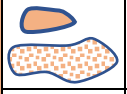
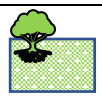
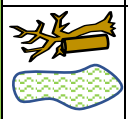
Water and nature recovery – source-to-sea opportunities for spatial planning

Natural England's approach to nature recovery in water begins with a whole-catchment, source-to-sea view. **This advice summarises opportunities for nature recovery**, by integrating catchment, water and wider biodiversity principles. Key considerations for including water in nature recovery planning are as follows:

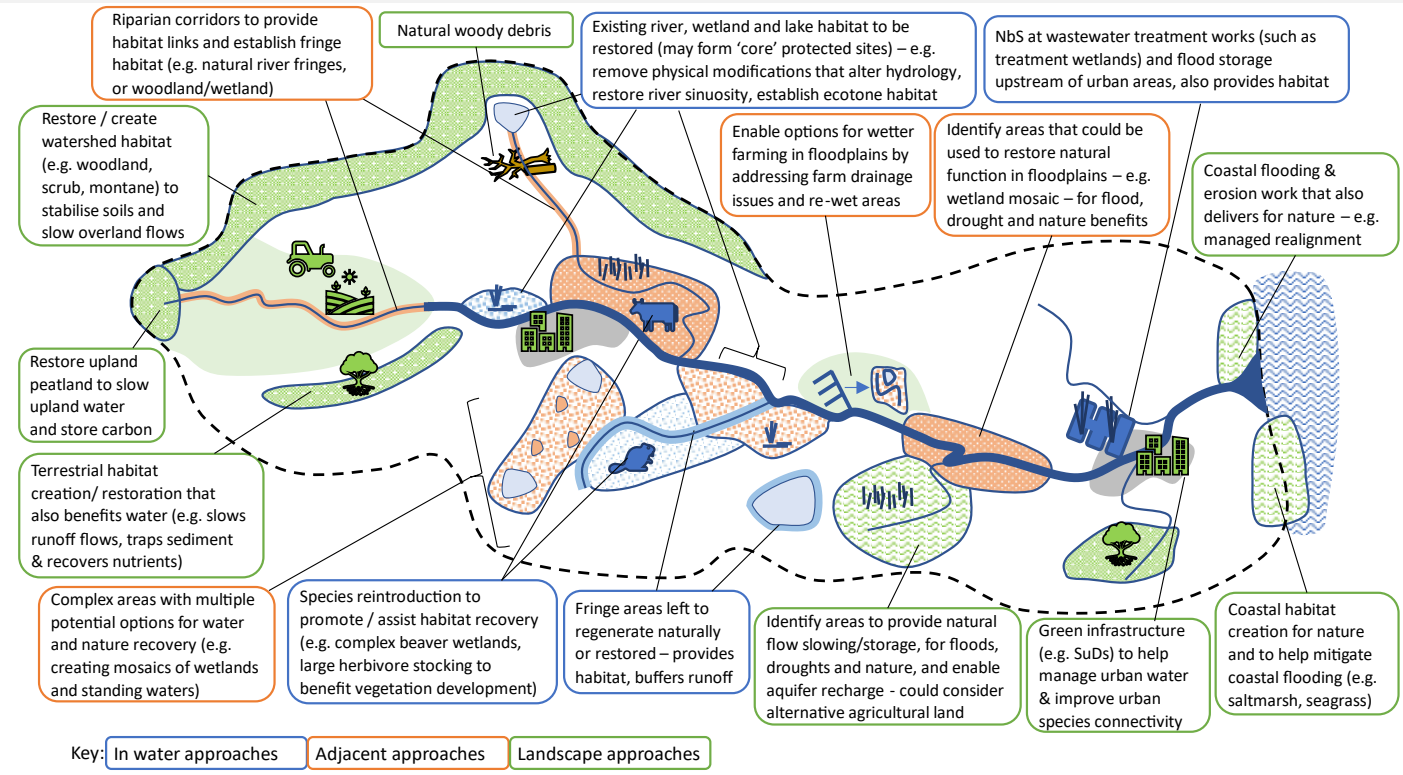
1. **Catchments** are the appropriate landscape-scale unit for water nature recovery. Catchments may vary from source to sea.
2. Define and assess catchments to determine **current condition** and deviation from **baseline expected condition.**
3. Nature recovery depends on **restoring natural function** and **wider landscape integration,** which are also critical to water habitats.
4. **Landscape resilience** (e.g. climate, floods, drought, carbon, …) is intrinsically linked to restoring natural water-based processes.
5. Look for opportunities **within water**, the **adjacent landscape**, or the **wider landscape** (catchment), using a **source-to-sea** approach.
6. Delivery of **the right action, in the right place** is critical for resilient water & nature recovery, supported by promoting natural function.

