Suffolk Local Nature Recovery Strategy



Together, we can recover nature in Suffolk

Suffolk County Council

Norfolk & Suffolk Nature Recovery Partnership

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There are case studies throughout the document that showcase nature recovery in action. These are denoted in the contents in green text and with an asterisk (*).

Some images in this document are not owned by Suffolk County Council or partner organisations and are used solely for illustration. Their inclusion does not imply photographer endorsement of this strategy. Full photo credits are listed at the end of the document.

Words or phrases that may require further explanation are explained in the Glossary (**Appendix 6**). These are in magenta throughout the document.

References and resources are listed at the end of the document (**Appendix 7**) and are denoted throughout the text by numbers in square brackets [ ].

When viewed as a PDF, interactive features enable readers to navigate through the document with ease.

Foreword



Tim De-Keyzer
Head of Natural and Historic Environment, Suffolk County Council

Co-Chair, Norfolk and Suffolk Nature Recovery Partnership

Suffolk's diverse landscape is home to many different species of plants and animals, enriching the lives of those of us who live here, as well as attracting many thousands of visitors every year, who are drawn to its beauty and the opportunities to enjoy the wildlife it offers. However, despite many of our wildlife sites being legally protected for decades, the diversity and abundance of nature across the county continues to decline, as the habitats that plants, animals and fungi depend on become increasingly fragmented and isolated.

To reverse this decline, and to ensure that future generations of Suffolk residents and visitors can continue to enjoy and benefit from a thriving and healthy natural environment, we need to reconnect and expand our wildlife areas, linking them through our towns and rural areas to help species to move, to feed and maintain healthy populations. We need to make more space for nature in Suffolk, and to do that in a way that will help nature recover and thrive as quickly and successfully as possible. There is no time to waste.

Focusing our collective actions to have the biggest impact is the purpose of this Local Nature Recovery Strategy for Suffolk. It is one of 48 such strategies covering the whole of England, which for each county identify priority areas for actions to support the recovery of nature. These will help to reverse the decline of many species, both locally and nationally, through extending and linking habitats, improving the condition of locally important habitats and creating new 'stepping stones' of habitat in areas where there is little connectivity at present. The strategy also identifies opportunities to deliver the wider environmental benefits that nature provides, such as flood mitigation, alongside improvements for wildlife.

This Local Nature Recovery Strategy for Suffolk is the result of a huge amount of collaboration between many organisations and individuals, all of whom have an interest in and a role to play in helping Suffolk's nature to recover. This has been coordinated through the Norfolk & Suffolk Nature Recovery Partnership, led by Norfolk and Suffolk County Councils, who are the responsible authorities for producing the Local Nature Recovery Strategy for their respective counties. This collaboration will continue through the partnership to promote and support the delivery of the priorities and measures set out in the strategy. These focus on actions that can be taken 'on

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the ground' in Suffolk to help our nature recover and on areas where these actions could have the most significant benefit for nature. There are also many actions that will support nature recovery widely across the county, which everyone can help play a part in.

Nature is critical to all of our lives, and its health and diversity is vital to not only support our ability to limit and adapt to the impacts of a changing climate in Suffolk, but also underpin our physical and mental wellbeing. This includes improved air quality and the benefits of nature-based interventions. The engagement and contributions made to this strategy are testament to the value of collaboration and partnership, and we need to continue to harness and build on that shared commitment to deliver the ambitions set out within it; working together across our communities and with our farmers and land managers, and with businesses, and health providers, and our schools and local government to achieve the recovery of nature in Suffolk.

Introduction



View of the Levington lagoon on the river Orwell at low tide

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What is nature recovery?

Nature recovery is the creation and restoration of habitats and biodiversity. This includes wildlife-rich places, corridors and stepping stones that help populations to recover, grow, move, thrive and adapt to a changing climate.

We will do this by regenerating wetlands, reintroducing native species, conserving coastal habitats, and creating more green and blue spaces for nature. Sustainable land and coastal management across our county will help to nurture wildlife, improve soil health and produce cleaner water, providing more and better spaces for us to enjoy and connect with nature where we live, work and play. It also supports improved air quality through increased tree cover and reduction of airborne pollutants, delivering benefits for respiratory health and overall health and wellbeing.

Working with nature helps us to provide the resources required, and nature based solutions like planting woodlands, restoring rivers and creating wetlands tackle climate impacts while benefiting outdoor recreation through improved water quality and air quality. Cross-sector collaboration that combines local knowledge and science helps revive Suffolk's nature in harmony with its economies and cultural heritage.

Nature recovery is an essential part of our future, as the United Kingdom has been rated as being within the bottom 10% of nature depleted countries in the world.

For nature to recover across Suffolk, we want to highlight the opportunity, ambition and potential available across all sectors to collaborate and contribute. This document intends to support this action and provide guidance and inspiration.



The sun rises over Westwood Marshes in the Walberswick National Nature Reserve

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What is a Local Nature Recovery Strategy (LNRS)

Local Nature Recovery Strategies (LNRSs) are a new approach to restoring and protecting nature in England [1].

LNRSs are part of a national push to give nature more room to grow. They are a requirement of the Environment Act of 2021 [2]. They focus on highlighting and revitalising natural habitats across Suffolk, including:

mapping existing important natural areas identifying key locations and opportunities for creating or enhancing habitats for maximum environmental benefit planning where and how habitats could be established or connected

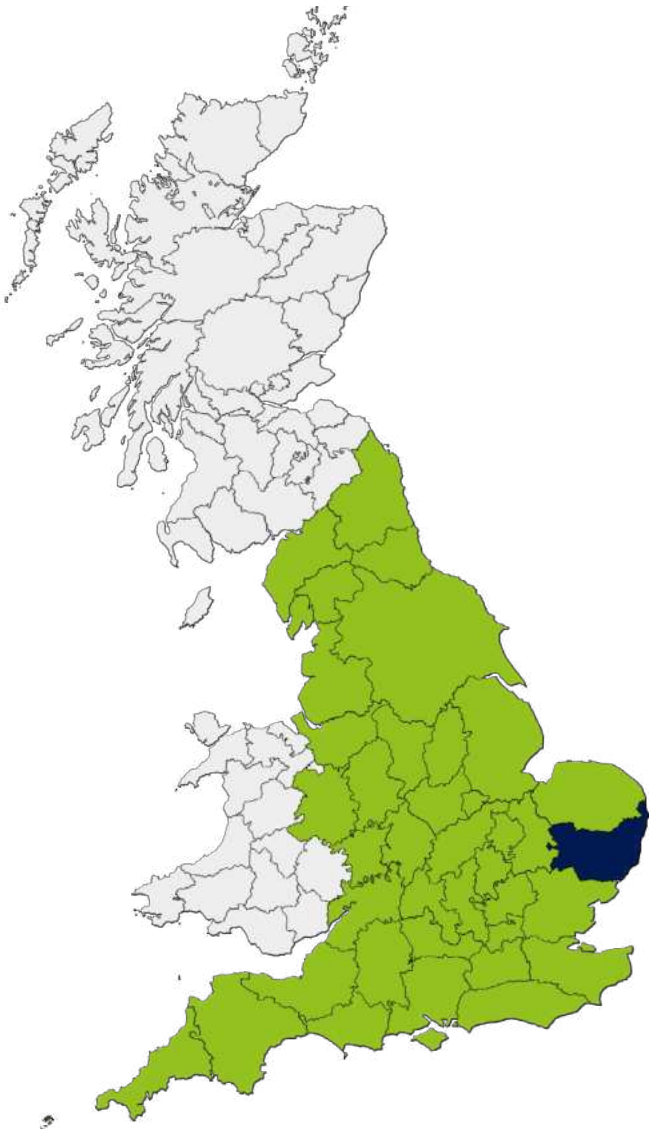
Forty-eight LNRSs developed across England (**Figure 1**) will collectively form a national Nature Recovery Network (NRN). The LNRS consists of this document, also referred to as the Statement of Biodiversity Priorities and the associated mapping tool, referred to as the Local Habitat Map.

It is considered to be a valuable tool for promoting partnership working across Suffolk to drive nature recovery.

Suffolk's landscape will contribute to this network as it consists of a wide range of habitats, key geographical features and specific areas, shown in **Figure 2**.

As per statutory guidance, the LNRS will not extend into the marine environment beyond the low tide line. However, it is considered that by improving habitat across the landscape, there will be a related benefit to the marine environment. [3].

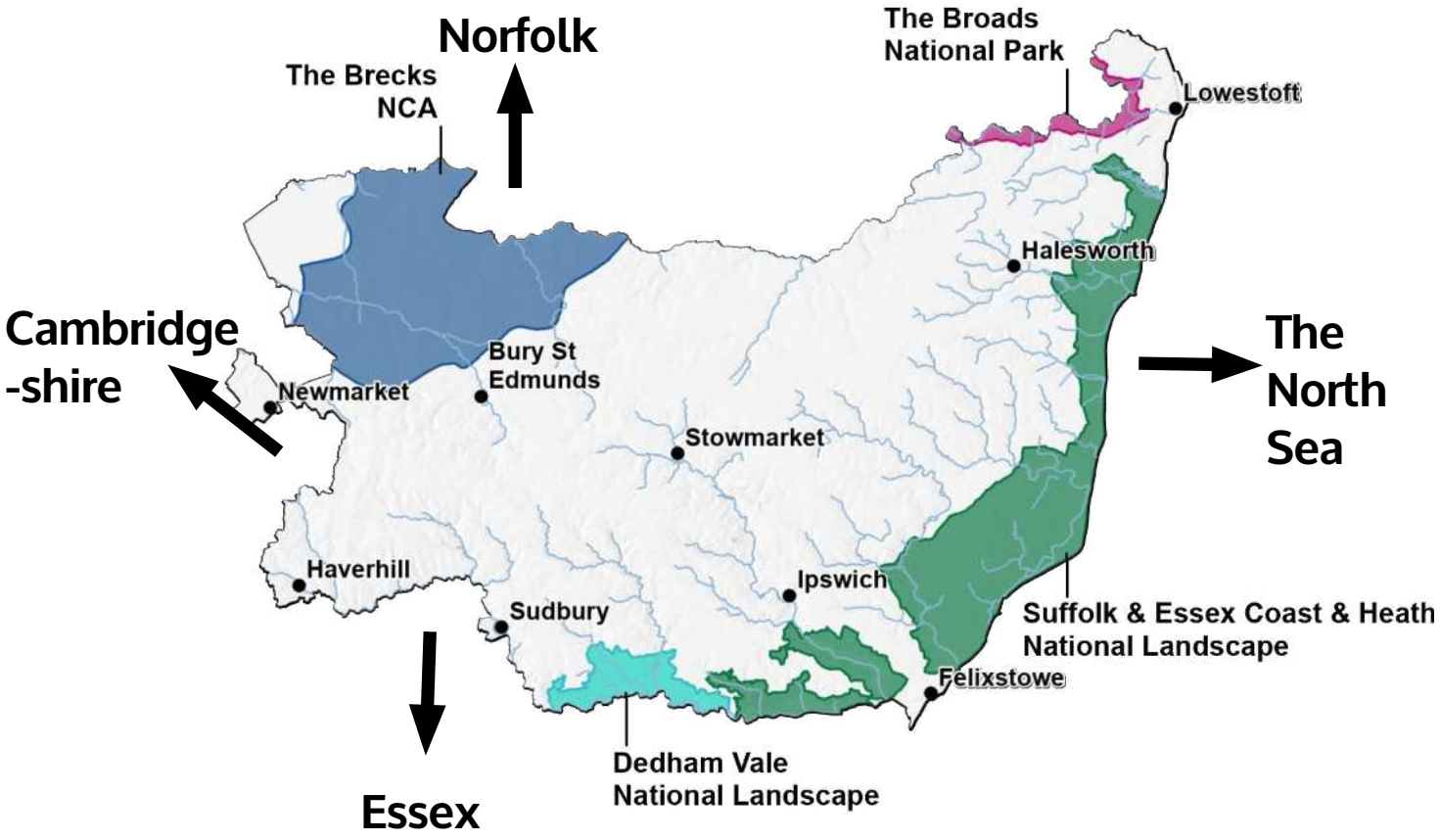
Figure 1. Forty-eight LNRS Areas in England (green) with Suffolk highlighted (blue).



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Overview of Suffolk's LNRS area

Figure 2. Map of Suffolk's LNRS area showing key landscapes: the Brecks National Character Area (NCA), The Broads National Park, Suffolk & Essex Coast & Heaths National Landscape, Dedham Vale National Landscape and major waterways.



The strategies aim to expand, improve, and link natural areas, guiding the implementation of environmental priorities and funding like Biodiversity Net Gain (BNG) [4]. The LNRS will target where habitat creation will be of 'high strategic significance', a 15% uplift in the biodiversity metric (using the strategic significance multiplier) will be applied if the measures and actions set out in the strategy are followed.

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What should the LNRS be used for?

The contents of the LNRS link into legal duties for delivering environmental factors across the county and the country. These include:

- the duty in Section 85 of the Countryside & Rights of Way Act 2000 [5] for public bodies to 'seek to further' the purposes of Protected Landscapes (eg conserving and enhancing the natural beauty of National Landscapes and to 'protect and improve the natural beauty, wildlife, and cultural heritage of the area' in National Parks)
- the duty of all planning authorities to 'have regard to' Local Nature Recovery Strategies in preparing relevant plans, which will be strengthened to 'take account of' once the relevant sections of the Levelling Up and Regeneration Act (LURA) 2023 are activated
- the strengthened duty of all public bodies to conserve and enhance biodiversity as embedded in Section 40 of the Natural Environment and Rural Communities Act 2006 [44]
- acting as one source of evidence to inform the preparation of plans that will determine where development should occur (these plan preparation processes have their own consultation and engagement requirements so that different needs for land can be balanced by the plan maker). This can allow biodiversity investigations to be part of the earliest stages of planning.

What should the LNRS not be used for?

LNRSs are not designed to be prescriptive but are tools to drive forward action to recover nature. They will not be used to:

- require land managers or owners to make specific proposed land use changes – this will remain their choice
- place new restrictions on developing land or act as a specific barrier or blocker for proposals
- identify areas to be given legal nature protections that create restrictions on how land can be used or managed – LNRSs do not propose new nature reserves or any other kind of legal designation
- prevent nature conservation work in areas not prioritised by the LNRS
- determine regulatory decisions, such as the result of Environmental Impact Assessments – they can be a source of evidence to inform decision making but determination must still be made on the basis of relevant legislation and statutory guidance.

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Who created Suffolk's LNRS?

Suffolk County Council has been designated as the responsible authority for developing Suffolk's LNRS. Under the shared banner of 'The Norfolk and Suffolk Nature Recovery Partnership' (NSNRP) (visit the NSNRP website at **www.nsnrp.org** and see **Appendix 5**), the Suffolk LNRS has been delivered by working closely with:

- Suffolk district and borough councils
- Broads Authority
- Suffolk & Essex Coast & Heaths National Landscape and Dedham National Landscape and Stour Valley Project
- nature conservation organisations
- landowners and land managers
- local people, groups and stakeholders
- private companies and local businesses.

Working with neighbouring Norfolk County Council, the Suffolk and Norfolk LNRSs have been developed in a joined-up way to reflect the shared natural habitats and species that sit across both counties. Close working with Essex and Cambridgeshire County Councils has ensured cohesion across shared boundaries.

The Department for Environment, Food and Rural Affairs' (Defra) guidance encouraged involving diverse participants in the LNRS process. Steering and expert groups provided advice, while stakeholders like nature specialists, community groups, landowners and local councils shaped the strategy through targeted engagement.

Six Themed Working Groups (TWG) were established to give as many expert stakeholders and interest groups as possible the opportunity to help influence and shape the content of the LNRS, as well as providing valuable technical input and expertise. These were:


Mapping


Land Management


Species and Biodiversity


Water and Coast


Planning Suffolk


Planning Norfolk

Membership of each TWG included existing partners with whom there were already well-established working relationships as well as wider groups and organisations where new collaborative relationships have been formed.

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Alongside specialist engagement, input and suggestions were sought from the wider public throughout the process of developing the strategy. Involving the public alongside professional opinions ensured a wide range of perspectives were included.

To reach all the different groups, engagement was conducted through multiple formats. A summary of engagement across the timeframe of the LNRS development is given in **Figure 3**.



Events (13)

- Public event stands
- Talks and panel sessions
- Site visits and networking meetings



Presentations (34)

- Presentations to organisations and businesses
- Invitations to speak at partnerships
- Presentations to stakeholders



Digital engagement

- Social media posts
- News updates on websites
- Email information distribution



Surveys (2)

- Public opinion surveys
- Surveys for target groups
- Public consultation



Webinars (12)

- Webinars with guest speakers for public and professionals
- Online roundtables

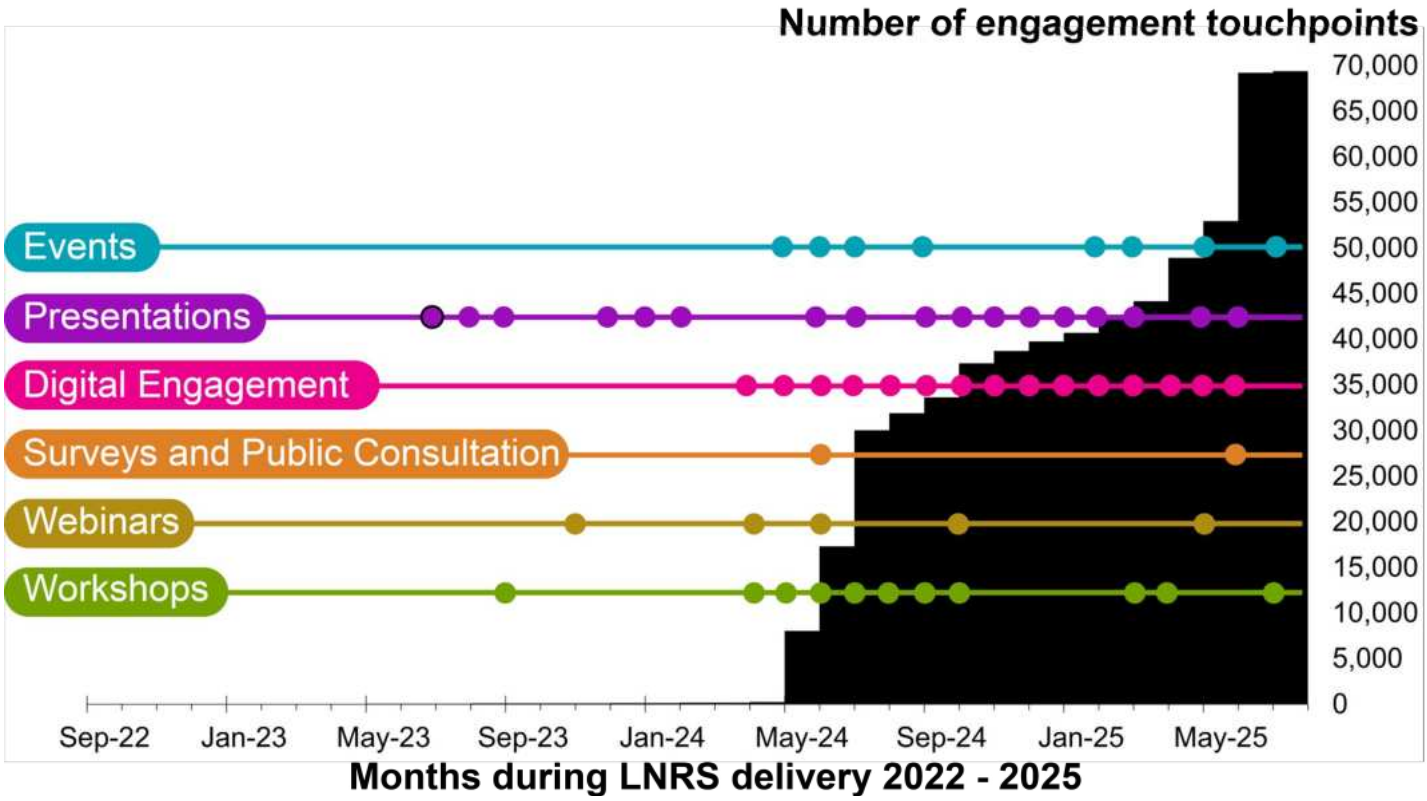


Workshops (16)

- Themed Working Groups
- Focus groups
- Collaboration discussions and data sharing

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Figure 3. Numbers of people engaged through Suffolk-led and NSNRP efforts during LNRS delivery.



Numbers of engagement for Suffolk-led and NSNRP activities during the LNRS delivery. Engagement activities – events (teal), presentations (purple), digital engagement (pink), surveys and public consultations (orange), webinars (gold), and workshops (green) – are displayed below with timelines indicating their occurrence from September 2022 to July 2025. The black area represents cumulative engagement, showing the growing reach to over 69,000 engagement touchpoints – that is, the individual moments where people connected with the project (such as attending an event, completing a survey, or interacting online) – through these activities and stakeholder interactions over the delivery timeline.

In Spring 2024 land managers and the public were asked which species and habitats they thought were the most important to prioritise in the LNRS; 1647 people responded to the surveys.

To ensure the LNRS represents the full county, all the survey suggestions were included on the longlist for biodiversity priorities and were given the same consideration as those included using a data-based approach or presented by conservation experts (see further information in **Part C**).

The full longlist can be found on the NSNRP website.

Public survey responses flagged pollinators and hedgehogs as key species for residents in Suffolk – you can find them both in our lists of priorities (**Part C**).

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Suffolk County Council greatly appreciates the valuable contributions and perspectives provided by all those involved in developing this plan, including:

individuals who participated in public surveys, events and workshops
landowners who responded to surveys and joined workshops
local subject matter experts from the NSNRP and its steering committee
Natural England, Environment Agency and Forestry Commission.

Community experts and organisations have contributed case studies that demonstrate successful nature recovery in practice. These case studies have been included to highlight existing efforts and best practices, and to support the potential implementation of future projects.

Funding to support the creation of Suffolk's LNRS has been provided by The Department for Environment, Food and Rural Affairs (Defra).



Suffolk Wildlife Trust Wild Tots group enjoy bug hunting

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How can the LNRS support the people of Suffolk?

The strategy outlines a plan for how everyone in Suffolk – from individuals and local communities to landowners, local governments, businesses, and national agencies – can come together to better restore nature through planning and on-the-ground action.

For everyone in Suffolk the LNRS will:

- inform how all public authorities in England meet their legal duty to conserve and enhance biodiversity, through land management and regulatory decisions
- seek to enhance the positive effects of nature on community wellbeing that contribute to improved physical and mental health and wellbeing, including direct and indirect benefits like clean air, water and food
- help identify key areas within the local community to prioritise nature recovery efforts while fostering community ownership at various levels, from nest boxes to nature reserves, so everyone can get involved
- promote active travel by supporting access improvements and integrating green corridors and trails that connect green spaces, encouraging walking and cycling and supporting healthier and more sustainable lifestyles. This can include use of Public Rights of Way, National Trails and the King Charles III England Coast Path
- provide potential locations for initiatives aimed at creating and enhancing habitats
- aid in aligning local and neighbourhood plans and other spatial strategies with countywide objectives, and informing priority actions in future plans
- support funding applications for nature recovery projects
- encourage local community groups, schools and homeowners focused on nature recovery.



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For land managers the LNRS can:

- signpost ways to help enhance and restore nature, providing a strategic spatial guide for habitats and species recovery and supporting environmental funding schemes under Environmental Land Management Scheme (ELMS) such as Countryside Stewardship, Sustainable Farming Incentive, Farming in Protected Landscapes and landscape recovery schemes, enabling large-scale positive changes for nature
- support sustainable agriculture, flood risk management, water management (both availability and quality) and carbon capture using measures such as planting trees and improving soil health
- identify the highest priority opportunity areas for habitat creation and connectivity, helping to channel BNG investment
- provide guidance on actions to achieve nature recovery – linking efforts across the county for expanding and connecting habitats, including development and implementation of Protected Landscape Management Plans.

For environmental Non-Governmental Organisations the LNRS aims to:

- facilitate the connection of long-term goals and generate greater ambition for nature recovery across partnership organisations
- further promote nature and wildlife recovery projects and strategic objectives including development and implementation of Protected Landscape Management Plans.
- help prioritise areas, potential measures and collaborative efforts for nature recovery, including species monitoring and evidence gathering as appropriate.



Heather in full bloom on Suffolk heathland at the end of summer

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For planners and developers the LNRS can:

- help to ensure planning decisions are informed by nature recovery priorities and follow best practices for enhancing biodiversity
- assist in aligning and developing local and neighbourhood plans, green infrastructure delivery (including links to the Natural England Green Infrastructure Framework [45], contributing to Suffolk-wide collaborative action between local authorities and ensuring development uplifts and safeguards the county's natural assets
- support decision making for off-site potential for BNG
- provide a series of potential measures for embedding nature into urban and new infrastructure such as stormwater management, contributing to climate resilience and delivering the most suitable nature-based solutions for Suffolk in the right places.

Planners have a legal requirement to 'have regard to' or ‘take account’ of the content of the LNRS (determined by the activation of the LURA, 2023), alongside other relevant objectives, to ensure nature recovery is properly reflected in the planning system [6].

The key documentation is available on the Natural environment guidance page of the GOV.UK website but is summarised below:

- local planning authorities should be aware of mapped areas and proposed measures in the relevant LNRS and consider how these are reflected in their local plan
- the LNRS is an evidence base that may be a ‘material consideration’ in planning; the decision-maker determines its relevance based on circumstances.

For local businesses the LNRS:

- signals Suffolk is open for green investment, showing that nature is at the heart of a successful local economy
- unlocks opportunities and provides supporting evidence for businesses and tourism to meet environmental and social goals while driving economic growth
- has the potential to promote and encourage a balanced approach to private and public investment into ecosystem creation and restoration, guiding investment and donation to specific projects.

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Why does nature in Suffolk need recovering?

Suffolk's habitats have been shaped by centuries of human interaction with the land and sea. They have been continually managed in ways to provide us with shelter, food, water, fuel, natural materials and recreation. Over time the majority of our habitats and species have undergone significant dynamic changes shaped by a range of environmental and social factors. Evidence from the last 50 years indicates that nature is in decline and we have experienced a significant loss of biodiversity [7]. The loss and degradation of nature has contributed to climate breakdown, as carbon dioxide is released through the loss and degradation of all habitat types, or is not absorbed effectively due to changes in the landscape. Contributing factors include:

- intensive agricultural practices
- increased demand on water and other natural resources
- air and water pollution
- invasive non-native species
- animal and plant diseases
- degradation of peat
- development and new infrastructure, including large scale energy projects
- fragmentation of habitats
- loss of coastal habitats
- climate change
- loss of traditional land management techniques
- reliance on artificial pesticides and herbicides
- changes in the use of natural resources
- increased recreational pressures.

On average, species abundance in England has fallen by about one-third (32%) since 1970 [7]. Among UK species in Suffolk that are classified as critically endangered or endangered are:

- European eel
- Starry Breck-lichen
- Turtle dove
- Barberry carpet moth
- Suffolk lungwort
- Natterjack toad

Lots more are 'vulnerable' (threatened with extinction) or 'near threatened' (close to being endangered in the near future) – see **Appendix 2** for further details. As indicated in the State of Nature report from 2023 [7], the UK overall has seen significant habitat impacts, with only one in seven habitats assessed as being important for wildlife reported to be in a good condition.



European eel *Anguilla anguilla*



Barberry carpet moth *Buellia asterella*



Suffolk lungwort *Pulmonaria obscura*



Starry Breck-lichen *Pelophylax lessonae*



Turtle dove *Streptopelia turtur*



Natterjack toad *Epidalea calamita*

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What can nature recovery achieve: Maple Farm

Maple Farm is a 400-acre, family-run farm in Kelsale, Suffolk. Organic for over 20 years, hens roam freely, meadows are grazed by visiting herds of sheep and cattle, and the market garden produces year-round fruit and vegetables in soils enriched by green manures, composts and compost teas.
Research suggests that organic farming, ie without pesticides or herbicides, helps the most threatened wildlife species to survive and recover. Organic farming using regenerative farming methods enables Maple Farm to produce food, capture carbon and build biodiversity all at the same time.

How did they do it?

Regenerative organic methods are used to improve soil health, boost water retention, and support natural insect predators.

The purchase of a stone flour mill has allowed the farm to sell their own grain as flour, increasing their margins. This also results in lots of byproducts to feed the free-range hens enabling soya-free egg production. This, in a small way, addresses the global issue of widespread and destructive soya production for livestock feed.

Creating healthy, fertile soil

Soil health has been prioritised - planting fields with deep-rooting, fertility building crops like clover and grazing these with hens or other livestock to improve soil structure and drainage. The fields are rarely ploughed and shallow ploughing is practiced to maintain soil structure. Small machinery is also used to avoid compacting the land.

Intercropping

A wide range of different crops are grown, often side by side to compliment and protect each other e.g. tomatoes and basil. This helps to keep plants disease and pest free without having to use pesticides.

Agroforestry

Thousands of trees have been planted in rows within the fields. These trees help to maintain optimum soil temperatures, moisture and fertility. They store carbon, provide diverse habitats for beneficial insects to support nearby crops, and they give shade and shelter to the hens. In time, they'll provide valuable timber and nuts and apples.

Conservation and restoration

Many miles of hedgerows and hedgerow trees have been replanted, vital habitat for nightingales. Over ten miles of wildflower and grass field margins have been created, many ponds have been restored (there are 32 natural dew ponds in total). Stubble is retained over the winter months for wild bird habitats and areas are planted specifically for winter bird feed. Permanent pastures have been restored and many spaces left wild where life can thrive undisturbed.

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Agroforestry in action at Maple Farm, demonstrating the varied planting regimes

What has been achieved?

The fields of flowering vetches and clovers are a haven for different species of threatened bees and other pollinating insects. The farm is host to many bird species, including yellowhammers, nightingales and skylarks, which have been victims of modern agricultural methods.

Ponds welcome wildfowl, while on and beneath the water great crested newts, grass snakes, dragon and damsel flies are found.

This work creates good jobs in the countryside and the farm supplies healthy food for the community. Most of what is grown is sold through the Maple Farm store. The rest goes to local restaurants and a few shops who support local production.

What's next?

Maple Farm will continue to develop and share experiences with a growing number of farmers that are interested in these techniques. They are keen to support the development of farm clusters that will be vitally important to promote farming methods that encourage the recovery of nature and that maintain and support rural jobs and communities.

The farm will seek further innovations to find new profitable niches such as growing wildflower seed and other high value crops. The team at Maple Farm are keen to prove that small family farms can be very profitable if they behave differently.

Find out more by visiting
www.maplefarmkelsale.co.uk

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Community conservation: Little Ouse Headwaters Project

Founded in 2002, the Little Ouse Headwaters Project (LOHP) is an award-winning initiative that brings local people together to protect, manage and celebrate a special landscape of biological, cultural and historic value.

The project focuses on a complex of fens, wet woodland and grassland along 5 km of river valley on the Norfolk-Suffolk border close to the villages of Thelnetham and Garboldisham. Alongside conservation activities they run social events, guided walks, talks and an annual art exhibition.

The project's core aim is the creation and restoration of wetlands, including rare calcareous fen habitat which is of national significance for its plants. All of the work is based on the principle of 'people working with and enjoying nature', both to restore and offer access to tranquil countryside.

Who's involved?

LOHP has a membership of approximately 200 local residents, ably coordinated by the Conservation Manager. Volunteers are fundamental to the ethos of LOHP and help manage the land and with weekly work parties as well as organising events.

LOHP works in collaboration with Suffolk Wildlife Trust and is a partner in the Waveney and Little Ouse pilot Landscape Recovery Project (WaLOR). Several areas of fen are leased from the local villages 'poor's trust'. Parts of the land are SSSI or or Special Area of Conservation (SAC) so the project also works closely with Natural England.

LOHP has received long-term support from both the National Heritage Lottery (NHL) and Esmée Fairbairn Foundation along with various local charities and trusts and their own members. The project works with graziers and, where possible, local contractors to deliver management aims.

How do they do it?

The development phase of the project involved extensive consultation and engagement with landowners (farmers) to secure buy-in for an ambitious vision for landscape scale habitat and ecosystem restoration. The innovative approaches being taken by the project include:

use of natural capital and ecosystem services metrics to quantify the public benefits delivered by proposed habitat and ecosystem restoration and land use change,
developing a bespoke approach to valuing these to make their delivery attractive to landowners and competitive with other land management options without undermining food production,
developing the legal and business structures to enable multiple landowners to pool the ecosystem services (or credits) they can offer and sell them through a single legal entity.

Planned habitat and ecosystem restoration includes 'Stage Zero' river restoration on a section of the River Waveney just upstream of Roydon Fen nature reserve.

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Volunteers clearing fen vegetation

This would see the river restored to its natural, meandering course from its current canalised channel alongside the restoration of a functional floodplain and wetland habitats.

What have they achieved?

LOHP have purchased 31 hectares of land and currently lease an additional 46ha. Habitat management is fine-tuned to the requirements of individual areas, wherever possible restoring rich communities of fenland plants. Ongoing monitoring shows that the diversity of wetland vegetation is now far higher as a result of this management.

Amongst the most spectacular successes has been the restoration of an area now known as ‘New Fen’, purchased with a NLHF grant in 2014. Originally, this was a tree nursery and a degraded fen that had become closed-canopy willow scrub. Clearance of the planted trees has created open woodland and scrub, and removal of the willows has led to the emergence of a remarkably rich fen flora containing southern marsh orchid, marsh lousewort, yellow rattle and meadow rue.

All of this has been achieved in less than 10 years thanks to a massive volunteer effort.

What's next?

As well as the ongoing maintenance of restored areas, the next major project is the creation of a network of diverse ponds across the sites. This will involve the creation of many new ponds and the restoration of existing ponds over a 5-year period. To address wider landscape pressures the project is contributing to the development of WaLOR to ensure their stewardship is successful in the decades to come.

A longer-term aim is to work with others to establish a more natural continuous river corridor providing extensive wildlife habitat, carbon storage and a range of other benefits.

Find out more by visiting
www.lohp.org.uk

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Part A: Strategy Area Description

“There is a hint of wildness in Suffolk's tamed beauty, and the tang of the North Sea is never far away.” - Patricia Moyes

Suffolk is an undulating county of low rolling hills and a central plateau, split by meandering river valleys. The county is bookended in the east by the Suffolk estuaries and a dynamic coast, and in the west by the sandy Brecks, The Fens, and the chalk hills that further west become the Chilterns. Much of the land is low-lying, nowhere more than 128 metres above sea level, and an average elevation of 35 metres.

