Reforming Our Approach to Flood Funding: DEFRA Consultation (July 2025)

The responses below have been generated through consultation with water@leeds and iCASP staff at the University of Leeds. Contributing staff include Professor Joseph Holden, Dr Megan Klaar, Dr Stephanie Bond, Dr Sam Ramsden, and Finn Barlow-Duncan.

University of Leeds hosts water@leeds, one of the world's largest university-based interdisciplinary water research centres, which delivers world-leading expertise on landscape-scale hydrology as a critical component of flood and climate resilience. Our expertise includes natural flood management, property flood resilience and integrated water management solutions.

In turn, water@leeds hosts the Yorkshire Integrated Catchment Solutions Programme (iCASP) which has engaged with 325 organisations over 56 projects to integrate cutting-edge climate change research into policy and practice. iCASP coordinates the Natural Flood Management Community of Practice which actively facilitates sharing of knowledge between local communities, government agencies, charities and businesses to empower nature-based flood management across Yorkshire. iCASP is also an active member of the West Yorkshire Flood Innovation Programme, a collaborative partnership between the five lead local flood authorities in West Yorkshire, Environment Agency, Yorkshire Water, and West Yorkshire Combined Authority, which works across administrative boundaries to implement innovative solutions for improved climate resilience.

Part 3: Changing our approach to funding flood and coastal erosion projects

Part 3 summary copied from WYCA: DEFRA asked for our views on the proposed new approach to funding new flood resilience projects – projects under £3m would be fully funded, and projects over £3m would be funded at a rate of 90%. Currently schemes receive a contribution based on a formula, it never fully funds a scheme and DEFRA's contribution can vary significantly.

UoL will respond to the following questions:

- **Q7:** To what extent do you agree with our overall proposed approach to funding FCERM projects as set out in Part 3?
- **Q8:** Please explain your answer to Question 7.
- **Q18:** Do you think that the overall proposals for funding flood and coastal erosion projects will support the right amount of natural flood management? Are there other proposals you think we should consider?
- **Q19:** Please explain your answer to Question 18.

Q7: Neutral

Q8: We welcome dedicated funding mechanisms which specifically support NFM and PFR initiatives, as well as maintenance funding for flood infrastructure. However, the £3million threshold proposed for 100% funding may set an expectation that all projects should be within that ballpark. This may discourage, or limit, smaller, often more agile NFM projects. We recommend that appropriate wording and example projects are used to encourage a wide range and scale of applications.

Secondly, while NFM projects are largely anticipated to remain below the £3 million threshold, we raise concern about where additional funding would come from for NFM projects over the £3 million threshold. In a recent University of Leeds review of key challenges and policy barriers to nature-based solutions (https://tinyurl.com/mvuzrah5), 48% of respondents reported that obtaining private funding was 'very challenging' and 38% 'challenging'; obtaining funding for projects with stacked benefits (e.g., biodiversity net gain *and* net zero *and* flood management) or projects where the defined benefits were limited to reducing the number of properties at risk, were identified as especially difficult.

Q18: Agree

Q19: Natural Flood Management (NFM) has an increasing body of evidence analysing its effectiveness as a flood mitigation tool. Recent key evidence syntheses include the '*Working With Natural Processes Evidence Review 2025*' (https://tinyurl.com/2s373p9v) and '*A Quantitative review of NFM research*' by Zhu et al 2025 (https://tinyurl.com/mr468f3w); these find that flood mitigation effectiveness does not appear to diminish with increasing catchment size and rainfall intensity, although NFM research is dominated by modelling. However, the 'right amount' of NFM will vary depending on physical catchment properties, flood risk, and the storm conditions the NFM mitigates against, including antecedent conditions at the time of the event. Therefore, our research teams at the University of Leeds recommend the following additional proposals, to be integrated into the new funding mechanism and in addition to it:

First, **partnership working should be encouraged to deliver effective, catchment scale NFM**. Local NBS partnerships, supported by government funding, should be facilitated and staffed to plan and co-design flood resilience projects. These partnerships can bring together groups who do not normally collaborate, enabling improved communication and knowledge sharing between different sectors and communities, facilitating upskilling, and reducing duplication of work. Partnerships could be organised by different geographical units such as river catchments (catchment-based partnerships) and/or use existing effective Local Nature Partnerships, depending on what works effectively in the local context. The University of Leeds is currently involved in **two examples of good practice: the Yorkshire NFM Community of Practice** (https://tinyurl.com/3mkddy23), and the **West Yorkshire Flood Innovation Programme** (https://tinyurl.com/yb2u6txf). We recommend that a national NBS advisory body should be developed to support establishment and maintenance of local partnerships.