Part 1a. Key water opportunities in spatial planning – based on Integrated Biodiversity Advice and restoring natural function

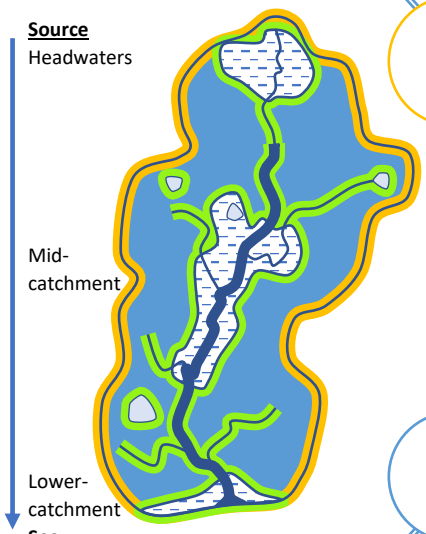
Where?	What?		How?	Main benefits provided * / **	Delivery†
Within water – in situ & fringe nature recovery for freshwater habitats		Water habitat restoration Water habitat expansion	Restore river, lake/pond & wetland habitat & improve hydrological connectivity. Look to enhance or expand (e.g. NE Habitat Network Maps).	Improved habitat/hydrology, increased connectivity, increase flood/drought (water resource) resilience, supports species	RRP, LRP, ELMs, PSS, WR, WRF, DLL, BF, FCERM
		Address physical modifications	Identify and tackle opportunities for restoring natural hydrology by removing or addressing physical modifications.	Improve connectivity/ species dispersal, impove habitat/ hydrology, water resilience	RRP, LRP, WRF, WR, FCERM
		Enhance water habitat fringes	Allow fringing space around rivers, lakes, wetlands for riparian fringe zones, transitional habitat and natural zones of ecological succession (ecotone).	Runoff & nutrient/sediment interception, enhanced lateral connectivity, improve habitat	BNG, BF, ELMs, WRF, WR
		Species reintroductions / wilding	Reintroduction of species, inc. those that provide wider ecological benefit (e.g. beavers, large herbivores).	Improve habitat, increase species abundance potential, mitigate flood, drought & WQ	SP/SL, DLL, BF
Adjacent landscape – joining up water and improving localised functioning		Riparian corridors	Linked to habitat fringes, appropriate adjacent habitat corridors (e.g. wet grassland, wetland, woodland).	Biodiversity, species dispersal, hydrologic connectivity, runoff nutrient/sediment interception	BNG, BF, ELMs, WRF, WR
		Create wetland standing water & ponds	Link up isolated standing waters, create stepping stones & wetland as mosaics of habitats. Incorporate priority habitat.	Biodiversity, improve habitat, species dispersal, hydrologic connectivity	ELMs, DLL, BF, WRF, NFM
		Floodplain restoration	Identify wet floodplain areas that should be restored to create wetland / wet mosaic habitat. Target priority habitat.	Improve habitat, increase species abundance potential, mitigate flood, drought & WQ	ELMs, PSS, BF, WRF, FCERM
		Historical modification	Address historical land use, drainage and explore opportunities to re-wet (e.g. drain removal / blocking).	Improve habitat, hydrologic connectivity, mitigate flood & drought	ELMs, PSS, BF, WRF, WR, FCERM
		Alternative agriculture	Re-wet land & create heterogeneity with alternative agriculture or management (e.g. paludiculture or change of grazing).	Biodiversity, hydrologic connectivity, mitigate flood, drought & WQ	ELMs, PSS, BF
Wider landscape – benefits running throughout the landscape		Targeted catchment habitat	Connect fragmented habitat, restore/ create habitat to help slow, intercept & store water (e.g. meadows, woodland).	Biodiversity, species dispersal, runoff nutrient/ sediment interception	ELMs, PSS, ELMs, BF
		Natural flood management (NFM)	Links to NbS and floodplain restoration. Many types – small scale (e.g. woody debris) to large scale (e.g. flood storage, coastal resilience). Aim for more natural.	Biodiversity, hydrologic connectivity, mitigate flood, drought & WQ	FCERM, NFM, PSS, ELMs
		Farmland water improvements	Prioritise catchment farm improvements for water – water runoff / retention, soil & nutrient protection. Slow flows, store water. Explore regenerative farming.	Biodiversity, species dispersal, runoff nutrient/ sediment interception	ELMs, CS, CSF, BF, DWPPs
		Nature-based Solutions (NbS) & Green Infrastructure	Varied & may use other solutions. NbS: nature for societal issues e.g. treatment wetlands, flood habitat/storage, wet woodland/wetland. Green infrastructure used in or near urban areas (e.g. SuDS).	Biodiversity, species dispersal, runoff nutrient/ sediment interception, mitigate flood, drought & WQ	WR, ELMs, PSS, BF, FCERM, NFM
		Water quality restoration	Many options. E.g. areas to capture & process runoff (e.g. farmland), & trap sediment/nutrients entering water.	Biodiversity, runoff nutrient/ sediment interception	DWPPs, CSF, ELMs

