks and Gardens (RHPG)
  - Scheduled Monument (SM) 50m buffer
  - Scheduled Monument
  - World Heritage Site (WHS)
- Bio-physical
  - Acid Sensitive Catchment
  - Ancient Woodland Inventory
  - Deep Peat and Modified Deep Peat
  - Grassland Fungi
  - Potential Habitat for Fritillary Butterflies over Bracken
  - Potential Habitat for Great Crested Newts
  - Potential Habitat for Open-ground Dependent Birds
  - Priority Habitat – High Sensitivity
  - Priority Habitat Mosaics – Investigation Required
  - Red Squirrel Areas
  - Regionally Important Geodiversity Site (RIGS)
  - Sensitive Arable Plants
  - Potential Habitat for Water Voles
- Landscape designations
  - Area of Outstanding Natural Beauty (AONB)
  - Registered Common Land
  - National Park
  - Open Access
  - Site of Special Scientific Interest (SSSI)
  - Site of Special Scientific Interest (SSSI) 100/300m Buffer
  - Upland Special Protection Areas (SPA)
  - Upland Special Protection Areas (SPA) 500m Buffer
- Agriculture
  - Agricultural Land Classification

Only sensitivities that have datasets covering the whole of Wales have been included. Some layers have associated buffer layers; other layers have buffers built in, depending on the nature of the data. Click on the layers' 'Data catalogue' page in DataMapWales for an explanation of each sensitivity.

Having a sensitivity present in a NFM proposal site means that the user should seek further guidance to further understand and mitigate any potential impact.

The Sensitivity layers listed are not exhaustive and additional layers can also be viewed alongside this data to help a user prioritise a set of areas further, depending on other aims and objectives. For example, habitat layers could be viewed to inform prioritisation of measures to deliver specific habitat enhancement.

3 How to use the maps

3.1 Intended use

The maps are strategic and indicative in nature. They should be used as a screening tool to signpost areas for more detailed, local field or modelling investigations. The maps can also be used in discussions with catchment stakeholders in combination with the gathering of relevant local knowledge. Further details on how the maps should and should not be used are given below.

The intended use for these maps is to:

- Support and inform national level planning and decision making for the distribution of funding and support for NFM
- Support the selection and prioritisation of NFM projects across a range of funding streams
- Provide additional information and evidence to support low cost and low risk NFM projects that cannot justify specific modelling studies
- Add value to existing datasets (e.g. WwNP and SCCAN) by providing more clarity as to where the identified opportunities are likely to provide the greatest flood risk management benefit

For example, managers of future funding grants may use the maps to prioritise expressions of interests or funding applications by those that fall in areas that the data suggests will deliver the greatest flood risk management benefits.

The Sustainable Farming Scheme (SFS), could use the two different scales of the NFM interventions identified in the mapping to prioritise measures delivered under either the Optional Action or Collaborative Action layers.

It is not intended that the mapping be used to exclude any areas for funding from any streams but should be used to inform how funds should be prioritised to deliver greatest likely benefit for flood risk and where to focus efforts and resources. It should also be noted that the catchments have been prioritised based on the potential for NFM to reduce flood risk to vulnerable communities at risk, not on the level of flood risk currently in catchment. These maps should be combined with other datasets such as the outputs of the Flood Risk Assessment for Wales (FRAW) to allow for this comparison.

3.2 User considerations

The maps should be considered ‘indicative’ only, as there will be other considerations and constraints, not least landowner agreements and permissions. The maps should be used in conjunction with early and full landowner and occupier engagement. Wider landowner considerations, such as eligibility for payment schemes, funding availability, liability risks, impacts on riparian rights and responsibilities, farm tenancy agreements and longer-term viability should be taken into account. Relevant local knowledge should be sought from landowners and occupiers, who may be able to suggest more optimum locations for NFM.

The maps do not account for reduction in flood risk to individual assets, with further, more detailed analysis, including site visits, feasibility analysis and modelling required to attain this level of understanding. Individual asset risk reduction was not undertaken as it is highly uncertain and difficult to generalise the effect of NFM at a national scale.

Other considerations include:

- The information provided within the prioritisation maps is based on a national scale mapping approach, taking into account largely modelled and open-source data.
- The maps have been derived from opportunity maps which do not cover all aspects of NFM.
- The maps represent a snapshot in time, with both the NFM opportunity maps and the flood risk maps used within the area of interest being subject to change. Locations identified may have more recent building or land use than available data indicates.
- It is important to note that land ownership has not been considered. Landowner considerations are paramount.

