

# Key Enabling Solutions

# Key Enabling Solutions

Through stakeholder interviews, workshops and roundtable, the Working Group has identified several key enablers that could address the barriers identified to building private sector demand for NFM. This section sets out the Key Enablers providing further information on each and the barrier(s) that each Key Enabler is addressing.

1. Strategic prioritisation of NFM
2. NFM asset database
3. Natural capital assessment tool framework
4. Funding for buyer facilitation and partnership development
5. NFM design standards and guidance
6. Clarity on ecosystem service stacking
7. Update to FCERM grant-in-aid partnership funding processes



**Figure 6:** Key Enabling Solutions

# Enabling Solution 1:



## Strategic prioritisation of NFM

A UK Government endorsed, free and open-access mapping application identifying priority locations for NFM delivery for flood risk reduction, and where NFM can deliver wider co-benefits and to what level.

### Overview:

A single, openly accessible, unified representation of the NFM opportunities within England could allow project developers to easily identify NFM opportunities where maximum flood risk reduction and co-benefit generation can be achieved. This would allow project developers to engage with private sector beneficiaries more easily on NFM. Delivering to a coordinated plan potentially helps multiple smaller projects, including community-led NFM projects, deliver small, incremental improvements that combine over time to drive a greater cumulative impact on resilience.

A central government mandated NFM opportunity and prioritisation map is likely to give potential buyers and investors the confidence that funding NFM projects aligns with the overall FRM strategy for England, ensuring delivery of optimum flood risk benefits and environmental co-benefits through these projects. As flood risk reduction benefits are generated within priority areas, it may also be easier to monitor any increase in resiliency delivered by NFM.

This NFM prioritisation exercise could feed into the development of Local Nature Recovery Strategies (LNRs) by highlighting areas where actions such as wetland creation, peatland restoration and tree planting can be achieved through the delivery of natural flood management projects – delivering both flood risk reduction and wider environmental benefits in line with the LNRs guidance published by Defra. Prioritisation could be done in conjunction with stakeholder mapping undertaken by Responsible Authorities for the development of LNRs, that may highlight key counterparties with an interest in reducing flood risk and restoring nature.

Consideration should be given by Defra to mandating on-site monitoring of all government-funded NFM projects over the lifetime of payments, to ensure widespread evidence capture across the country. As the evidence base for NFM is developed further, the NFM prioritisation map can be regularly updated to ensure that the information given is as accurate as possible.

The EA is working to develop a Natural Flood Management benefits tool aimed providing a nationally consistent way of assessing flood risk and wider benefits of NFM projects. This will help the EA to focus on developing NFM projects in locations where they can have the greatest flood risk benefits. A prototype tool has been piloted and the EA are currently scoping out further development work to improve its functionality, with the ambition of making it available more widely to support the development of NFM projects. The high-level method and assumptions on which the tool is based are planned to be published in the near future.

It is important that alongside the development and trialling of this tool, private sector stakeholders are engaged in these processes, to further the understanding of how NFM may provide benefits for different organisations.

Prioritisation should be able to highlight opportunities for NFM to increase the longevity of traditional flood infrastructure. Making these opportunities known could further the use and delivery of NFM across catchments and would increase widespread confidence in NFM as part of a holistic approach to flood risk management.

There are examples of NFM mapping tools already in use, that could be built upon to develop an overall strategic prioritisation of NFM across the country. Some of these are highlighted below.

| <b>NFM Opportunity Maps</b>   | <b>Developer</b>                    | <b>Details</b>  |
|---|-------------------------------------|---|
| <b>Working With Natural Processes Evidence Directory Potential Maps</b> <sup>83</sup> | Environment Agency                  | A selection of interactive maps to show where different types of river and catchment management approaches have the potential to reduce flood risk by working with natural processes.   |
| <b>SCIMAP Flood</b> <sup>84</sup>   | SCIMAP                              | An online tool that aims to prioritise NFM interventions within a catchment to increase their effectiveness.  |
| <b>NFM Studio</b> <sup>85</sup>   | Environment Agency, Atkins          | A strategic tool that quantifies NFM effectiveness relative to runoff reductions at the field scale. It also values the potential natural capital benefits of interventions in Devon, Cornwall, and the Isles of Scilly areas. It is based on open-source data, industry standards and methods. |
| <b>Flood and Drought Research Infrastructure</b> <sup>86</sup>                        | UK Centre for Ecology and Hydrology | The FDRI will create digital infrastructure to make flood and drought information freely available, to inform management plans to reduce flood risk.  |
| <b>SD-TOPMODEL</b> <sup>87</sup>  | University of Leeds                 | A digital model to show the flow of water from hillslopes to river. Existing landscape features and changes to land management practices can be assessed for their ability to reduce flood risk, to help prioritise the siting of future NFM projects in Calder Valley.                         |

**Table 11:** Examples of NFM mapping applications currently in use

<sup>83</sup> Environment Agency: Mapping the potential for Working with Natural Processes – user guide.