* Lawton Principles: More, bigger, better, joined up / ** Main climate change link: Adaptation, mitigation / † see Part 3

Part 1b. Example catchment – opportunities to look for (local priorities should drive the right opportunity mapping)



Part 2. Approach for integrating water in nature recovery plans *'Encourage and support catchment natural processes'*



Stage A – Define the catchment
To set out the logical unit area to explore water opportunities
- Identify catchment boundaries & explore river networks
- Examine catchments in relation to spatial plans (e.g. wider LNRS mapping)

Stage B – Identify existing water-based habitat sites
To highlight core protected and priority areas for water in each catchment
- Identify water-based protected sites (SSSIs, SACs, SPAs, Ramsars)
- Identify priority water-based habitats and priority rivers/headwaters

Stage C – Explore spatial overlap and 'gaps' in connectivity
To rationalise water habitats and explore connectivity potential
- Examine location of existing habitat in catchments and any overlaps
- Explore habitat fragmentation and gaps, noting opportunities to reconnect

Stage D – Identify catchment-wide opportunities for water (source-to-sea)
To ensure the right water nature recovery measures are mapped in the right place
- Explore catchments looking 'within water', 'adjacent', and 'wider landscape'
- Reconnect; restore/create habitat; enhance floodplains, coastal and farmland
- Ensure opportunities identified can deliver multiple integrated outcomes

Part 3. Key resources, contacts and supporting drivers – for LNRS, see advice updates at LNRS & Water advice

Resources for water NR (docs, data)*

- LNRS & Water advice **(NE advice site)**
- CaBa Biodiversity Pack / CaBa Data Hub
- Green Infrastructure Framework
- Nature Networks Evidence Handbook
- EA Catchment Data Explorer
- NE Freshwater Narrative
- Integrated Biodiversity Advice
- Habitat Network Maps
- Local planning and NR delivery **(NE internal)**
- LNRS Data Viewer – key water data:
  - Priority water habitats (e.g. rivers, headwaters)
  - Climate change vulnerability
  - EA Working with Natural Processes (WWNP); flooding maps; WFD catchments / RBD; rivers / river obstacles maps; FC EWCO (e.g. water quality) data

Key contacts / water stakeholders

Look for opportunities to work together with NE and EA water specialist colleagues as a priority:

- Local area team water advisers
- National water advisers / specialists
- Catchment Sensitive Farming Officers
- Protected sites advisers / species advisers
- Priority places area advisers
- National LNRS team / Area team LNRS SPoCs
- River Basin Planning SPoCs / Area FBG teams
- Nature recovery advisers
- Catchment Base Approach (CaBa) partners

