Lancashire County Council

Lancashire Local Nature Recovery Strategy

Consultation Draft

Contents

Foreword

We are lucky in Lancashire to have a diverse and spectacular environment and landscape, stretching from the uplands to the coast, including areas designated for their national and international importance for biodiversity. However, reflecting global and national trends, Lancashire's biodiversity has been declining. We want to halt this decline and, in time, reverse biodiversity loss. We want to enhance and protect our best nature rich sites, create new sites where there is opportunity to do so, and provide better access to green space that everyone can enjoy.

This is the first nature recovery strategy for Lancashire. It recognises the challenges we face in reversing this decline, but also the great opportunities we have for nature recovery and the benefits action can have, not only for our important landscapes, habitats and species, but for the people of Lancashire. Nature can provide many benefits, including greater public enjoyment and health benefits, carbon capture, water and air quality improvements and flood management. A more attractive place to work, visit and do business also encourages local economic growth.

I would like to thank everyone that has provided invaluable input and supported the County Council in preparing this Strategy for Lancashire, and I look forward to continuing this collaboration in delivering the priorities and opportunities we have collectively identified. By working together, we can build on the good track record we have in Lancashire on improving our environment and use this strategy as a foundation for further action.

Cllr Shaun Turner
Cabinet Member for Environment & Climate

Acknowledgements

This Strategy was written in collaboration with organisations and partnerships from across Lancashire, including:

Supporting Authorities
- Blackburn with Darwen Borough Council
- Blackpool Council
- Burnley Borough Council
- Chorley Council
- Fylde Council
- Hyndburn Borough Council
- Lancaster City Council
- Pendle Borough Council
- Preston City Council
- Ribble Valley Borough Council
- Rossendale Borough Council
- South Ribble Borough Council
- West Lancashire Borough Council
- Wyre Council
- Yorkshire Dales National Park Authority
- Natural England

Consenting Authorities:
- Environment Agency
- Forestry Commission

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- Graeme Skelcher Ecology
- Greater Manchester & Lancashire Wildlife Trust
- Lancashire Peat Partnership
- Lancaster University
- Marine Management Organisation
- Ribble Rivers Trust
- Suzanne Perry
- Wyre Rivers Trust

and,
- The local environmental records centre – LERN (Lancashire Environment Record Network).

Lancashire County Councill would like to thank all local authorities, organisations and individuals who have provided support, information, feedback, and input into the preparation of the strategy. A full list of those involved is included in the supporting *Evidence and Technical Information*[1] document.

[1] *Document to follow.*

Executive Summary

Local Nature Recovery Strategies (LNRS) were introduced by the Environment Act 2021 to drive nature's recovery and provide wider environmental improvements. Their main purpose is to identify locations to create or improve habitat most likely to provide the greatest benefit for nature and the wider environment. The LNRS is a tool to identify opportunities for nature recovery, which can be used to target action and funding, it is not intended to be a delivery plan.

Lancashire County Council has been appointed as the responsible authority for the preparation of the Lancashire LNRS, which includes Blackburn with Darwen and Blackpool. An inclusive and collaborative approach has been taken to co-produce the Strategy with a broad range of stakeholders.

The Strategy provides a collective vision for nature recovery to work together to protect, enhance and connect our rich biodiversity and natural environment to be enjoyed by more Lancashire residents and visitors.

It aims to:

- Halt local biodiversity loss and support thriving species populations, which can move more freely through the landscape.
- Conserve natural resources and build resilience to climate change.
- Provide wider benefits for the people of Lancashire including increased and equitable access to green and blue space.
- Reinvigorate existing partnerships and establish new ones to deliver nature recovery in the places and spaces that need it most on a landscape-scale.

The Strategy is made up of two main elements, a Statement of Biodiversity Priorities, and a Local Habitat Map.

The **Statement of Biodiversity Priorities,** includes a description of Lancashire and its biodiversity in terms of geomorphology, important habitats, and species, drawing together existing information on the state of nature and the environment in Lancashire. Lancashire's important habitats span the following broad habitat types:

- Aquatic & wetlands
- Coastal & estuarine
- Grasslands (including agricultural land)
- Lowland & upland peatland
- Rocky habitats
- Urban & infrastructure networks
- Wooded habitats & trees

The existing and likely future pressures faced by each of these habitats have been identified, together with possible opportunities for nature recovery to overcome these pressures. These pressures and opportunities have informed the priorities (the long-term end results that the strategy is seeking to achieve) and the potential measures, or actions, that can be taken to contribute to achieving each agreed priority and deliver wider benefits such as climate resilience, flood risk management, more equitable access to green and blue space that is safe and sustainable, and improved health outcomes.

Measures carried out on each specific habitat will also benefit a range of Lancashire's most important species. These have been identified alongside the habitat measures.

24 species have also been identified as 'target species', these are some of Lancashire's most scarce, declining or most important species requiring bespoke actions beyond the more general habitat creation and enhancement measures. They are:

Mammals:

- Red squirrel

Fish:

- Atlantic salmon
- European smelt

Birds:

- Hen harrier
- Black-tailed godwit
- Black-headed gull
- Lesser black-backed gull

Plants:

- Yellow Star-of-Bethlehem
- Northern bedstraw
- Wood Crane's-bill
- Melancholy Thistle
- Lady's slipper orchid
- Petty whin
- Dwarf cornel

Invertebrates:

- Duke of Burgundy butterfly
- High brown fritillary butterfly
- Pearl-bordered fritillary butterfly
- Large heath butterfly
- Belted beauty moth
- Least minor moth
- Wall mason bee
- Tormentil Mining-bee
- Bilberry bumblebee
- Red wood ant

Additionally, three 'universal' priorities that relate to recurring pressures across all habitats have been identified as:

- Minimising nutrient enrichment, sediment deposition and pollution.
- Biosecurity (measures aimed at preventing the introduction or spread of harmful organisms) and the control of invasive species.
- Minimising recreational impacts.

The measures that could be taken to address these have also been identified. These are unmapped measures i.e., potential actions that could be used widely across the whole strategy area. Mapped measures are those opportunities which can be mapped to a particular area on the **Local Habitat Map** (see below).

Supporting actions that are not specifically linked to delivering actions 'on the ground' but are equally important in achieving the wider goals of nature recovery have been identified as:

- Data and evidence to inform nature recovery actions.

- Engagement & collaboration.
- Policies that support nature recovery.
- Finance for nature recovery.

The **Local Habitat Map** identifies the existing Areas of Particular Importance for Biodiversity, this includes internationally, nationally, and locally designated sites, as well as Lancashire's statutory irreplaceable habitats. It also identifies the 'Areas that Could Become of Particular Importance for Biodiversity'.

These are the locations where creation or restoration of habitat could deliver the greatest gains in terms of nature's recovery, wider benefits for the environment and people, and the most investible opportunities for private finance in nature's recovery. The map shows how existing habitats (our Areas of Particular Importance for Biodiversity) can be connected to create ecology networks enabling species to move between them and help nature thrive.

This LNRS will be the guiding strategy for nature recovery across Lancashire. It can be used by everyone from local authorities, landowners, environmental organisations, businesses, community groups and residents to target action and inform future policies and plans.

1. Introduction

Lancashire is a diverse county with a rich history and culture. The contrasting geography of the area, along with the creativity and friendliness of its people, combines to make Lancashire a great place to live, learn and work. Lancashire is 'polycentric' with a strong network of urban centres set amongst areas of outstanding natural beauty.

There is great natural physical diversity from coast and estuary landscapes to uplands with extensive areas of open countryside and moorland. There is also a great variety in the focus and intensity of the management of land, from areas carefully managed for nature conservation aims, dense urban, commercial, and industrial landscapes.

"Despite being one of the most populous and urbanised shire counties in the UK, much of Lancashire is still predominantly rural. The coastal plain formerly had extensive raised mires (mosses), which have been converted into highly productive agricultural land, and uncultivated mossland only survives as remnants. Some of the vast numbers of wildfowl and wading birds, which feed and roost on the extensive estuaries also use these fields for feeding. Nationally important areas of coastal limestone pavement occur in the north of the county. Semi-natural grasslands are now very rare on the plain but, together with other traditional lowland farmscape elements, are important for farmland birds and plant species which are declining nationally. High field pond densities are locally very characteristic. In the east are two major semi-natural upland areas; of which the Forest of Bowland and outlying Pendle Hill is the most northerly. Heather moorland and blanket bog here are of international importance for breeding birds. The herb-rich hay meadows and clough woodlands are nationally important habitats, but semi-natural grasslands including marshy grasslands which support breeding waders continue to be lost to agricultural improvements. A similar range of habitats occurs in the West and South Pennines, shared with adjacent counties of Greater Manchester and West Yorkshire, and upland reservoirs here add habitat diversity. With the notable exception of the Arnside and Silverdale National Landscape, Lancashire's woodland cover is low[i]."

Wild about the North West: A biodiversity audit of North West England

The landscape and environment in Lancashire today are the result of millennia of complex interactions between geology, topography, climate, and human activity. It is an ever-changing picture which is not (and cannot) be either static or unmanaged.

Lancashire residents recognise the importance of nature for the natural beauty and cultural heritage it provides and for the benefits it can bring for both physical and mental wellbeing, with many visiting a local park or nature reserve on a weekly basis. However, many are concerned about the state of nature and issues such as the loss of green space and pollution of rivers.

There is limited data on the state of Lancashire's nature, but from what is known and using the knowledge of local experts we know Lancashire is experiencing a decline in biodiversity, with key bird populations declining and bees experiencing a dramatic decline, and woodland cover in Lancashire is below the NorthWest and national

average. Lancashire's habitats and species are experiencing pressure from land-use changes, recreation, pollution, and the changing climate. However, there are great opportunities for nature recovery, building on work already being delivered by many organisations across Lancashire. For example, over £3.7m of peatland restoration projects have delivered across Bowland since January 2022, over £1m has been secured for tree planting schemes being delivered by the Treescapes project and the strong Catchment Partnerships across Lancashire are delivering woodland creation and natural flood management schemes, being successful in securing external finance for these schemes. There are many local community engagement and volunteer groups across the county, enabling people to learn new skills and improve health and wellbeing by spending time in nature as well as making improvements to their local green space and making them more accessible for everyone.

The vision for nature recovery

This Local Nature Recovery Strategy sets out a long-term vision to work together to protect, enhance and connect our rich biodiversity and natural environment to be enjoyed by more Lancashire residents and visitors.

It aims to:

- Halt local biodiversity loss and support thriving species populations which can move more freely through the landscape.
- Conserve natural resources and build resilience to climate change.
- Provide wider benefits for the people of Lancashire including increased and equitable access to green and blue space.
- Reinvigorate existing partnerships and establish new ones to deliver nature recovery in the places and spaces that need it most on a landscape-scale.

This will be the guiding strategy for nature recovery across Lancashire. It can be used by everyone from local authorities, landowners, environmental organisations, businesses, community groups and residents to target action and inform future policies and plans.

Why we need a Local Nature Recovery Strategy

England is widely considered to be one of the most nature-depleted countries in the world following historic and ongoing declines, resulting in the government making legally binding commitments to end these declines and for nature to recover.[ii] The 25-year Environment Plan[iii] set out 10 long-term goals for action to help the natural world regain and retain good health. It introduced the concept of creating a "nature recovery network" to complement and connect our best wildlife sites and provide opportunities for species conservation and the reintroduction of native species. Such a network will deliver on the recommendations from Professor Sir John Lawton[iv] that recovering wildlife will require more habitat; in better condition; in bigger patches that are more closely connected.

The Environment Act[v] 2021 required the setting of a suite of legally binding targets, including a target to halt the decline in species abundance. This target is set out in the Environmental Improvement Plan 2023[vi], the first revision of the 25 Year Environment Plan, along with additional commitments related to nature. A list of relevant national targets and objectives agreed in the Plan is outlined at Appendix One. The Environment Act also introduced the requirement to prepare nature recovery strategies for areas in England to identify opportunities to create and restore habitat to help deliver these commitments. There are 48 local nature recovery strategies covering the whole of England with no gaps or overlaps. Together they will underpin the Nature Recovery Network.

The benefits of nature

Nature plays a vital role in supporting our wellbeing, society, and economy. It provides the air we breathe, the food we eat, the water we drink, and many of the resources crucial for our survival and quality of life. Nature also captures and stores carbon and has a vital role to play in helping us adapt to the impacts of climate change.[vii]

Environmental benefits

Habitats and the natural environment are responsible for dynamic systems and natural processes such as soil formation, the water cycle, the carbon cycle, supporting food production and climate regulation, which are all fundamental to sustaining life. These are functions that cannot be substituted with other solutions such as technology. They are irreplaceable.

A healthy water supply depends on natural habitats and processes for filtration, regulation of water flow and reducing sediment and pollution. Habitat creation and enhancement can also minimise erosion and support sustainable management of river catchments with increased resilience to floods and drought. Water supply, healthy soils, pollinators and the control of pest and dieses are fundamental for food production.

Habitats can store huge amounts of carbon in soil, sediment, and vegetation, helping to reduce carbon emissions, conversely degradation results in the release of emissions contributing to climate change. Through regulating water flows and temperature, providing flood protection, and reducing erosion the natural environment is important in helping to build resilience to the impacts of a changing climate.

Benefits to the economy
A healthy natural environment results in a more attractive area to live, work, visit and enjoy, which encourages local economic growth. The economy is reliant on natural resources for multiple purposes such as food production, raw materials for construction and industry, a healthy water supply and flood alleviation. This is known as 'natural capital' and is important to local and national economies, such as manufacturing, energy, farming, fishing, forestry, leisure, and tourism, all of which depend on local employment and skills and provide potential for the creation of new jobs in low carbon industries, land management and natural science.

Health and wellbeing benefits
Drinkable water, clean air, nutritious food, and a safe environment are all critical for physical and mental health. Risks to public health from air pollution can be reduced through tree planting and other habitat creation. Targeted planting can have further benefits on air quality through the formation of green barriers, and this can also help to control temperatures in urban areas. Experiences of nature-rich and quiet open spaces in urban and rural environments also have great benefits for both physical and mental health and wellbeing.

Social, cultural, and educational benefits
The natural environment has intrinsic value and importance to many people. Nature recovery action can enable active engagement with the natural world, whilst providing social and educational opportunities and benefits to wellbeing, though events, outdoor learning, and volunteer opportunities.

The State of Nature

Globally, it is estimated that over 1 million species are threatened with extinction and that the populations of many vertebrate animals have declined by at least two-thirds since 1970[viii]. The UK has experienced a significant loss of biodiversity, with declines over the last 50 years following on from major changes to the UK's nature over previous centuries. As a result, the UK is now one of the most nature-depleted countries[ix], the State of Nature Report in England highlights:

- Intensive management of agricultural land since World War II has led to significant loss and fragmentation of semi-natural habitats.
- The abundance of terrestrial and freshwater species has on average fallen by 32% across England since 1970.
- The distributions of 4,815 invertebrate species on average decreased by 18% since 1970.
- Since 1970, the distributions of 64% of flowering plant species and 68% of bryophytes (mosses and liverworts) have decreased.
- Of 8,840 species that have been assessed using IUCN Regional Red List criteria[x], 13% have been classified as threatened with extinction from Great Britain.

There is little data available on biodiversity trends for Lancashire, and the absence of sufficient data prevents robust statistical analysis. Survey and research targeted through the LNRS will therefore be essential to aid understanding and ultimately the recovery of Lancashire's habitats and species. The information available indicates:

- Total tree and woodland cover is approximately 10.34% (2022 National Forest Inventory figures), this is below the North West average for woodland cover (12.57%) and the England average (14.87%).

- Coastal squeeze of inter-tidal habitats is increasing pressure on biodiversity in the important coastal habitats of Lancashire.

- Bird populations can be used as an indicator of the wider state of nature. Mirroring national trends there have been declines in Lancashire's bird species. The data between 1999 and 2011 shows:
    - Important woodland species pied flycatcher and willow tit declining by 10% and 50% respectively with willow tit further declining by 14% between 2011 and 2020.
    - Three key moorland species are in serious decline with ring ouzel declining by 29%, whinchat by 55% and twite by 85% (possibly functionally extinct).
    - Among aquatic and wetland species, breeding curlew, lapwing and snipe are all declining (curlew unknown, lapwing by 7% and snipe by 23%).
    - Among Coastal & Estuarine species, redshank has declined by 22% and ringed plover by 28%.
    - Of grassland and farmland birds, corn crake is functionally extinct, but could be considered for reintroduction in future strategies. Grey partridge, yellow wagtail and corn bunting are all in decline (by 37%, 37% and 18% respectively).
    - Among urban species, greenfinch appear to remain stable after recent declines, however others are sadly in decline with starling declining by 1% (after a much larger decline), swallow by 5%, house martins by 20% and swifts by 35%.
- Key invertebrate groups also show a pattern of decline in most species. Bees have experienced the most dramatic decline.

Causes of biodiversity decline

Pressures on habitats and biodiversity have been linked to increased development pressure for housing and commercial purposes, changing human activity, agriculture, and increased consumption, along with reduced resource efficiency[xi].

Many habitats are becoming fragmented or lost because of changes in land use, causing an overall loss in biodiversity. Lack of management is also a threat to remaining habitat fragments, which may be too small to be managed effectively, particularly species-rich grasslands and wetlands[xii]. The evidence from the last 50 years shows that on land and in freshwater, significant and ongoing changes in the way we manage our land for agriculture, and the effects of climate change, are having the biggest impacts on our wildlife[xiii].

The government's Environmental Improvement Plan acknowledges the significance of climate change as a pressure on nature. It recognises that we will see more intense and changeable weather and coastal erosion; an increase in risks from pests, pathogens, and invasive species; and knock-on impacts to our ecosystems, habitats, species and agricultural, forestry and marine productivity.

Nature Recovery

Ecological networks have become widely recognised as an effective way to conserve wildlife in environments that have become fragmented by human activities. An ecological network comprises a suite of high-quality sites which collectively contain the diversity and area of habitats needed to support species and which have ecological connections between them enabling species to move between them. The LNRS identifies where the greatest connectivity between similar biodiverse habitats across the landscape can be achieved.

What is a Local Nature Recovery Strategy?

A local nature recovery strategy (LNRS) is a locally led collaborative strategy identifying priorities agreed between a wide group of stakeholders to drive nature's recovery and in doing so provide wider environmental and co-benefits, such as public access to nature, natural flood-risk management, and resilience to climate change.

The main purpose of the LNRS is to identify locations to create or improve habitat most likely to provide the greatest benefit for nature and the wider environment. These mapped opportunity areas are intended to guide where the public, private and voluntary sectors can focus their nature recovery efforts to enable the best, most joined-up actions to help improve connectivity and resilience for habitats and species across the strategy area.

The LNRS is a tool to identify opportunities for nature recovery, which can be used to target action and funding. It is not intended to be a delivery plan. Landowners of the areas mapped are not obliged to deliver the opportunities identified. They are simply opportunities within areas that could deliver the greatest gains in terms of nature's recovery, wider benefits for the environment and people, and the most investible opportunities for private finance in nature's recovery.

The LNRS does not add levels of designation to land and therefore does not assign any level of protection or restrictions on land use. It also does not give permission to create habitat without necessary consultation and consents or without following appropriate existing statutory requirements, decision-making frameworks, and pre-existing procedures.

What is in the Local Nature Recovery Strategy?

The Nature Recovery Strategy is made up of two main elements, a statement of biodiversity priorities and a local habitat map, that come together to set out how and where action can be taken for nature recovery.

The statement of biodiversity priorities draws on existing information on the state of nature and the environment to describe Lancashire and its biodiversity and identify existing areas of particular importance, including internationally designated sites and those designated locally as important for Lancashire.

The existing and likely future pressures on nature such as pollution, climate change, development and other land-use change, and the possible opportunities for nature recovery and enhancement to overcome those pressures are identified. These pressures and opportunities have informed the development of the Strategy priorities and measures for both habitats and species.

Priorities: These are the long-term end results that the strategy is seeking to achieve in terms of habitats and species. The priorities for Lancashire reflect local circumstances, including the most important issues to local people and organisations.

Potential Measures: These are the practical actions that could contribute to achieving each agreed priority and can deliver wider gains for the environment and people of Lancashire.

The Local Habitat Map provides a clear visual way to see the areas which already are, and those that could become, of particular importance for biodiversity. Areas that could become of particular importance for biodiversity have been targeted to join up or expand existing areas of particular importance for biodiversity. This is intended to establish larger, more resilient networks of high-quality habitat across the landscape, and show how spaces can be better connected across Lancashire.

How the strategy was developed

As the designated responsible authority, Lancashire County Council has led on the production of this LNRS. However, an inclusive and collaborative approach has been taken to co-produce the Strategy with a broad range of stakeholders. This includes all local authorities in the strategy area, public bodies (Environment Agency, Forestry Commission and Natural England), habitat and species experts from local environmental organisations and Lancaster University. Land managers (farmers, local authorities, education providers, the NHS, and utilities companies) and members of the public have shared their knowledge, experience and understanding of where nature recovery should be focused, and this information has fed into the production of the LNRS. The Strategy has been developed following the statutory and non-statutory guidance provided by DEFRA and Natural England, taking an evidence-based and locally led approach incorporating data, local expertise, and local opinion.

In preparing this strategy we have:

- Established a Steering Group to provide oversight and direction.
- Delivered a stakeholder mapping workshop to identify key organisations to be involved at various stages of the process.
- Established a mapping, data, and evidence group to develop ecological network models and lead on data management.
- Carried out an online public engagement survey, including an interactive publicly accessible online map, to gather opinion and opportunities for nature recovery across the strategy area.
- Appointed specialist facilitators to engage with landowners, land managers, farmers, and representatives from the sector through workshops, webinars, drop-ins at auction marts and attending existing farmer groups.
- Supported by Natural England held four 'People and Nature' workshops to engage with the Voluntary Community Faith and Social Enterprise (VCFSE) sector.
- Reviewed over 190 national, regional, and local strategic plans, and documents to identify common pressures, themes, priorities, and measures.
- Commissioned local environmental organisations to lead on each of the habitat groups and facilitate input from key interested organisations. They helped to describe the strategy area, its biodiversity and identify the pressures and opportunities for recovery in relation to their habitat to inform the development of priorities and measures.
- Engaged species experts to identify Lancashire's most scarce, declining or most important species requiring bespoke actions beyond the more general habitat creation and enhancement measures.

A timeline of the key milestones is provided in Figure 1. Further details on the LNRS development process, and sources of information and data used to inform the strategy are included in the supplementary *Evidence and Technical Information* document[2].

[2] *Document to follow.*

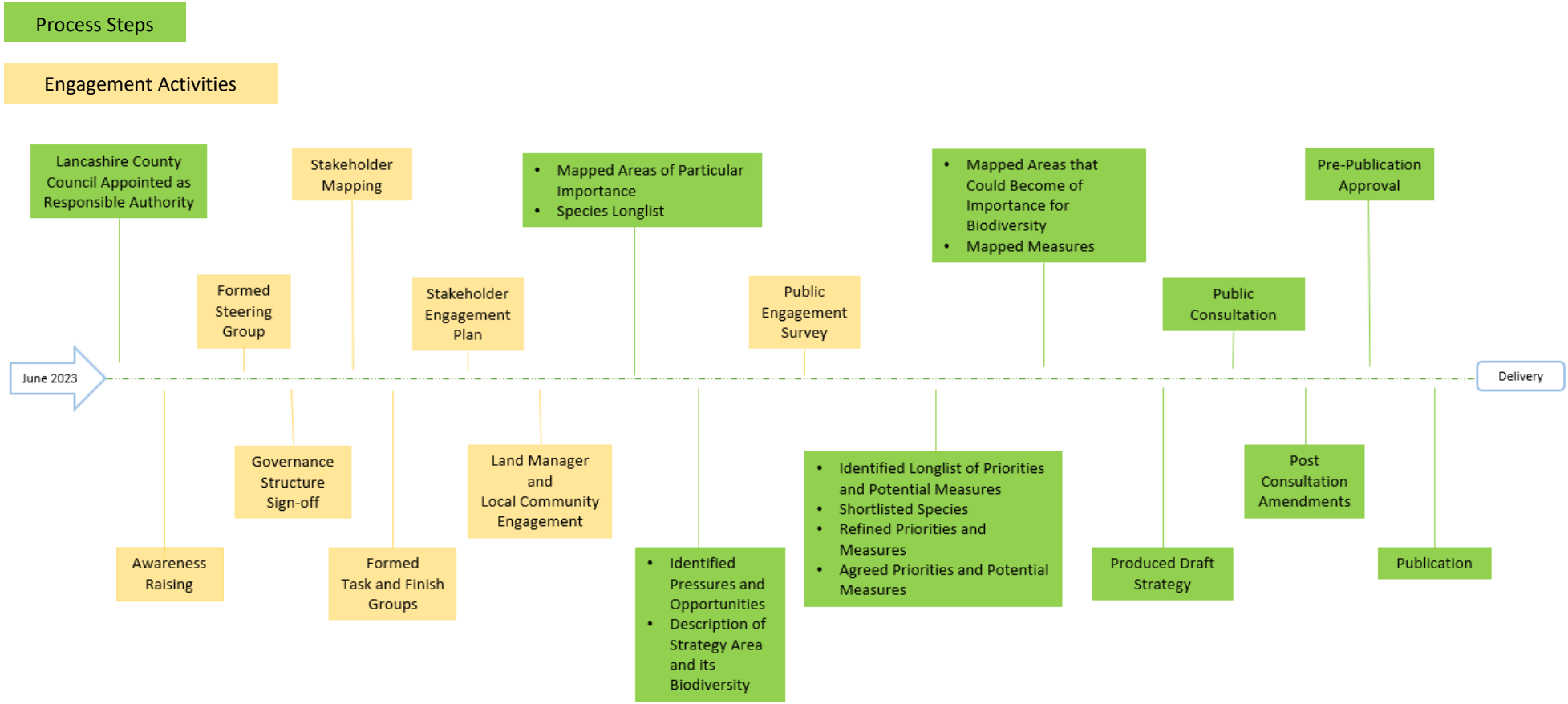

Figure 1: LNRS Development Timeline and key milestones

Who the LNRS is for and how to use it

The LNRS is for the nature and people of Lancashire. Whether you are a land manager, developer, planner, environmental organisation, member of a community group or resident, everyone can act for nature.

