LNRS habitats and themes - strategic priorities

The following sections show each of the habitats and themes, explains the state of nature, the pressures they face, outlines the opportunities and lists the priorities and actions we can take to support nature recovery and build our Cheshire and Warrington Local Nature Network.

These sections cover:

- **Woodlands, hedgerows and trees**
- **Grassland & heathland**
- **Watercourses**
- **Peat & wetlands**
- **Species**
- **Farmland**
- **Urban**
- **Nature based solutions**





Following the habitat sections, we cover key priority species that need bespoke actions over and above habitat actions that benefit them, followed by themes that bring relevant topic based actions together.

In each of the habitats and theme sections, you will see a 'Key Habitat' or 'Key Topic' highlighting our highest priorities for the next 10 years.

Key habitats demonstrate the habitat's importance to the landscape character and historical aspects of the region. Whereas key topics align with the main issues facing Biodiversity and intrinsic links to impacts on society and/or the economy.

For further understanding around delivery, please refer to Appendix 7, which will help to inform consideration of priorities and actions in terms of accessing relevant guidance and standards to inform LNRS delivery note that this appendix shows mapped actions in bold for ease of reference.

Priorities and actions shortlist terminology

The below common terms will be used throughout the priority habitat types and themes in the priorities and actions shortlist.

Safeguard - This safeguard represents the need to protect existing nature sites, external to those of which are our core nature sites through buffers. Although this may sound prohibitive to development, this is not the case. The LNRS cannot prohibit development from taking place but it does need to have regard to the LNRS and ensure that the nature site is improved by the development (following BNG guidance) or that nature is integrated into the development.

Restore - Habitat restoration refers to:

- Action on sites which support relict habitat that leads to the expansion of wildlife-rich habitat. Examples would include where fragments of wildlife-rich habitat remain and action on land or water surrounding these fragments re-establishes the habitat, increasing the total extent of the wildlife-rich habitat. Only the newly established habitat will be counted towards the target.
- Action on degraded habitat where single or multiple actions need to be undertaken to address on or off-site pressures so that wildlife-rich habitats of sufficient quality can become established, e.g. addressing nutrient enrichment and invasive non-native species pressures to restore a lake.
- Action on existing habitat (possibly wildlife-rich) that has developed in a degraded ecosystem; consequently, the existing habitat may be considered degraded. Examples include the restoration of blanket bog from dry heath on drained peat, or action to reduce grazing pressure on upland acid grassland to restore priority habitat such as upland heath or upland oakwood[8].

[8] Version 1 - Environment Act Habitat Target - Definitions and Descriptions (1).pdf

Create - Where viable, wildlife rich habitats are established on land or water where such habitat is currently absent.

Enhance - Actions that improve the condition, structure or composition of existing wildlife-rich habitats but is not considered within the scope of creation or restoration despite following actions relating to those priorities.

Promote - LNP partners and local authorities (LNRS team) to promote nature friendly solutions within their representative organisations and to developers and businesses.

Increase - Where possible, 'stepping stones' (large areas of similar habitat) should be created. Appropriate - definition of the term is shown in Appendix 7. Furthermore, the Appendix also describes appropriate habitats.

Woodlands, Hedgerows and Trees

This section outlines the current state of our woodland, hedgerow and trees, the pressures they face, opportunities for nature recovery, the priorities and actions for this habitat.

Cheshire and Warrington's woodlands, hedgerows and trees.

- Total tree and woodland cover: 12.69% (slightly above North West average).
- Woodland cover: 6.51% (2022 NFI) (less than NW and England average) (of which 4.17% is in front of broadleaf woodland - in other words, majority of Cheshire woodlands are broadleaf).
- Trees outside woodland cover: 6.17% (2023 unpublished data higher than NW and England average) 0.75% coniferous.
- 7,194ha deciduous woodland in LNRS area (3.14% of LNRS region).
- 1,702ha wood Pasture and parkland (0.74% of the LNRS region).
- Ancient woodland 1.03% (2349.47ha of which: 78% is Ancient Semi Natural Woodland [1,460 ha].
- 284ha traditional orchards (0.12% of LNRS region).
- 325 recorded veteran trees.
- 10,118km of hedgerow in Cheshire (making up 3.2% of England's total hedgerow network).
- An estimated 9% of wildlife habitat lost in region since 1980's is deciduous woodland.
- 66% of Cheshire's woodlands are not sustainably managed (this is measured by a Forestry Commission Key Performance Indicator).
- Urban tree cover varies significantly in Cheshire and Warrington, ranging from as little as 4% in some wards in Ellesmere Port, Chester and Warrington to 30% in some wards on the edge of our towns and villages.



Did you know?

Beetles need dead wood...

Around 650 UK beetle species are thought to require deadwood at some point in their lifecycle – our woodland, trees and hedgerows are home to deadwood invertebrates which in turn become part of the food chain and support other wildlife which eat them.

In total the area of woodland and trees outside woodland covers 12.69% of Cheshire and Warrington (slightly below national average of 14.87%). Just 6.51% of this is woodland cover (lower than the England average of 10%), while trees outside woodland such as those found in urban areas, along hedgerows and in parkland collectively cover a further 6.17% (higher than the England average of 4.68%).

Although formerly ancient hunting forest, relatively little ancient woodland remains (0.8%), we have 325 recorded veteran trees (some of which are ancient), but these are likely to represent a fraction of current and past ancient trees once seen across our landscape. We have a variety of types of woodland which are home to different species but are fragmented, facing common and specific risks, including a lack of management (regular thinning for woodland products that once took place), pressure from development, climate change, diseases, invasive non-native species like Rhododendron or disturbance from recreation.

Woodlands, Hedgerows and Trees - types of habitat

Broadleaf woodland covers 4% of our area, making up just over a quarter of priority habitat overall in this strategy. It includes Dry Oak woodland, Ash woodland and upland oak woodland. Shell Brook Valley near Wincle (see photo) and woods near Cumberland Cottage in the South Pennines SAC are considered some of the best examples of Upland Oak woodland in the UK. These woodlands are very important for birds including the Wood Warbler, Redstart, and Pied Flycatcher. They are also home to rare moths and the Purple Hair-streak Butterfly.



Wet woodland, (priority habitat) can be found in poorly drained or seasonally wet locations and is commonly known as 'carr'. There are three main types in Cheshire – Willow, Alder and Birch Carr reflecting the tree species found most in each.

In the uplands, moorland cloughs and river valleys can support Birch and Alder wet woodland, providing important habitat for birds, which help to improve water quality. In lowland areas, wet woodland can often be found along watercourses, around open water and in mosaics with other wetland habitats and as part of larger woodlands. Researchers have recently highlighted that wet woodland as a peat forming habitat has been overlooked, so as well as being a priority habitat in its own right, hosting important invertebrates and the threatened Willow Tit, it is also likely to help reduce the impacts of climate change.

Plantation woodland, the UK imports over 80% of the timber it uses, so more use of home-grown timber should be explored. And by applying the UK Forestry Standard, productive plantation woodlands can be managed in a responsible and sustainable way. At Delamere Forest, the largest plantation woodland in the area, Forestry England is increasing structural and species diversity and open habitat to deliver biodiversity alongside timber production. These, along with access, recreation and events, boost health and wellbeing and the local economy.