Second, **an open-access framework/design standard is needed to ensure effective placement and choice of NFM**, limiting unnecessary costs or ineffective choice of flood mitigation type. Rainfall-runoff modelling and ground truthing (verifying information through direct observation and/or measurement) may be used to collaboratively determine effective NFM placement alongside relevant stakeholder groups. Appropriate planning requirements should be developed for nature-based solutions (NBS) – of which NFM is a subset - which are consistently rolled out across all local authorities, with training made available for NBS planners to facilitate efficient rollout. Some NBS interventions should be allowed as permitted developments. **A national planning policy statement for NBS is recommended as a way forward** (see '*Unlocking Policy for Nature Based Solutions'* at https://tinyurl.com/mvuzrah5).

Finally, **we recommend that suitable monitoring of NFM be made mandatory**, with **clear guidance produced on how best to monitor NFM,** to ensure evidence gaps are filled for different techniques or for different environmental contexts (e.g. soil type, geology, topography etc). A wide range of monitoring options should be recommended, tailored to skill level, NFM type, and resource allocated, with a minimum monitoring allocation applied to the funding conditions. To maximise evidencing of NFM, funding should recommend a BACI (before after control impact) approach to facilitate measurement of change in risk before and after interventions.

iCASP have identified Yorkshire Region **skill gaps associated with blue-green infrastructure**, including NFM (see Blue Green Infrastructure Training Programme, https://tinyurl.com/4mjywmdu and associated presentation for full regional statistics at https://tinyurl.com/527ypddj); 51% of respondents with organisational responsibility reported that they require 'basic' training in the aims and objectives of NFM, and 50% required 'advanced' training in NFM monitoring; the skill gaps identified may be replicated across the UK.

Therefore, monitoring should include a range of options which encompass varying skill levels and costs. The **University of Leeds has recently produced recommended NFM monitoring options for three tiers of cost and skill level** (see Chapter 5 of '*Payment by Results: Manual for implementation in the Skell Valley, North Yorkshire, March 2025*' at https://tinyurl.com/4fm7kcfx). The guide also contains options for both catchment-scale monitoring of river flow volumes and suitable local proxies (i.e., soil properties) which can be modelled to calculate catchment scale benefits. We recommend that a mixture of monitoring approaches is used, with frequent undertaking of simple monitoring measures (e.g., photographs from a fixed point) and regular but less frequent undertaking of more complex monitoring (e.g., laboratory analysis of soil properties).

Part 4: Changing our approach to prioritising the delivery of flood and coastal erosion projects

Part 4 summary copied from WYCA: With the simplified funding arrangements proposed, there will be more local competition for funding; DEFRA are considering different models of prioritisation to support projects with the greatest benefits. These models are: - Approach 1: value for money vs flood risk; - Approach 2: as above but additionally bolstering policy objectives (such as supporting economic growth or deprived communities); - Approach 3: as above but prioritising projects that raise additional partnership funding.

UoL will respond to the following questions:

- **Q23:** Which of these options do you think that FCERM projects should be prioritised for delivery (select one)?
- **Q24:** Please explain your answer to Question 23.
- **Q25:** Please rank in order of preference the 5 potential outcomes that could be prioritised through prioritisation Approach 2: (with 1 being the highest preference and 5 being the lowest preference)
- **Q26:** Please explain your rankings in Question 25.
- **Q27:** Are there any other outcomes we should consider prioritising through prioritisation Approach 2?

Q23: Bolstering projects that achieve priority outcomes (approach 2)

Q24: The contributing researchers in water@leeds agree that Approach 2 is most appropriate for prioritising the delivery of flood and coastal erosion projects. While value for money vs flood risk is a valuable prioritisation method, Approach 1 would disadvantage certain communities, especially rural communities who are disadvantaged by narrow benefit definitions regarding the number of properties at flood risk (see recent University of Leeds review *'Unlocking Policy Support for Nature-Based Solutions'* at https://tinyurl.com/mvuzrah5).

We **recommend that additional benefits are integrated into Approach 2.** NFM measures are well recognised to provide additional and valuable benefits which are quantifiable via monitoring. Additional benefits include **water quality, carbon sequestration, drought mitigation, biodiversity net gain, and health, wellbeing and social benefits;** these have been assessed in the '*Working With Natural Processes Evidence Review 2025'* (https://tinyurl.com/2s373p9v) and in research publications, for example on in-stream wood structures (https://tinyurl.com/mv6wvvj2) and local community benefits (https://tinyurl.com/mc3e24w5).

Currently, few funding schemes recognise the additional benefits that NFM provide; usually funding is for flood mitigation *or* biodiversity *or* water quality etc (see *'Unlocking Policy Support for Nature-Based Solutions'* at https://tinyurl.com/mvuzrah5). There is significant opportunity with the change in funding mechanism to reward schemes which deliver multiple benefits towards the UK Government's 25-year environment plan and Local Nature Recovery Strategies.