Suffolk’s habitats and species reflect its variable geology and soils as well as centuries of human occupation and modification through farming, forestry and settlement. This interaction has shaped the patchwork of habitats across our estuaries, wetlands, open coast, heathlands, meadows, woodlands and farmed countryside that we see today.



The wide expanses of Suffolk’s shingle beaches, like this one in Aldeburgh, provide a vibrant ecosystem for diverse species, from nesting seabirds to coastal flora.

Nature conservation action in Suffolk has a long history, having provided the country with some of its earliest nature reserves and conservation success stories. In the 1930s and 40s, the RSPB purchased North Warren reserve in Aldeburgh and began managing the now famous coastal wetlands at Minsmere, purchasing Havergate Island on the River Ore in 1948. The wealth of wildlife and habitats in Suffolk is reflected in the 38,458 hectares under one or more nature designation, some 10.1% of the total county land area.



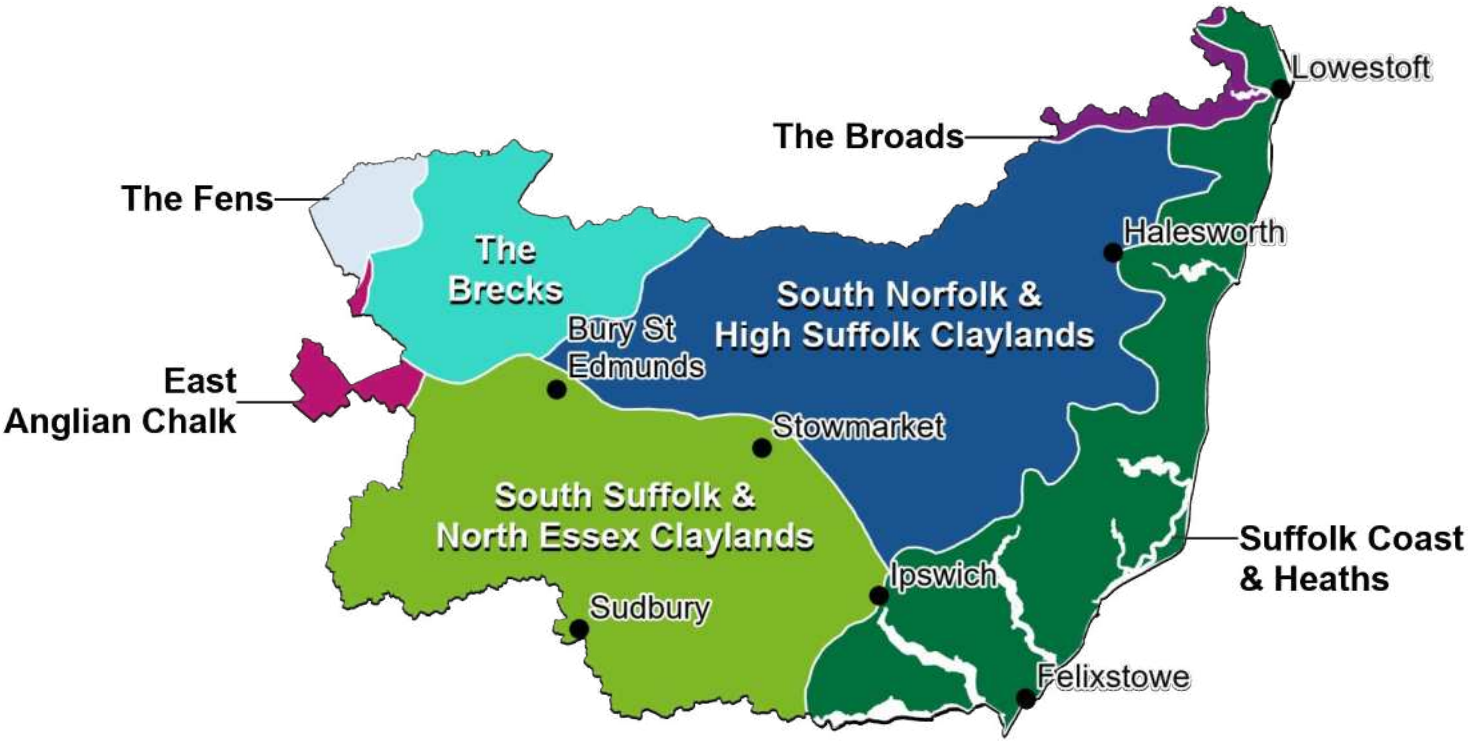
The geology underlying Suffolk's habitats

Suffolk is underlain by layers of sedimentary rock, primarily sandstone, chalk, clay and crag. In turn, this is covered with varying depths of glacial sands and gravels, estuary silts and loam-rich soil. Soils are the second largest carbon sink after the oceans. Peat is an ancient soil, formed several thousands of years ago in bog or fen habitats.

It is found in the Broads area and fens of southwest Norfolk and northwest Suffolk where it can be several metres thick. Peatlands are the largest natural terrestrial carbon store sequestering 0.37 gigatonnes of carbon dioxide (CO_2) a year globally and store more carbon than all other vegetation types in the world combined [8].

Much of Suffolk's sedimentary rocks hold water as aquifers, providing groundwater that issues out as springs and seepage for rare fen, bog and marsh habitats, and, ultimately, into the rivers. These aquifers are a precious natural resource, providing water for agriculture, industry and domestic use. The sandier soils of Suffolk have historically lent themselves to heaths and warrens, and more recently as commercial forestry or arable.

Figure 4. Map of Suffolk's National Character Areas (NCAs) highlighting distinct regions reflecting unique geographical and ecological characteristics.



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Suffolk's diverse landscapes host a tapestry of interconnected environments, each adding to the ecological network.

Across the strategy area, this is reflected in the range of landscape character areas as shown in **Figure 4**, which can influence the complex techniques required to manage each effectively.

This complexity becomes especially apparent in ecotones, the transitional areas where different habitats like woodlands and meadows or rivers and marshes meet. These zones are biodiversity hotspots, offering varied resources, microhabitats and opportunities that support many species.

By focusing on connectivity and the enhancement of habitats, the LNRS will support the resilience and vibrancy of local ecosystems. This approach is vital for supporting wildlife and ensuring community wellbeing, adapting effectively to environmental changes.

The historic environment

Suffolk has a rich archaeological heritage, with over 40,000 sites recorded across the county, from palaeolithic flint tools to medieval manors to Cold War military and much more. Many sites are designated due to their ecological importance and their inclusion of heritage assets – past human activity, design and land use or management mean that there can be a concentration of protected species and habitats present. This could include a wide range of features such as ancient and veteran trees, defensive or ornamental water bodies or long established woodland and grassland communities [9].



Cliffs at Covehithe reveal the geological layers below the ground's surface

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Suffolk's coast

From the sandy cliffs of Pakefield in the north of the county, to Brantham on the Stour Estuary, Suffolk's coast is one of England's most naturally dynamic coasts, supporting a range of wetland, saltmarsh, dune, shingle, mudflat, and soft cliff habitats. It stretches for nearly 60 miles and hosts some of the nation's most famous coastal wetland nature reserves in Benacre, Minsmere and Orfordness.

The relationship between the coast and adjacent wetlands is a delicate balancing act. To protect established and thriving communities from coastal erosion, where occasionally tens of metres can be lost in a single storm event, sea defences are erected, but inevitably shift the natural erosion forces of the sea to other areas, risking the sediment flow round our coastline. Sediment, released from coastal erosion, nourishes the barrier dunes and shingle, which, in turn, protects wetlands teeming with birds and wildlife. Thousands of waders and wildfowl feed on the pools and lagoons, bittern, marsh harrier and bearded tit make the reedbeds their home, while the beaches are a home for breeding shorebirds like ringed plover and little tern. The shingle beaches and ridges have a unique flora and are speckled with tough pioneer plants like the yellow horned-poppy in late summer.

The five great estuaries of the Blyth, Alde-Ore, Deben, Orwell and Stour are one of Suffolk's most famous natural features. Together, they represent some of the largest concentrations of inter-tidal habitat in England, home to internationally important numbers of breeding and wintering birds, and important saltmarsh habitats that help provide flood protection from the sea, in front of the low-lying floodwalls. These areas are part of the East Atlantic Flyway, the migratory route linking the Arctic to Africa, and are currently under consideration for UNESCO World Heritage status.

Species found on Suffolk's coast:



Little Tern
Sternula albifrons



Redshank
Tringa totanus



Sea Pea
Lathyrus japonicus



Yellow Vetch
Vicia lutea

Did you know?
Suffolk contains 15% of England's coastal vegetated shingle habitat. Worldwide, the vast majority of this is found in north-west Europe, Japan and New Zealand.

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Sand dunes, like these near Lowestoft, are an iconic feature of the coastline. As a key successional habitat they are home to many unique and important species.

Coastal pressures

The Suffolk coast, measuring approximately 60 miles from Felixstowe in the south to Lowestoft in the north, faces significant pressures from climate change and human activity, threatening its unique habitats and globally important biodiversity. With average temperatures set to rise by up to 1.6°C in summer and 1.3°C in winter by the 2040s, climate change is driving significant impacts. Rising sea levels, projected to increase by 0.2–0.4 m by mid-century and potentially exceeding 1 m by 2100, directly threaten habitats like saltmarshes and mudflats, which make up 9.6% and 9% of the UK's total, respectively [10].

The region's water systems are also under considerable strain. Suffolk and Norfolk, among England's driest counties, face projections of up to a 13% summer rainfall reduction and a 5–8% winter rainfall increase by the 2040s [10,11]. These shifts, coupled with higher temperatures, could reduce freshwater flows, increase groundwater abstraction, and enable saline intrusion into marshes and estuaries, degrading habitats.

A summary of key pressures identified by regional experts is as follows:

- sea level rise due to climate change and 'post-glacial' rebound
- sea defence structures and artificial stabilisation measures change sediment deposition and affect the dynamic nature of all coastal habitat systems
- large-scale built development and infrastructure is a risk to these habitats. However when designed well, impacts can be properly mitigated and compensated
- excessive recreational pressures from visitors will continue to cause damage and disturbance to sensitive habitats and species
- climate change impacts include higher temperatures and prolonged periods of drought which, if impacts on resources are not addressed, have the potential to result in ground water abstractions_ increasing and freshwater river flows reducing. Estuaries may become increasingly saline negatively affecting the intertidal habitats. Increased groundwater abstraction may also lead to saline intrusion of the coastal marshes. Conversely, wetter winters can lead to increased flooding and impacts on surrounding habitats due to waterlogged soil
- habitat loss caused by artificial coastal defences also leads to 'coastal squeeze' which results in habitat loss, including vegetated shingle and saltmarsh
- poor agricultural practice can lead to air and water pollution which negatively impacts on coastal habitats and species
- unsustainable fisheries management can lead to a reduction in prey species for some of our important fish-eating bird species.

Despite these challenges, Suffolk's coastal landscapes also offer opportunities for restoration and adaptation to enhance biodiversity and resilience. These are explored further in **Part B: Opportunities Identified**.

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For further details on coastal pressures, visit The Natural Capital Evidence Compendium for Norfolk and Suffolk at: www.nsnrp.org/publications or scan the QR code.



Port of Felixstowe cranes overlooking Trimley Marshes Nature Reserve, Suffolk Wildlife Trust.

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An example of Suffolk's coast: The Deben estuary

One of Suffolk's five great estuaries, the Deben winds through undulating farmland and historic towns and villages, from its furthest tidal limit inland above Woodbridge to the sea at Felixstowe Ferry. Migratory fish, such as herring, bass or sea trout, fill the estuary seasonally, while it also supports non-migratory fish such as dab, flounder and mullet throughout the year. Low tide reveals an expanse of saltmarsh and wide, intertidal mud flats which provide ample feeding grounds for wintering waders and wildfowl, including important numbers of dark bellied brent geese. The sheltered estuary possesses some of the most complete ranges of saltmarsh flora in Britain.

However, despite the considerable biodiversity on the estuary, monitoring by the Environment Agency between 2015 and 2022, revealed that only one out of the ten waterbodies that flow into the River Deben meet good ecological status. The remaining water sources are failing both ecologically and for water quality. Collaboration between individuals and organisations along the length of the river and estuary are working to reverse historic habitat fragmentation, as well as adapting to the extreme weather and flood pressure caused by climate change, and improve the status of this important asset [12-14].



The river Deben at Woodbridge

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Suffolk's farmland

Suffolk is predominantly shaped by farming, with around 75% of land in agricultural use [11]. Arable cultivation dominates but with important areas of livestock farming, root and salad crops and horticulture. Intensification has resulted in significant changes in the farmed landscape, but remnants from earlier days remain, such as irregular patchwork of ancient hedgerows dotted with veteran trees, drove roads, old veteran trees and ponds.

Farmland is home to habitats important to many species, and its productivity is reliant on nature for many things, including pollination of crops, healthy soils and availability of clean water. Parts of Suffolk show a slower rate of decline for rare arable plants and farmland birds like turtle dove, tree sparrow and grey partridge than other areas of the UK. In Suffolk we have many great examples of how nature and farming can be successfully integrated with one another. Nationally, the 2021 farmland bird index, which is a good indicator of general biodiversity on farmland, shows that the numbers of all farmland bird species have more than halved since the 1970s.

Species found on Suffolk's farmland:



Kestrel
Falco tinnunculus



Barn owl
Tyto alba



Corn bunting
Emberiza calandra



Shepherd's needle
Scandix pecten-veneris



Agricultural land, which covers much of the county, offers huge potential for nature recovery actions through sustainable farming practices.

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Farmland pressures

Suffolk and Norfolk have a greater proportion of the best grades of food-producing land compared to the average for England (25.5% Grades 1 & 2 and 53.8% Grade 3 respectively, compared to 16.9% and 48.1% for England) [11]. However modern farming practices and land management techniques can impact the biodiversity and soil productivity of our farmland, and create a lack of connection with surrounding habitats.

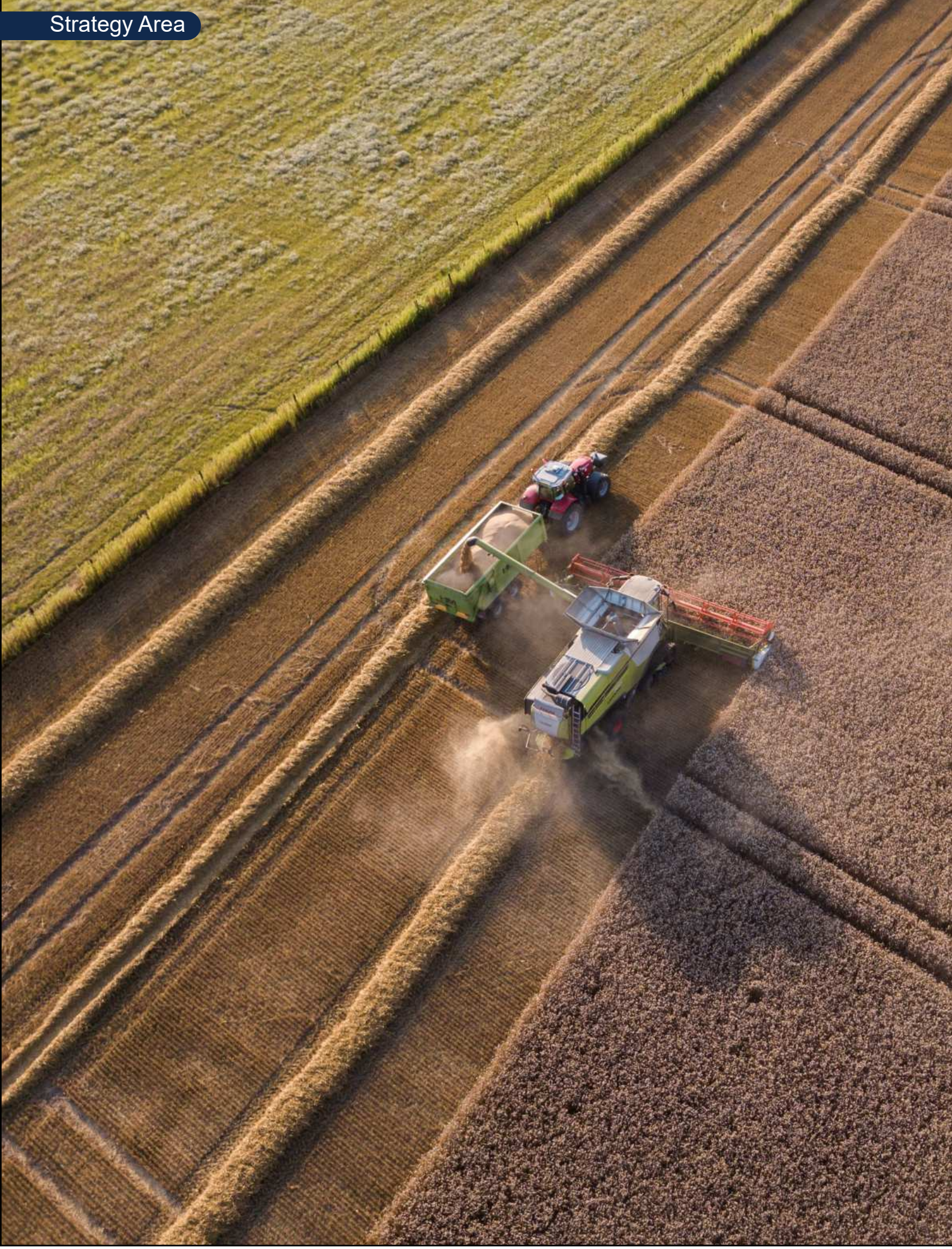
A summary of key pressures on Suffolk's farmland include:

- **intensive farming practices**, such as use of pesticides and fertilisers, negatively impact soil biodiversity and health, as well as invertebrates, including pollinators
- **removal and/or poor management of hedgerows** removes vital habitat for many species and increases disease introduction
- **abstraction of water for irrigation practices** impacting on water availability
- **loss of traditional field margins, small copses, isolated and hedgerow trees and farmland ponds or wetlands** limits habitats and wildlife corridors that allow species to traverse agricultural land
- **removal of existing woodland areas** to increase farmland reduces biodiversity and contributes to climate change through the release of carbon dioxide
- **monocropping** and other modern farming practices such as increased specialisation diminishes plant diversity and can make crops more vulnerable to pests and diseases
- **soil erosion and degredation** due to a variety of factors including stock pressures, lack of ground cover and use of unsuitable land types for agricultural practices
- **land use change** due to increased pressure for infrastructure, development and housing
- **agricultural runoff** transports harmful pollutants and excess nutrients into waterbodies and ecosystems, which in extreme cases can create areas of low oxygen in aquatic environments. These water quality issues can pose risks to human health, particularly where pollutants affect drinking water sources or recreational waters. Additionally, certain agricultural practices, such as fertiliser storage and application can influence local air pollution, with implications for both environmental and human health. Actions to reduce these emissions present co-benefits for biodiversity and local air quality.

Suffolk's farmland can and will play a crucial role in nature recovery and increasing biodiversity. This is explored further in **Part B: Opportunities Identified**, and highlighted in appropriate case studies.

For further details on farmland pressures, visit The Natural Capital Evidence Compendium for Norfolk and Suffolk at www.nsnrp.org/publications or scan the QR code.

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Crop harvesting near Woodbridge demonstrates modern techniques employed to generate food from the landscape.

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An example of sustainable farming in Suffolk: Shimpling Park Farm



Under-sown clover growing through a crop of spring barley on Shimpling Park Farm

Taking the decision at Shimpling Park Farm to farm organically and changing the farming system over 20 years ago has resulted in healthier soils, more nature, an enlightened workforce and a more stable farming business.

Bringing herbal leys and livestock back into the system, coupled with green manures and cover cropping, has increased the soil's organic matter as well as its health.

Not using pesticides or chemical fertilisers has meant that rotations have had to be longer with the use of an increasing number of crops sown in equal measures of winter and spring cropping, which has helped to increase biodiversity on the farm as well as prevent any one pest, weed or disease from dominating.

Increased complexity has been a challenge for the owners as well as the staff at Shimpling Park Farm, meaning that they have become accustomed to change and indeed thrive on it, making the business resilient and more sustainable in times when our farmers are being asked to produce more than just food.

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Woodland, trees and scrub

Suffolk boasts some of East Anglia's most important remaining ancient woodland, and wood pasture with old veteran trees. This includes wet woodlands known as carrs, normally comprising alders, willows and birches, areas interspersed with old trees, and woodlands that were used for grazing. The Norfolk and Suffolk Broads hold some of the largest extent of wet woodlands in the UK.

The heavy clay soils of north and mid-Suffolk are scattered with ancient hornbeam, oak and ash woods, many with a history of active coppicing and pollarding, often linked by a network of hedgerows. Although Suffolk has over 450 ancient woodland sites, some have been reduced in size and changed to monocultural and even aged plantations with little resilience to climate change and pests and diseases. Generally the woodlands are under intense browsing pressure from increased deer (both native e.g. red deer, and non-native species such as muntjac) and squirrel numbers. Where active management has resumed, coppicing has brought structure and light to the woodland floor and ground flora and bird life has returned, creating safe nesting and perching opportunities for birds such as nightingale and warblers.

Wood pasture and medieval deer parks such as Staverton Thicks supports old veteran trees and ancient pollard, which hosts rich insect fauna, owls and other birds. Many of Suffolk's oldest trees are found in some of the county's estate parklands and large historic designated landscapes associated with stately homes such as Heveningham, Ickworth and Clare Castle.



Autumn in Tunstall Forest, a Forestry England site within the National Landscapes of Suffolk.

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Suffolk hosts a variety of traditional orchards, from majestic standard cherry trees gracing parklands in the south to ancient cobnut coppices, and quaint farmhouse orchards adorned with a diverse mix of fruit trees. Urban trees, often hardy species like silver birch and London plane, play a crucial role in cooling, air quality and wildlife habitat.

Scrub is a transitory stage between open habitats such as grassland and closed canopy woodland. It plays a crucial role in supporting a broad range of wildlife, providing a continued source of nectar, fruits, seeds, shelter, breeding and roosting sites.

Nightingale are summer visitors to Suffolk, for example Arger Fen and Black Bourn Valley, where scrub habitats are increasingly important, as they prefer thickets of dense blackthorn and bramble, with a margin of rough grass.

Species found in Suffolk's woodland, trees and scrub:



English oak
Quercus robur



Barbastelle bat
Barbastella barbastellus



Purple emperor butterfly
Apatura iris



Black poplar
Populus nigra subsp. betulifolia

Invasive species



Muntjac deer
Muntiacus reevesi



Grey squirrel
Sciurus carolinensis

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Woodland, trees and scrub pressures

Woodlands in Suffolk play a crucial role for biodiversity and recreation but they face a range of pressures that threaten their sustainability. The Forestry Commission's National Forest Inventory provides detailed information on woodlands across the country, identifying areas larger than 0.5 hectares with at least 20% canopy cover and a minimum width of 20 metres. While this dataset does not explicitly identify timber producing woodlands, categories such as conifer, young trees and recently felled areas have been used as indicators of productivity.

The Brecks is a notable example, with 27.6% of its land covered by forest, more than double the national average of 10%. Of this, 18.3% is considered productive, underlining the region's importance for timber supply, energy production from waste wood and recreation. The UK imports more than 80% of its timber, causing over-reliance of more greenhouse gas heavy materials and deforestation abroad, therefore risking unsustainable management in countries with weaker (or no) regulations. Thetford Forest, at the heart of The Brecks, exemplifies this multifunctional value, drawing 1.5 million visitors annually while supporting both commercial forestry and biodiversity [15].

Key pressures identified by regional experts include:

- climate change impacts such as extreme weather events, fire and drought affect growth patterns, water availability, and species distribution
- destruction, fragmentation and isolation of woodlands puts species at risk of local extinction as natural processes are limited, for example mobile species may be unable to migrate between locations
- deer and grey squirrel populations cause overgrazing, which reduces the regrowth of young trees
- recreational pressures create the need to balance protecting space for nature with the benefits of access to nature for people
- invasive non-native species increase competition and diseases to native species
- pests and diseases, resulting in conditions such as Acute oak decline (AOD) and Ash dieback, have surged across the UK, threatening tree populations. Novel diseases are expected to increase in future, providing further challenges for biosecurity.

While these pressures are substantial, they also create opportunities to rethink management approaches and enhance the resilience of Suffolk's woodlands, alongside urban trees and those found outside of woodlands. These opportunities are discussed in **Part B: Opportunities Identified**.

For further details on woodland, trees and scrub pressures, visit The Natural Capital Evidence Compendium for Norfolk and Suffolk at www.nsnrp.org/publications, or scan the QR code.

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Enjoying a Suffolk woodland – striking a balance between conservation and providing access to nature for people.

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An example of Suffolk's woodland, trees and scrub: Bradfield Woods

Bradfield Woods is a National Nature Reserve in West Suffolk. This ancient woodland covers 70 hectares and has a rich history of continuous traditional coppice management since 1252. Coppicing involves cutting stems at ground level to promote vigorous regrowth. Remarkably, some ash coppice stools here are believed to be over 1000 years old.

The dense, bushy growth from regenerating shoots provides cover for migrant songbirds like garden warblers and blackcaps, while mammals such as stoats, yellow-necked mice, dormice and badgers can be found here. On sunny days, the sheltered woods become a habitat for 24 butterfly species, including the elusive white admiral and purple hairstreak.



The Bradfield Woods National Nature Reserve, managed by Suffolk Wildlife Trust, contains some of Britain's finest ancient woodlands, which has been under continuous, traditional coppice management since 1252.

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Freshwater habitats

Freshwater habitats include rivers and streams and still waters, including ponds or lakes. All of them are rich in species biodiversity, vulnerable to human impact and contribute to natural processes, including wider environmental benefits such as flood management.

In the north of the county, the River Waveney flows eastwards as part of the Broads catchment, from its origins in the spring-fed valley fens scattered around its headwaters (**Figure 5**). As they travel seaward, the Waveney and the other east-flowing rivers, like the Hundred Stream, open into wide floodplains, on peat, silt or clay. These support a mosaic of wet grassland, reedbeds, wet woodland, coastal flood plain and grazing marsh and occasional fen habitats. They are the drainage axis for much of Suffolk's hinterland.

Suffolk's chalk, such as the Little Ouse and Lark, make up some of the 39 streams feeding into the River Ouse. These flow westwards through The Brecks with adjoining wetlands and heathland habitats and eventually into the Fens. They are fed by the chalk aquifer with clear, mineral-rich water and provide a habitat for species such as the globally endangered white-clawed crayfish and the critically endangered European eel.

The low-lying landscape and shallow river gradients mean that saltwater often penetrates upstream, and flooding can occur when freshwater is 'locked' upstream on high tides, or barred by barrier beach sediments, although this is an entirely natural process.

The frequency of these events is increasing with sea-level rise due to climate change. The main rivers themselves, especially the Stour, Gipping, Deben, Alde, Blyth, Lark and Waveney support increasingly broad floodplains towards the sea. Some of the broader river valleys, like the Lark in the west of the county, have historically been dug in their lower reaches for gravel and minerals, and the resultant man-made lakes are often rich in bird and other aquatic life.

The tributary streams feeding the main rivers and estuaries often support an intricate linear mix of wet woodland, scrub, grazing meadows, ponds and ditches within the farmed countryside. Suffolk has 22,000 farmland and village ponds; however, many of these require restoration to reinstate their ecological value.

Species associated with Suffolk's freshwater:



Water vole
Arvicola amphibius



Frogbit
Hydrocharis morsus-ranae



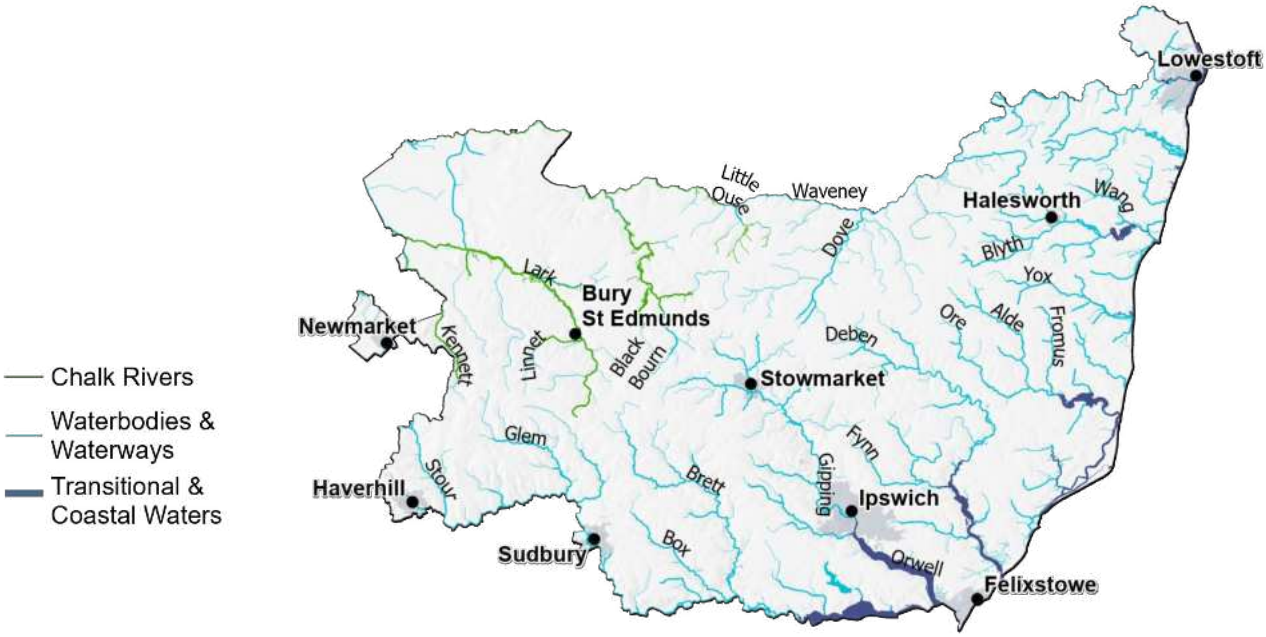
Bittern
Botaurus stellaris

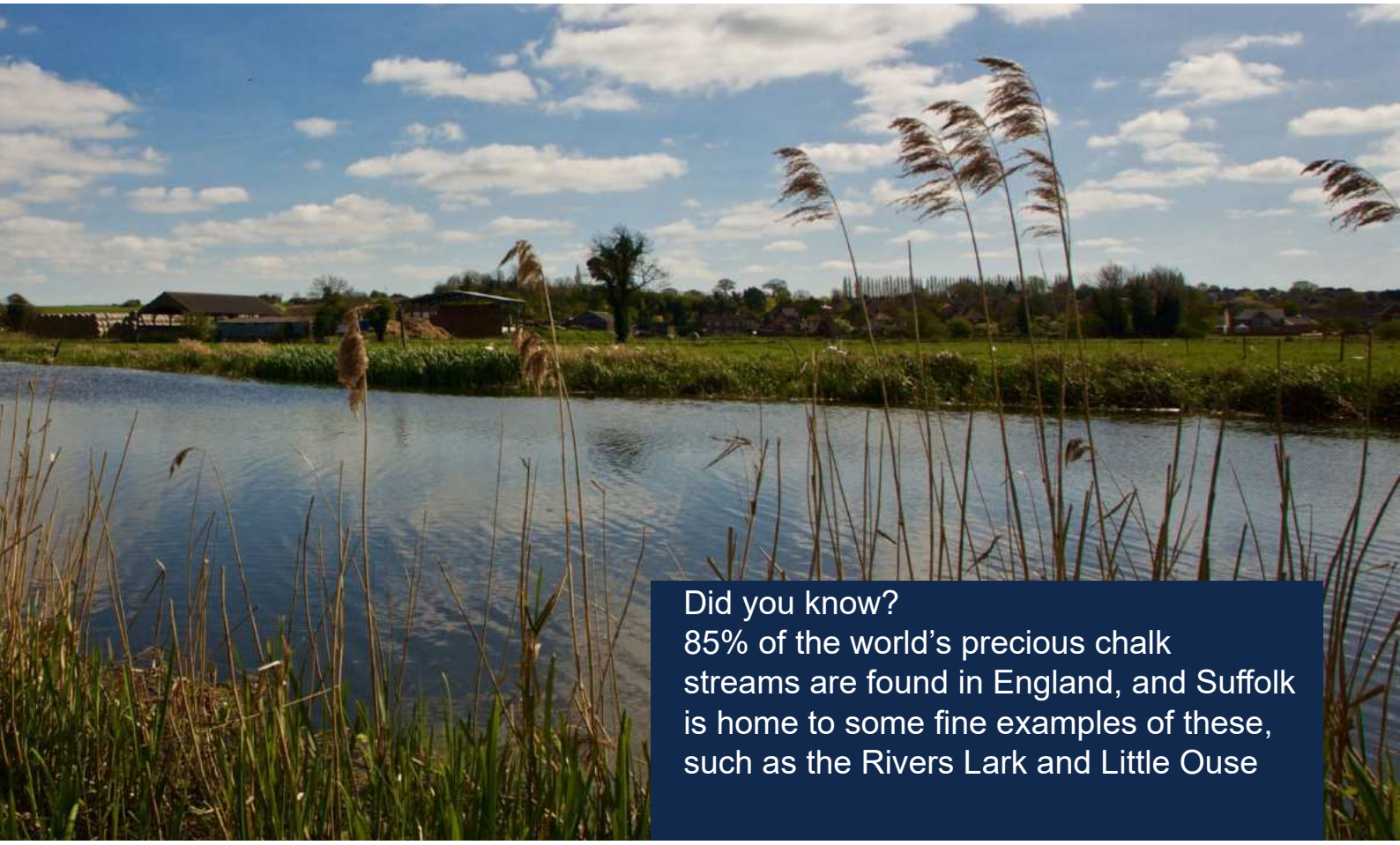


Great crested newt
Triturus cristatus

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Figure 5. Map of Suffolk's waterbodies and rivers.





Did you know?
85% of the world's precious chalk streams are found in England, and Suffolk is home to some fine examples of these, such as the Rivers Lark and Little Ouse

The River Waveney flows through east Suffolk, here passing by Wainford

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Freshwater pressures

Freshwater systems in Suffolk face mounting pressures that threaten ecological integrity and vital services. The Water Framework Directive creates an understanding of the quality of freshwater streams, rivers and lakes called water bodies. Surface water quality is a key concern, with few achieving 'good ecological' status under current assessments. The majority are classified as 'moderate', based on indicators for the biological and physical factors assessed. While some improvements are noted, many others have seen a decline or no change. Groundwater quality is also under strain, with the Environment Agency identifying 'poor' status across nearly all of Suffolk due to diffuse pollution from agriculture, urban runoff, and point-source contaminants like sewage household chemicals such as domestic pesticide treatments and industrial discharges [16, 17].

