Policy and Regulation: Enablers for Mainstreaming NbS

Briefing Note

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Issue & Revision Record

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Executive Summary

The Mainstreaming Nature-based Solutions (MNbS) project has brought together a range of partners and stakeholders from a variety of sectors to discuss and understand the current barriers to widespread adoption of Nature-based Solutions (NbS) in the UK, and to develop recommendations for enablers that would facilitate greater uptake of NbS. This briefing note summarises the 8 key enablers identified to date. Where applicable, case studies from other countries or sectors where similar enablers have been adopted are presented, providing a robust evidence base for the recommendations. Whilst most enablers presented relate to changes to policy and regulatory frameworks, enablers related to upskilling and capacity building and multi-sector coordination and collaboration have also been identified.

Following the identification of potential enablers for mainstreaming NbS the next step is to develop these further in terms of identifying influencing strategies to promote necessary policy and legislative changes needed to enable these.

A summary of the 8 key enablers is provided below:

- **Enabler 1 - Set a clear long-term strategic direction and embed NbS into legally binding cross-sectoral national strategy with integrated, measurable and aligned targets**

  Without clear long-term policies, regulatory frameworks will continue to prioritize short-term, engineered solutions over long-term, sustainable approaches provided by NbS. This enabler is looking at strengthening NbS requirements across all sectors by introducing mandatory “nature-first” approaches and NbS targets.

- **Enabler 2 - Improve regulatory frameworks to enable outcome-based, flexible delivery**

  The existing regulatory framework presents multiple barriers to mainstreaming NbS, including fragmented planning, misaligned policies, lack of incentives, inconsistent permitting processes, short regulatory timeframes and limited flexibility. We need a broader perspective that enables resilience of the water system as a whole and which values the resilience provided by nature-based solutions. Multiple changes are needed to achieve this and here we are looking at options such as:

  - Taking a holistic/system approach to planning where there is a requirement to consider the overall outcome needed for the catchment, providing greater opportunities for increased uptake of NbS.

- Fast-tracking and standardizing permitting for NbS schemes through preapproved templates and guidance.
- Excluding some NbS from BNG requirements, e.g. farm wetlands and constructed treatment wetlands.
- Extending regulatory planning and delivery cycles beyond five years, thereby aligning price controls with NbS maintenance and benefit realisation horizons.

- **Enabler 3 - Set up a water industry focused NbS "sandbox" where regulators will temporarily derogate regulations**

  A recurring theme through discussions with key partners and stakeholders has been around the risk-averse nature of the current regulatory system, limiting the use of NbS. Recommendation 10 in the Corry Review[1] advocates for the set up of a programme of experiments or sandboxes where regulators identify projects where they will waive regulations and measure the results. Whilst being fully supportive of this recommendation, the MNbS programme recommends that a proportion of this is specifically aimed at the water industry. This would allow the water industry to deliver and monitor NbS in a regulatory environment more conducive to innovation, under the supervision of the regulator but without being blocked by existing regulatory rules.

- **Enabler 4 - Embed a resilience-first approach in long-term water resources planning**

  This enabler is looking at addressing the barriers associated with the lack of NbS being considered and/or selected in water resources planning (e.g. the WRMPs) process. Options being considered include:

  - Embedding a resilience-first approach in long-term water resources planning. This can include introduction of a formal hierarchy for interventions embedded in the optioneering and funding decision process, where input control and NbS solutions are prioritised.
  - Introducing a resilience driver in the WRMP process to move away from the main focus on deployable output (DO) in long-term water resources and provide a mechanism for identifying and value catchment resilience.
  - Developing a measure or metric(s) for catchment water resources resilience.
  - Ensure WRMP guidance on best value planning aligns with the MNbS Common Value Framework.

[1] Corry, D. 2025, Delivering economic growth and nature recover: An independent review of Defra's regulatory landscape, Delivering economic growth and nature recovery: An independent review of Defra's regulatory landscape, Accessed on 16.05.2025

- **Enabler 5 - Embed a resilience-first approach in flood management**

  NbS, including natural flood management (NFM) and sustainable drainage systems (SuDS), also have an important role in reducing flood risk. Further, the types of NbS that are delivered for flood management also often deliver additional benefits to the water environment such as improved water quality. One of the key barriers for largescale implementation of NbS as part of local and regional flood risk strategies are uncertainties around long-term maintenance of the NbS. Some of the options include:

  - Mandating blue-green infrastructure in urban planning and development processes.
  - Implementing a clear, funded and mandatory mechanism for SuDS/bluegreen infrastructure in new developments that sets standards and provides for adoption and maintenance, for example Schedule 3 of the Flood and Water Management Act.
  - Enabling funding of retrofitted SuDS to address drainage and wastewater issues, through changes to DWMP guidance and the Capex-leaning water industry investment model. Ensure that the approval and adoption mechanism applied to new developments apply equally to retrofitted SuDS.
  - Applying learning from the Welsh experience of implementing Schedule 3 of the Flood and Water Management Act 2010 and learning from the Water Environment and Water Services (Scotland) Act 2003 with regards to maintenance of SuDS.
  - Implementing a mechanism for SuDs to be adopted and maintained by the same bodies, irrespective of who the SuDS 'developer' is (e.g. housebuilder, sewerage undertaker, highways authority or local authority), for example by the Local Authorities.
  - Ringfencing a proportion of funding to Lead Local Flood Authorities (LLFA) and Local Planning Authorities (LPA) for NbS.
  - Introducing a mechanism for better collaboration between Local Authorities, Flood Action Groups (FAGs) and land owners to better capture opportunities for NFM mitigation measures in LLFAs.
  - Streamlining funding application processes (e.g. Landscape recovery scheme) to become more proportionate to the application and projects.
  - Fast-tracking and standardising permitting for NbS schemes through preapproved templates and guidance.

- **Enabler 6 – Local Planning Authority (LPA) expertise and consistency**

There is a need for change in policy and planning processes to drive greater consistency in LPA approvals in relation to NbS and mandate coordination between other sectors to

identify cross-sector opportunities for NbS. More and better guidance for local planning authorities on how to consider NbS projects in planning applications.

- **Enabler 7 - Information-based policy instruments to increase landowner participation and raising awareness within local authorities and the public.**

Local knowledge is crucial to identify cost effective NbS and having access to accessible and affordable advisory services that eases this process could help increase the uptake of large-scale NbS. This could include provision for advisory services such as catchment/NbS coordinator with the primary role of identifying catchment needs and objectives, advising landowners, coordinating implementation of measures, communicating across administrative levels (local, regional and national).

