



NORFOLK WATER
STRATEGY PROGRAMME

A visual glossary of Nature-based Solutions for water security

A reference guide for partners, landowners and the public.

July 2026



Introduction

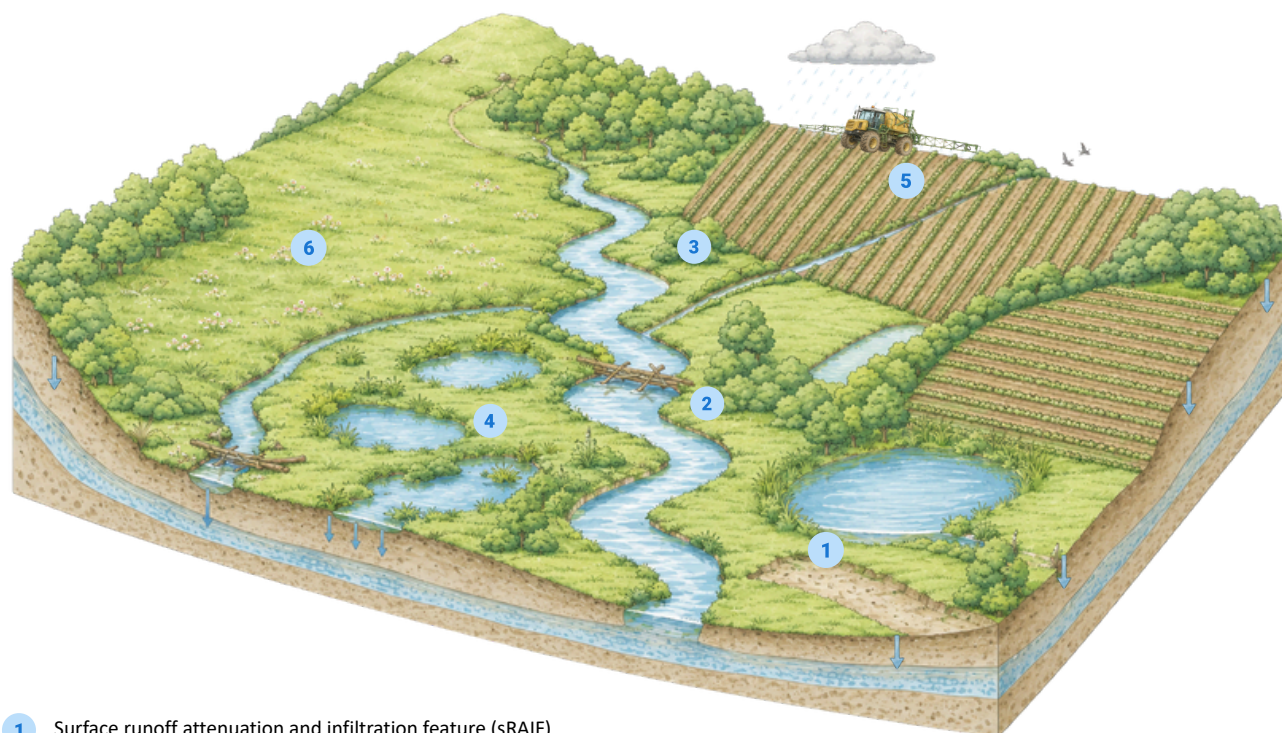
This visual guide explains the main types of Nature-based Solutions (NbS) promoted by Water Resources East (WRE) to address water security challenges in the East of England.

There is growing interest in NbS, and as the sector rapidly expands, so does the associated acronyms and jargon. Similar measures are often referred to with different terminology by different organisations. This visual glossary is an attempt at a quick reference guide to help understanding. It includes simple definitions and diagrams, and a synthesis of the multiple terms used.

The intended audience is for WRE members, partner organisations, practitioners, landowners and the general public.

The [Norfolk Water Strategy Programme \(NWSP\)](#) is a flagship project hosted by WRE focused on scaling up investment in and delivery of NbS, working in partnership with Norfolk County Council, Anglian Water and The Nature Conservancy.

NbS in the catchment



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| 1 Surface runoff attenuation and infiltration feature (sRAIF) | 4 Floodplain reconnection |
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What are Nature-based Solutions?

International Union for Conservation of Nature (IUCN, 2016)

Nature-based Solutions are actions that protect, manage and restore natural or modified ecosystems, which address societal challenges, effectively and adaptively, providing human well-being and biodiversity benefits.



NbS can also be known as blue-green infrastructure, which means a network of water and land-based features which use nature's potential to provide multiple **ecological**, **social** and **economic** benefits.