Flood risk is another significant pressure, with over 11% of Suffolk and Norfolk rated by the Environment Agency as being at risk of at least a 1 in 100-year flood event. This risk is pronounced in key areas such as the Broads, coastal margins, and freshwater wetlands. Additionally, water availability is a pressing issue in East Anglia, the driest region in the UK. Demands for limited water resource - agriculture, public supply, business and environmental need - are exacerbated by projections of a regional net water deficit at 200 million litres per day by 2050. Chalk rivers, globally rare ecosystems that support distinctive species, are particularly vulnerable, with nearly 17% of England's chalk rivers located in the region. Many of these chalk rivers are already in 'poor' or 'bad' condition due to pollution, abstraction, sedimentation, and invasive species [16, 17]. The regions important peatland and wetland habitats are also impacted by the risk of drying out.

Key freshwater pressures identified by regional experts include:

- high level and uncontrolled excessive water abstraction which contributes to low river flows and groundwater input to sensitive wetland habitats
- surface and groundwater flood risk linking to impacts on communities
- physical modification of rivers, including dredging, installation of barriers and lowering riverbeds and confining them to specific channels for flood defence, drainage, navigation, or other purposes
- pollution from the air and the land and of all forms, including sewage, forever chemicals and plastics
- invasive non-native species which increase competition and diseases to native species, while also contributing to the degredation of physical habitats (for example signal crayfish can significantly disrupt ecosystems). These impacts are particularly severe in wetland habitats, which also face pressure from increasing deer populations
- climate change which increases water stress within wetlands and affects freshwater species distribution and land management practices
- habitat loss from infilling of ponds, including from lack of management

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- increasing salination as more saltwater encroaches upstream into areas of fen habitat or Broads along tidal sections, with potential higher impact than in coastal habitats recreational pressures in terms of the need to balance protecting space for nature with the benefits of access to freshwater habitats.

These challenges highlight the need for innovative approaches to restore and enhance Suffolk's freshwater ecosystems. Opportunities to strengthen habitat resilience and improve water management are discussed further in **Part B: Opportunities Identified**.



For further details on freshwater pressures, visit The Natural Capital Evidence Compendium for Norfolk and Suffolk at: www.nsnrp.org/publications or scan the QR code.

The waters of the River Lark, a classic chalk river, flows through modified channels in Bury St Edmunds.

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Grassland and heathland

The Suffolk coastal fringe supports an extensive network of pre-enclosure heath, warrens and commons. Together, these make up some of England's largest remaining areas of lowland heath. They are often embedded in the landscape alongside wetlands and estuaries, such as at Dunwich and Minsmere, or forestry and arable farming, such as at Tunstall.

Suffolk's meadows, once a part of every farm, are woven into our cultural fabric. These flower-rich expanses developed alongside humans due to livestock grazing and cutting for hay. The west of the county is home to areas of calcareous grassland due to the underlying chalk soils and, in the Brecks, these are often found close together in mosaics with acid grasslands due to the unusual geology of the area. It is estimated that more than 97% of the UK's species-rich grassland has been lost since 1930 and, in Suffolk, such habitat is generally confined to highly fragmented areas and marginal land, such as roadside verges.

Species found on Suffolk's grassland and heathland:



Heather
Calluna vulgaris



Nightjar
Caprimulgus europaeus



Silver-studded blue butterfly
Plebejus argus



Woodlark
Lullula arborea

Did you know?
Between the Brecks and the Sandlings, Suffolk supports over 25% of England's acid grassland habitat.

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The dry grassland at Carlton Marshes, managed by Suffolk Wildlife Trust, is highly important for biodiversity as they provide habitat for a wide range of plant and animal species

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Grassland and heathland pressures

Grasslands and heathlands in Suffolk are habitats of international significance but face many pressures threatening their survival. Calcareous grassland is found on shallow, lime-rich soils, neutral grassland on clay and loamy soils, and acidic grassland on sands, and gravels. Found on predominantly nutrient-poor, sandy soils, these habitats are home to a vast range of plants such as heathers, gorse, wildflowers and grasses adapted to their specific conditions.

Lowland heath and dry acid grasslands are now rare, making up just 0.5% of England's land area. However, Suffolk, along with Norfolk, holds a disproportionately large share of these habitats, including 8.4% of England's lowland heath and 27.7% of its dry acid grasslands. Much of this is concentrated in the Brecks and Suffolk & Essex Coast & Heaths National Landscape, highlighting their importance locally and nationally [11].

These ecosystems are highly vulnerable to human activity and environmental change. Fragmentation from historical habitat loss has reduced these habitats to small, isolated patches, making them more prone to degradation. Nutrient runoff from farmland and deposition from air pollution alters species composition, encouraging grasses that outcompete flowering plants and reducing biodiversity. Rising temperatures and frequent droughts linked to climate change further shift species dynamics and increase summer fire risks, which can permanently alter habitat structure. These pressures demand urgent action to safeguard the region's grasslands and heathlands.

Key pressures identified by regional experts include:

- disturbance susceptibility being impacted by site access due to species sensitivities
- high nutrient runoff and atmospheric pollution from farmland and infrastructure respectively, affects vegetation and can alter habitat composition (eg by encouraging more grass growth which outcompetes flowering plants)
- over or under-grazing or mechanical management impacts habitat structure
- summer wildfires change vegetation structure and composition following the fire
- habitat loss and fragmentation from housing development, road development, agriculture, forestry. For example, nationally, 85% of heathland and 96% of lowland hay meadows have been lost over the last 150 years and only 8% of Sandlings' heaths remain, affecting connectivity
- under-management and neglect: these sites may decline (abandonment or poor maintenance) due to under-investment, leading to adverse effects on the surrounding natural environment
- climate change can lead to changes in species composition (linked to changes in hydrological conditions, more frequent droughts, warmer temperatures causing grass species to become more dominant or allowing invasive species to establish and due to higher temperatures, a higher frequency of fires).

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Addressing these pressures requires focused efforts to restore and enhance Suffolk's grasslands and heathlands and strategies to achieve this are discussed in **Part B: Opportunities Identified**.



For further details grassland and heathland pressures, visit The Natural Capital Evidence Compendium for Norfolk and Suffolk at www.nsnrp.org/publications or scan the QR code.

The Brecks – a rare and vital habitat, home to unique wildlife and in need of continued care to thrive.

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An example of Suffolk's grassland and heathland: Suffolk Sandlings

The Suffolk Sandlings is an area of light sandy soils in south-east and east Suffolk, formed from material washed out from the ice sheet during the last ice age, between 10,000 - 70,000 years ago. This unique landscape, once dominated by woodland, now hosts a rare wildlife habitat - heathland, which has a unique flora and fauna. However, the extent of this habitat has declined by 70% in the last century alone, and 86% since the mid-1700s, making its protection and enhancement crucial [18].

In recent decades, efforts have been made by farmers and conservation bodies around these places to restore the former heaths where they had been previously reclaimed for forestry or arable farming. This is starting to reduce the fragmentation, as former sandy and poor, marginal arable fields are restored to grass and heath.



The frost covered Upper Hollesley Common provides vital habitat for a variety of species throughout the year.

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Urban and built environment

By English standards, Suffolk is still a relatively rural county. However, our built environment provides an important part of our natural heritage, not least for the habitats and species it supports. Crucially, it brings nature close to where people live in Suffolk's many towns and villages, allowing them to access and connect with the green and blue spaces which support physical activity, mental wellbeing and community cohesion, especially in denser urban neighbourhoods.

Among our more urban areas, Ipswich has the Orwell estuary on its doorstep, the Gipping River corridor, heathlands on its eastern fringes, and impressive parkland open spaces like Christchurch and Orwell Country Park, bringing nature in and around the town centre. However access to these spaces is unequal, some neighbourhoods are underserved which can exacerbate health inequalities. Improving connectivity through green corridors and better links to green spaces and parks can help to address this imbalance.

The habitats of Carlton Marshes, Belton Forest and Fritton Lake are all close to Lowestoft, while the town itself supports green spaces and Oulton Broad, a reminder of the town's position at the seaward end of a former Broads estuary. Many of our historic market towns such as Bury St Edmunds, Sudbury, Stowmarket, Halesworth and Bungay are located along rivers, crucial arteries connecting nature and people throughout the county. Finally, Newmarket and the surrounding areas, known as the headquarters of British horse racing, offer potential for habitat creation.

Foxes, hedgehogs and starlings are prime examples of urban species, but there are also more endangered species such as swifts, utilising the skies above our towns and villages in the early summer.

Weaving nature into high quality design for housing, road, rail and energy infrastructure projects helps create nature rich places. When combined across the county, private gardens are larger than our National Nature Reserves, so have great potential to help recover nature, from window boxes to stepping stone ponds and mini-meadows. Our public spaces, parks, street trees and road verge grasslands and hedgerows can also be utilised for people and nature when managed well. By closing gaps in access and ensuring inclusive design, every community in Suffolk can benefit from natures health, social and ecological assets, from wildlife friendly management of community green spaces to tree planting.

Open Mosaic Habitat (OMH) on previously developed land, such as former industrial estates, mineral extraction sites and disused areas, is playing a role in our ecosystems as some species adapt to living in our more urbanised areas. OMH is a very rare habitat, often overlooked, under recorded and undervalued as sites are often of importance for invertebrates and successional species.

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Species found on Suffolk's urban and built environment:



Hedgehog
Erinaceus europaeus



House Sparrow
Passer domesticus



Swallow
Hirundo rustica



Swift
Apus apus



Urban parks, such as Christchurch Park in Ipswich, offer great opportunities for urban-based nature recovery action as well as providing access to green space.

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Urban and built environment pressures

In 2021, Suffolk had a population of 760,688, (**Figure 6**) which is projected to increase to 828,710 by 2043. Just under 20% of this population resided in the urban area of Ipswich, with the total urban population being approximately 60% of the total population [19-21]. Heavy human activity in urban areas can impact local wildlife and biodiversity.

Key pressures identified by regional experts on habitats and species in urban areas include:

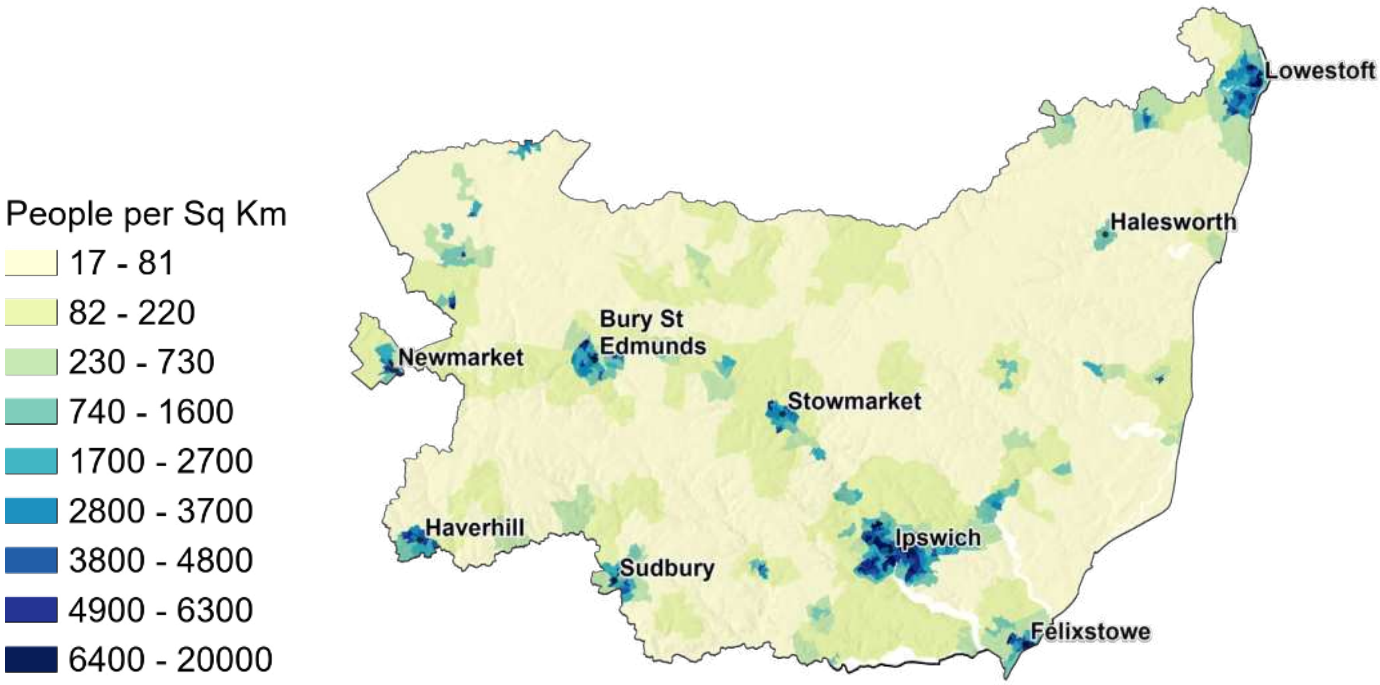
- urban expansion often leads to the destruction and fragmentation of natural habitats and increasing competition for resources such as water and food, making it difficult for species to survive and thrive
- urban regeneration using brownfield sites due to their value as biodiverse habitats
- garden design features and practices such as solid fencing and use of chemical treatments
- air, water and soil pollution caused by transport, construction and other infrastructure in urban areas, can harm wildlife and degrade natural habitats
- heat islands - urban areas which are warmer than their rural surroundings - due to human activities and infrastructure, which can stress local flora and fauna
- invasive species can be more prevalent in urban environments, which can outcompete native species and disrupt local ecosystems
- artificial light and noise from urban areas can interfere with the natural behaviours of wildlife, such as migration, reproduction and feeding.

There are multiple opportunities for individuals and communities to reduce these pressures in urban and built environments and potential measures to achieve this are discussed in **Part B: Opportunities Identified**.

For further details on urban and built environment pressures, visit The Natural Capital Evidence Compendium for Norfolk and Suffolk at www.nsnrp.org/publications or scan the QR code.

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Figure 6. Suffolk's population density.





Busy roundabouts increase artificial light and noise which can interfere with the natural behaviours of wildlife

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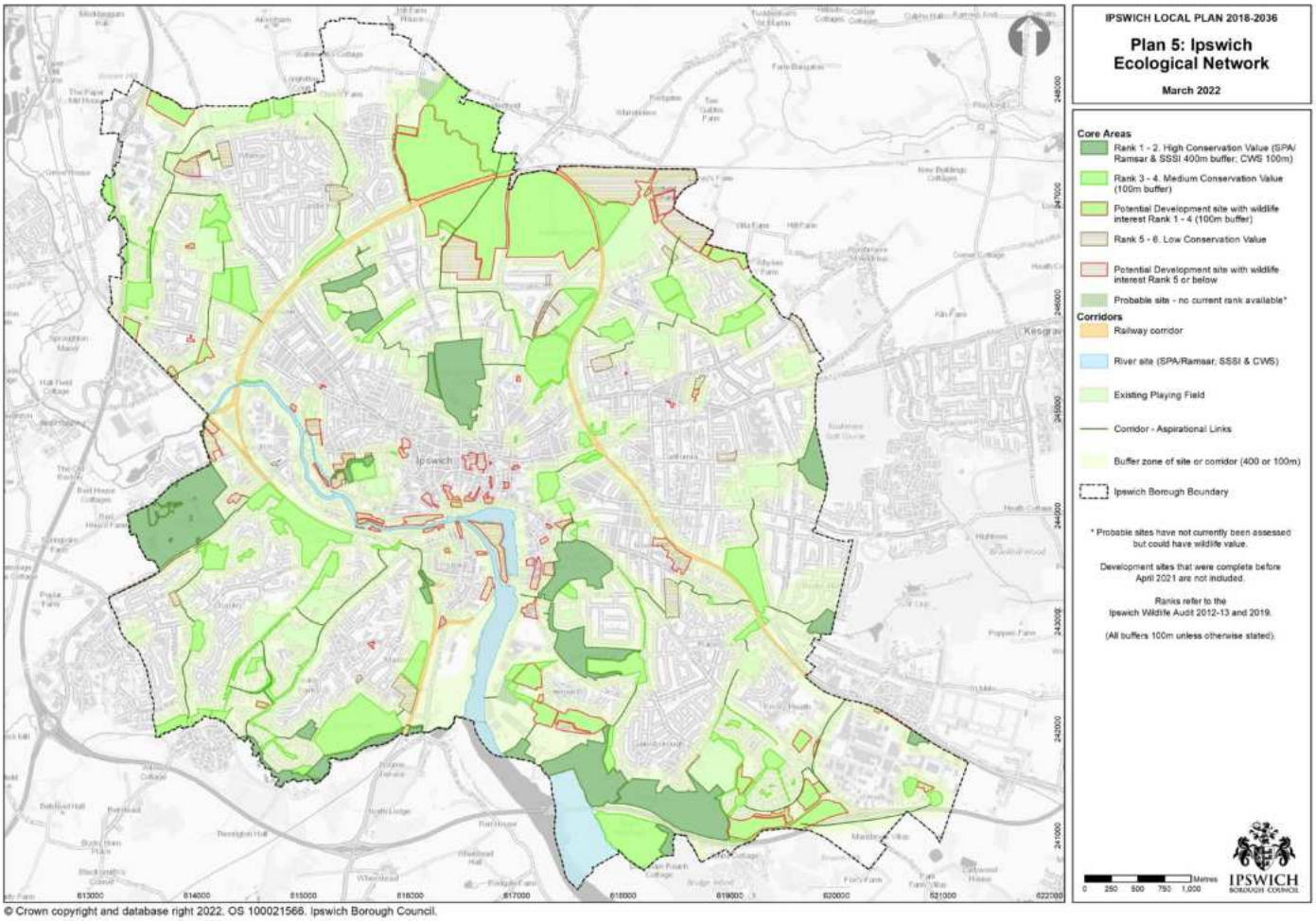
An example of nature recovery in a developed area: Ipswich Greenways

“Knowing what natural resource we had was the logical first step in the long journey of trying to maintain and enhance the biodiversity value of the town.”

The Ipswich Ecological Network Map was created in 2014 following detailed site surveys of every significant green space in the town by Suffolk Wildlife Trust. The map shows all the ‘core sites’ (parks, nature reserves, allotments etc), along with corridors linking them together. Within the Local Plan context, the sites and corridors have a policy to protect corridor function and encourage enhancement through any developments.

The map clearly shows the vital importance of private gardens along with school grounds, business premises and smaller public green spaces – and it has highlighted the importance of working in partnership with other organisations and individuals to achieve as many wildlife benefits as possible. The Ipswich Borough Council Parks Service and Greenways Countryside Project have used the network map to focus resources and encourage public participation. Many ‘Wildlife Homes’ events, in partnership with Ipswich Wildlife Group, have allowed local people to make bird boxes, bug hotels, hedgehog houses and other ‘biodiversity features’ to take home to put in their gardens – with the idea that all the small efforts made by lots of people gradually, yet significantly, improve the diversity and value of the network.

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The Ipswich Ecological Network Map.

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Distinct areas: The Broads

The Waveney Valley, to Bungay, forms the southern arm of the Broads National Park, one of Britain's most famous and biodiverse wetlands. The Waveney (and Little Ouse heading east) defines the boundary between Suffolk and Norfolk, linking with a network of tributary rivers through much of north Suffolk. The area supports a diverse patchwork of peat fens, reedbeds, wet woodlands and wet grasslands. The marshes of the lower Waveney floodplain support large wetlands, many now being managed at landscape scale and enhanced for wildlife.

Rare and threatened species such as fen raft spider, water vole and bittern are the subject of intense conservation action, and the recovery of the bittern and marsh harrier from near extinction are two recent species recovery success stories.

But the Broads are also an important economic resource and the area is under intense pressure, from recreational use, water quality and demand, flooding, drought, wildfires and the necessity to respond to sea level rise and climate change.

Find out more by visiting
www.broads-authority.gov.uk

Species found in The Broads:



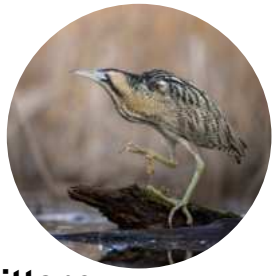
Swallowtail
Papilio machaon



Little whirlpool ramshorn snail
Anisus (Disculifer) vorticulus



Fen orchid
Liparis loeselii



Bittern
Botaurus stellaris



Marsh harrier
Circus aeruginosus



Common crane
Grus grus



Herrinfleet Mill on the Suffolk Broads

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Distinct areas: The Brecks

Straddling the border between Suffolk and Norfolk, The Brecks is one of England's most biodiverse regions. The landscape is one of the driest parts of England, but supports an incredible mosaic of woodland, heathland, rivers, wetlands and farmed land. The region is home to an incredible 2,149 priority species many of which are nationally rare, scarce, or threatened and of which the Brecks supports all or a large part of what remains. This includes rare birds of forest and open country such as stone curlew, woodlark and nightjar, and many rare plants of heath and cultivated land.

The Brecks' conifer woods, planted for commercial purposes in the twentieth century, have become a distinctive part of the landscape. However, the open heath areas are now limited and are mostly found within protected areas. This situation persists despite efforts to create corridors of these habitats through forest management.

The Brecks' unique natural features include meres that have changing water levels due to their connection to the chalky underground rock.

Equally fascinating are pingo ponds, formed from the freeze-thaw cycles of past glacial periods, creating distinctive pools and chalky ridges that support grassland plants. These are now key habitats for breeding amphibians, including the northern pool frog, which became extinct in the UK at the end of the twentieth century but has been re-introduced at two Brecks sites in Norfolk.

Species found in The Brecks:



Stone curlew
Burhinus oedicnemus



Woodlark
Lullula arborea



Nightjar
Caprimulgus europaeus



Creeping marshwort
Apium repens



Spring speedwell
Veronica verna



Adder
Vipera berus

Find out more by visiting www.brecks.org

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Protected landscapes

Suffolk is home to the distinct areas of the Broads National Park and the Brecks. These are complemented by our National Landscapes: Dedham Vale and the Suffolk & Essex Coasts & Heaths. Combined, the Broads and the National Landscapes are considered a Protected Landscape within the UK, and hold a unique and significant position ecologically and culturally.

15% of the land across England is designated as a National Landscape, with 66% of people living within half an hour's journey time to one of these areas [47]. These were previously known as Areas of Outstanding National Beauty, or AONBs.

The Suffolk National Landscapes also benefit from their own, specifically produced, management plans, avaliable on the Suffolk & Essex Coast & Heaths website and the Dedham Vale website.

Dedham Vale National Landscape

The Dedham Vale National Landscape and Stour Valley encompasses one of the counties most treasured landscapes. This distinctive lowland landscape, overlapping the Suffolk–Essex border, is characterised by picturesque villages, rolling farmland, rivers, wildflower meadows, ancient woodlands, which provide homes for a variety of local wildlife. With much of East Anglia's traditional grassland lost to drainage and arable farming, the hedgerows and meadows of the Dedham Vale stand as some of the most precious, but vulnerable, pastoral habitats in the country.

Covering 90 square kilometres, the designated National Landscape stretches upstream from Manningtree to within a mile of Bures. Less than 10,000 people



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live within the area and, whilst it remains a predominantly agricultural area, increasing numbers of residents are commuting to Ipswich, Colchester and London for work. Tourism is localised but vital to the economy, while the River Stour is an important for boating and angling water [48].

Suffolk & Essex Coasts & Heaths National Landscapes

The Suffolk & Essex Coast & Heaths National Landscape is a low-lying coastal landscape of astonishing variety, stretching from the Stour estuary in North Essex, up to Kessingland in North Suffolk, covering 403 square kilometres [49].

The landscape encompasses a unique mixture of shingle beaches, crumbling cliffs, marshes, estuaries, heathland, forests, and farmland. Its picturesque countryside, towns and villages have an unspoilt and tranquil atmosphere, with a very distinctive 'Suffolk' character. Visitor activity is centred around the medieval market town of Aldeburgh and other coastal towns and hamlets such as Woodbridge, Southwold and Walberswick.

The Suffolk & Essex Coast & Heaths is also one of the most important wildlife areas in Britain, encompassing three National Nature Reserves, many Sites of Special Scientific Interest and the RSPB's Minsmere Reserve. The mudflats and creeks of the Stour, Deben, Blyth, Ore and Alde estuaries contain wildlife wetland sites of national and international importance, whilst the wild, sandy stretches of ancient open heathland such as the Sandlings are a refuge for nightjar, woodlark, and rare heath butterflies.



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Conserving the Brecks: The Brecks Fen Edge and Rivers landscape partnership

The Brecks is landscape spanning 393 square miles across Suffolk and Norfolk. One of the driest UK habitats, the Brecks has both sandy and chalky soil, lowland forest, acid grasslands and heathlands, and riparian corridors, creating an important and ecologically diverse habitat. Between 2020-2024, the landscape has been the focus of the Brecks Fen Edge & Rivers Landscape Partnership Scheme (BFER).

Who's involved?

BFER is funded by the National Lottery Heritage Fund (NLHF) and hosted by Suffolk County Council.

BFER has worked in partnership with regional, national, and local organisations to conduct a core programme of projects across the Brecks.

Norfolk Rivers Trust (NRT) (with match funding from organisations including Coca Cola and the Environment Agency) have conducted assessments and interventions of riparian farmland across the Brecks to protect the rivers. These have included preventing negative run-off, and soil erosion.

The River Lark Catchment Partnership (RLCP) is a volunteer led charitable organisation. RLCP have carried out restoration work in the River Lark, with the support of BFER, Bury Trout Club, the Environment Agency, the Lark Angling Preservation Society, and the Wild Trout Trust.

What have they achieved?

Farm Intervention Work

Through BFER, NRT have conducted 14 interventions on farmland within the catchment of the rivers Little Ouse, Thet, Lark, and Wissey. Completed interventions in tributaries of the Lark and Little Ouse have significantly reduced sediment and nutrient input. Fencing installed alongside the Wissey has allowed for conservation grazing to resume at a county wildlife site, which was previously losing habitat and species diversity due to lack of grazing.

River Restoration Work

Through BFER, RLCP have improved the morphology and habitat quality of sections of the River Lark. 1.8km of habitat works were conducted by 89 RLCP volunteers via work parties, improving the natural sinuosity of stretches of the river that had been historically canalised for industrial use. This has improved natural flow and ecological quality, supported priority species, and created new spawning areas for fish.

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How do they do it?

Farm Intervention Work

- Working relationships with landowners developed through farm visits
- Flooding, excess sediment, and field run-off addressed with silt traps and holding ponds
- Soil erosion prevented in areas left bare by late harvesting crops, using maize under sowing.

River Restoration Work

- River flow characteristics and channel morphology re-established with installation of log deflectors, brash bundle shelving, and gravel riverbed augmentation
- Invasive species such as Himalayan balsam surveyed and removed
- Riparian planting conducted using coir matting
- Citizen science volunteer training provided to upskill and provide legacy.

What's next?

A Suffolk and Norfolk farm advisors' network has been established, with monthly meetings allowing for information sharing and future support.

RLCP will continue with volunteer river restoration work on the Lark, including aquatic planting, and will support the National Chalk Stream Recovery Strategy.

Find out more by visiting
www.brecks.org/bfer



Aerial photograph demonstrating river restoration improvement works (right) carried out by RLCP on a historically canalised section of the River Lark at Fullers Mill.

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Recreational pressures in Suffolk

Tourism is vital to Suffolk's economy, significantly contributing to local income and employment. However, alongside local activity, it can also bring substantial recreational pressures, particularly in sensitive areas like the Broads, the Brecks, and coastal sites. In 2023, Suffolk received 37 million visits, generating a total tourism value of £2.13 billion, with day trips comprising the majority at 35.34 million visits and £1.17 billion in value [19].

The Broads National Park

The Broads National Park remains a key attraction, offering opportunities for boating, hiking, and wildlife-watching while significantly contributing to the local economy. With 120 miles (200 kilometers) of waterways and 13 broads open to navigation, this unique wetland landscape, home to a rich variety of species, attracted 7.6 million visitors in 2022, generating an economic impact of £711 million. However, heavy recreational use brings challenges, with peak-season visitor footfall leading to soil compaction, bank erosion, and disturbance to nesting birds.

Waterborne vessels can also create disturbance and bank erosion. The areas population and tourism growth requires improvements in waste water treatment to further improve the water quality of Broadland rivers. Water pollution, increasing nutrient levels and associated promotion of algal blooms can all have a negative impact on other species.

In addition, rising water levels, frequent droughts and increasing levels of salination pose additional threats to this fragile ecosystem, highlighting the need for sustainable management.

The Brecks

The Brecks, with its fragile sandy soils and rare heathland habitats, is another area under strain. This region's popularity for walking, cycling, and exploring historical sites brings challenges. Pathway erosion and habitat fragmentation threaten biodiversity, while under-regulated access disturbs sensitive species. Spanning the Suffolk-Norfolk border, collaborative management between the two counties is essential to safeguard its ecosystems. The Brecks Fen Edge & Rivers Landscape Partnership Scheme has initiated several successful projects and management schemes, demonstrating the importance of cross-border collaboration.

The Suffolk Coast

In 2023, Suffolk's coast attracted approximately 4.62 million visits, generating £140 million in spending [20]. However, this sustained popularity exerts significant environmental pressures. High visitor numbers can lead to increased disturbance pressures on important sites for nature, with negative impacts from disturbance, sometimes by dogs off leads, on ground nesting birds or birds feeding at the waters edge of estuaries. Where visitors stray from publicly accessible areas there can be problems of soil compaction, trampling of vegetation and further disturbance. Additionally, sea-level rise exacerbates these challenges, threatening natural habitats and coastal infrastructure.

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Key recreational pressures

High visitor numbers, especially in peak-season, can cause soil compaction, habitat degradation, and erosion in sensitive areas. Human activity disrupts nesting, visiting and overwintering birds, seals, and other species, causing wildlife disturbance at key lifecycle points. Recreational activities increase nutrient loads in water, causing harmful pollution. Overuse of pathways and open spaces fragments habitats, threatening biodiversity and connectivity.



Boats on the Suffolk Broads boost tourism and the local economy but pose challenges like pollution and habitat disturbance.

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Biological pressures

Invasive non-native species outcompete native wildlife, altering habitats and disrupting ecological balance. In Suffolk, this includes addressing invasive plants (including pests or diseases affecting plants), invertebrates, fish, mammals, the most significant of which are listed below in **Figure 7**. Monitoring, habitat restoration, prevention are essential, with collaborative actions key to protecting biodiversity. Additional challenges are expected with changing conditions that could allow new species and diseases to thrive. Early warning of these will be important to ensure appropriate management is in place.

Figure 7. Invasive non-native species and significant pests and diseases

Vascular Plants



Floating pennywort
Hydrocotyle ranunculoides



Parrot's feather
Myriophyllum aquaticum



Himalayan balsam
Impatiens glandulifera



Japanese knotweed
Fallopia japonica

Vascular Plants



Giant hogweed
Heracleum mantegazzianum



Rhododendron
Rhododendron ponticum



New Zealand pigmyweed
Crassula helmsii



Pirri Pirri Burr
Acaena anserinifolia

Vascular Plant Pests



Oak processionary moth
Thaumetopoea processionea



Eight Toothed Spruce Bark Beetle
Ips typographus

Vascular Plant Diseases



Acute oak decline
Multiple pathogenic agents



Ash dieback
Hymenoscyphus fraxineus

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Vascular Plant Diseases



Sooty Bark Disease
Cryptostroma corticale



Phytophthora
Various species



Sweet Chestnut Blight
Cryphonectria parasitica

Invertebrates



Quagga mussel
Dreissena bugensis rostriformis

Invertebrates



Zebra mussel
Dreissena polymorpha



Signal crayfish
Pacifastacus leniusculus



Killer shrimp
Dikerogammarus villosus



Chinese mitten crab
Eriocheir sinensis

Fish



Top mouth gudgeon
Pseudorasbora parva plantarius



Wel's catfish
Silurus glanis



Grass carp
Ctenopharyngodon idella



Gold fish
Carassius auratus

Mammals



American mink
Neovison vison



Chinese water deer
Hydropotes inermis



Muntjac
Muntiacus reevesi



Grey squirrel
Sciurus carolinensis

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Areas of Particular Importance for Biodiversity

To consider where ambitious nature recovery measures can take place, the locations of the locally, nationally and internationally important and diverse habitats that make up the ecological network across Suffolk need to be established. This is achieved within this strategy by creating a single map, identified as the Areas for Particular Importance for Biodiversity (APIB) map (**Figure 8**). This acts to provide a framework of core sites to help identify locations and opportunities for targeting creation of new habitat, or improving, expanding and linking the existing areas. The specific sites included in the map are described below.

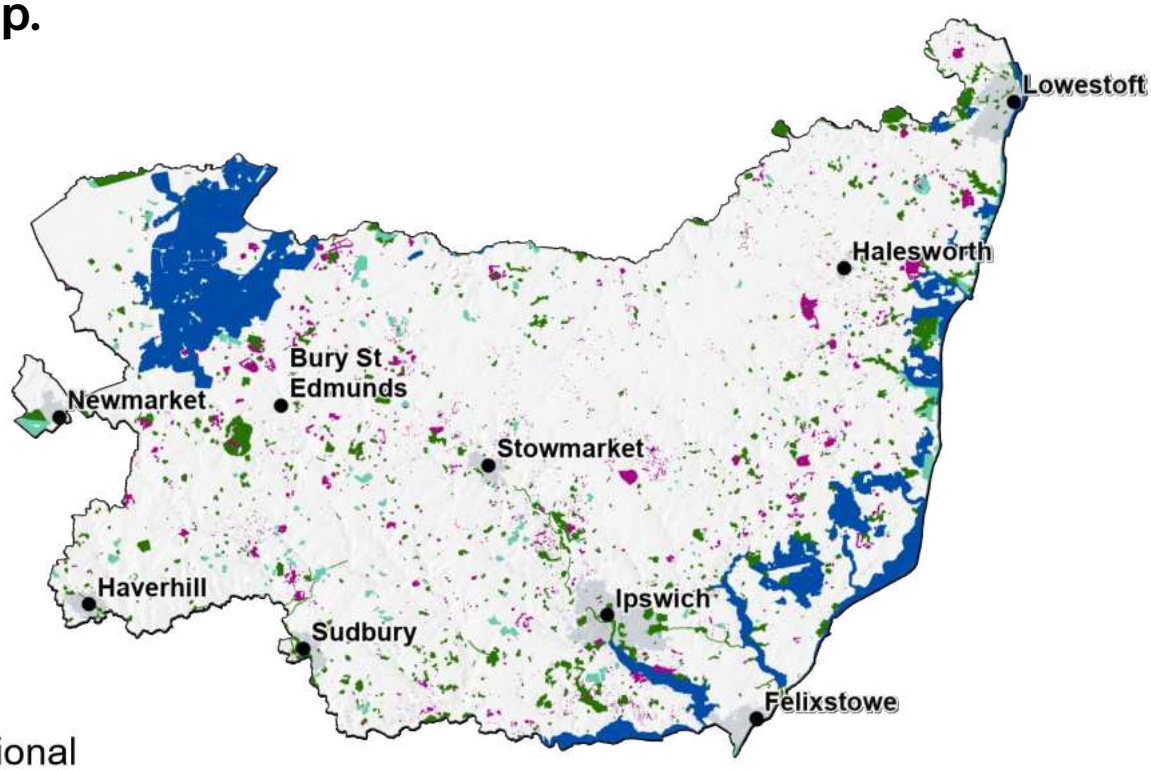
Internationally designated sites

Special Protection Areas (SPA)

SPAs are protected areas in the UK, designated under the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales.