- **Enabler 8- A coordinating organisation at sub-regional scale to help align planning**

Mainstreaming of NbS could benefit from a coordinating organisation at a sub-regional or regional scale that brings together key organisations to collectively address shared environmental challenges and align funding with regionally agreed priorities within a more unified approach.

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1. Introduction

1.1. Programme Overview

Mainstreaming Nature-based Solutions (MNbS) is an £8.9m Ofwat Innovation Fund funded programme, bringing together 22 named partners and many other collaborators, such as water companies, NGOs including The Rivers Trust, supply chain, policymakers and regulators, communities and professional institutions. With an emphasis on cross-sectoral collaboration and co-creation, the programme aims to address barriers to the large-scale implementation of NbS, including policy and regulation, funding and finance, benefits valuation, standardisation, collaboration and integrated planning.

The Policy and Regulation workstream of the programme has the following objectives:

- Enable NbS through recommendations for policy and regulation, supporting greater uptake of NbS in the water sector and beyond;
- Work with water industry and other key sectors, regulators and policy makers to develop a robust evidence base for recommendations; and,
- Work with regulators and policy makers to propose changes and implement recommendations.

1.2. Briefing note overview

This Briefing Note is the second deliverable under the Policy and Regulation workstream of the Mainstreaming Nature-based Solutions (NbS) programme. The first deliverable, *Policy and Regulation – current state of play briefing note*, issued in November 2024, summarised the current state of play for NbS within England, Wales, Scotland and Northern Ireland in the context of policy and regulation.

This Briefing Note summarises key enablers and recommendations that have come out from discussions and workshops with water industry and other key sectors, regulators and policy makers, in response to the barriers that were identified in the current state of play briefing note. Where applicable, case studies from other countries or sectors where similar enablers have been adopted are also presented, providing a robust evidence base for the recommendations.

Much of the drive for this project is from the water industry, and therefore the water sector is often the focus of the content in this note. However, to achieve the outcomes needed for the environment through NbS, other sectors are also key.

The evidence base in this Briefing Note largely comes from the following sources:

- Feedback and discussion with the Policy and Regulation workstream Task and Finish Group. This includes feedback gained through workshops and online surveys to gather information from the group on the barriers to NbS and enablers.
- Understanding gained through smaller targeted meetings with key stakeholder covering specific topics such as NbS in devolved nations, case studies and discussions with key parallel workstreams or individuals. Particularly relevant workstreams include the Environment Agency's Water Environment Transformation (WET) programme, and the ongoing evaluation of the PR24 Water Industry National Environment Plan (WINEP) process.
- A review of key literature, consisting largely of previous studies examining relevant policy, and barriers and enablers to NbS.
- Case studies, with information provided through existing documents, email communication and specific calls with those involved in the relevant projects.

As much of this information was gained and developed through the course of the project to date, there is sometimes no specific source or reference. Where a specific document has

been drawn upon, this has been referenced, but in some sections there are few formal references.

2. The current state of play

2.1. Overview of key barriers

The water environment faces increasing stresses from climate change, population growth, societal pressures such as affordability, ageing infrastructure and the biodiversity crisis.

Nature-based Solutions (NbS) have a key role to play in addressing these pressures. They are multi-functional and can provide multiple benefits – tackling flooding, drought and water quality issues, supporting biodiversity, delivering social value and contributing to the climate adaptation and resilience of other land uses. However, systemic barriers currently hinder wider adoption of NbS and the full realization of their benefits.

The key barriers identified through the Policy and Regulation workstream are summarised below:

- Misaligned or conflicting policies and legislation, some of which promote NbS and some which limit NbS. Some restrictions on NbS are legitimate as there is a need to ensure targets are met for environmental protection and improvement, but the regulatory environment must include more flexibility and appetite for new approaches to allow NbS or hybrid schemes in the right places.
- Misalignment of different sectors, limiting opportunities to work in a joined-up way across multiple organisations and sectors, and to maximise benefits for the environment whilst utilising a range of funding sources and expertise.
- Fragmented and siloed planning; partly as a consequence of misalignment of policy and sectors, environmental planning tends to be fragmented. Even within the water industry, the focus on single targets, rather than wider environmental outcomes (despite efforts after PR19 to resolve this) means planning to achieve multiple environmental benefits is challenging.
- Changes in policy – although changing policy can present a barrier, it is possible that the direction of travel in the future will be towards promotion of NbS, and changes needed to improve our environment. Therefore, as long as changes to policy are implemented well, this should be seen as more of an opportunity rather than barrier.
- Permitting and regulation - although there has been increased flexibility in recent years with the recognition of the benefits of NbS and the use of Operating Techniques Agreements (OTAs), there are limitations associated with permitting for the water industry. The Environment Agency's WET programme is looking into these issues in more detail. In addition, there is a lack of permitting and regulation of nonwater industry sectors, which may be particularly important for agriculture and highways.

- Trust/communication; there are some recognised issues with trust and communication between water companies and regulators. In addition, a lack of public trust in both the water industry and regulators has become an increasing problem in the last few years, resulting in greater scrutiny of the sector and driving interventions like the Cunliffe Review.
- Regulatory timeframes; water industry business planning timescales, which vary across the UK, are insufficient to plan and develop collaborative schemes, particularly when the approach to doing so is reliant on timely issuing of regulatory guidance in the run up to a price review. Further, the timescales for delivery of the required targets and outcomes are often not appropriate for NbS. This is true in the five-year AMP cycles seen in England and Wales but is particularly problematic in Northern Ireland where funding is determined on a year-by-year basis, minimising opportunities for truly long-term planning.
- Lack of incentivisation for NbS; within the water industry and other organisations that lead/drive forward NbS, regulatory incentivisation is likely to be key. However, for collaborating with landowners, financial incentivisation is likely to be more important. Policy uncertainty around Environmental Land Management (ELM) schemes, in particular the Sustainable Farming Incentive (SFI) has not helped give farmers the confidence that this is a viable income stream.
- Land supply; the above issue can impact supply of land for NbS to be delivered; land owners will want adequate funding and certainty of funding over long periods of time for hosting and maintaining NbS such as wetlands. Multiple sources of funding for environmental schemes may result in increasing competition for land. The Land Use Framework consultation, introduced above, is particularly relevant to this barrier.
- Perceived and real risks, of achieving outcomes, and in maintenance and operation. Risks perceived by regulators and lead organisations can hinder planning and development, risks perceived by the public and landowners can impact delivery.
- Challenges with consenting can result in delays to scheme delivery, compounding some of the issues above in relation to timescales, landowner engagement and delivery of outcomes.

The barriers outlined above do not completely preclude delivery of landscape scale NbS. However, they work together to result in challenges, which may only be overcome in particular circumstances and with the right political and organisational drive.