Blue-green infrastructure can be used instead of or alongside grey infrastructure, which are more traditional engineered and built features to address specific problems.



The Environment Agency's [2025 position statement](#) uses a broad definition of NbS and emphasises that they can 'deliver environmental, social and economic benefits at the same time'.

NbS sit on a spectrum

Some are small, simple and low-cost, such as buffer strips, cover crops or small runoff attenuation and infiltration features. Others are larger and more complex, such as floodplain reconnection or wetland creation projects. Therefore, NbS include simple land management changes through to larger engineered schemes which harness and restore natural processes. Understanding this spectrum helps explain why NbS projects can look very different, while still contributing to water security.



How do NbS improve water security?



Increase groundwater recharge (helping drought resilience)



Improve water quality



Slow and store flood water



Restore wildlife habitats and increase native biodiversity



Capture carbon and build climate resilience



NbS and Natural Flood Management (NFM)

You may see both terms used.

- **NbS** is the broader term, which encompasses interventions that deliver for a range of objectives, including water resources, water quality, flood risk, biodiversity, carbon sequestration etc.
- **NFM** is commonly used in the UK to describe NbS that focus specifically on reducing flood risk by protecting, restoring or mimicking natural processes to slow and store water.



The five main types of NbS promoted by Water Resources East



Nature-based Solutions reference guide

NbS type	Description	Examples	Other terms used
Runoff attenuation and infiltration features (RAIFs)	Small landscape features that catch water in high rainfall events and promote infiltration.	Leaky dams, edge-of-field ponds, scrapes, swales, ditch blocking, gully blocking, sediment traps, bunds.	Leaky dams, woody dams, scrapes, runoff management, small-scale NFM measures, online storage/offline storage, woody barriers/Large Woody Material (LWM), catchment storage.
Riparian restoration	Restoring vegetation and natural habitats along rivers and streams to protect water and wildlife.	Riparian buffer strips, tree planting along rivers, livestock fencing, riverbank vegetation, bioengineering.	Buffer strips, riparian buffers, river corridor work, river restoration, riparian management.
Soil management practices	Farming practices that improve soil health and water retention in-field, reducing overall runoff.	Cover crops, minimum tillage, soil aeration, tramline disruption, contour farming, shelterbelts, direct drilling, wood pasture.	Soil health measures, sustainable soil management, land management measures, slowly permeable soil interventions.
Land use change	Converting intensively farmed land to more natural habitats that store water and support wildlife.	Arable to species-rich grassland, woodland planting, wetland creation, peatland restoration.	Habitat creation, habitat restoration, land cover change/management, grassland creation, woodland creation, rewilding (in some contexts).
Floodplain reconnection	Restoring the natural connection between rivers and their floodplains so water can spread out and be stored during high flows.	Re-meandering rivers, bank lowering, wetland restoration, side channels, removing embankments.	Floodplain restoration, river restoration, re-meandering, wetland restoration, stage zero restoration.



Summary of NbS benefits

Each NbS will function differently depending on where it is located, because soil type, geology and topography vary. WRE recommends using opportunity maps, modelled datasets, site visits, ground investigations and local knowledge when assessing NbS potential.

NbS type	Water resources / recharge	Water quality	Mitigate flood risk	Biodiversity	Carbon storage
RAIFs	High	High	High	Medium	Low
Riparian restoration	Low–Medium	High	Medium	High	Medium
Soil management	Medium	High	Medium	Medium	Medium
Land use change	Medium	High	Medium	High	High
Floodplain reconnection	Medium	Medium–High	High	High	High



Runoff attenuation and infiltration features (RAIFs)

Runoff attenuation and infiltration features for water resources are small landscape features that catch water in high rainfall events and promote infiltration. They should be located where water naturally collects or flows, and where soil type and geology will promote water to soak into the ground, helping drought resilience.

Runoff attenuation and infiltration features can either be positioned:

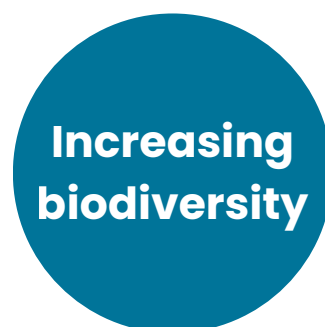
- In a channel, sometimes called online RAIFs or channel RAIFs (cRAIF).
- At the edge of a field, sometimes called offline RAIFs or surface RAIFs (sRAIF).