The LNRS is not a delivery plan but can be used to understand how and where action could be taken to help nature recover. It identifies the opportunities for nature recovery action in locations likely to provide the greatest benefit. It does not impose requirements for land use change, establish statutory designations or place restrictions on land use. All projects delivered to meet LNRS priorities must still comply with relevant legislation, policy, and best practice standards, a summary of what to consider is summarised in Appendix Two.

The Strategy can be used to:

Inform and evidence:

- Policies, plans, and land-use change decisions.
- Land management options, advice, and decisions.
- Appropriate nature recovery opportunities locally and on a landscape scale.
- Understanding of the state of Lancashire's nature and where there is a need for improved information and data.

Target action:

- in the places where it will have the greatest benefit to species and habitats.
- to take a strategic approach to species recovery, including target species prioritised for bespoke conservation measures.

Deliver multiple benefits:

- Identifies where actions can have multiple benefits, such as reduced flood risk, climate resilience, equitable access to nature, and improved health outcomes.
- Encourage greater involvement in nature recovery by everyone and promote a collaborative approach.

Direct funding & investment:

- Helps to target and prioritise nature recovery funding and investment.
- Identifies strategically significant locations for delivery of biodiversity net gain.
- Provides evidence and support for funding applications.

Monitor:

- Provides a strategic framework for monitoring biodiversity change.

Different organisations and groups of people will be able to use it in different ways:

Local authorities and public bodies: The Environment Act sets out that local planning authorities and decision-makers must take account of the LNRS in their policies, including those in their local plans. The LNRS is designed to support development plans and provide closer alignment with the planning system and

environmental outcomes. The Natural Environment & Rural Communities (NERC) Act 2006 (as amended)[xiv] requires public authorities to consider what they can do to conserve and enhance biodiversity. The LNRS can support with informing policy, targeting action and provide assurance that biodiversity improvements and nature recovery projects are being targeted in the best locations to achieve the greatest benefit.

Land managers and landowners: Landowners and land managers are integral to supporting nature and achieving better outcomes for biodiversity. The Local Habitat Map shows where opportunities to do something significant for nature recovery are located and what the likely best action to take would be. Management for nature recovery may provide opportunities for funding, such as through agri-environmental schemes or Biodiversity Net Gain. The Local Habitat Map also highlights where there are nearby opportunities and where potential landowner clusters could be formed to collaborate on nature recovery initiatives.

Developers: The local habitat map identifies opportunities for developers to deliver mandatory biodiversity net gain (BNG). Development projects that create, enhance, or recover habitat in locations which are mapped in a local nature recovery strategy will get a higher biodiversity value in the biodiversity metric than they would in other locations.

Environmental organisations: Local environmental organisations are already delivering nature recovery projects across Lancashire and will be instrumental in achieving the strategy priorities. The LNRS provides an opportunity to align approaches and work towards an agreed set of shared goals. The Local Habitat Map shows where opportunities to do something significant for nature recovery are located and will help to identify where efforts and funding should be targeted.

Businesses: All businesses and organisations can take action to embed nature-friendly practices into their operations and corporate plans and invest in nature's recovery. The Local Habitat Map can help businesses to understand how their activities fit within the local environment and could identify opportunities for collaboration, staff volunteering schemes or opportunities to support a local community group deliver nature recovery initiatives.

Community groups: There are many active community groups tending local sites across Lancashire. The LNRS can help to identify where the best opportunities for nature recovery are, provide direction on what action to take, and support funding applications. It will also help groups understand how local project support wider nature recovery.

Residents: Residents can use the LNRS to find out what they can do to support nature recovery. Private gardens, yards and balconies and communal spaces are particularly important for habitat connectivity, helping species move between areas.

What matters to you?

In March 2024 an online public engagement survey sought residents' views on nature recovery to better understand what is important to our residents with regards to the natural environment, concerns for nature and aspirations for nature recovery. 963 people responded. You told us:

- The main reasons nature is important is for natural beauty/cultural heritage and improvement of mental and physical health.
- Almost half of respondents are concerned about the state of nature in Lancashire. 55% believe that nature in Lancashire is in at least a 'good' state.
- Hedgehogs, Bees and Red Squirrels were the top species identified for nature recovery action.
- Almost 50% of respondents spend time in nature in their own garden daily, 21.4% visit their local park at least once a week with 17.5% visiting a nature reserve / conservation area weekly. However, only 30% strongly agreed that nature is of a high enough standard to want to spend time in.
- Barriers to accessing nature include safety, poor public transport, loss of nature to development, landowner restrictions and bad weather.
- The most important environmental issue of concern was, *'building on green and natural spaces'*, closely followed by *'pollution of rivers, lakes and groundwater'*.

Less than 5% of respondents to the survey were under 30 years old. To further engage with this age group, students at Myerscough College and at the Lancashire Youth Climate Conference 2024 at Blackpool Sixth Form were asked what issues were important to them. They highlighted:

- How nature connects people to places
- Conserving green spaces and nature reserves
- Clean beaches
- Good water quality on the coast

Information gathered from the public engagement survey formed part of the data used to inform the shortlisting of priorities and measures.

Landowners and managers

Independent facilitators experienced in working with farmers and land managers organised several workshops, webinars and drop in events to raise awareness of the LNRS and seek views and feedback that would help shape the priorities for Lancashire.

Participants from this sector displayed a clear pride in, and knowledge of, the wildlife on their land. This results in many taking action to support nature and biodiversity on their land and outside of any support or funding structures, and many examples of this were given. Key themes and opportunities that came out of this engagement were:

- The need for one-to-one advice
- The need for a single, trusted platform for information
- The need for education, training, and upskilling
- More and accessible baseline data
- The LNRS providing an opportunity for joined up thinking.

Some of the barriers and opportunities for nature friendly land management practices were identified as human impacts, accessibility of grants and agri-environment schemes, the pressures on farmers and land managers and in particular education; and the importance of educating children at an early age. The insight and feedback gathered[xv] particularly around the enablers and barriers to nature friendly farming and land management practices has informed the potential measures and supporting activities.

Voluntary, Community, Faith, and Social Enterprise (VCFSE) Sector

Four 'People and Nature workshops targeted at those working in health and education, the VCFSE sector and local community groups working on projects to achieve multiple outcomes for people and nature. Areas of good practice and opportunities for nature as well as what could be done better across was considered. They identified:

- The creation of high tide roosts for birds and the need for wetland restoration.
- The creation of wildflower meadows in parks and cemeteries and along road verges.
- The control and removal of invasive species.
- Water quality improvements.
- Species recovery.
- Supporting tree planting and peatland restoration projects.
- Numerous urban based projects including 'Green Social Prescribing' (nature-based activities to improve mental and physical health), 'growing' projects and nature-based regeneration and green infrastructure.

The pressure from development was a concern highlighted by all groups; as well as the need for training, pooling of resources and better knowledge sharing through resource hubs. These key findings have been reflected in the potential measures and supporting activities identified.

2. Statement of Biodiversity Priorities for Lancashire

Description of Lancashire and its biodiversity

The area covered by the strategy includes Lancashire's twelve districts, Blackburn with Darwen and Blackpool, covering an area of 3,066 square kilometres, with a population of 1.53 million. The Lancashire LNRS also includes a small part of the Yorkshire Dales National Park.

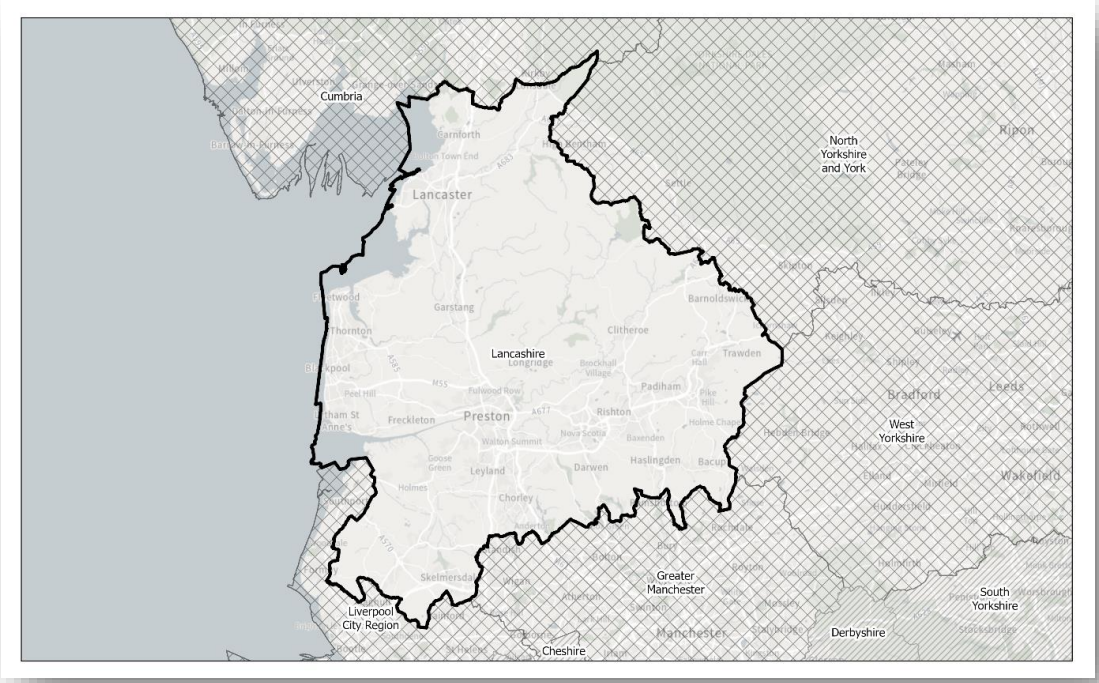

Figure 2: Boundary of the strategy area

Lancashire is 'polycentric' with a strong network of urban centres set amongst areas of outstanding natural beauty. There is great natural physical diversity from coast and estuary landscapes to uplands with extensive areas of open countryside and moorland, as well as dense urban, commercial, and industrial areas. Natural England's National Character Area (NCA) profiles[xvi], together with a range of other local information have been used to provide summary descriptions of Lancashire's varied natural environment and biodiversity. Lancashire is divided into 11 National Character Areas, each representing a distinctly different landscape and following natural lines in the landscape not county or district boundaries.

- Morecambe Bay Limestones
- Morecambe Coast and Lune Estuary
- Bowland Fells
- Lancashire and Amounderness Plain
- Lancashire Valleys
- Bowland Fringe and Pendle Hill
- Southern Pennines
- Lancashire Coal Measures
- Manchester Pennine Fringe
- Sefton Coast
- Yorkshire Dales

Morecambe Bay Limestones

This area is found entirely within the district of Lancaster. It is a lowland landscape that surrounds the head of Morecambe Bay, consisting of conspicuous limestone hills with prominent scars, cliffs, screes, and exposed limestone pavements separated by areas of low-lying undulating farmland with limestone drystone walls, and wetland habitats including reedbeds, mudflats, coastal marsh and saltwater lagoons (in particular Leighton Moss). There are significant areas of limestone pavement, often forming a multiple mosaic with other habitats. Lancashire and Cumbria are nationally recognised for the rare and unique wooded limestone hills and the limestone pavements of Arnside and Silverdale National Landscape. Some limestone pavements are heavily damaged with many covered by scrub or woodland. There are also several small caves, limestone outcrops and active and former quarries together with open mosaic habitats on previously developed land. The underlying limestone blocks form an arc rising steeply from the estuarine landscape at the head of Morecambe Bay with its extensive intertidal flats and salt marshes.

The retreat of glaciers from the last ice age to the north in Cumbria left several shallow river valleys including the Crake, the Lyth, Bela and Keer whose rivers join the channels of the main rivers, the Leven, and the Kent, as they enter Morecambe Bay and discharge through a vast dynamic estuarine network.

Leighton Moss SPA, Ramsar and SSSI, situated between Warton Crag and Silverdale on the edge of Morecambe Bay, is a site of outstanding importance for birds and wetland habitats. It contains the largest reedbed in north-west England, areas of open water and willow/alder scrub and mixed fen vegetation, supporting nationally important breeding populations of bittern, and bearded tit. A large population of reed warbler (one of the most northerly colonies in Britain), as well as sedge and grasshopper warblers, water rail, spotted crake and a wide range of waterfowl also breed there. The site also supports a variety of passage and wintering waterfowl and other birds, including nationally important numbers of teal, shoveler and gadwall. The site is also of value for other fauna including otters, red squirrels and a wide range of butterflies.

There are a number of important grasslands found in this area. Lowland calcareous grasslands are most extensive in the Arnside & Silverdale National Landscape and are present on the surface of the underlying limestone bedrock often occurring in intimate mosaics with woodland and limestone pavement habitats. Examples of high-quality calcareous grassland can be found within the Sites of Special Scientific Interest (SSSIs) at Gait Barrows, Warton Crag, Hawes Water, Thrang End and Yealand Hall Allotment, Jack Scout, and Silverdale Golf Course. The international value of the best of these sites has been recognised through designation as part of a suite of smaller sites that comprise the Morecambe Bay Limestones Special Area for Conservation (SAC). Semi-natural species-rich grasslands occur here on the deeper, neutral soils in mosaic with calcareous grasslands on thinner soils.

Important locations for waxcap grasslands in Lancashire include the area of Arnside & Silverdale National Landscape where over 20 species have been recorded. Two sites in Lancashire, Jack Scout, and the Post Office Lots, meet the threshold for SSSI qualification though neither site has been recognised for this interest feature.

15% of the area is covered by woodland though the landscape that has been reclaimed for agriculture is virtually treeless aside from hedgerows alongside ditches on field margins. Scrub forms part of this landscape including species-rich scrub in high quality semi- natural habitats of national and international importance. There are also orchards that contribute to food provision, genetic diversity, pollination, and biodiversity. The Arnside and Silverdale National Landscape is part of the Lake District Important Invertebrate Area, a significant place for the conservation of invertebrates and the habitats upon which they rely.

Morecambe Coast and Lune Estuary

Morecambe Coast and Lune Estuary is a relatively small and low-lying NCA bordering Morecambe Bay with a bedrock of sandstones and mudstones of Carboniferous, Permian, and Triassic age, but with a surface mainly shaped by superficial deposits of glacial, fluvial, and coastal origin. There are highly populated areas in the towns of Heysham and Morecambe and the City of Lancaster, but the area also encompasses areas of high tranquillity, particularly around the Lune Estuary and westwards along the Pilling Coast. There is a longstanding cultural link to the coastal environment through fisheries, trade, and tourism.

The area is crossed by the rivers Lune and Cocker, both of which enter the NCA from the Bowland Fringe. The rivers that empty into the bay also provide a strong physical connection between the area and the upland NCAs that frame it, particularly through the Lune Catchment, which drains a number of external NCAs including Cumbria High Fells, Howgill Fells and Yorkshire Dales as well as Bowland Fells.

The identity is strongly linked to the coastal environment along its margin with Morecambe Bay, and inland through the estuaries of the rivers Lune and Keer. These are nationally and internationally designated as SSSIs, SAC, SPA and Ramsar sites for their coastal habitats and the wildlife that they support. These include salt marshes, intertidal reefs, and wader and waterfowl populations.

Coastal and floodplain grazing marsh are associated with the estuaries of the Rivers Lune and Wyre, recognised for their internationally important wildfowl (for example, northern pintail) and wader populations (for example, redshank, ruff and ringed plover) through the Morecambe Bay & Duddon Estuary SPA designation. The proximity of the coastal grazing marshes to these outstanding wildfowl sites is important, as birds regularly commute between the grazing marshes and the mudflats and saltmarshes of the estuaries to forage and roost; the coastal and floodplain grazing marshes are therefore recognised as functionally linked land around the Morecambe Bay & Duddon Estuary SPA.

Away from the coast and urban areas, the landscape is mainly one of pastoral agriculture, including dairy, which varies in character from reclaimed grasslands bounded by wet ditches in the lowest-lying areas to a hedged landscape including frequent boundary trees as the land begins to rise in elevation. Stone walls become prevalent near the adjacent upland NCAs, and where drumlins are present. Very small areas of lowland calcareous grasslands are found here, on old industrial or previously quarried sites.

Bowland Fells

The Bowland Fells form a distinctive upland block on the boundary between north Lancashire and the Yorkshire Dales. Upland areas of Lancaster, Ribble Valley and Wyre districts reside within its boundary. The landscape is wild and windswept, with upland oakwood on the steep slopes and cloughs, steep escarpments, upland meadows and pasture and expansive open moorland.

The NCA is within the Forest of Bowland National Landscape and contains areas of moorland, designated as a SPA due to its international importance for breeding hen harrier, merlin, and lesser black-backed gull. It also provides habitat for other important raptor species, peregrine falcon, and short-eared owl (features of the SSSI), and two breeding bird assemblages (also features of the SSSI) including songbird species such as ring ouzel and whinchat and wader species including curlew, lapwing, snipe and oystercatcher.

An assemblage of interesting and rare plant species is also a feature of the SSSI, some associated with woodland for example, chickweed wintergreen, some with the Millstone Grit crags such as hayscented buckler-fern and some found in flushes and springs such as broad-leaved cotton grass.

The peat soils of the fells, including the deep columns of peat associated with blanket bog, store significant volumes of carbon and are recognised for their importance through their designation as the Bowland Fells SSSI. Blanket bog habitat is also important for water storage with important peat forming sphagnum mosses acting as sponges and growing in hummocks around dwarf shrubs such as heather and bilberry creating an uneven surface of tall vegetation and hollows essential for keeping water on the tops of the fells. The drainage pattern of this area has cut deep cloughs through the harder sandstone in a radial pattern emanating from the upland moorland plateau.

The remaining uplands are soils from the Belmont series and are typically acid, coarse and loamy. However, there are tracts of underlying limestone that buffer many of the water courses from the acidity. This land has traditionally been converted, by drainage, fertiliser, and lime application to improved pastures for grazing.

Upland oakwood is also a feature of the Bowland Fells SSSI, it is now fragmented, occurring on the steep slopes and in the cloughs, adding to the diversity of habitats within the site but only a remnant of the previous woodland. Many of the trees are of great age, supporting a variety of lichens, and the shelter they provide allows the growth of carpets of tall ferns. Temperate rainforest or acid oakwood (described by the Joint Nature Conservation Committee as old sessile oak woods with Holly and Hard Fern) is a habitat of European importance, with the best examples designated as Special Areas for Conservation (SAC). The British Isles once supported large expanses of temperate rainforest across its western fringes including South and West Pennines and the Forest of Bowland, the vast majority of which have been replaced by coniferous plantations and sheep grazed pastures. Calf Hill and Cragg Woods SAC on the northern edge of the Forest of Bowland is designated for its old sessile oak woods on the north- and south-facing slopes of a valley on millstone grit. Temperate rainforest also forms part of the natural range of mammals such as pine marten and red squirrel (now mostly restricted from the area) and provides habitat for migrant birds such as pied flycatcher[xvii].

The area provides water catchments for many of the surrounding rivers in the adjacent Bowland Fringe and Pendle Hill NCA and beyond. There are also a large number of important waterbodies such as Stocks reservoir and several upland reservoirs at Barnacre, Barn Fold and Longridge also important for species such as birds, otter and invertebrates such as stoneflies and mayflies as well as providing water for public consumption within the towns of Blackburn, Burnley and Lancaster.

The northern slopes of the Fells are drained by streams that flow to the rivers Wenning and Hyndburn, tributaries of the Lune, which flows through Lancaster before entering the sea at Morecambe Bay. The western and south-western slopes are drained by the headwaters of the River Wyre and its tributaries, the rivers Calder and Brock, as well as the River Conder, which flows directly to the Irish Sea. The River Wyre enters the sea at Fleetwood. The southern and eastern slopes are drained by streams flowing to the River Ribble and by the headwaters of its tributary, the River Hodder. The Ribble flows through Preston before entering the Irish Sea at Lytham St Anne's.

High-quality species-rich meadows can be found in the limestone areas to the east. Lowland calcareous grasslands are found on old industrial or quarried sites, much the same as in Morecambe Coast and Lune Estuary. In Bowland however, calcareous grassland can sometimes be found above 250m, and similar in composition to the nearby lowland grasslands rather than a distinct upland calcareous grassland vegetation. A few upland hay meadows (nationally scarce flower-rich grasslands rich with eyebrights, pignut and yellow rattle) are found around the margins of the Bowland Fells and small pockets of Lancashire's semi-natural species-rich grasslands persist despite wide-spread agricultural improvements.

Species-rich purple moor-grass and rush pasture are found very patchily within the Bowland Fells. This is one of a few important locations for upland acid grasslands in Lancashire found mostly above 250m or 300m on acid rocks, sands and gravels. Waxcap grasslands are also present with ongoing research suggesting that grassland fungi are likely to be more widespread and diverse and potentially nationally important in Lancashire than is currently recognised.

The Fells are fringed by extensive areas of piecemeal ancient pre-1600 farm enclosures with irregular small to medium sized field parcels defined by a mixture of drystone walls, banks, hedgerows and fragments of ancient woodland. Extensive conifer plantations occur to the south-east and east of the area, with fragmented broadleaved woodland largely in the cloughs. Gisburn Forest adjacent to Stocks Reservoir, which is important for wintering wildfowl and breeding birds such as red breasted merganser, black-headed gull and ringed plover, is one of the largest examples of its kind in Lancashire. It also supports small but locally important populations of crossbill, black grouse, nightjar and goshawk. There are approximately 2,902ha of woodlands in the Lancashire area of the NCA (9% of the total area of the NCA in Lancashire), of which 415ha is ancient woodland, of which 27ha is plantation on ancient woodland sites.

Lancashire and Amounderness Plain

Lancashire and Amounderness Plain is an area of high-grade agricultural land, bounded by Morecambe Bay in the north and Liverpool City Region to the south. The

most populated urban areas include Blackpool, Fleetwood, Leyland, Lytham St. Annes, Preston, Ormskirk and Skelmersdale.

The eastern boundary of the NCA is contained by the Bowland Fringe. The plain is made up of a series of low-lying landscape types: in the east, undulating lowland farmland on the highly productive coastal plain, and in the west, the former moss lands and their remnant sites, and the coastal marshes and dunes. Place names incorporating 'moss' and 'mere' are numerous today and are associated with an abundance of maintained ditches and drains.

The northern Fylde (or Amounderness) coastal plain contains the estuary and lower reaches of the River Wyre, as well as its tributaries, the rivers Calder and Brock. It is predominantly improved pasture, with isolated arable fields. It is an ordered landscape of medium-sized fields with field ponds, clipped hedgerows and drainage ditches with areas of stubble and grass leys that contribute to significant feeding grounds for internationally important flocks of pink-footed goose and whooper swan. This is a medium to large-scale landscape, where blocks of wind-sculpted mixed woodland punctuate the relatively flat to gently rolling plain.

At the centre of the Lancashire and Amounderness Plain lies the estuary and lower reaches of the River Ribble which has its source in the neighbouring Yorkshire Dales and its tributary, the River Darwen which drains the Southern Pennines. The River Douglas and its tributaries, the rivers Yarrow and Lostock, drain much of the southern half of the NCA, with the River Douglas flowing into the southern side of the Ribble Estuary. The headwaters of these rivers are on Rivington Moor, in the Southern Pennines NCA. South of the Ribble Estuary the plain has a different physiographical history to that of the north, and this is reflected in the land use of the area. It is predominantly highly productive arable land with large fields and is internationally important for wintering wildfowl such as pink-footed geese and whooper swan and wading birds such as golden plover and oyster catcher.

Agricultural drainage systems, including steep-sided ditches with localised reedbeds and steep embankments, are a dominant feature, and are responsible for the area's dramatic transformation from marshland to a rich and ordered landscape of farmed land parcels. This is mainly an area of open, high-quality farmland with large, rectilinear fields bounded by ditches, as well as some pasture for sheep and cattle, with scattered remnant woodlands and wetlands. Coastal inland areas in the south of the NCA fall below sea level, as far inland as the base of Parbold Hill and flooding is a recurring risk. The forecasted impacts of rising sea levels resulting from climate change will make this issue worse, presenting an ongoing challenge to the farming community. This area, which also contains Martin Mere SPA, is key feeding ground for the birds associated with the estuary such as pink-footed geese, teal and pintail.