2.2. Ongoing reviews and consultations

At the time of writing the current environmental regulation framework is being reviewed with a number of consultations and independent reviews recently been published, including:

- The Independent Commission on the Water Sector Regulatory System[2] (aka “Cunliffe Review”), which makes recommendations on how to equip and reform the system to meet the various future challenges facing the UK water sector.
- The Land Use Framework consultation, which aims to gather public and stakeholder input on the government’s vision for land use in England, which focuses on various priorities including boosting food security, building 1.5 million homes and the restoration of nature.
- The Corry Review, which set out to examine whether the regulatory landscape of Defra (primarily of relevance to England) is fit for purpose in terms of enabling economic growth while protecting the environment.

[2] Corry, D. 2025, Delivering economic growth and nature recover: An independent review of Defra’s regulatory landscape, Delivering economic growth and nature recovery: An independent review of Defra's regulatory landscape, Accessed on 16.05.2025

3. Enablers and recommendations

3.1. Key themes

The Mainstreaming Nature-based Solutions project has brought together a range of partners and stakeholders from a variety of sectors to discuss and understand the current barriers, and to develop recommendations for enablers that would facilitate widespread adoption of NbS in the UK.

There are a number of key themes that have emerged from analysis of the identified enablers:

- Policy and regulatory frameworks
- Upskilling and capacity building
- Multisector coordination and collaboration (explored further under the MNbS collaboration workstream)

The key enablers are presented below under relevant theme and are summarized here from the policy and regulation workstream viewpoint and there is more detail within the other programme briefing notes such as for funding and finance, collaboration and standardisation. Where applicable, case studies from other countries or sectors where similar enablers have been adopted are also presented, providing a robust evidence base for the recommendations.

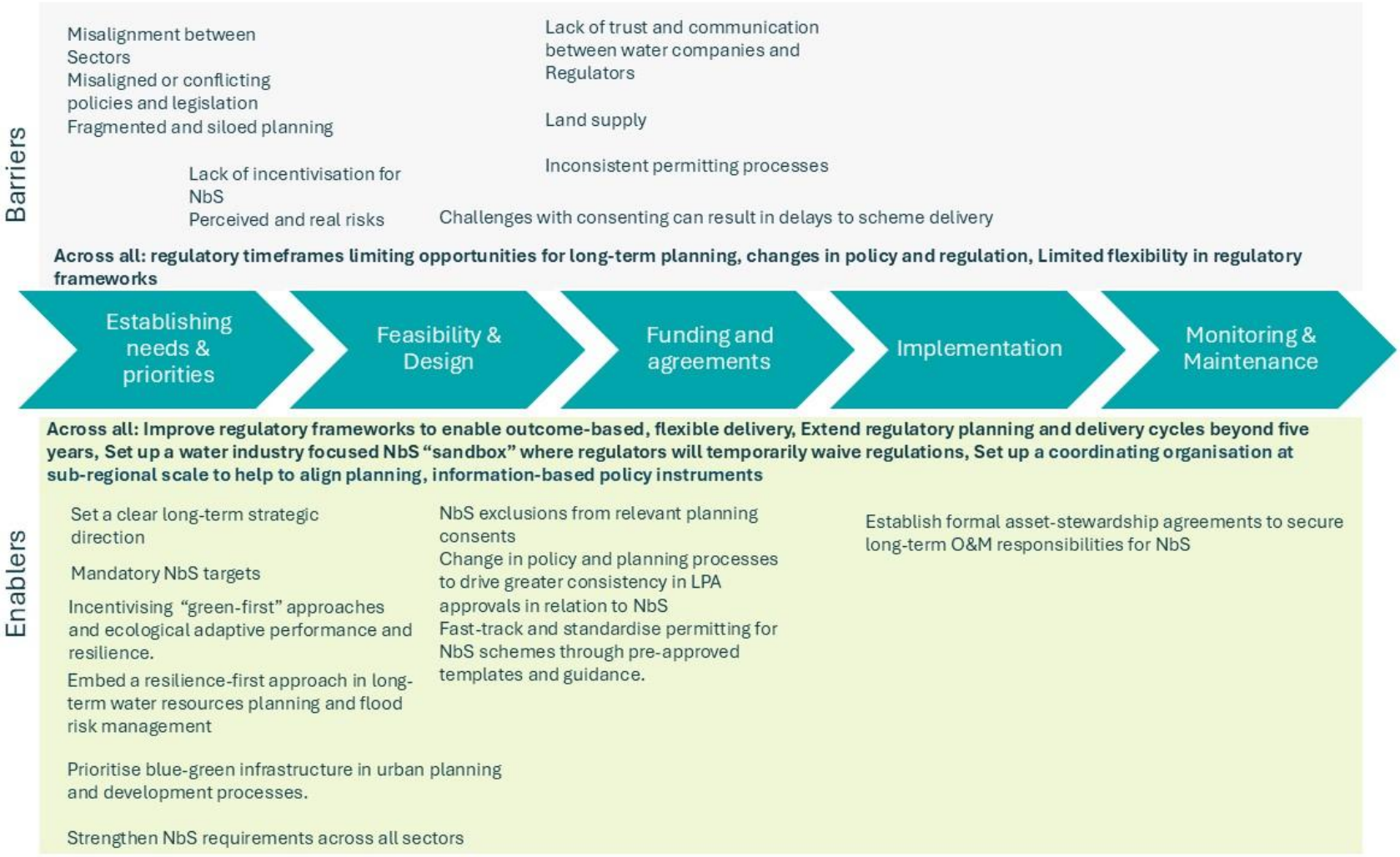

Figure 1 Overview of key barriers and enablers across the typical stages of NbS project lifecycle

Policy and Regulation: Enablers for Mainstreaming NbS

3.2. Policy and regulatory frameworks

Enabler 1 – Set a clear long-term strategic direction and embed NbS into a legally binding cross-sectoral national strategy with integrated, measurable and aligned targets

Without clear long-term policies, regulatory frameworks will continue to prioritize shortterm, engineered solutions over the long-term, sustainable approaches provided by NbS. For example, strategic policy statements in England encourage the use of NbS but fall short of mandating their implementation. This lack of mandatory requirements means that water companies, regulators and other sectors often default to conventional engineered solutions, which are perceived as less risky and more certain in terms of regulatory compliance. Requirements (outcomes) need to be clearly mandated by national policy whilst also allowing flexibility to adapt at regional and local scale. Additionally, the current financial models and incentives are insufficient to attract large-scale investment in NbS, and the bias towards capital expenditure (capex) over operational expenditure (opex) further limits funding for NbS.