<sup>84</sup> <https://scimap.org.uk/scimap-flood/>

<sup>85</sup> <https://storymaps.arcgis.com/stories/3065971ddb42079f63b950eed58f1e>

<sup>86</sup> <https://www.ceh.ac.uk/our-science/projects/floods-and-droughts-research-infrastructure-fdri>

<sup>87</sup> <https://icasp.org.uk/projects-2-2/calderdale-nfm-2/>

It is important to note that the EA will be publishing an update to the Working with Natural Processes Evidence Directory in the summer of 2024. This directory will provide policy makers and practitioners with access to information that explains the benefits of NFM measures and is a vital step in improving confidence in NFM's ability to deliver flood risk reduction.

**Barriers addressed:**

- Confidence
- Coordination

## Enabling Solution 2:

# Natural flood management asset database



An NFM asset database that records all natural flood management assets, projects, and projects within a geography with minimum asset and maintenance data collection requirements. Information held should include NFM asset and intervention type, location and condition, purpose of natural flood management asset and maintenance/adaptive management schedules and history.

**Overview:**

Providing an NFM asset database, similar to that which is provided for traditional flood risk infrastructure and held by the EA, Internal Drainage Boards, Councils and Defra, could give the private sector confidence that the NFM assets they have invested in, or are purchasing outcomes from, are accounted for and that there is a maintenance regime built in and recorded in a central location. It would also ensure that management actions that need to be repeated regularly or implemented as standard across farms, such as improved soil and land management techniques, are done so in accordance with agreements.

NFM assets could include for example: off-line ponds, leaky debris dams, riparian corridors, field parcels with improved management techniques, and areas of wet woodland (among others).

Having this database will allow buyers and investors to examine funded sites and to monitor at a site and portfolio level whether interventions have been implemented to specification as per any agreements, and that these sites are following a suitable maintenance regime to ensure continued ecosystem service delivery. This will give confidence that the NFM assets they have funded are being delivered, recorded accurately, and that regular maintenance records are being kept ensuring the assets continue to deliver the benefits that investors/buyers require. It would provide a constantly updated baseline of what NFM assets are within a region, removing the need to begin this assessment at the start of every project stage.

A single location where all natural flood management assets are registered could allow government to track the delivery of flood risk reduction more accurately and compare outcomes with the budget spent on those natural assets. It will allow RMAs to quickly react after a flood event and investigate how the natural flood assets reduced or exacerbated the flooding, encouraging adaptive management approaches.

There are already examples of natural asset databases and registers to build on, including the Biodiversity Net Gain register managed by Natural England. This register allows off-site units providers to list their sites and obligations centrally. Other examples include The NFM Hub as described in **Box 6** below.

### The NFM Hub

Developed by the Rivers Trust, the NFM Hub allows any civil society group to register an NFM asset and quantify the flood risk reduction through NFM, and the associated co-benefits that the asset delivers. The hub also allows the user to record how the asset is being adapted and maintained.

On the Hub, every 'asset' that is delivered can be assessed for its benefits to biodiversity, water quality, water resources etc. The Rivers Trust have designed the Hub so that it can underpin integrated catchment scale delivery of NFM for any of the multiple benefits that it will deliver. There are three main layers to the information held on the hub:

1. Project level. The user can estimate the marketable benefits of a collection of NbS assets. For example, BNG, Replenish, Carbon, and/or Nutrient Credits. They use published tools to quantify these benefits, which can then be sold. These benefits are then recorded in the Hub. Users are able to record the non-market estimates of multiple benefits from the B£ST tool. This quantifies benefits such as Health and Wellbeing and Education. The benefits can't be sold as there is no market for them currently, but they can be recorded as co-benefits of investment.
2. Asset level information: This is where information about the specific assets is stored, including what assets have been delivered, and where. Physical benefits are evaluated for water quality improvement, flood risk reduction, water resources, and habitat improvement, among others.
3. Maintenance & Adaptation: Information about the condition of the asset is stored here, alongside maintenance records to inform any adaptive management or maintenance that needs to occur.

**Box 7:** The Rivers Trust NFM Hub

### Considerations:

As good soil management, healthy terrestrial habitats and landscape features deliver a significant proportion of flood risk reduction, it is important that these features are recorded and captured on the database. This will require linking up with agri-environment projects which are the largest provider of flood risk reduction through nature-based processes via soil and land management grants.

Data protection considerations need to be made if farm-level information is being held and can be accessed by external parties. For example, having data widely available on leaky dams on specific farms and the maintenance requirements may lead to concern from private landowners and farmers.