Wood pasture and parkland is found in all 15 estates across Cheshire, from Lyme Park in Disley to Eaton Estate on the Dee. It is often home to veteran and ancient trees. Wood pasture and parkland is important because of the high numbers of ancient and veteran trees alongside unimproved grassland. It can also be classified as ancient wood-pasture.

Ancient woodland and plantation on ancient woodland sites (PAWS) are irreplaceable habitat only covering 1% of Cheshire.

Heroic Hedges: As well as being good for nature, healthy hedges provide a wealth of benefits to farmers and landowners including providing wind and frost shelter for arable crops, reducing pesticide use by providing homes for natural predators on arable pests and season round habitat and foods for pollinators that help field yields; they also help protect our grazing animals by providing shelter from heat and cold, provide different foods for grazers, and a source of self-medication for animals and vital biosecurity – protecting against disease spreading. Hedges reduce water run-off and protect soils, reduce phosphate and nitrate run-off to water courses, their deep roots can reduce flood impact, and improve and draw up nutrients to the soil surface. Hedgerows store carbon above and below ground, new hedgerows can store between 600-800kg of CO_2 per year, per km.

Pressures

Grey squirrels - An invasive species that can have significant impacts in woodlands as they severely damage young, establishing woodlands through their bark stripping habits. This can impact our ability to meet the tree and woodland cover targets, as set out in the Environment Act 2021 amongst other pressures as discussed below.

Deer - There are six species in the UK in the wild. Red and Roe are the native species found in the UK and both have been recorded in Cheshire. Non native species in UK include Sika, Chinese Water Deer, Muntjac and Fallow. In Cheshire, Fallow and Muntjac have been recorded[9].

Some estates in Cheshire actively manage deer herds in their parkland. For example Tatton Park has both Red and Fallow herds. Dunham Massey has Fallow.

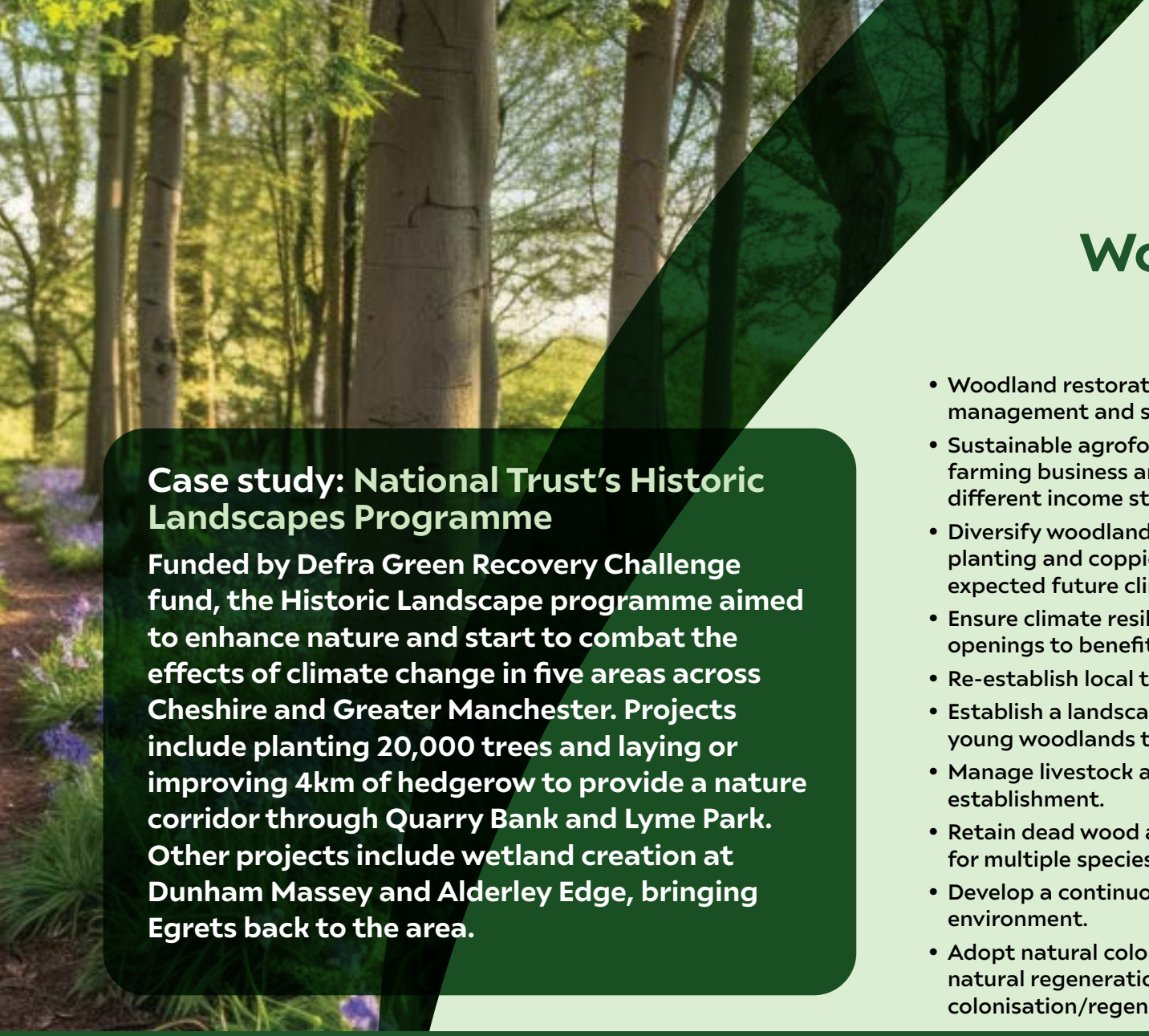
Deer fencing prevents access but doesn't address numbers. Sustainably managed populations are also important. While fencing to exclude deer helps to limit browsing impact, this doesn't address the density that populations can reach and their impact across the wider landscape.

Disease - Climate change poses an imminent threat to many of Cheshire's trees, as new diseases have spread northwards especially acute oak decline and Phytophthora ramorum, which affects a number of tree species, including Larch and also Rhododendron (an invasive species rampant in the UK), so eradication of Rhododendron could help to prevent the potential spread of Phytophthora to other species of trees. Another major disease, already rampant, is ash dieback but there are signs that certain young ash trees are becoming resistant to this disease.

[9] Deer Distribution Survey - The British Deer Society



Open areas in woodland: Openings in the woodland canopy are important to let light in and enable younger and smaller trees and shrubs, plus flowering plants like Bluebells, Wood Anemones, brackens and grasses to flourish and provide food for animals and insects.