A clear strategic direction is crucial to overcome the institutional and cultural barriers including risk aversion which prevent NbS and hybrid options from being selected, even when they are the best value solution. This strategic direction needs to recognise the importance of functioning natural systems and nature-based solutions (natural infrastructure) in ensuring the long-term resilience of national infrastructure, including but not limited to water. This natural infrastructure approach goes beyond Local Nature Recovery Strategies[3], while also incorporating them. It would enable the co-ordination of action by all impacted and impacting sectors, rather than siloing action into sectors such as water, agriculture or energy. Further, it would help to surface the trade-offs between different, competing drivers for water management and land-use, and prevent decisions being made with a single objective in mind.

To bring about change, a clear strategic direction will also require top to bottom alignment; passing legislation may not by itself achieve the desired end goal. This is exemplified by the situation in Wales, which already has a clear strategic direction driven by legislation, including the 2015 Wellbeing of Future Generations Act. However, the impact of this legislation in increasing the use of nature-based and hybrid solutions in Wales is constrained by regulatory positions and interpretation of legislation, and by a lack of recognition from Ofwat of the differences in Welsh policy. This situation would be improved by a decoupling of the regulators between England and Wales, and, in England, improvements to legislation to drive long-term sustainability and resilience.

[3] Local nature recovery strategies are a system of spatial strategies for nature and environmental improvement required by law under the Environment Act (applies to England only).

Recommendations:

- **Embed NbS into a legally binding, cross sectoral national strategy (water, land use, agriculture, energy and others) with integrated, measurable and aligned targets, to be referenced in every major plan and strategy across different sectors.**
- **Strengthen NbS requirements across all sectors.**
- **Where appropriate, co-ordinate cross-border regulation (e.g., England and Wales) ensuring top-to-bottom policy coherence, so that legislation drives resilient, multi benefit outcomes. In Wales, improved regulatory alignment is required to realise the strategic direction already set in legislation.**
- **Explore how mandatory "nature-first" approaches and NbS targets could work across the different sectors and statutory plans. How do we ensure that the targets meet local and regional needs?**

What could mandatory NbS targets look like and how do we ensure success?

Mandatory targets to support national or regional strategies are not a new concept and are already applied within the UK and abroad. A recent example from England are the legally binding targets set in the Environment Act 2021. As an example, this includes the woodland targets, where the tree cover in England must increase to 16.5% by 2050. The Environmental Targets (Woodland and Trees Outside Woodland) (England) Regulations 2023 sets the woodland targets into law and contains provisions on how they will be monitored and assessed, whilst the Environmental Improvement Plan (IEP23) sets interim targets and describes how these will be met.

Mandatory targets for NbS could be implemented in a similar way. However, it is crucial that there is clear provision for the co-ordination of actions by all impacted and impacting sectors, rather than siloing actions into sectors such as water, agriculture or energy. Learning from implementation of wetlands targets in Denmark and Sweden shows that information-based policy instruments is key to improve successful landowner participation (Graversgaard et al, 2021). In Sweden, the introduction of free advisory system has been a relatively efficient way of getting wetlands constructed, where landowners get support through the entire process from concept, design and implementation.

Define clear purpose of NbS targets – should these be set on local, regional or national scale? What NbS should be promoted?
Provision for coordination of actions by all impacted and impacting sectors.
Information-based policy instruments to increase landowner participation and raising awareness within local authorities and the public. This could include provision for advisory services (initially as pilot studies?), such as catchment/NbS coordinator with the primary role of identifying catchment needs and objectives, advising landowners, coordinating implementation of measures, communicating across administrative levels (local, regional and national).
Clear governance structure and identification/creation of administrative authority responsible for coordination and implementation of mandatory NbS targets. Do the local nature recovery strategies have a role here?
Recognition that the implementation of NbS often takes longer compared to conventional engineering solutions and long-term funding is needed.

Enabler 2 - Improve regulatory frameworks to enable outcome-based, flexible delivery

The existing regulatory framework presents multiple barriers to mainstreaming NbS, including fragmented planning, misaligned policies, lack of incentives, inconsistent permitting processes, short regulatory timeframes and limited flexibility. We need a broader perspective that enables resilience of the water system as a whole and which values the resilience provided by nature-based solutions. There needs to be greater clarity on the roles of the different sectors and actors within a landscape, including the roles of regulators.

Policy alignment and flexibility

There is significant misalignment and conflict between various policies and legislation, which creates confusion and hinders the implementation of NbS. For example, the Environment Act 2021 promotes NbS, but also imposes stringent requirements on phosphorus reduction that can only be met through end-of-pipe solutions, so restricting the use of nature-based solutions. Similarly, the conflicting priorities between the Environment Act's Storm Overflow Discharge Reduction Plan (SODRP) and Ofwat's emphasis on cost-efficiency create challenges in aligning NbS with regulatory requirements.

Some NbS also require planning permission, which also triggers Biodiversity Net Gain (BNG) requirements. This is the case for constructed treatment wetlands and larger scale farm wetlands. There have been instances where achieving the required 10% biodiversity net gain has been difficult. This largely relates to issues with the BNG metric, where there is no specific habitat for a constructed wetland. Therefore, assigning an appropriate habitat type is somewhat subjective. In addition, because a constructed treatment wetland is unlikely to achieve the biodiversity of a natural wetland, its condition under the metric is likely to be moderate or less. In many cases, the baseline habitat of the land being developed for a constructed treatment wetland will be similar to or better than the constructed wetland and therefore BNG cannot be achieved through the wetland itself. This then requires additional habitat to be included which has implications in terms of design, land availability, feasibility and cost-effectiveness.

Planning policy and obtaining necessary consents can impede the delivery of NbS on the ground. There are several regulatory requirements that may apply for carrying out NbS both in and around rivers and in wider catchments, for example impoundment licences for weir removals, Flood Risk Activity Permits (FRAPs) and BNG. Designations (e.g. World Heritage Sites, SSSI, SAC, SPA. NNR, RAMSAR) also add time, costs and resources through additional consenting requirements.

Addressing these conflicts requires a coordinated effort to align policies in support of the long-term, multi-benefit solutions provided by NbS. This includes fast-tracking approval processes, extending regulatory timeframes, standardized permitting processes, creating

strong incentives for NbS implementation and integrating NbS into broader climate resilience and land use strategies.

In addition, we need to enable more flexible, less prescriptive regulation that allows greater flexibility spatially and in time (for example regulatory deadlines or across delivery cycles). This would help to facilitate the shift from output to outcome-based regulation, as well as 'green-first' approaches that deliver NbS where they would provide most value in the catchment. Greater flexibility in timescales would overcome the frequently encountered issue of water companies 'timing-out' in the funding cycle on the development of NbS and reverting to quicker engineered solutions which do not provide the best value.