There are significant pond networks to both the north and south of the Plain, emphasising its importance in providing ecological connectivity between pond habitats.

Small pockets of semi-natural species-rich grasslands remain in southern parts of the Plain. Coastal grazing marshes and floodplain grazing marshes found here are associated with the estuaries of the Rivers Wyre and Ribble and are recognised as functionally linked land around the Morecambe Bay & Duddon Estuary SPA and the

Ribble & Alt Estuary SPA. They are internationally important for the wildfowl and wader populations they support (as above). Relict acid grasslands are also found around Martin Mere in the Rufford area where, despite being inland, they show some affinity with dune grassland as sand sedge is present.

The NCA includes approximately 4,343ha of woodland (6% of the total area), of which 518ha is ancient woodland.

Lancashire Valleys

The Lancashire Valleys run north-east from Chorley through Blackburn, Accrington, Burnley and Nelson to Colne. The NCA lies mainly in east Lancashire and is bounded to the north-west by the Bowland Fells fringe and Pendle Hill, and to the south by the Southern Pennines. A small proportion of the area (5%) lies in the Forest of Bowland National Landscape.

Lancashire Valleys consists of the wide vale of the rivers Calder and Ribble and their tributaries, running northeast to south-west between Pendle Hill, the Bowland Fells and the Southern Pennines. The landscape here has an intensely urban character. The Millstone Grit outcrop of Pendle Hill, on the northern boundary and the fells of the Southern Pennines to the south create enclosure and serve as a backdrop to the settlements in the valley bottom. The north-west of the NCA contains the middle section of the River Ribble, which has its source in Ribblesdale in the adjacent Yorkshire Dales NCA, as well as the Ribble's confluence with the River Hodder, which drains the southern slopes of the Bowland Fells. In the south, the River Yarrow rises on Rivington Moor in the Southern Pennines before joining the River Douglas in the Lancashire and Amounderness Plain NCA to the west. A number of reservoirs lie on or close to the boundary with adjacent NCAs.

There is approximately 5,463ha of woodland in the Lancashire area of the NCA (8% of that total area). Much of this (91%) is broadleaved and is situated on steep valley sides. There is also a small amount of conifer plantation. There are approximately 1,462 ha of ancient woodland, of which 107ha is plantation on ancient woodland sites.

Small broadleaved woodlands, often ancient, are scattered throughout the remaining farmland associated with rivers, field boundaries and cloughs. The wooded, steep-sided and narrow cloughs are a characteristic feature of the Lancashire Valleys – for example, Priestly Clough in Accrington, Spurn Clough in Burnley and Lower Darwen Valley which comprises oak, alder and sycamore with areas of grassland flushes and wetland. Wood anemone, Herb Paris and small-leaved lime are all ancient woodland indicators and typical species in these areas. Wet woodlands dominated by alder occur on the flood plains and riverbanks. There are also small areas of woodland and scrub associated with abandoned or reclaimed industrial land and several small conifer plantations, the largest being Standardise Plantation by Elslack Reservoir to the north-east of Colne.

Small pockets of semi-natural species-rich grassland remain in the valleys that have not been agriculturally improved, while some upland acid grasslands are found in the areas of upland fringe. Floodplain grazing marsh associated with the river valleys is present. Species-rich lowland dry acid grasslands are found on fluvio-glacial sands

along the River Darwen. Waxcap grasslands are likely to occur too, although further research is required to identify their locations.

One of the key characteristics is that field boundaries are regular to the west and more irregular to the east. They are formed by hedges with occasional hedgerow trees and by stone walls and post-and-wire fences at higher elevations.

Bowland Fringe and Pendle Hill

The Bowland Fringe and Pendle Hill NCA is a transitional landscape that wraps around the dramatic upland core of the Bowland Fells, underpinned by Carboniferous geology. The cultural heritage is an integral part of its character with a range of rich and distinct landscapes, including the substantial extent of semi-natural woodland, tree-fringed rivers, and irregular field patterns defined by well-maintained hedgerows and hedgerow trees. Improved pastureland defined by well-maintained hedgerows is characteristic of the agricultural land in the fringes, which supports both dairy and livestock farming. In contrast to the predominantly rural feel, this NCA includes several relatively urban areas in Clitheroe, Bentham and Longridge.

Over half of this NCA, along with the Bowland Fells, makes up the Forest of Bowland National Landscape. This is a diverse landscape of herb-rich hay meadows, lush pastures, broadleaved woodland, parkland, waterbodies, rivers and streams. The numerous river valleys and associated woodlands are a major component of the area. To the west, this NCA includes part of the Bowland Fells SPA, where the influence of human habitation and activity, and the area's long farming history, contribute significantly to its character.

Many of the meadows are nationally or internationally designated, including North Pennine Dales Meadows SAC (which supports globe flower and lady's mantle species). The rivers and streams support nationally and internationally protected species, including Lancashire LNRS Target Species Atlantic salmon and smelt, as well as white-clawed crayfish, otter, water vole, river water-crowfoot, wasp and cranefly species and various species of bat.

Lowland calcareous grassland occurs in association with the scattered limestone knolls such as Long Knots, Great Dunmow Hill, Worsaw Hill; one of the best examples being on the Clitheroe Knoll Reef SSSI designated for its geological interest.

Unimproved species-rich grassland on neutral soils is a rare habitat in Lancashire due to the influence of agricultural improvement and development. There are however a few upland hay meadows around the margins of Bowland Fringe and Pendle Hill. Floodplain grazing marsh found here are associated with the river valleys of the Lune, Wyre and Ribble. Species-rich purple moor-grass and rush-pastures, valuable for ground nesting waders, including curlew lapwing, redshank and snipe, are found in patches in mosaic with dry grassland and wet woodland.

Species-rich lowland dry acid grasslands are found only very sparsely due to historic heavy stock grazing which has reduced their species-richness. Important locations for upland acid grasslands in Lancashire lie primarily within the Forest of Bowland SPA, in the Bowland Fells and the Bowland Fringe and Pendle Hill NCAs; where they contribute to the important upland vegetation mosaics alongside blanket bog, heath

and flush habitats. Waxcap grasslands are also present. The NCA contains 5,060ha of woodland (7% of the total area), including 1,165ha of ancient woodland, almost a quarter of which is plantation on ancient woodland sites.

Southern Pennines

Upland areas within the Lancashire districts of Burnley, Chorley, Hyndburn, Pendle, Rossendale as well as Blackburn with Darwen reside within the Southern Pennines NCA. The Southern Pennines are part of the Pennine ridge of hills, lying between the Peak District National Park and the Yorkshire Dales National Park. Major urban areas include Bacup, Darwen, Haslingden and Rawtenstall. The Southern Pennines are important for recreation due to the extensive open access areas and footpaths, and the sense of escapism they offer, along with the ease of access from large towns. Challenges for the area include managing the land to reduce downstream flooding, halting decline in the upland peat habitats, improving water quality, and managing increased recreational demand.

This is a landscape of large-scale sweeping moorlands, pastures enclosed by drystone walls and gritstone settlements contained within narrow valleys. The moorland plateau is dissected by many small, fast-flowing streams which are tributaries of multiple main rivers; the Aire and the Yorkshire Calder and Colne, draining to the east, the Roch and Irwell which drain to the south-west and the headwaters of the Lancashire Colne and Calder, the Douglas and the Darwen draining to the north and west. Most of the valleys are narrow and steep-sided with woodland on the steepest slopes.

With its high rainfall and impervious rocks, the area is a valuable water catchment area and contains a large number of reservoirs including Belmont reservoir and Turton & Entwistle Reservoir which support the bird features of the West Pennine Moors SSSI, black-headed gull, heron and Mediterranean gull and supply the water to adjacent conurbations.

The area contains internationally important mosaics of moorland habitats that support nationally rare birds such as merlin, short-eared owl, ring ouzel and twite. Nesting on the unenclosed moorland and foraging elsewhere, including wet grassland and rush pastures in the in-bye fields below the moorland line are wader species like lapwing and curlew.

There are large expanses of internationally important blanket bog and upland heathland within the West Pennine Moors SSSI, often botanically poor and dominated by purple moor grass, with Sphagnum mosses being quite rare primarily because of overgrazing, over burning and atmospheric pollution. Upland dry heath, dominated by common heather, occupies the lower slopes of the moors on mineral soils or where the peat is thin. In the wooded cloughs, which transition into the heather moorlands, a greater mosaic of habitats and plants can be found.

The peat soils include blanket bog, a statutory irreplaceable habitat that supports rare and threatened species such as golden plover and dunlin, dwarf shrub species like cranberry and bog-rosemary as well as peat forming Sphagnum mosses.

The heathlands and blanket bogs, in mosaic with smaller habitat features such as upland acid flushes are an important component of the blanket mire landscape. They

support species such as round-leaved sundew and include lime-rich flushes with carpets of lime-loving bryophytes, fens and areas of bracken and scrub, which support nationally rare bird species.

Upland hay meadow habitat reaches its southern British limit of distribution in Lancashire in the Southern Pennines NCA. Species-rich purple moor-grass and rush-pastures are found very patchily within the Southern Pennines. Stands are sometimes found within the margins and clearings of wet woodland along cloughs, for example at Owshaw Clough in the West Pennine Moors SSSI. In the West Pennine Moors SSSI area of the Southern Pennines NCA, most areas of lowland acidic grassland have arisen through the degradation of heathland through a combination of fires and overgrazing, and latterly affected by environmental nitrification. Historically many of these grassland areas would have supported oak woodland. [xviii]

Other important grasslands include upland acid grasslands found within the South Pennine Moors SAC/SPA and waxcap grasslands. A survey of upland fringe fields in the West Pennine Moors SSSI found a total of 23 different waxcap species, though individual fields fell just short of qualifying for SSSI notification for this feature[xix].

There is approximately 3,026ha of woodland in the Lancashire area of the NCA (8.6% of the total Lancashire area found within) of which 70%, 2,115ha, is broadleaved woodland. Of the woodland resource, 11% (332ha) is ancient woodland.

The West Pennine Moors includes a number of acid oak woodlands often along steep-sided cloughs and water courses, some of which are remnants of temperate rainforest for example at Stronstrey Bank, Lead Mine's Clough, Dean Wood, Tiger's Clough, Hall Wood and Longworth Clough.

Woodland habitats include oak woodlands with downy birch, rowan, holly and hazel with ground flora comprising wavy hair-grass, interspersed with ferns, (such as hard-fern and lemon-scented fern), dwarf shrubs (such as bilberry) and woodland flowers (such as wood sorrel). These may be interspersed with wet woodland with species-rich flushes comprising species such as marsh hawk's beard, marsh valerian and many blue-green sedges. The woodlands are also important because they support a diverse assemblage of woodland breeding birds, including scarce and/or rapidly declining species such as pied flycatcher and willow tit. Extensive woodland clearance of higher land during the later Neolithic period and the Bronze Age has formed the open peat landscapes of today.

Lancashire Coal Measures

The Lancashire Coal Measures surrounds the towns of St Helens and Wigan and extends from the Mersey Valley in the south to the Lancashire and Amounderness Plain in the north-west. 10% of this NCA lies within the districts of Chorley and West Lancashire. Rocks from the Carboniferous Coal Measures underlie most of the area, giving rise to a varied topography of gentle hills and valleys, with patchy layers of glacial deposits. The area is crossed by a number of rivers. The River Douglas is the largest of these and drains through West Lancashire alongside the Leeds and Liverpool Canal which eventually connects to the river.

Past industrial activity and mining subsidence have severely altered the drainage and landform of the area, creating a disrupted drainage pattern characterised by low-lying waterbodies, subsidence flashes and peatlands. This has created the habitat for an array of important species such as the red-eyed damselfly, willow tit, bittern and one of the LNRS target species, the large heath butterfly. This led to the 2022 designation of the Wigan Flashes National Nature Reserve (NNR) in Greater Manchester.

Manchester Pennine Fringe

The Manchester Pennine Fringe occupies the transitional zone between the open moorlands of the Dark Peak and Southern Pennines, and the densely populated urban conurbation of Manchester. Very small areas of Rossendale as well as Blackburn with Darwen lie within this NCA.

Numerous rivers flow through the area, with the Irwell's source in Rossendale district found in the Southern Pennines NCA to the north which drains down through the Southern Pennines towards the lowland Manchester Conurbation and Mersey Valley, ultimately flowing into the Mersey Estuary and the Irish Sea. These rivers are important links between the uplands and lowlands, in terms of ecological connectivity as well as water management.

Sefton Coast

This area runs from the mouth of the Ribble Estuary in the north to the edge of Crosby in the south. It is characterised by intertidal sand flats and mudflats, coastal sand dunes, coastal dune heathland and conifer plantations, and is backed by a hinterland of flat farmland. It is a small area of this hinterland that lies within West Lancashire. The landscape is low-lying with multiple hydrology, with much of the area at or below sea level. The coastal hinterland is extensively pumped to drain the land for agriculture and to provide flood protection for urban areas.

The River Alt rises in the urban area of Huyton in Merseyside, and flows into the Irish Sea at Hightown, south of Formby. The wide flood plains of the Crossens catchment extend into the Lancashire and Amounderness Plain, with a large network of modified watercourses and a multiple land drainage system discharging into the Ribble Estuary. The sedimentary shoreline experiences a range of physical environments influenced by shallow water and high tidal ranges. This has led to the development of extensive sandy and muddy/sandy beaches along the coast. Dunes of recent wind-blown sand present the dominant landscape feature along much of the coast.

Yorkshire Dales

A small area of the Yorkshire Dales NCA overlaps with Lancaster district. It includes semi-natural species-rich grasslands on Leck Fell. A number of limestone outcrops within peat are also found within this area together with a small area of limestone pavement, sink holes and a large cave system. There are also areas of scree and drystone walls. Leck Fell, a limestone fell at 627m, is the highest point in Lancashire. Grazing is the dominant land use of the high fells and the landscape of drystone walls and field barns reflects the farming traditions. This limestone scenery is characterised by the virtual absence of surface drainage and an extensive subterranean drainage network which has resulted in cave systems and sink holes[xx].

Areas of Particular Importance for Biodiversity in Lancashire

Existing areas of particular importance for biodiversity are defined in the LNRS statutory guidance, this is to help establish a nationally consistent baseline of areas whose particular importance has already been recognised,

These areas in Lancashire are detailed below and can be viewed here:
Areas of Particular Importance for Biodiversity in Lancashire

International Conservation Sites

13% of Lancashire (41,586 hectares) is covered by a Special Protection Area (SPA) or Special Area of Conservation (SAC). These include:

- Bowland Fells SPA
- Calf Hill & Cragg Woods SAC
- Leighton Moss SPA
- Martin Mere SPA
- Morecambe Bay and Duddon Estuary SPA
- Morecambe Bay SAC
- Morecambe Bay Pavements SAC
- North Pennine Dales Meadows SAC
- Ribble & Alt Estuaries SPA
- Part of the South Pennine Moors SPA and SAC

Ramsar Sites within Lancashire include Leighton Moss, Martin Mere, Morecambe Bay and the Ribble and Alt Estuaries.

National Conservation Sites

Nationally designated conservation sites in Lancashire Include:

- Two National Nature Reserves (NNR): Gait Barrows and the Ribble Estuary
- Two Marine Conservation Zones (MCZ): Ribble Estuary and Wyre-Lune.
- 122 Sites of Special Scientific Interest (SSSI) covering a total of 49,247 hectares.

Local Nature Reserves (LNR)

Local Nature Reserves are designated for their natural features, such as habitats, wildlife, or geology, and managed by local authorities for environmental education and the enjoyment of the public. At least part of each LNR should be publicly accessible by anyone where visitors would not damage or disturb wildlife.

Biological Heritage Sites (BHS)

Biological Heritage Sites is the name given in Lancashire to non-statutory wildlife sites of at least County significance. They are considered to form part of the suite of sites collectively referred to as 'locally designated sites' in the National Planning Policy Framework, and elsewhere as 'Local Wildlife Sites.'

There are currently 1,215 Biological Heritage Sites, covering a total area of 34,298 hectares. Although they do not have statutory protection per se, some are equal in quality to the representative sample of sites that make up the suite of statutory Sites of Special Scientific Interest (SSSIs). They are identified and designated by a

partnership comprising Lancashire County Council, Lancashire Wildlife Trust and Natural England, using a set of published guidelines[xxi].

District Wildlife Sites

District Wildlife Sites are considered part of the suite of Local Wildlife Sites. These sites are identified by district councils and unitary authorities and have various names locally. They are one 'tier' below Biological Heritage Sites and are not identified in all local authorities in Lancashire. They may also have an important role in contributing to the public enjoyment of nature conservation.

Statutory Irreplaceable Habitat

The statutory irreplaceable habitats found in Lancashire, as defined by The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024 are:

- ancient woodland
- ancient and veteran trees
- blanket bog
- coastal sand dunes
- limestone pavements
- lowland fens

Mapped, these core sites, our existing areas of Particular Importance for Biodiversity helps us to identify opportunities to connect and link them up to provide more and higher-quality habitats to allow nature to thrive and species to recover, expand and move across the landscape, and in turn create our Local Habitat Map i.e., the Areas that Could Become of Particular Importance across the landscape as a whole and not just in isolated reservoirs.

Habitat Extent

In the absence of local habitat trend data and a state of nature report for Lancashire, Table 1 provides a summary of broad habitat type extent, extracted from the Local Habitat Map base map. Information on the data sources used to create the derived habitat base map and the sub-habitat categories that constitute each layer can be found in the *Evidence and Technical Information* document.

Table 1: Coverage of broad habitat types in Lancashire
(Local Habitat Map base map)

Habitat category	Habitat area ha.	% of total county area
Acid grassland	26,043	9.38
Ancient Woodland	5,387	6.25
Arable	31,240	11.25
Calcareous	597	0.21
Coastal and floodplain grazing marsh	12,291	4.43
Coniferous	4,157	1.50
Deciduous	13,922	5.01
Fen, Marsh and swamp	7,053	2.54
Grass	759	0.27

Heath	12,591	4.53
Improved	90,231	32.49
Inland rock	837	0.30
Limestone pavement	14	0.005
Littoral sediment and rock	22,293	8.03
Lowland bog	263	0.09
Mixed	955	0.34
Modified grassland	5,294	1.91
Neutral	13,592	4.89
Rivers and streams	72	0.03
Rough	2,650	0.95
Scrub	394	0.14
Semi-improved	3,906	1.41
Standing Open Water and Canals	2,784	1.00
Suburban	3,048	1.10
Upland bog	17,361	11.25
Total broad habitat	**277,732**	**100.00**

Species

Due to Lancashire's diversity of habitats, including everything from the upland fells to the coasts and estuaries, as well the farmed and urban landscapes, there are also thousands of species that make them their home. Considering factors such as their scarcity, decline and whether they are or could be of national importance, 534 species have been identified as the most threatened or locally significant to prioritise for recovery action. The full species list is included in the *Evidence and Technical Information* supporting document[3]. While trends for many of these species are currently unavailable, a number can be identified as being of national significance, these are detailed in Table Two.

Table 2: Shortlisted species found in Lancashire where the population is of national significance (LNRS Target Species in Bold).

Habitat	Lancashire species (and No. of) with populations of National Significance
Aquatic & Wetland	**14 Species:** Birds - Sedge warbler, bittern, curlew, willow tit. Plants - divided sedge, bird's-eye primrose, flat-stalked pondweed, narrow small reed, thread rush, green-flowered helleborine, floating water-plantain. Fish - **European smelt, Atlantic salmon;** and great crested newt.
Coastal & Estuarine	**20 Species**: Birds - **Black-tailed godwit**, redshank. Fish - plaice, sole, **European smelt, Atlantic salmon.** Invertebrates - saltern neb moth, black

[3] *Document to follow.*

	sober moth, sandhill rustic moth, **belted beauty**, vernal mining bee, margined colletes bee, *Podalonia affinis* (a wasp). Plants - variegated horsetail, Baltic rush and a hybrid *Juncus balticus x J. inflexus,* seaside centaury, dune helleborine, divided sedge and lax-flowered sea-lavender.
Peatland	**6 Species:** Birds - **Hen harrier**, curlew. Invertebrates - **bilberry bumblebee**, the northern sallow mining bee. Plants - broad-leaved cotton grass and **dwarf cornel** (for England).
Rocky habitats	**17 Species:** Plants - Dark-red helleborine, Killarney fern, narrow-leaved bitter-cress, angular Solomon's-seal, fingered sedge, rock whitebeam, Lancastrian whitebeam, baneberry, rare spring-sedge, **lady's-slipper orchid**, mezereon, wall whitlowgrass, blue-moor grass. Invertebrates - barred tooth-striped moth, white-spotted sable moth, **least minor** moth and *Scythris fallacella* (a moth).
Wooded habitats & Trees	**19 Species:** Bird - Willow tit, Plants - green-flowered helleborine, narrow-leaved bitter-cress, angular Solomon's-seal, fingered sedge, rock whitebeam, Lancastrian whitebeam, *Rubus accrescens* (a bramble). Invertebrates - **high brown fritillary, pearl-bordered fritillary and Duke of Burgundy** butterflies, barred tooth-striped and netted carpet moths, **wall mason bee, red wood ant**, shiny guest ant, *Passaloecus monilicornis* (a solitary wasp), *Pseudoplatylabus violentus* (a parasitic wasp), and broad margin mining bee.
Grassland (Including agricultural land)	**16 Species:** Plants - Purple ramping-fumitory, bird's-eye primrose, *Alchemilla monticola* and *Alchemilla subcrenata* (lady's-mantle species). Invertebrates - **least minor**, white-spotted sable, rufous marble, bronze owlet, *Elachista cingillella* and *Anania terrealis* (all moth species), **wall mason bee**, **tormentil mining bee**, moss carder-bee, *Lasius sabularum* (an ant), *Pseudoplatylabus violentus* (a parasitic wasp) and the northern brown argus butterfly.
Urban & infrastructure networks	**5 Species:** Swift, **lesser black-backed gull, black-headed gull**, European hornet and great crested newt.

24 species have identified as 'target species', those that require multiple or urgent bespoke actions that could not be delivered through habitat group measures. These are:

Mammals:

- Red squirrel

Fish:

- Atlantic salmon
- European smelt

Birds:

- Hen harrier
- Black-tailed godwit
- Black-headed gull
- Lesser black-backed gull

Plants:

- Yellow Star-of-Bethlehem

Invertebrates:

- Duke of Burgundy butterfly
- High brown fritillary butterfly
- Pearl-bordered fritillary butterfly
- Large heath butterfly
- Belted beauty moth
- Least minor moth
- Wall mason bee
- Tormentil Mining-bee
- Bilberry bumblebee
- Red wood ant

- Northern bedstraw
- Wood Crane's-bill
- Melancholy Thistle
- Lady's slipper orchid
- Petty whin
- Dwarf cornel

Pressures and Opportunities

In the absence of a state of nature report for Lancashire, stakeholders, including the Lancashire Environmental Records Network, local environmental organisations, and other specialists provided information to better understand Lancashire's most important habitats and species, the pressures that are influencing them and the opportunities to aid their recovery.

Pressures on Lancashire's biodiversity

Climate change is acknowledged as a leading pressure across all of Lancashire's broad habitat types. Changing weather patterns with warmer drier summers and warmer wetter winters with more frequent extreme weather events are likely to become the norm [xxii]. Flooding and the impacts to both wildlife and communities are a major pressure on watercourses, floodplains, wetlands, and the wider riverine environment. Bowland Fringe and Pendle Hill is a high-risk area within Lancashire. The areas steep topography and narrow flood plains combined with waterlogged moorland soils and high rainfall, produces watercourses that respond rapidly to rainfall, increasing fluvial flood risk. Saltwater flooding is a pressing threat on the coastal and floodplain grazing marsh of the Lune and Wyre river estuaries[xxiii]. These coastal grazing marshes are at additional risk from sea level rise, leading to increased inundation, potential coastal erosion, and coastal squeeze, with freshwater sites adjacent to the coast sensitive to saline intrusion. Climate prediction suggest there will be a significant impact on existing and future wooded habitats. These include losses in soil carbon, carbon stored in vegetation and reduced ability of wooded habitats to store carbon in the future. Prolonged periods of drought are likely to lead to reduced ground water and drying out of wet woodland habitats making them more prone to soil erosion and wildfire events. Climate extremes are likely to increase the threat to trees and woodland habitats from new pests and disease.

Human activity such as land use changes, urbanisation, recreation, and pollution have impacted the natural environment and biodiversity. Diffuse water pollution from the urban environment and agriculture through use of fertiliser, manure, or slurry application for example, is a particular concern. Some of Lancashire's core sites are particularly impacted by diffuse water pollution through agriculture, including around Leighton Moss SSSI, Martin Mere SSSI and the Lune, Ribble, and Douglas River catchments[xxiv]. With high rainfall coupled with a growing population and an ageing infrastructure, the Ribble catchment suffers significant point-source pollution from combined sewer overflows[xxv].