Nature recovery opportunities for Woodlands, Hedgerows and Trees

- Woodland restoration, especially PAWS restoration, through improved management and species diversification.
- Sustainable agroforestry could be a key element of a sustainable farming business and contribute to increased biodiversity as well as a different income stream within the farming landscape.
- Diversify woodland structure through natural regeneration, tree planting and coppicing favouring species and provenance suited to expected future climate.
- Ensure climate resilient trees are planted and increase area of canopy openings to benefit woodland species.
- Re-establish local timber production to encourage better management
- Establish a landscape-scale deer and grey squirrel strategy to enable young woodlands to thrive.
- Manage livestock access to facilitate successful tree and woodland establishment.
- Retain dead wood and mature trees with cavities to provide habitat for multiple species.
- Develop a continuous canopy cover approach for the urban tree environment.
- Adopt natural colonisation as a woodland establishment method and natural regeneration within existing woodlands, using planting where colonisation/regeneration are not successful, where appropriate.

Case study: National Trust's Historic Landscapes Programme

Funded by Defra Green Recovery Challenge fund, the Historic Landscape programme aimed to enhance nature and start to combat the effects of climate change in five areas across Cheshire and Greater Manchester. Projects include planting 20,000 trees and laying or improving 4km of hedgerow to provide a nature corridor through Quarry Bank and Lyme Park. Other projects include wetland creation at Dunham Massey and Alderley Edge, bringing Egrets back to the area.

What are veteran and ancient trees? A veteran tree is one that has features like cavities, decay holes and fungi growing on the trunk, they are an important habitat in their own right, significantly contributing to wider forest or woodland biodiversity and often have a rich cultural and historical value. Sometimes prominent in the landscape, they mark historic boundaries or locations. An ancient tree is one that has passed beyond maturity and is in its old age, often with a wide trunk but smaller crown. The deadwood from ancient trees is an important habitat.

Priority	Actions
W1. More, bigger, better and joined up wildlife rich woodland networks across the landscape	• W1.1 Establish sustainable, biodiversity-positive management of all woodland, increase % of open space, resilience to pests, disease and climate change regardless of size. • W1.2 Establish buffers to woodlands using a variety of methods. • W1.3 Create woodlands to UK Forestry Standard. • W1.4 Create and restore clough woodlands for natural flood management and increased biodiversity. • W1.5 Increase connectivity between existing woodlands through different suitable habitats. • W1.6 Safeguard mosaics (different habitats within one landscape) to complement and support woodland through good design and management • W1.7 Increase the biodiversity in all woodlands. • W1.8 Encourage positive management of woodlands by encouraging renewed interest in extracting timber for products and sale. • W1.9 Manage and minimise invasive, non-native species and deer impacts on new/current woodland and scrub/hedgerow habitats. • W1.10 Create and expand wet woodland in appropriate places. • W1.11 Create and maintain woodland scrubby edge habitats. • W1.12 Manage wet woodlands to promote a varied age structure and species diversity alongside maintaining a high-water table.
W2. A network of well-connected, well managed and restored ancient woodlands and plantation on ancient woodland sites (PAWS), veteran trees, orchards and exceptional trees	• W2.1 Safeguard and encourage positive management of existing ancient woodlands and plantation on ancient woodland sites (PAWS). • W2.2 Create woodlands, woodland belts and hedgerows to buffer and connect existing ancient woodland sites. • W2.3 Improve protection of and safeguard all veteran and exceptional mature trees. • W2.4 Establish new trees that can become veteran and exceptional trees of the future. • W2.5 Record and map existing veteran trees and ancient woodlands. • W2.6 Re-establish voluntary tree wardens or community volunteers across Cheshire to help record, safeguard and encourage the positive management of veteran or exceptional trees and orchards.
W3. Urban areas with a network of trees, hedges and woodland, sustainably managed, delivering nature recovery and more environmental benefits to residents	• W3.1 Better safeguard and manage tree assets in urban areas and only remove as a last resort. • W3.2 Establish and manage tree assets as a continuous viable tree cover. • W3.3 Plant suitable replacement urban trees, native (UKISG nursery) or non-native, where planted urban trees are coming to end of life. • W3.4 Create and safeguard a network of urban trees and woodlands. • W3.5 Safeguard, retain and improve conditions for exceptional mature trees in the urban environment. • W3.6 Prevent damage to retained trees. • W3.7 Safeguard, manage and expand community woodlands. • W3.8 Raise awareness of the benefits of trees, hedges and woodland.
W4. More, bigger, better and joined up hedgerow networks	• W4.1 Safeguard and enhance existing hedgerows to achieve species diversity and enhance landscape value. • W4.2 Create or restore 5,000km of additional species rich hedgerows. • W4.3 Promote benefits of hedgerows and their positive management across Cheshire and Warrington. • W4.4 Better value and safeguard and increase the number of veteran and exceptional trees in our hedgerow network.

Species - the list of species and species assemblages that benefit from the above actions:

- Grassland fungi assemblage
- Deadwood invertebrates assemblage
- Farmland birds assemblage
- White-Letter Hairstreak butterfly
- Willow Tit
- Western European hedgehog
- Badger
- Bats assemblage

Key habitat - Hedgerows

Hedgerows play a vital role in the lifecycle and survival of many farmland species including amphibians, small mammals, invertebrates and birds. They complement and connect other areas of habitat and provide food, shelter and breeding sites. They are found on the Cheshire plains and on the lower slopes of the Pennine foothills. The most common tree species to be seen in our hedgerows and in-fields (historic hedgerows) include Oak, Sycamore, Lime, Field Maple and Holly.



What happened?

- From 1976 to 1997, the EU CAP (Common Agricultural Policy) scheme paid farmers to remove hedges to target increased production by having larger fields.
- 66% of remaining hedgerows are in poor to moderate condition due to historic inconsistent national policy and guidance around management.

Are hedgerows in recovery now in Cheshire? What policies and regulations are there to protect them?

- Since 1997, there has been legislation in the UK preventing the removal of ecologically or historically important hedgerows without the consent of the local authority.
- There are farm subsidies available for farmers to lay hedgerows and to maintain them with the Sustainable Farming Incentive, Countryside Stewardship scheme and Higher Level Stewardship, which has helped to see a marked increase in the number of new hedges.
- From 2024 onwards, there have been new hedgerow management regulations in place to prevent the degeneration of hedgerows by residents, farmers, local authorities and developers[10].

[10] The Management of Hedgerows (England) Regulations 2024



Farming and Woodland, Hedgerows and Trees

Below list demonstrates the benefits for farmers from utilising the above habitat theme and how farming benefits these habitats:

Woodland, hedgerows and trees benefits to farming:

- Diversified source of income through Agroforestry.
- Contributes to achieving carbon neutrality on the farm through carbon sequestration[11].
- Improved animal welfare as livestock utilise woodlands, hedgerows and trees for shade from all weather conditions as livestock can suffer from heat stress in the summer months, leading to lower productivity rates, negative effect on weight gain, and decreases conception rates. Also, trees can offer livestock additional food contributing to diet diversity[13].
- Reduces the likelihood of diseases[12].
- Flood mitigation.
- Soil enhancement.
- Improves water quality.
- Silvoarable can provide extra income through fruits, nuts or timber being produced in alleys in and amongst crops.
- 20% average yield advantage from Silvoarable system.