The Corry review recognises these barriers to large-scale implementation of NbS, with a recommendation that Defra conduct a six-month sprint, with industry, on removing the barriers to using NbS to flooding and pollution including planning, benefit-to-cost ratios, orders of magnitude of risk, biodiversity net gain, and licensing, and then propose a way of reducing or removing these.

Operation and maintenance (O&M)

There is a critical need to improve funding, resources and incentives for operation and maintenance across all water sector solutions – engineered and nature-based – in line with robust asset management principles grounded on a whole lifecycle model, that prevents premature asset deterioration and reduces total cost of ownership.

Historically, the water industry in the UK has adopted a build-decay-repair asset management model. This model is driven by capital-heavy investments within five-year price control periods, thereby creating a Capex bias, which results in significantly increased longterm costs for a less resilient, and yet more expensive, asset base.

The sector's Capex bias, which is reflective of conventional asset management approaches not just in water but also other sectors, favours capital expenditure over operational expenditure. This particularly undermines the long-term viability of NbS because of the need for proactive ongoing ecological management and adaptive maintenance, funded by Opex; whereas traditional engineering solutions may be more "forgiving" of short term inadequacies in maintenance. Within the Capex bias therefore, NbS operational expenditure is not adequately accounted for in the current financial models, leading to NbS falling into disrepair and failing to deliver the intended long-term environmental benefits.

At PR24, Ofwat introduced a ten-year allowance mechanism for non-traditional solutions, predominantly classified as Opex-based, such as green or nature-based solutions, to bridge this funding gap and to incentivise their adoption. Although uptake was limited in PR24, this mechanism nevertheless offers a potential blueprint for integrating sustained O&M budgets into regulated plans, and for incentivising companies to propose NbS with proven whole-life performance benefits.

However, accountability for O&M of NbS remains uncertain. Water companies often lack inhouse technical and operational expertise, which tends to focus primarily on the O&M of a more traditional asset base. Typically, the management of NbS schemes, such as river restoration and constructed wetlands, falls to landowners or NGOs like local Rivers Trusts, who often carry out voluntary maintenance. This reliance on voluntary, "goodwill" maintenance is fragile and can be problematic, especially for large-scale NbS schemes requiring consistent, long-term upkeep. Clear stewardship frameworks, perhaps underpinned by the PR24 ten-year allowance mechanism and "green-first" incentives – with defined roles, budget commitments and performance targets – are therefore essential to secure the resilience and environmental outcomes of NbS.

Recommendations:

- **Shift from prescriptive outputs to measurable outcomes, by incentivising "greenfirst" approaches and ecological adaptive performance and resilience.**
- **Fast-track and standardise permitting for NbS schemes through pre-approved templates and guidance.**
- **Exclude some NbS from BNG requirements, for example, farm wetlands and constructed treatment wetlands. Arguably, the ecological survey triggered by planning regulation will ensure the wetland is created at the right location.**
- **Extend regulatory planning and delivery cycles beyond five years, thereby aligning price controls with NbS maintenance and benefit realisation horizons.**
- **Resolve the capex bias by embedding Totex incentives, that optimise Capex and Opex together over the whole lifecycle of NbS assets.**
- **Establish formal asset-stewardship agreements – leveraging, for example, the PR24 ten-year allowance mechanism or using "green-first" incentives – to clarify and secure long-term O&M responsibilities for NbS schemes and remove short-term Capex bias**

Case study: Environment Agency use of Regulatory Position Statement (RPS) 260 to enable treatment wetland creation

The Environment Agency can issue regulatory position statements (RPSs) which indicate time where they will not require a permit for certain activities that they regulate to be carried out. This means they will not normally take enforcement action when you operate without an environmental permit if you comply with the requirements in this RPS.

The Environment Agency has provided guidance on the use of RPS 260 which enables the use of nutrient treatment wetlands to improve the final effluent quality discharged from wastewater treatment works.

Currently this RPS only applies to parties other than Water and Sewerage Companies (WaSCs), in order to fulfil obligations such as nutrient neutrality. There is potential that the extension of this RPS to allow nutrient treatment wetlands use by WaSCs, and the creation of others relevant to WaSCs, could be a significant enabler of NbS in the water sector. There could also be opportunities to better integrate RPSs to provide permit relief to NbS (for example, allowing activities to be carried out without both an environmental permit for a waste operation and an environmental permit for a surface water discharge). Also, RPSs such as RPS 260 could be used as a framework for other methods of permit relief.

Enabler 3 - Set up a water industry focused NbS "sandbox" where regulators will temporarily derogate regulations

A recurring theme through discussions with key partners and stakeholders has been around the risk-averse nature of the current regulatory system, limiting the use of NbS. The precautionary principle is well embedded in the water and environment regulatory system and is also one of the five principles set out in Section 17(5) of the Environment Act.

NbS is still often considered as an innovative approach with limited perceived evidence of the efficacy of these solutions in meeting statutory environmental requirements. This is often the case within the water industry planning process, where NbS are unlikely to be supported in the Price Review process.

Recommendation 10 in the Corry Review includes setting up a programme of experiments or sandboxes where regulators identify projects where they will waive regulations and measure the results. Whilst being fully supportive of this recommendation, the MNbS programme also recommends that a proportion of this is specifically aimed at the water industry. This would allow the water industry to deliver and monitor NbS in a regulatory environment more conducive to innovation, under the supervision of the regulator but without being blocked by existing regulatory rules. This would then allow reflection on whether existing regulatory frameworks should be adapted to better enable NbS and the subsequent positive

outcomes they provide. The use of regulatory sandboxes in the water sector has also been supported by The UK Water Partnership[4] to "enable the fail fast-fail safe approach to test, try and deploy innovative solutions". Similarly, proposed examples of regulatory sandboxes for addressing water quality issues using green infrastructure has been proposed by the Environmental Policy Innovation Center in the USA[5]. However, perhaps most relevantly, the Aldersgate Group indicated how regulatory sandboxes could be used in the English water sector Price Review process, whereby the Environment Agency could change the way it regulates water quality to focus on the catchment scale, something that could be done without legislative change[6].

The UK has led the way with regulatory sandboxes, with the Financial Conduct Authority (FCA) introducing one in 2016, with uptake of this approach in other counties including Canada, Australia and Singapore. Although initially trialed in the finance sector, this approach has also been considered and used in other industries such as transport, aviation and healthcare.