Rivers Trusts - Wildlife Trusts - Wildfowl & Wetlands Trust - Freshwater Biological Association - Freshwater Habitats Trust - Floodplain Meadows Partnership - River Restoration Centre

Supporting policy & delivery

Water Framework Directive (River Basin Planning); Environment Act; Environmental Improvement Plan; Plan for Water; National Environmental Objectives

Indicative delivery/funding mechanism potential
RRP-River Restoration Programme, **LRP**-Lake Restoration Programme, **ELMs**-Environmental Land Management Schemes (inc. SFI, CS+, LR), **BNG**-Biodiversity Net Gain, **PSS**-Protected Sites Strategy, **DLL**-District Level Licencing, **WR**-Water resources, e.g. water company Price Review, **WRF**-Water Restoration Fund, **CSF**-Catchment Sensitive Farming, **DWPPs**-Diffuse Water Pollution Plans, **SP/SL**-Species projects & licencing, **FCERM**-Flood & coastal erosion risk management, **NFM**-Natural Flood Management, **BF**-blended finance approaches (private/public)

Contacts/expertise: NE (nature, water expertise and catchment management) / EA (water environment expertise) / FC (trees & water) / external

Explainer – How to use this advice

This page is an optional explainer, describing how to interpret and use the main 2 page summary advice.

Purpose

The advice summarises Natural England's priorities in freshwater to support spatial planning.
It is designed to provide a set of baseline topics for reference and as a conversation starting point for use as part of wider landscape nature recovery *Integrated Biodiversity Advice*, and has the following objectives:

1. To provide evidence-based examples of key spatial opportunities for maximising nature recovery in water.
2. To contextualise national water priorities, as drivers for nature recovery across the wider landscape.
3. To signpost links, resources and contacts to support planning for freshwater nature recovery.

This advice sheet intends to enable a consistent baseline reference for use during nature recovery conversations.

Rationale

1. All water priorities underpinned by evidence-based scientific rationale – primarily Natural Ecosystem Function: consider where water habitats might develop naturally in a landscape and aim to create/restore these areas.
2. Natural ecosystem function must be considered in relation to protected sites, priority / irreplaceable habitats.
3. Restoring natural processes & climate change resilience underpins and embedded throughout the priorities.
4. Works with Integrated Biodiversity Advice and Lawton principles for nature recovery in Nature Networks.
5. Opportunities can and should deliver multiple benefits / outcomes – e.g. areas can be identified that deliver restoration of floodplain function, enhance habitat, biodiversity, flooding and drought resilience, and provide water quality benefits.
6. Opportunities informed by and potential to contribute to policy, particularly Plan for Water, Environmental Improvement Plan, and the wider national environmental objectives that all LNRS should seek to contribute to.

Interpreting and using the advice

The advice is separated into three main parts:

Part 1 covers key water opportunities – this is the main focus of the advice and provides a list of key high-level opportunities in water, designed to be spatially applicable, embed scientific rationale, and separated into key spatial areas within a catchment. Use this to ensure opportunities are captured against wider water priorities and to ensure local needs drive discussions against these.

Part 1a lists opportunities and for each one includes information on location, improvement opportunity, how to consider (spatially), what additional/multiple benefits could be delivered concurrently, and potential supporting delivery mechanisms. A visual marker provides links across to Lawton and climate change benefits.

Part 1b demonstrates how opportunities could be considered spatially in a fictional example catchment. This is intended as a visualisation of how you could map opportunities, but actual mapping of opportunities needs to be driven by local priority discussions around ambitious and pragmatic implementation of opportunities.

Part 2 provides a summary approach in stages for considering catchment and water integration in wider nature recovery planning. Use this to consider key elements catchment thinking in nature recovery planning.

Part 3 summarises key resources, contacts and supporting policy/ delivery mechanisms for reference. Use this to find additional detail, who to speak with, and what policy/mechanisms underpin potential delivery.

Further advice and support

Additional supporting resources are currently being developed around water nature recovery and will be made available on the 'Freshwater Nature Recovery' SharePoint page.

Further LNRS specific support can be found in the 'Local Nature Recovery Strategies & Water' SharePoint page, which includes a more detailed '**LNRS & Water – How to use the advice**' document.