Examples include:

- Leaky ponds
- Leaky dams (often woody barriers in ditches or small streams)
- Scrapes and shallow ponds
- Sediment traps
- Swales (shallow vegetated channels)
- Ditch blocking

What they do:



Encourage infiltration and long-term water retention



Allow sediment and nutrients to settle out



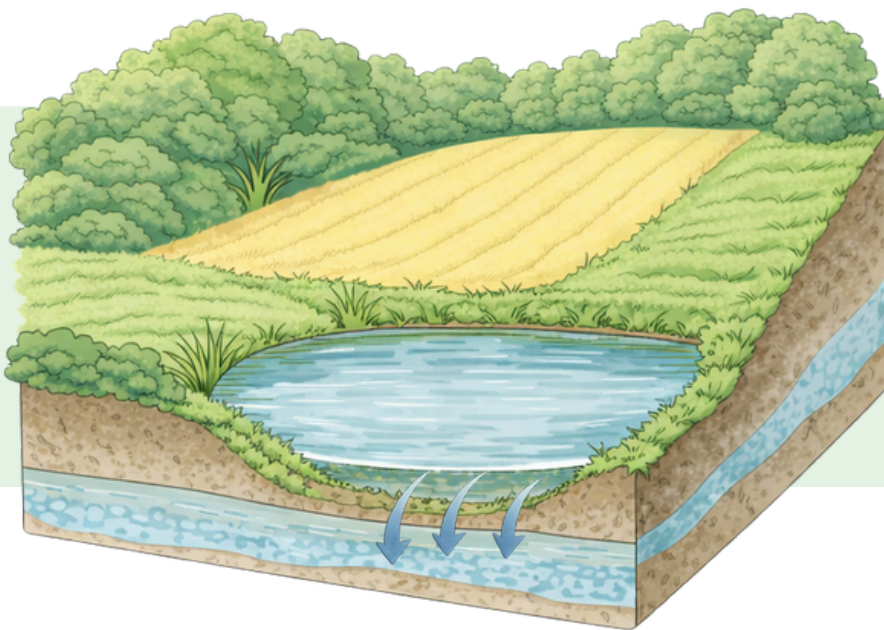
Reduce downstream flood peaks



Create ephemeral, seasonal wetland habitat

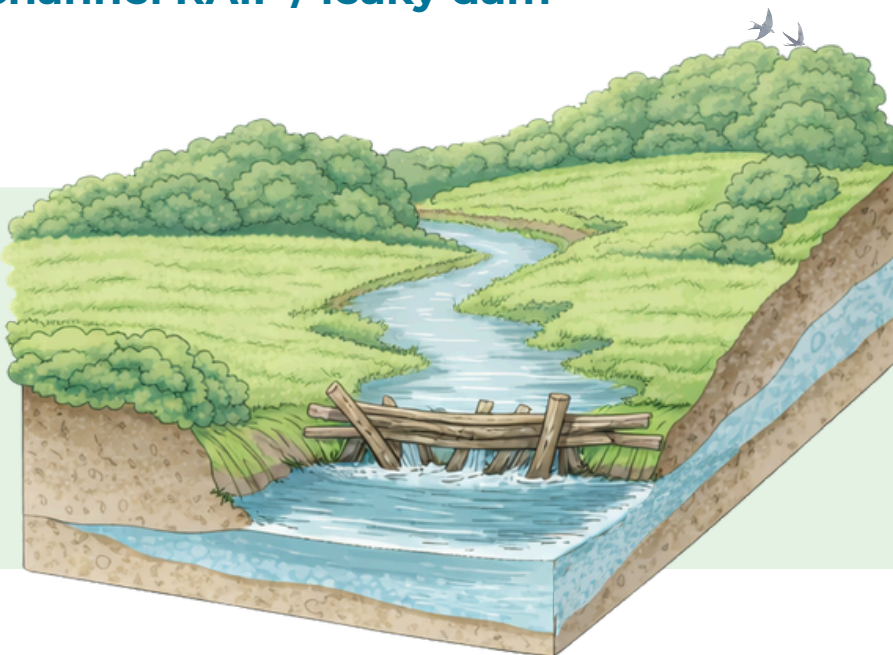


Surface RAIF / leaky pond



- Groundwater recharge
- Shallow sloping vegetated margin
- Shallow pond/scrape
- Grassy buffer zone

Channel RAIF / leaky dam



- Groundwater recharge
- Improved water quality
- Riverbank stability
- Healthy aquatic habitat
- Reduced erosion
- Reduced peak flows



Riparian restoration

Riparian restoration means restoring and improving land next to rivers, streams, ditches or flow pathways, acting as a natural buffer to erosion and pollutants. In practice, this could include planting vegetation, fencing livestock out of watercourses, restoring riverbank habitat, or removing hard engineering so the river edge works more naturally.