For a central NFM asset database to be successful, it would need to be able to easily link up with flood risk asset registers that are currently set up for traditional infrastructure. It will also need to be able to reflect nature-based projects whose primary driver may not be flood risk reduction through NFM, but that deliver some flood risk reduction due to certain interventions. Otherwise, the complete flood risk impact of all natural assets cannot be assessed.

For the private sector to have increased confidence, it will need to be able to see any assets it has funded/co-funded. This will help build confidence within the private sector and will also help with reporting on progress to any environmental targets.

We recommend that an underlying data model and database be assessed for suitability by the EA, and if applicable, be rolled out nationally so that all stakeholders are recording information in a standardised format. This will ensure consistency when comparing NFM projects across geographies. Further considerations should be made on the ability for the private sector to view data within the NFM Hub (or similar) and if there are any data sharing implications.

### **Barriers addressed:**

- Confidence
- Coordination



## Enabling Solution 3:

# Natural capital assessment tool framework



We recommend that an assessment be undertaken of the natural capital valuation tools available for NFM projects, and the results of this assessment to be made publicly available. This assessment should be used to inform the creation of a natural capital assessment tool framework, and that framework to be mandated for every FCERM scheme application.

### Overview:

Highlighting the co-benefits generated by NFM projects is crucial for attracting a wide range of private sector buyers. By using natural capital assessment tools accredited under a high-integrity, government backed framework, opportunities can be highlighted to potential buyers in a standardised manner. This would increase the confidence of buyers that the appraisals of co-benefits have been done to a high standard and would ensure comparability across multiple NFM projects in different geographies.



There are many examples of natural capital assessment tools currently in circulation. Some examples of these tools are highlighted below.

| Natural Capital Assessment Tool   | Developer                                       | Description   |
|---|---|---|
| <b>BEST (Benefits Estimation Tool) (CIRIA, 2019)</b>  | CIRIA   | Estimates impacts and benefits of SuDS and NFM.<br>Assess and monetise many financial, social, and environmental benefits.<br>Identifies stakeholders and support investment decision making.   |
| <b>Green Infrastructure Valuation Toolkit (GI-Val) (Mersey Forest, 2011)</b>                              | The Mersey Forest                               | A set of calculator tools to assess the value of a green asset or a proposed green investment.<br>Benefits given an economic value alongside other quantitative contributions.  |
| <b>Environment Agency's Partnership Funding Calculator (Environment Agency, 2020). Outcome Measure 4.</b> | Environment Agency                              | A standardised and generalised method for appraising the multiple environmental benefits of a proposed FRM scheme.  |
| <b>Co\$ting Nature</b>  | King's College London, AmbioTEK, and UNE PWC MC | Web-based policy-support tool for natural capital accounting and analysis of the ecosystem services provided by nature.<br>Identifies opportunity costs to of protecting nature to produce ecosystem services vs land use alternatives.         |
| <b>Integrated Valuation of Ecosystem Services and Trade-offs (INVEST) software.</b>                       | Natural Capital Project                         | Software to map and value ecosystem services provided by land and seascapes.<br>Assesses how changes in ecosystems are likely to affect the flow of ecosystem services to beneficiaries, to inform decisions about natural resource management. |
| <b>HyrdoloGIS</b>   | Viridian Logic Ltd                              | Identifies, ranks, and prioritises the best interventions to create and where to locate them, to maximise the provision of NbS to local problems.   |

**Table 12:** A selection of natural capital assessment tools currently in circulation.<sup>88, 89</sup>

As can be seen from the above, these tools all assess natural capital differently, and may be more useful in certain geographies when compared to others.

<sup>88</sup> Mott Macdonald, September 2020. Integrating natural capital into flood risk management appraisal.

<sup>89</sup> Ecosystem Knowledge Network – Tool Assessor

A review should be undertaken to assess the extent to which commonly-used natural capital assessment tools diverge in their estimates of the value of natural capital and/or ecosystem service provision and identify sources of discrepancy between tools.

We recommend that the review follow a similar approach to that undertaken by the Harmonisation of Carbon Accounting Tools for Agriculture project undertaken by RSK ADAS on behalf of Defra (see Box 7).<sup>90</sup> Similar areas to be covered in the review of natural capital assessment tools could include:

1. Identifying the key differences between inputs and outputs for an appropriate number of natural capital assessment tools.
2. Identify key drivers that result in the differences in outputs.
3. Map out benefits and limitations of various methodologies used.
4. Assess tools for their applicability to flood risk management specifically.



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<sup>90</sup> Defra and RSK ADAS, June 2023. Harmonisation of Carbon Accounting Tools for Agriculture. Evidence Project Final Report.