Areas where this could work well includes looking at NbS measures that target catchment risks, which could help reduce drinking water treatment needs. Another area to include is looking at reducing runoff to the sewer network, reducing the likelihood of flooding and storm overflows, as well as Natural Flood Management (NFM) to mitigate flood downstream flood risk. An NbS sandbox would also be particularly useful to help promote implementation of constructed treatment wetlands and help build up the evidence base on the efficiency in terms of reducing phosphorus loads in line with the Environment Act target. Whilst some of these specific sandboxes may be covered by the Tracked Programme of evidence gathering proposed by the MNbS programme, a broader and longer-term acceptance of sandboxing could drive much greater innovation and value within the sector.

Recommendations:

- **Discussions with regulators to explore how a NbS sandbox could work in practice, such as identifying the type of NbS that would be considered, approval process and finance – these discussions are ongoing linked to the MNbS Tracked Programme.**
- **Identify pilot catchments where the NbS sandbox could be tested and developed in practice.**
- **Appoint a NbS coordinator in each pilot catchment to ensure that the selected NbS addresses the catchment needs and where possible allow collaborative solutions with other sectors.**

[4] https://www.ofwat.gov.uk/wp-content/uploads/2019/07/Ofwat-innovation-response-UK-Water-PartnershipUKWP.pdf

[5] https://www.policyinnovation.org/insights/sandbox

[6] https://www.aldersgategroup.org.uk/blog/the-government-urgently-needs-to-rethink-its-water-strategy/

Case study: UK energy sector regulatory sandbox created and operated by Ofgem

The UK energy sector, which is arguably the closest parallel sector to the UK water industry, has created and staffed a regulatory sandbox to encourage innovation. This approach provides bespoke guidance to innovators, shares risk and provides time-limited relief/derogation from specific rules.

This approach has a number of proposed projects that have been accepted and rejected for sandbox use. Emergent Energy Systems Ltd, which proposed a trial scheme to deliver the right for energy customers on microgrids to switch their supply, was granted sandbox access in 2023 and was subsequently given temporary derogation from certain license conditions. Contrastingly, Good Energy Ltd requested sandbox access to acquire temporary derogations from specific industry codes, which was subsequently rejected due to Ofgem deeming that a trial using code derogations was the wrong way to achieve the intended benefits of the proposal.

This case study and the learnings from Ofgem could be used by UK water sector regulators to create and operate a successful sandbox system which could better enable NbS implementation.

Enabler 4 - Embed a resilience-first approach in long-term water resources planning

This enabler is looking at addressing the barriers associated with the lack of NbS being considered and/or selected in water resources planning process. A combination of lack of coordination between regulators, short funding cycles and focus on process over outcomes currently makes it difficult to deliver investments with joined-up outcomes and those suited to tackle long-term challenges such as climate change and population growth.

In England and Wales, water companies must prepare and maintain Water Resources Management Plans (WRMPs) that set out how they intend to achieve a secure supply of water and protect and enhance the environment. Although the link between water quality and quantity is recognised in the WRMP guidance documents, a clear investment need is generally only triggered when water quality might impact the supply-demand balance, such as supply outages. This is an issue that has been raised by some of the regional water resources groups. Unless nature-based solutions have a clear deployable output (DO) associated with them, they rarely get selected through the standard optioneering process. There is currently no effective mechanism in place to fully value catchment resilience and the protection of existing water resources in terms of both water quality and quantity within water resources planning.

By embedding a "resilience first" approach in regulator guidance and method statements, funding and planning decisions, water companies would have an obligation to consider

solutions that mitigate the risk (for both water quality and quantity) at source (i.e. in the catchment) rather than solely treatment solutions or solutions looking at developing new sources of water. This can include introduction of a formal hierarchy for interventions embedded in the optioneering and funding decision process:

1. Input control – reducing pollutants at source
2. Nature-based solutions
3. Hybrid solutions
4. Traditional grey infrastructure solutions

There would still be a need to review the current drivers within the WRMP process and the potential introduction of a catchment resilience focused driver, to ensure a clear funding route for resilience. Alternative (or perhaps in addition to a resilience driver in the WRMP process) a new Water Industry National Environment Programme (WINEP) driver could be introduced focusing on overall resilience improvement, building on learning from the recent introduction of Advanced WINEP (A-WINEP). Historically, funding for catchment and NbS interventions have primarily been through WINEP (England) and the National Environment Programme (NEP) (Wales), with Drinking Water Protected Areas, Habitats Regulations and
Water Framework Directive being some of the most common drivers behind these. Ahead of PR24, new WINEP guidance was published with more focus on delivering outcomes and supporting delivery of wider environmental outcomes compared to previous Periodic Reviews. The Environment Agency and OFWAT invited water companies to submit proposals for A-WINEP, targeting those investments that would not be possible within the standard WINEP framework but clearly offer greater environmental value. It will be essential that the progress of these is being thoroughly monitored and lessons learnt applied for future adoption of similar programme of measures.

There might also be benefits from better integration between WRMPs and WINEP and the outcomes from the Drinking Water Safety Planning (DWSP) and associated catchment risk assessment that water companies must carry out and keep up to date for all their drinking water catchments. Where a water quality risk is identified mitigation measures must be put in place. The Drinking Water Inspectorate (DWI) promotes the" source to tap model", with expectations that water companies address catchment risk at source, as well as including plans for mitigation at water treatment works. This approach is very much aligned with the suggested hierarchy.

An alternative approach is to set a fixed target for implementing NbS to reduce catchment risk and increase catchment resilience. An example of target could be a set percentage of total spent on grey infrastructure mitigation measures being allocated to catchment resilience schemes aimed to mitigate specific catchment risks, whilst maximizing the wider benefits to the catchment.

Recommendations:

- **Embed a resilience-first approach in long-term water resources planning. This can include introduction of a formal hierarchy for interventions embedded in the optioneering and funding decision process, where input control and NbS solutions are pririotised.**
- **Introduce a resilience driver in the WRMP process to move away from the main focus on deployable output (DO) in long-term water resources and provide a mechanism for identifying and valuing catchment resilience.**
- **Developing a measure or metric(s) for catchment water resources resilience**

Case Study: Cape Town Water Strategy and the Greater Cape Water fund

In response to the severe drought in 2014-2018, the City of Cape Town has developed a Water Strategy that provides a road map towards a resilient water supply (CCT, 2020). As part of this, the City of Cape Town has made a commitment to reduce regional water resources risks, including funding for catchment initiatives where invasive vegetation is being removed to increase groundwater recharge. In addition to this there are commitments to optimise and integrate the management of water resources (surface, ground, waste and storm water) to improve resilience.