Riparian restoration can also be known as river corridor restoration, riverbank stabilisation (bioengineering), and riparian management.

In summary, riparian restoration should promote natural habitats along flow-pathways and adjacent to watercourses to intercept water before it enters channels.



Examples include:

- Riparian buffer strips
- Tree planting
- Instream vegetation planting
- Bioengineering (e.g. coir rolls)
- Removal of concrete or artificial bank reinforcement

What they do:

**Water quality
improvement**



**Filters
sediment
and nutrients
from runoff**

**Increasing
biodiversity**



**Improves
aquatic and
terrestrial
habitat**

**Bank
stability**



**Reduces
riverbank
erosion**

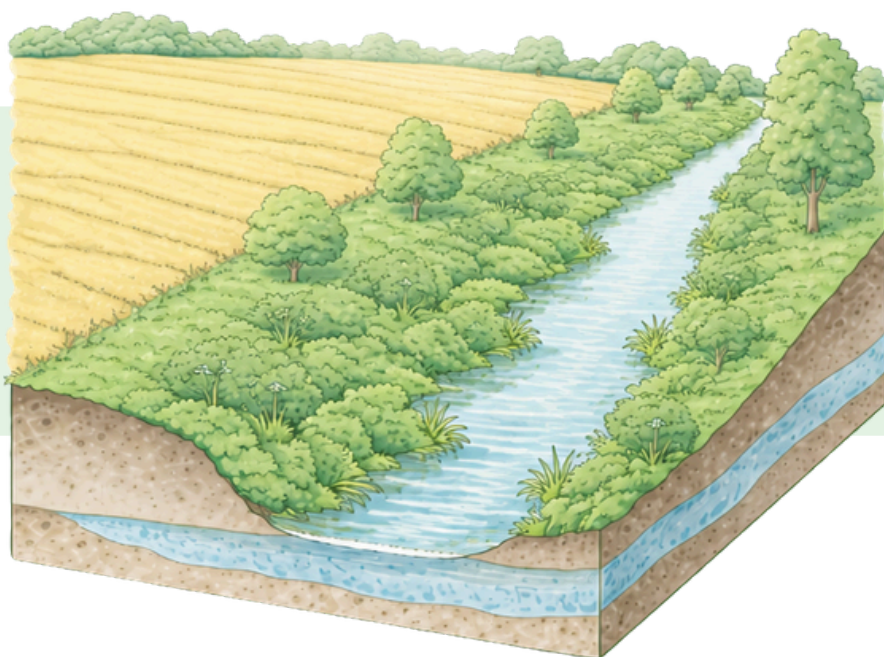
**Improves
river health**



**Shades rivers
and keeps
water cooler**

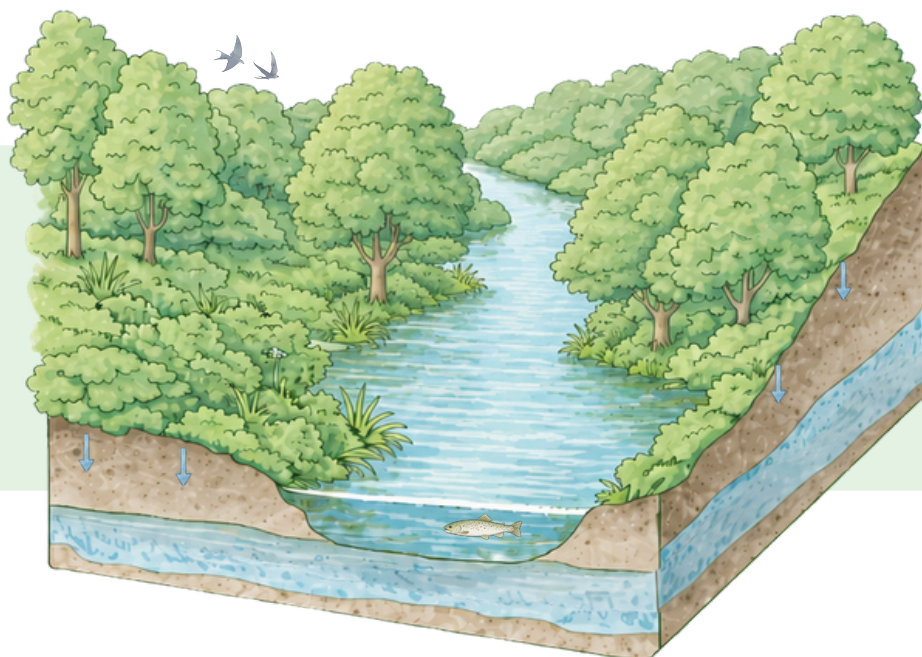


Riparian buffer strips



- Biodiverse woodland
- Vegetated bank
- Shallow pond/scrape
- Increased infiltration