Farming benefits for woodlands, hedgerows and trees

- Increased management providing diversity in structure of woodland and ensuring that hedgerows form the "A" shape commonly associated with healthy hedgerows (Cyclical management)[14].
- Farmers provide trees in the most suitable area on their farm to ensure the best outcome for the trees as well as their livestock, soil or arable crops.

[11] National Farmers Union: Achieving net zero - farming's 2040 goal - AFN Network+
[12] The Benefits of Silvopastures: What are silvopastures, and how do they benefit our farmland and waterways? - Lancaster Farmland Trust
[13] Agroforestry - Woodland Trust
[14] Hedgerow Management Advice | Hedgelink

Key topic - Agroforestry

What is it?

Agroforestry is the integration of trees into a farming system, while maintaining or enhancing the farm's agricultural output[15].

What types of agroforestry are there?

There are two types of agroforestry practices:

- Silvo-pastoral agroforestry
- Silvo-arable **agroforestry**

What is silvo-pastoral agroforestry?

This type of agroforestry is where livestock graze under trees. There are mutual benefits for both the livestock and trees, with animals enriching the soil whilst the tree provides shelter and nutrition for livestock.

What is silvo-arable agroforestry?

Silvo-arable[16] agroforestry is defined as 'agricultural or horticultural crops grown simultaneously with a long-term tree crop, such as fruit or nut trees, which provides an annual income while the tree crop matures. Trees are grown in rows with wide alleys in-between for cultivation.

How is agroforestry relevant to Cheshire's nature recovery and agriculture?

Nature benefits from forestry within agriculture systems, especially when it comes to wood pasture and orchards as these can provide habitats for a wide range of species[17].

- Inputting trees within hedgerows provides an increase in tree canopy cover and provides nesting sites for birds and other creatures.
- Agroforestry can help to enhance soil health and protect from extreme weather, which can boost crop production and help with shelter for livestock.
- The yields of crops in between the trees is not reduced by shading until the tree reaches alley width, in which case the system can become silvo-pasture. According to Agroforestry Research Trust, competition between trees and the alley crop for water is not present in the West, whereas during drought summers, this might be present in the East.[12] In a silvoarable system, nitrogen leaching could be reduced by up to 28% in areas where leaching was deemed high, but this is entirely dependent on tree density.

[15] What is agroforestry? | Soil Association
[16] Silvoarable - The Agroforestry Research Trust
[17] A guide to agroforestry - GOV.UK



Grassland and Heathland

This section outlines the current state of our grassland and heathland, the pressures they face, opportunities for nature recovery and the priorities and actions for this habitat.

The state of our grassland and heathland

What types of grassland and heathland are good for nature?

Species rich grassland (shown on the right) is what we need, buzzing with insects, with different heights and types of plants and surface texture including tussocks and lumps. Improved grasslands may sound good – but in fact they are not very good for nature. Most of our species-rich grasslands, full of different types of grasses and wildflowers, have been lost to fields that may look green but are in fact species poor crop grassland of rye grass or a very limited species mix (e.g. clover, buttercup and ryegrass). This type of grassland is not that effective in protecting and improving our soils or supporting insects or other animals. Less than 2% of Cheshire and Warrington area is species-rich grassland and heathland habitat.



- **Most grassland in Cheshire is improved (species-poor) grassland (73,077ha), mainly rye grass for agriculture.**
- **Second largest habitat is coastal and floodplain grazing marsh, at 1,315ha (again most is species poor).**
- **99% of Cheshire's species rich meadows have disappeared since 1930.**
- **466ha of lowland meadow priority habitat left below 200m, with a further 141ha in the upland fringe.**
- **26ha of calcareous grassland - a unique habitat in the North West as it is normally found in the chalk area in the South of England.**
- **63% of Local Wildlife Sites on grasslands have lost all their unimproved neutral, acid or calcareous grassland habitat.[18]**

Grassland and heathland habitats cover a small area of Cheshire and Warrington, including grazing land, as well as road verges, parks, golf courses, riverbanks, lakesides, churchyards and along access routes and within open space in woodlands. Our grasslands and heathlands are fragmented, under pressure from drainage, development, agricultural improvement, recreational disturbance, and lack of management that leads to succession (when grasslands become areas of scrub, with woody plants, as nutrients increase).

The best examples of species rich grassland can have more species per square metre than any other habitat. Cheshire has irreplaceable wax-cap meadows and pastures which have some of the best examples of fungi in the UK. Along with these, our old species rich grasslands are home to well-established, complex webs of plants, fungi and invertebrates which cannot be replaced if lost.

[18] Appendix 1: Description of the Strategy Area: Technical version

Cheshire and Warrington's diverse habitats include a wide range of types of grassland and heathland which include the following:

Neutral grassland is grassland defined as having vegetation dominated by grasses and herbs on a range of neutral soils, usually with a pH of between 4.5 and 6.5. These can include up to 12 different species of grass or flower per square metre, making it one of the most biodiverse habitats alongside species rich acid or calcareous grassland, discussed below. There are multiple habitats that neutral grasslands cover, as per the UKHab classification, including lowland neutral meadow. We only have 607ha left of species-rich neutral meadow, one of the largest is at local nature reserve Swettenham Meadows (see photo) managed by the Cheshire Wildlife Trust and the local farmer with sympathetic grazing. The large number of flowering plants now supports 14 types of butterfly. Other grasslands covered under the term neutral grasslands can include meadows and pastures, as well as a range of grasslands periodically inundated with water or permanently moist.

Waxcap grassland is a specific habitat with groups of fungi (see photo) including those from the Waxcap family. It is nutrient poor, well-drained, semi-natural grassland, and often grazed by sheep or mowed. It can be found in pastures, reservoir embankments, churchyards or old cricket pitches. It is found in the Pennine foothills at Rainow, with its rare Ballerina waxcap, and Tegg's Nose Country Park has 18 waxcap species and 25 other types of fungi. The importance of waxcap grasslands and its rarity is highlighted through its inclusion in the species actions, as there is a need for better information about where these sites are.

Coastal and floodplain grazing marsh is found where the floodplain retains a high-water table for at least part of the year, providing an important habitat for overwintering wildfowl and breeding wader birds. Its water-filled ditches are an important habitat for mammals, insects and plants. Cheshire has only 1,315 ha of coastal and floodplain grazing marsh left along its major rivers. The River Gowy meadows support important endangered birds like Purple Heron, Glossy Ibis, Red-backed Shrike, Wryneck and Snipe and invertebrates such as the Mud Snail and Lesser Silver Water Beetle. Grazing marsh along Frodsham, Helsby and Ince marshes are of county, national and international importance for breeding and migrating birds, designated as functionally linked land to the Mersey estuary. We also have small areas of **fen meadow** and **marshy grassland** also known as rush pasture.





What is a sward? It's an old English word meaning a stretch of turf or an area covered in grass. It comes from words relating to hide or skin.