Incorporating additional benefits – and increasing the evidence base via carefully targeted monitoring - may also provide a **platform for private sector investment**, where natural capital schemes for ecosystem services, such as carbon sequestration, are comparatively well established. Recent relevant reviews include *'Unlocking Policy Support for Nature-Based Solutions'* (https://tinyurl.com/mvuzrah5); *'Forging links between the green finance and flood resilience sectors to improve protection for homes and businesses'* (https://tinyurl.com/25hxnx4y); and *'Financing Natural Flood Management'* (https://tinyurl.com/3mwcen4k). **Government support is needed to lever private sector finance for NFM**, which is currently extremely difficult to obtain. To enable this, the funding mechanism chosen should be clearly defined and demonstrate the return on investment.

Q25:

Supporting economic growth and the wider economy	Deprived areas	Specific types of flood resilience intervention, such as natural flood management	Specific types of communities, e.g. rural or coastal communities	Local choice
2	3	4	5	1

Q26: Local collaboration and choice is recognised as an essential component of undertaking flood mitigation projects successfully. Two good practice examples which showcase working with stakeholders to assess for and choose NFM interventions are 1) ground truthing of nature-based solutions in the Skell Valley (see Chapter 3 of '*Payment by Results: Manual for implementation in the Skell Valley, North Yorkshire, March 2025*' at https://tinyurl.com/4fm7kcfx); and 2) modelling NFM in the Upper Rother catchment (https://tinyurl.com/yz7cd4jn). Collaborative decision making alongside stakeholders can empower communities to feel part of the decision-making process and choose effective flood mitigation types which support the priorities outlined in question 25.

NFM research clearly evidences that the effectiveness of flood mitigation varies by location (see '*Working With Natural Processes Evidence Review 2025'* at https://tinyurl.com/2s373p9v). Therefore, **it is essential that the right type of flood mitigation is located in the right place for maximum mitigation.** Prioritising specific types of flood management over others may, therefore, lead to poor choice of flood mitigation type.

Ranking by community type may reduce the effectiveness of the flood mitigation delivered. NFM is most effective when placed upstream of the community and/or area it will benefit. Consequently, the hazard location and flood source/management location may be in differently ranked community types (see *'Developing flood source mapping systems to better prepare for climate change'* at https://tinyurl.com/25hxnx4y). Careful consideration should be made regarding who is ranked more highly: the communities who benefit from the flood management, or the communities who will have the flood management installed most locally to them.

Q27: There are three other outcomes that the research community at the University of Leeds recommends prioritising through Approach 2: **1) community resilience indicators**; **2) likely risk improvement (modelled or measured)** and **3) additional benefits.**

Community resilience indicators. Resilience should encompass both process and outcome-based components, including the capacity to resist, the capacity to respond and recover, and the capacity to adapt. These measurable indicators include social, physical, human, economic, institutional and natural capacities, and can be used to enhance community resilience to flooding, especially where qualitative knowledge (e.g., experience of previous flooding) is valued. *'A conceptual framework for understanding community resilience to flooding'* (https://tinyurl.com/mrxj4bsu) outlines one approach. Good community resilience has been shown to buffer against the negative impact of flooding on mental health (see https://tinyurl.com/6wpb7mx7), where people whose homes have been flooded are 6 times more likely to have probable PTSD, depression and/or anxiety than people who had not been flooded (see *'The English National Study of Flooding and Health'* at https://tinyurl.com/3j7ausx6).

Likely risk improvement. Funding applications typically include a strategic case outlining the extent to which the flood mitigation proposed will mitigate flood risk. This may include measured or modelled evidence of expected change in catchment scale risk or proxies which indicate likely change (e.g., change in soil properties). By allocating funding on this basis, funding will encourage the right type of flood mitigation in the right place, maximising impact. NFM, PFR and traditional flood mitigation should be categorised separately.

Additional benefits. NFM measures are well recognised to provide additional and valuable benefits which are quantifiable via monitoring. Additional benefits include **water quality, carbon sequestration, drought mitigation, biodiversity net gain, and health, wellbeing and social benefits;** these have been assessed in the '*Working With Natural Processes Evidence Review 2025'* (https://tinyurl.com/2s373p9v) and in research publications, for example on in-stream wood structures (https://tinyurl.com/mv6wvvj2) and local community benefits (https://tinyurl.com/mc3e24w5)**. Currently, few funding schemes recognise the additional benefits that NFM provide**; usually funding is for flood mitigation *or* biodiversity *or* water quality etc (see *'Unlocking Policy Support for Nature-Based Solutions'* at https://tinyurl.com/mvuzrah5). There is significant opportunity with the change in funding mechanism to reward schemes which deliver multiple benefits towards the UK Government's 25-year environment plan and Local Nature Recovery Strategies.