They are areas with the most important habitats for rare and migratory birds within the UK. Alongside SACs they form part of the UK's national site network.

Figure 8. Suffolk's Areas for Particular Importance for Biodiversity (APIB) map.



Explore Suffolk's Areas for Particular Importance for Biodiversity (APIB) map through the NSNRP website or scan the QR code.

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Special Areas of Conservation (SAC)

SACs are protected areas of habitats and species listed within international conventions to which the UK Government is a signatory. They provide protection for types of species and habitat most in need of conservation at an international scale.

In England SACs are classified under the Conservation of Habitats and Species Regulations 2017 (as amended), and contribute to the UK's national site network alongside SPAs.

There are both inland and marine SACs around Suffolk.

Ramsar Sites

Ramsar sites are areas of internationally important wetlands designated under the Ramsar Convention [22]. In Suffolk, there is significant overlap between Ramsar sites and SPAs, as many of the wetland sites are protected because of their importance to water birds.

Nationally designated sites

National Nature Reserves (NNR)

NNRs protect nationally important habitats, species and geology across the country, whilst allowing public access and research and monitoring opportunities.

NNRs are managed to high standards for nature by Natural England and its partner organisations, and have legal protections designated under the National Parks and Access to the Countryside Act 1949, Wildlife and Countryside Act 1981 (as amended and the Countryside and Rights of Way Act 2006.

Sites of Special Scientific Interest (SSSI)

SSSIs are protected areas which contain specific features - either biological or geological - of particular interest to science. These features of interest can range from specific species all the way to whole landscapes of national importance.

Natural England are the responsible authority for designating and monitoring SSSIs, which are protected under the Wildlife and Countryside Act 1981.

Local wildlife sites

Local Nature Reserves (LNR)

LNRs are locations of special local interest for biodiversity (or in some cases for geological features). They also offer public access, making them important sites for both people and nature.

LNRs are a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949, designated by local authorities.

County Wildlife Sites (CWS)

CWS are designed to protect the most important areas for wildlife which are not covered by national designations. Suffolk's network of CWS is designated through a partnership, chaired by the Suffolk Biodiversity Information Service (SBIS).

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There are over 900 CWS in Suffolk, ranging in size from single ponds to large areas of woodland. They provide vital refuges for wildlife and stepping stones between other areas of habitat. Most are privately owned and managed and the majority are not accessible to the public.

Irreplaceable habitats

Certain types of habitat would be very difficult (or take a long time) to restore, recreate or replace once destroyed, due to factors such as their age, uniqueness, diversity or rarity. Irreplaceable habitats have specific consideration under the National Planning Policy Framework and legal protection under the Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations: 2024 [6, 23].

Irreplaceable Habitats in Suffolk are:

- ancient woodland
- ancient and veteran trees
- coastal sand dunes
- lowland fen
- coastal saltmarsh (Spartina saltmarsh swards and Mediterranean saltmarsh scrub)

The irreplaceable habitats used in the mapping of APIBs comprises those defined as Irreplaceable Habitats in the ‘Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024’.

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Restoring peatlands: Cowles Drove extension to Lakenheath Fen

In 2023 the RSPB began work reverting 67 hectares (ha) of arable land back to wetland which helps enlarge the existing reserve to a total of 490ha. The project aims to create fen and wet and dry grassland on the Norfolk/Suffolk border and to protect the remaining carbon held in the peat-based soils of these fields. When the land was being farmed, the peat had oxidised, releasing significant amounts of carbon dioxide.

The land lies within the Fens National Character Area with fen and wet grassland being Priority Habitats. The previously created nature reserve at Lakenheath, begun in 1995, now qualifies as a Site of Special Scientific Interest (SSSI) and as a Special Protection Area (SPA) for Common crane, Eurasian bittern and Western marsh harrier (but has yet to be designated).

Who's involved?

RSPB is the landowner and project manager of this scheme which has been funded by a donation from the Morgan Sindall Group. The RSPB is also part of the Fens East Peat Partnership (FEPP). The Lakenheath Fen project contributes to a larger effort to restore peatland sites in low-lying areas across Lincolnshire, Cambridgeshire, Norfolk and Suffolk. FEPP received grant aid from the Natural England Nature for Climate Peatland Grant Scheme.

Consultation has involved the Borough Council of King's Lynn and West Norfolk, Southery and District Internal Drainage Board (IDB), Environment Agency, Natural England, neighbouring landowners and the Ministry of Defence.

What have they achieved?

- 67 ha of arable land has been restored back to fen and wet and dry grassland
- The water levels have been raised across a wider 118 ha area to prevent peat erosion and carbon release.
- New habitat has begun to be used by wading birds, waterfowl and egrets.
- Cattle grazing on the land has commenced.



Cattle Egrets started visiting Lakenheath Fen shortly after grazing cattle were introduced.

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How do they do it?

The project started with extensive survey work to measure soil quality, peat depth, protected species and vegetation of the fields and ditches. Making use of existing data on peat depth, water transport through the soil and LiDAR (light detection and ranging) topography.

Water levels were raised by damming internal ditches and installing water control structures (including 7 sluices and 16 culverts) as well as removing field drains to prevent water loss, and the re-routing of an IDB drain.

Badgers and water voles were relocated and new habitat was created for them. Manual dipwells and auto-loggers were installed for ongoing monitoring of water levels and surface level change rods to monitor peat depth.

What is next?

- Installation of additional stock fencing.
- Installation of an electric pump (and its connection to the grid), to maximise the movement of water for the target habitats (fen and wet grassland) and species (waders, egrets, crakes, cranes).
- Finishing the validation process by the IUCN Peatland Code
- Continue ongoing monitoring of the water, species and habitat
- Registering the land (where eligible) for Biodiversity Net Gain

In the longer term, predator exclusion fencing will be installed around one field Much of the work to date has been done by contractors or RSPB staff but as the site transitions into more regular maintenance work RSPB will make increasing use of its volunteer team to assist with managing the land.

Find out more on the RSPB's Lakenheath Fen webpage





Left: Original water levels at Lakenheath Fen. Right: Water levels after raising. Raising the water levels prevents peat erosion and carbon release.

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Part B: Opportunities Identified



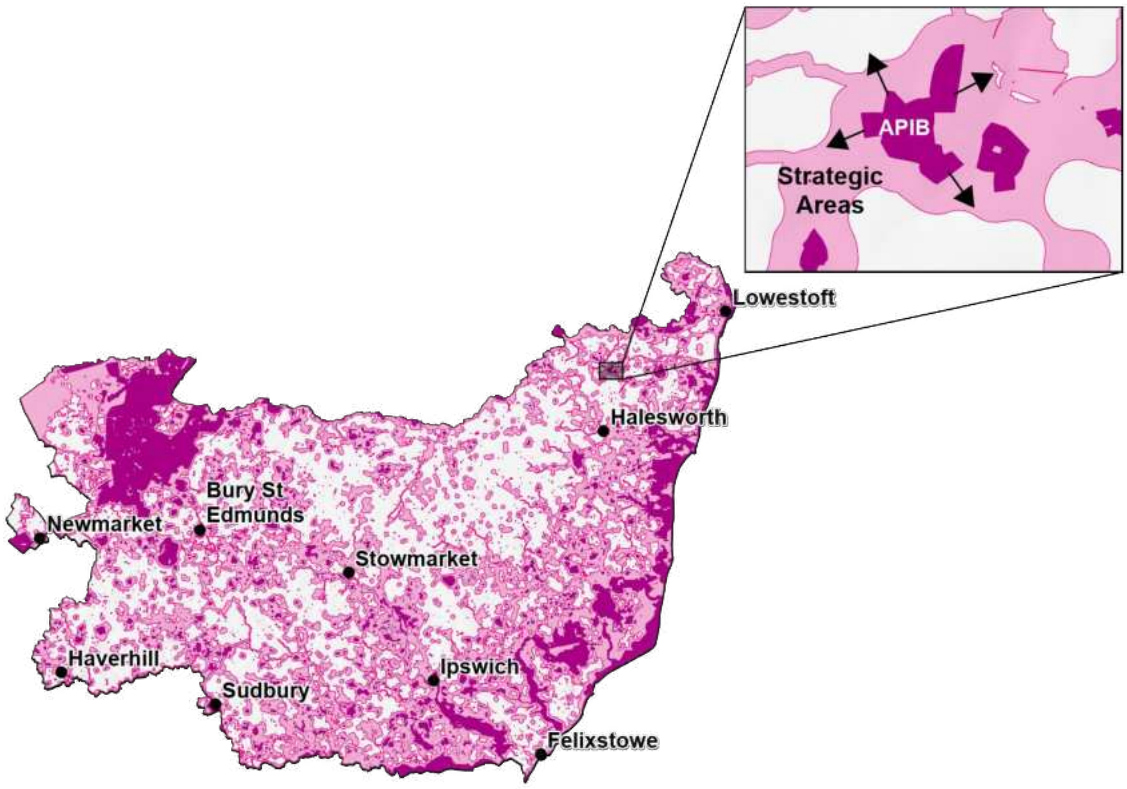
Wildflower field margin and hedgerow showing how agricultural fields can support wildlife and farming together.

Nature recovery principles

The Lawton Principles, introduced in the 2010 report Making Space for Nature [24], provide a clear way to think about improving nature. They focus on making space for wildlife and ensuring habitats are better connected, more robust, and able to support biodiversity in the long term. These "more, bigger, better, and joined" principles are summed up as:

- **more** means increasing the amount of natural habitat, so there's more space for plants and animals to thrive
- **bigger** refers to making habitats larger. Larger areas are more resilient and support more species over time
- **better** focuses on improving the quality of habitats. This ensures they are healthy and able to support a wide range of wildlife
- **joined** is about linking habitats so species can move between them. This helps wildlife adapt to changes in the environment and reduces the risks to species that live in isolated areas.

Figure 9. Map of biodiversity priorities in Suffolk showing existing APIB habitats (purple) surrounded by a 250 metres buffer or "Lawton Zones" (pink) to expand and connect habitats.



Explore Suffolk's Lawton Zones map through the NSNRP website or scan the QR code.

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In Suffolk's LNRS, these principles are being used to guide decisions about where and how to focus efforts for nature recovery. By following these principles, the strategy identifies opportunities to create a stronger, more connected natural environment that benefits both wildlife and people (**Figure 9**).

In order to address the Lawton Principles, we have applied a 250m buffer around Areas of Particular Importance for Biodiversity, Priority Habitats and churchyards across the county. This size of buffer was chosen as it provides ample opportunity and choices for expanding and connecting habitats across the county.

In addition to "more, bigger, better, and joined", the strategy also incorporates other nature recovery principles to ensure a comprehensive approach:

- **recover** aims to actively restore degraded habitats to their full ecological potential. This could involve enhancing soil health, rewetting drained peatlands, or removing invasive species to allow ecosystems to function naturally again. The actions also aim to support the recovery of existing species
- **reintroduce or translocate** is about bringing species back to areas where they have been lost or establishing populations in new locations to help them thrive. This can help rebuild balanced ecosystems and restore missing links in food webs
- **control** involves managing factors that threaten biodiversity, such as invasive species, grazing pressure, or pollution. Effective measures ensure restored and existing habitats stay healthy and productive.

Building on the nature recovery principles, Suffolk's LNRS identifies specific opportunities to restore and enhance habitats across the county, creating more green and blue spaces where most appropriate. These opportunities focus on practical actions that target key habitat types, addressing biodiversity loss and strengthening ecological resilience. By tailoring these measures to Suffolk's unique landscapes, the strategy provides a clear pathway for nature recovery and long-term environmental sustainability. These opportunities are not considered to be an exhaustive list, and there may be other actions and interventions that contribute positively.

This strategy details and refers to specific Landscape Recovery Schemes (LRS) across the region within case studies, highlighting the work planned or already undertaken at a landscape scale. There is an expectation that alignment between the schemes and the LNRS will present future opportunities as they work together, outlined in a guidance note issued by Defra. Information will be shared between the two policy areas dependent on the phase. This can include information on aims, environmental activities planned and maps of project areas, including more detailed mapping and environmental data where appropriate.

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Opportunities indicated by partnership between the LNRS and LRS include:

- links to funding potential, such as BNG, including private sector investment
- inclusion in long-term and large-scale nature recovery actions
- demonstration of mutual stakeholder engagement, for example with large farm clusters, eNGOs and landowners, alongside engagement with relevant spatial strategies and plans.

Within Suffolk, there are three projects in differing stages. A specific stakeholder group has been established with project leads across Norfolk and Suffolk to maintain communication and enable data sharing and therefore inclusion within the LNRS where applicable. These are also discussed across county boundaries with neighbouring RAs as necessary.

- Breckland Farmers Wildlife Network (BFWN)
- Habitat enhancement and connectivity in Gainsborough and Constable Country
- Waveney and Little Ouse Headwaters (WaLOR)

The creation of targeted, spatial measures and actions within the priority areas which have been identified and have emerged from the LNRS process will also provide the opportunity to align with and contribute to the legally binding national environmental objectives and targets introduced by the Environment Act (2021):

- restore or create in excess of 500,000 hectares of wildlife-rich habitat outside of protected sites by 2042, compared to 2022 levels
- halt the decline of species abundance by 2030, ensuring 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 2022
- increase total tree and woodland cover from 14.5% of land area to 16.5% by 2050
- improve water quality and availability – reduce nitrogen, phosphorus and sediment pollution by at least 40% by 2038
- increasing total tree and woodland cover
- improving water quality and availability
- ensuring that everyone in England lives within 15 minutes' walk of a green or blue space
- restoration of 280,000 hectares of peatland in England
- restoration of water bodies to good ecological status
- protecting 30% of land and sea in the UK for nature's recovery by 2030
- supporting farmers to create or restore hedgerows
- managing woodlands for biodiversity, climate and sustainable forestry
- restoration of Sites of Special Scientific Interest to favourable condition
- ensuring climate change adaptability is included in actions and policies
- inclusion of proposals for nature-based solutions which improve flood risk management where appropriate
- reduction in the rates of introduction and establishment of invasive non-native species.

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The measures and actions identified for the habitat assemblages and key species in Suffolk's LNRS are aimed to contribute, where possible, to the national objectives of:

- halting the decline of species abundance
- reducing the risk of species' extinction
- reducing the rates of introduction and establishment of invasive non-native species

It should be noted some measures could have the potential for increasing adverse effects for example increased connectivity allowing for spread of diseases, pests and wildfires.



Bumblebee on a cornflower

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Letting nature take over: Black Bourn Valley

Black Bourn Valley is a 300-acre reserve located near the village of Thurston. For over 20 years Suffolk Wildlife Trust has been 'wilding' the Black Bourn Valley by taking fields out of arable farming and allowing nature to take over.

The site is composed of a mix of former arable land, grassland meadows, wet woodland and scrub. As nature recovers, we are seeing this land transform into a scrub and grassland mosaic. Eventually, we hope to establish species rich grassland and scattered scrub as well as maintaining wetland features to increase biodiversity on the site.

What have they achieved?

Pond creation

One of the larger projects has been pond creation, with 24 ponds being managed sensitively to support a range of species.

The bare pond edges are providing feeding ground for endangered turtle dove and invertebrates. The cattle 'poach' the pond edges to maintain this bare ground for feeding.

Hedgerows

Hedgerows have been left unmanaged allowing scrub to spill out and encroach. This has created a graded habitat that is supporting a wide range of breeding birds.

Floodplain connection

In 2017 a project was undertaken to reconnect the river channel with the floodplain by excavating the old river channel, allowing it to flood out on to the meadows. Scrapes were created alongside this to provide habitat for wintering wildfowl. There were instant results with waders and wintering wildfowl using the entire area.

Species recovery

Since adopting a wilding vision, the species response has been extremely positive. There are now have at least three pairs of breeding turtle dove on site and four pairs of breeding nightingale (both of which are endangered).

The ability to graze the site with cattle extensively roaming through woodland, grassland and ex-arable areas has helped create and maintain a much more natural landscape.

Insect abundance has dramatically increased across the former arable areas as grassland meadows naturally establish. This further illustrates the ecosystem recovery that's taking place.

Find out more by visiting www.suffolkwildlifetrust.org/blackbournvalley

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Scrub and mosaic at Black Bourn Valley

How do they do it?

The main outcome of the work is to have a nature reserve that is nature led. A low intervention approach to site management is being taken and the main management technique is to extensively graze with cattle. The cattle can access the whole site and help to manage the meadows and scrub through grazing.

Ponds are managed rotationally. Some ponds are allowed to scrub over and vegetate, while others will be de-silted to maintain open water. This creates diversity in the age structure of ponds and caters for a wide range of invertebrates.

This approach enables nature to be the driving force for ecological gain and ecosystem recovery. Subtle interventions such as pond management and grazing ensure certain species are catered for, such as the great crested newt and dragonflies.

Volunteers assist with work at Black Bourn Valley. This can include installation and repair of livestock fences and cutting back vegetation on footpaths. The volunteers also install nest boxes for barn owls and carry out surveys.

What is next?

Black Bourn Valled are currently monitoring the changes on site - from soils (as they transition from arable to natural grassland) to key species such as turtle dove, bats, dragonfly and reptiles. The long-term goal is to provide species space and time to adapt in the face of climate change and intensive surrounding land use.

The hope is that this project will act as an exemplar site to show what wilding land looks and feels like. The site could also have the potential to demonstrate to local farmers and landowners the wider benefits of wilding their land.

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Habitat Opportunities

The following opportunities outline key actions across Suffolk, linking to the habitat areas outlined in the description of the strategy area.

Coastal opportunities

within maritime cliffs, sand dunes, vegetated shingle, saline lagoons, saltmarsh and mudflats.

- Allow natural coastal processes where possible and appropriate to enable habitats to develop, move, and function naturally, also incorporating creation of replacement habitat inland to mitigate for climate change and losses.
- Manage recreational pressures through key strategic solutions such as the Suffolk Coast Recreation Disturbance Avoidance and Mitigation Strategy (RAMS) and it's public facing brand Wildlife Wise [27a and b].
- Provide benefits to the marine environment and align with appropriate environmental plans for example Shoreline Management Plans, the East Inshore and East Offshore Marine Plans [46].
- Benefical use of dredged materials (BUDM) for habitat creation and restoration.
- Improve conservation techniques to restore and enhance existing habitats.

Woodland, Trees and Scrub opportunities

Creating new woodlands and improving existing areas, including wet woodlands, wood pasture and parkland and trees outside of woodlands. This incorporates both planned planting schemes following the principle of 'the right tree in the right place' alongside natural regeneration and colonisation where possible.

- Improve resilience through appropriate management techniques to promote structural and age diversity.
- Connect existing woodlands and create new areas using a diverse mix of appropriate native tree species and shrubs.
- Protect and conserve significant trees and woodlands.
- Identify new sites for planting orchards in rural and urban areas.
- Increase urban planting.
- Manage deer populations to sustainable levels and control invasive species such as grey squirrels.
- Create new areas of scrub and open space as transitional habitats.

Freshwater opportunities

- Restore and enhance existing rivers, streams, and ditches, including control of invasive species and enhanced biosecurity.
- Improve water resource and water quality management through nature-based solutions, including at source in headwater areas, at water recycling centres and by upgrading small rural water sewage works.
- Strengthen the mosaic of wetland habitats along river channels.
- Enhance river, riparian, and floodplain habitats.
- Restore and enhance chalk stream habitats.
- Enhance opportunities for fish pass installation or barrier removal.
- Create and restore where appropriate still water habitats eg ponds and lost or ghost ponds.

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- Restore, maintain, and enhance lake and broad habitats.
- Create new freshwater habitats, such as reedbeds, grazing marsh, and lowland fen.
- Include former gravel pits and mineral workings, especially in river valleys as potential sites for restoration to wetlands, including open water, fen and reedbed.
- Reduce greenhouse gas emissions from freshwaters by improving water quality and through restoring heavily overgrown ponds to an open-canopy state.
- Benefit the marine environment by improving the quality of freshwater entering it.

Grassland and Heathland opportunities

- Connect, expand, and enlarge grassland and heathland areas.
- Restore and enhance grassland and heathland.
- Protect and conserve significant existing habitat areas.
- Promote effective management techniques and controlled grazing regimes.
- Incorporate mosaic features within habitats.
- Remove encroaching habitat where appropriate.

Farmland opportunities

- Connect, expand and enhance areas of arable field margins.
- Enhance and restore hedgerows and hedgerow trees.
- Promoting effective management techniques and controlled grazing regimes.
- Incorporate mosaic features within habitats.
- Restore farmland ponds and improve riparian habitats.
- Use sustainable and regenerative practices to improve soil and water quality, including where appropriate paludiculture in high water table areas.
- Implement varied planting techniques to enhance biodiversity eg mixed cropping, agroforestry.
- Support and increase resilience of farming, eg through ecosystem services such as pollination and pest control.

Urban Opportunities

- Create corridors to connect the urban landscape with the countryside beyond, in the existing built and new developments.
- Increase the numbers of trees and other appropriate vegetation within urban areas.
- Improve green infrastructure aspects including green crossings and buffer areas, sustainable drainage systems and schemes, green roofs and walls.
- Encourage nature friendly management practices and activities within public spaces, communities and new developments. For example, local plan site allocations require the provision of open spaces and seek to improve connectivity to existing networks.
- Establish connectivity between gardens and public spaces.
- Incorporate retrofitted features into building work and transport networks.
- Creation of new areas for education, community projects and engagement within all urban settings.

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Mosaic habitat creation opportunities

Using combinations of habitat types within the Suffolk landscape, there is the possibility to create dynamic mosaic areas, where diversity can be maximised using varied vegetation structure and successional or transition zones and ecotones.

These areas will become naturally messy and be representative of allowing natural processes to occur. Mosaic habitats are beneficial to species as they can maximise the resilience of an area to change, due to the presence of varied habitat features eg still water habitats, trees and scrub.

Wider environmental benefits and co-benefits of nature recovery

Wider environmental benefits


Air quality


Capturing carbon


Clean water source


Erosion prevention


Flood mitigation


Improving marine environment


Managing climate resilience


Nutrient cycling


Pollination

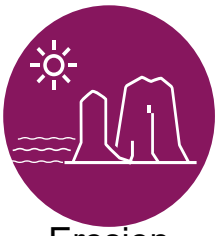

Soil health

Co-benefits


Clean water source


Cooling urban areas


Cultural, heritage and aesthetic services


Erosion prevention


Flood mitigation


Food provision


Pest and disease control


Physical and mental wellbeing


Pollination


Raw materials

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The impact of planning actions and measures to recover nature is not limited to species and habitats. Maintaining enough healthy 'natural capital' such as healthy soils, clean rivers and non-polluted air, alongside a diverse range of plants and animals, provides flows of environmental or 'ecosystem services' over time. This shows how nature recovery can play a key role in other priorities for the county, including climate resilience, disease resilience, health and wellbeing, air and water quality, and wider socio-economic benefits such as job creation and alignment with green infrastructure.

The 'other environmental benefits' are split into two areas within this LNRS:

- the 'wider environmental benefits' which can address the environmental issues such as climate adaptation as well as priorities for recovering or enhancing biodiversity
- the 'co-benefits' which focus more on the societal and cultural impacts eg improved access to nature

The measures proposed within this strategy are designed to support these additional benefits where possible and these are identified within the tables in **Part C**. These benefits have been highlighted by stakeholders and groups throughout our engagement processes and are integral to this strategy. Some benefits are considered applicable as both wider environmental and co-benefits, and these are depicted within **Part C**.

Types of ecosystem service can be defined in several ways, but a common approach (originally proposed by the Millennium Ecosystem Assessment, 2005) [25] is shown in **Table 1 (a-d)**.

Key examples are identified below, demonstrating the main benefits that each group of actions could provide alongside achieving the biodiversity priorities. Where appropriate, these can be defined as nature-based solutions, especially those opportunities and suitable locations for undertaking natural flood management, through the creation or improvement of habitat for biodiversity. In addition, actions can link to addressing and controlling access issues, by increasing appropriate areas and protection of sensitive habitats using planned re-direction.

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Table 1a. Co-benefits of nature recovery actions for provisioning services (outputs from ecosystems that meet human needs)

Service	Main Benefits
Pollination of food crops	Pollination of crops and wild plants.
Food production	Arable crops, horticulture, orchards, allotments and community gardens, livestock, wild food and foraging.
Wood production – productive or mixed forestry	Timber, biofuel production, paper, coppiced wood and wood waste.
Fish production	Aquaculture, commercial and recreational fishing.
Water supply	Impact of soil and vegetation on rainwater runoff and infiltration, restoring natural processes for groundwater and aquifer recharge or surface water flow, including drainage.

Table 1b. Co-benefits of nature recovery actions for regulating services (ecological processes that regulate and reduce pollution and other adverse effects)

Service	Main Benefits
Filtering air and water	• Water: Direct uptake by terrestrial or aquatic vegetation of pollutants, interception of overland flow and filtering or trapping pollutants and sediment within vegetation before it reaches watercourses. Natural processes such as nitrogen cycle converting nitrates into nitrogen gas. Infiltration into ground, allowing soil filtration and minimising watercourse pollution. • Air: Removal of air pollutants via deposition and absorption or breakdown via vegetation; includes fine particles, ozone and nitrogen oxides.
Reduction in flooding	Reduction of surface run off, peak flow, flood extent and flood depth through canopy interception, evapotranspiration, soil infiltration and physical slowing of water flow.
Erosion protection	The ability of vegetation to stabilise soil against erosion and mass wastage – providing protection from the power of rainfall and overland flow, trapping sediment and binding soil particles together with roots.
Capturing carbon	Carbon stored in vegetation and soil types. Sequestration is impacted by land use change, habitat loss and soil disturbance. New habitat areas take time to reach the sequestration rate of a mature habitat.
Cooling urban areas	Shade, shelter and the cooling effect of vegetation, in particular in urban areas or parks with trees close to buildings, green roofs and green walls. These can in turn increase efficiency and reduce heating and cooling costs.
Noise reduction	Attenuation of noise by trees and vegetation.
Pest control	Predation of crop or tree pests by natural predators.

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Table 1c. Co-benefits of nature recovery actions for cultural services (environmental settings that enable cultural interaction and activity)

Service	Main Benefits
Supporting physical and mental health and wellbeing (also referred to as physical and mental wellbeing)	Evidence that nature-rich green spaces can improve human physical and mental health and wellbeing and can have wider socio-economic benefits. For example, interaction with nature can improve a range of health conditions including heart and lung health, high blood pressure, diabetes, immune function, depression and anxiety.
Interaction with nature	Formal and informal positive nature-related activities, balanced with accessibility and human impacts on nature eg bird watching.
Recreation and leisure	Provision of green and blue spaces used for any leisure activity, linking to target to ensure everyone has access within 15-minute walk.
Aesthetic value and tranquillity	Provision of views, surroundings and inspirational experiences – linked to artistic expression and creation.
Education and knowledge	Opportunities for formal and informal education, scientific research, citizen science, local knowledge sharing, volunteer and career opportunities. These could include: • encouraging nature areas in school grounds, lessons delivered outdoors, regular field trips to nature reserves or natural areas and Forest Schools or similar. • the creation of new large-scale nature reserves with visitor centres • encouraging and promoting interpretive exhibits, talks, workshops, events, walks, learning activities, field survey events and more to help people, of a variety of ages, experience and learn about nature and the natural environment.
Community and sense of place	• Inspiring and informing community action for nature. • Aspects of an area promoting special and distinctive features – characteristic species, habitats and landscapes, alongside physical, social, spiritual or emotional importance.

Table 1d. Co-benefits of nature recovery actions for supporting services (functions provided by ecosystems that underpin other services)

Service	Main Benefits
Keeping soils healthy	Healthy soils are essential to food production, water filtration and storage, nutrient cycling and carbon sequestration.
Biodiversity and primary production	Complex ecosystem processes eg photosynthesis and natural system functions of species and habitats.

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Historic environment

In addition, the varied habitats, landscape parks and open spaces in our cities, towns and villages often have a heritage interest. Therefore, the consideration of nature recovery measures and actions should take into account the positive links and benefits to the historic environment [26].

These could include:

- preserving and enhancing heritage assets, both above and below ground – this could be achieved via arable reversion to permanent grassland on archaeological sites or to parkland and wood pasture. Alternatively, planting techniques eg direct drill, can prevent harm to assets, whilst improving soil health and reducing water pollution
- improving the setting of heritage assets
- improving access to heritage assets
- creating a sense of place and a tangible link with local history, supporting community engagement, encouraging stewardship and public understanding
- creating links between heritage assets and local nature recovery sites.

Specific actions could include:

- ensuring that key historic views or vistas within designed historic landscapes and the wider landscape are maintained and enhanced
- the creation of wildflower meadows in areas of previously cultivated land, protecting these assets from further degradation and damage
- restoration of historic hedgerow areas
- restoring traditional orchards
- improvements to the water quality of historic lakes or ponds
- supporting the continuation or revival of traditional land management practices that contribute to the historic character of landscapes and biodiversity.

Planned nature recovery projects must be informed by an understanding of heritage sensitivity, particularly in relation to scheduled monuments and registered parks and gardens, to avoid unintended harm to or loss of significance through management or enhancement works.

Health and wellbeing

The Health, Wellbeing and Access sector across Suffolk and Norfolk are considered integral in supporting the possible co-benefits developed, particularly within the Cultural Services sector. The Norfolk and Suffolk Nature Recovery partnership aims to facilitate these opportunities across the county as implementation of this strategy takes place. Throughout the engagement processes employed, key messages and aims linked to these co-benefits were determined:

- develop a vision of people and nature thriving together in Suffolk
- acceptance that on some sites, nature needs to come first
- ensure that everyone has access to green and natural space
- maintaining designated routes such as National Trails and the King Charles III England Coast Path alongside the Public Rights of Way network
- co-create nature recovery actions with local communities to maximise engagement
- provide support for schools, community groups and other appropriate landowners to develop connections and take action on their own estates.

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Potential Benefits

For each of the key habitat areas identified within this strategy, the wider environmental benefits and co-benefits that could result from the priority measures identified are summarised below. The actual benefits delivered will depend on a range of factors including the type of action, the related habitat, location and access. These factors are considered during the development and determination of the strategic opportunity areas. There are also important actions outside of the scope of the LNRS, such as reduction of emissions and pollution at source.

Coastal

- Sustainable food production linked to increased and varied biodiversity in productive areas, including through conservation grazing to restore and maintain habitats.
- Flood protection due to managed habitat creation.
- Pollution control and improving water quality from creation of new wetland areas.
- Erosion control and climate resilience from realignment projects.
- Carbon sequestration from the creation of intertidal and saltmarsh habitats.
- Opportunities for recreation, exercise and supporting health and wellbeing.
- Aesthetic value and tranquility.

Farmland

- Food production; increased yield due to pollinator increase and natural pest predators.
- Pollution control and improving water quality from use of buffer strips.
- Reduced soil erosion from increased permanent vegetation planting, using cover crops, terracing, agroforestry or adopting conservation tillage techniques.
- Soil formation and protection from erosion.
- Climate resilience due to increased connectivity and improved shade and shelter created by mosaics of diverse habitats.
- Opportunities for recreation, exercise and supporting health and wellbeing.

Woodland, trees and scrub

- Wood production due to new planting schemes and management.
- Improved air quality due to increased vegetation.
- Carbon sequestration from woodland creation and healthy soil development.
- Soil formation and protection from erosion due to planting schemes.
- Flood protection due to increased tree planting in riparian areas, buffer strips, woody debris and floodplain restoration.
- Increased soil infiltration due to increased organic matter.
- Climate resilience due to increased connectivity and improved shade and shelter created by mosaics of diverse habitats.
- Opportunities for recreation, exercise and supporting health and wellbeing.

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Freshwater

- Food production due to increased biodiversity.
- Increased water availability and enhanced water quality as a result of appropriate processes and reduction in pollution.
- Flood protection due to managed habitat creation, river restoration and reconnection of rivers to floodplains.
- Pollution control due to reduced agricultural run-off.
- Erosion control and climate resilience from habitat creation.
- Carbon sequestration through the creation of lowland fen habitat.
- Opportunities for recreation, exercise and supporting health and wellbeing.
- Aesthetic value and tranquillity.

Grassland and heathland

- Improved air quality due to increased vegetation.
- Carbon sequestration from healthy soil development.
- Soil formation and protection from erosion due to planting schemes.
- Climate resilience due to increased connectivity and improved shade and shelter created by mosaics of diverse habitats.
- Opportunities for recreation, exercise and supporting health and wellbeing.
- Aesthetic value and tranquillity.

Urban and built environment

- Food production within allotments and community gardens.
- Improved air quality due to increased vegetation at high infrastructure.
- Noise reduction created by planting schemes.
- Carbon sequestration within existing and new urban trees.
- Vegetation creating cooling effects, providing shade and soaking up heavy rainfall, thereby reducing urban flooding.
- Opportunities for recreation, exercise and supporting health and wellbeing, targeted green space improvements in deprived areas.

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Landscape recovery: Waveney and Little Ouse Recovery project

The Waveney and Little Ouse Recovery project is a Landscape Recovery pilot being led by Suffolk Wildlife Trust working in partnership with the Environment Agency and 16 other landowners and land managers. The project covers an area of about 1,650 hectares in the Waveney and Little Ouse headwaters catchment on the Suffolk/Norfolk border.