### Harmonisation of Carbon Accounting Tools or Agriculture Project

Over eighty tools have been developed to quantify farm emissions, and there is considerable variation in the outputs of these tools. The aim of the Project was to identify how to ensure the quantification tools were robust in their calculations and consistent in their results. Six of the most commonly used tools in circulation, were included in this assessment.

Twenty model farms were created for the assessment, with two of each of the nine Defra farm types covering cereals, general cropping, horticulture, mixed, pigs, poultry, dairy, grazing livestock (less favoured area) and grazing livestock (lowland), plus two additional farms testing functionality around anaerobic digestion and agroforestry (silvopasture) in dairy systems. Each of these tools were applied to each of these farms, and the results analysed to assess discrepancies.

The results uncovered discrepancies between results produced from different types of farms. For example, for seven of the twenty farms, the highest emissions were more than twice as high as the lowest emissions reported. In some instances, the highest emission outputs were 3.5x higher than the lowest. These discrepancies highlight the importance of conducting such a review.

The report also made a number of recommendations to support this harmonisation:

1. Industry and government to define what a farm level assessment is, how it is going to be used, and what parts of the farm business should or should not be included.
2. Calculators should align with the requirements of the latest standards and guidance.
3. Calculator providers should regularly review and update their tools to account for changes in scientific knowledge, carbon accounting methodologies, and new emission factors.
4. Calculators should use emission factors from an agreed set of robust databases for embedded emissions in fertilisers, feeds and fuels.
5. Calculators ought to present outputs consistently and in compliance with the latest standards to help facilitate understanding of emission sources.
6. Calculator providers need to build user confidence through transparency and use third-party verification to ensure calculators align to minimum standards.

**Box 8:** Summary of the Harmonisation of Farm Carbon Accounting Tools project.<sup>91, 92</sup>

#### Barriers addressed:

- Confidence
- Co-Benefits

<sup>91</sup> Defra and RSK ADAS, June 2023. Harmonisation of Carbon Accounting Tools for Agriculture. Evidence Project Final Report.

<sup>92</sup> <https://adas.co.uk/news/harmonisation-of-carbon-accounting-tools-for-agriculture-report-published/>

## Enabling Solution 4:

# Funding for buyer facilitation & partnership development



Funding made available for the effective facilitation of buyer engagement to stimulate demand for flood risk outcomes and associated co-benefits generated by NFM projects.

### Overview:

Providing funding for NFM projects to focus on engaging potential buyers could increase demand for NFM from the private sector and therefore increase the likelihood of these projects securing sufficient revenue streams.

Currently, proactive engagement with the private sector outside of a few targeted industries, such as property developers and the water sector, is not happening at the scale required to increase demand sufficiently for NFM. Providing facilitatory funding for NFM projects to specifically highlight asset-level and operational interests (for example supply chain exposure to flood risk, or under TCFD & TNFD disclosures) could increase the number of private sector buyers willing to pay for reduced flood risk reduction and/or associated co-benefits generated by NFM projects. There are already examples of government funding projects, that could be used to help stimulate this proactive engagement with the wider private sector.

As highlighted previously, the Natural Environment Investment Readiness Fund (NEIRF) provides grant funding of up to £100,000 to multi-stakeholder projects to help them develop financial and operational models for nature projects in England to a point where private investment can be attracted.<sup>93</sup> So far, the NEIRF project is supporting 86 projects across England over two funding rounds. In December 2023, a third funding round was announced that focussed on supporting farmers in accessing nature markets and other means of accessing private finance for nature.<sup>94</sup> As previously mentioned, of the projects currently funded through NEIRF, more than half are looking to develop revenue streams from the sale of reduced flood risk outcomes and other ecosystem services delivered through NFM.

Providing funding to NFM projects as part of the NEIRF programme to increase buyer engagement would add an additional enabling layer to this existing mechanism and would remove a significant blocker to stimulating demand for NFM from the private sector. Funding could also be used for initial high-level modelling to outline the potential business case for private sector entities. This would allow project developers to calculate expected flood risk reduction outcomes of their projects more easily, and to begin to develop possible business cases for co-investment.

### Barriers addressed:

- Confidence
- Coordination

<sup>93</sup> <https://www.greenfinanceinstitute.com/gfihive/neirf/>

<sup>94</sup> ibid

# Enabling Solution 5:



## NFM standards or guidance

The Group recommends the development of a government-backed NFM design guidance that NFM projects can follow when implementing NFM techniques and maintaining NFM assets. Emphasis should be given to ensuring NFM projects are delivered to a high-level of integrity and, that benefits, dis-benefits and risks inherent in NFM projects, are assessed and mitigated against.