Riverbank vegetation



- Biodiverse woodland
- Riverbank stability
- Reduced erosion
- Healthy aquatic habitat
- Carbon sequestration
- Water retention



Soil management practices

Soil management practices are farming methods that improve soil health so that rainwater soaks into the soil like a sponge, aiding water infiltration and reducing runoff. These land management practices are sometimes called regenerative agriculture, conservation agriculture or water sensitive farming.

In summary, soil management practices should reduce runoff, soil erosion and nutrient loss, while increasing infiltration.



Examples include:

- Cover crops
- Minimum tillage or no-till
- Tramline disruption (reducing compaction)
- Contour ploughing
- Crop rotation
- Soil aeration and decompaction
- Improve organic matter

What they do:

**Increases
infiltration**



**Helps farms
be drought
resilient**

**Reduces soil
erosion**



**Retains soil in
the field**

**Limits
nutrient loss**



**Safeguards
aquatic
ecosystems**

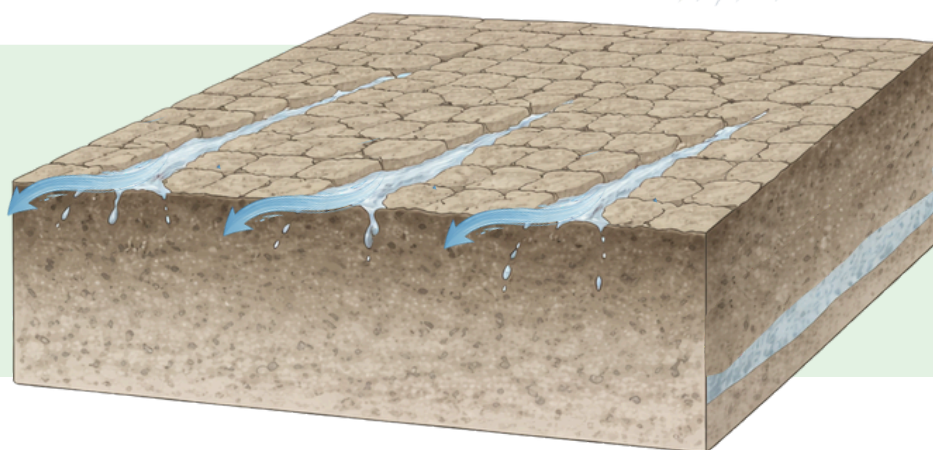
**Improves
soil health**



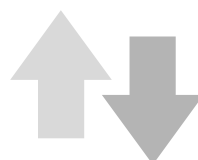
**Boosts farm
productivity**



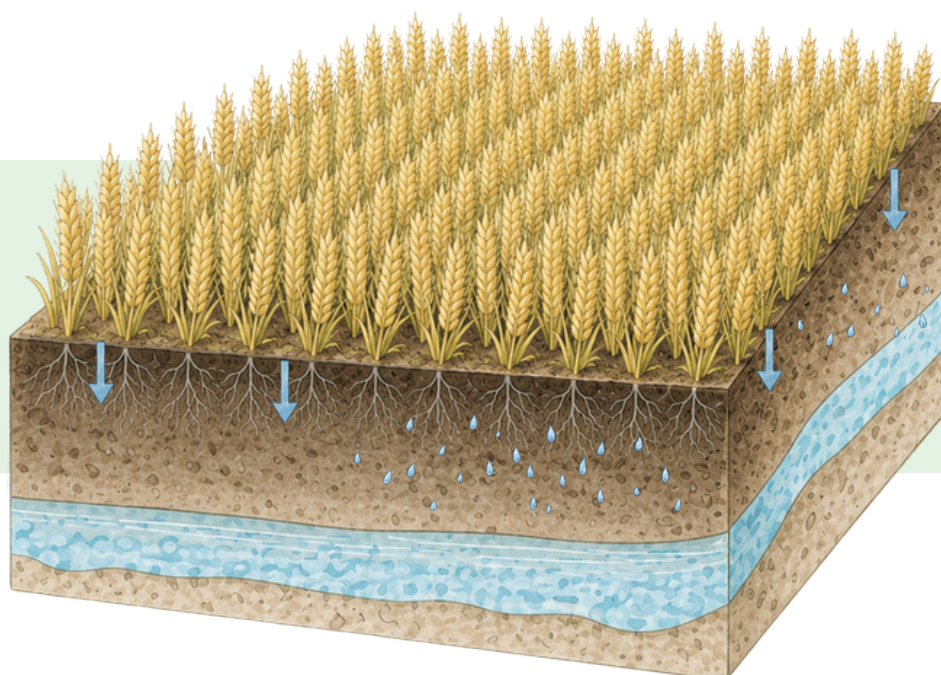
Poor soil management



- Limited infiltration
- Lower soil organic matter
- Higher chemical input
- Runoff in high intensity rainfall events
- Lower biodiversity



Good soil management



- Healthy soil
- Long-term water retention
- Reduced runoff
- Increased infiltration
- Carbon sequestration

Land use change is converting intensively managed agricultural land into more natural, permanent vegetation. Land use change is sometimes called rewilding, habitat creation, habitat restoration.

In summary, land use change can reduce soil disturbance and increase the land's ability to store water.



Examples include:

- Arable to grassland
- Arable to woodland
- Peatland restoration
- Agroforestry

What they do:

**Long-term
water
retention**



**Increases water
stored in the
landscape,
more drought
resilience**

**Water quality
improvement**



**Reduces
fertiliser and
pesticide
runoff**

**Increasing
biodiversity**



**Expands
natural
habitats**

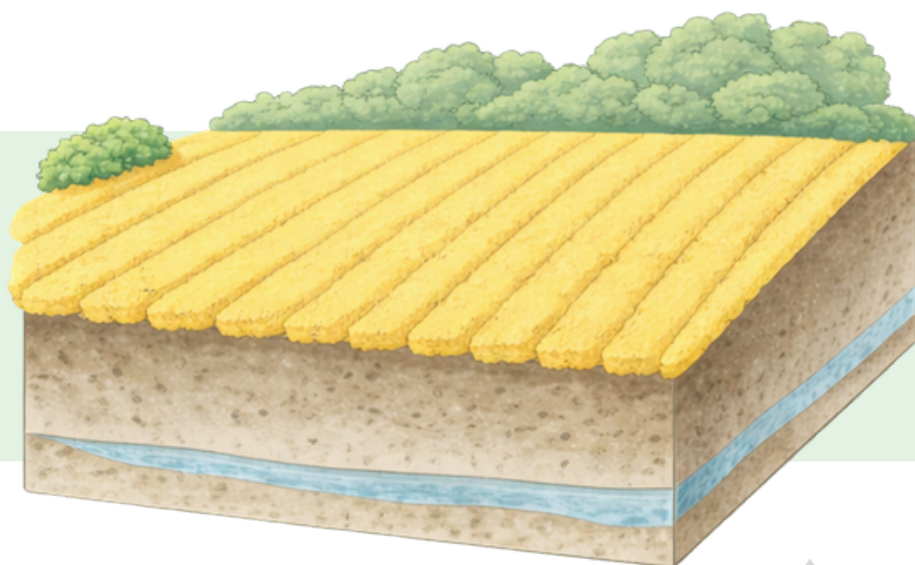
**Carbon
sequestration**



**Mitigates
climate
change**

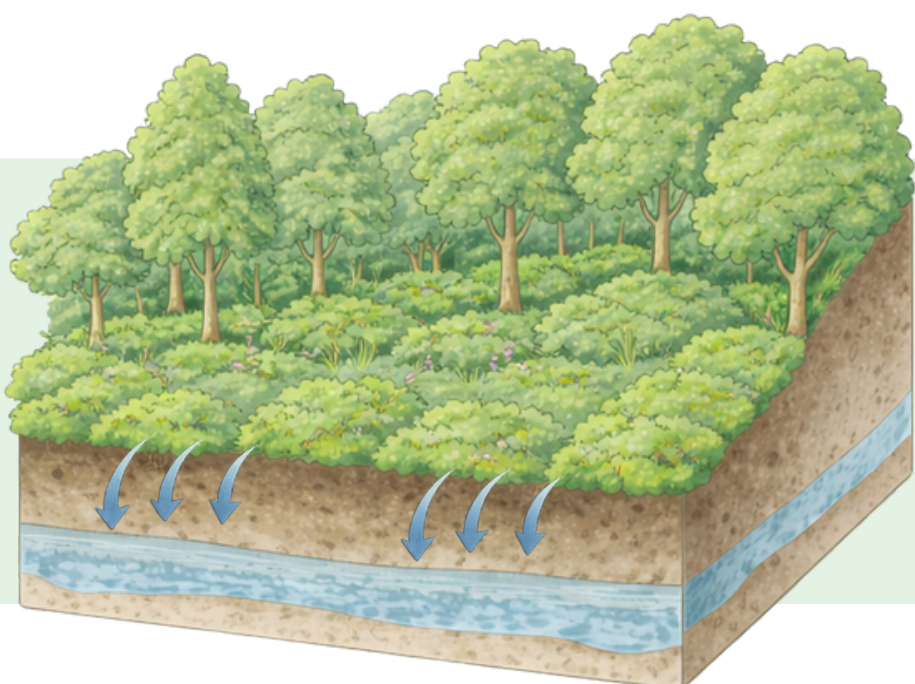


Intensively farmed land



- Pesticides and fertiliser used
- Limited biodiversity
- Limited infiltration
- Low organic matter levels
- Increased runoff potential

Biodiverse natural habitats



- Woodland habitat
- Scrub and grassland habitat
- Increased biodiversity
- Increased infiltration
- Reduced runoff
- Long-term water retention
- Carbon sequestration
- Healthy soil



Floodplain reconnection

Floodplain reconnection means restoring the natural connection between a river and its floodplain, so that water flows can slow and spread out over a wider area. This often involves removing or lowering embankments or reshaping straightened and deepened channels.

Floodplain reconnection can sometimes be called river restoration, floodplain restoration, re-meandering, re-wiggling, stage zero restoration.

In summary, floodplain reconnection projects are aiming to restore more natural processes within the river and its floodplain.



Examples include:

- Bank lowering
- Removing flood embankments
- Re-meandering/re-wiggling straightened rivers
- Creating side channels or backwaters
- Wetland restoration
- Stage Zero restoration (blocking or filling straightened and deepened channels and allowing water to follow its natural course)

What they do:

**Long-term
water
retention**



**Increases water
stored in the
landscape,
more drought
resilience**

**Flood risk
reduction**



**Reduces
downstream
flood peaks**

**Wetland
creation**



**Restores
wetland
habitats,
increasing
biodiversity**

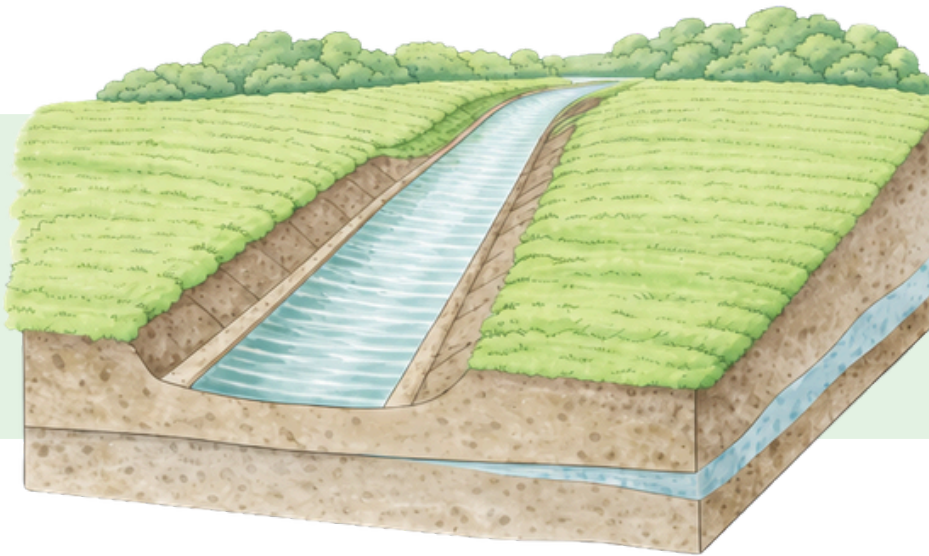
**Carbon
sequestration**



**Mitigates
climate
change**



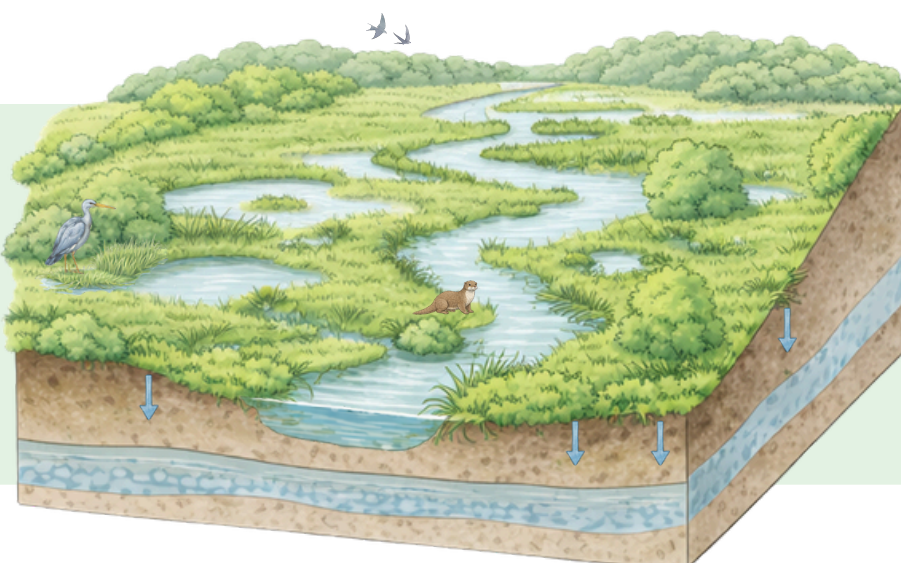
Straightened river



- Disconnected from floodplain
- Lack of biodiversity
- Limited infiltration
- Eroding banks



Floodplain reconnection



- Biodiverse wet habitats
- Mosaic of ponds
- Re-wiggled river channel
- Reduced sediments and nutrients
- Carbon sequestration
- Increased infiltration

As interest and investment in Nature-based Solutions continues to grow, so does the terminology used to describe them. This glossary has been developed to provide a shared reference point for stakeholders and to support a more consistent understanding across the sector.

This document is developed from Water Resources East's work in this space since 2021 and reflects our understanding in 2026. It does not claim to be an authoritative knowledge base. WRE hopes this can be a useful starting point for those learning about NbS, and provoke discussion in the sector, where shared understanding will evolve over time. Together, we can work towards Nature-based Solutions being recognised as a valued part of the response to water security challenges in the East of England.



Key sources reviewed

Water Resources East / Norfolk Water Strategy Programme sources - useful to define the five intervention categories and their water-security focus

- [NWSP Best Practice Guide: In-field monitoring of NbS](#)
- [WRE GIS dataset user guide](#)
- [NWSP / Norfolk Water Strategy Programme pages](#)
- [Norfolk Water Fund business case](#)
- [Funding Nature-based Solutions through Environmental Land Management Schemes](#)