The project is creating a way to fund large-scale efforts to restore and protect nature, using the concept of natural capital (the value of nature's resources) and ecosystem services (the benefits nature provides, like clean water, flood control, and recreation). This approach will deliver a range of benefits for wildlife and people, from opportunities to access and enjoy nature, to improving the health of the rivers and helping protect homes and businesses further down the rivers from flooding.

The project development phase is being supported and funded by Defra through the Landscape Recovery pilot programme under the Environmental Land Management Scheme (ELMS).

What have they achieved?

To date the project has:

- assessed and measured the current state of biodiversity, soil carbon, nutrient inputs, surface water run-off into rivers, and flood storage capacity to set natural capital baselines in the project area
- tested a range of ways to measure and track the benefits from different habitat and ecosystem restoration scenarios and changing the land use.

Based on these, the project worked with landowners to develop proposed restoration and land use changes that would deliver an estimated:

- 266,803 tonnes of CO2 removed from the atmosphere over 50 years
- more than 5,000 Biodiversity Units
- 9,969 kg reduction in phosphorous inputs to land
- 450,948 m3 additional flood water storage capacity
- 204,286 m3 reduction in water run-off into local rivers

The project also developed a proposed legal framework and business model that will enable these ecosystem services to be valued, marketed, and sold to pay for their delivery.

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The Waveney Valley

How do they do it?

The development phase of the project has involved extensive consultation and engagement with landowners (farmers) to secure buy-in for an ambitious vision for landscape scale habitat and ecosystem restoration.

The innovative approaches being taken by the project include:

- use of natural capital and ecosystem services metrics to quantify the public benefits delivered by proposed habitat and ecosystem restoration and land-use change
- developing a bespoke approach to valuing these to make their delivery attractive to landowners and competitive with other land management options without undermining food production
- developing the legal and business structures to enable multiple landowners to pool the ecosystem services (or credits) they can offer and sell them through a single legal entity.

Planned habitat and ecosystem restoration includes 'Stage Zero' river restoration on a section of the River Waveney just upstream of Roydon Fen nature reserve. This would see the river restored to its natural, meandering course from its current canalised channel alongside the restoration of a functional floodplain and wetland habitats.

What is next?

The project is looking to move from the development phase into delivery, which will see habitat and ecosystem restoration works starting. Engaging and working with a wide range of stakeholders will be crucial to implementing the project's vision.

In the future, the Waveney and Little Ouse Recovery project could provide a template for other projects taking an ecosystem services approach to fund landscape scale nature recovery and nature-based solutions.

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The largest wetland creation in a decade: Carlton Marshes

In 2018, having received over £4m from the National Lottery Heritage Fund (NLHF) and raised £1 million from public and business donations, Suffolk Wildlife Trust set about transforming over 400 acres of land (178 ha) to create a southern gateway to the Broads. This was the biggest wetland creation in the Broads for over a decade and saw former farmland transformed into an accessible nature reserve.

Who's involved?

Suffolk Wildlife Trust – Grant recipient and project lead.
NLHF – Principal funder.
Broads Authority – Key partner.

What have they achieved?

The historic & cultural landscape that defines the Broads National Park as a distinctive and globally important wetland has been restored through the raising of water levels and reintroduction of grazing, to reinstate a functional wetland landscape.

The damage done by intensive arable farming in this part of the Broads National Park has been reversed through the creation and restoration of 155 ha of semi-natural habitat (fen meadow, reedbed, wet grazing marsh, marginal upland habitats).

The adjoining European & international designated habitats are less isolated and more resilient in this better connected landscape.

The future of the historic heritage of Oulton Broad has been secured, through the beneficial use of dredgings within the reserve habitat management programme.

Wildfowling adjacent to the designated habitats has stopped.

Within two years Carlton Marshes was the most productive breeding wader site in Suffolk and the reserve supports one of the most diverse dragonfly/damselfly assemblages in the UK.

Find out more by visiting www.suffolkwildlifetrust.org/carlton



The visitor centre at Carlton Marshes nature reserve

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Aerial view of Petos Marsh

How did they do it?

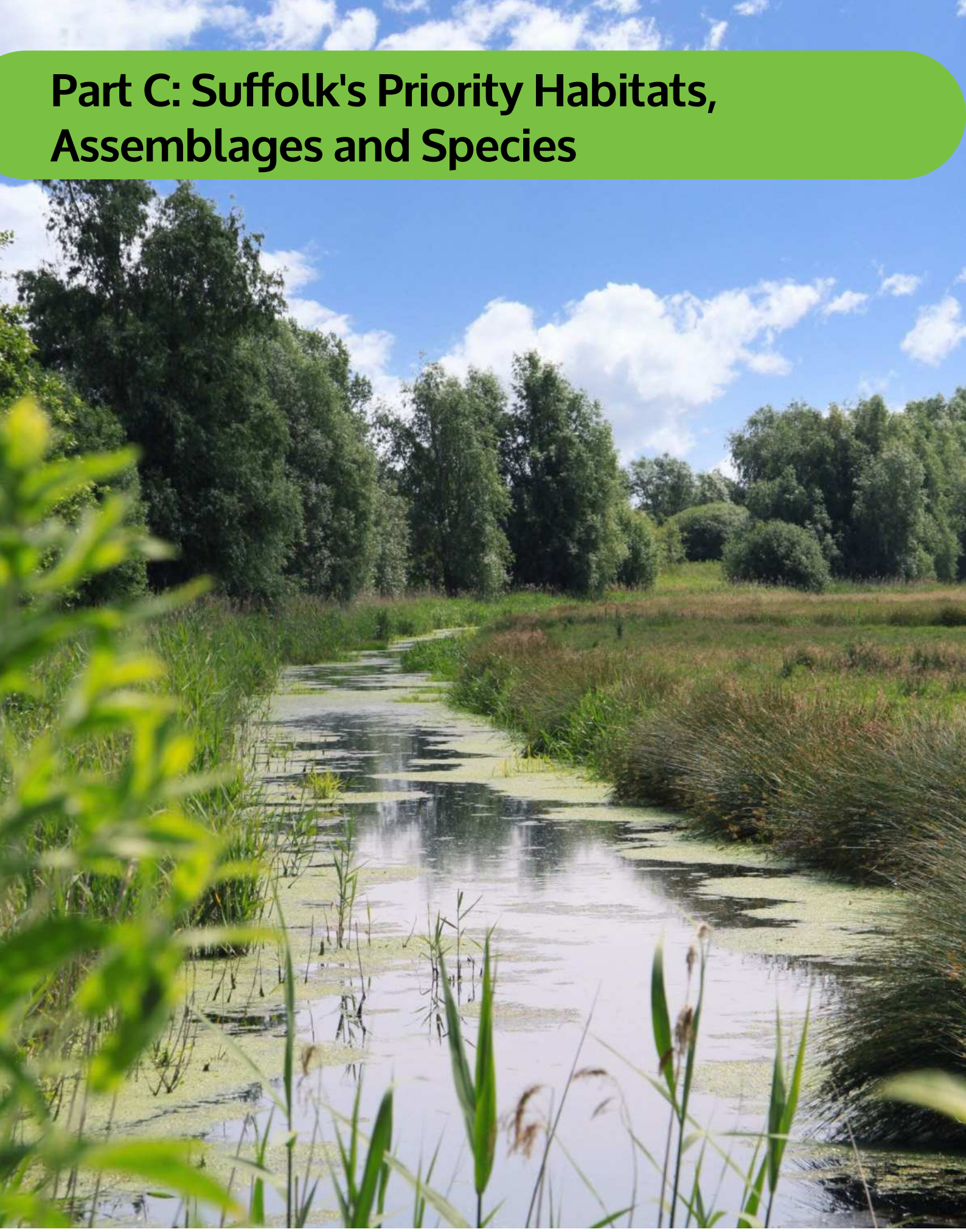
- On Peto's Marsh 41.6 ha of reedbed habitat and 20 ha of wet grazing marsh has been created from former arable land.
- On the eastern side of Share Marsh, 12.4 ha of wet grazing marsh habitat has been created along with 8.1 ha of fen habitat.
- On the western side of Share Marsh, 27.4 ha of wet grazing marsh habitat has been created and 14.5 ha of fen and reedbed habitat.
- Over 5,300m of dyke habitat has been created and restored.
- 6.8 ha of dry grassland and scrub habitat has been created on former arable land.
- The full ecotone of Broadland habitats, from dry valley side to wetland, identified in the Broads Audit as of principle importance for biodiversity, has been restored.
- Water quality across the whole hydrological unit has been improved through the change in land use from intensive arable farming.

What can we expect to see?

- Within 10 years, the 15km of restored Broadland dykes will support a Special Area of Conservation (SAC) quality assemblage of species.
- Broadland specialist plant species recorded within 10 years including water soldier, bladderwort & flowering rush.
- The restored fen meadow (29 ha) will support a SAC quality assemblage of species within 25 years.
- Within 5-10 years the restored wet grazing marsh (54 ha) and new reedbed (50 ha) will be of similar quality to existing designated habitats.
- SSSI units in unfavourable recovering condition (Sprat's Water) will be moved to favourable within 5 years.
- Breeding populations of birds which are characteristic of the Broads SSSI will increase in size and range.
- Populations of rare and threatened species, identified in the conservation plan, will be larger, more widespread & more resilient to future change.

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Part C: Suffolk's Priority Habitats, Assemblages and Species



Worlingham Marshes Nature Reserve supports a wide variety of habitats and species.

The LNRS for Suffolk is underpinned by a detailed understanding of the county's unique biodiversity and ecological needs. This section outlines how we have prioritised practical action for the habitats and species most in need of recovery. The priorities and measures identified are a guide to the recovery and enhancement of local species and habitats.

This section highlights three critical components of the LNRS:

- the identification of habitat priorities
- the identification of key species and habitat based species assemblages
- the identification of environmental benefits through nature-based solutions.

Combined, these provide a framework for targeted nature recovery actions in Suffolk, adopting a landscape-scale approach.

The types of actions which could be included as potential measures are:

- actions to create, improve, or restore habitats (expanding and/or enhancing habitat or changing management practices to better support biodiversity)
- actions needed to benefit specific local species
- actions to connect habitat areas to improve the resilience of nature and enable species to move through the landscape.

Examples of potential measures include actions such as ‘controlled regeneration of open woodland using grazing techniques’ or ‘installation of nest boxes and suitable building eaves’.

The priorities and measures outlined in this section have been shaped through extensive collaboration with stakeholders, themed working groups and steering groups.

Feedback from this engagement, as well as public input, has ensured a balanced and inclusive strategy, reflecting local circumstances and stakeholder views.

Where possible, each area is linked to defined assemblages and habitats, highlighting the complex nature of ecosystems. In addition, an overall indication of where the opportunities outlined can respond to the pressures faced, as detailed in **Part A: Description of the Strategy Area**, is included.

While this section focuses on the measures and actions, the methodologies underpinning this work are detailed in **Appendix 2** to be clear how we have reached these outcomes.

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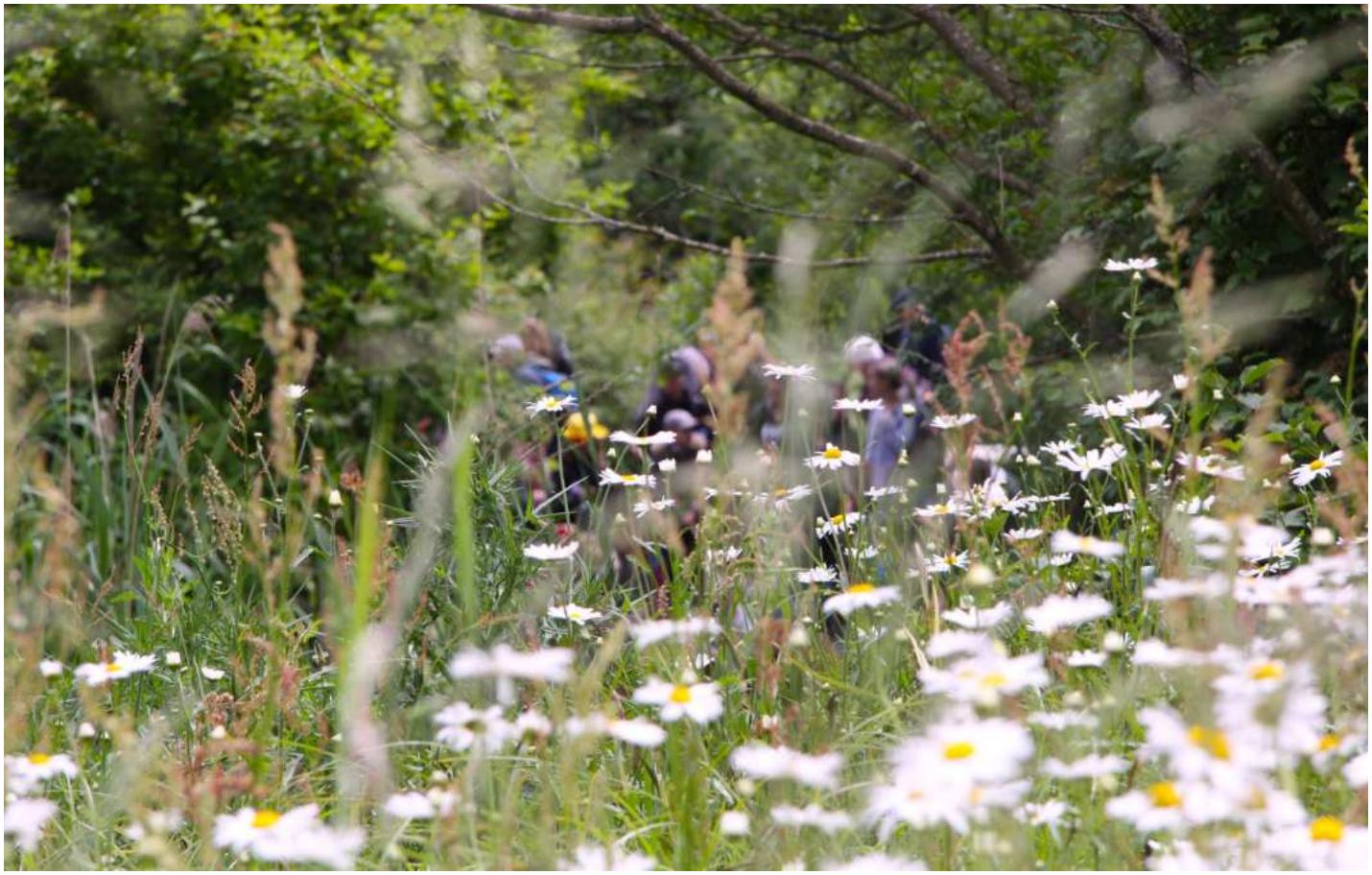
Using the measures and actions determined within the LNRS

The way in which the LNRS measures will be delivered will vary based on situation, location, funding opportunities and support available.

The measures outlined have been generated using the procedures described above, and many species and habitats are expected to be supported by these actions across Suffolk to create a developing nature recovery network. A sufficient site-specific review should be carried out to determine the suitability of nature recovery actions, with appropriate expert advice and input, as appropriate. This should include a range of advice eg hydrological surveys or reviews of the historic environment and Landscape Character Assessment if applicable.

This review should also consider any consents that may be required, for example from the local planning authority, relevant Historic Environment team, Environment Agency, Forestry Commission or Natural England.

Any individual or organisation looking to use the LNRS is invited to contact the Norfolk and Suffolk Nature Recovery Partnership for support as required.



People learn about nature recovery at the Suffolk Show

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Habitat priorities: More, bigger, better, and more connected

Through the analysis of 301 existing stakeholder documents including strategies, policies and plans which relate to nature recovery we started to identify potential priorities. (Full details in **Appendix 1** and **Appendix 2**). Alongside input from Themed Working Groups and authoritative sources, accompanied by priorities submitted in public and landowner surveys, this generated over 1700 identified possible actions linked to habitat creation or improvement.

A robust review process, again developed in a collaborative process, identified 20 habitat specific priority areas and 13 more general priority focus areas, designed to have a wide impact across a range of habitats and processes, but without a specific location. These priorities were assessed on a qualitative basis, aligning with key national targets for environmental change, to identify where multiple benefits would arise. Full details are available in **Appendix 3**.

The measures and actions identified for the habitat priority areas are designed to contribute, where possible, to the national objectives detailed below. It is considered that the approach taken to generate strategic opportunity areas encompasses these factors of:

- restoration or creation of in excess of 500,000 hectares of wildlife-rich habitat outside of protected sites
- increasing total tree and woodland cover
- improving water quality and availability
- ensuring that everyone in England lives within 15 minutes' walk of a green or blue space
- restoration of 280,000 hectares of peatland in England
- restoration of water bodies to good
- ecological status
- supporting farmers to create or restore hedgerows
- managing woodlands for biodiversity, climate and sustainable forestry
- restoration of Sites of Special Scientific Interest to favourable condition
- ensuring climate change adaptability is included in actions and policies
- inclusion of proposals for nature-based solutions which improve flood risk management where appropriate
- reduction in the rates of introduction and establishment of invasive non-native species.

Each of the identified habitat priorities areas are profiled in this section (**Tables 4-23**), including links where possible to the habitat-based assemblages defined as part of the species prioritisation process (**Appendix 2**). Where the measure is included on the Local Habitat Map, this is stated, along with a linked code (for supporting information refer to **Part D: Locations for Action**).

For each habitat priority, the following information is included:

- detailed measures and actions,
- existing examples of this ambition where appropriate taken from the reviewed sources, intended to provide supporting evidence for the approaches indicated, but not considered to explain the full extent of this work.

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If the measure is featured on the Local Habitat Map it is identified using a PM code which correlates to the ACB layer. Unmapped measures are designated as such.

See **Table 2** for an example, and **Table 3** for the evidence codes employed.

It is not possible to define locations for all measures, and there is potential for the measures outlined in this strategy to be delivered across various locations across the county. In addition, general habitat management techniques, and the consideration of working towards a sustainable and regenerative process, can be undertaken, as appropriate, in a variety of agricultural, horticultural, rural or urban locations. Such measures can especially link to common concerns raised during engagement, for example protection of pollinator species such as bees and butterflies.

Therefore, some measures within the habitat priorities are defined as unmapped. A notable example of this is within urban areas, where a wide range of actions and potential measures, for example wildlife friendly gardening practices, installation of green roofs, increasing green infrastructure could contribute to the recovery of a high number of species and have significant impacts on environmental benefits. However, due to the nature of the geographical features and data available, it is not suitable to apply mapped measures to these locations.

Some habitat types and locations are incorporated into the Areas of Particular Importance for Biodiversity and therefore are potentially covered by detailed management plans already in place and outside of the scope of the LNRS. Therefore, it is not possible to map measures specifically to those locations, unless they are designated as County Wildlife Sites (with the exception of SSSIs) are irreplaceable habitats or have no designation existing. Within the intertidal zone, measures can also be mapped to any designated APIB.

Table 2. Example of priorities and measures for habitat areas

Table XX. Priorities and Potential Measures considered to support species identified in the following assemblages(s): Scrub and Mosaic

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new scrub where feasible	Include open spaces and transitional habitats, such as scrub, in woodland management plans. [HPA32]	Mapped [PMXX]

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Table 3. Potential Measure Evidence Codes

Code	Evidence
HPA01	Anglian River Basin District, Lowestoft Risk Area
HPA02	Anglian Water biodiversity strategy
HPA03	Appropriate biodiversity plans
HPA04	Breckland Biodiversity Audit
HPA05-08	Broads biodiversity focus, strategies and nature recovery plans especially BNRS – Broads Nature Recovery Strategy
HPA09	CABA Chalk Stream Strategy
HPA10	Catchment management plans
HPA11	Catchment partnerships
HPA12	East Marine Plan
HPA13	Estates specific work
HPA14	Farm cluster priority actions plans (location)
HPA15	Internal Drainage Boards plans and priority actions (location)
HPA16	River basin management plans
HPA17	River Catchment Partnerships priority actions
HPA18	RSPB Priority Work Area
HPA19	Suffolk Shoreline Management Plans
HPA20	Suffolk Biodiversity Audit Priority
HPA21	Suffolk local and neighbourhood plans (location)
HPA22	Suffolk local flood risk management SuDS (Sustainable Drainage Systems) plans
HPA23	Suffolk Coast RAMS [27a]
HPA24	Suffolk Green Strategy
HPA25	Suffolk Wildlife Trust flagship priority
HPA26	Suffolk Wildlife Trust Priority Habitat
HPA27	Tailored advice and funded interventions (specifics)
HPA28	Tier 1 habitat priority in National Landscape Nature Recovery Plans (location)
HPA29	Tier 2 habitat priority in National Landscape Nature Recovery Plans (location)
HPA30	Tier 3 habitat priority in National Landscape Nature Recovery Plans (location)
HPA31	Tree and Woodland strategies

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Mixed Deciduous Woodland

Table 4. Mixed Deciduous Woodland (including ancient woodland) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new deciduous woodland	• Plan new developments to plant the veteran trees of the future, using appropriate pollarding and veteranisation techniques and species with resilience to predicted climate change and disease. To support species decisions, use Ecological Site Classification (ESC) profiles. • Use mixed woodland creation to provide opportunities for recreation and increased access, whilst reducing pressures on ancient woodland areas. • Create Heath, Grassland, and Woodland Enhancement Areas – zones where it is desirable to establish a mosaic of heathland, grassland, scrub and woodlands. • Increase canopy cover area by the creation of new woodlands, using a broad range of native species to increase diversity and promote climate and pest/disease resilience. • Create new community woodlands using appropriate species in appropriate areas. • Wherever possible, creation should be achieved via natural regeneration processes, including, where appropriate, deer management techniques, incorporating protection of the designated area and appropriate timeframes. This maximises local genetic diversity and reduces risk of disease. [HPA29, Suffolk and Essex Coast & Heaths]	Mapped [PM01] Veteran trees mapped [PM50]
Enlarge and expand existing deciduous woodland	• Enlarge areas of appropriate woodlands including Plantations on Ancient Woodland Sites (PAWS) and secondary woodlands. • Enhance woodland areas within the IDB drainage district through tree planting ensuring potential conflicts with other habitats and species are avoided • Wherever possible, creation should be achieved via natural regeneration processes, incorporating protection of the designated area and appropriate timeframes. This maximises local genetic diversity and reduces risk of disease. [HPA13, Broads, Waveney]	Mapped [PM01] Veteran trees mapped [PM50]
Connect deciduous woodland areas	• Within suitable sites, plant appropriate species to link woodland blocks and enhance commuting routes for species, especially bats. • Plant a variety of features such as corridors, stepping stone areas or direct links using ESC profiles. [HPA29, Suffolk and Essex Coast & Heaths]	Mapped [PM01] Veteran trees mapped [PM50]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance existing deciduous woodland	• Improve biodiversity in woodland areas through targeted planting schemes, eg enrichment planting or management designed to encourage natural colonisation, or promoting retention of dead wood (fallen and standing). • Enhance woodland areas within the IDB drainage district through tree planting, ensuring potential conflicts with other habitats and species are avoided and local landscape character is conserved. • Reinstate, adapt or introduce appropriate management regimes, such as coppicing. • Ensure available management plans within woodland are being fully implemented. • Manage canopies to reduce understory shading. • Manage deer populations to sustainable levels to reduce browsing pressure. • Provide opportunities to open areas of woodland using selective felling to create appropriate structures. • Facilitate development of connected, shrub-rich, and structurally complex woodland understories. • Enhance ancient semi-natural woodland and restore PAWS to UK Forestry Standards and UK Woodland Assurance Standards (UKWAS) for biodiversity, climate and other environmental and economic benefits by the gradual and systematic removal of conifers, whilst maintaining economic outputs where possible. • Restore and enhance ancient semi-natural woodland, non-native woodlands and productive commercial forestry or biodiversity, and restore planted ancient woodland in line with revised management plans. • Diversify woodlands by varying native tree species and tree ages to facilitate natural succession, creating optimal niches for species to occupy and thrive. • Support grey squirrel population management to enhance natural regeneration. • Increase the longevity of ancient and veteran trees by protecting trunks and roots (such as from compaction) and implementing annual tree maintenance regimes, creation of root protection zones, appropriate remedial surgery, haloing, protection from livestock and nursing of seedlings or clonal cuttings.	Mapped [PM02] Appropriate enhancement of conifer woodlands [PM02] Veteran trees mapped [PM50]
Restore and enhance existing deciduous woodland continued	• Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place. [HPA24, HPA29, Suffolk and Essex Coast & Heaths]	Mapped [PM04] Mapped for appropriate conifer specific areas as [PM71] Veteran trees mapped [PM50]

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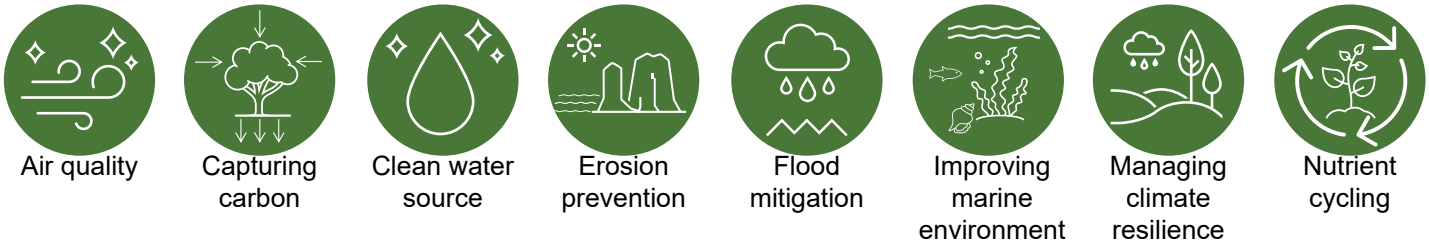
These measures are considered to support species identified in the following assemblages:

- Native Woodland

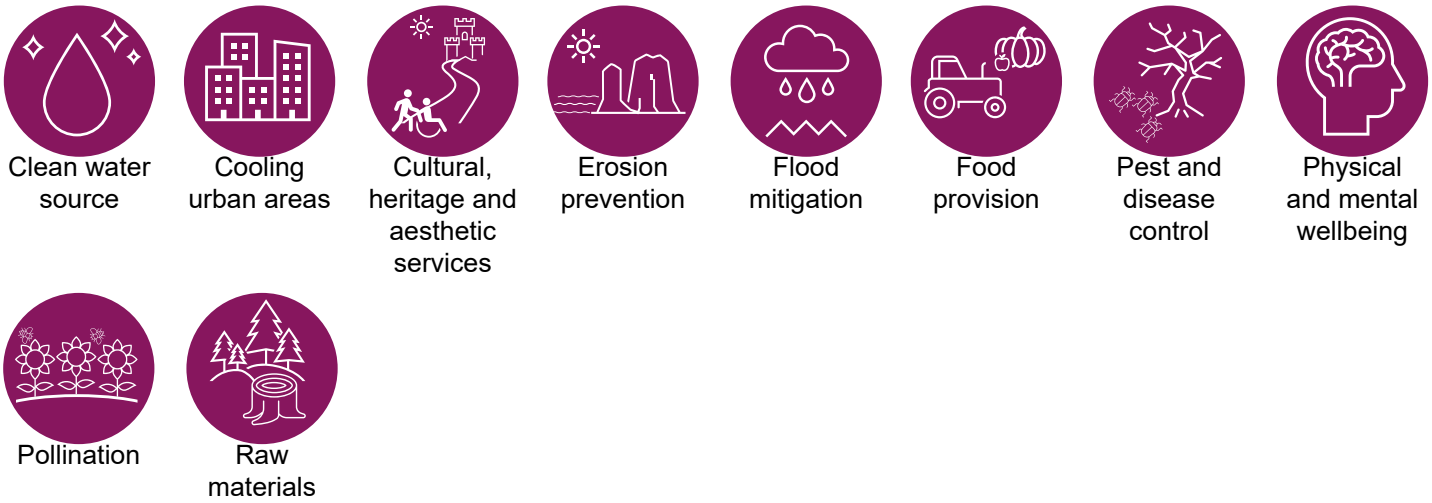
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Wet Woodland

Table 5. Wet Woodland priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing and connect wet woodland where feasible	• Plant appropriate species in appropriate places using ESC profiles (avoiding fen areas and lowland wet grassland habitats suitable for breeding waders/ wintering wildfowl) along riverbanks and floodplains to reduce flood and erosion risks and create wildlife corridors, allowing natural processes to take place. • Wherever possible, creation should be achieved via natural regeneration processes, including where appropriate deer management techniques. [HPA28, Suffolk and Essex Coast & Heaths]	Mapped [PM03]
Restore and enhance existing wet woodland	• Remove inappropriate invasive or non-native species from selected sites as required eg Himalayan balsam. • Employ appropriate and effective grazing regimes and management programmes to ensure habitat conditions are maintained eg minimising access to watercourses to prevent excessive pollution and erosion. • Promote the retention and conservation of significant trees and woodlands. • Improve biodiversity in wet woodland area through targeted planting schemes or natural colonisation. • Maintain wet woodland habitats by ensuring appropriate water level management based on seasonal fluctuations, soil type and location. • Maintain and enhance priority areas of fen, reedbed, grazing marsh, and wet woodland through site management agreements and support for site managers. • Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place. [HPA15, (Broads, Waveney), HPA03]	Mapped [PM04]

These measures are considered to support species identified in the following assemblages:

- Native Woodland
- Rivers and Riverside Habitats

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These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Wood Pasture and Parkland

Table 6. Wood Pasture and Parkland priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing and connect wood pasture where feasible	• Create wood-pasture near existing woodland to improve vegetation cover and habitat connectivity, ensuring planting follows ESC profiles. • Allow habitat connectivity where appropriate using corridors or stepping stone planting. • Increase canopy cover area by the creation of new mixed and broadleaved wood pasture using a broad range of species to increase diversity and promote climate and pest/disease resilience. • [HPA30, Dedham Vale]	Mapped [PM05]
Restore and enhance existing wood pasture	• Create areas to protect significant trees and woodlands in appropriate areas such as registered parks, using Tree Preservation Orders where needed if suitable. • Restore areas within lost, historic locations. • Employ management measures for veteran and ancient trees including pollard creation, control of grazing pressures, reduction of compaction, protection against shade and root damage. • Incorporate mosaic features to maximise habitat value for invertebrates eg appropriate grazing animals, microhabitats such as dead wood, rot holes, ageing bark, fallen trees, leaf litter, nectar sources and ground vegetation. • Improve and manage the floristic diversity of the grassland beneath the trees by grazing, hay cutting and enhancing with local seed where possible. • Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place. [HPA30, Dedham Vale]	Mapped [PM06]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore, enhance and re-create existing and former parkland	• Establish suitable grazing regimes and management programmes eg pollarding. • Maintain wooded parklands to preserve the landscape setting of historic estates using appropriate pruning and support as needed and considering root protection zones. • Increase the longevity of ancient and veteran trees by protecting trunks and roots (such as from compaction) and implementing annual tree maintenance regimes. • Recreate parkland on the sites of former historic parkland. HPA30, Dedham Vale, HPA13 (Benacre, Sotterley)]]	Mapped [PM06]

These measures are considered to support species identified in the following assemblages:

- Trees Outside of Woodlands

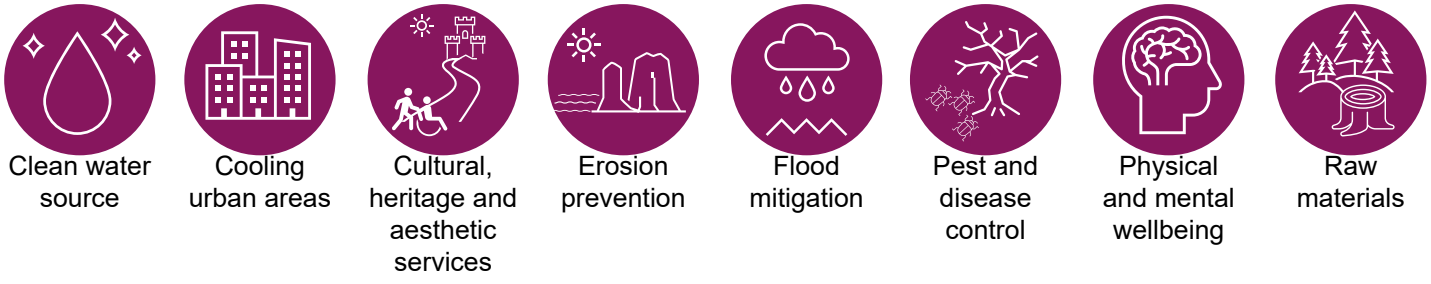
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Scrub

Table 7. Scrub priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new scrub areas where feasible and desirable	Include open spaces and transitional habitats, such as scrub, in woodland management plans. Ensure allowance is made for a series of successional stages. [HPA28, Suffolk and Essex Coasts and Heaths, HPA18, HPA26]	Mapped [PM07]
Enlarge, expand and connect existing scrub	Use scrub areas as connectivity corridors where appropriate. [HPA28, Suffolk and Essex Coasts and Heaths]	Mapped [PM07]
Restore and enhance existing scrub	• Carry out annual scrub maintenance regimes where appropriate. • Adopt grazing regimes in appropriate areas to maintain scrub margins. • Coppice roadside scrub verges on long rotations (10–15 years) to improve habitat suitability for dormice. Ensure maintenance and management techniques are employed to retain scrub where appropriate and maintain safety aspects of location. • Manage scrub so there is diversity in age and structure; eg dense, tall thicket (at least 3m tall and 4m wide) • Consider hedgerows as components of linear scrub features • Employ sustainable deer management for scrub regeneration to avoid the underneath being eaten out. [HPA28, Suffolk and Essex Coasts and Heaths]	Mapped [PM08]

These measures are considered to support species identified in the following assemblages:

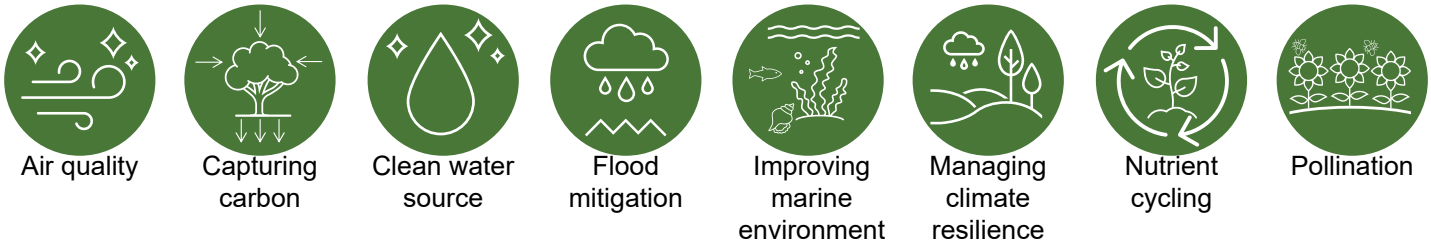
Scrub and Mosaic

These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Grassland and Heathland
- Invasive Species and Diseases