The Greater Cape Water fund (GCWF), established by The Nature Conservancy, is a collaboration with the City of Cape Town and a coalition of partners in response to the water scarcity in Cape Town. GCWF brings together private and public sector stakeholders and aims to support and align with existing initiatives and catalyse systemic change in catchment management through cost-effective use of resources, strengthened capacity, and robust monitoring and evaluation. GCWF was formed as a response to previous failure in addressing the invasive vegetation threat to water supply and resilience. One of the reasons for past failure is the absence of a timely long-term follow up and maintenance schedule after initial clearing and fires, resulting in regrowth.

While the focus of GCWF is on invasive plants, the scope of the water fund also includes support to additional ecological infrastructure interventions to secure water supply, such as wetland restoration.

This case study raises some important questions such as governance structure and funding, and highlights the how important long-term and clear funding routes are for successful implementation of catchment solutions and supporting development of resilient catchments.

Case Study: Successful implementation of catchment management solutions to address water quality concerns at abstraction points.

In AMP5 the concerns regarding high concentrations of metaldehyde at abstraction points across the UK triggered adoptions of catchment management approaches to improve raw water quality. Given the difficulties of removing metaldehyde at water treatment works, there was a clear business case for the benefits of addressing the issue at source by working with farmers. Some water companies provided payment for ecosystem services whilst others provided direct payments to farmers to use alternative products in particularly sensitive catchments or high-risk areas. Whilst not entirely a NbS these success stories demonstrate the potentials to promote and adopt NbS and catchment measures to improve raw water quality and increase catchment resilience.

Enabler 5 - Embed a resilience-first approach in flood management

NbS, including natural flood management (NFM) and sustainable drainage systems (SuDS) also have an important role in reducing flood risk. Further, the types of NbS that are delivered for flood management also often deliver additional benefits to the water environment such as improved water quality. One of the key barriers for large-scale implementation of NbS as part of local and regional flood risk strategies are uncertainties around long-term maintenance of the NbS. It normally falls to landowners or organisations to voluntarily opt to maintain the schemes, for example local Rivers Trusts. These concerns also apply to local authorities, who are often uncertain over who is responsible for the maintenance requirements of NbS, as this currently relies on the voluntary maintenance of these schemes, typically done by local eNGOs particularly in the case of NFM measures. It is also not clear who takes on the risk associated with these projects, including the legal and liability agreements that are required for NFM projects (Defra, 2020).

In the case of SuDs, maintenance responsibility is significantly affected by land ownership. The Living with Water SuDS programme in Hull is an example of where there is a "mosaic" of organisations individually responsible for maintaining their own SuDS schemes. Yorkshire Water have noted that this represents a missed opportunity for better and more costeffective maintenance across the city. In addition, due to delays to implementation of Schedule 3[7] in England and with no formal approach to maintenance, there are many example of 'zombie SuDS' where developments have been approved without an agreed SuDS adoption solution, or where a company was selected to maintain the schemes which has since ceased to exist. There is a lack of long-term financial provision or mechanism to ensure ongoing maintenance perpetuate. This results in a risk of SuDS falling into disrepair and failing to deliver as designed (CIWEM, 2024).

In Scotland, the Water Environment and Water Services (Scotland) Act 2003 attempts to rectify the maintenance challenges, by making Scottish Water responsible for the future maintenance and capital replacement of public SuDS. Although this simplifies the responsibility, it also increases risk to Scottish Water as the statutory maintenance body and has resulted in Scottish Water refusing to adopt SuDS that did not meet certain standards, as they would then be legally required to maintain them (ClimateXChange, 2018).

It would be beneficial for all SuDS delivered in the public realm to be adopted and maintained by the same bodies, irrespective of who the SuDS 'developer' is (e.g. housebuilder, sewerage undertaker, highways authority or local authority). Given the local authorities' role in managing the public realm, it would potentially be more efficient if they adopt and maintain SuDs, and that the process for doing so should be consistent whether SuDS are being retrofitted or delivered in new developments.

Recommendations:

[7] Schedule 3 provides a framework for approving and implementing sustainable drainage systems (SuDS).

- **Mandating blue-green infrastructure in urban planning and development processes.**
- **Implement a clear, funded and mandatory mechanism for SuDS/blue-green infrastructure in new developments that sets standards and provides for adoption and maintenance – for example Schedule 3 of the Flood and Water Management Act.**
- **Enable funding of retrofitted SuDS to address drainage and wastewater issues, through changes to DWMP guidance and the Capex-leaning water industry investment model. Ensure approval and adoption mechanism applied to new developments apply equally to retrofitted SuDS.**
- **Apply learning from the Welsh experience of implementing Schedule 3 of the Flood and Water Management Act 2010.**
- **Apply learning from the Water Environment and Water Services (Scotland) Act 2003 with regards to maintenance of SuDS.**
- **Implement a mechanism for SuDs to be adopted and maintained by the same bodies, irrespective of who the SuDS 'developer' is (e.g. housebuilder, sewerage undertaker, highways authority or local authority), for example by the Local Authorities.**
- **Ringfence a proportion of funding to Lead Local Flood Authorities (LLFA) and Local Planning Authorities (LPA) for NbS.**
- **Better collaboration between Local Authorities, Flood Action Groups (FAGs) and land owners to better capture opportunities for NFM mitigation measures in LLFAs.**
- **Streamline funding application processes (e.g. Landscape recovery scheme) to become more proportionate to the application and projects.**
- **Fast-track and standardise permitting for NbS schemes through pre-approved templates and guidance.**

Case study: Schedule 3 implementation in Wales

Despite having not been implemented in England yet, Schedule 3 of the Flood and Water Management Act 2010 has been active in Wales since 2019. A comprehensive postimplementation assessment has been undertaken by Arup on behalf of the Welsh Government which summarises available data on implementation , collates stakeholder feedback, and outlines recommendations to overcome issues raised.

Arup found that the approach to, and acceptance of, SuDS is inconsistent across Wales and that there have been mixed results in the implementation of SuDS. They also found that for the most part SuDS are not maximised in highway settings, something to be considered by Defra when considering optimal implementation in England.

It is noted that fundamental differences in the legislative and regulatory contexts and "ways of working" between England and Wales means that some of the conclusions from reviewing Schedule 3 implementation in Wales may not be directly applicable to England. However, there are a number of factors which could be consistent between both and are key for consideration before Schedule 3 is implemented in England, including (but not limited to):

- *Resource and skills gaps creating issues with SuDS deliverability and effectiveness.*
- *Inconsistency of approach with insufficient and unclear guidance.*
- *A lack of standards and support.*
- *A lack of funding of long-term maintenance.*

It is also important to note that Schedule 3 is primarily focused on mandating SuDS for new development and does not address the retrofitting of SuDS for existing developments.