3.3 Accessing and using the data

Data can be viewed either on DataMapWales (bi-lingual) or downloaded in a GIS format.

It is recommended that the data is banded into percentage coverage of NFM across the catchment into four categories (Figure 3-1):

- <10%
- 10%-25%
- 25%-50%
- >50%

If the user is faced with a number of catchments being within the same band of potential, the attribute table can be explored to attain the exact percentage coverage of NFM potential which can be used comparatively between different catchments.

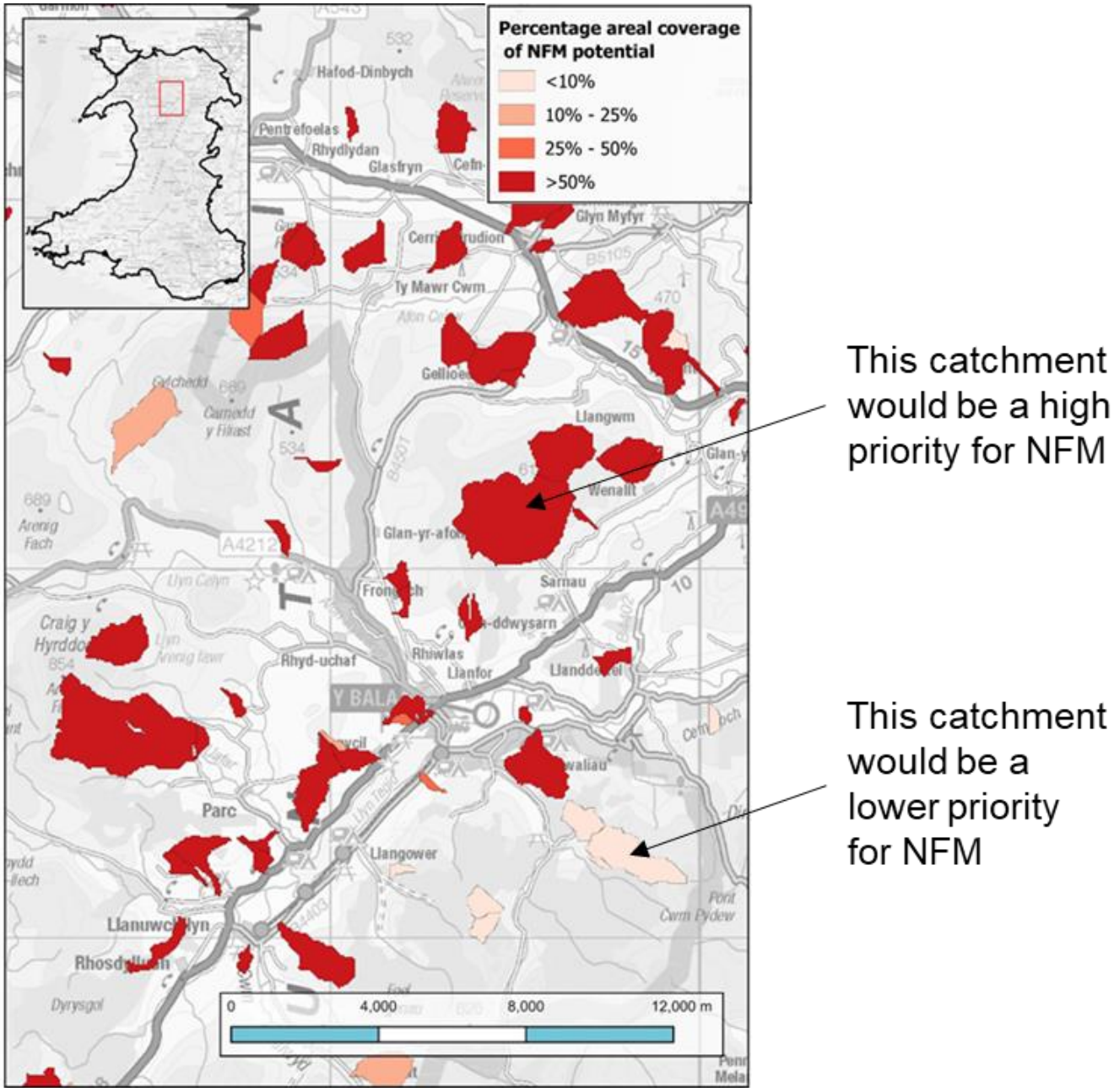
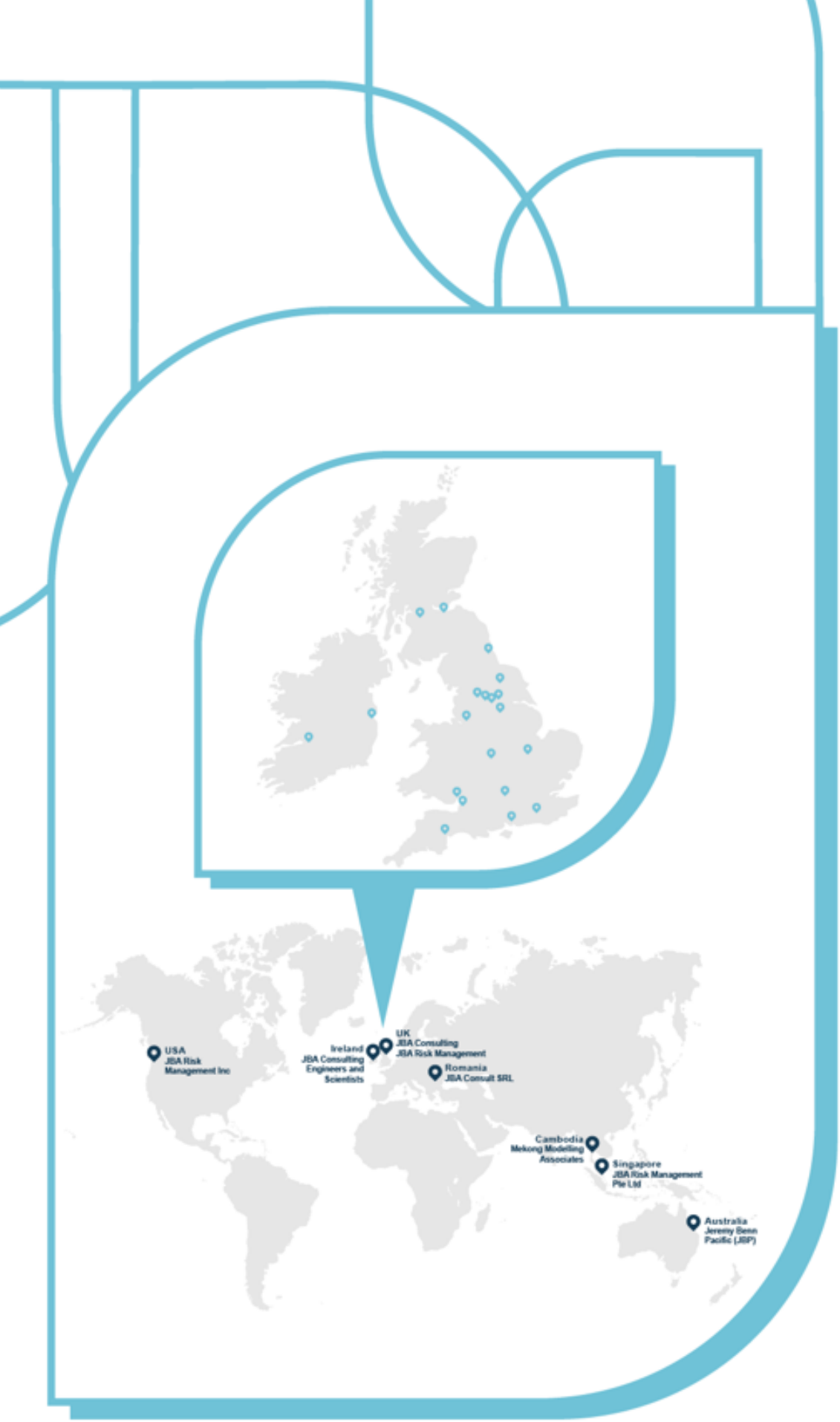


Figure 3-2: Example area within the prioritisation map for small catchments



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Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0)1756 799919
info@jbaconsulting.com
www.jbaconsulting.com
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