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These measures are considered to support the following wider environmental benefits:





These measures are considered to support the following co-benefits:



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Habitats in Farmed Landscapes

Table 8. Habitats in Farmed Landscapes priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Enlarge and expand existing arable field margins (typically located on outer 2-12m margin of arable fields)	• Employ locally appropriate land disturbance or management techniques to incorporate margins. • Create margins around field boundaries where possible - margins should be created to follow best practice and scheme guidance as appropriate, and to be as wide as possible within the situation. This should allow for mitigation of spray/irrigator drift and take into account edge benefits and the juxtaposition of cultivated margins (those areas of fields that are cultivated annually but are managed to allow germination of plants to support pollinators and other invertebrates). • Support identification of desirable locations for cultivated margins including light soils (chalky and acidic), especially alongside old tracks, tussocky verges, grassland areas, old hedges, pinelines, sites of rare plants and invertebrates, and existing well-managed margins to incorporate buffering. • Employ minimal disturbance establishment practices where appropriate – direct drilling, broadcasting and rolling – noting that re-cultivating existing diverse grassland will not generally be desirable. • Allow natural regeneration of margin species or sew a variety of appropriate local native plant species • Margins should be greater than 6m, with wider margins providing more habitat for more species. • Margins should be made wider where they buffer important habitats such as rivers, streams, ditches, woodland, and hedgerows, to reduce damage to roots from cultivation, and reduce pollution of watercourses. [HPA04, HPA14 (Bramfield, Blythburgh, Felixstowe, Sandlings, Stour Valley, Shotley), HPA29, Suffolk and Essex Coasts and Heaths, Dedham Vale]	Mapped where possible when linked to other measures [PM09]
Connect arable field margin areas	• Follow principles identified above to connect existing field margins. • Use arable field margins to connect non-farmed habitats, and to enhance areas such as hedgerows where planting is not appropriate. [HPA11 (Bramfield, Blythburgh, Felixstowe, Sandlings, Stour Valley, Shotley)]	Mapped where possible when linked to other measures [PM09]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance existing arable field margins	• Implementation of appropriate cultivation methods to maximise organic content within margins. • Implementation of appropriate cultivation methods to maximise biodiversity within margins; employ seasonal cutting and removal of material to promote more diverse swards, or no cutting to allow scrub regeneration and expansion of hedgerows. • Spread green hay from locally floristically diverse sites to increase local native wildflower species. [HPA14 (Bramfield, Blythburgh, Felixstowe, Sandlings, Shotley, Stour Valley), HPA15 (Broads), HPA29, Suffolk and Essex Coasts and Heaths, Dedham Vale]	Mapped where possible when linked to other measures [PM10]
Create new hedgerows using appropriate native species	• Plant new hedgerows in appropriate areas using native species: ○ on field boundaries, old hedge lines, or on areas which connect existing or planned habitats. ○ next to ditches and margins • Provide a root protection zone, preferably with 15m buffers, to limit pressures and allow trees to develop and deteriorate naturally [HPA14 (Bramfield, Blythburgh, Stour Valley)] Hedgerows may also be created as an unmapped measure outside of ACB areas to provide additional connectivity	Unmapped
Restore and enhance existing hedgerows	• Improve hedgerows and incorporate field-edge trees, encouraging gapping up and planting to enhance connectivity. • Gap up hedgerows with a variety of locally appropriate native hedgerow species. • Lay or coppice hedgerows past peak maturity to encourage dense base regrowth and extend lifecycles, in appropriate areas following expert advice. • Maintain hedgerows associated with Roadside Nature Reserves following appropriate plans and techniques. • Create areas which allow for retention and conservation of significant hedgerow trees. • Bring hedgerows into lifecycle management, including periodic rejuvenation. • Promote hedgerow management practices that benefit wildlife, including dormice, such as incremental trimming and longer trimming rotations. • Establish species-rich hedgerows.	Unmapped

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Establish more hedgerow trees	• Plant new hedgerow trees of appropriate varieties. • Recreate hedgerow pollards. • Increase overall canopy cover area by the creation of agroforestry crops and shelterbelts (primarily within in-field areas), using a broad range of species to increase diversity and promote climate and pest/ disease resilience.	Mapped where possible when linked to other measures [PM12]
Create new hedgerows using appropriate native species	• Plant new hedgerows in appropriate areas using native species: ○ on field boundaries, old hedge lines, or on areas which connect existing or planned habitats. ○ next to ditches and margins • Provide a root protection zone, preferably with 15m buffers, to limit pressures and allow trees to develop and deteriorate naturally [HPA14 (Bramfield, Blythburgh, Stour Valley)] Hedgerows may also be created as an unmapped measure outside of ACB areas to provide additional connectivity	Mapped where possible when linked to other measures [PM11]
Restore and enhance existing hedgerows	• Improve hedgerows and incorporate field-edge trees, encouraging gapping up and planting to enhance connectivity. • Gap up hedgerows with a variety of locally appropriate native hedgerow species. • Lay or coppice hedgerows past peak maturity to encourage dense base regrowth and extend lifecycles, in appropriate areas following expert advice. • Maintain hedgerows associated with Roadside Nature Reserves following appropriate plans and techniques. • Create areas which allow for retention and conservation of significant hedgerow trees. • Bring hedgerows into lifecycle management, including periodic rejuvenation. • Promote hedgerow management practices that benefit wildlife, including dormice, such as incremental trimming and longer trimming rotations. • Establish species-rich hedgerows.	Mapped where possible when linked to other measures [PM12]
Establish more hedgerow trees	• Plant new hedgerow trees of appropriate varieties. • Recreate hedgerow pollards. • Increase overall canopy cover area by the creation of agroforestry crops and shelterbelts (primarily within in-field areas), using a broad range of species to increase diversity and promote climate and pest/ disease resilience.	Mapped where possible when linked to other measures [PM12]

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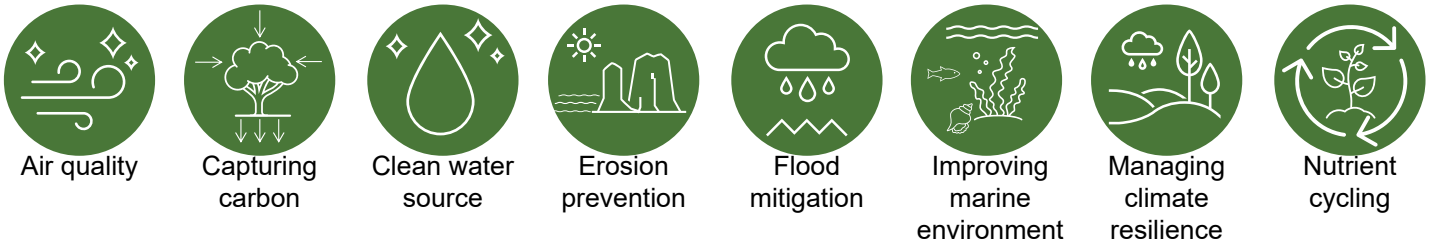
These measures support species identified in the following assemblages:

- Farmed Landscapes
- Trees Outside of Woodlands

These measures could offer solutions to address pressures in:

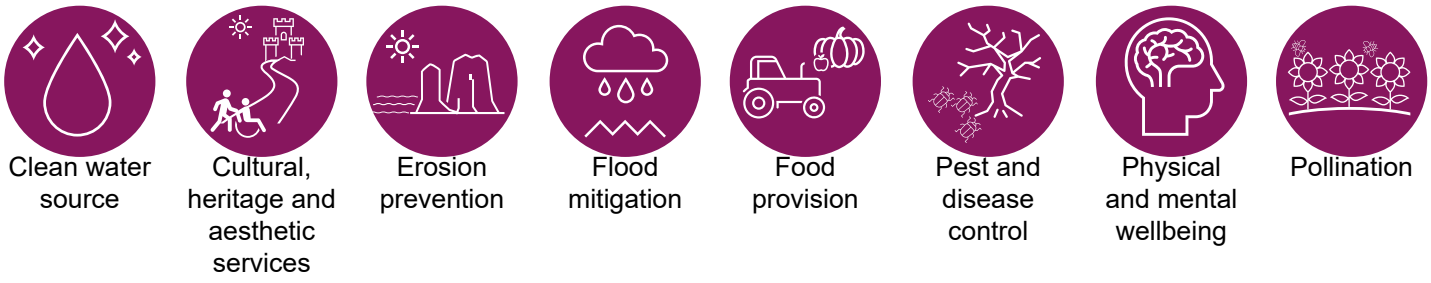
- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Grassland and Heathland
- Invasive Species and Diseases
- Coastal

These measures are considered to support the following wider environmental benefits:





These measures are considered to support the following co-benefits:





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Traditional Orchards

Table 9. Traditional Orchards priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new orchards where feasible	• Plant orchards in rural and urban areas, including community projects. • Increase canopy cover area by the creation of new orchards using a broad range of species to increase diversity and promote climate and pest/disease resilience. [HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley)]	Mapped [PM13]
Enlarge and expand existing traditional orchards	Plant orchard trees annually to meet appropriate defined targets.	Mapped [PM13]
Restore or enhance existing traditional orchards	• As part of creation or regeneration processes, engage orchard owners in management, upkeep, and use, and provide education on accessing stewardship funding, training in pruning and out of management restoration. • Create areas which allow for retention and conservation of significant orchards both for cultural and landscape continuity and for the genetic diversity of fruit trees and important assemblages of epiphytes, fungi and invertebrates associated with old trees and orchards. • Improve and manage the grassland beneath the trees for the floristic diversity by grazing, hay cutting and enhancing with local seed where possible [HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley), HPA15 (Broads)]	Mapped [PM14]

These measures are considered to support species identified in the following assemblages:

- Trees Outside of Woodlands

These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases
- Coastal
- Urban and Built

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These measures are considered to support the following wider environmental benefits:



Air quality | Capturing carbon | Flood mitigation | Managing climate resilience | Nutrient cycling | Pollination | Soil health

These measures are considered to support the following co-benefits:



Cooling urban areas | Cultural, heritage and aesthetic services | Flood mitigation | Food provision | Pest and disease control | Physical and mental wellbeing | Pollination | Raw materials

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Habitats in Urban, Built and Garden Environments

Table 10. Habitats in Urban, Built and Garden Environments priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Improve the condition of the existing urban tree estate	• Ensure tree management regimes are in place to improve and enhance existing trees. • Replace all trees lost due to pests, disease, damage, or health and safety concerns. • Plant using species with resilience to predicted climate change and disease, including where appropriate non-native species, using ESC profiles and Trees and Design Action Group (TDAG) guidance. Ensure all planting schemes align with existing policies and TAWS (Trees and Woodland Strategies). • Provide a root protection zone, preferably with 15m buffers, to limit pressures and allow trees to develop and deteriorate naturally.	Unmapped Veteran trees mapped [PM50]
Increase urban tree cover	• New road, housing, energy and other developments should aim to establish diverse roadside wooded habitats, with consideration for road safety and impact of increased mammal populations. • Aim for an increase in towns and cities to 20% tree canopy cover. • Plant using species with resilience to predicted climate change and disease, including where appropriate non-native species, using ESC profiles. Ensure all planting schemes align with existing policies and TAWS (Trees and Woodland Strategies). [HPA21]	Unmapped Veteran trees mapped [PM50]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Identify focus areas for improved garden connectivity and wildlife friendly management practices	• Improve the wildlife value of private gardens and promote networks of living gardens. • Ensure all new fencing installed in new development is wildlife friendly eg gravel boards have pre-cut holes for hedgehogs and small mammals to pass through. • Promote the installation of bird and bat boxes and bee bricks. • Retain hedgerows around new developments. Where access is created or widened through an existing hedgerow, replant a new native hedgerow. • Protect and enhance hedgerows in peri-urban areas. • Use mixed native hedging wherever possible, where the right species is planted in the right location. • Incorporate features in new buildings to protect and enhance wildlife, such as 'swift bricks' and 'hedgehog doors'. • Design gardens to enhance wildlife, including trees and hedgerows in boundary treatments where appropriate. • Retain ponds in the built environment. • Develop meadow areas within urban environments where possible to support pollinator species. • Include amphibian friendly features like dropped kerbs, SuDS ponds and tunnels. [HPA21]	Unmapped Veteran trees mapped [PM50]
Identify areas suitable for creation of community gardens	• Develop specific community projects, such as gardens, orchards and allotments. • Retain or create native hedgerows around allotments, alongside habitats for pollinators with long flowering periods, and berry bearing shrubs for bird species.	Unmapped Veteran trees mapped [PM50]
Create green crossings over roads or railway lines that fragment blocks of habitat	• Increase permeability in urban and wider environments with features such as hedgehog highways, green bridges, and suitable underpasses. • Integrate green infrastructure corridors into development proposals to establish connections and ecological networks.	Unmapped Veteran trees mapped [PM50]
Improve habitats associated with major transport infrastructure	• Improve the management of road and rail corridors. • Follow appropriate biodiversity plans designed specifically for railway network habitats and areas	Unmapped Veteran trees mapped [PM50]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new habitats through drainage and infrastructure features on development sites	• Incorporate SuDS, including reedbeds, green roofs, swales, rain gardens, permeable paving, water butts etc. • Plant hedgerows and trees in appropriate locations, where the right species is planted in the right location. • Add ponds to newly built environments where suitable • Incorporate habitat for pollinators, with appropriate planting and cutting regimes, rotational areas with over wintering or hibernation possibilities. • Incorporate features like green roofs, green walls and high quality varied habitats within public open spaces • Retrofit existing areas with appropriate features, or make space for SuDS and other measures to reduce run-off.	Unmapped Veteran trees mapped [PM50]
Make space for more, bigger, better and joined up nature in and around built development (including within new allocations and development plans)	• Develop high-quality habitats in school grounds to improve biodiversity (linking to Climate Action Plans). • Create habitats through parish-based recovery projects. • Enhance road verge management. • Better manage churchyards for biodiversity. • Enhance public green spaces. • Improve parks and open spaces to incorporate nature recovery techniques. • Include green corridors and stepping stones within development plans. • Promote the creation of 'edible parks' through community projects. • Create new nature reserves accessible to urban populations • Establish Community Woodlands near settlements in appropriate conditions using appropriate species. • Plant veteran trees of the future in new developments, using appropriate native species of local provenance. • Promote the creation of urban and peri-urban agricultural opportunities. • Ensure plans for lighting infrastructure takes into account appropriate intensities, wavelengths and time patterns to minimise impact on biodiversity whilst complying with required regulations. • Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place.	Mapped where possible Veteran trees mapped [PM50]

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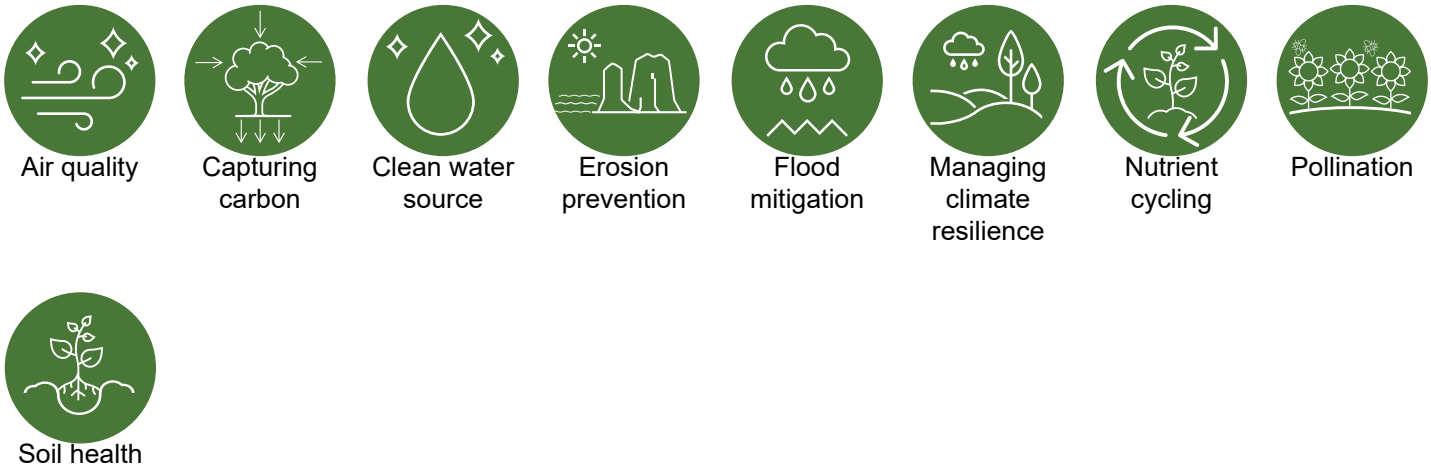
These measures are considered to support species identified in the following assemblages:

- Urban, Built and Garden Environments

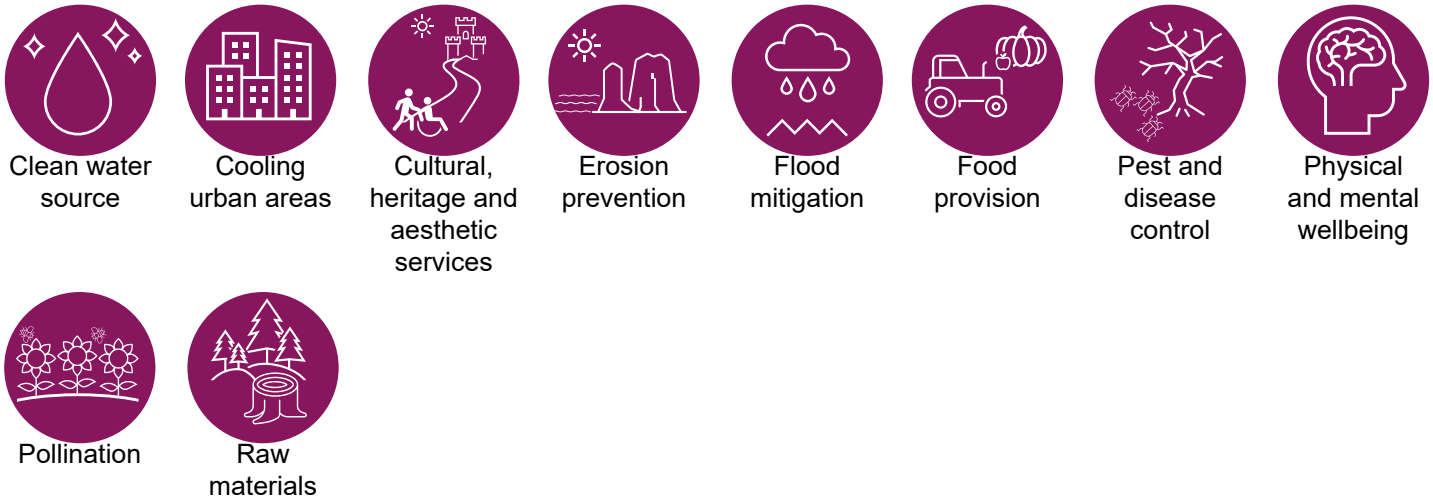
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Freshwater
- Invasive Species and Diseases
- Urban and Built

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Heathland and Acid Grassland

Table 11. Heathland and Acid Grassland priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new heathland areas where feasible and desirable	• Create Heath, Acid Grassland, and Woodland Enhancement Areas to establish mosaics of heathland, scrub, bare ground, acid grassland, and woodland habitats. The process of heath creation is considered a complex process due to the time required, and therefore the successional creation habitats are important for nature recovery principles. • Convert landward arable fields adjacent to coastal floodplains into heath where possible in suitable areas. • Use heather and other heathland floral seed from existing Suffolk heaths wherever possible [HPA15 (Broads), HPA07]	Mapped [PM15]
Enlarge and expand existing heathland	• Buffer all heathland sites to promote resilience to climate change, using appropriate expertise and new research where possible. • Increase connectivity between existing heathlands using developed creation techniques. • Include wet heath and transition areas between heath and other habitats [HPA04]	Mapped [PM15]
Restore and enhance existing heathland	• Promote management and controlled grazing regimes. • Incorporate mosaic features into habitats. • Remove encroaching vegetation where appropriate, incorporating adding measures to encourage rabbit populations. • Protect heathland habitats and species from human disturbance. • Where possible, promote restoration of heathland from land previously used for forestry purposes. [HPA23]	Mapped [PM16]
Create new acid grassland where feasible and desirable	Create new acid grassland at priority sites.	Mapped [PM17]
Enlarge and expand existing acid grassland	Enlarge, buffer, and reconnect sites.	Mapped [PM17]
Restore and enhance existing acid grassland	• Promote management and controlled grazing regimes. • Incorporate mosaic features into habitats. • Remove encroaching vegetation where appropriate. • Maintain sites in favourable condition through appropriate management.	Mapped [PM18]

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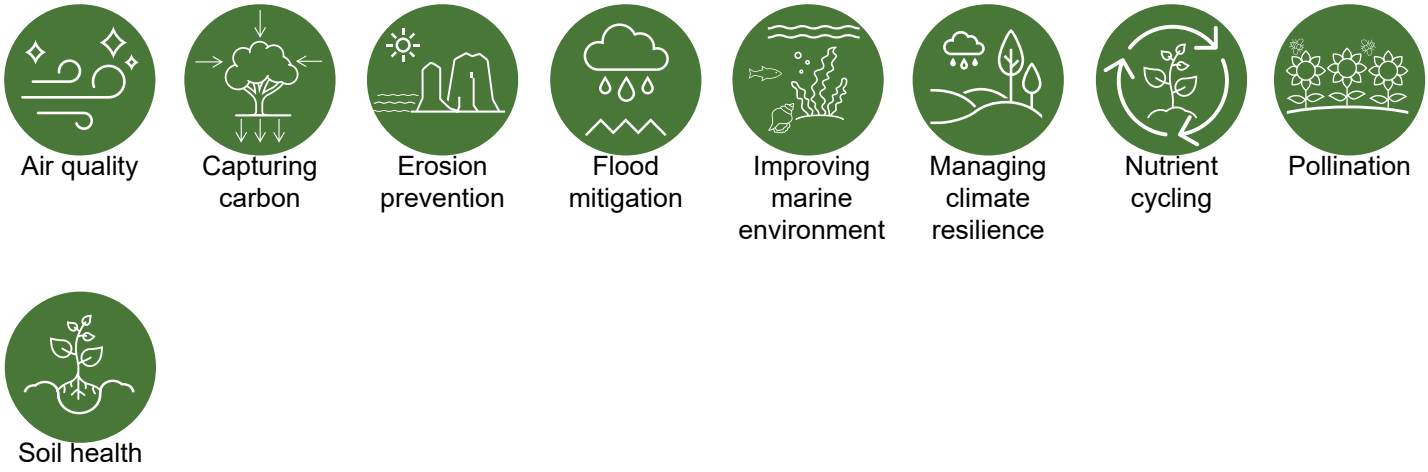
These measures are considered to support species identified in the following assemblages:

- Acid Grassland and Heathland
- Brecks Grass Heath

These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Neutral and Calcareous Grassland

Table 12. Neutral and calcareous grassland (including meadows, road verges, parks, churchyards and cemeteries) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new grassland areas where feasible and desirable	• Ensure new road developments include wide verges and control new road verge provision. • Create Heath, Grassland, and Woodland. Enhancement Areas to establish mosaics. • Revert arable land to grassland where possible. • Use green hay and hand-collected seed wherever possible. [HPA05]	Mapped [PM19]
Enlarge and expand existing grassland	• Develop land management programmes for grassland areas across the country, including churchyards and cemeteries in all dioceses, lowland meadows and grassy commons where applicable, and the majority of amenity spaces. • Use green hay and hand-collected seed wherever possible.	Mapped [PM19]
Connect grassland areas	• Connect all grassland habitats, including road verge areas where feasible, potentially via agri-environment schemes. • Use green hay and hand-collected seed wherever possible.	Mapped [PM19]
Restore and enhance existing grassland	• Promote appropriate grazing and management regimes. • Incorporate mosaic features within habitats. • Maximise biodiversity-enhancing practices in all grasslands including churchyards and cemeteries and known lowland meadow sites. • Enlarge and restore road verges and boost biodiversity. • Buffer existing trackways and track verges, for example those associated with rights of way and National Trails, including the King Charles III England Coast Path. • Use green hay and hand-collected seed wherever possible. • Use sustainable and financially viable methods for hay cutting and grazing. • Buffer all sites to protect from spray drift.	Mapped [PM20]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand and connect existing calcareous grassland areas where feasible and desirable	• Incorporate management techniques in appropriate areas to allow natural processes to occur. • Use green hay and hand-collected seed wherever possible [HPA14, HPA20]	Mapped [PM21]
Restore and enhance existing calcareous grassland	• Re-establish lowland calcareous grassland from arable or other land. • Implement appropriate grazing regimes. • Use green hay and hand-collected seed wherever possible. • Link to Big Chalk programme targets and projects where possible. See www.big-chalk.org [HPA14 HPA15 (East Suffolk), HPA20]	Mapped [PM22]
Create new lowland meadows and pastures where feasible and desirable	• Incorporate management techniques in appropriate areas to allow natural processes to occur. • Encourage the use of green hay processes and collection of local seeds. • Revert arable land to grassland where possible. [HPA14, HPA20]	Mapped [PM23]
Enlarge and expand existing lowland meadows and pastures	Encourage the use of green hay processes and collection of local seeds. [HPA14, HPA20]	Mapped [PM23]
Connect lowland meadow and pasture areas	• Incorporate management techniques in appropriate areas to allow natural processes to occur. • Implement appropriate grazing and mowing regimes. [HPA14, HPA20]	Mapped [PM23]
Restore and enhance existing lowland meadows and pastures	• Incorporate management techniques in appropriate areas to allow natural processes to occur. • Implement appropriate grazing and mowing regimes. [HPA14, HPA20]	Mapped [PM24]

These measures are considered to support species identified in the following assemblages:

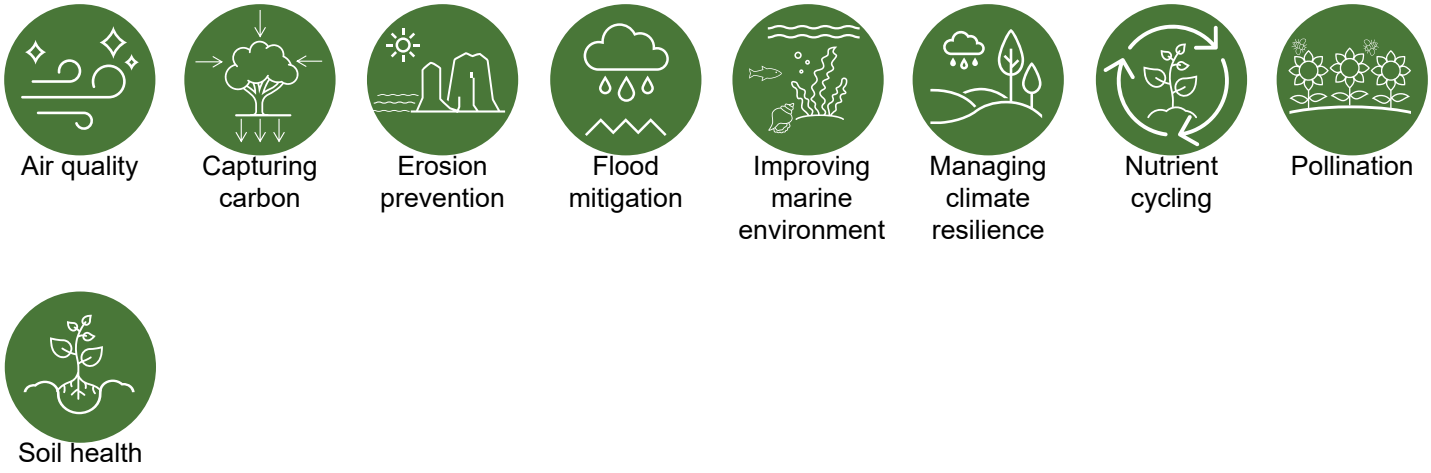
- Lowland Meadows and Pastures
- Chalk Grassland
- Brecks Grass Heath
- Farmed Landscapes
- Reedbeds and Freshwater Wetlands
- Saltmarshes and Lagoons

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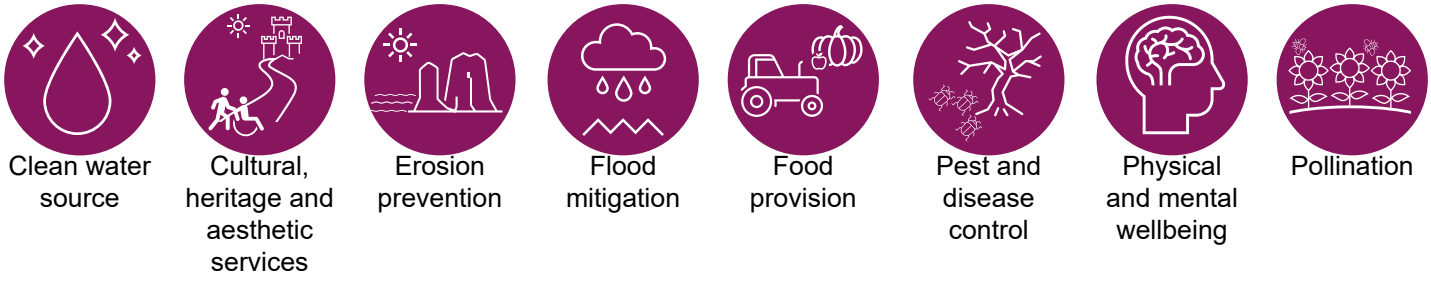
These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Farmland
- Woodland, Trees and Scrub
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Wet Grassland

Table 13. Wet Grassland (including grazing marshes and rush pasture) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing and connect wet grassland and grazing marshes where feasible and desirable	• Connect wet grassland blocks to create larger areas • of habitat. • Ensure habitat creation efforts are complementary and strategically implemented so as not to inadvertently increase predation pressure on key priority species. Include appropriate in-field foot drains, ditches and appropriate water control structures. • Include as part of an open wetland habitat mosaic to maximise invertebrate species, using local green hay and seeds wherever possible. • Instigate appropriate grazing and water level management regimes to benefit breeding waders and wintering wildfowl. • Include predator-proof fencing. [HPA02, HPA05-08, HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley), HPA19, HPA21, HPA23, HPA26, HPA28, Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM25]
Restore and enhance existing wet grassland and grazing marshes	• Maintain and enhance priority areas of grazing marsh through site management agreements. • Use appropriate water level management practices, including maintaining and extending existing ditch systems. • Remove scrub and woodland where appropriate to create a variety of grazed and tall vegetation structures. • Promote appropriate grazing management regimes for breeding waders and wintering wildfowl. • Minimise refuges/perches for predators next to areas utilised by breeding waders. [HPA02, HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley), HPA15, HPA19, HPA21, HPA26, HPA28, Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM26]

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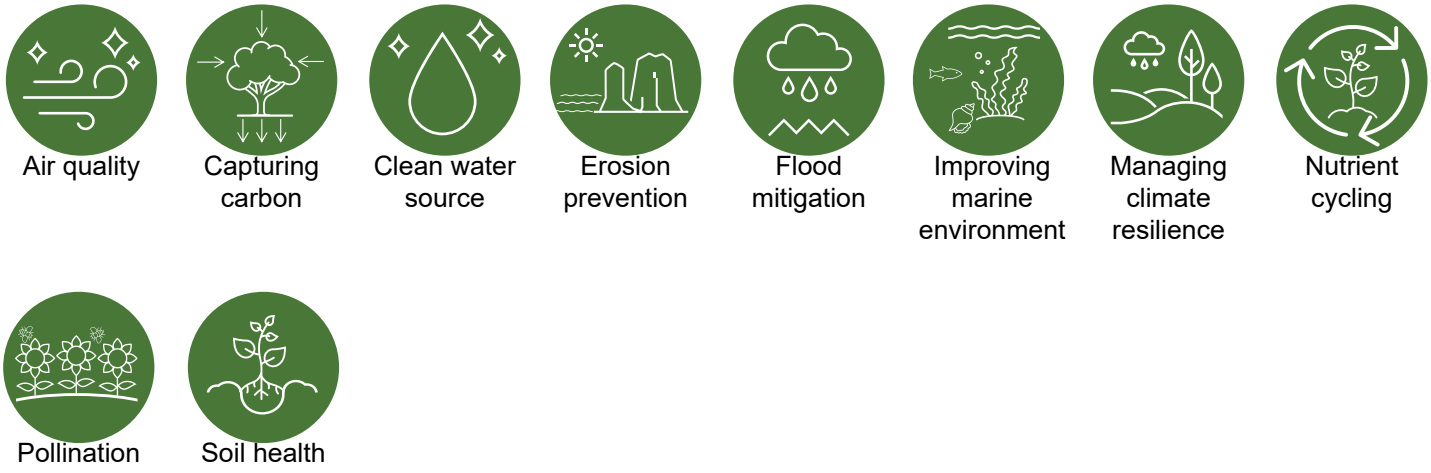
These measures are considered to support species identified in the following assemblages:

- Lowland Meadows and Pastures
- Reedbeds and Freshwater Wetlands
- Saltmarshes and Lagoons
- Farmed Landscapes

These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Open Mosaic Habitat on Previously Developed Land

Table 14. Open Mosaic Habitat on Previously Developed Land (including brownfield and landfill) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new open mosaic habitat where feasible and desirable	• Secure the inclusion of valuable sites as recognised natural open spaces in Green Infrastructure strategies. • Develop protocols to allow land in new developments to be left for natural colonisation, ensuring ongoing opportunities for habitat creation. • Within urban areas, include creation of OMH at ground level, especially as a interim measure during planning and development phases, alongside integrating within permanent landscape schemes. • Consider the potential of green and brown roofs to enhance the availability of this habitat. [HPA20, HPA21]	Mapped [PM27]
Enlarge and expand existing open mosaic habitat where feasible	• Secure the inclusion of valuable sites as recognised natural open spaces in Green Infrastructure strategies. • Develop protocols to allow land in new developments to be left for natural colonisation, ensuring ongoing opportunities for habitat creation. • Ensure scrub removal, ploughing, turf removal, and the creation of steep open exposures at key former gravel workings. [HPA04, HPA20, HPA21]	Mapped [PM27]
Improve and enhance existing open mosaic habitat	See 'Enlarge and expand existing open mosaic habitat where feasible'	Mapped [PM28]