### Overview:

Providing a government-backed standard or set of design, monitoring and maintenance principles will instil confidence in the private sector that NFM projects have been delivered to a high standard, and that risks have been mitigated for. This will increase confidence for potential private sector buyers of flood risk reduction generated by NFM, as buyers will want to ensure that the ecosystem services paid for, will continue to be delivered into the future.

Ensuring NFM is designed and implemented to deliver value for money, with the lowest associated risks, and least ongoing liability and management requirements, will ensure NFM outcomes are implemented to a high standard, reducing any reputational risk that may occur in the event of a failure of the NFM interventions, or for those interventions to potentially increase flood risk to people and properties downstream. For example, while hedgerow creation may on its own reduce flood risk, if land management practices in part enabled by the NFM funded hedge change, such as an increase in grazing levels, this can lead to an increase in flood risk compared to the risk before the hedgerows were created.

The development of a set of government backed NFM principles and undertakings, will help inform the development of an NFM ecosystem market Standard or Code. The British Standards Institution (BSI) is currently undertaking a work programme to develop a set of overarching investment standards for nature markets, with the aim of driving the application of consistent principles and approaches to the quantification of ecosystem services,<sup>95</sup> including NFM.

As mentioned previously, there are multiple examples of best practice guidance for the delivery of NFM. A selection of guidance documents are included in the table below.

<sup>95</sup> <https://assets.publishing.service.gov.uk/media/642542ae60a35e000c0cb148/nature-markets.pdf>

| Best Practice Guide  | Publisher   | Details  |
|--|---|--|
| <b>CIRIA Natural Flood Management Manual</b> <sup>96</sup>   | CIRIA, Mott Macdonald, River Restoration Centre, Yorkshire Dales Rivers Trust, and The Rivers Trust | Overview of NFM, how to set up a project for success and choose appropriate NFM sites and measures.<br><br>Applies to inland NFM measures only.  |
| <b>UK Forestry Standard Practice Guide – Designing and managing forests and woodlands to reduce flood risk</b> <sup>97</sup> | Forestry Commission, Scottish Forestry, Natural Resources Wales, and Forest Service                 | Describes how to comply with the UKFS Good Forestry Practice Requirement to consider how forestry activities can reduce flood risk.<br><br>The Guide comprises five main sections covering: flood risk management; designing new forests and woodlands; forest and woodland management; interventions to slow run-off, and monitoring. |
| <b>International Guidelines on Natural and Nature-Based Features for Flood Risk Management</b> <sup>98</sup>                 | U.S. Army Corps of Engineers  | A practical guide to help inform the process of conceptualisation, planning, designing, engineering, and operating flood risk management systems that include natural and nature-based features (NNBF) to reduce flood risk.<br><br>Covers coastal, estuarine, and fluvial applications of NNBF for flood risk reduction.              |
| <b>Natural Flood Management Handbook</b> <sup>99</sup>   | Scottish Environment Protection Agency  | A practical guide to the delivery of NFM to reduce flood risk and deliver wider environmental co-benefits.<br><br>Includes NFM for river and coastal flooding  |
| <b>The SuDS Manual</b> <sup>100</sup>  | Ciria   | A guide to assist with the planning, design, construction, management and maintenance of SuDS in a way that meets the UK Government’s non-statutory technical standards and on how to deliver cost-effective delivery of multiple benefits.  |
| <b>NFM Guidance for Devon</b> <sup>101</sup>   | Devon County Council  | A region-specific introductory guidance document aimed at landowners, land managers, agricultural and land management advisors, and communities. It is to support individuals in resolving flood issues and managing land in a more productive way.  |

**Table 13:** Examples of NFM design guidelines currently in use

<sup>96</sup> Wren, E et al, May 2022. The natural flood management manual (C802F)

<sup>97</sup> <https://cdn.forestresearch.gov.uk/2022/10/UKFSPG027.pdf>

<sup>98</sup> Bridges, T. S., J. K. King, J. D. Simm, M. W. Beck, G. Collins, Q. Lodder, and R. K. Mohan, eds. 2021. International Guidelines on Natural and Nature-Based Features for Flood Risk Management. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

<sup>99</sup> Scottish Environment Protection Agency, 2015. Natural Flood Management Handbook

<sup>100</sup> <https://www.ciria.org/ItemDetail?iProductCode=C753F&Category=FREEPUBS>

<sup>101</sup> <https://www.devon.gov.uk/floodriskmanagement/document/nfm-guidance-for-devon/>

## Scope

Within these guiding principles for NFM design, the wider context of land use management within a catchment should be highlighted, including how this may be causing or exacerbating flood risk, and if measures can be put in place to address this, before considering 'in-channel' interventions, or large capital works such as river restoration [see Connecting the Culm case study]. If current land management practices promote an elevated degree of flood risk, implementing in-channel interventions alone are less likely to produce sustained flood risk benefits, and investments are less likely to produce additionality. This underperformance will negatively impact the ecosystem service provision paid for by private sector buyers and will erode confidence further.