Calcareous grassland has formed on lime beds formed from salt mining near Northwich (around 27 ha, providing rare and complex plant life like that found on natural limestone outcrops in the Derbyshire Dales. Similar sites with crushed concrete, brick waste and other industrial material left for a generation or two can often provide incredible mosaic habitats where nutrients are at a premium, leading to a mix of scrub, woodland, open ground, very rare grassland and groups of other plants like lichen and mosses. Hard concrete and other aggregates provide an artificial hard layer to stop soil enrichment and prevent these habitats deteriorating with a lack of management of the vegetation (which would normally result in enrichment and succession). This hard landscape often provides temporary pools and bare ground. Together all these things are called **open mosaic habitat.** Many of these sites are at risk of development due to a national policy for encouraging development on brownfield sites.

Lowland acid grassland has only 744ha left with good examples in Cheshire East, at Kettleshulme, Wildboarclough and Rainow. These have magical sounding plant names like Sheep's Fescue, Common Bent, Tormentil, Harebell, Adder's tongue and Moonwort.

Great grasslands: The benefits of species rich grassland are good for nature and farmers alike. A typical three acre field can host nine million flowers on a single summer's day, producing enough nectar to support over 300,000 bees. Species rich grassland legume rich grassland or herbal lays with legume species (also found in species rich grassland) will help to reduce the costs of fertilisers, fix nitrogen, reduce the need for feed supplements and worming treatment, as a more mixed pasture will help to provide better grazing nutrition and minerals. Rotational grazing also promotes animal growth. It drains better, is more resilient to drought and provides a longer grazing season, provides five times the carbon storage than pure grass fields, and results in less weed growth. Of course, there is a cost to swapping out rye and clover for herbal lays. The Future Farming Group should be able to provide case studies and examples of how this 'reversion' back to more species rich grassland can be a win-win for farming businesses and wildlife.

Heathland comes in two types – **wet heathland and dry heathland,** these occur in both uplands and lowlands. Heathland is an important habitat with over 25% dwarf shrub cover found on mineral soils and thin peat. Our wet heathland is very fragmented and degraded, suffering from recreational disturbance or becoming deciduous woodland due to lack of appropriate intervention management, which could lead to natural habitat succession. It is found on the edges of blanket bog, degraded peat or on water-logged soils, with sphagnum mosses and heathers present. **Cheshire's lowland wet heath is its second rarest habitat in the area.** Dry heathland is recognisable by its gorse, heather and bilberry and is an important home to Common Lizards and in some locations uncommon species such as Green Hairstreak butterfly and Adder. Risks it faces include development, fire, climate change and air pollution.

What is citizen science? Research conducted by the public also known as volunteer monitoring or community science. Citizen Science is widely used to study wildlife and help with conservation. We'd like to encourage more people to connect with nature, to learn more about it, and help us keep good records of common and rare species across Cheshire.

Many of Cheshire's traditional hay meadows were ploughed up around the Second World War's 'dig for victory' campaign and then lost during the intensification of farming driven by the Common Agricultural Policy. This encouraged greater mechanisation, larger scale and simpler processes, including extensive use of chemical fertilisers, pesticides and herbicides. When species rich grasslands are lost, we see a significant impact on farmland species, particularly invertebrates at the bottom of the food chain, which also impacts small mammals, amphibians and even reptiles. So, the loss of this habitat has had a severe effect on the numbers of Lapwings, Curlews and Yellow Wagtails and Skylark since the 1930s. **Species rich grassland has been lost faster than any other habitat in the UK.**

Pressures on Grassland and Heathland

- Increased pesticide use.
- Lack of awareness amongst residents about benefits of leaving 'no cut' areas in urban centres.
- Lack of communication between local authorities, contractors and residents relating to new mowing strategies designed to benefit biodiversity.
- Invasive non-native species.
- Soil compaction.
- Soil erosion.
- Inappropriate management techniques.
- Succession.

Nature recovery opportunities for Grassland and Heathland

- Councils have begun to adopt better management practices, sowing wildflower areas in many of our urban areas to provide food for pollinators. More work is needed to ensure new wildflower meadows are sustainable in the long term with appropriate resources, training or volunteer support to ensure they are hay cut, and cuttings removed, to prevent enrichment, resulting in loss of diversity and value over time.
- Restore former landfill sites to grassland and other appropriate habitats, manage by hay cutting or conservation grazing.
- Lapwing, Redshank and Curlew populations will benefit from restoration and management of lowland wet grassland on floodplains.
- Implement seasonal grazing and mowing to maintain the grass cover (sward) and not impact nesting birds.
- Restore former heathland sites for example those at Goostrey Heaths & Morley Green Heath.
- Improve resident education and awareness to carry out nature friendly gardening, improve awareness of the rarity of heathland habitat and reduce the danger of wildfires at publicly accessible heathland sites.
- Restore appropriate ex-industrial sand and sandstone quarries in Cheshire to acid grasslands and lowland heath to allow animals like reptiles to thrive.

Fact: Plantlife research shows that one typical 3 acre field can host 9,000,000 flowers on a single summers day, producing enough nectar to support over 300,000 bees.

Priority	Actions
G1 More, bigger, better and joined up nature friendly and semi-natural grasslands for people and pollinators	• G1.1 Create and enhance a network of species-rich grassland sites. • G1.2 Create more wildflower rich grasslands, encourage rotational grazing practices and reduced fertiliser use. • G1.3 Create new species rich grasslands as part of public and private development. • G1.4 Better manage grasslands to increase species and sward diversity. • G1.5 Promote better grazing practices for different wildlife-rich grassland communities. • G1.6 More grasslands managed by hay cuts or cut-and-collect in urban areas, to ensure quality can be sustained. • G1.7 Promote nature friendly gardening. • G1.8 Support communities to adopt public land to manage as species rich grasslands. • G1.9 Promote nature friendly public space and linear features (i.e. roads, railways, cycle routes, canals). • G1.10 Use Citizen Science to increase identification and recording of species across our diverse grasslands. • G1.11 Promote awareness of the value and role species-rich grasslands can play. • G1.12 Encourage pesticide use to be minimised.
G2 Waxcap grasslands, coastal and floodplain grazing marsh are extended and restored	• G2.1 Enhance waxcap grasslands. • G2.2 Establish appropriate conservation grazing over large areas. • G2.3 Restore and expand the area of coastal and floodplain grazing marsh. • G2.4 Map and safeguard existing known locations of waxcap grasslands. • G2.5 Carry out appropriate management of sites depending on location. • G2.6 Maintain waxcap grassland through appropriate livestock grazing or haymaking but avoid soil damage where possible. • G2.7 Conduct research to locate sites of importance as such mapping long established undisturbed grasslands.
G3 More, bigger, better and joined up Heathland	• G3.1 Restore and create wet heath. • G3.2 Create and enhance a network of heathland sites. • G3.3 Manage and maintain heathland through appropriate conservation grazing practices. • G3.4 Manage and expand diverse heathlands for key species identified in Cheshire. • G3.5 Promote the value of heathland.
G4 Moorland areas supporting species and structurally diverse mosaic of habitats	• G4.1 Enhance and manage moorland through plant reintroductions and translocations. • G4.2 Manage recreation to safeguard our moorlands. • G4.3 Promote awareness of moorland habitats and why they are important. • G4.4 Establish a network of gully blocking and re-profiling areas to raise the water table. • G4.5 Enable heather to complete its natural cycle.