Land is increasingly under pressure from development to meet the variety of needs of those that live and work here, for example the demand for new affordable homes and commercial space, transport, and utilities, to support energy generation, for food growing and recreation, resulting in habitat loss and fragmentation.

Land use practices can also be detrimental to biodiversity, for example a high proportion of species-rich neutral grasslands (especially hay meadows) occur on generally flat topography over deep soils. Consequently, they are readily ‘improved’ in agricultural terms into productive fields. Some national policies, subsides and incentives have led to land management practices that have contributed to habitat loss and species decline for example wildflowers and the invertebrates they support in the

Forest of Bowland over the last 80 years or so. During the last two centuries, both lowland and upland peatlands in Lancashire were drained to lower the water table, dry the land and make it more productive. Other factors (such as historic peat extraction, overgrazing, inappropriate burning, and recreation) coupled with drainage have contributed to significant loss and degradation of our peatlands over many years.

Opportunities for recovery or enhancement

Existing successes and potential new initiatives to provide wider benefits by expanding, enhancing, and re-connecting our most important habitats were considered. The opportunities identified by stakeholders are identified for each of the habitats, in many cases building on and expanding existing work being delivered by many organisations across Lancashire. For example, agri environment schemes and the Farming in Protected Landscapes programme have provided opportunities to support land managers and farmers to manage their land with biodiversity in mind. This is best where supported with local advisors and there are opportunities to simplify and extend the reach of these schemes to support food production alongside making space for nature. Farm clusters have and should continue to provide opportunities for future implementation. Organisations across Lancashire are experienced in securing funding, both grant and private investment, for projects particularly tree planting, woodland creation, and natural flood risk management. These are seen as key success to build on. Enhancing woodland plantation provides commercial opportunities for timber, as well as providing places for people to engage with nature as potential wildlife sites and through forest schools, for example. Provision of more e green social prescribing and initiatives through the NHS are key opportunities to involve more people in nature to help support health and wellbeing.

The pressures and opportunities associated with the broad habitat groups in Lancashire have been identified along with examples of the assemblages of species that are affected.

Priorities and Measures – what we need to do

Priorities are the long-term end results, and the potential measures are the practical actions that will help to deliver these priorities, they have been informed by the pressures and opportunities identified for habitats and species.

To cover the different types of places and spaces across Lancashire the priorities have been identified by seven broad habitat types and the target species which require their own bespoke set of measures.

There may be many potential measures that support each priority, and a single measure may help to achieve more than one priority. They are not intended to be detailed instructions, but guidance for what appropriate action can be taken.

Some measures have been mapped on the Local Habitat Map, these are actions where locations that provide the greatest benefit for nature and the wider environment can be identified. These measures are highlighted in green in the priority tables.

The habitat priorities will be of huge benefit to many of Lancashire's most important species. The 534 prioritised species have been assigned to groups called "assemblages", which are communities of species that exist in a particular habitat and will therefore be affected by some of the same pressures and share some of the same requirements and management needs. It is anticipated that these species assemblages are likely to benefit from similar habitat recovery measures.

The measures identified will also deliver wider benefits for the environment and people of Lancashire, as well as help to meet national targets and objectives. These benefits have been summarised to assist those using the LNRS to target action and evidence outcomes from potential projects. The benefits provided by individual potential measures will depend on precisely how, when and where they are carried out.

Aquatic and Wetland

The condition of Aquatic Habitats across Lancashire varies significantly (as does the number of different ways to assess them). However, broadly speaking, they are not in good condition. 88% of Lancashire's surface water bodies were classified as having 'moderate' water quality and all of our waterbodies failed in the Chemical Status of the Water Framework Directive Water Bodies assessment[xxvi].

In respect of aquatic and wetland species, water voles have undergone one of the most serious declines of any wild mammal in Britain during the 20th century having been lost from 94% of places where they were once widespread[xxvii]. In Lancashire, although oystercatcher have shown an increase of 12%, our breeding curlew, lapwing and snipe are all in decline. The Ribble Rivers Trust use Trout and Salmon as indicators of catchment health, which allows identification of locations in poor condition. Both species are showing a concerning decline across the catchment.

To ensure continuity and integration of efforts to recover aquatic habitats and species, it is important to collaborate with our neighbouring authorities due to our connections with the Yorkshire Dales, South Cumbria Fells, Merseyside Conurbation and Mersey Valley.

Table Three: Pressures and opportunities for recovery

Pressures	Example Habitats Affected	Broad Species Assemblages Affected (including indicative species)	Opportunities Identified
• Pollution, sediment deposition and nutrient enrichment • Point source pollution • Climate change • Water quantity extremes such as flood and drought • Invasive species • Recreational pressure • Inappropriate land use & management	Canals and ditches Flood plain meadows Grazing marsh Ground water Lowland fens Marsh Standing open water / Ponds Reedbeds Rivers Streams Upland flushes, springs, fens and swamps Wet woodland (also considered under the trees & woodland group).	**Flushes (including upland, lowland & wetlands)** 41 shortlisted species (particularly plants and mosses) including: • *Drepanocladus turgescens* (a feather moss • *Plagiomnium ellipticum* (Marsh Thyme-moss) • Green-flowered Helleborine • Ivy-leaved bell flower **Standing open water (including ponds, canals and ditches)** 29 shortlisted species including: • Pondweed and water-crowfoot species • Amphibians such as great crested newts • Water voles • Foraging bats	Natural flood management solutions to slow the flow of water and attenuate flow Creation of wetter areas throughout our catchments Tree planting in the upper catchments and riparian planting Sustainable Drainage Systems Reduce diffuse and point source pollution entering our watercourses Reinstating our lost pond

• Intensive farming practices		**Rivers & streams (including riverbanks and riverine sediments)** 27 shortlisted species including: • Numerous fish • Crane-fly species • Freshwater pearl mussel • White-clawed crayfish • Otter **Marsh (including upland, lowland, fen and reedbeds)** 10 shortlisted species including: • Bittern • Sedge warbler • Snipe	landscape in low lying areas Build on the successes of the Catchment Based Approach (CaBA) partnerships

Table Four: Aquatic and wetland priorities, potential measures, and associated benefits

AQUATIC AND WETLAND			
PRIORITY	**MEASURES**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
AW1. Enhanced existing river, stream and watercourse network and associated floodplains in Lancashire.	**AW1.1 -** Support the expansion of eels across the county for example by removing barriers to migration such as dams (also see **AW2.2 and C1.2**), by improving water quality and by protecting key areas from habitat loss.	Eels as well as other fish species including: • **Atlantic Salmon** • **Smelt** • Brown trout • Lamprey species	National objectives and targets: 1, 2, 3, 4, 5, 8, 10, 11, 12, 13, 14, 15, 16 Wider benefits: • improvements in water quality, • climate adaptation, • Water flow regulation, • reduction in flood risk, • social, cultural and educational Other linked LNRS Priorities: AW2, AW3. AW4, C1, C2, C3 G1, U1, U2, U4
	AW1.2 - Improve the extent and condition of floodplain habitats including floodplain meadows, damp grassland, grazing marsh, reedbeds, wet woodland and lowland fen.	Flood plain habitats: • **Belted beauty moth** • Crescent striped moth • Ruff (bird) • Redshank (bird) • Divided sedge • Meadow barley • Otter Reedbeds: • Harvest mouse *Birds* • Sedge warbler • Bittern • Lapwing. Wet woodland: *Birds* • Willow tit	

		• Sedge warbler *Plants* • Dark-leaved willow • Bryophytes like *Plagiomnium ellipticum* (marsh thyme-moss).	
	AW1.3 - Sensitive management of ditches and other watercourses for biodiversity for example by: - Reduced livestock grazing along the water's edge to reduce trampling. - Control the extent of trees and scrub along waterways so other vegetation (native, non-invasive and important for biodiversity) is not shaded out. - If bankside cutting is required, cut on a two-year rotation (or longer), leaving one bank uncut each year. - De-silting of ditches on a five-year rotation.	• Water voles • Harvest mice • Amphibians and reptiles • Aquatic and marginal vegetation such as water-crowfoot and pond weed species. • Invertebrates such as the Norfolk Hawker dragonfly	
AW2. Natural river processes restored, with habitats connected along water courses and between their flood plains.	**AW2.1** - Increase the multiplicity and structural diversity of water course corridors to include multiple and sinuous channels, the natural supply of sediment, woody material and gravel management.	• Eels Fish - • Atlantic Salmon • Smelt • Brown trout • Lamprey species • Otter • Water voles • Scarce yellow splinter (cranefly) • Norfolk Hawker dragonfly • Freshwater pearl mussel	National objectives & targets: 1, 2, 3, 4, 5, 8, 10, 11, 12, 13, 14, 15, 16 Wider benefits: • restore natural hydrology and hydro-geomorphic processes including sediment and nutrient deposition • reduction in flood risk to downstream communities • climate resilience • water attenuation • improve natural function,
	AW2.2 - Remove or redesign artificial structures impacting natural processes of water courses including culverts, weirs, revetments, embankments and installation of fish passage solutions.		
	AW2.3 - Re-meandering of reaches of straightened and artificial modified channels of rivers and streams.		

		• White-clawed crayfish	• health and wellbeing • social, cultural, and educational Other linked LNRS Priorities: AW1, AW3, AW4, C1, C2, C3, G1, G2, P1, P2, P3, P4, P5, P6, W2, U1, U2, U3, U4
AW3. A restored and connected healthy freshwater and wetland landscape in Lancashire.	**AW3.1.1** - Restoration of Lancashire's lost pond landscape **AW3.1.2** – Rotational pond management to preserve emergent and submerged vegetation. **AW3.2 -** Appropriate canal management to protect and maintain emergent and submerged vegetation. **AW3.3 -** Improve the extent and condition of fens, reedbeds, springs, flushes, marshes, marsh fen, wet woodland and ephemeral waterbodies. **AW3.4 -** Restore and reconnect fragmented canal network.	• Great crested newts • Common toads • Water voles • Foraging bats Plants - • Green-flowered Helleborine • Ivy-leaved bell flower • Great fen-sedge • Golden dock • Pondweed and water-crowfoot species • *Drepanocladus turgescens* (a feather-moss) • *Plagiomnium ellipticum* (marsh thyme-moss) Birds - • Bittern • Sedge warbler • Snipe • Oyster catcher • Curlew	National objectives and targets: 1, 2, 3, 5, 8, 11, 12, 13, 14, 16 Wider benefits: • natural resources, • health and wellbeing, • natural processes regulation such as water attenuation, • improved water quality • climate resilience, • reduction in flood risk to downstream communities, • improved connectivity • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW4, C1, C2, C3, P1, P2, P3 P4, P5, P6, W1, W2, U2, U3, U4

<table>
<tr>
<td rowspan="3">AW4. Catchments resilient to water quantity extremes.</td>
<td>AW4.1 - Install woody material, including leaky dams to promote natural processes and provide habitat for a range of aquatic species.</td>
<td>• Fish species
• Water vole
• Riverine invertebrates such as craneflies and wasp species
• White-clawed crayfish</td>
<td rowspan="3">National objectives and targets:
1, 2, 3, 4, 5, 8, 9, 11, 12, 13, 14, 16
Wider benefits:
• improved water environment to provide sustainable resources to support a growing population,
• soil erosion prevention,
• drought resilience,
• natural flood-risk management,
• promote natural processes
Other linked LNRS Priorities:
AW1, AW2, AW3, C1, C2, C3, G3, P1, P2, P3, P4, P5, P6, W2, U1, U2, U4</td>
</tr>
<tr>
<td>AW4.2 – Increase the use of sustainable drainage schemes incorporating features for biodiversity.

AW4.3 - Sustainable abstraction plan for agriculture and horticulture in Lancashire.</td>
<td>• Native plant species such as pondweed and water-crowfoot species
• Amphibians such as great crested newts and common toads
• Invertebrate species such as craneflies</td>
</tr>
<tr>
<td>AW4.4 - Bioengineering and nature-based solutions to moderate water flows, such as reedbed filters, living dams, living revetments, tree and hedge planting and kested hedgerows.</td>
<td>As above, plus bird species for example:
• Sedge warbler (reedbeds)
• Corn bunting and tree sparrow (hedgerows)</td>
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Coastal and Estuarine

The coastal expanse of Lancashire's strategy area spans from Barrow-in-Furness to Sefton. This large expanse of coastline has several contributing main estuaries of the Ribble, Wyre, Lune, Keer, Kent and Leven with a myriad of smaller channels and outlets that feed into the coastline[xxviii]. There are extensive areas of river, coastal and estuary SSSIs which predominantly are in favourable condition.

Sand dunes are multiple systems that are vulnerable to increased disturbance and invasive plant species, as well as weather and sea conditions[xxix]. The presence of three large golf courses on the Lancashire's dune land has saved extensive areas of semi-natural vegetation, including the largest remaining areas of dune heath, from built development[xxx] However, without sensitive management of routine golf course operations such as drainage, irrigation, tree-planting, mowing, fertilising and re-seeding then their biodiversity value is at risk.

Coastal squeeze of inter-tidal habitats is an increasing pressure on biodiversity in Lancashire.

Table Five: Pressures and opportunities for recovery

Pressures	Example Habitats Affected	Broad Species Assemblages Affected (including indicative species)	Example Opportunities Identified
• Climate change • Drought & flooding • Land & sea management detrimental	Brackish reedbeds Coastal grasslands Coastal floodplain grazing marsh	**Estuaries** 14 shortlisted species including: Fish - • Eel • Lesser sand eel	Restore saltmarsh through rewetting interventions, changes to grazing management and managed realignment.

to biodiversity • Habitat loss • Development & physical modification • Pollution, sediment deposition and nutrient enrichment • Recreational impacts	Coastal hinterland (functionally linked farmland) Coastal saltmarsh Coastal sand dunes Coastal vegetated shingle Coastal woodlands Estuaries Lowland rivers and watercourses Maritime cliffs Mudflats Non-saline lagoons Saline lagoons Inter-tidal and sub-tidal cobble & boulder skears Open mosaic on previously developed coastal land	• River lamprey Birds - • Ringed plover • Lapwing **Dune slacks (including dune slacks/sand dune systems and coastal ditches and canals)** 10 shortlisted species including: Plants - • Tubular water dropwort (plant) • Early sand-grass • Sand dart moth • tiger crane-fly **Sand dunes (including beach and sand dunes associated with woodland, lowland heath and shingle)** 32 shortlisted species including: • Sand lizard • Adder *Plants -* • Dune helleborine • Seaside centaury	Managed realignment, for tidal exchange. Juvenile fish and spawning habitat restoration in the middle and upper estuaries of the Lancashire and Amounderness Plain, Morecambe Coast & Lune Estuary, and Morecambe Bay Limestones. Promotion of a step change in changes to agricultural management practices. Wetland and flood storage habitat creation in West Lancashire, Morecambe Coast & Lune Estuary and Lancashire & Amounderness Plain to improve the current water management regime. Alleviate recreational impacts through public engagement for example, through raising awareness and Community wildlife projects; and improvements to Suitable Alternative Natural Green Spaces

		• Creeping willow • White Colon moth • Black-headed leafcutter bee • Sand runner spider. **Saltmarsh (including transitional brackish marsh and floodplain grazing marsh** 19 shortlisted species including: *Plants* - • Sea milkwort • Divided sedge • Saltern neb moth • Belted beauty moth *Birds* - • Redshank • Black-tailed godwit • Pintail **Coastal rocky / maritime cliffs** 4 shortlisted species including: • Common Scurvy Grass	

		• Sea spleenwort (a fern) **Coastal grasslands** 9 shortlisted species including: • White-dusted owlet moth • Vernal Mining bee *Plants -* • Field gentian • Hoary Cinquefoil	

Table Six: Coastal and estuarine priorities, potential measures, and associated benefits

COASTAL AND ESTUARINE			
PRIORITIES	**MEASURES**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
C1. Coastal habitats connected with wider ecosystems particularly transitional habitats.	**C1.1** - Create and restore coastal habitats (such as sand dunes, dune slacks and saltmarshes) to reverse fragmentation. **C1.2** - Remove or create pathways through barriers such as small weirs, road culverts and other riverbed modifications, to improve connectivity for species dispersal by focussing on barriers within main rivers at, or close to the tidal limit. **C1.3** - Create and enhance habitat corridors to support species migration including connectivity between coastal and freshwater ecosystems.	• **Belted beauty moth** • Saltern neb moth • Sand dart moth • White Colon moth • Black-headed leafcutter bee • Sand runner spider Plants - • Tubular water dropwort • Early sand-grass • Dune helleborine • Seaside centaury • Creeping willow • Divided sedge • Sand lizard Fish - • Eel • Lesser sand eel • **Smelt** • **Atlantic salmon** • Brown trout Birds -	National objectives and targets: 1, 2, 3, 4, 5, 8, 11, 12, 13, 14, 16 Wider benefits: • natural resources quality, • reduction in flood risk for coastal communities, • natural processes regulation, • climate resilience, • Ensure resilient and healthy populations of coastal species. • Improve migration routes. • health and wellbeing • social, cultural, and educational Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C2, C3, G3, P1, P2, P3

		• Ringed plover • Lapwing • Redshank • **Black-tailed godwit** • Pintail • Ruff	
C2. Naturally functioning coastal systems with dynamic processes forming embryonic and transitional habitats.	**C2.1** - Restore natural processes in coastal waters, estuaries, dune slacks, sand dunes and salt marsh habitats for example by: - redesigning and realigning coastal flood defences - Creating naturally functioning saltmarsh creek networks, - Restoring natural hydrology in dune slacks, - Promote the natural growth of sand dunes, - Rewetting of coastal wetlands and grasslands. **C2.2** - Restore, create and actively manage dune slacks. **C2.3** - Allow natural formation of embryonic habitats such as embryonic dunes, salt marshes (including strand line and pioneer vegetation) and dune slacks.	Coastal waters and estuaries are key habitat for juvenile and larvae phase fish including: • Eel • Lesser sand eel • **Smelt** • **Atlantic salmon** • Brown trout • Cod • Plaice Potential consideration for future re-introductions of natterjack toads.	National objectives and targets: 1, 2, 3, 5, 8, 11, 12, 13, 14 Wider benefits: • natural resources, • health and wellbeing • climate regulation, • reduction in flood risk to coastal communities, • restoration of coastal habitat dynamism, • safeguarding natural coastal processes, • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C1, C3, P1, P2, P3, U1, U4
C3. Expanded, enhanced and preserved coastal and estuarine	**C3.1** - Create undisturbed coastal high tide roost sites for waders and coastal lagoons and islands for nesting sites.	Species benefits from reduced recreational impacts for example, *Birds* -	National objectives and targets: 1, 2, 3, 5, 8, 11, 12, 13, 14, 16

habitat important to Lancashire.	**C3.2** - Creation of estuarine, and lower river (between tidal limit and 1-2 miles upstream) riffle habitats to support key fish species for example by: - Installing natural features such as large wood or large rocks within the watercourse to alter flow and facilitate sediments to be deposited in desired areas.	• Ringed plover • Lapwing • Redshank • **Black-tailed godwit** • Arctic tern • Common tern • **Belted beauty (moth)** • Sand lizard Riffle habitats (for fish species): • **Atlantic salmon** • **Smelt** • Lamprey species	Wider benefits: • natural resources, • natural processes regulation, • reduction in flood risk to coastal communities, • climate regulation, Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C1 C2, G1, G2, G3, P2, P3, U1, U4
	C3.3 - Creation and restoration of naturally functioning saltmarsh habitat.		
	C3.4 - Creation of coastal habitats, including brackish reedbeds, coastal grasslands and wetlands within their former extent for example by reconnecting low-lying reclaimed and frequently flooded agricultural land to coastal and transitional habitats.		

Grassland (Including agricultural land)

Semi-natural grassland is one of the most threatened habitats in the UK, with a reported 97% loss of semi-natural enclosed grasslands in England and Wales between 1930 and 1984[xxxi].

Between 1960 and 2013, semi natural grasslands in England declined by 47% overall[xxxii]. Dry acid grassland saw the greatest loss (85%) while the extent of upland calcareous grassland was at 39% loss[xxxiii], The Floodplain Meadows Partnership estimate that about 1,100 hectares (ha) remain of the classic floodplain meadow plant community in England and Wales[xxxiv].

Most semi-natural grassland in England has been improved to benefit agricultural production, and the grasslands in Lancashire are no exception. The more natural and species-rich sites that remain are often small and isolated but can still support communities of specialised plant and animal species[xxxv]. The annual value of carbon sequestration by vegetation in grassland is estimated to be approximately £0.2 billion[xxxvi]

Table Seven: Pressures and opportunities for recovery

Pressures	Example Habitats Affected	Broad Species Assemblages Affected (including indicative species)	Example Opportunities Identified
• Climate change • Land management detrimental to biodiversity – longer growing season • Habitat loss and fragmentation • Pollution, sediment deposition and nutrient enrichment • Recreational impacts • Invasive species	Calaminarian Grassland CHEGD (waxcap) grasslands Coastal grasslands Lowland calcareous grassland Lowland dry acid grassland Neutral Lowland Meadows (includes pasture) Neutral Upland Meadows (includes pasture) Purple Moor Grass and Rush Pastures and other fen meadows/pastures Tussocky/rough	**Arable & farmland (including grazed pasture, arable and Farmland Mosaic /Hedgerows)** 11 shortlisted species including: *Birds -* • Corn bunting • Yellow wagtail • Tree sparrow; and 31 arable plant species. **Unimproved Grassland (including ancient grasslands, dry grasslands and hay meadows)** 14 shortlisted species including: • Dyer's greenweed (plant) • Globeflower • Wall butterfly	Improve land management practises through farming networks and stronger engagement with the land manager community on nature recovery and agri-environment funding opportunities. Funding reforms to incentivise land managers. Establish collaborative nature recovery programmes like the Farming in Protected Landscapes scheme and promote and support new and existing farming clusters/networks. Create a map and directory of green hay donors and donor sites that can provide the seed source to support hay meadow recovery projects. Create a directory of contractors who specialise in using smaller tractors and mowers for sites which

	grassland Upland acidic grassland Upland calcareous grasslands	• Phantom hoverfly; and 50 grassland fungi species. **Calcareous Grasslands** 22 shortlisted species including: • Dingy skipper and northern brown argus butterflies • Least minor and cistus forester moths • *Rhytidium rugosum* (a feather-moss) • *Didymodon acutus* (a moss) • Green-winged orchid and moonwort (plants). **Grassland (Open Mosaic) including lowland, coastal, upland, damp, acid, rich flower resource (botanically species-diverse) and verges** 20 shortlisted species including: • Small heath butterfly • Tormentil nomad bee • Small flecked mining bee Plants - • Autumn crocus • Saw-wort • Harvest mouse • Polecat **Flushes /flushed grasslands** 5 shortlisted plant species: • Marsh lousewort • Small water pepper • Mossy saxifrage • Lesser skullcap • Ivy-leaved bell flower **Marsh (including upland and lowland marsh/ fen**	limited accessibility to maintain low nutrient levels. Reduce verge (and some amenity grasslands) cutting regimes to increase sward diversity

		and wet grassland) 8 shortlisted species including: Plants - • Heath Fragrant Orchid • Corky-fruited Water-dropwort • Marsh stitchwort	

Table Eight: Grassland priorities, potential measures, and associated benefits

GRASSLAND (INCLUDING AGRICULTURAL LAND)			
PRIORITY	**MEASURE**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
G1. Ecologically important grasslands preserved and managed for biodiversity.	**G1.1** - Create and maintain conditions to allow thriving, resilient and dynamic populations of waders important to Lancashire dependent on key habitats including grasslands, peatland and arable land.	Potential for in-bye enhancements for wading birds & species-rich grassland; *Birds -* • Curlew • Oyster catcher • Lapwing *Plants -* • Dyer's greenweed • Globeflower • Green-winged orchid • Moonwort • Autumn crocus • Saw-wort • Lesser skullcap • Ivy-leaved bell flower • Heath Fragrant Orchid • Corky-fruited Water-dropwort • Marsh stitchwort • *Rhytidium rugosum* (a feather-moss) • *Didymodon acutus* (a moss) *Invertebrates -*	National objectives and targets: 1, 2, 3, 5, 8, 11, 12 Wider benefits: • preservation of natural resources, • social, cultural and educational Other linked LNRS Priorities: AW1, AW3, C1, C3, G2, G3, P2, P5,
	G1.2 - Secure appropriate management of grasslands with high biodiversity value, such as ancient permanent grasslands and grasslands rich in plant species, fungi, or invertebrates (for example, conservation grazing, preservation of undisturbed and uncultivated soils and maintenance of low nutrient levels, appropriate sward structure and hydrological conditions).		
	G1.3 - Inoculate suitable grassland sites with appropriate plant species from appropriate agreed donor sites.		
	G1.4 - Produce a local directory of resources to aid grassland management, facilitate sharing of equipment and access to appropriate grazing stock and seed donor sites.		
	G1.5 - Undertake suitability assessments and grassland fungi surveys (fruit body or DNA) on long-established semi-improved and unimproved grasslands (including botanically species poor examples) subject to any proposal which could disturb the soil or increase nutrient levels in the soil (such as tree planting, other habitat creation requiring soil disturbance, change in agricultural use, excavation, ploughing, nutrient enrichment, development etc) and use this information to assess importance and inform decision making, to ensure the conservation of ancient and important grasslands		

		• **Least minor moth** • Cistus forester moth • Wall butterfly • Dingy skipper • Northern brown argus butterfly • Small heath butterfly • Tormentil nomad bee • Small flecked mining bee • Phantom hoverfly • Harvest mouse • Polecat Important grassland fungi assemblage (for example, waxcaps and earthtongues) including: • Jubilee waxcap • Pink waxcap • Glistening waxcap • Brightsky pinkgill • Lilac pinkgill • Violet coral • Dark-purple earthtongue • Rufous earthtongue	
G2. A connected network of biodiverse grassland habitats.	**G2.1** - Enhance habitat, for example, good, semi-improved grasslands to priority habitat, and create biodiverse grasslands buffering and connecting important habitats, through appropriate management including low nutrient inputs, species and sward diversification as well as conservation grazing and mowing regimes.	As above	National objectives and targets: 1, 2, 3, 5, 8, 11, 12, 14, 16

	G2.2 - Maintain and enhance biodiverse grassland verges such as BHS verges (in agreement with the BHS partnership), identified biodiversity verges and wildflower verges which may be particularly valuable in aiding connectivity, including appropriate mowing regimes to enable flowering/seeding and removal of arisings.		Wider benefits: • natural resources with improved soil health, • health and wellbeing, • crop pollination, • social, cultural and educational Other linked LNRS Priorities: AW1, AW3, C1, C3, G1, G3 P2, P5, U2, U3, U4
	G2.3 - Create biodiverse grassland verges in suitable locations to enhance habitat connectivity, for example, through species and sward diversification, conservation mowing regimes to enable flowering / seeding and removal of arisings.		
G3. Sustainably managed agricultural land with maximised biodiversity value, generating wider environmental benefits.	**G3.1** - Manage soils for enhanced biodiversity and improved soil health for example by reducing compaction, winter cover crop, crop and grazing rotation, produce a soil management plan.	Important arable plant assemblage including: • Purple Ramping-fumitory • Corn marigold • Prickly poppy • Slender parsely-piert • Corn Chamomile *Birds -* • Corn bunting • Yellow wagtail • Trees sparrow • Grey partridge • Corn crake • Great crested newts • Common toads • Grass snakes	National objectives and targets: 1, 2, 3, 4, 5, 8, 9, 11, 12, 13, 15, 16 Wider benefits: • Improved water quality, • health and wellbeing • crop pollination, • improved soil health, • resilience in food production, • reductions in siltation, nutrient run-off, pollution, soil erosion, flood risk • social, cultural and educational Other linked LNRS Priorities:
	G3.2 - Appropriately manage for arable species assemblages such as leave buffer strips, beetle banks, conservation headlands, maintain overwintering feeding habitat, overwinter stubble and field corners.		
	G3.3 – Create habitat within farming landscapes such as tree planting in field corners, individual trees, agro-forestry, field ponds and buffer habitats adjacent to watercourses and aquatic habitats.		
	G3.4 - Reduce the use of herbicide, pesticide and other agricultural chemicals.		
	G3.5 - Support and promote organic farming.		
	G3.6 - Reinstate historic field boundaries such as hedgerows, ditches and drystone walls.		
	G3.7 - Provision of habitat piles, nest and roosting boxes.		