Guidance should also look to articulate the parties responsible for the ongoing maintenance of NFM assets, or the ongoing implementation of on-farm land management techniques. It should also aim to provide clarity on who owns the risk of failure of these assets and who is required to repair and maintain these assets in the event of any damage caused.

## Design guidance

While the market for flood risk reduction through NFM is still immature, more mature ecosystem service markets contain guidance on the delivery of interventions to achieve high integrity outcomes. For example, the Woodland Carbon Code (WCC)<sup>102</sup> mandates that projects must conform with the UK Forestry Standard (including the elements of sustainable forest management (Climate Change, Soil, Water, Biodiversity, Landscape, Historic Environment and People))<sup>103</sup>, and BNG projects must conform to national guidance throughout their 30-year lifespan. The standard or guidance should highlight the need for a whole business protocol including a suite of intervention options for those farms or businesses in receipt of funding to implement NFM measures to reduce flood risk. This will ensure that other non-funded measures implemented on farm will not add to the overall flood risk generated by the business.

## Monitoring, reporting and verification

Monitoring, reporting, and verification (MRV) is crucial to ensuring the NFM interventions are delivered appropriately, and that any adaptive management measures can be undertaken swiftly in response to changing conditions. Any standards or guidelines should include guidance on the minimum level of MRV that is required for NFM projects, and on how that monitoring should be undertaken. In regulated ecosystem service markets, there are already examples of this in place.

In the case of using constructed wetlands to improve water quality for Nutrient Neutrality, Natural England has created the Wetland Mitigation Framework. This was developed in response to the increased use of constructed wetlands in the delivery of Nutrient Neutrality and is designed to enable Natural England staff to adequately and appropriately comment on wetland proposals and designs which are focused on Nutrient Neutrality mitigation.<sup>104</sup> The framework includes detailed guidance on baseline monitoring of constructed wetlands to inform design, performance monitoring to understand the efficacy of the wetland in nutrient reduction, and longer-term monitoring to support maintenance and adaptive management of the wetland once fully operational.

Providing guidelines on MRV could allow for comparable monitoring of NFM across landscapes, and this would therefore help develop the evidence base for NFM going forward. It is important that as this evidence base changes, any standards and guidelines are updated accordingly. This should also feed into the NFM prioritisation map outlined in Key Enabler 1.

## Barriers addressed:

- Confidence

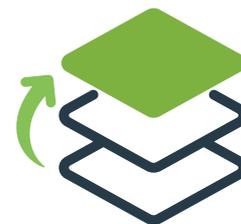
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<sup>102</sup> <https://woodlandcarboncode.org.uk/standard-and-guidance/1-eligibility/1-5-conformance-with-uk-forestry-standard>

<sup>103</sup> <https://cdn.forestresearch.gov.uk/2023/10/The-UK-Forestry-Standard.pdf>

<sup>104</sup> Constructed Wetland Hub, The Rivers Trust, Natural England: Designing for Nutrient Neutrality.

## Enabling Solution 6:



### Clarity on ecosystem service stacking

Allow the stacking of ecosystem service co-benefits, such as BNG, carbon credits, and Nutrient Neutrality individually, to be sold alongside NFM outcomes.

#### Overview:

Permitting the stacking of ecosystem services could increase private sector demand by attracting a broader pool of potential ecosystem service buyers to NFM projects. These buyers may wish to pay for one or more outcome, including flood risk reduction, biodiversity uplift, carbon sequestration, social impact, or water quality improvements (among other ecosystem services). Increased demand from private sector buyers for co-benefits alongside flood risk reduction is likely to increase the chances of projects securing sufficient revenue streams to make the project financially viable, and lower entry costs for buyers with less tangible links to the project.

A wider pool of potential buyers will mean that an individual buyer's financial contribution to the project could be limited to whatever ecosystem service is required by that business, potentially leading to reduced costs. Marketing specific ecosystem services of interest to certain organisations will make it easier to build the business case to that business and may reduce time.

Allowing the stacking of environmental and social outcomes may reduce the risk of potential 'free riding', whereby entities who do not contribute receive benefits they have not paid for. Being able to identify buyers for each ecosystem service would help reduce the risk of free riding by ensuring all monetisable benefits delivered by the project have been purchased by the relevant buyer or purchased by government.

Sourcing funding for NFM projects from a broader array of private sector buyers could potentially reduce the burden on the public purse of delivering flood risk reduction and increase the number of projects delivered.