A list of species and species assemblages that benefit from the above actions:

- Birds of prey assemblage
- Grassland fungi assemblage
- Roof nesting birds assemblage
- Reptiles assemblage

Key habitat - Orchards



What are orchards?

According to UKHabs classification, Orchards are an open mosaic habitat, 'that is structurally and ecologically similar to wood pasture and parkland, with open grown trees set in herbaceous vegetation'. They are different to the priority habitat complexes due to the tree species composition, the small scale of individual habitat patches and a wider distribution and greater frequency of the habitat patches[20]. Cheshire's traditional orchards are unique, there are 32 local cultivars of apple within the county and highly localised varieties of pear, damson, bullace (plum type), plum and pear.

Why are orchards important in Cheshire?

Cheshire's orchards were once well-known in the conurbations of Liverpool and Manchester as Cheshire was a key supplier of fresh fruit up until the late 1940's. Majority of the estates and farms in Cheshire had their own orchard, which makes it unsurprising that the two main cities relied on the county for their 5 a day. On top of the orchard areas within farms and estates, many farms have Damson trees in hedges close to farms.

[20] ORCHARD | English meaning - Cambridge Dictionary

What is normally in an orchard?

- Fruit trees (Damson, Bullace, Pear, Apple, Cherry).
- Wildflower meadow (The pollinators and predators in this habitat helps to improve the success of fruit trees).
- Ponds (This was part of the traditional orchard setting).
- Vegetable plots.

What happened?

- Post World War 2, many of the orchards have been removed.
- However, within the historic Vale Royal area of mid-Cheshire, there are still numerous orchards that survive.
- In 2011, PTES (People's Trust for Endangered Species) found that there was only 90.2Ha of orchards left in Cheshire, but from further studies by Cheshire Wildlife Trust, there are 284Ha of Orchards in the county (see Appendix 1).

What is going to be done to improve the figures?

- Through possible private investment into natural capital, the Cheshire and Warrington LNRS team will look to incentivise farmers and landowners to reintroduce this valuable asset into the countryside.
- Environmental Land Management schemes, which will be linked with the LNRS in the future, could help to improve the state of orchards in Cheshire.
- Also, there are community and allotment groups, which have introduced orchard trees, providing another source of food for pollinators and invertebrates and the community itself. This is being made possible through national heritage lottery funding.

"Cheshire was famous for its apples and pears. I'm in my fifties now, and things have really changed. I remember finding old orchards on farms as a child, with really old apple and pear trees."

Cheshire resident.

Species-rich Grassland/Heathland and Farming

The below list demonstrates the benefits for farmers from changing their practices to incorporate the above habitats and how farming benefits these habitats



Benefits for farming from species-rich grassland and heathland

- Keeps soil healthy and carbon rich.
- Protects soil from erosion.
- Provides a range of forage for livestock.
- Is part of the character of a landscape.
- Can be part of our cultural heritage where traditions and skills are maintained, like haymaking[21].
- Provides minerals for livestock, which would not come from normal rye grass pasture[22].
- Just by having a 6 metre strip along the side of a crop field, can provide multiple benefits, such as pest reduction, less diseases, cost reduction of up to £3,000per ha, when compared to the cost of pesticide use.
- In drought conditions, wildflowers have been found to cope with the extreme heat conditions better due to the varying root structure that enables them to tap into groundwater sources.
- Supports biodiversity on the farm.
- Reduces overall chemical dependence.
- Higher yields are achieved as pollination is enhanced.
- Ensures climate resilience on farms.

[21] Maintain species-rich grassland – Farming
[22] Is the rye-grass always greener

Farming benefits to species-rich grassland and heathland

- Without farming interventions, such as haymaking or sympathetic livestock grazing, wildflower meadows tend to move into the next phase of ecosystem succession, which is becoming scrub habitat[23].
- By embracing wildflowers on the borders of their fields, farmers can help to reduce run off into the watercourses, therefore benefitting overall ecosystems[24].
- Farmers or land managers can help to reduce the risk of wildfires and provide a mosaic of structure on heathland by maintaining traditional grazing practices on heathland. However, stocking rates must be set to create or maintain the mosaic of habitats and vegetation structure[25].

[23] 7 Stages of succession
[24] 19 Reasons Farmers Are Using Wildflowers Instead Of Pesticides - And Why You Should Try It
[25] Lowland heathland - Farm Wildlife

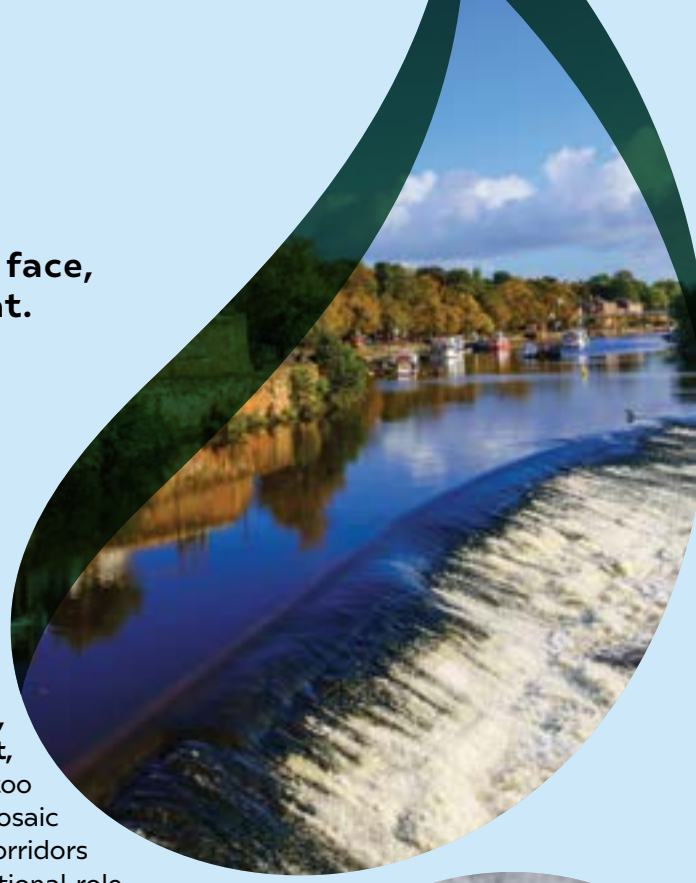
What's a headland? Headlands are the areas at the edges of fields beyond where the main arable crop grows, it's often where the tractor and machinery turns around before going back into the main field to drill or spray it. Headlands are therefore a grassland, where lots of wild-flowers can grow providing homes and food for pollinators that benefit crops and eat pests, reducing the need for fertilisers and pesticides.

Watercourses

This section outlines the current state of our watercourses, the pressures they face, opportunities for nature recovery and the priorities and actions for this habitat.