		• Brown hare • Hedgehogs • Polecat Roosting and foraging bats including: • Whiskered bat • Serotine • Lesser horseshoe	AW1, C2, C3, G1, G2, P5, U2

Peatland

Lancashire contains approximately 135,000 hectares of peat soils, according to Natural England's Peaty Soils layer. Key upland areas include the Forest of Bowland, West Pennines and Forest of Rossendale, the first two of which are designated as SSSIs in part for the blanket bog habitat, the latter sits outside any such designation but is an important link between the West Pennine Moors and the South Pennines. Land-use in the uplands in the main is water company catchment, agricultural grazing land, grouse moors, common land and windfarms. Key lowland areas include the Alt Crossens and Pilling Moss. Some small areas of these are designated as SSSI but the majority sits outside of designation. Lowland peat areas are generally agricultural crop and grazing land.

Many of our peatlands are in a progressive state of degradation[xxxvii]. Only 13% of England's peatlands are in a near natural state and much of our lowland peat is currently used for intensive agriculture[xxxviii]. Winmarleigh Moss SSSI is the largest area of lowland raised bog remaining in Lancashire and is the only one that survives in anything like its original condition[xxxix]. White Moss SSSI in Ribble Valley is the best surviving example of an actively growing basin mire in Lancashire. At least 95% of the lowland peat mosses existing in Lancashire in 1948 have been lost[xl] This loss has mainly been due to reclamation for agriculture, peat extraction, repeated burning or afforestation. National blanket bog losses of 30% between 1930 and 1980 were mainly due to overgrazing, indiscriminate historic moor burning, afforestation and the abandonment of grouse moors. No specific data is available on the condition of Lancashire's upland peat habitats, although it is expected that similar rates of loss will apply to Lancashire's upland peat habitats over the same period.

Table Nine: Pressures and opportunities for recovery

Pressures	Example Habitats Affected	Broad Species Assemblages Affected (including indicative species)	Opportunities Identified
• Climate change • Land management detrimental to biodiversity • Habitat loss and fragmentation • Pollution, sediment deposition and nutrient enrichment	Blanket bog Hydrologically linked land Lagg fen Lowland heathland Lowland raised bog Mires & quaking bogs Shallow peaty soils Upland heathland	**Bogs (including bog pools, blanket, raised and mire)** 21 shortlisted species including: • Dunlin (bird) Invertebrates - • 5 species of crane-fly • Keeled skimmer and golden-ringed dragonflies Plants - • Sphagnum pulchrum • Great sundew	To engage sustainable management practices following habitat restoration. To stack public body funding and private finance (such as the Peatland Carbon Code standard or Water Industry National Environment Improvement Programme). Monitoring to evidence improvements following restoration and inform further restoration work. Develop a countywide wildfire strategy.

• Hydrological changes • Recreational impacts from off-road vehicles & dogs off leads. • Grazing intensity, mainly form sheep		• Bog myrtle **Scrub-heath & moorland (including Structural Diversity (Upland), Moorland & Woodland Edge, lowland and upland heathland upland flushes, marsh/fen and purple moor-grass & rush pasture)** 53 shortlisted species including: Birds - • Short-eared owl • Ring ouzel • Snipe • Curlew • Marsh fritillary butterfly Plants - • Reindeer lichen • Mossy saxifraige • Common butterwort • Cloudberry • Adder	Better engagement across the upland land manager sector, sharing best practice and upskilling contractors and practitioners. Develop a new water level management strategy. Opportunities for a more sustainable management approach to peatland soils through wetter farming.

Table Ten: Peatland priorities, potential measures, and associated benefits

LOWLAND PEATLAND			
PRIORITY	**MEASURE**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
P1. Sustainable land use of lowland peat soils creating a mosaic of peatland habitats supporting a variety of species.	**P1.1** - Wetter farming - where it leads to peat formation or transition to restoration for example sphagnum farming, typha growing, willow crop and carbon farming. **P1.2** - Productive agriculture on wet or rewetted peaty soils to buffer and enhance habitats adjacent to peatland habitats. **P1.3 -** Create or update sustainable water level management plans to: • Work with local partners and landowners to better manage all forms of flooding in the catchment in the future through promoting collaborative working and sustainable development. • Identify opportunities to improve Water Resource resilience to weather extremes. • Deliver Natural Flood Management / BNG and Water Quality improvements which support nature recovery, peat restoration, long term sustainability and reduction of operational costs. **P1.4 -** Landscape-scale joined up Wildfire Management Plans that crosses land boundaries including a fire ranger scheme to educate public and with powers to close areas of high risk. **P1.5** - Work with DEFRA to pilot a northwest-wide traffic light system to manage fire risk.	*Plants -* • Sphagnum pulchrum • Great sundew • Oblong-leaved sundew • Common butterwort • Bog myrtle • Hare's-tail cotton grass • White beak-sedge • Slender sedge • Small cudweed • Reindeer lichen • *Campylopus gracilis* (Schwartz's swan-neck moss) • **Large heath butterfly** • Cranefly species • A 'flesh' fly • A 'dance' fly • Adder • Sand lizard	National objectives and targets: 1, 2, 3, 5, 7, 8, 11, 12, 13, 14 Wider benefits: • Improved water quality, • Attenuating water flow (water quantity resilience), • Reduction in carbon emissions, • Increase in carbon sequestration, • climate resilience, • health and wellbeing • reduction in flood risk for local communities, • Local economy through green jobs Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C1, C2, C3, G1, G2, G3, P2, P3

		Birds - • Willow tit • Cuckoo • Short-eared owl • Water voles	
P2. Lowland peatlands and their supporting habitats restored and connected at a landscape-scale.	**P2.1 -** Restore and enhance key connecting and relict peatland sites. **P2.2** - Hydrological restoration to support peatland habitat creation and enhancement. **P2.3** - Create corridors and steppingstones of peatland and other wetland habitats in between fragmented lowland raised bog and associated habitats for example wet woodland, reedbeds and wet heath. **P2.4** - Expansion, sensitive management and restoration of lowland heath.	As above	National objectives and targets: 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14 Wider benefits: • Safeguarding natural resources by restoring peatlands, • Improved water quality, • Attenuating water flow (water quantity resilience), • Reduction in carbon emissions, • Increase in carbon sequestration, • climate resilience, • health and wellbeing • reduction in flood risk for local communities, • Filtration of pollutants (reedbeds). Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C1, C2, C3, G2, G3, P1, P3

P3. Active growing lowland peatlands supporting rich biodiversity.	**P3.1** - Restoration of degraded peatland areas back to active peat-forming bogs.	As above	National objectives and targets: 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 16 Wider benefits: • Safeguarding natural resources by restoring peatlands, • Improved water quality, • Attenuating water flow (water quantity resilience), • Reduction in carbon emissions, • Increase in carbon sequestration, • climate resilience, • health and wellbeing • reduction in flood risk for local communities, Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C2, C3, W1, U2
	P3.2 - Create transitional habitats between peatland and non-peatland habitats in appropriate areas to support biodiversity and hydrology for example lagg fen and wet woodland.		
	P3.3 - Inoculate suitable peatland sites with appropriate plant species from suitable agreed donor sites.		
	P3.4 - Restoration of habitats on deep peat that have been adversely affected through land management detrimental to biodiversity e.g., through removal of trees and in accordance with the Decision Support Framework for Peatland Protection.		

UPLAND PEATLAND			
PRIORITY	**MEASURE**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
P4. Functioning upland peatlands	**P4.1** - Restore hydrology of upland peat soils such as grip and gully blocking.	*Birds -*	National objectives and targets:

forming peat at a landscape-scale.	**P4.2** - Revegetation of key peatland plant species in areas of restored hydrology dependent on site specific conditions including seeding, plug planting, encouraging revegetation. **P4.3** - Restore and reconnect appropriate relic areas back to active bog and mire through management changes, practical interventions and encouraging sphagnum growth. **P4.4 -** Restoration of habitats on deep peat that have been adversely affected through land management detrimental to biodiversity e.g., through removal of trees and in accordance with the Decision Support Framework for Peatland Protection. **P4.5** - Maintain and enhance existing blanket bog in good ecological/favourable condition through appropriate management for example sustainable grazing and cessation of burning.	• **Hen harrier** • Merlin • Short-eared owl • Ring ouzel • Snipe • Curlew • Dunlin • Whinchat • Twite • **Large heath** • **Bilberry bumblebee** • Broken-banded bumblebee • Northern sallow mining bee • Keeled skimmer dragonfly • Golden-ringed dragonfly • Sheet weaver spider *Plants -* • **Dwarf cornel** • **Petty whin** • Sphagnum pulchrum • Great sundew • Bog myrtle • Broad-leaved cottongrass • Mossy saxifrage • Common butterwort • Reindeer lichen	1, 2, 3, 5, 7, 8, 11, 12, 13, 14, 16 Wider benefits: • Safeguarding natural resources by restoring peatlands, • Improved water quality, • Attenuating water flow (water quantity resilience), • Reduction in carbon emissions, • Increase in carbon sequestration, • climate resilience, • health and wellbeing • reduction in flood risk for local communities. Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C1, C2, C3, G1, G2, G3 P1, P2, P3 P5, P6, R1, R2, R4, W1, W2, U1, U2, U3

		• Cloudberry • Juniper • Adder • Water vole	
P5. A mosaic of upland peatland, non-peatland and connecting transitional habitats in the uplands supporting a variety of species.	**P5.1** - Management to maintain and enhance species and habitat diversity through alterations to site hydrology, burning, grazing, nutrient inputs, encroachment of bracken and other vegetation, adjustments to game management and predator control regimes. **P5.2 -** Management and restoration of upland heath through sensitive management. **P5.3 -** Management, restoration and expansion of purple moor-grass & rush pasture and upland flushes.	Purple moor-grass & rush pasture: • Marsh fritillary butterfly • Bryophyte species like ribbonwort. Upland flushes, for example: *Plants -* • Ivy-leaved Bellflower • Marsh lousewort • Grass-of-parnassus • *Campylopus gracilis* (Schwarz's Swan-neck moss)	National objectives and targets: 1, 2, 3, 5, 7, 8, 11, 12, 13, 14, 16 Wider benefits: • Safeguarding natural resources by restoring peatlands, • Improved water quality, • Attenuating water flow (water quantity resilience), • Reduction in carbon emissions, • Increase in carbon sequestration, • climate resilience, • health and wellbeing • reduction in flood risk for local communities. Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C2, G1, G2, G3, P4, P6

P6. Sustainable land use and management of upland peat soils.	**P6.1** - Work with DEFRA to pilot a northwest-wide traffic light system to manage fire risk.	As above	National objectives and targets: 1, 2, 3, 5, 7, 8, 11, 12, 13, 14 Wider benefits: • safeguarding natural resources by restoring peatlands, • climate resilience, • health and wellbeing, • economic gain with new green jobs, • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW3, AW4, C2, G1, G2, G3, P1, P2, P3, P4, P5, W1, W2, U4
	P6.2 - Landscape-scale joined up Wildfire Management Plans that crosses land boundaries including a fire ranger scheme to educate public and with powers to close areas of high risk.		

Rocky Habitats

Rocky habitats, some of which are natural and some of which are man-made, are found throughout Lancashire. Lancashire's limestone pavements are nationally rare habitats with 45% of their area having been damaged or destroyed by quarrying activity[xli]. In 1990, only 3% of the area left remained undamaged[xlii]

Post-industrial sites including former quarries, drained reservoirs, disused railways, and certain types of industrial tips have been colonised naturally by a wide range of plants and animal communities such as Mere Sands Wood Nature Reserve. These sites are valuable for their biodiversity and there is a need to recognise their importance in the context of pressure for development or redevelopment and a need to manage them appropriately to enhance their biodiversity value.

Table Eleven: Pressures and opportunities for recovery

Pressures	Example Habitats Affected	Broad Species Assemblages Affected (including indicative species)	Example Opportunities Identified
• Land management detrimental to biodiversity • Habitat loss • Invasive species • Recreational Pressure – from activities such as climbing & caving, mountain biking etc. • Climate Change	Caves & mines Inland rock exposures and scree Limestone Pavements Man-made rock features (for example, man-made historic features like barns, sheep folds and dry walls). Open Mosaic on Previously Developed Land – outside urban areas (≥10,000 residents) Quarries Spoil heaps & quarries	**Structural Diversity (Limestone Habitat Mosaic)** 42 shortlisted species including: Plants - • Dwarf spurge • Mountain melick • Blue-moor grass • Dark-red helleborine • Baneberry • Juniper • *Tortella densa* (a moss) • Chestnut-coloured Carpet moth • Barred tooth-striped moth **Limestone pavement/rock (often linked with the above)** 9 shortlisted species including:	Develop current biodiversity management plans for active and recently closed quarries. Gain a better understanding of suitable biodiversity management of rocky habitats, write guidance and share best practice. Control both native and non-native invasive species to reduce encroachment. Work with Buglife and the Arnside and Silverdale National Landscape to conserve the nationally significant species found within this Important Invertebrate Area.

		Plants - • Lily-of-the-valley • Northern bedstraw • Limestone fern • Grayling (butterfly) • Narrow-mouthed whorl snail **Rocky woodland** 9 shortlisted species including: Plants - • Lady's slipper orchid • Killarney Fern • Spring Cinquefoil **Exposed Rock (Acidic)** including: • 10 lichen species. **Exposed rock (Basic)** 6 shortlisted species including: Plants - • Bloody Crane's-bill • Green spleen-wort • *Bryum elegans* (a moss) • *Tortella squarrosa (Pleurochaete squarrosa*, a moss) **Exposed rock/crags (scrub, heath moorland)** 8 shortlisted species including: Plants - • Hoary whitlowgrass • Hay-scented Buckler-fern • Peregrine falcon	

Table Twelve: Rocky habitats priorities, potential measures, and associated benefits

ROCKY HABITATS			
PRIORITY	**MEASURE**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
R1. Limestone pavement habitats with high biodiversity value.	**R1.1** - Suitable management of the features associated with limestone pavements present. **R1.2** - Re-establish the naturally occurring gryke communities. **R1.3 -** Write and promote the use of the limestone pavement handbook.	*Plants -* • **Lady's slipper orchid** • Northern bedstraw • Spring Cinquefoil • Limestone fern • Dwarf spurge • Mountain melick • Blue-moor grass • Juniper • Lancastrian whitebeam • Baneberry • Green spleenwort • Dark-red helleborine • Lily-of-the-valley • **Duke of Burgundy** • **High brown fritillary** • **Pearl-boarded fritillary butterflies** • Grayling (butterfly) • Chestnut-coloured carpet moth • Barred tooth-striped moth • Narrow-mouthed whorl snail	National objectives and targets: 1, 2, 3, 5, 8, 10, 11, 12, 15, 16 Wider benefits: • preservation of natural resources, • social, cultural and educational Other linked LNRS Priorities:

R2. Rocky outcrops with high biodiversity value.	**R2.1** - Suitable management for local naturally occurring biodiversity of the features present for example appropriate grazing and scrub control.	• Peregrine • 10 lichen species • *Bryum elegans* (a moss) • *Tortella squarrosa (Pleurochaete squarrosa*, a moss) *Plants* - • Bloody crane's-bill • Green spleenwort • Hoary whitlowgrass • Hay-scented buckler-fern	National objectives and targets: 1, 2, 8, 11, 16 Wider benefits: • preservation of natural resources, • social, cultural, and educational Other linked LNRS Priorities:
R3. Biodiversity value of geological features, rocky habitats and artificial habitats arising from past industry and development is maximised.	**R3.1 -** Maintain and enhance existing biodiversity value of geological features, rocky habitats and artificial habitats arising from past industry and development, including quarries, disused railways, open mosaic on previously developed land and spoil heaps (hushings) for example, by appropriate management for the habitat type. **R3.2** - Create and maintain locally appropriate habitats on rocky substrates arising from past industry and development in suitable locations beneficial to habitat connectivity for example by creating new habitat to support shortlisted species.	All above	National objectives and targets: 1, 2, 3, 8, 11, 16 Wider benefits: • preservation of natural resources, • social, cultural and educational, • improve connectivity Other linked LNRS Priorities:

Wooded Habitats & Trees

Lancashire is home to a range of thematic habitat types relating to trees and woodland. The thematic habitat of trees and woodland includes the trees, hedgerows, scrub, orchards, woodlands proper, wood pasture and parkland, wet woodland, and commercial forestry. However, tree and woodland cover is approximately 10.34% (2022 National Forest Inventory figures), this is below the North West average for woodland cover (12.57%) and the England average at 14.87%.

Up to 40% of England's ancient woodlands have been cleared and replanted with non-native timber species[xliii]. The way in which trees and woodland are established and managed will influence their biodiversity and the other benefits they provide[xliv]. Lack of management of existing woodlands is leading to poor condition and replanting is often required. Grazing by deer is one of the main pressures on existing temperate rainforests[xlv]. The population of deer is higher today than at any time in the last 1,000 years[xlvi].

In 2018 a survey of 43.36km of hedgerows by the Pendle Hill Landscape Partnership[xlvii] recorded the following:

- 38.2% were species-poor hedgerows with trees.
- 26.6% were species-poor hedgerows (no trees).
- 24.3% of hedgerows were defunct.
- 9.4% were species-rich hedgerow with trees.
- 1.5% were species-rich hedgerow (no trees).

In terms of hedgerow condition, the survey revealed that:

- Only 7.3% of hedgerows had no gaps.
- 32.1% had less than 10% gaps.
- 68.5% of hedges had less than 50% gaps.
- 31.5% had more than 50% gaps.

A number of community orchards are known to have been planted in recent years, including examples in Blackburn with Darwen, Lancaster, South Ribble and Wyre. However, there does not appear to be a register of either new or pre-existing orchards in Lancashire. Hence, the number, area, composition and condition of orchards in Lancashire is unknown. According to the Arnside and Silverdale AONB Management Plan 2019-2024, while some orchards are well managed, the condition of others is deteriorating and many are in need of concentrated restoration work.

Table Thirteen: Pressures and opportunities for recovery

Pressures	Example Habitats Affected	Broad Species Assemblages Affected (including indicative species)	Opportunities Identified
• Climate change • Pests and diseases • Land management detrimental to biodiversity • Invasive species • Habitat loss and fragmentation • Recreational Pressures	Ancient and native woodland Ancient & veteran trees Broadleaved woodland Coniferous woodland Mixed woodland Wet woodland Yew Woodland Hedgerows Orchards Scrub Wood pasture and parkland	**Woodland (Broadleaved) including ancient, damp/wet and calcareous.** 54 shortlisted species including: Plants - • Bird's-nest Orchid • Enchanter's nightshade • Dark-leaved willow • Wild service tree • Netted carpet moth • *Ulota calvescens* (a cushion moss) • *Rhytidiadelphus subpinnatus* (a turf-moss) Fungi - • Orange chanterelle • Blackening coral fungi Birds - • Hawfinch • Willow tit • Goshawk • Pine martin • Hazel dormouse • Numerous bat species **Structural Diversity (Calcareous Habitat Mosaic, rocky woodland, limestone, juniper scrub, woodland rides and coppice)** 22 shortlisted species including: • 4 LNRS target species (3 butterflies, 1 bee) • White-letter hairstreak butterfly • Hedgehog • Painted pill woodlouse Plants -	Increase tree and woodland cover. Integrate existing community woodlands and country parks into the surrounding landscape. Riparian planting to slow the flow, regulate water quantity and reduce water temperatures. Restore traditional orchards and establish new orchards in public open space for communities. Restock conifer plantations with native trees and manage them for nature conservation and recreation encouraging public access in these locations. Coppice management for timber production, improve structural diversity and create green jobs.