As discussed previously, the Woodland Carbon Code and Peatland Code do not currently allow the stacking of other ecosystem services alongside carbon, due to the implicit bundling of these other services within the price of the unit. However, both projects have signalled that it may be possible to stack voluntary credits or units generated from a carbon project provided a credible voluntary standard or methodology for the valuation of each ecosystem service.<sup>105</sup> This is a welcome first step, and there are multiple different valuation metrics currently employed by NFM projects in the landscape. Examples of these are included in **Table 14** below.

Consideration needs to be made, however, on the possible negative impact of stacking multiple benefits together, and how this could lead to a reduction in potential beneficial change for flood risk. For example, a BNG site may require a permanent pond for biodiversity, but a reduction in flood risk would require a temporary pond. This permanent pond could in some instances promote quicker run off rates and greater flood risk than if there was no pond.

<sup>105</sup> IUCN Peatland Programme, March 2023. Peatland Code. Guidance. Version 2.0.

| Metric                            | Unit(s) of measurement                                   | Description  |
|-----------------------------------|--|--|
| Increased hydrological lag time   | Hours  | Time between rainfall events, and the peak of the following hydrograph. As water is held in the catchment, lag time increases. |
| Reduction in peak flood flow.     | m <sup>3</sup> /s<br>litres/s                            | The maximum rate of water discharge during a period of run off caused by a storm event.  |
| Reduced volume of flood run off   | m <sup>3</sup>   | The total quantity of water flowing from a catchment during the period of a flood. <sup>106</sup>                              |
| Reduced duration of flood run off | Minutes  | Total duration of water flowing above baseline levels from a catchment during the period of a flood.                           |
| Volume of water storage           | M <sup>3</sup> of water per km <sup>2</sup> of catchment |  |

**Table 14:** Examples of flood risk metrics employed by FRM projects

Other workstreams are also underway, looking to develop standards or codes for water related ecosystem services including flood risk reduction through NFM. In Scotland, work led by Forest Research is developing a Woodland Water Code which will look to quantify the water-related benefits of new woodland planting. This work aims to incentivise greater private investment into woodland creation to help tackle key water pressures including diffuse pollution, flooding, and rising water temperatures. The development of this code is expected to help achieve the target of trebling tree planting rates in England by the end of the current Parliament. Forest Research and Nature Scot are also working on an initiative to explore the possible development of a wider Water Code covering water-related benefits provided by other habitat types in addition to woodland.<sup>107</sup>

As work continues on the BSI's Nature Investment Standards Programme, the Group recommend the development of an NFM Standard and guidance on stacking and bundling be prioritised. We also recommend that the BSI guidance is free to access, and equally useful at both the portfolio and project level.

**Barriers addressed:**

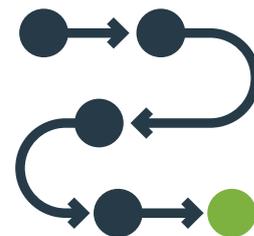
- Confidence
- Co-Benefits

<sup>106</sup> European Environment Information and Observation Network

<sup>107</sup> Forest Research. Research highlights 2022 - 2023

## Enabling Solution 7:

# Update to FCERM grant-in-aid partnership funding processes



We recommend that the wider environmental co-benefits identified through Outcome Measure 4, are valued in the form of ecosystem credits and can be apportioned appropriately between the public, private and third sector organisations sector partnerships.

### Overview:

The wider co-benefits generated in FCERM partnership funding schemes under OM4 need to be 'un-bundled' from within the scheme and made available to the private sector in the form of verified ecosystem units or credits, such as BNG or Carbon.

All benefits generated through OM4 are currently retained within the scheme and held by the EA and Lead Local Flood Authorities. By recording outcomes generated by these schemes as recognisable and verified credits or units, these outcomes could provide the private sector with an opportunity to share in these benefits in a way that fits with their organisational goals. For example, a property development company in need of BNG units could secure agreement from public sector partners to purchase some or all of the units created through an FCERM scheme.

Having outcomes of FCERM schemes as verified credits or units, could increase the amount of private sector capital deployed into FCERM schemes, as these outcomes are now valued in a way that could meet their organisational requirements or legal obligations – such as through BNG requirements.

### Barriers addressed:

- Coordination
- Co-Benefits



# Testing of key enablers

The Group recommends that the above Key Enablers be tested in the short-term using the existing FCERM and NFM programmes. A possible body to oversee testing of these key enablers could be a Regional Flood and Coastal Committee (RFCC). RFCCs (See **Box 8**) are a structure that already exists within the current FRM framework, and that already include multiple stakeholders across the water environment and the local economy.

## Regional Flood and Coastal Committees (RFCCs)

RFCCs are committees established by the EA under the Flood and Water Management Act 2010. They bring together members appointed by Lead Local Flood Authorities (LLFAs) with independent members with relevant experience. There are 12 RFCCs in England and each has a Chair appointed by Defra.