The state of our watercourses

- **The majority of Cheshire and Warrington rivers and streams are in poor or moderate condition.[26]**
- **3,704ha of mudflats make up 1.62% of the area.**
- **1,112ha of rivers and streams cover less than 0.5% of our area but their catchments cover almost the entire county.**
- **2,086ha coastal saltmarsh makes up under 1% of our area.**
- **River Dee and River Mersey estuaries are nationally and internationally designated with legal protections.**



Cheshire and Warrington's watercourses include rivers, streams, estuaries and canals. **The rivers Mersey, Dane, Weaver, Wheelock, Gowy, Bollin and Dee are important ecological corridors crossing our landscape, home to Brown Trout, Atlantic Salmon and European Eel.** Alongside the numerous streams, they form a vital habitat for wildlife. Riverbanks too steep or wet for farming or timber production are home to woodland, species-rich grassland and form tiny fragments of mosaic with scrub or fen. **Our canals,** built in the industrial revolution are now important homes for wildlife, forming ecological corridors through the urban and rural environment, along with their sustainable use as recreational corridors and multifunctional role. **Some of Cheshire and Warrington's most important places for wildlife are the Mersey and Dee Estuaries with inter-tidal mudflats and saltmarshes,** which are internationally important for migrating birds.

There are many risks to nature in and around Cheshire's rivers, canals and streams with majority in less than "Good" status, exacerbated by the modifications and obstacles in them which make species movement difficult. These water bodies are under pressure from water abstraction, pollution from agricultural, urban and highway run-off, plus occasional sewage discharge overflows. Run-off from agriculture and sewage discharges add unwanted nutrients to the water which cause algal blooms and a high amount of sediment, adversely effecting native species. The linear nature of our network of watercourses helps invasive non-native species like Himalayan Balsam, Japanese Knotweed and Floating Pennywort to spread. Our waterways and river systems, especially the risk to water quality, are also increasingly affected by the impacts of climate change, including extremes of rainfall or dry weather and associated temperature changes, which alter water quality, quantity and habitats. The LNRS will look to address the impacts of these pressures alongside the impacts from climate change, such as flooding and drought, through the priorities and actions set out on page 46.



[26] State of our Rivers Report 2024 | The Rivers Trust

Rivers

The **River Dee** rises in Eryri (Snowdonia) National Park in Wales and joins the English border above Chester, where it forms the boundary between Cheshire and Wales. It is designated as a Water Protection Zone (WPZ) due to its importance as a source of drinking water for three million people. It is a SAC and a SSSI because of a suite of designated features. Furthermore, The River Dee is the only SAC river in Cheshire. It was designated because of the species it supports and its fluvial geomorphology, including the most northern population of Club Tailed Dragonfly in Britain, and the only population in Cheshire.



The **River Dane** has many natural features such as oxbows, sandy cliffs and sand bars. Significant amounts of woodland can be found along the steep banks near Holmes Chapel, including ancient woodland. A tributary of the River Dane, the **River Wheelock** area is a designated Local Wildlife Site due to its reeds, Reed Sweetgrass and Reed Canary grass, which provides an important habitat for the Marsh Harrier. It is an important ecological connectivity corridor to the Sandbach Flashes SSSI.

The **Weaver** is the longest river in the county at over 50 miles rising in the Peckforton Hills and joining the Manchester Ship Canal before entering the Mersey estuary. Between Nantwich and Winsford, it is more semi-natural and meandering but downstream of Winsford, it has been heavily modified with weirs and locks to allow boats to bring in coal and export salt. It even had its own Act of Parliament to permit navigation in 1759.



Also rising in the Peckforton Hills is the **River Gowy** which follows the lowland of Cheshire for 22 miles. It is the most heavily modified river in the area, and have been straightened, dredged and had its banks raised to drain once marshy floodplain for agriculture and to reduce flooding. Yet it still provides important coastal and floodplain grazing marsh habitat in several locations along its route. It plays host to nationally rare insect species at the Gowy Marshes and is an important area for wading birds.

The **Mersey** is fed by many tributaries including the Bollin on the boundary between Cheshire and Greater Manchester. It flows through Warrington, meandering through Paddington Fields on the northern edge of Woolston Eyes, before meeting the estuary at Howley Weir. It then flows heavily channelled through the south of Warrington town centre, out to the west of Warrington, where it naturally meanders before being joined by **Sankey Brook** and the **Gowy** west of Warrington.



Canals

Canals are excellent wildlife and recreational corridors, especially in urban areas. Canals do face challenges, such as non-native invasives e.g. Floating Pennywort, due to its linear nature. In Cheshire and Warrington, the Canal and Rivers Trust and other partners have been hard at work trying to boost biodiversity along these corridors and their adjacent habitats, enabling some of our rarest species to maintain a stronghold e.g. Gadwall, Reed Bunting and Willow Warbler.

Pressures on our Watercourses

- Increased pesticide use.
- Lack of awareness amongst residents about benefits of leaving 'no cut' areas in urban centres.
- Lack of communication between local authorities, contractors and residents relating to new mowing strategies designed to benefit biodiversity.
- Invasive non-native species.
- Soil compaction.
- Soil erosion.
- Inappropriate management techniques.
- Succession.

Nature recovery opportunities for Watercourses

- Adopt nature-based interventions in the landscape to improve water quality e.g. hedgerows, buffer strips and river-side tree planting.
- Develop and build upon the good work of the catchment partnerships to complete further Water Framework Directive (WFD) enhancement actions by speeding up river restoration and wetland creation.
- Eradicate American Mink, to help establish a viable population of Water Voles again.
- Require developers of large-scale developments to follow local planning and Biodiversity Net Gain policies regarding watercourses, by following the mitigation hierarchy. Damage to estuarine habitats through Biodiversity Net Gain policies.





Priorities and actions for Watercourses

What are the priorities and actions to support protection and restoration of a thriving water-based ecosystem?

Priority	Actions
WA1. Healthier and resilient watercourses with more abundant native wildlife	• WA1.1 Create interventions in the landscape to slow the flow, attenuate water, and reduce run-off. • WA1.2 Re-connect rivers and estuaries with their floodplains. • WA1.3 Facilitate identification, prevention, regulation and enforcement of pollution by relevant agencies. • WA1.4 Remove or adapt barriers to allow fish and other river species full access to our rivers and streams. • WA1.5 Enhance natural structures in rivers for biodiversity benefits. • WA1.6 Ensure better natural recharge of water bodies during low rainfall periods. • WA1.7 Create and restore a variety of riverside (riparian) and in-channel habitats.
WA2. The whole river catchment, from source to sea, functions as naturally as possible	• WA2.1 Re-naturalise rivers by re-connecting rivers to their floodplains. • WA2.2 Create a mosaic of habitats in the catchment that holds and slowly releases water over time to refill our waterbodies for nature and people. • WA2.3 Reduce pollution in our watercourses and catchments. • WA2.4 Enhance canals by improving and creating better habitats for nature. • WA2.5 Restore natural processes of erosion, transportation and deposition through the implementation of nature-based solutions.
WA3. Our estuaries are restored for nature and enhanced by local communities	• WA3.1 Enhance and create habitats along our estuaries. • WA3.2 Manage and re-align flood defences to conserve intertidal habitats. • WA3.3 Reduce the impact of public access on feeding and nesting birds.