		• Narrow-leaved bitter-cress • Yellow bird's-nest • Lancastrian whitebeam **Riparian Woodland (including riverside trees and woodland and shaded banks):** • Black poplar • **Yellow star-of-Bethlehem** **Scrub Mosaic (including Structural Diversity (Grassland/Woodland), wood pasture, woodland edge/heath, early Succession (Birch Wood) and hedgerows.** 16 shortlisted species including: • Tea-leaved willow • Brown hairstreak butterfly • Large red-belted clearwing moth • Broad margin mining bee • Tree snipe fly • Black grouse **Deadwood & Litter** One lichen species and 9 shortlisted invertebrate species including: • *Trichrysis cyanea* (blue cuckoo wasp) • *Crossocerus binotatus* (a digger wasp) • *Lasius fulginosus* (a jet ant) • Lesser Sabre Comb-Horn (crane-fly) **Mixed and coniferous woodland** 4 shortlisted species: • Red squirrel • Nightjar (bird) • **Red wood ant** • Shiny guest ant	

Table Fourteen: Wooded habitats and trees priorities, potential measures, and associated benefits

WOODED HABITATS AND TREES			
PRIORITY	**MEASURE**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
W1. Biodiversity value of existing wooded habitats is maximised.	**W1.1** - Restore natural processes and enhance the biodiversity value of existing wooded habitats, prioritising ancient and long-established woodlands, temperate rainforest, Plantations on Ancient Woodland Sites (PAWS) and wet woodland. **W1.2** - Enhance the biodiversity value of broadleaved, mixed and coniferous plantation woodland, including: - diversification of structure, age and species composition, - increasing the proportion of native species, - retaining permanent areas of broadleaved woodland, - creation of open habitats such as rides, glades and transitional woodland edge habitats, through selective felling, coppicing and ride management to increase the extent, diversity and connectivity of understory in woodlands and limit over-shading. - increasing standing and fallen dead wood. - inoculating habitats with appropriate native species from suitable agreed donor sites. **W1.3** - Introduce low impact woodland management and silviculture practices including sustainably managed Continuous Cover Forestry to diversify age range and structure of woodland. **W1.4** - Employ measures to minimise grazing and trampling pressure on woodland ground flora and understorey, including fencing where appropriate.	*Plants* - • Bird's-nest Orchid • Enchanter's nightshade • Narrow-leaved Bitter-cress • Yellow bird's-nest • Tea-leaved Willow • Wild service tree • Lancastrian whitebeam • *Plagiomnium ellipticum* (a moss) • *Pylaisia polyantha* (a moss) • Orange chanterelle (fungi) • Blackening coral fungi *Birds* - • Hawfinch • Goshawk	National objectives and targets: 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16 Wider benefits: • Timber production, • Carbon sequestration, • Improved air quality, • health and wellbeing • climate regulation, • social, cultural, and educational Other linked LNRS Priorities: AW1, AW2, AW4, P2, P3, P4, W2, U2, U3, U4

	W1.5 - Retention and appropriate maintenance of aged, ancient and veteran trees to maximise their lifespan and biodiversity value, including safe retention of dead and decaying wood and other veteran features as well as maintenance of root protection zones to prevent construction, soil compaction, cultivation/excavation and application of fertilizers and pesticides. **W1.6** - Enhance and restore wood pasture and parkland with veteran trees and manage for biodiversity. **W1.7** - Restore and expand juniper scrub including encouraging natural regeneration and appropriate planting on suitable soils. **W1.8** - Retain and enhance standing and fallen dead wood resources in wooded habitats to maximise biodiversity value. **W1.9** - Retain trees with ash dieback where considered appropriate and safe to do so. Provide adequate replacement planting where retention is not possible. **W1.10** - Enhance the biodiversity value of hedgerows for example: - Bring hedgerows into lifecycle management including periodic rejuvenation. - Promote hedgerow management that routinely benefits wildlife such as incremental trimming and longer trimming rotations. - Lay or coppice hedgerows which have passed their peak maturity to encourage dense base regrowth and ensure another lifecycle.	• Black grouse • Pine martin • Polecat • Hazel dormouse • Hedgehog Roosting & foraging bat species including: • Noctule • Brown long-eared • Natterer's bat • **Wall mason bee** • Broad margin mining bee • Large red-belted clearwing moth • White-letter hairstreak butterfly • Painted pill woodlouse • Tree snipe fly	
W2. Expanded and reconnected wooded habitats of all types and tree cover in	**W2.1** - Establish riparian woodland and trees along water courses, riparian corridors and floodplains, through appropriate planting or natural colonisation, where biodiversity gains and improved habitat connectivity can be achieved. **W2.2** - Expand and enhance wooded clough habitats, through natural regeneration or appropriate planting if necessary, where biodiversity gains and improved habitat connectivity can be achieved.	In particular: • **Yellow star-of-Bethlehem** • Black poplar As W1 priorities.	National objectives and targets: 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16 Wider benefits: • Improved water quality in aquatic environment,

appropriate locations.	**W2.3** - Creation of new biodiverse woodlands incorporating appropriate native species and avoiding detrimental impacts on important habitats and species.	In particular: • Willow tit • Netted carpet moth • Dark-leaved willow In particular: Pied flycatcher	• Watercourse infiltration, • Resilience against water quantity extremes, • Supports groundwater recharge, • Agricultural benefits for livestock (shade, shelter, browsing), • Erosion prevention, • Reduction in flood risk to local communities, • Carbon storage, • Timber production, • Climate resilience, • health and wellbeing • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW4, G3, P2, P3, U1, U2, U3, U4
	W2.4 - Appropriate management of woodland verges which may be particularly valuable in aiding connectivity.		
	W2.5 Wet woodland creation in suitable locations for example floodplains and post-industrial habitats including natural regeneration, planting of appropriate native species and potentially re-wetting of suitable woodland sites on previously drained land.		
	W2.6 - Create new wood pasture and parkland.		
	W2.7 - Create appropriate semi-natural habitats to buffer, expand or connect existing woodland, incorporating natural regeneration wherever possible.		
	W2.8 - Restore and create temperate rainforest on suitable sites along Lancashire's Atlantic seaboard with precursor vegetation or where indicated by site suitability mapping.		
	W2.9 - Create biodiverse and structurally diverse locally distinctive native hedges, reinstate relic hedgerows and establish boundary trees to connect existing woodland and hedgerow networks.		

Urban Habitats (Including Infrastructure Networks)

Throughout Lancashire's long history, changes in agriculture, industry, society and the environment have had a profound and lasting influence over the landscape and urban environment[xlviii]. Our industrial past has left us with many brownfield sites, including open mosaic habitats on previously developed land, which have considerable biodiversity value. Recent increases in housing targets and demand for housing are exerting pressure on brownfield sites for residential development.

The most important habitats in the urban group are the biodiverse open spaces within towns, cities and urban areas. Opportunities for nature recovery in the urban environment include effectively designed green and blue infrastructure. It is therefore essential that nature is at the heart of urban regeneration to create attractive, investable places that are good for people, climate, and the economy[xlix].

Many of the broad urban habitat types replicate those from the other habitat groups (for example, trees and wooded habitats, aquatic and wetland habitats such as ponds and canals, rocky habitats such as open sandy/stony ground). For simplicity not all of these have been repeated within the tables below. Please see the 'Species shortlisted for recover in Lancashire' in the *Evidence and Technical Information* supporting document[4] for the full urban species assemblage list.

Table Fifteen: Pressures and opportunities for recovery

Pressures	Example Habitats Affected	Broad Species Assemblages Affected (including indicative species)	Example Opportunities Identified
• Climate change • Habitat loss and fragmentation, particularly through development • Land management detrimental to biodiversity • Flood risk • Recreational pressure	Farmland enclosed by the urban environment. Open mosaic on previously developed land in urban areas (≥10,000 residents). Rivers & streams, canals & other waterways	**Brownfield (including open mosaic on previously developed land, disturbed ground, exposed ground, waste ground).** 31 shortlisted plant and moss species including the plants: • Pyramidal Orchid • Bee orchid • Basil thyme • Marsh helleborine • Small cudweed **Parkland, parks, Gardens, orchards, verges and rich flower resource.**	Broadleaved native trees and woodland planting. To improve the structure of park woodland to target urban heat islands in towns and cities. To create urban farms and urban nature reserves for inner city or highly urban communities. To improve engagement with local community groups for example nature focused community projects. Embed nature recovery in education in our primary and secondary schools. Raise awareness in the value of gardens for wildlife.

[4] *Document to follow.*

		14 shortlisted species including: • Hedgehog Plants - • Small-flowered buttercup • Bladder campion • Slate bolete fungi • Moss carder bee • European Hornet **Open water (reservoirs, ditches, ponds, canals and marginal vegetation).** 32 shortlisted species including: • Common toad • Water vole • Foraging bat species • Red-eyed Damselfly • Numerous pondweed species • Green figwort (plant) • *Weissia rostellata* (a moss) • *Physcomitrium sphaericum* (a moss) **Manmade structures/buildings** 11 shortlisted species including: • Numerous roosting bat species including pipistrelles, Daubenton's and whiskered bats. Birds - • Swallow • Swift • House martin • Starling • Peregrine falcon	Raise awareness in the value of maintaining a variety of semi-natural habitats and how to incorporate management to benefit biodiversity in parks and other green spaces. Enhance green corridors and active travel routes through urban areas for example, along linear infrastructure and urban watercourses. Develop/create green spaces within the public & private estates for example, NHS, schools, colleges and universities. Incorporate/create Sustainable Urban Drainage systems

Table Sixteen: Urban habitats priorities, potential measures, and associated benefits

URBAN HABITATS AND INFRASTRUCTURE NETWORKS			
PRIORITY	**MEASURE**	**SHORTLIST SPECIES BENEFITED**	**BENEFITS**
U1. Suitable habitats and features created and maintained to support thriving populations of urban species important to Lancashire.	**U1.1** – Create insect-rich habitat to support swift breeding populations in Lancashire sites as part of a wider, program of landscape scale habitat restoration to support this often-urban nesting, critically declining species.	Swifts, invertebrates, other invertebrate predators and invertebrate reliant species (e.g. wildflowers).	National objectives and targets: 1, 2, 3, 4, 5, 6, 8, 12, 13, 15, 16 Wider benefits: • health and wellbeing, • reduction in heat loss, • reduction in carbon emissions, • climate resilience, • attenuate water to reduce flood risk, • mitigate water quantity extremes, • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW3, AW4, G1, G2, R3, R4, W1, W2, U2, U3, U4
	U1.2 - Create more connected pollinator habitat in and through urban centres seeking connectivity to the B-Lines approach.	Invertebrates such as: • Wool carder bee • *Stelis punctulatissima* (a bee) • *Dolichovespula media* (a wasp)	
	U1.3 - Protect existing swift nesting sites.	Swifts	
	U1.4 - Retro-fitting nesting and roosting opportunities on existing buildings and infrastructure.	Bird species for example: • Swallow • Swift • House martin • Starling Bat species, for example: • Common pipistrelle • Soprano pipistrelle • Whiskered • Brandt's bat	

	U1.5 - Retro-fit green roofs and brown roofs on existing buildings green walls, roof gardens and balcony planting into new buildings.	Large numbers of invertebrates and the birds and bats that feed on them.	
U2. Maximised biodiversity value of new and existing urban environments and infrastructure networks.	**U2.1** - Promote the naturalisation of watercourses including the establishment of buffer habitats in the urban environment.	• Common toad • Water vole • Foraging bat species • Red-eyed damselfly *Plants -* • Numerous pondweed and water-crowfoot species • Green figwort	National objectives and targets: 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16 Wider benefits: • Improve access to green space, • health and wellbeing • improve water quality by intercepting diffuse pollution, • attenuating water to reduce flood risk, • mitigate water quantity extremes, • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW3, AW4, G1, G2, W1, W2, U1, U3, U4
	U2.2 - Create more waterbodies, wetlands and other aquatic habitats in urban areas, considering connectivity such as garden ponds, aerial ponds, bioswales, rain gardens and biodiverse sustainable drainage systems.		
	U2.3 - Wooded habitat creation and enhancement in urban open spaces such as orchards, street trees, micro-woods, urban woodland and hedgerows.	• Hedgehog • Greenfinch *Plants -* • Small-flowered buttercup • Pink-flowered bramble • Slate bolete fungi • European hornet • *Brachychaeteuma bagnalli* (a millipede)	
	U2.4 - Grassland creation and enhancement containing species suitable to the location and purpose in urban open spaces for example locally native wildflower grasslands and pollinator patches.	*Plants -* • Pyramidal Orchid • Common spotted and marsh orchids • Rough hawk's-beard • Lesser hawkbit	

		• Bladder campion • Yellow-wort.	
	U2.5 - Enhancement of open mosaic habitat on previously developed land for biodiversity.	*Plants* - • Bee orchid • Basil thyme • Marsh helleborine • Small cudweed • Sand spurrey • Quaking grass	
	U2.6 - Habitat creation and enhancement through appropriate management within urban parks, public open space, gardens, allotments, historic parks and gardens, burial grounds, cemeteries, churchyards and other religious memorial sites.	As above Peregrine falcon • Important grassland fungi such as waxcaps and earthtongues.	
	U2.7 - Habitat creation and enhancement through appropriate management within the public estate for example educational grounds, the NHS estate, the Crown Estate, Ministry of Defence land, complete landfill sites and local authority land.	As above	
	U2.9 - Review and adapt existing lighting design in parks and along streets and linear infrastructure to be more wildlife friendly, whilst remaining safe and useable by people.	Bats often found in urban settings including: • Pipistrelle's • Daubenton's bat • Natterers • Whiskered • Brandt's • Serotine	
	U2.10 - Incorporate appropriate native habitats and species into Sustainable Urban Drainage Systems.	• Hedgehogs	

U3. Increased connectivity of habitats through and between urban landscapes.	**U3.1** - Create and enhance of connected habitats along transport and other linear infrastructure corridors for example greener active travel routes, diversification of verges, canal network and towpaths through appropriate management.	As above	National objectives and targets: 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 15, 16 Wider benefits: • Improve access to green space, • reduction in noise pollution, • improve air quality, • health and wellbeing, • address severance, • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW3, AW4, G2, G3, R4, W1, W2, U1, U2, U4
	U3.2 - Enhance connectivity of habitats across transport and other linear infrastructure corridors and reverse the effects of severance, including for example hedgerows, green bridges, removal or widening of culverts, creation of underpasses, 'hop-over' planting.		
	U3.3 - Habitat creation and enhancement to connect urban habitats and green spaces to the wider ecological network, including new or enhanced stepping-stone habitats, wildlife corridors and biodiverse open spaces**.**		
	U3.4 - Create and enhance habitats to buffer the canal network.		
U4. Biodiverse publicly accessible spaces and routes.	**U4.1** - Habitat creation, enhancement and management within public open space and along active travel routes.	As above	National objectives and targets: 1, 2, 3, 4, 6, 10, 12, 15, 16 Wider benefits: • Improve air quality, • Improve water quality, • health and wellbeing • Improve access to green space, • social, cultural and educational Other linked LNRS Priorities: AW1, AW2, AW3, AW4, G2, W1, W2, U1, U2, U3
	U4.2 - Creation and restoration of Local Nature Reserves, District Wildlife Sites, Country Parks and Suitable Alternative Natural Green Spaces.		

Biological Heritage Sites (BHS)

Biological Heritage Sites are the best areas for biodiversity within Lancashire, outside of legally protected (statutory) sites. Unlike statutory designated sites which have their own management plans and statutory powers, BHS do not, but as with other local wildlife sites, form part of the core sites from which our Local Habitat Map has been based. Once we know where the best areas for biodiversity are, we can work to protect and conserve them. We do not have up to date information on the condition of many of these sites (of which there are 1,215), and we continue to find out about potential new ones (provisional BHS). It was therefore important to include a priority and mapped measures for practical action to maintain and appropriately enhance Biological Heritage Sites, ensuring conservation of these sites and the species they support.

It should be borne in mind that the BHS system is not static, with the extent of BHSs regularly reviewed and updated (with greater frequency than the LNRS mapping which will be static from publication until review). Provisional Up to date mapping of BHS boundaries can be found here Nature Recovery Interactive Map

Table Seventeen: BHS priorities, potential measures, and associated benefits –

BIOLOGICAL HERITAGE SITES (NON-STATUTORY COUNTY WILDLIFE SITES)			
Priorities	**Measures**	**Species Benefits**	**Benefits**
The ecological interest of Biological Heritage Sites is maintained and appropriately enhanced.	**B1 -** Habitat enhancement and positive conservation management within Biological Heritage Sites which increases the ecological value of the site, supporting the habitats, species and qualifying features of the site, and has been agreed with the BHS Partnership.	As listed in the qualifying features	BHS play a significant role in meeting overall national biodiversity targets as sites of particular importance for biodiversity. In order to maximise these benefits – refer to the description of the sites in the BHS guidelines.
	B2 - Habitat creation and enhancement adjoining Biological Heritage Sites to benefit the BHS's ecological value, with input from the BHS Partnership.		

Target Species

24 'target species' have been prioritised for bespoke measures beyond the more general habitat creation and enhancement measures. These include some of the most scarce, declining, or important species in the County. Bespoke measures for these species often involve multiple coordinated actions to bring about recovery. By enabling the recovery of these species, the LNRS aims to contribute to the following two national environmental targets:

- *Halt the decline of species abundance by 2030. Ensure that species abundance in 2042 is greater than in 2022, and at least 10% greater than 2030.*
- *Reduce the risk of species' extinction by 2042, when compared to the risk of species' extinction in 2022.*

Where these species are a qualifying feature of a SSSI (such as hen harrier in the Bowland Fells), then species recovery measures outside of the relevant SSSI will help bolster the population and aid dispersal. This could also contribute to the relevant key additional commitment of the Environmental improvement Plan (2023) *'Restore 75% of Sites of Special Scientific Interest to favourable condition by 2042. By 31 January 2028 50% of SSSIs will have actions on track to achieve favourable condition*'.

The Priority '***SR1: Enable the recovery of scarce and declining species and other species considered to be important to Lancashire, which require bespoke species recovery measures***' and bespoke measures for these species are included in the table below.

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Table Eighteen: Target species priorities, potential measures, and associated benefits –TARGET SPECIES

LNRS TARGET SPECIES & BESPOKE MEASURES			
PRIORITY	**SR1: Enable the recovery of scarce and declining species and other species considered to be important to Lancashire, which require bespoke species recovery measures.**		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Red squirrel (RS)	**RS1** - Protect existing red squirrel populations to maintain their current range for example, by prioritising grey squirrel management including actively managing to maintain a buffer between red and grey populations and promoting habitat best practices such as rotational thinning of older conifer trees to maintain cone productivity.	Pine marten Nightjar W1 and W2 See Universal Priorities - *Priority: Biosecurity and control of invasive species*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Endangered Local status – Lancashire Biodiversity Action Plan (LBAP) and BHS species, found in isolated areas which cannot sustain viable populations. Enabling the recovery in Lancashire also bridges the gap between existing population in Cumbria and Liverpool City Region.
	RS2 - Improve and connect existing and suitable areas for red squirrel whilst preventing grey colonisation, for example by: • Defining expansion zones • Promote appropriate habitat management (good practice guidance for woodland and forestry) to landowners and managers in potential red squirrel areas, Planting of favoured trees to expand existing areas.		
	RS3 - Collaborate with Neighbouring LNRS Authorities (Cumbria, West/North Yorkshire and Liverpool City Region) to align actions that benefit red squirrels and contribute to a joined up and expanded network of red squirrel populations, whilst continuing to develop and implement our measures in line with the developing 'England Red Squirrel Strategy'.		

	RS4 - Conduct research into the ecology of squirrels within Lancashire to improve understanding of the dynamics between red and grey squirrels, the changes in distributions of each species and recovery needs of red squirrels within Lancashire. Such research will guide conservation actions for red squirrels at a local scale and identify the need for further action.	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
	RS5 - Once appropriate grey squirrel (and squirrel pox transfer) and habitat management is in place, explore appropriate measures to facilitate red squirrel colonisation into expanded and connected sites, either through natural dispersal or reintroduction.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**WIDER BENEFITS**
Atlantic salmon (AS)	**AS1-** Work with land managers in upper river catchments to reduce the impact of the use of Diazinon (an insecticide used in sheep dip) on nearby watercourses which has a significant impacts on olfactory function in Atlantic salmon, by ensuring sheep do not access or cross watercourses following dipping and by ensuring that they are dipped in an area which drains to tank, rather than surface water drains. This is particularly important as sheep dip tends to be applied between September and November, a time when Atlantic salmon are arriving at their spawning locations in upper river catchments, hugely increasing the risk of impacts from this chemical.	Many riverine species See Universal Priority - *Priority: Nutrient enrichment and pollution are minimised.* Eel Brown trout Grayling	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Endangered Local status – Lancashire BHS and BAP species. Cross boundary importance – yes (tbc)
	AS2 – River restoration in areas where salmon are known to spawn/have previously spawned to make catchments more resilient to both high and low flows and alleviate pressures caused by water quantity extremes such as the loss of redds (spawning sites) and increased mortality via exposure to extreme temperatures by delivering habitat measures to store water and slow the flow of water during high flows; and store and slowly release water during low flow periods which can also result in a loss in available habitat area for juvenile salmon and an increase in competition for habitat.		

	AS3 - Work to improve habitat quality in likely spawning areas to help provide a greater area of suitable spawning habitat both within the main stem of rivers and within tributaries for spawning adults for example, natural pool/riffle sequences and refugia (large wood, overhanging trees, complex habitat etc.	AW2 (all) and AW4 - AW4.1, AW4.2 & AW4.4	
	AS4 - Create and restore river habitat to support juvenile salmon during their various development phases. for example, by providing suitable habitat via the reintroduction of appropriately sized sediments and the introduction of refugia such as large rocks and large wood at priority sites, especially those in close proximity to known spawning locations.	AW2.1, AW2.2 & AW2.3.	
	AS5 - Work to improve habitat complexity for example, via the installation of large wood and boulders and the creation of complex instream habitats within lower reaches of river networks, to provide greater refugia for young salmon during their downstream migrations. This is particularly important where flow regimes are affected by drought conditions, where migration can be held up by low flows increasing the likelihood of predation.	AW2.1 & AW4.1.	
	AS6 - Improve connectivity by focussing on the removal of, or mitigation of man-made barriers across the river network, a key issue for this species. Barriers include dams, weirs, fords and culverts of any height in the river network and impacts should be considered for both upstream and downstream migration.		
	AS7 - Survey and monitoring work needs to be undertaken to: • Assess watercourses within spawning range for spawning habitat availability and suitability. • Assess adult populations and population structures within all principal salmon rivers. • Assess spawning activity at known/expected spawning locations. • Assess smolt (a specific salmon life stage) escapement at a catchment scale, helping to further understand migration pathways, triggers and pressures.	AW2.2	

	• Assess the impacts of water transfers on both upstream and downstream migrations (the Lune/Wyre Conjunctive Use Scheme). • Investigations at a catchment scale to understand the impact of barriers on the downstream migration of Atlantic salmon smolts.	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Smelt (SM)	**SM1 -** Make coastal catchment areas more resilient to both high and low flow through actions designed to slow the flow of water during high flow and store and slowly release during low flow to improve water quality, a key issue for this species.	Eel Brown trout	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – UKBAP and S41 Local status – The Lancashire population is of national significance and has undergone massive declines in Lancashire (and the NW). Cross boundary importance – yes (tbc)
	SM2 - Urgent habitat improvements in likely spawning areas with suitable tidal regimes to provide a greater area of suitable spawning habitat within the main stem of rivers and within estuarine tributaries (for example, shallow fast flowing riffles) and refugia (for example, large wood, overhanging trees etc) for spawning adults.	C1.2, C1.3 and C3.2	
	SM3 - Improve connectivity within tributaries where their confluence is adjacent or downstream of the tidal limit for example, by removing, modifying or mitigating the impact of barriers within watercourses, specifically including low head impoundments (small weirs, road culverts and other bed modifications) and that prevent the occurrence of natural tidal regimes such as tidal flaps.		
	SM4 - Population surveys (for example, potential for Citizen Science projects) to: • Assess watercourses within spawning range for spawning habitat availability and suitability. • Assess adult populations and population structures within coastal waters and estuaries.	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	

	• Assess spawning activity at known/expected spawning locations. Assess juvenile smelt within estuaries using refined techniques based on works undertaken on River Thames.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Hen harrier (HH)	**HH1 -** Continued monitoring of breeding attempts and key winter roost sites across the County.	P6 (all) Merlin, Short-eared owl P4.5 P4.4, P5.2, P5.3 See Universal Priorities – *Priority: Access to nature is provided whilst minimising recreational impacts on sensitive sites, habitats and species populations.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Endangered and S41 Local status – BHS and LBAP species. Designated feature of the Bowland Fells SSSI (and SPA). The Lancashire population is of national significance. Cross boundary importance – yes (tbc)
	HH2 - Protection of recently used nest sites for example, by ensuring deep vegetation cover for nesting is retained and burning or cutting is avoided within a buffer of 100m around nests used in the past 5 years.		
	HH3 - Protection of winter roost sites by, for example: - avoiding cutting, mowing and topping in these areas, - protecting from potentially detrimental land use changes such as tree planting and wind farm developments.		
	HH4 - Consider legal predator control of species that may seek to prey upon eggs and chicks at existing breeding sites.		
	HH5 - Manage potential impacts from human activities throughout the year considering both breeding and winter roosting sites for example by, restricting recreational activities and providing information for the public.		
	HH6 - Stop any larger scale land management operations in potential nesting areas by March to avoid disturbance of prospecting birds.		
	HH7 - Promote diversionary feeding at potential future nesting sites on managed grouse moors to mitigate the potential impact of hen harrier predation on grouse and the associated conflict; and support expansion of the hen harrier population.		