RFCCs guide FCERM activities within their river catchments and along the coastline. Responsibilities include: ensuring coherent plans are in place for identifying, communicating, and managing flood and coastal erosion risks across catchments and shorelines; for promoting efficient, targeted investment in flood and coastal erosion risk management; and for providing a link between flood risk management authorities and other relevant bodies to develop mutual understanding of flood and coastal erosion risks in their areas.

The EA must consult with RFCCs about FCERM work in their region, taking any comments into consideration. RFCCs approve the annual programme of FCERM work in their region and set the local levy that funds flood risk management activities within the region that are a local priority.

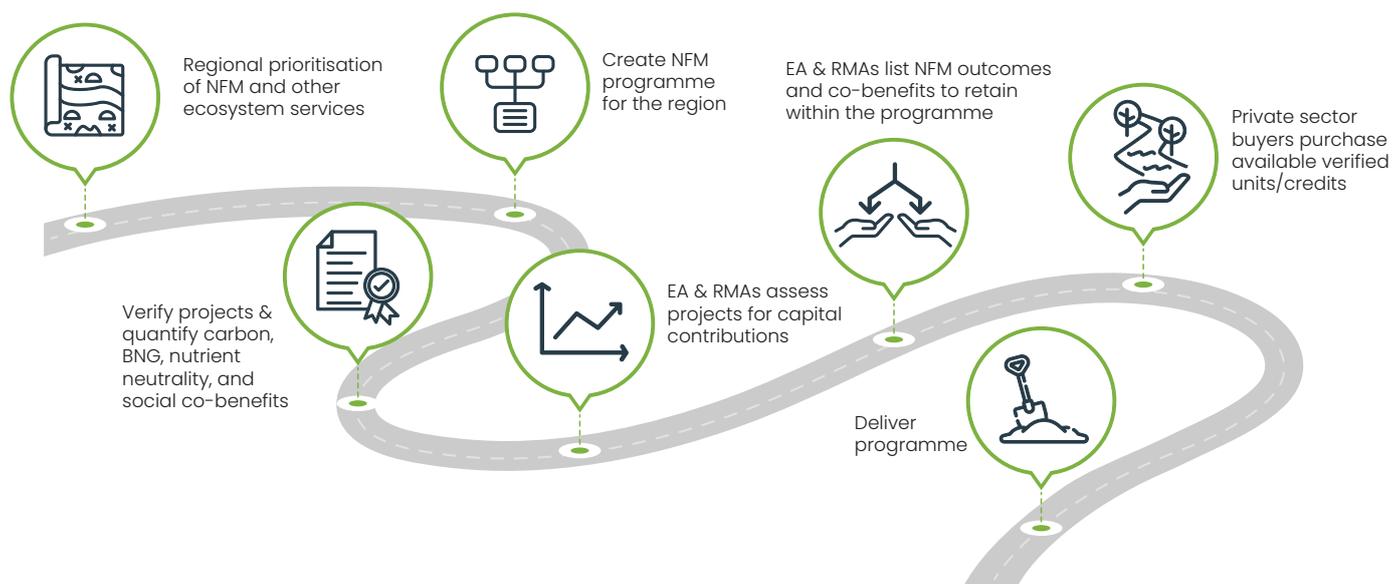
**Box 9:** Regional Flood and Coastal Committees.<sup>108, 109, 110</sup>

<sup>108</sup> <https://www.ada.org.uk/our-members/regional-flood-coastal-committees/>

<sup>109</sup> <https://www.gov.uk/government/collections/regional-flood-and-coastal-committees-rfccs>

<sup>110</sup> [https://consult.environment-agency.gov.uk/fcrm/changes-to-regional-flood-and-coastal-committees/#:-:text=Regional%20Flood%20and%20Coastal%20Committees%20\(RFCCs\)%20are%20Committees%20established%20by,independent%20members%20with%20relevant%20experience.](https://consult.environment-agency.gov.uk/fcrm/changes-to-regional-flood-and-coastal-committees/#:-:text=Regional%20Flood%20and%20Coastal%20Committees%20(RFCCs)%20are%20Committees%20established%20by,independent%20members%20with%20relevant%20experience.)

RFCCs have business plans, many of which include plans and ability to explore innovative financing to deliver flood risk outcomes within their regions. The above recommendations are an opportunity for RFCCs to further that goal. Below outlines a process through which the above could be tested in the short-term. A process for raising funding for FCERM NFM projects through the sale of verified environmental credits/units, is outlined below in **Figure 7**.



**Figure 7:** Proposed Key Enabler testing process for raising funding for FCERM NFM projects through the sale of verified environmental credits.