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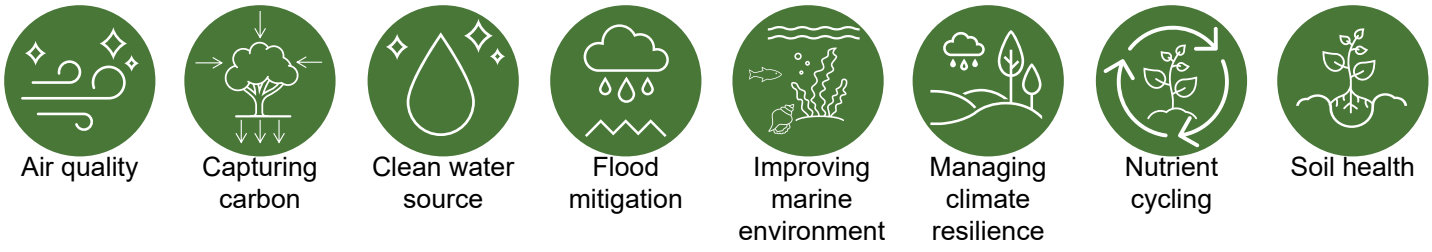
These measures are considered to support species identified in the following assemblages:

- Scrub and Mosaic
- Urban, Built and Garden Environments

These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Farmland
- Woodland, Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Rivers and Streams

Table 15. Rivers and Streams priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance existing rivers, streams and ditches	• Reconnect rivers with floodplains, removing barriers along the river course where feasible. • As appropriate, remove invasive non-native species. • Improve water quality using nature-based solutions, sustainable practices and improved waste water treatment practices eg within household septic tanks. • Allow natural river morphological processes to take place. • Reduce erosion of river banks using appropriate planting techniques and regimes or structures. • Restore ditch and dyke habitats using appropriate species translocation, water quality testing and planned clearance to maintain water flow. • Reduce drainage and holding water on the floodplains which may involve blocking ditches. • Use nature-based solutions, such as retaining fallen trees in watercourses, creating leaky dams, and upstream natural flood management, to restore and enhance rivers. • Employ appropriate river restoration techniques as determined by expert advice – this may include restoring meanders, enhancing channels, modifying river beds, diversion, enhancing outfalls and using in-channel features such as shallow water and gravel beds • Always aim to address the range of challenges facing rivers and stream by utilising the Catchment Based Approach (CABA). • Work with Catchment Partnership organisations to ensure measures align with locally written and agreed Catchment Action Plans. • Establish habitat buffers between arable land and watercourses to reduce agricultural runoff and mitigate diffuse pollution. • Develop opportunities for establishing 'treatment wetlands' to clean post treatment wastewater before it enters rivers and streams. • 'Slow the flow' and improve infiltration of water into soils through creation of suitable habitats in appropriate locations, such as grassland, woodland, scrub mosaics. [HPA05-08, HPA10, HPA14 (Waveney, Water and Woodlands, Bramfield, Blythburgh), HPA15, HPA17, HPA20 (Breckland, East Suffolk, West Suffolk), HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)	Mapped [PM29]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Improve management of water resources through nature-based solutions, (also referred to as Natural Flood Management)	• Mitigate against pollution, abstractions, droughts, and floods, as well as physical modifications such as land use changes, drainage, soil erosion, channelisation and barriers. • Reforestation, increasing the number of trees and vegetation biomass within the catchment where appropriate, but to avoid significantly increasing tree cover which shades out chalk stream or other specialist aquatic plants. Caution must be applied for use of large tree species, due to a high water demand, reducing flows in the chalk stream. • Maintenance of soil structure and vegetation cover. • Restoration of a more natural bed level and run-off attenuation features. • Floodplain reconnection to alleviate short-term flooding. In addition, to enhance resources and increase subsequent summer flow rates, target flood water storage away from discharge zones ie headwater opportunities with the correct geology, where there is connectivity with the underlying aquifer. [HPA01, HPA15, HPA16, HPA17, HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM30]
Strengthen mosaic of wetland habitats along river channels	• Restore rivers by recreating what would occur naturally and is appropriate to the type of river, its energy and landscape, its natural character, and is based on the restoration of natural processes. • Restore a more natural mosaic of habitats, by reducing drainage and adopting appropriate management, which could benefit chalk streams and improve valley fen or grazing marsh habitat. [HPA15, HPA16, HPA17, HPA20, HPA27 (River Waveney Trust) HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM30]
Improve river, riparian and floodplain habitat	• Reinstate the natural processes of water bodies to re-create more natural morphology, water velocities and increase biodiversity. • Retain riparian trees in appropriate areas. • Revert arable land on naturally wet soil to appropriate floodplain habitat to increase biodiversity. [HPA14, HPA15, HPA16, HPA17, HPA20, HPA27 (River Waveney Trust) HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM30]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance chalk stream habitats	• Restoration of river meanders as appropriate to the natural character of the chalk stream. • Use of riparian trees to cool chalk streams. • Reconnection of the stream and the flood plain. • Implement changes to channel morphology to restore energy to the system to enable natural processes to remove silt from the gravel bed • Use the CaBA Chalk Stream Strategy detailing the ecological basis for improving the health of chalk streams - a culmination of restoring flows, improving water quality and restoration of habitat. • Link to Big Chalk programme targets and projects where possible. See www.big-chalk.org [HPA 09, HPA15, HPA17, HPA21 (Breckland)]	Mapped [PM29]

These measures are considered to support species identified in the following assemblages:

- Rivers and Riverside Habitats

These measures could offer solutions to address pressures in:

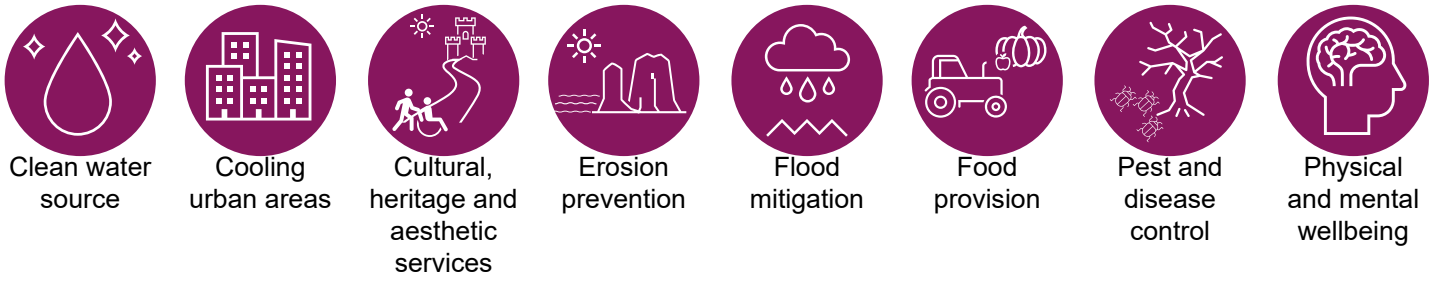
- Freshwater
- Farmland
- Woodland, Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:





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Still Water Habitats

Table 16. Still Water Habitats priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create or re-create new still water habitats where feasible and desirable	• Include ponds as integral parts of green infrastructure. • Re-establish or create ponds of high wildlife value, avoiding damage to Priority Habitats. New high-quality pond sites should form part of a network of clean water ponds with high biodiversity potential. • Refer to appropriate district level licensing schemes for links to great crested newts. [HPA14 (Bramfield, Blythburgh, Stour Valley, HPA15, HPA21, HPA26 HPA28 and HPA29, (Suffolk and Essex Coasts and Heaths, Dedham Vale) Ponds may also be created or re-created as an unmapped measure outside of ACB areas to provide additional connectivity	Mapped where possible [PM30 or PM31]
Restore appropriate pond habitats	• Restore ghost or lost ponds and improve ponds in poor condition. • Support pond restoration and creation through projects like the Norfolk Ponds Project. • Buffer ponds from any impacts of arable farming with permanent grass margins. • Manage margins to ensure scrub does not surround pond habitats [HPA14 (Bramfield, Blythburgh, Stour Valley, HPA15, HPA23, HPA26, HPA28 and HPA29, (Suffolk and Essex Coasts and Heaths, Dedham Vale) Ponds may also be restored as an unmapped measure outside of ACB areas to provide additional connectivity.	Mapped [PM31]
Restore, maintain and enhance lake and Broads habitats	• Control and manage invasive non-native species. • Restore diverse macrophyte communities in shallow lakes. • Trial innovative restoration techniques and identify maintenance and enhancement needs for aquatic communities. • Restore shallow lakes to a clear water state using appropriate techniques such as sediment, vegetation and fish removal. [HPA08, HPA11, HPA14, (Waveney, Water & Woodlands), HPA15]	Mapped [PM56]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Enhance existing pond habitats	• Control and manage invasive non-native species. • Improve water quality by reducing water and atmospheric pollution, over-abstraction, light pollution, and recreational pressures. Control invasive species, and implement biosecurity measures. • Clear woody vegetation from most significant and mere sites, retaining some wet woodland. Maintain diverse vegetation structures around margins and within water bodies using grazing and mechanical methods. • Support community projects for pond development and maintenance. • Retain and improve the biodiversity of ponds in the built environment. • Selectively fell around ponds, connecting them via networks of rides. • Assess and reduce cover on existing overshaded ponds. • Periodically dig out ponds that have become over silted. [HPA04, HPA14 (Bramfield, Blythburgh, Stour Valley, HPA15, HPA21, HPA23, HPA26, HPA28 and HPA29, (Suffolk and Essex Coasts and Heaths, Dedham Vale), HPA31]	Mapped [PM32]
Restore, maintain and enhance lake and Broads habitats	• Control and manage invasive non-native species. • Restore diverse macrophyte communities in shallow • lakes. • Trial innovative restoration techniques and identify maintenance and enhancement needs for aquatic communities. • Restore shallow lakes to a clear water state using appropriate techniques such as sediment, vegetation and fish removal. [HPA08, HPA11, HPA14, (Waveney, Water & Woodlands), HPA15]	Mapped [PM32]
Restore wetlands, including open water, fen and reedbed	Use former gravel pits and mineral workings, especially in river valleys, as potential sites for restoration of wetlands, including open water, fen and reedbed.	Mapped where possible [PM32, PM33, PM35]

These measures are considered to support species identified in the following assemblages:

- Still Waters
- Farmed Landscapes
- Scrub and Mosaic

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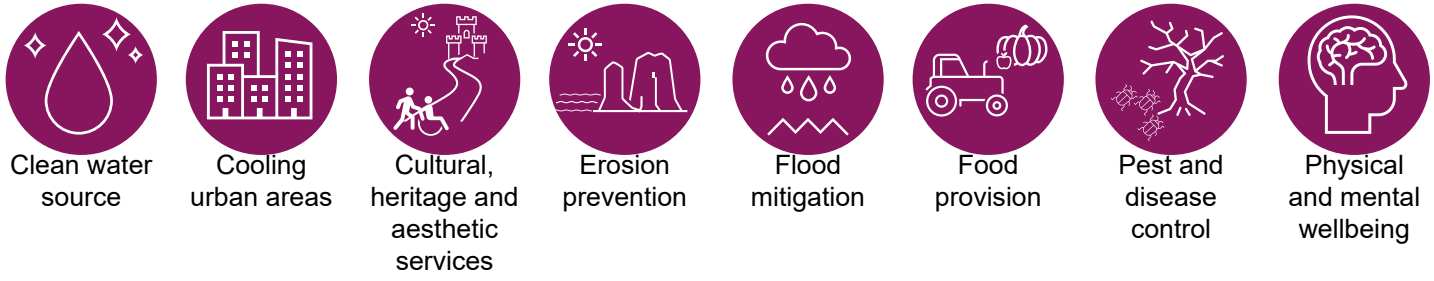
These measures could offer solutions to address pressures in:

- Freshwater
- Farmland
- Woodland, Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:





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Fen Habitats

Table 17. Fen Habitats priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new fen habitats and wetlands	• Create new fen to replace those at risk from climate change impacts by identifying fen refugia areas, managing their hydrology, translocating vegetation where appropriate and re-seeding using local seed sources wherever possible • Manage the water table effectively to ensure levels are sufficient for habitat creation. [HPA15, HPA17]	Mapped [PM33]
Enlarge, expand and connect existing fen habitats	• Remove most scrub and woodland from fen and wetland sites, creating a mix of grazed and tall vegetation structures through flexible extensive grazing or mechanical management. Retain some wet woodland as part of the habitat. • Link fen restoration and expansion to ELMS and other projects in order to establish wildlife corridors. • Ensure appropriate water quantity and quality for existing sites, in light of climate change and pressures on supply. [HPA04, HPA14 (Felixstowe, Sandlings), HPA30 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM33]
Restore and enhance existing fen habitats	• Enhance priority fen areas through site management agreements, prescriptions, and support services for site managers, in conjunction with reedbed, grazing marsh, and wet woodland control measures. • Control invasive species within wetlands. • Link fen restoration and expansion to ELMS projects. • Ensure appropriate water quantity and quality for existing sites, in light of climate change and pressures on supply [HPA0 2, HPA15, HPA23, HPA26, HPA30 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM34]

These measures are considered to support species identified in the following assemblages:

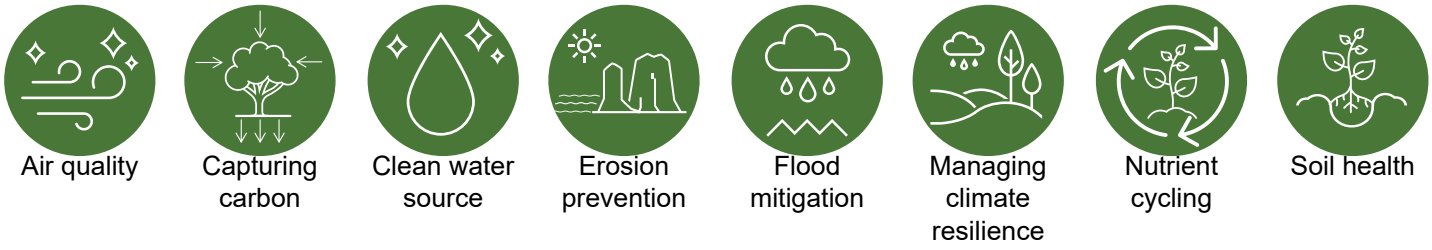
- Lowland Fen

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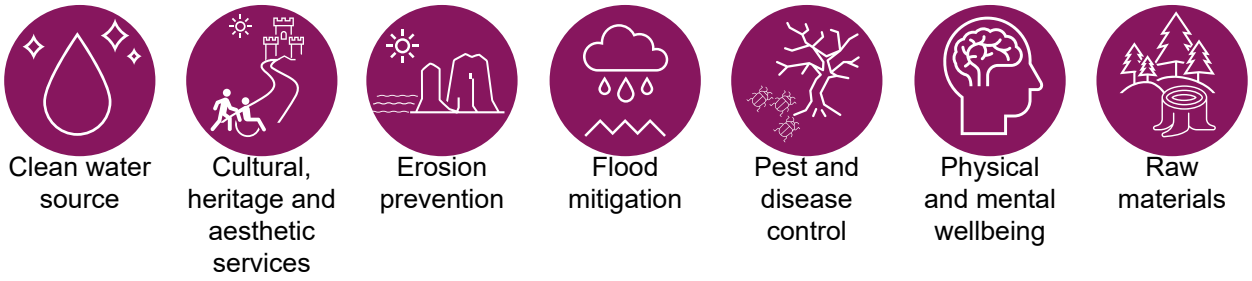
These measures could offer solutions to address pressures in:

- Freshwater
- Farmland
- Woodland, Trees and Scrub
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Reedbeds

Table 18. Reedbeds priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new reedbed habitat	• Create new reedbeds to replace those at risk from coastal management changes. • Where appropriate, reconnect fragmented wetlands and reedbeds with existing habitats. • Explore opportunities to create new reedbeds and link them with other projects to establish wildlife corridors. [HPA02, HPA06, HPA15, HPA18, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM35]
Enlarge, expand and connect existing reedbed habitat	• Incorporate SuDS, including reedbeds and natural filtration systems, to manage floods while creating habitats and green corridors. • Explore opportunities to create new reedbeds and link them with other projects to establish wildlife corridors. • Develop a reed management policy, maintaining and extending reedbed fringe habitats along Board drains where feasible. [HPA 02, HPA06, HPA14 (Felixstowe, Sandlings), HPA15, HPA18]	Mapped [PM35]
Restore and enhance existing reedbed habitat	• Restore rivers, fens, and reedbeds (peatland). • Enhance priority fen, reedbed, grazing marsh, and wet woodland areas via site management agreements, prescriptions, and support services for site managers. • Improve reedbeds through appropriate water level management that facilitates healthy fish populations and prevents drying, to prevent succession of this transitional habitat to woodland. Also, implement a scrub management regime for this purpose. Develop a reed management policy, maintaining and expanding reedbed fringe habitats along Board drains where feasible. [HPA05, HPA02, HPA13, HPA23, HPA27]	Mapped [PM36]

These measures are considered to support species identified in the following assemblages:

- Reedbeds
- Freshwater Wetlands

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These measures could offer solutions to address pressures in:

- Freshwater
- Coastal
- Farmland
- Woodland, Trees and Scrub
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Coastal Saltmarsh and Intertidal Mudflats

Table 19. Coastal Saltmarsh and Intertidal Mudflats priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing saltmarsh where feasible and desirable	• Allow saltmarsh to develop naturally and migrate inland where feasible, restoring the coastal floodplain through managed realignment and Regulated Tidal Exchange (eg removing or breaching artificial structures). • Actively convert grazing marsh areas at high risk of sea defence failure to saltmarsh or brackish marsh. • Identify areas around the coast and estuaries where saltmarsh could be created in preparation for future adaptation and to support management of protected sites. [HPA12, HPA14 (Felixstowe, Sandlings, Shotley), HPA15, HPA18, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM37]
Restore and enhance existing saltmarsh	• Allow saltmarsh to develop naturally and migrate inland where feasible, restoring the coastal floodplain through managed realignment and Regulated Tidal Exchange (eg removing or breaching artificial structures). • Improve saltmarsh management in areas outside SAC, SSSI, and Ramsar designations using appropriate methods such as grazing management, vegetation planting, management of pollution events, management of access, freshwater input and drainage. Refer to appropriate documentation where possible Saltmarsh management manual - GOV.UK [28]. • Implement appropriate management measures to minimise recreational disturbance, linking to strategic solutions where appropriate. • Implement Beneficial Use of Dredged Sediment (BUDS) as a saltmarsh restoration tool and potential to build resilience of existing saltmarsh. [HPA12, HPA14 (Felixstowe, Sandlings, Shotley), HPA15 (East Suffolk), HPA18, HPA23, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM38]

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Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing intertidal mudflats where feasible and desirable	• Implement shoreline management strategies, including managed realignment and Regulated Tidal Exchange. • Identify areas around the coast and estuaries where mudflats could be created in preparation for future adaptation and to support management of protected sites. [HPA12, HPA14 (Shotley), HPA15 (East Suffolk), HPA18, HPA23, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM39]
Restore and enhance existing intertidal mudflats	See 'Create new intertidal mudflats where feasible and desirable'	Mapped [PM40]

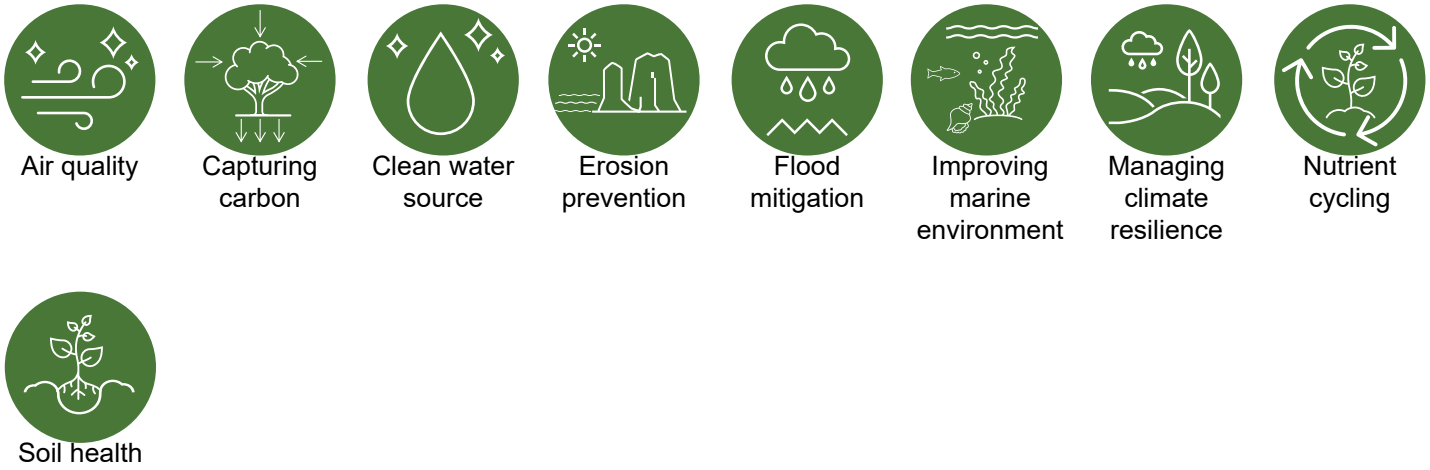
These measures are considered to support species identified in the following assemblages:

- Saltmarshes and Lagoons

These measures could offer solutions to address pressures in:

- Freshwater
- Coastal
- Farmland
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:



Clean water source

Cultural, heritage and aesthetic services

Erosion prevention

Flood mitigation

Food provision

Pest and disease control

Physical and mental wellbeing

Raw materials

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Coastal Sand Dunes

Table 20. Coastal Sand Dunes priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of new coastal sand dunes	• Allow natural coastal processes to enable dunes to develop, move, and function naturally. • Facilitate a wide zone of transition between Mean High Water and the backshore to accommodate a range of coastal plants. • Facilitate dune formation using appropriate planting eg use of marram grass. • Implement shoreline management, including incorporating new areas of shingle into land adaptation projects on the coast where possible and allowing vegetation to regenerate naturally. [HPA15, (Broads, East Suffolk)] HPA19]	Mapped [PM41]
Enlarge and expand existing coastal sand dunes	• Allow natural coastal processes to enable dunes to develop, move, and function naturally. • Restore dune slacks to create a succession of habitats for dune slack species, restore natural functioning to dune systems constrained by sea defences and facilitate dune roll-back. • Enhance connectivity between dune systems by improving remnant dunes and creating ecotones with inland habitats.	Mapped [PM41]
Restore and enhance existing coastal sand dunes	• Allow natural coastal processes to enable existing dunes to move and function naturally, increasing their resilience. • Improve sand dune management outside designated areas (eg SAC, SSSI, Ramsar). • Use techniques detailed in published advice such as The Sand Dune Managers Handbook: second edition – Natural England [29]. • Mitigate impacts from recreational disturbance through strategic solutions eg innovative signage and management techniques. • Control invasive species. • Restore dune slacks to create a succession of habitats for dune slack species, restore natural functioning to dune systems constrained by sea defences and facilitate dune roll-back. • Enhance connectivity between dune systems by improving remnant dunes and creating ecotones with inland habitats. [HPA19]	Mapped [PM42]

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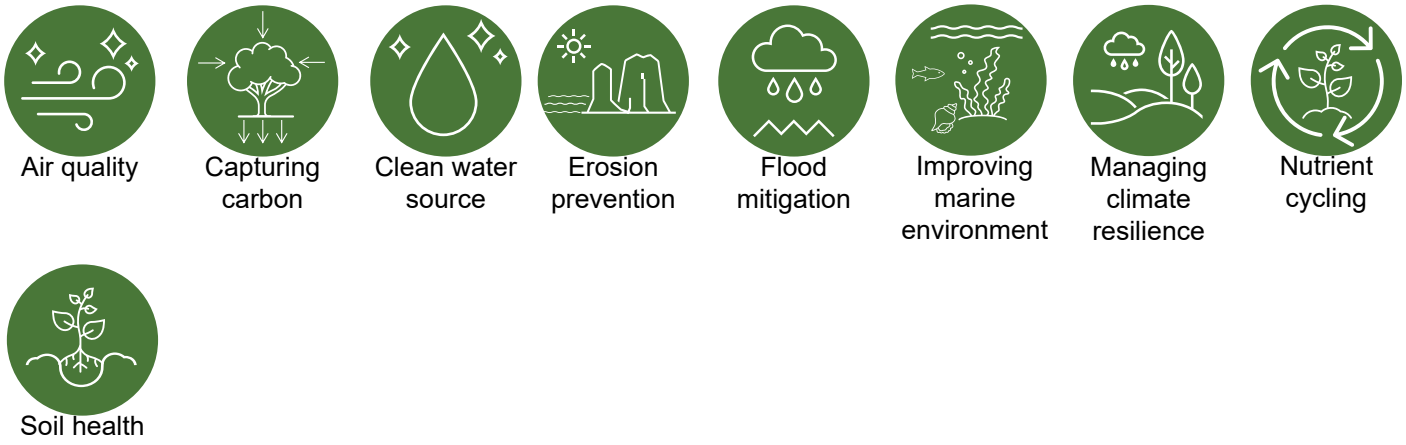
These measures are considered to support species identified in the following assemblages:

- Coastal Shingle and Dunes

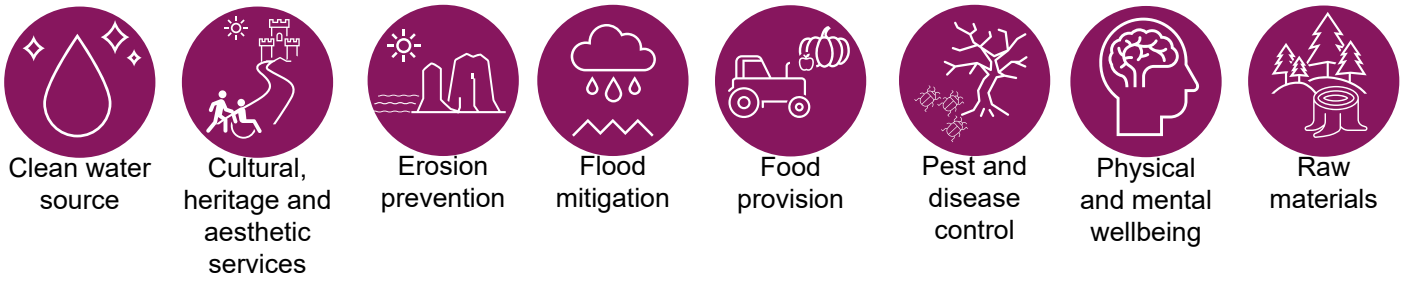
These measures could offer solutions to address pressures in:

- Coastal
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Coastal Vegetated Shingle

Table 21. Coastal Vegetated Shingle priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of new coastal vegetated shingle	• Allow natural coastal processes to enable vegetated shingle to develop, move, and function naturally. • Implement shoreline management, including managed realignment. [HPA15] (East Suffolk), HPA19, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM43]
Enlarge and expand existing coastal vegetated shingle	Implement shoreline management, including managed realignment. [HPA15] (East Suffolk), HPA19, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM43]
Restore and enhance existing coastal vegetated shingle	• Allow natural coastal processes to enable vegetated shingle to function naturally. • Improve vegetated shingle management outside designated areas (such as SAC, SSSI, Ramsar). Techniques include: minimising disturbance, using traditional land management techniques on adjacent grassland, preventing scrub encroachment, and leaving tidal debris, driftwood and seaweed on the beach. • Mitigate recreational disturbance impacts through strategic solutions eg. innovative signage and management techniques. • Implement shoreline management, including managed realignment. [HPA15 (East Suffolk), HPA19, HPA23, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM44]

These measures are considered to support species identified in the following assemblages:

- Coastal Shingle and Dunes

These measures could offer solutions to address pressures in:

- Coastal
- Freshwater
- Invasive Species and Diseases

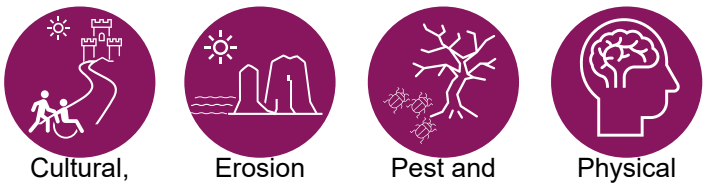
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These measures are considered to support the following wider environmental benefits:



Air quality | Erosion prevention | Improving marine environment | Managing climate resilience | Nutrient cycling

These measures are considered to support the following co-benefits:



Cultural, heritage and aesthetic services | Erosion prevention | Pest and disease control | Physical and mental wellbeing

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Maritime Cliffs and Slopes

Table 22. Maritime Cliffs and Slopes priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of appropriate maritime slopes	• Allow natural coastal processes to enable maritime cliffs and slopes to develop, move, and function naturally. • Implement shoreline management, including managed realignment. [HPA15 (East Suffolk, HPA19]	Mapped [PM48]
Enlarge and expand existing maritime cliffs and slopes	See 'Facilitate the formation of appropriate maritime slopes'	Mapped [PM48]
Restore and enhance existing maritime cliffs and slopes	See 'Facilitate the formation of appropriate maritime slopes'	Mapped [PM47]

These measures are considered to support species identified in the following assemblages:

- Chalk Grassland
- Acid Grassland and Heathland
- Lowland Meadows and Pastures

These measures could offer solutions to address pressures in:

- Coastal
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:


Cultural, heritage and aesthetic services


Erosion prevention


Pest and disease control


Physical and mental wellbeing


Pollination

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Saline Lagoons

Table 23. Saline Lagoons priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of new and connect saline lagoons	• Allow natural coastal processes to enable new saline lagoons to develop and function naturally. • Create new saline lagoons in strategic locations to provide stepping stones and increase resilience to climate change impacts. • To create new saline lagoons, it may be necessary for regulated tidal exchange to be used. • Implement shoreline management, including managed realignment. [HPA 12, HPA15 (East Suffolk, HPA19, HPA28, (Suffolk and Essex Coasts and Heaths)]	Mapped [PM45]
Restore and enhance existing saline lagoons	• Allow natural coastal processes to enable existing saline lagoons to function naturally. • Improve saline lagoon management in areas outside SAC, SSSI, and Ramsar designations. Techniques include: maintaining water quality levels, minimising disturbance, maintaining structural diversity, controlling encroachment and maintaining the margins • Implement shoreline management, including managed realignment. [HPA 12, HPA15 (East Suffolk, HPA19, HPA23, HPA28, (Suffolk and Essex Coasts and Heaths)]	Mapped where possible [PM46]

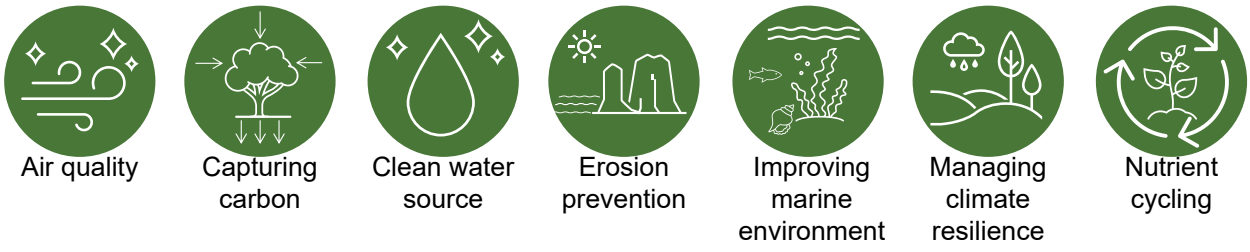
These measures are considered to support species identified in the following assemblages:

- Saltmarshes and Lagoons

These measures could offer solutions to address pressures in:

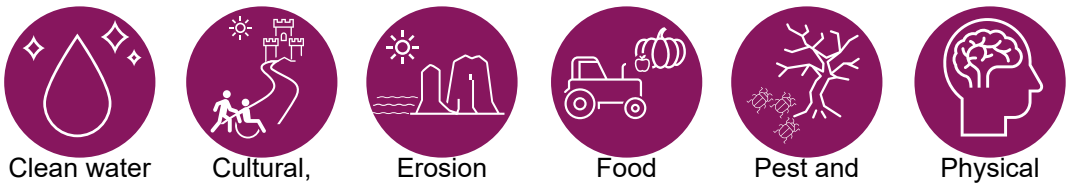
- Coastal
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:



Clean water source

Cultural, heritage and aesthetic services

Erosion prevention

Food provision

Pest and disease control

Physical and mental wellbeing

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Mapping potential measures to create mosaic habitats

Allowing dynamic habitat mosaics consisting of different habitat types to develop in some places is important in supporting the full diversity of habitats and species that would naturally occur in a place. This is especially important at a large scale where such mosaics can be allowed to develop under minimal human led management, which might not be feasible to resource at such a scale or desirable in terms of habitat outcomes.

The dynamic habitat mosaic approach can instead embrace natural processes such as grazing and disturbance to shape the habitats, with the ambition to produce diverse areas with varied vegetation structure and crucial transitional zones (eg from dry to wet habitats, open to closed vegetation, bare to covered ground).

Dependent on the underlying conditions, the habitats that would naturally occur would be established to largely undetermined outcomes, allowing them to adapt and develop resilience to pressures such as climate change.

These habitats can be created on a variety of scales and would be considered to facilitate ambitious recovery projects. Where possible, they can be included within the spatially mapped opportunities within this strategy, but could also be considered part of the wider priorities and measures that could take place across the county, facilitated by all stakeholders.

Mosaics have been mapped to those parcels where multiple habitats comprising a natural succession of habitats were suggested through the rules based mapping, where the distinctiveness of those habitats (as defined for BNG purposes) is the same or similar, and where there is widespread distribution of these habitats throughout the county.



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Prioritising species

The foundation of this work began with a thorough review of 1284 species of concern across Suffolk, derived from authoritative sources such as Natural England and the National Biodiversity Network. Employing a robust scoring system, developed in collaboration with stakeholders and experts, species were assessed for their conservation status, ecological significance, and vulnerability. This systematic process reduced the longlist to 261 species, which were further defined as 21 key species for focused action, detailed in **Tables 39-59**, while the remaining were grouped into habitat-based assemblages (**Tables 24-38**). All relevant species are in **Tables 67-69** and full details are available in **Appendix 2**. The key species are shown below in **Figure 10**.