IUCN Global Webpage

- [Standard for Nature-based Solutions definition](#)

Environment Agency - useful for national NbS definitions, NFM framing and evidence language

- [Environment Agency Nature-based solutions for water resources handbook](#)
- [Environment Agency NbS position statement](#)
- [Environment Agency Natural Flood Management programme](#)
- [Environment Agency NFM evidence directory – River and floodplain management](#)
- [Flood and Coastal Erosion Risk Management \(FCERM\) research report](#)

The Rivers Trust / Norfolk Rivers Trust - useful for practical, project-based wording and real-world examples

- [The Rivers Trust NFM](#)
- [Norfolk Rivers Trust local project pages](#)

The Nature Conservancy - useful for public-facing water security framing and Norfolk Water Fund context

- [TNC Norfolk Water Fund](#)
- [TNC Clear water Article](#)

River Restoration Centre – useful for river restoration, floodplain reconnection and restoration terminology

- [RRC The Manual of River Restoration Techniques](#)
- [RRC Webinar slide pack](#)

Mainstreaming Nature-based Solutions – useful for wider NbS categorisation and sector language

- [Mainstreaming NbS programme](#)
- [Mainstreaming NbS - Categorisation of NbS intervention types](#)

Natural Course - useful as a UK programme example of catchment and water-environment delivery

- [NC - River restoration and redressing physical modification](#)
- [NC - What is Natural Course?](#)
- [NC Programme overview](#)
- [Using Local Nature Recovery Strategies to achieve WFD objectives](#)

Norfolk FWAG - useful for farmer-facing examples and local Norfolk communication

- [Norfolk FWAG Projects page](#)
- [Water Discovery Pilot by Norfolk FWAG, Broads Authority, BAWAG and Cranfield University](#)
- [Norfolk FWAG Nature-Based Solutions case study](#)
- [Norfolk FWAG Working with Water](#)

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