Case study: SuDS governance in Scotland

In Scotland, the Water Environment and Water Services (Scotland) Act 2003 made amendments to The Sewerage (Scotland) Act 1968 to include SuDS implementation as a core function of Scottish Water and effectively making the use of SuDS law, with water quality being a primary driver of this.

This means that responsibility for SuDS is much clearer than in other UK-nations, with Scottish Water also being responsible for the future maintenance and capital replacement of public SuDS. This contrasts with the other UK-nations where a "mosaic" of organisations being individually responsible for their own SuDS schemes addressing siloed problems is

often seen. Despite this, the significant allocation of risk to Scottish Water does mean their standards for accepting legal responsibility of SuDS systems are very high, with subsequent impacts on SuDS creation and maintenance. This could be addressed by the creation of a mandatory integrated strategic drainage plan, the absence of which currently acts as a barrier for greater SuDS implementation in Scotland, particularly in relation to strategically retrofitting SuDS.

In relation to road runoff, there has been a requirement that since 2007 for new discharges SuDS must be used for treatment. Scotland's general policy of EU alignment, coupled with recent revisions to the EU Urban Waste Water Treatment Directive, means that SuDS for road runoff mitigation are likely to be incentivised further.

3.3. Upskilling and consistency

Enabler 6 – Local Planning Authority (LPA) expertise and consistency

There are different authorities responsible for different elements of the planning process relevant to NbS implementation. Planners in local authorities are sometimes lacking in resources and expertise to provide timely, reliable advice on NbS schemes. There is also variability between approaches taken by different LPAs due to ways of interpreting guidance and requirements. This can lead to missed opportunities for collaborative solutions to catchment scale needs.

Recommendations:

- **Change in policy and planning processes to drive greater consistency in LPA approvals in relation to NbS and mandate coordination between other sectors to identify cross-sector opportunities for NbS.**
- **More and better guidance for local planning authorities on how to consider NbS projects in planning applications.**

Enabler 7 - Information-based policy instruments to increase land owner participation and raising awareness within local authorities and the public.

The full process of implementing NbS, from idea to construction, can be perceived as being difficult and time-consuming by land owners and sometimes also by local authorities. Local knowledge is crucial to identify cost effective NbS and having access to free advisory services

that eases this process could help increase the uptake of large-scale NbS. It is essential that the advice is properly funded over the long-term and fully integrated with other farm advice offerings to ensure land owners are not overwhelmed with conflicting advice. Conflicts and synergies with existing advisory roles such as catchment sensitive farming advisors and environment agency coordinators needs to be considered.

Recommendations

- **Provision for advisory services such as catchment/NbS coordinator with the primary role of identifying catchment needs and objectives, advising land owners, coordinating implementation of measures, communicating across administrative levels (local, regional and national).**
- **Explore funding opportunities for this type of advisory service.**

Case study: Catchment officers secure local engagement in Sweden

As part of the project LEVA (Local engagement for water) the Swedish Government funded local catchment officers in a number of pilot areas across Sweden from 2018 to 2023. This was part of an initiative to support local actions and measures against eutrophication, where the catchment officers would help improve and speed up the implementation and amount of voluntary measures being made in the agricultural landscape. The project was led by the Swedish Authority for Water and Marine Management together with the Swedish Board of Agriculture, The County administrative boards, the Water district authorities, and the Federation of Swedish farmers as active partners. The catchment officers acted as the contact person for the landowners and also the link between the landowners, the municipality, the County and different funding agencies. They also acted as a link to consultancies that construct the actual measure or restore the landscape functions.

Our understanding is that the Swedish Authority for Water and Marine Management is no longer coordinating the officers, but their work now continues through funding from LOVA, an initiative that is managed by the County administrative boards.

3.4. Coordination and collaboration

Enabler 8 - A coordinating organisation at sub-regional scale to help to align planning

NbS are inherently multi-functional and provide multiple benefits – tackling flooding, drought and water quality issues, supporting biodiversity, delivering social value and contributing to the climate adaptation and resilience of other land uses. Fully realizing their potential will lead to mosaics of land use changes across landscapes and over time, which requires more integrated planning both spatially (linking national strategy to regional and local plans) and temporally (to better align funding cycles and priorities). This must be underpinned by better collaboration across multiple sectors, utilising an integrated approach to planning that enables each sector's individual plans to sit within a coherent whole.

Achieving this vision demands enhanced collaboration across sectors. An integrated planning approach would ensure that the individual plans of sectors – such as water, agriculture, and land-use – coalesce into a coherent and aligned whole. However, within the water industry, the lack of a unified strategic direction across water and land significantly inhibits multisectoral collaboration and long-term NbS deployment. This is compounded by low levels of trust and limited communication among sectors, regulators, and stakeholders, often resulting in siloed planning and fragmented implementation. This further inhibits the development and scaling of NbS.

Multiple planning frameworks influence water and land management at regional level, including Water Resource Management Plans (WRMPs), Drainage and Wastewater Management Plans (DWMPs), the Water Industry National Environment Programme (WINEP) in England and National Environment Plan (NEP) in Wales, River Basin Management Plans (RBMPs) and Flood Risk Management Plans (FRMPs). These frameworks often operate in isolation, focusing on discrete regulatory outcomes rather than a joined-up, catchmentscale vision. Additionally, FRAPs (Flood Risk and Asset Performance plans) and RBMPs, which are intended to guide the water industry's and other sectors' environmental actions, do not currently fulfil their potential in delivering integrated solutions. Despite being designed to influence and shape WRMPs, DWMPs and other planning tools, they often remain disconnected from broader spatial and policy coordination mechanisms. If better aligned however, they could provide a more joined-up delivery of targets and better outcomes.

This fragmentation is further exacerbated by the differing timelines and regulatory cycles of these planning instruments, making alignment complex and difficult to implement without significant systemic change in policy, regulation, and delivery capacity. One potential solution would be to establish a coordinating body or mechanism at the regional or sub-regional level – an entity that brings together key organisations to collectively address shared environmental challenges and align funding with regionally agreed priorities within a more

unified approach. This organisation could also have responsibility for managing the advisory services outlined in enabler 7.

Recommendations:

- **Following the likely recommendations for a regional coordinator as par tof the Cunliffe review, further explore how this regional or sub-regional coordinating body could work in practice.**
- **Explore how this would be funded and managed**

4. Next steps

Following the identification of potential enablers for mainstreaming NbS the next step is to develop some of these further in terms of identifying key messages and develop an advocacy and influencing strategy to promote necessary policy and legislative changes. We envisage that this will include 1:1 discussions with decision makers, regulators and relevant stakeholders.

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