TARGET SPECIES	MEASURE	RELATED HABITAT MEASURES AND SPECIES BENEFITS	WIDER BENEFITS
Black-tailed godwit (BTG, breeding)	**BTG1 -** Erect predator exclusion fences or implement legal predator control of species that may seek to prey upon eggs and chicks at existing and potential breeding sites.	Other ground nesting birds at these sites See Universal Priorities – *Priority: Access to nature is provided whilst minimising recreational impacts on sensitive sites, habitats and species populations.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Endangered Local status – LBAP and BHS species. The Lancashire population is of national significance. Designated feature of the Ribble Estuary SSSI (and of Ribble & Alt Estuaries and Morecambe Bay & Duddon Estuary SPAs). Cross boundary importance – yes (tbc)
	BTG2 - Manage potential impacts from human activities during the breeding season (from March when birds are prospecting nest sites to July inclusive) at existing and potential breeding sites for example by, restricting recreational activities such as dog walking, fishing and the use of drones/UAVs and providing information for the public.		
	BTG3 - Management of wet features at existing and potential breeding sites for example ditch reprofiling and soil spreading to retain reasonable amounts of muddy edge to feed on.		
	BTG4 - Creation of a series of wet features at potential breeding sites for example, scrapes and pools where mud is exposed for feeding ground through spring and early summer. These may need to be fed by a constant source of water for example, from a spring or stream to feed wet features in dry springs to ensure wet mud is available throughout the breeding season.		
	BTG5 - Removal of trees (ensuring appropriate consultation, assessment and compliance to avoid any detrimental impacts on other species or the habitat) at existing and potential breeding sites that may act as perches for avian predators and ensure no tree planting is undertaken in these areas.		
	BTG6 - Once predator fencing and appropriate habitat management is in place, develop project for the release of head-started birds to boost existing population numbers. Further info can be found at Project Godwit – Securing the future of black-tailed godwits in the UK.	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**WIDER BENEFITS**

Black-headed gull (BHG)	**BHG1** - Erect predator exclusion fences or implement legal predator control of species that may seek to prey upon eggs and chicks at existing and potential breeding sites.	Other ground nesting birds at these sites	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Amber List. Local status – LBAP species. Designated feature of the West Pennine Moors SSSI. The Lancashire population is of national significance. Cross boundary importance – yes (tbc)
	BHG2 - Manage potential impacts from human activities during the breeding season (from March when birds are prospecting nest sites to July inclusive) at existing and potential breeding sites for example by, restricting recreational activities such as dog walking, fishing, water sports and the use of drones/UAVs and providing information for the public.	See Universal Priorities – *Priority: Access to nature is provided whilst minimising recreational impacts on sensitive sites, habitats and species populations.*	
	BHG3 - Habitat management during the winter to remove any growing vegetation from the summer months before the Gull's return in March to ensure an open nesting platform is available at existing and potential breeding sites.		
	BHG4 - Manage water levels at existing breeding sites for example, to avoid flooding of nest sites during high rainfall, and predation during prolonged dry periods where water levels fall allowing predators to cross over to Island nesting sites.		
	BHG5 - Create islands on open areas of water at existing and potential breeding sites either by: 1. Installing rafts to provide nesting habitat, or where this is unsuitable (for example, on reservoirs where these may pose a threat to spill ways) – 2. Create islands from stone (depending on the water body depth tipping large amounts of stone can create a safe nesting site for breeding Gull's).		
	BHG6 - Monitor any growth of Lesser Black-backed Gull (and other Larus species) populations against any negative impact on Black-headed Gull colonies.	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
	BHG7 - Monitor growth of growing Greylag Goose populations against disturbance and reduction of the available area for nesting Black-headed Gull colonies.		

TARGET SPECIES	MEASURE	RELATED HABITAT MEASURES AND SPECIES BENEFITS	BENEFITS
Lesser black-backed gull (LBBG)	**LBBG1** - Erect Predator exclusion fences or implement legal predator control of species that may seek to prey upon eggs and chicks at existing and potential breeding sites.	Other ground nesting birds at these sites	Benefits to nature recovery network: National status – GB Amber List. Local status – LBAP species. The Lancashire population is of national significance. Designated feature of the Bowland Fells SSSI (and SPA) and Ribble Estuary SSSI (and the Ribble & Alt Estuaries and Morecambe Bay & Duddon Estuary SPAs). Cross boundary importance – yes. Will feed into the North West England Gull Project www.nwgulls.org.uk (specifics tbc)
	LBBG2 - Manage potential impacts from human activities during the breeding season (from March when birds are prospecting nest sites to July inclusive) at historic/potential natural breeding sites for example by, restricting recreational activities such as dog walking, fishing, and the use of drones/UAVs and providing information for the public.	See Universal Priorities – *Priority: Access to nature is provided whilst minimising recreational impacts on sensitive sites, habitats and species populations.*	
	LBBG3 - Protect existing urban nesting sites from interference for example ensure no netting is erected to avoid entanglement resulting in the loss of existing nesting areas for lesser black-backed gulls.		
	LBBG4 - Habitat management during the winter to remove any growing vegetation from the summer months before the Gull's return in March to ensure an open nesting platform is available at historic/potential natural breeding sites.		
	LBBG5 - Manage potential impacts from the reduction in feeding sites and the resulting increase in foraging in in-bye fields by promoting a change in livestock feeding systems for example, through careful placement of feeders and/or the use of covered feeders to discourage Gull's (RSPB, 2022 - Forest of Bowland - Gull Proof Feeder Trial Report).	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
	LBBG6 - Continued monitoring of movements of breeding Lesser black-backed gulls between colonies in the northwest of England through the Natural England colour ringing scheme.		

	LBBG7 - Establish a project to identify new potential natural nesting areas for Lesser black-backed gulls to alleviate the pressures of existing colonies.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**WIDER BENEFITS**
Duke of Burgundy (DoB)	**DoB1** - Work with land managers to establish management practices to enable the key food plant for this species (cowslips and primroses) to increase, suitable conditions for pupation (the transitional stage from larva to adult) to take place and connect habitats by: • Late summer and winter grazing (generally recommended) with heavy cattle/ponies to create ground disturbance opportunities for seeding into (consider 'no fence' grazing collars). • Appropriate scrub management for shelter and to facilitate connectivity. • Cyclical cutting /disturbance of limestone grassland (to avoid a dense thatch of blue moor grass) where grazing is not possible. • Woodland ride and glade management. • Creating breeding habitat through planting larval foodplants (cowslip and primrose spp.), to maintain areas of mosaic habitat of species rich grassland, occasional tussocky limestone grasses (required for pupation), light open scrub, and bracken interspersed with limestone outcrops and connected canopy gaps.	Numerous other limestone grassland and woodland edge species including: • Northern brown argus butterfly • Harvest mouse • Dark-red helleborine • Dwarf spurge See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Vulnerable, BAP and S41. Local status – BHS and Lancs BAP species; and the Lancashire population is of national significance. It is a designated feature of Gait Barrows SSSI and Thrang Wood SSSI. Cross boundary importance – yes (tbc)
	DoB2 - Survey local populations to establish trends and conservation successes.	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
	DoB3 - At known sites, monitor habitat quality and the needs of the species to further understand their decline and response to climate change to enable effective future action.		

	DoB4 - Support and encourage landowners in targeted landscapes to enter into Countryside Stewardship agreements to support appropriate management for these species.		
	DoB5 - Develop a strategy for a landscape scale habitat patch creation, including stepping-stone patches, across and between areas where multiple historic records exist.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
High brown fritillary (HBF)	**HBF1** - Work with land managers to establish management practices to enable the key food plant for this species (Viola spp.) to increase, create suitable conditions in bracken litter vital for larval development and egg laying and connect habitats by: • Appropriate summer and winter grazing in bracken • Appropriate scrub management for shelter and to facilitate connectivity. • Cyclical cutting /disturbance of bracken where grazing is not possible. • Woodland ride and glade management. • Potential trials in patch disturbance of ground to produce areas of violet germination; and • Creating breeding habitat through planting larval foodplants (Viola spp.). to maintain areas of mosaic habitat of grassland, scrub and bracken interspersed with limestone outcrops and connected canopy gaps.	Species also requiring violets: • Dark Green Fritillary • Small Pearl-bordered Fritillary Numerous other limestone grassland and woodland edge species including: • Northern brown argus butterfly • Harvest mouse • Dark-red helleborine • Dwarf spurge See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Vulnerable, BAP and S41. Local status – BHS and Lancs BAP species; and the Lancashire population is of national significance. Designated feature of Gait Barrows SSSI, Hawes Water SSSI and Thrang Wood SSSI. Cross boundary importance – yes (tbc)
	HBF2 - Survey local populations to establish trends and conservation successes and verify new abundance and distributions to inform possible re/introductions.	See Supporting Activities - *Data, evidence and strategies to inform*	

	HBF3 - Monitor habitat quality at known sites and also at nearby sites where appropriate management for the species has occurred.	*nature recovery actions and the next iteration of the LNRS.*	
	HBF4 - Support and encourage landowners in targeted landscapes to enter into Countryside Stewardship agreements to support appropriate management for these species.	See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**WIDER BENEFITS**
Pearl-bordered Fritillary (PBF)	**PBF1 -** Work with land managers to establish management practices to enable the key food plant for this species (Viola spp.) to increase, create suitable conditions in bracken litter vital for larval development and egg laying and connect habitats by: • Appropriate summer and winter grazing in bracken • Appropriate scrub management for shelter and to facilitate connectivity. • Cyclical cutting /disturbance of bracken where grazing is not possible. • Woodland ride and glade management. • Potential trials in patch disturbance of ground to produce areas of violet germination; and • Creating breeding habitat through planting larval foodplants (Viola spp.). to maintain areas of mosaic habitat of grassland, scrub and bracken interspersed with limestone outcrops and connected canopy gaps.	Species also requiring violets: • Dark Green Fritillary • Small Pearl-bordered Fritillary Numerous other limestone grassland and woodland edge species including: • Northern brown argus butterfly • Harvest mouse • Dark-red helleborine • Dwarf spurge See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Vulnerable, BAP and S41. Local status – BHS and LBAP species; and the Lancashire population is of national significance. Designated feature of Gait Barrows SSSI, Hawes Water SSSI and Thrang Wood SSSI. Cross boundary importance – yes (tbc)
	PBF2 - Survey local populations to establish trends and conservation successes and verify new abundance and distributions to inform possible re/introductions.	See Supporting Activities - *Data, evidence and strategies to inform*	

	PBF3 - Monitor habitat quality at known sites and also at nearby sites where appropriate management for the species has occurred.	*nature recovery actions and the next iteration of the LNRS.*	
	PBF4 - Support and encourage landowners in targeted landscapes to enter into Countryside Stewardship agreements to support appropriate management for these species.	See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Large heath (LH)	**LH1** - Work with land managers to establish management practices at historical sites and sites with declining populations to restore sward mosaics and promote nectar plants such as crossed leaved heath by: • Appropriate grazing to reduce dominant thatch whilst allowing some dense tussocks for the species to overwinter in the larva form. • Combine with re-wetting techniques to enable the key food plants for this species (hare-tail cotton grass and crossed leaved heath) to increase. • Reduce or clear invasive plant species and scrub such as rhododendron, birch and self-set conifers (ensuring appropriate means in sensitive habitats). • Create breeding habitat through planting larval foodplants (hares tail cotton grass) and nectar plants (crossed leaved heat) at degraded sites and new peat restoration project sites.	Numerous other species benefitting from peatland restoration and sensitive management for example, • Broad-leaved cotton grass • Red-eyed damselfly • Curlew. See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – GB Red List, Vulnerable, UKBAP and S41. Local status – BHS and LBAP species; and the Lancashire population is of national significance. Cross boundary importance – yes (tbc)
	LH2 - Develop monitoring project to use Large Heath as a target species to show benefits to wildlife and habitat quality at peat restoration project sites to raise water tables across large landscape areas.	See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
	LH3 - Survey local populations at known sites and previously recorded sites together with habitat assessments, to establish trends, monitor declines and inform conservation measures.		

	LH4 - At known sites, monitor habitat quality and the needs of the species and create a Rapid Habitat Assessment (RHA). Use this RHA to further understand widespread habitat change, population declines and response to climate change to be able to promote bigger, better and more connected action going forward.		
	LH5 - Building on the mapped measures (LH1 - 4), develop a project building on existing knowledge to model opportunities for re/introduction measures across large areas of recent re-wetted upland Lancashire.		
	LH6 - Support and encourage landowners in targeted landscapes to enter into Countryside Stewardship agreements, to support and promote appropriate management for these species. Share good practice and management options with practitioners.	See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Belted beauty (macro-moth, BBeau)	**BBeau1** - Surveys of the existing colony to inform the development of a structured land management plan to include: • Low-intensity cattle grazing of the marsh between spring and autumn. • Establishing temporary exclusion zones to assess the impact of different levels of grazing on the saltmarsh vegetation structure, coupled with larval surveys (also see BBeau2) which could inform which areas provide the best quality habitat for Belted Beauty.	See Supporting Activity - *Engagement and collaboration to promote nature recovery.* See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – Nationally rare and S41. Local status – BHS and LBAP species; and the Lancashire population is of national significance - **sole-remaining English site.** Cross boundary importance – yes (tbc)
	BBeau2 – Establish a robust monitoring program to advise how long the existing population can survive at low abundances and the impact this might have on genetic diversity; and to help inform any future plans for habitat restoration/creation where there is currently no prospect of habitat expansion or colonisation by: • Increasing the number of transects carried out and increase the area of salt marsh covered by the transects as the saltmarsh is expanding. • Larval surveys coupled with vegetation monitoring to pinpoint the most-suitable habitat patches and exact habitat preferences, and		

	track abundance changes over time in relation to shifts in vegetation structure.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Least minor (macro-moth, LM)	**LM1** - Work with land managers to establish management practices at existing and potential sites to improve open, well-connected habitats and promote the larval food plant Blue Moor-grass by: • Increasing habitat availability through scrub control, and • Introducing sheep grazing (mixed livestock or replace cattle grazing) at known sites to help promote Blue Moor-grass growth as sheep are known to selectively leave it (whereas cattle will graze it off).	See Supporting Activity - *Engagement and collaboration to promote nature recovery.* See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – Nationally rare (GB Red List Pre94). Local status – BHS and LBAP species; and the Lancashire population is of national significance. Cross boundary importance – yes (tbc)
	LM2 – Establish a robust monitoring program of vegetation, larval, and adult surveys to determine preferred vegetation structure, to establish whether unknown populations are present and whether existing populations are stable by: • Carrying out larval and adult surveys at sites with modern records (larval surveys effective at determining presence), • Survey sites with suitable habitat but without known populations, and • Larval surveys to determine whether Glaucous Sedge is used as a larval foodplant		
	LM3 - Support and encourage landowners in targeted landscapes to enter into Countryside Stewardship agreements to support appropriate management for these species.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**

Wall mason bee (WMB)	**WMB1** - Increase monitoring of key sites with historically plentiful records (Morecambe Bay), where monitoring in the past 10 years has substantially reduced in frequency and quality.	Umbrella for other species supported by acid grassland, open edge habitats with yellow legumes (for example, bird's-foot trefoil) such as the welted lesser mason bee. See Supporting Activity - *Engagement and collaboration to promote nature recovery.* See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – Nationally rare (GB Red List Pre94), UKBAP and S41. Local status – the Lancashire population is of national significance and Morecambe Bay is a stronghold. Cross boundary importance – yes (tbc)
	WMB2 – Investigate the species composition – including key forage plants and vegetation structure – where populations have remained stable in the last ten years; and compare with non-Lancashire sites where the species is present at higher densities and note any differences.		
	WMB3 – Identify key nesting sites, key foraging areas and key "lekking areas (where groups of males display to entice females)" for breeding males.		
	WMB4 – Carry out meteorological analysis and atmospheric monitoring at ground level on sites with good populations and sparse populations. To help understand whether climate instability and heat spikes are having localised effects		
	WMB5 – Conduct research into the effects of Ash Dieback and whether it has had a significant effect (loss of populations) on sites with previously strong populations.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Tormentil Mining-bee (TMB)	**TMB1** - Increase monitoring of upland areas which have never been target surveyed.	Umbrella for other species supported by acid grassland, requiring tormentil species such as: • Tormentil nomad bee • Black-headed mining bee • Moss carder bee See Supporting Activities - *Data, evidence and strategies to inform*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status –UKBAP and S41. Local status – the Lancashire population is of national significance.
	TMB2 - Carry out DNA analysis on Lancashire populations in order to be able to compare with remote populations (for example, Cornwall and European populations) to see if there are significant differences.		
	TMB3 - Carry out pollen analysis to verify that the species is only using tormentil (*Potentilla erecta*) and trailing tormentil (*P. anglica*) in Lancashire (records elsewhere have been noted for other Potentilla species).		

		nature recovery actions and the next iteration of the LNRS.	Cross boundary importance – yes (tbc)
	TMB4 - When carrying out restoration of heathland and acid grassland ensure pollen specific plants tormentil and trailing tormentil are included in species mixes; and create bare sandy areas where practical.		
	TMB5 - Work with land managers to establish management practices at historical (lowland) sites and existing (upland sites with declining populations to; restore sward mosaics and promote good farming practices including vastly reduced or avoidance of nitrates; and avoid overgrazing and recreational pressures.	See Supporting Activity - *Engagement and collaboration to promote nature recovery.*	
	TMB6 - Re-survey lowland sites where it has seemingly, recently disappeared (in case of re-colonisation or climate instability that is not as severe a threat to the species than is anticipated)		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Bilberry bumblebee (BB)	**BB1** - Survey areas in the uplands (> 400 metres) which have either an absence of records completely or a sharp decline in the last 30 years (where suitable habitat exists)	Other upland & heathland species such as: • Broken-banded bumblebee • Northern Sallow Mining Bee • Twite • Ring ouzel • Reindeer lichen • Cloudberry	National objectives and targets: 2 & 3 Benefits to nature recovery network: National status – Not evaluated, localised and declining. Local status – the Lancashire population is of national significance. Cross boundary importance – yes (tbc)
	BB2 - When carrying out restoration of heathland and peat-based habitats in the uplands (> 400 metres) ensure nectar plants bilberry, cowberry and cranberry are incorporated into species mixes.	P4.2 P5.3	

	BB3 - Work with land managers to establish management practices at historical sites and sites with declining populations to; restore sward mosaics and promote good variation in heath age, retain areas of species-rich grassland and small areas of gorse, especially where these are proximal to ericaceous habitat (for example, areas with bilberry, cowberry and cranberry), avoid the use of pesticides, herbicides	P4.5, P5.1, P5.2	
	BB4 - Organise awareness raising events for landowners and land managers with land above 400 metres, to promote the needs of the species, their declining distribution and the management practises that would encourage the growth of their preferred forage plants; and to help to identify any gaps in knowledge of where this species occurs in Lancashire and it's nesting requirements (which are poorly known).	See Supporting Activity - *Engagement and collaboration to promote nature recovery.* See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	
	BB5 - Carry out meteorological analysis and atmospheric monitoring at ground level on sites with good populations and sparse populations to see if climate instability is affecting sites differently.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**BENEFITS**
Formica rufa (red wood ant) - FR	**FR1** - Investigate as to whether woodland management practices have changed where populations of this species have declined.	Shiny guest ant (lines in nests of Formica rufa red wood ant). Improved coniferous woodland management that would also benefit species such as red squirrels and nightjar. See Supporting Activity - *Engagement and collaboration to promote nature recovery.* See Supporting Activities - *Data, evidence and strategies to inform*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National Status - Near-threatened (GB Red List Pre94), localised and declining. Local status – the Lancashire population is of national significance.
	FR2 - Survey larger existing populations (where nest frequency is more dense and "budding" - which is the establishment of smaller nests as part of an expansion response of a colony to growing original nest size) as part of ongoing research into the species by various students and researchers can look to align differences in habitat structure where populations are contracting, dying out or not showing any natural tendency to "bud".		
	FR3 - Carry out DNA analysis of the Lancashire populations as it has been suggested that they may be of hybrid origin, in which		

	case standalone objectives centred on habitat management may need to be re-considered.	*nature recovery actions and the next iteration of the LNRS.*	Cross boundary importance – yes (tbc)
	FR4 - Consider pheasant control around key population areas as a significant predator of red wood ants. (This species may have been introduced from the south as a food source for pheasants which may explain why the Lancashire population is so restricted geographically and is so fragmented, isolated and declining and therefore important.) Pheasants are proven to be highly detrimental to a large range of fauna including invertebrates.	See Universal Priorities - *Priority: Biosecurity and control of invasive species*	
	FR5 - Carry out meteorological analysis and atmospheric monitoring at ground level on sites with good populations and sparse populations to see if climate instability is affecting sites and populations differently.		
TARGET SPECIES	**MEASURE**	**RELATED HABITAT MEASURES AND SPECIES BENEFITS**	**WIDER BENEFITS**
Plants: Yellow Star-of-Bethlehem (YS) Northern Bedstraw (NB) Wood Crane's-bill (WC) Melancholy Thistle (MT) Lady's slipper orchid (LO) Petty whin (PW) Dwarf cornel (DC)	YS1, NB1, WC1, MT1, LO1, PW1, DC1 - Work with landowners at previously known or potential sites to propagate and plant to suitable areas nearby or where populations once existed; taking into account climate resilience (for example where previous or existing sites have become/may become unsuitable and by working with landowners to collect material from existing sites.	See Supporting Activity - *Engagement and collaboration to promote nature recovery.* See Supporting Activities - *Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.*	National objectives and targets: 2 & 3 Benefits to nature recovery network: National Status: Lady's slipper orchid is a GB Red List, Critically Endangered species. Wood crane's-bill, petty whin and dwarf cornel are all GB Red List, Near Threatened species. Local status: Yellow Star-of-Bethlehem, northern bedstraw and
	YS2, NB2, WC2, MT2, LO2, PW2, DC2 - Maintain existing 'Horticultural reserves' for those species that have otherwise been lost or are at high risk of being lost as a 'cultivation stock' and create additional 'Horticultural reserves' as a fall back whereby propagation attempts can thus be carried out because natural dispersal is known to be failing in the wild (for example, The Barn (LWT) where melancholy thistle is established).		

	YS3, NB3, WC3, MT3, LO3, PW3, DC3 - Localised surveys to establish evidence on presence / extent / distribution of local populations, to support recovery.		melancholy thistle are Lancashire Rare or Scare, Local BAP and/or BHS species. The Lancashire populations of Lady's slipper orchid and dwarf cornel are of National/England significance (respectively).

Universal Priorities

Three 'universal' priorities that relate to recurring pressures across all habitats have been identified as:

- minimising nutrient enrichment, sediment deposition and pollution,
- biosecurity (measures aimed at preventing the introduction or spread of harmful organisms) and the control of invasive species, and
- minimising recreational impacts.

The measures that could be taken to address these have been identified in the table below; along with the measures or supporting actions to address them.

Because these are applicable universally across the county, these are not mappable. They are nevertheless important actions that, if taken, will greatly improve the chance of the LNRS priorities being achieved and will generally benefit species across the board. Where they have a specific benefit for a target species, this has been highlighted and mapped accordingly.

Table Nineteen: Priorities, potential measures and associated benefits – UNIVERSAL PRIORITIES

PRIORITY	MEASURE	BENEFITS
Access to nature is provided whilst minimising recreational impacts on sensitive sites, habitats and species populations.	Produce and implement recreation management plans for sensitive sites and habitats to minimise disturbance and other impacts including (for example): • Undisturbed public access exclusion zones around sensitive habitats and species populations, • Seasonal access restrictions to protect breeding birds and other sensitive species, • Designated access routes, • Interpretation materials, • Visual screens, • Prohibition of damaging activities, • Requirements for dogs to be on leads, • Public Spaces Protection Orders and bylaws, • Rangers and enforcement officers.	National objectives and targets: • 2, 3, 6, 11 Wider benefits: • Local economy through green jobs • Social, cultural and educational • Health and wellbeing • Safeguarding natural coastal processes,
	Enhance existing recreational and public open spaces to improve biodiversity, access and amenity value, to alleviate recreational pressure on sensitive sites and habitats.	
	Establish new biodiverse multi-functional open spaces accessible for public recreation such as new: • Local nature reserves, • Country parks, • Sustainable forestry plantations • Other suitable alternative natural green spaces.	
Nutrient enrichment, sediment deposition and pollution are minimised.	Establish buffer zones of semi-natural habitat separating agricultural operations from water courses, water bodies, wetlands and other habitats sensitive to nutrient enrichment.	National objectives and targets: • 1, 4, 5, 9, 14, 15 Wider benefits: • Improvements in water quality, for example by intercepting diffuse pollution/filtration of pollutants.
	Establish shelter belts to minimise the impacts of ammonia and nitrogen deposition on sensitive sites and habitats, such as long-established woodlands.	
	Install new and improved infrastructure to: • minimise the risk of pollution input to rivers & waterbodies from all sources (such as sewage, industrial pollution, road surface run-off, domestic sources etc) • minimise the risk of nutrient input to water courses, water bodies, wetlands and other habitats sensitive to nutrient enrichment.	

	Employ measures to prevent soil erosion and silt run-off during industrial, construction, forestry and agricultural operations	• Local economy through green jobs. • Natural resources with improved soil health • Restore natural hydrology and hydro-geomorphic processes including sediment and nutrient deposition • Soil erosion prevention • Social, cultural, and educational • Health & wellbeing
	Reduce or eliminate nutrient inputs as part of landscaping, habitat enhancement and management schemes.	
	Employ pollution prevention measures during industrial, construction, forestry and agricultural operations.	
	Reduce or eliminate use of herbicides, insecticides or other pesticides during land management operations.	
	Where appropriate, employ mowing and grazing regimes as part of habitat management regimes to prevent nutrient build-up.	
	Remove arisings such as grass cuttings following management operations and seek sustainable uses for the material for example: • Haymaking • Composting • Mulch • Biochar	
Biosecurity and control of invasive species	Eradicate invasive species from: • Sensitive/important habitats and sites, • Coastal habitats • Water courses and floodplains • Transport and infrastructure corridors.	National objectives and targets: • 2, 3, 10, 11, 16 Wider benefits: • Local economy through green jobs • Improvements in water quality, • Social, cultural, and educational • Improve natural function and processes,
	Management of ancient and long-established woodland to remove non-native species that are detrimental to the biodiversity of the habitat.	
	Establish and implement co-ordinated landscape scale plans for management of deer and grey squirrel to facilitate successful woodland establishment and regeneration.	
	To help achieve biodiversity gains, consider legal predator control of species including mink, and those that may seek to predate the eggs and chicks of native natural populations of ground nesting bird species.	
	Provide guidance and information on controlling disease risk and implement biosecurity measures to prevent introduction and spread of pests and disease including: *Phytophthora ramorum, P.austrocedri, Hymenoscyphus fraxineus* (Chalara ash dieback) and Squirrel Pox Virus Disease (SQPVD)	

	Delivery of measures proposing habitat creation and improvement should consider the risks of introducing or enabling the spread of non-native species (also see compliance).	• Restoration of coastal habitat dynamism, • Safeguarding natural coastal processes.