Species - the list of species and species assemblages that benefit from the above actions:

- White-Clawed Freshwater Crayfish
- Migrating fish assemblage
- Mud Snail
- Lowland raised mire invertebrates
- Exposed riverine sediment invertebrates
- European Water Vole
- Common Club-Tail Dragonfly
- Desmoulin's Whorl Snail

What is diffuse water pollution? Diffuse water pollution comes from lots of smaller, scattered and intermittent sources including run off from transport, agricultural soils and nutrients, pesticides and leaching through soils or underground drainage, which all combined to pollute our watercourses.

Key habitat - Estuaries

The middle of the Mersey Estuary is designated as a Special Protection Area (SPA), Ramsar and SSSI. It is an important part of a major bird migration route. The upper Mersey Estuary, near Warrington consists of intertidal sand and mudflats and saltmarsh. They are classified as functionally linked land to the SPA. Since the industrial revolution, the river has been subject to industries dumping heavy metals , such as zinc lead and arsenic, into the river. But as many of these industries have disappeared, fish and other aquatic life have returned, attracting Cormorant, Heron and Grebe as the river came back to life.

The Dee Estuary is protected by SPA, SAC, SSSI and Ramsar designations and is one of the top ten estuaries in the UK for wintering and passing waterfowl populations. Throughout the year, it provides a key area for internationally designated birds, in with its mudflats support a variety of marine invertebrates.

Our estuaries, especially the Dee's saltmarshes, have been managed well by the RSPB but certain pressures still persist across the Dee and Mersey. These include effects of persistent historic and current pollution, increased storm surges because of climate change and recreational disturbance, along with invasive species like the Chinese Mitten Crab.

What are the pressures impacting estuaries?

Estuaries are unique habitats as it comprises of multiple habitats within one ecosystem. Some of the key pressures include:

- **Poor water quality from agricultural, sewage and litter pollution.**
- **Recreational disturbance (see Appendix 1).**
- **Sea level rise.**
- **Coastal erosion.**
- **Invasive non-native species.**
- **Development pressure.**



Key issues - Water availability

Cheshire and Warrington's landscape will be undergoing vast amounts of pressure on its water resources in the near future:

- Twice the amount of housing allocation- All boroughs in Cheshire and Warrington.
- 10x higher abstraction from water-reliant industries such as salt, manufacturing, renewable energy, food manufacturing and agriculture.
- The River Dee supplies three million people on both sides of the border in England and Wales.
- The Weaver-Gowy catchment is an unusual catchment in the North-West as it is predominantly abstracted for non-public water supply, meaning that it is under more pressure than other rivers in the region.

The majority of Cheshire's water bodies are falling below good ecological and chemical condition, with only a few reaching "Good" status.

How does ecological and chemical condition impact water abstraction?

The main rivers in Cheshire and Warrington, which face possible water scarcity in the near future include the Weaver, Gowy and Dane. The rest of the catchments are following closely behind with the upper Mersey being a source of concern. All of these rivers are classified as moderate, poor or bad condition, for both ecological and chemical condition. By not having ecological and chemical condition of watercourses at "Excellent" or "Good" status, it can cause problems to businesses through:

- Businesses with abstraction licences, with higher volumes of water, may have their volumes reduced.
- There will need to be a re-distribution of abstraction among existing sources within the catchment.
- The Environment Agency will possibly change licences under Section 51/52 of the Water Resources Act 1991, as they are committed by law to ensure that designated sites are not impacted and they are committed to address serious damage, actual and at risk water bodies under the abstraction plan.

What is the likelihood of water scarcity and what could happen to abstraction licences in Weaver, Gowy and Dane?

- In Water Resources West Water means Business report[27], it is stated that declining low flows are becoming a stark reality for the Dane, Gowy and tributaries of the Weaver. Low flows that abstractors could expect to see, specifically in the River Dane, during dry summers for the next 30 years, could be 9% lower than the previous 30 years. We are experiencing water scarcity in both the Gowy and Weaver too, and low flow alarms are being recorded. In August 2025, rainfall was only 33.7%. For abstractors, the EA have set up Hand-Off Flow (HOF) conditions in their licences, meaning that if river flows fall below the HOF threshold, abstraction is restricted. If investment is not put into water security through nature-based solutions and river restoration, this could become more frequent as climate change takes hold.

What is being done to prevent this?

The solutions proposed to mitigate the potential impact of low water availability in the next 10 years are as follows:

- The Weaver-Gowy private investment scheme, which is a natural capital scheme, will be directed by the combined authority, providing farmers and landowners with funding to provide nature-based interventions in the landscape to slow the flow, reduce flood risk, store carbon and improve biodiversity on their land. This scheme will be paid for by a range of stakeholders with an interest in water availability, carbon sequestration, nature restoration, water quality and high quality farm produce.

[27] WRW Water Means Business Report



Farming and Water

The below list demonstrates the benefits for farmers from changing their practices to incorporate these habitats and how farming benefits these habitats:

Water benefits to farming:

- Lower water usage can help to reduce costs for farmers, making their operations more economically sustainable.
- Improved water management can help to improve soil health by preventing soil erosion and maintain soil structure, promoting better crop growth.
- Holistic water management by capturing rainwater through techniques like swales and ponds, which allow soil infiltration and aquifer recharge, can protect farmers in future extreme climate conditions, such as droughts and flooding, thus making the business sustainable[29].
- Agriculture, water and maintenance of natural environment has been previously seen as separate issues, but by creating a holistic catchment management approach, centred around all 3 together, we can help to resolve many problems faced by each one synonymously[30].

Farming benefit to water:

- In areas where irrigation is used,farmers can be efficient by optimising irrigation piping placement to ensure water is evenly distributed across crop fields and by integrating large trees within crop areas to minimise evaporation and reduce water needs[31].
- Many farming techniques can help with water conservation that can help improve water quality and boost biodiversity:

1. Drip irrigation.
2. Capturing and storing water (rainwater harvesting).
3. Irrigation scheduling.
4. Drought resistant crops.
5. Dry farming: Method of crop production that does not rely on irrigation during dry seasons but instead utilises soil moisture stored from previous rains[32].

Urban areas and water

Unlike other themes in the LNRS, watercourses are a key and permanent feature of our urban areas as majority of the world's urban centres are centred around watercourses. The amount of water used by an average person in the UK at present is now 143 litres per day, whereas in the 1960's, it was 85 litres per day[33]. With urban areas expected to increase in the UK, the pressures on making our water use and management system sustainable and efficient. Flooding and water quality problems will be the main topic of contention over the next few decades and some of the key solutions are discussed in this document e.g. Sustainable Urban Drainage Systems (SUDS).



[28] Water Conservation in Natural Farming | Water-Smart Farming
[29] Nurturing Nature: The Crucial Role of Water in Regenerative Farming | Eight Oaks Farm Distillery
[30] Agricultures-impacts-water-quality.pdf
[31] Water Use in Agriculture Key Facts and Figures
[32] Agricultural Techniques for water conservation
[33] Future of the subsurface: Urban water management in the UK