Supporting Actions

In addition to the mapped and unmapped measures identified for each habitat type and target species supporting actions have been identified and agreed by stakeholders that will support and enable delivery of the LNRS priorities. They are grouped under four themes:

- Data & evidence.
- Engagement & collaboration.
- Policies that support nature recovery.
- Finance for nature recovery.

These measures are equally important in achieving our nature recovery priorities and have been informed by feedback gathered from the engagement with land managers, the VCFSE sector and the public survey, particularly around the enablers and barriers to nature friendly farming and land management practices. As with the Universal Priorities, where carried out they will generally benefit species across the board. Where they have a specific benefit for a target species, this has been highlighted and mapped accordingly.

Data, evidence and strategies to inform nature recovery actions and the next iteration of the LNRS.

- Maintain the Lancashire Environmental Records Network (LERN).
- Develop a State of Nature report for Lancashire identifying species and habitat trends.
- Develop and maintain a Lancashire Habitat Inventory as an accessible repository for historic and up-to-date habitat information to fill current and future data, evidence, and monitoring needs.
- Develop a Species Data Strategy for Lancashire to direct a collaborative, consistent approach to the collection and collation of species observation data, supporting and growing biological recording networks to address existing and emerging data, monitoring and evidence needs.
- Maintain the Biological Heritage Site (non-statutory wildlife site) system.
- Develop and implement landscape scale mitigation strategies to minimise recreational and tourist pressure on sensitive habitats, nature conservation sites and species populations.
- Develop and implement landscape scale mitigation strategies to minimise the ecological impacts of nutrient enrichment, sediment deposition and pollution.
- Develop and implement landscape scale mitigation strategies to minimise the ecological impacts of invasive species.
- Develop and implement a programme of measures to identify and safeguard ancient, important and fungi-rich grasslands.

- Identify locations where biodiversity gains and wider environmental benefits can be provided through peatland restoration.
- Identify and agree suitable donor sites for seeds/plants to inoculate habitats as part of habitat restoration.
- Contribute to wider research into habitat creation, restoration and management techniques to inform future actions and approaches, focussing on knowledge gaps.
- Analyse monitoring data to identify barriers to successful habitat creation/restoration to inform future actions.
- Undertake further research to develop agreed locally appropriate seeding and planting mixes.

Engagement and collaboration to promote nature recovery

- Develop and implement a landowner engagement strategy for nature recovery.
- Develop and implement a public and community engagement strategy for nature recovery.
- Develop and implement a strategy for engagement with the commercial sector.
- Develop and implement education and training strategies for nature recovery.
- Develop and implement a consultation strategy for nature recovery.
- Establish and build upon nature recovery partnerships, including Lancashire's Local Nature Partnership (LNP) and Morecambe Bay LNP to deliver LNRS measures and supporting activities.

Policies that support nature recovery.

- Establish development plans and policies that support LNRS delivery, giving consideration to the following recommendations:
    - Incorporating identified nature recovery opportunities, priorities and measures into new and emerging local plans.
    - Restricting development (unless for biodiversity reasons) wherever possible on:
        - flood plains,
        - coastal habitats,
        - upland and lowland peat.
    - Ecological restoration requirements following mineral extraction.
    - Support for biodiversity enhancement measures within new developments, above and beyond mandatory and national policy requirements, such as:
        - nesting and roosting opportunities within buildings and structures,
        - habitat creation on new buildings and structures,
        - wildlife shelters,
        - interconnecting habitats,

    - biodiverse sustainable drainage systems.
  - Requirements for sensitive lighting.
  - New biodiverse open spaces accessible for public recreation.
  - Robust protection for:
    - Lancashire's most important species (see *Evidence and Technical Information* document), in particular the 24 Lancashire LNRS Target Species requiring bespoke measures to support their recovery,
    - habitats that are difficult or impossible to re-create (including a local list of habitats to be agreed),
    - habitats with high carbon storage potential such as peatland and wooded habitats,
    - trees, wooded habitats and associated root protection zones, including aged and veteran trees, ancient and long-established woodlands and temperate rainforest.

Finance for nature recovery.

- Establish a local strategy for financing:
  - Landscape scale nature recovery projects,
  - Community nature recovery projects.
  - Research and collection of ecological data and evidence.
- Promote private and public investment in:
  - Landscape-scale ecosystem creation and restoration,
  - Community nature recovery projects,
  - Research and collection of ecological data and evidence.

3. The Local Habitat Map

The Local Habitat Map can be accessed here: Lancashire's Local Habitat Map. It shows:

Areas of particular importance for Biodiversity in Lancashire.

Areas that could become of particular importance for Biodiversity in Lancashire – these are the mapped locations for potential measures that would:

- make the greatest contribution to achieving the identified priorities.
- achieve greatest connectivity of similar biodiverse habitats across the landscape.
- make a particular contribution to other environmental benefits or the people of Lancashire, such as natural flood management or for health and wellbeing.

Connectivity modelling (connecting similar habitats based on the existing areas of particular importance) has identified new ecological networks and has informed where the potential measures have been mapped. Where a potential measure could feasibly be implemented in many locations, areas have been identified that would benefit biodiversity or the environment the most.

Where two or more potential measures could be carried out together, or where different potential measures would generate similar levels of benefit, or the most suitable measure would need to be informed by further survey on the ground, they may be mapped in the same location. Some measures could be applied widely across Lancashire and have therefore not been mapped. This includes, for example, various measures relating to sustainable land management practices and some relating to surveys, research, and monitoring. Further information on the mapping process is provided in the *Evidence and Technical Information* document.

When viewing the map please remember:

- The aim is not to create isolated areas but ecological networks that are bigger, better, and more connected to help nature thrive. If a site doesn't appear it is likely that connectivity opportunities were not identified as a priority in these areas.
- It is a tool to identify opportunities for nature recovery, it is not intended to be a delivery plan. Landowners of areas mapped are not obliged to deliver opportunities identified.
- It does not preclude land use changes. Due to it being a 'snapshot' in time it may, for example include sites that already have planning permission etc.

The habitat map is based on data sets and the best available information available at the time. As part of the consultation, you will have the opportunity to point out any areas you feel have been mapped inappropriately.

Before undertaking any measure, it is important to obtain the permission of the landowner, carry out any necessary surveys and obtain the required consents and approvals from the relevant public body, see a summary of compliance requirements in Appendix Two.

Delivery, Monitoring & Review

Delivery

The LNRS is a tool to identify opportunities for nature recovery, which can be used to target action and funding, it is not intended to be a delivery plan. The delivery of the LNRS will be a collaborative exercise involving a wide range of stakeholders. By working with partners, the aim is to strengthen partnerships, particularly with those who manage land and those involved in making regulatory decisions that will be fundamental in delivering the strategy.

Monitoring and Review

The Environment Act requires that the LNRS is reviewed and republished every 3 – 10 years. This will enable progress on delivery to be monitored and to reflect on what has been achieved and where more action is needed. The review will consider which measures have and have not been carried out since the previous published strategy, which will inform an open process of adding, removing, or amending potential measures before republishing. Areas where nature recovery action has taken place will be mapped.

A responsible authority may not change a published local nature recovery strategy without the written agreement of the Secretary of State in accordance with the Regulations.

Glossary

Agri-environment schemes	Agri-environment schemes are Government programmes set up to help farmers manage their land in an environmentally friendly way. Agri-environmental schemes are important for the conservation of farmed environments of high nature value, for improved genetic diversity and for protection of agro-ecosystems.
Ancient woodland	Areas of woodland that have been continuously wooded since at least 1600AD.
Biodiversity Net Gain (BNG)	BNG is an approach to development, and/or land management, that aims to leave the natural environment in a measurably better state than it was beforehand. It delivers measurable improvements for biodiversity by creating or enhancing habitats in association with development. BNG can be achieved on-site, off-site or through a combination of on-site and off-site measures. Biodiversity net gain - GOV.UK (www.gov.uk)
Biological Heritage Site (BHS)	Non-statutory wildlife sites of at least County significance within Lancashire.
Biosecurity	Biosecurity refers to a set of precautions that aim to prevent the introduction and spread of harmful organisms. These include non-native tree pests, such as insects, and disease-causing organisms (called pathogens) such as some bacteria and fungi.
Blue space	Blue space refers to our water environments; natural – such as rivers, lakes, streams and the sea, and built – such as marinas, canals and lidos.
Brownfield sites	Brownfield sites are defined as previously developed land that are no longer being used. This includes disused industrial estates and factories: land that has previously been altered by human activity. It does not include farmland.
Calcareous grassland	Calcareous grassland is found on shallow, well-drained soils which are rich in bases (principally calcium carbonate) formed by the weathering of chalk and other types of limestone or base-rich rock or drift and is characterised by vegetation dominated by grasses and herbs.
Carboniferous	The Carboniferous Period began approximately 358.9 million years ago and ended 298.9 million years ago. Its duration of approximately 60 million years makes it the longest period of the Paleozoic Era and the second longest period of the Phanerozoic Eon. The rocks that were formed or deposited during the period constitute the Carboniferous System. The name Carboniferous refers to coal-bearing strata that characterise the upper portion of the series throughout the world.
Carbon sequestration	Carbon sequestration is the process of storing carbon in a carbon pool. It plays a crucial role in limiting climate change by reducing the amount of carbon dioxide in the atmosphere.

Catchment Based Approach (CaBA) partnerships	An inclusive, civil society-led initiative that work collaboratively with government, local authorities, water companies, businesses and local groups to maximise the natural value of our aquatic environment.
CHEGD grassland	These are waxcap grasslands. CHEGDs stands for the key fungi groups involved: spindles, club and coral fungi (Clavarioids), the waxcaps *Hygrocybe* genus (although recent DNA investigations have split up the genus), pinkgills (*Entoloma*), earthtongues (*Geoglossum* and relatives), and crazed caps (*Dermoloma* and relatives). Waxcap-grassland fungi are of conservation interest as indicators of semi-natural, mycologically-rich unimproved grasslands. They are a threatened habitat throughout the UK and Europe and the species concerned are strongly associated with unfertilised, unimproved, nutrient-poor grasslands.
Clough	A steep valley or ravine.
Coastal hinterland	The hinterland of a stretch of coast is the area directly in land behind it.
Coastal squeeze	A term that describes the loss or deterioration of natural habitats along the coast due to human activities or structures that prevent them from adapting to rising sea levels.
Co-benefit	Co-benefits are other positive things that the creation or improvement of habitat can also contribute towards such as improvements to peoples' health.
Diffuse pollution	The release of pollutants from a range of activities that individually may have little effect on the water environment, but at a catchment scale can have a significant impact on water quality.
District Wildlife Site	These are sites designated by district councils and unitary authorities and have various names in Lancashire. They include local wildlife sites that have been recognised as having value for wildlife.
Drumlin	An oval or elongated hill believed to have been formed by the streamlined movement of glacial ice sheets across rock debris or till.
Equitable	Giving consideration to the needs of different population groups, so that everyone has the opportunity to enjoy the same outcome.
Escarpment	A long, steep slope, especially one at the edge of a plateau or separating areas of land at different heights.
Floodplain meadows	Wildflower meadows in a floodplain managed through an annual hay cut and typically grazed afterwards.
Fluvial deposits	These are sediments that are transported and deposited by rivers in a continental environment.
Functionally extinct	Too few individuals remain to enable reproduction.
Functionally linked land	A term used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying

	feature for which a Special Areas of Conservation (SAC)/ Special Protection Area (SPA)/ Ramsar site has been designated. These habitats are frequently used by SPA species and support the functionality and integrity of the designated sites for these features.
Greenspace	• Greenspace is an area of vegetation that is set within a landscape or townscape and may include built environment features. • Greenspace is not necessarily accessible to the public e.g., greenspaces include allotments (that are normally locked and only accessible to key holders), and golf courses (which may require club membership and or payment of a fee to access). Such greenspace has a significant role to play in the overall provision of greenspaces for recreation and enjoyment. • High quality greenspace is designed and managed to deliver its intended functions and to meet defined needs. Greenspace may be urban or rural.
Groundwater recharge	A hydrologic process, where water moves downward from surface water to groundwater. Recharge is the primary method through which water enters an aquifer (underground layer of water bearing material).
Improved pasture	Improved pasture refers to cultivated or managed areas of land that have been modified to enhance the growth of specific, desirable forage plants for grazing animals.
Irreplaceable Habitat	Habitats that would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. National Planning Policy Framework updated 12/12/24. Examples listed in Biodiversity Net Gain legislation include: • ancient woodland, • ancient and veteran trees, • blanket bog, • limestone pavement, • sand dunes, • salt marsh, and • lowland fen.
Kested hedgerows	Hedgerows planted on small embankments.
Limestone pavement	A limestone pavement is a natural karst landform (landform worn away by water) consisting of a flat, incised surface of exposed limestone that resembles an artificial pavement
Long established woodland	Woodland that has existed since at least 1893.
Marine Conservation Zone (MCZ)	Marine Conservation Zones are areas that protect a range of nationally important, rare or threatened habitats and species.
National Landscape	National Landscapes (designated Areas of Outstanding Natural Beauty) are on par with the UK's National Parks, each is an outstanding

	landscape whose distinctive character and natural beauty is safeguarded in the national interest.
National Nature Reserves (NNR)	Established to protect some of our most important habitats, species and geology, and to provide 'outdoor laboratories' for research. Most NNRs offer great opportunities for schools, specialist interest groups and the public to experience wildlife at first hand and to learn more about nature conservation.
National Planning Policy Framework (NPPF)	The NPPF is the overarching policy guideline for people trying to develop land in England.
Natural capital	The parts of nature that provide benefits to people. We depend on it for the air we breathe, the water we drink and the food we eat. It boosts our health and wellbeing. It captures and stores carbon and has a vital role to play in helping us adapt to the impacts of climate change. Natural capital is also an economic concept. It considers nature as a stock of assets, which we have to invest in.
Nature-based Solutions	Actions which support and draw on nature to provide wider environmental or societal benefits.
Neutral soils	Neutral soil is a type of soil that is neither acid nor alkaline. It has a pH range between 6.6 and 7.3. Most plants have a pH level of between 6.5 and 7, which means they need a neutral soil.
Open Mosaic Habitats on Previously Developed Land	Open Mosaic Habitats on Previously Developed Land (OMH) are found mainly in urban and formerly industrial areas and have high biodiversity value.
Peatland Carbon Code standard	The Peatland Code is a voluntary certification standard for UK peatland projects wishing to market the climate benefits of peatland restoration and provides assurances to voluntary carbon market buyers that the climate benefits being sold are real, quantifiable, additional and permanent.
Plantations on ancient woodland sites (PAWS)	Ancient woodland sites that have been converted to plantations dominated by non-native tree species. These often retain some remnant features characteristic of ASNW such as ground flora along rides or pre-plantation native trees.
Polycentric	Having more than one centre or focus
Point source pollution	Point source pollution comes from a direct specific source, for example an effluent discharge pipe.
Potential measures	Potential measures are specific practical actions to achieve priorities.
Priorities (in the LNRS)	Priorities are the end results that the strategy is seeking to achieve.

Protected Species	Species protected by legislation.
Ramsar Sites	Wetlands of international importance designated under the Ramsar Convention
Rectilinear fields	Fields with straight-lined boundaries.
Red List criteria	The IUCN Red List Categories and Criteria are a system for classifying species at high risk of global extinction.
Saline intrusion	Saltwater intrusion is the movement of saline water into freshwater aquifers, which can lead to groundwater quality degradation, including drinking water sources and may have other consequences.
Semi-improved grasslands	Semi-improved grassland is a transition category between improved and unimproved grasslands that have undergone some modification through the use of, for example, fertilisers, herbicides and grazing.
Semi-natural species-rich grassland	Defined by a richness score, usually more than 15 and sometimes up to 40 beneficial vascular plant species per square metre, including grasses, graminoids and broadleaf wildflowers.
Silviculture	Silviculture is the care and cultivation of woodlands (as opposed to arboriculture which is the care and cultivation of individual trees).
Sites of Special Scientific Interest (SSSI)	They are nationally designated sites of special scientific interest. SSSIs are legally protected under the Wildlife and Countryside Act 1981.
Special Area for Conservation (SAC)	Protect one or more special habitats and/or species listed in the Habitats Directive. They cover both terrestrial and marine habitats and species. Designated under the Conservation of Habitats and Species Regulations 2017.
Special Protection Area (SPA)	Internationally designated areas on land or at sea which protect vulnerable bird species in the UK. Designated under the Conservation of Habitats and Species Regulations 2017.
Strategic Significance	BNG (Biodiversity Net Gain) Strategic Significance refers to the local significance of a habitat based on its location and habitat type.
Sustainable Urban Drainage Systems (SuDS)	Environmentally friendly techniques designed to help manage and control surface water runoff.
Suitable Alternative Natural Green	A Suitable Alternative Natural Greenspace (SANG) is a recreational site, created to attract residents of new developments away from designated sites that are protected for their valuable ecology and are sensitive to recreational activities such as dog walking.

Spaces (SANGS)	
Supporting Actions	Supporting actions have been identified that will support and enable delivery of the LNRS priorities. They have been grouped under four themes: • Data and evidence • Engagement and collaboration • Policies that support nature recovery • Finance for nature recovery
Temperate rainforest	Temperate rainforests are wet and often have open glades, or rivers cutting through rocky gorges. The trees that grow there typically include sessile oak, birch, rowan, holly, alder, willow, and hazel. The thick cover of ferns, mosses, liverworts, and lichens which cover every surface, from the ground to boulders, crags, and even the trunks and branches. A luscious temperate rainforest once covered vast areas of the British Isles. This woodland is also known as upland oakwood, Atlantic or Celtic rainforest. Wistman's Wood in Dartmoor, Devon is a famous national example of upland oakwood.
Veteran tree	may not be very old, but they have significant decay features, such as branch death and hollowing. These features contribute to their biodiversity, cultural and heritage value. They are also considered statutory irreplaceable habitat. All ancient trees are veteran trees, but not all veteran trees are ancient.
Unimproved grassland	Unimproved grasslands are areas that have never been ploughed, reseeded or heavily fertilised and tends to be species- rich with flowers and wildlife.
Universal priorities	Universal priorities relate to recurring pressures across all habitats. • minimising nutrient enrichment, sediment deposition and pollution, • biosecurity (measures aimed at preventing the introduction or spread of harmful organisms) and the control of invasive species, and • minimising recreational impacts. These priorities are applicable universally across the county and are therefore not mappable. They are nevertheless important actions that, if taken, will greatly improve the chance of the LNRS priorities being achieved and will generally benefit species across the board.
Urban heat islands	Urban heat islands are areas within the urban environment that are significantly warmer than the surrounding rural areas. The heat is generated by high concentrations of people and energy use from cars, trains and buses and heat retaining structures such as roads and buildings.
VCFSE	Voluntary Community Faith and Social Enterprise sector
Waxcap grassland	Waxcap grassland is short-sward, nutrient-poor grassland that supports a rich assemblage of larger fungi, particularly waxcaps, characteristic of

	such habitats. They are characterised by colourful waxcap fungi, but also include other charismatic species like the coral fungi, pinkgills and earthtongues.
Wetlands	Wetlands are areas of land that are either permanently or seasonally inundated with water, supporting species that are adapted to live there. They include a range of habitat types that are important for wildlife and people and play an important role in reducing flood risk and slowing the flow of water.
Wetter farming	Wetter farming is also known as paludiculture or high-water table farming. Wetter farming is the practice of productive agriculture on wet or re-wetted land, often peatland.
Wet woodland	Wet woodland is characterised by trees such as willows, birches and alder that thrive in poorly drained or seasonally flooded soils, such as in fens and bogs, pond and lakesides, riverbanks, and flushed hillsides.

Appendix One: National targets and objectives

Table 1 National targets set under the Environment Act 2021

Targets
1) Biodiversity on land - Restore or create in excess of 500,000 hectares of a range of wildlife-rich habitat outside protected sites by 2042, compared to 2022 levels.
2) Biodiversity on land – Halt the decline of species abundance by 2030. Ensure that species abundance in 2042 is greater than in 2022, and at least 10% greater than 2030.
3) Biodiversity on land - reduce the risk of species' extinction by 2042, when compared to the risk of species' extinction in 2022.
4) Woodland cover - Increase total tree and woodland cover from 14.5% of land area now to 16.5% by 2050
5) Improve water quality and availability - Reduce nitrogen (N), phosphorus (P) and sediment pollution from agriculture into the water environment by at least 40% by 2038, compared to a 2018 baseline.

Table 2: Additional relevant commitments from the Environmental Improvement Plan

Objective
6) Work to ensure that everyone in England lives within 15 minutes' walk of a green or blue space
7) Restore approximately 280,000 hectares of peatland in England by 2050
8) Protect 30% of land and of sea in the UK for nature's recovery by 2030
9) Support farmers to create or restore 30,000 miles of hedgerows by 2037 and 45,000 miles of hedgerows by 2050
10) Manage our woodlands for biodiversity, climate and sustainable forestry
11) Restore 75% of Sites of Special Scientific Interest to favourable condition by 2042. By 31 January 2028 50% of SSSIs will have actions on track to achieve favourable condition.
12) Ensure delivery and management of actions and policies that contribute towards our 25YEP goals are suitable and adaptive to a changing climate
13) Make sure LNRSs include proposals for Nature-based Solutions which improve flood risk management where appropriate
14) Achieve Good Environmental Status for our seas
15) Reduce emissions of nitrogen oxides by 73% and ammonia by 16% by 2030 relative to 2005 levels
16) Reducing the rates of introduction and establishment of invasive non-native species by at least 50%, by 2030

Appendix Two: Compliance with legislation, policy, and best practice standards

In delivering LNRS priorities and measures, projects must:

Ensure compliance with legislation and statutory requirements, including (but not restricted to):

- Avoiding detrimental impacts on statutory designated sites, their qualifying features, associated species populations and functionally linked land.
- Avoiding detrimental impacts on protected species and their habitats.
- Preventing the spread of invasive non-native species, including those listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
- Implementation of statutory biosecurity measures.
- Completion of all relevant and necessary assessments, such as Habitats Regulations Assessments.
- Prior acquisition of all relevant and necessary consents, assent, exemptions, licences etc.
- Compliance with statutory environmental protection requirements, such as Environmental Impact Assessments (EIA)(Agriculture) Regulations.
- Compliance with statutory health and safety requirements.

Ensure compatibility with relevant national and local policies, local plans and associated land allocations/spatial plans.

Ensure that actions are informed by:

- Ecological data searches including consultation with the local records centre (LERN - the Lancashire Environment Record Network - Lancashire County Council), as well as open-source data,
- Appropriate baseline ecological assessments of all habitats and species groups that may be affected.
- Other necessary assessments as required, such as hydrological assessments, soil analysis etc.

Undertake appropriate consultation, giving consideration to consultation with:

- Local Planning Authorities.
- The Local Environmental Records Centre.
- Ecological advisors.
- Landowners/tenants with an interest in the site or neighbouring land.

- The designating authority/partnership for any designated sites that may be affected, such as the Biological Heritage Sites Partnership.
- Public Health.
- Utilities companies responsible for overhead or underground infrastructure within or adjacent to the affected area.
- Authorities/organisations responsible for transport infrastructure that may be affected.
- Other relevant bodies.

Avoid detrimental impacts on and provide benefits for:

- Irreplaceable habitats,
- Other habitats that are difficult to replace,
- Habitats of principal importance (NERC Act, 2006),
- Species of Principal Importance and their habitats,
- Protected species and their habitats,
- Locally and nationally important species populations,
- Designated sites, their qualifying features and associated species populations,
- Habitats with high carbon storage potential,
- Habitats and species prioritised by the LNRS.

Follow recognised best practice guidance and standards wherever relevant and available, including guidance from statutory nature conservation and environmental protection bodies.

Deliver overall biodiversity gains, taking existing ecological value and environmental considerations into account, including habitats, features and species populations.

Ensure that habitat creation and enhancement proposals comprise habitats, native species and plant communities appropriate for the location and site conditions taking account of:

- Local climate,
- Geology, soils, and topography,
- Hydrology,
- Existing habitats and land uses on the site and adjacent land,
- Native species distribution,
- Species populations and species associations,
- Competition and species interactions.

Consider habitat enhancements through adjustments to management including consideration of a non-intervention approach in locations where this would benefit the biodiversity of a site.

Seek to deliver wider environmental benefits.

Ensure that necessary and appropriate establishment maintenance and long-term management of habitats is secured and provided to achieve the habitat creation/enhancement and species conservation objectives.

Implement monitoring programmes to assess the success of nature recovery projects and to inform the need for remedial measures or adjustments to maintenance and management.

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