Figure 10. Key species



Bark-sulphur firedot
Caloplaca flavorubescens



Basil-thyme case-bearer
Coleophora tricolor



Crested cow-wheat
Melampyrum cristatum



Dwarf eelgrass
Zostera noltei



Eurasian curlew
Numenius arquata



European eel
Anguilla anguilla



Fen raft spider
Dolomedes plantarius



Hazel dormouse
Muscardinus avellanarius



Kittiwake
Rissa tridactyla



Lapwing
Vanellus vanellus



Little whirlpool ramshorn snail
Anisus vorticulus



Narrow-mouthed whorl snail
Vertigo angustior

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Orange-fruited elm lichen
Caloplaca luteoalba/ Gyalolechia flavorubescens



Rosser's sac-spider *Clubiona rosserae*



Scarce vapourer
Orgyia recens



Serotine bat
Eptesicus serotinus



Starlet sea anemone
Nematostella vectensis



Suffolk lungwort
Pulmonaria obscura



Tassel Stonewort
Tolypella intricata



Water vole
Arvicola amphibius



White-clawed crayfish
Austropotamobius pallipes

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Habitat-based assemblages

Beyond individual species, the Suffolk LNRS identifies 15 habitat-based assemblages. These assemblages reflect groups of species that co-exist within specific habitat types, such as grasslands, wetlands and urban environments. A flagship species has been selected for each assemblage to symbolise conservation efforts and engage the public. For instance, the turtle dove exemplifies farmland habitats, while the nightingale underscores the ecological importance of scrubland.

Profiles of these assemblages provide an overview of their flagship species, appropriate conservation measures, relevant habitats, and the additional biodiversity benefits they offer (**Tables 24-38**). By linking species and habitats, this approach ensures that measures support broader ecological networks, adhering to Lawton's principles of "bigger, better, more, and more joined up." It is recognised that not all measures are appropriate for the location of each individual species within the assemblages identified, due to varying ecological needs. It is also recognised that species included within a particular assemblage will make use of other habitat areas and ecosystem features, and are therefore not isolated to the habitat assigned but can benefit from a range of potential measures. Therefore species specific requirements must be considered carefully as part of any planned action and expert advice obtained.

Within the tables below, measures are identified for the species listed. In some cases, measures may be applicable to more than one species. Where appropriate, this is explained using text in the relevant section of the table.

Where the habitat measures identified as most relevant for a particular species occur in locations with known species records, these have also been identified within the Local Habitat Map by use of a species code (for example SPM01). Whilst this information strengthens the link between habitat measures that may provide benefits to species, it must not be used in place of more detailed assessment of species requirements and suitability.

The measures and actions identified for the assemblages and species are designed to contribute where possible to the national objectives detailed below. It is considered that the approach taken to generate strategic opportunity areas encompasses these factors:

- halt the decline of species abundance
- reduce the risk of species' extinction
- reducing the rates of introduction and establishment of invasive non-native species.

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Coastal Shingle and Dunes



Saltmarshes and Lagoons



Reedbeds and Freshwater Wetlands



Farmed Landscapes



Lowland Meadows and Pastures



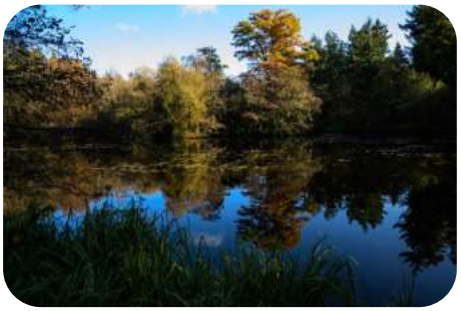
Native Woodland



Trees Outside of Woodland



Scrub and Mosaic



Still Waters



Rivers and Riverside Habitats



Lowland Fen



Chalk Grassland



Brecks Grass Heath



Acid Grassland and Heathland



Urban, Built and Garden Environments

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Coastal Shingle and Dunes

Coastal habitats, such as shingle beaches and dune structures, support specialised species adapted to harsh conditions. These natural systems protect against erosion and flooding and provide essential nesting grounds for seabirds.



Little tern
Sternula albifrons

Table 24a. Coastal Shingle and Dunes assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Little tern *Sternula* albifrons	Implement intensive protective management for colonies and provide suitable habitat areas. If prospecting occurs at new sites, facilitate breeding success with a suite of protective measures.

Table 24b. Coastal Shingle and Dunes assemblage shortlisted species showing recovery potential

Species	Potential Measures
Gnaphosa lugubris spider	• Habitat improvement and protection, alongside appropriate ecological research and monitoring to better understand detailed species requirements. • Maintain adequate grazing/mowing with scrub clearance if necessary, to ensure retention of open ground
Natterjack toad	Connect appropriate habitats of warm, open dunes and ephemeral water bodies
Grey Hair-grass	Conduct rotavation and grazing of dunes to mobilise sand and shift accessible areas on dunes receiving a lot of recreational pressure.
Rhysodromus fallax spider	• Where possible, reduce recreational pressures by incorporating accessible areas within appropriate habitats. • Control recreational erosion of foredunes.
Prickly saltwort	See *Rhysodromus fallax* spider
Baryphyma maritimum spider	• See *Rhysodromus fallax* spider • Protect vulnerable yellow dunes from visitor pressure.
Clubiona frisia spider	• See *Rhysodromus fallax* spider • Manage encroaching scrub on grey dunes to maintain open habitat. • Protect fragile yellow dunes from recreational pressures by controlling access.
Ringed plover	Where possible, reduce recreational pressures by incorporating accessible areas within appropriate habitats, including keeping key areas disturbance-free and use of ‘dogs on leads’ policies, where appropriate. This can be accompanied by use of on-site communications and educational measures. reduce predation via protective measures, and create new habitat nesting areas on bare shingle and sand.

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Species	Potential Measures
String of sausages lichen	Where possible, manage recreational pressures by incorporating accessible areas within appropriate habitats. on dunes to protect sensitive areas.
Yellow vetch '*Vicia lutea*'	Manage scrub edges within habitats to maintain ecological balance.

Additional species or groups benefiting from conservation actions:

- Other lichens and fungi
- Sea Pea

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes (PM43-44) as well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species Little Tern are identified using the code SPM29. These measures could offer solutions to address pressures in:

- Coastal
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Saltmarshes and Lagoons

Saltmarshes, lagoons and brackish coastal areas provide essential feeding grounds for wading birds and breeding sites for fish. These intertidal habitats protect against erosion, sequester carbon, and support salt-tolerant plant life, adding significant ecological value.



Redshank
Tringa totanus

Table 25a. Saltmarshes and Lagoons assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Redshank *Tringa totanus*	• Restore habitats by manipulating water levels, reducing grazing, and delaying mowing. • Create and maintain high-quality areas of extensive, shallow, vegetated water during breeding months. • Consider seasonal grazing to create an optimal sward where appropriate • Avoid agricultural or high-disturbance activities including recreational disturbance at breeding sites during the breeding season.

Table 25b. Saltmarshes and Lagoons assemblage shortlisted species showing recovery potential

Species	Potential Measures
Oystercatcher	Maintain and restore saltmarsh habitats, managing appropriate water levels and grazing intensity.
Common tern	Create habitats using gravel pits, tern rafts in reservoirs, islets in industrial lagoons, port structures, and by improving reserves through vegetation control, managing gull competition, and predator control.
Sea barley	• Enhance management and design of coastal defence areas and retreat plans. • Cultivate the species off-site and re-introduce the plants to areas with a suitable habitat’
Small cord-grass	See 'Sea barley'
Sea heath	See 'Sea barley'
Divided sedge	See 'Sea barley'
Borrers saltmarsh-grass	See 'Sea barley'
Pedunculate sea-purslane	Establish new populations as backups to the existing site in Essex; restore upper saltmarsh habitats in suitable East Anglian sites, restore the saltmarsh/dune interface where appropriate, and translocate seed specimens as needed.
Common eelgrass	Implement terrestrial habitat measures to improve the quality of water entering the coast, and enhance planning to reduce impacts from freshwater inputs and terrestrial run-off.

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Species	Potential Measures
Native oyster	• See 'Common eelgrass'. • Restoration of and creation of new breeding beds of culch.
Scarce pug	• Improve and enhance saltmarsh habitats to include Sea Wormwood plants. • Prevent grazing of upper saltmarsh edges in late summer and early autumn. • Undertake management of upper saltmarsh edges to reduce dominance of species such as Sea Couch and Shrubby Sea-blite
Praestigia duffeyi spider	• Maintaining and restoring saltmarsh, including management of appropriate water levels and levels of grazing. • Ensure site managers are aware of species past/recent presence and vulnerability. Update them with survey and research results to provide guidance on locations/management and inform commissioning of invertebrate survey work. • Once there is sufficient understanding of this species' ecology, assess viability of translocation to new saltmarsh areas created in mitigation for losses to coastal realignments.

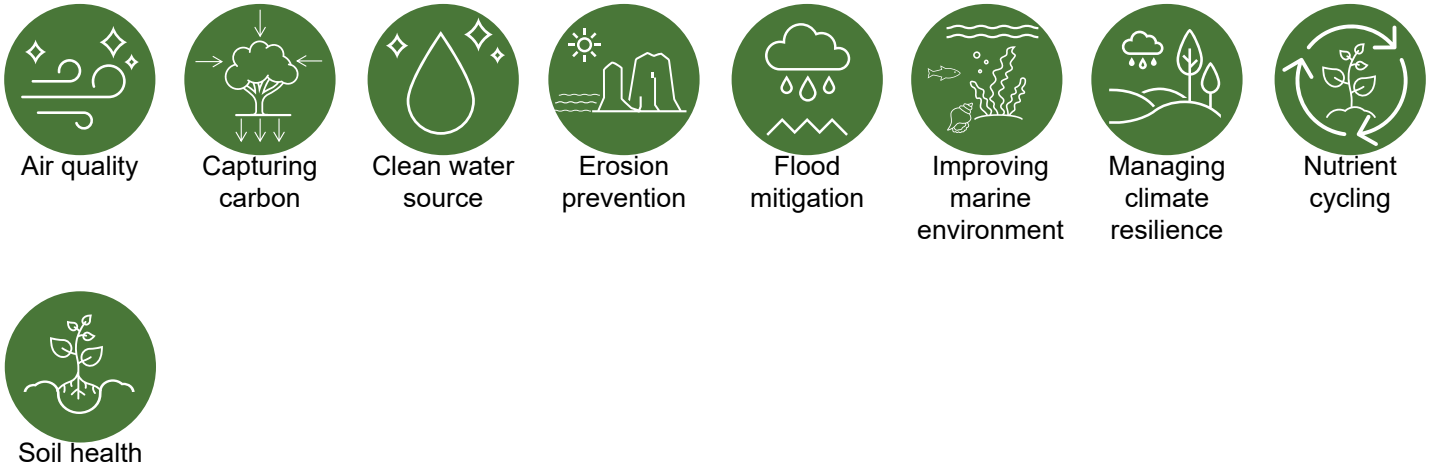
Additional species or groups benefiting from conservation actions:

- Pink-footed and Dark-bellied brent goose

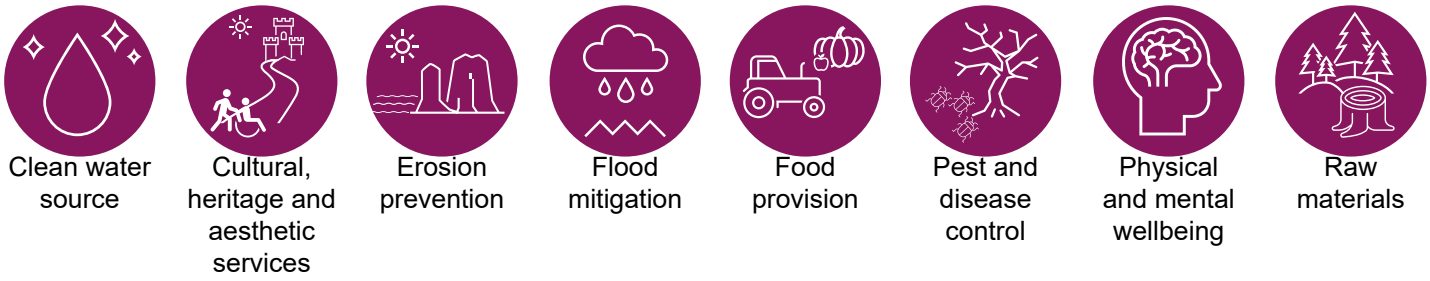
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes (PM37-38, 45-46), as well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species Redshank are identified using the code SPM30. These measures could offer solutions to address pressures in:

- Coastal
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Reedbeds and Freshwater Wetlands

Reedbeds, marshes, pastures, and wetlands support species like bitterns and marsh harriers, improve water quality, and aid flood management.



Bittern
Botaurus stellaris

Table 26a. Reedbeds and Freshwater Wetlands assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Bittern *Botaurus stellaris*	• Create large contiguous reedbed expanses (over 1 hectare) with restoration and protection of flooded channels. • Raise water tables in areas where reedbeds are at risk of drying out and manage reed structure to enhance diversity. • Maintain reedbed age structure, with no more than 30% older than 7 years and less than 5% scrub cover. • Implement cyclical cutting of different reed sections and regularly remove scrub. • Reduce numbers and the pressure of deer in fen and reedbeds. • Include bittern feeding requirements in ecosystem design management. • Incorporate recreational disturbance management where appropriate.

Table 26b. Reedbeds and Freshwater Wetlands assemblage shortlisted species showing recovery potential

Species	Potential Measures
Tansy beetle	Remove Himalayan balsam to promote growth; plant in gaps to aid beetle movement and create flood-safe areas. Use temporary fencing and manage grazing to protect tansy. Manage sites in line with current research.
Scarce emerald damselfly	• Create habitats with dense submerged and emergent vegetation within shallow pools and drainage channels. • Restoration and re-naturalisation of wetland systems, particularly grazing marshes, to create diverse habitats, including shallow ephemeral areas. • Diversification of wetland systems through pool and ditch creation to increase availability of breeding habitat encouraging range expansion. • Encourage species to continue its range expansion to offset expected habitat loss as a result of sea level rise.

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Species	Potential Measures
Large mouthed valve snail	• Use ditch management and vegetation control, supported by research and monitoring to understand species needs. • Stagger clearance of ditches: clearing alternate 10-15m stretches, or clearing only one side of ditches, or creating spur ditches one year before ditch clearance. • Molluscs require ditches to be managed so that there is a range of successional stages from open water through to overgrown and clogged.
Geyer's whorl snail	• Use ditch management and vegetation control to create specific habitat of low growing grasses and sedges. • Management of grazing levels at existing sites to avoid trampling. • Molluscs require ditches to be managed so that there is a range of successional stages from open water through to overgrown and clogged.
Desmoulin's whorl snail	• Use ditch management and vegetation control, alongside maintenance of hydrological conditions. • Support restoration of hydrology on protected sites. • Molluscs require ditches to be managed so that there is a range of successional stages from open water through to overgrown and clogged.
Marsh harrier	• Creation and enhancement of reedbed habitats, alongside wetland regeneration projects. • Promote sustainable farming practices and reduction in use of organochlorine pesticides alongside other accumulating chemicals.
Erioptera bivittata fly	Improve and protect habitats with ecological research and monitoring to enhance understanding of specific species requirements
Erioptera meijerei fly	See '*Erioptera bivittata* fly'
Fenn's wainscot	• Regularly cut reedbeds as part of habitat management. • Recreate reedbed habitat on drained land.
Grass-poly	Employ ditch management and vegetation control to create exposed areas and open vegetation.
Grass snake	Develop and connect habitat areas to increase ecological connectivity.
Creeping marshwort	Create suitable habitats, such as creating scrapes in floodplains and enhancing connectivity with rivers, in appropriate areas to support species needs.
Water dock case bearer	Employ ditch management techniques and vegetation control to create specific habitat of food plant.

Additional species or groups benefiting from conservation actions:

- Aquatic macrophytes
- Aquatic beetles

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The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM30
- PM33-36

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species bittern are identified using the code SPM31.

These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Farmed Landscapes

Suffolk's farmland, including arable fields, grasslands, hedgerows, and margins, can support biodiversity with wildlife-friendly management, providing habitats for pollinators, birds, and small mammals alongside agriculture.



Turtle dove
Streptopelia turtur

Table 27a. Farmed Landscapes assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Turtle dove *Streptopelia turtur*	Provide a variety of required habitats: • nesting habitat (hedgerows, regenerating scrub and some woodland edges) • foraging habitat (with bare ground/short vegetation and sources of small seeds in the breeding season) • water sources with shallow edges • manage hedges to offer nesting sites while allowing scrub areas to regenerate • provide supplementary feed where appropriate.

Table 27b. Farmed Landscapes assemblage shortlisted species showing recovery potential

Species	Potential Measures
Kestrel	• Increase invertebrate presence on farmland by maintaining diverse habitats and leaving wild, unfarmed areas. • Practice organic grazing and regenerative farming with reduced chemicals, especially insecticides, to support insect-eating birds. • Reduce or delay post-harvest ploughing to increase winter stubble and green cover crops, and avoid annual hedge cutting. • On intensive arable land, maintain cropped areas for nesting and foraging, adding wildflower, grass, and nectar-rich margins to boost insects and provide summer food for breeding birds. • Provide seed sources to support farmland birds, especially in late winter, either by direct provision or allowing plants to go to seed in suitable areas. • Maintain and enhance hedgerows for nest sites and corridors • Create and maintain grassland habitats for foraging • Improve farmland for small mammals, including creating refugia in winter to protect from flooding • Provide appropriate nest boxes • Control rodent management to minimise chemical impacts • Create appropriate in-field measures for specific species eg skylark.
Grey partridge	See 'Kestrel'

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Species	Potential Measures
Yellow wagtail	See 'Kestrel', as appropriate for species
Cuckoo	See 'Kestrel', as appropriate for species
Skylark	See 'Kestrel', as appropriate for species
Tree sparrow	See 'Kestrel', as appropriate for species
Linnet	See 'Kestrel', as appropriate for species
Greenfinch	See 'Kestrel', as appropriate for species
Bullfinch	See 'Kestrel', as appropriate for species
Corn bunting	See 'Kestrel', as appropriate for species
Yellowhammer	See 'Kestrel', as appropriate for species
Barberry carpet	• Plant barberry within hedgerows to enhance habitat diversity. • Enhance and connect the existing core areas away from arable areas. • Create additional breeding habitat through Barberry planting at new sites within 5km of known populations. Include planting in field margins, new hedgerows and woodland rides. • Reduce hedgerow cutting frequency and ensure hedges are cut after September.
Brown hairstreak	• Increase the prominence of blackthorn and implement infrequent cutting regimes. • Ensure appropriate management of hedgerows (appropriate methods and rotations).
Ground pine	Reintroduction and appropriate management
Slender tare	Ensure appropriate management of arable field margins, habitat improvement, and protection
Wild pansy	See 'Ground pine'
Small flowered catchfly	See 'Ground pine'
Red tipped cudweed	See 'Ground pine'

Additional species or groups benefiting from conservation actions:

- Other arable weeds and plants eg shepherd's needle
- Hedgerow butterflies
- Hedgerow trees such as Hazel, Hawthorn
- Pink-footed goose and other water fowl and waders

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM01-02
- PM05-06
- PM09-14

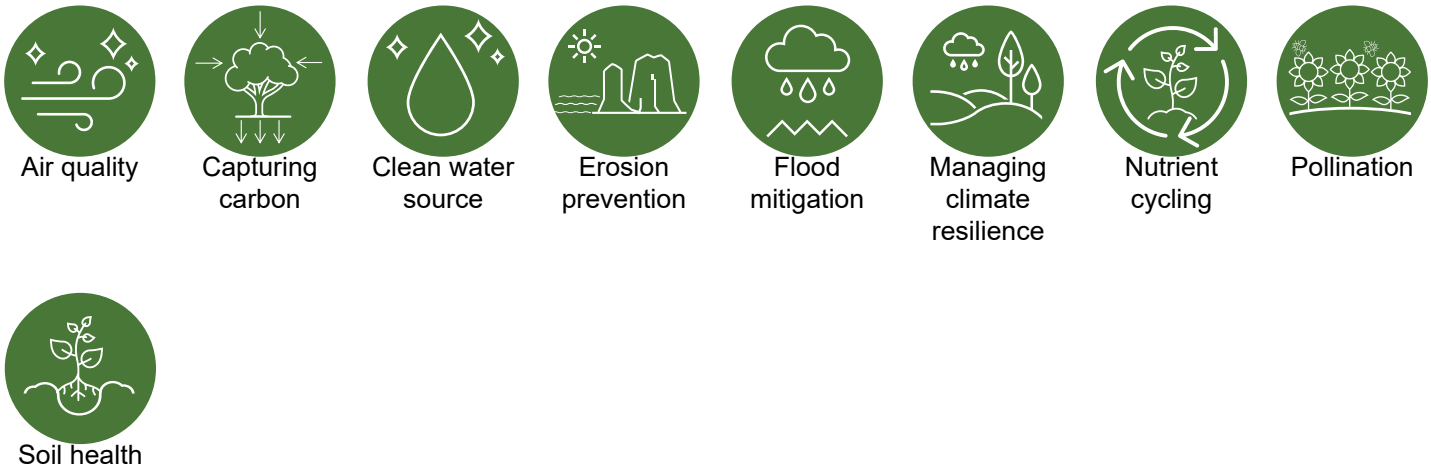
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- PM19-24
- PM31-32

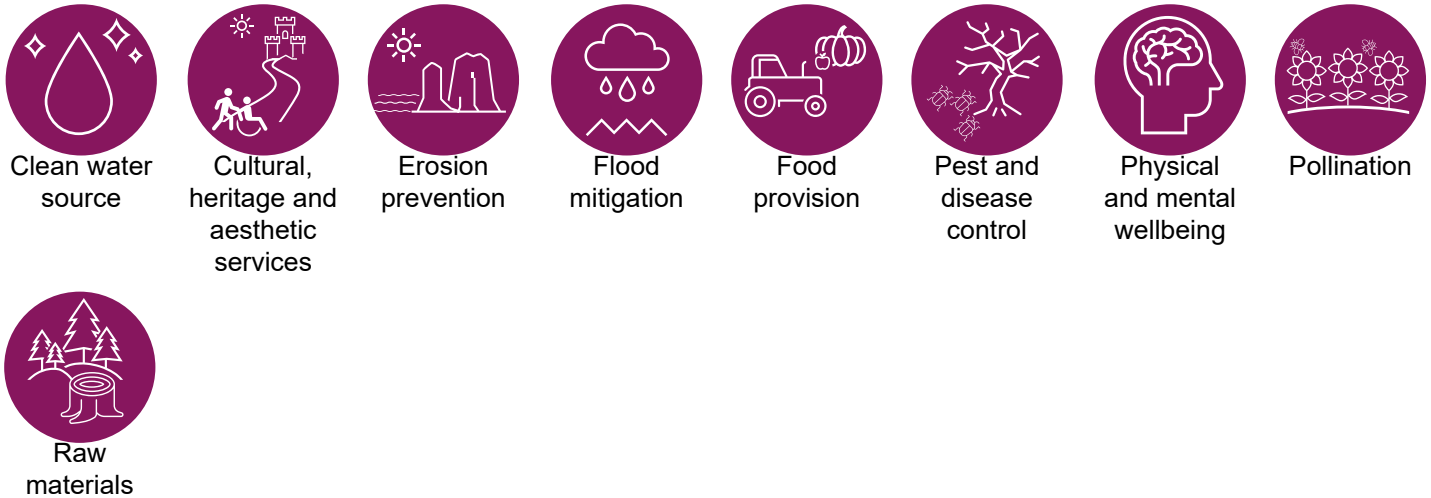
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species turtle dove are identified using the code SPM32. These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Lowland Meadows and Pastures

Species-rich grasslands, lowland meadows and pastures, support pollinators, ground-nesting birds, and small mammals. Traditional management aids carbon storage, soil health, and water management, sustaining ecological balance.



Green-winged orchid
Anacamptis morio

Table 28a. Lowland Meadows and Pastures assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Green-winged orchid *Anacamptis morio*	• Improve management of habitat areas by cutting and raking to reduce nutrient loading followed by adopting a suitable mowing regime'. • Control invasive species to protect native biodiversity. • Manage grazing pressures to prevent overgrazing in meadow habitats, whilst employing aftermath grazing to reduce nutrient levels and competition from aggressive plants. • Support pollinator populations by providing nesting sites, reducing pesticide use, and planting native flowering plants. • Avoid mowing during peak fruiting or flowering periods and control vegetation that competes with target species. Incorporate appropriate hay cutting regimes. • Increase populations of target species by creating new habitat areas adjacent to existing populations. • Control deer to sustainable levels, remove grazing animals, limit scrub and bramble encroachment, and consider fencing to protect vulnerable populations. • Re-establish specimen plants on appropriate lost sites. • Maintain continuity of management over a long period allowing the appropriate soil fungi to accumulate.
Dingy skipper	• As 'Green-winged orchid', incorporating appropriate management and trials for species re-establishment as needed. • Appropriate hay management and/or grazing. • Create, restore, enhance and connect habitats to increase availability of habitats and increase the resilience of dingy skipper metapopulations.
Spiny restharrow	See 'Dingy skipper'
Twayblade	See 'Dingy skipper'
Deptford pink	See 'Dingy skipper'
Sulphur clover	See 'Dingy skipper'
Frog orchid	See 'Dingy skipper'
Chamomile	See 'Dingy skipper'

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Table 28b. Lowland Meadows and Pastures assemblage additional species or groups benefiting from conservation actions

Species	Potential Measures
Fungi eg waxcaps	Employ appropriate management techniques in terms of grazing and cutting and eliminating chemical use, and keep well-drained

Additional species or groups benefiting from conservation actions:

- Barn owl
- Bryophytes

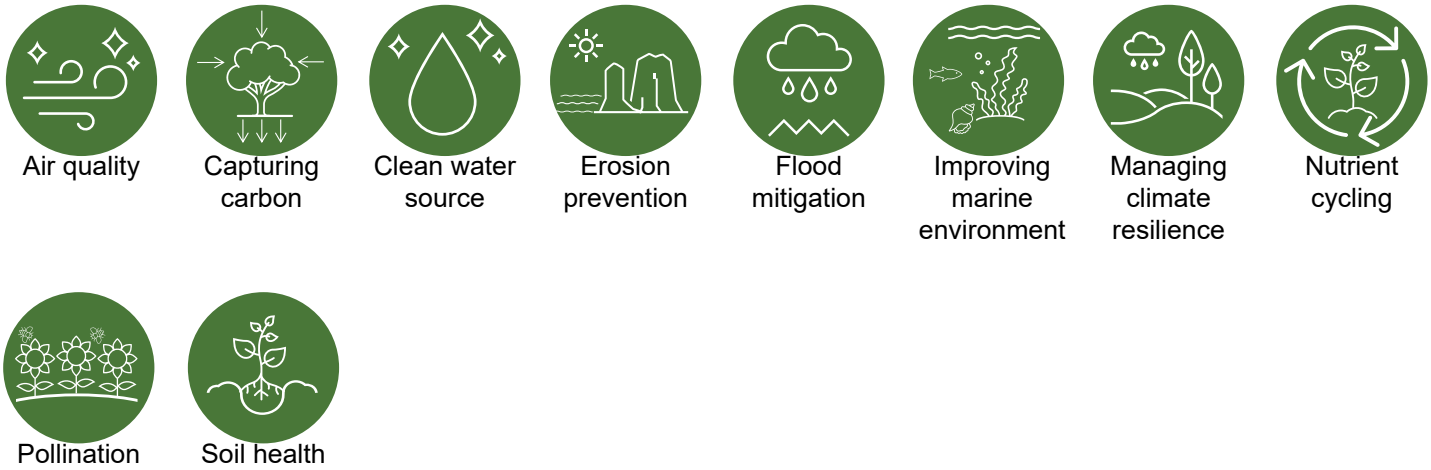
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM19-24

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species green-winged orchid are identified using the code SPM33.These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:


Clean water source


Cultural, heritage and aesthetic services


Erosion prevention


Flood mitigation


Food provision


Pest and disease control


Physical and mental wellbeing


Pollination


Raw materials

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Native Woodland

Suffolk's native woodlands, with ancient and veteran trees, are rich ecosystems that support diverse wildlife, store carbon, purify air, and mitigate floods, bolstering climate resilience and enhancing the landscape.



Barbastelle bat
Barbastella barbastellus

Table 29a. Native Woodland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Barbastelle bat *Barbastella barbastellus*	• Use woodland management practices to enhance appropriate woodland areas, such as streams and ponds within wet woodland. • Employ minimal woodland management – leave standing deadwood wood and damaged trees – this allows for successional availability of roosts. • Protect existing/potential roosting sites by retaining trees with cracks, loose bark, ivy and/or woodpecker holes, storm-damaged trees – loose bark is especially important for maternity colonies. • Leave areas of non-intervention in all woodlands - encourage natural cycle of growth, damage, decay as well as regeneration. • Establish foraging corridors by planting trees and hedgerows within 6 km of suitable roosting habitats. • Near bat roosts, plant trees or woodland that can develop veteran features like hollowing. • Protect maternity roosts and hibernacula from development. • Create connections between populations to reduce isolation. • Reduce the impact of artificial night lighting as much as possible.

Table 29b. Native Woodland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Eagle's claw lichen	• Maintain host tree species (eg Acer, Fraxinus, Ulmus, Quercus) in wood pasture, parkland, and along roadsides. • Thin trees selectively to reduce overstocking in order to maintain appropriate light to the lichens and add structural variety in woodlands, ensuring successional natural processes can occur. • Control regeneration to keep woodlands open, potentially by reintroducing grazing, mindful of wild herbivore pressure. • Clear dense growth around veteran trees, aiming for glades across one-third of the area with varied age and size.

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Species	Potential Measures
Drab wood soldierfly	• Restore and maintain mature woodlands with an extensive understorey layer, including veteran oaks, deadwood (fallen or standing), and appropriate clearings and rides with shrubby edges. • Manage deer populations to sustainable levels to preserve structural diversity and understorey vegetation. • Restore woodland connectivity to support ecosystem health and species movement. • Use rotational cutting of the understorey to encourage regrowth and structural diversity.
Lesser spotted woodpecker	See 'Drab wood soldierfly'
Willow tit	See 'Drab wood soldierfly'
Oak polypore	See 'Drab wood soldierfly'
Marsh tit	See 'Drab wood soldierfly'
Redpoll	See 'Drab wood soldierfly'
Hawfinch	See 'Drab wood soldierfly'
Dark crimson underwing	• See 'Drab wood soldierfly' • Support natural oak woodland development, allowing for mature oak trees to become established.
Greater butterfly-orchid	See 'Drab wood soldierfly'
Spotted flycatcher	See 'Drab wood soldierfly'
Purple emperor	• Establish large blocks of broadleaved woodlands or clusters of smaller woods with abundant willow. • Manage woodlands for shaded conditions, promoting honeysuckle in sheltered areas. • Enhance rides and glades with bare ground and large bramble patches for nectar. • Use coppicing on 12–30-year rotations, retaining honeysuckle-supporting trees. • Control grazing to support coppice regrowth and connect open woodland areas. • Create and connect woodlands to reduce isolation of existing colonies.
White admiral	• See 'Purple emperor' • Support woodland regeneration to increase number of potential sites for this species.
Wild service tree	• Identify and include key species within planting strategies to support biodiversity and habitat goals. • Use local wild sourced seed to preserve and foster local genetic diversity’
Small leaved lime	See 'Wild service tree'

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Table 29c. Native Woodland assemblage additional species or groups benefiting from conservation actions

Species	Potential measures
Other lichens and fungi	• Thin trees selectively for structural variety within woodlands. • Maintain open woodland structure by controlling regeneration, reintroducing grazing where appropriate, considering grazing pressure from wild herbivores. • Clear regrowth around veteran trees, creating varied glades across a third of the area. • Retain trees beneficial to valuable plant and fungi species. • Expand suitable tree areas near existing populations to boost species presence. • Manage deer populations to sustainable levels, remove grazing animals, limit scrub/bramble spread, and fence if needed. • Avoid mowing during peak fruiting/flowering and manage competing vegetation. • In hotspots, protect soils by avoiding felling, coppicing, fire, fertilisers, and heavy machinery. • Ensure continuity of tree species from saplings to veterans through planting or natural regeneration.

Additional species or groups benefiting from conservation actions:

- Other bat species
- Bryophytes
- Other native tree species eg Alder, Oak
- Saproxylic beetles

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

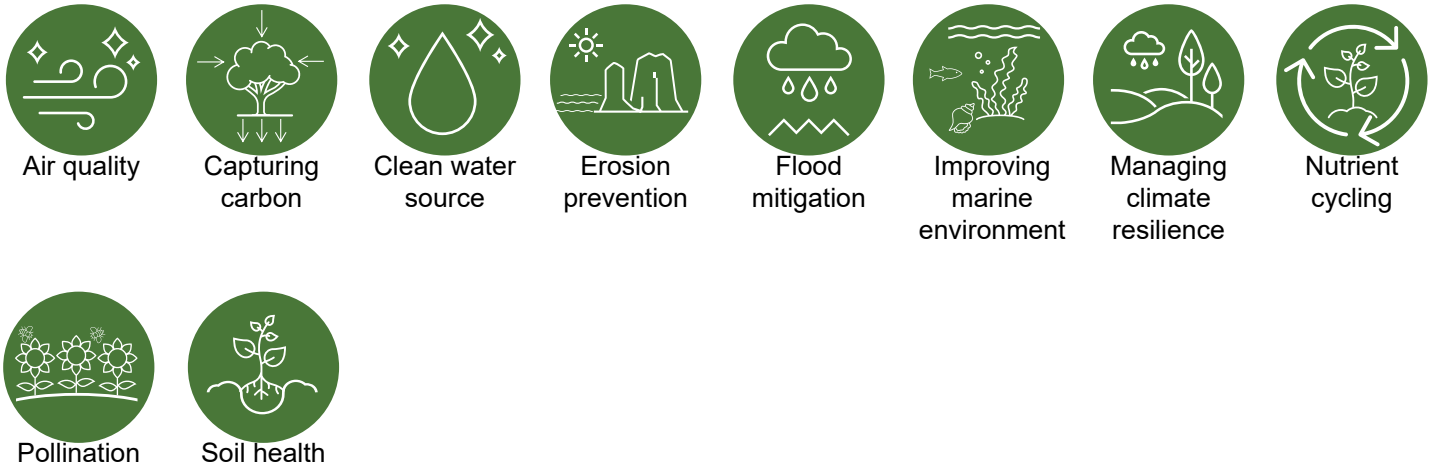
- PM1
- PM5-6
- PM50

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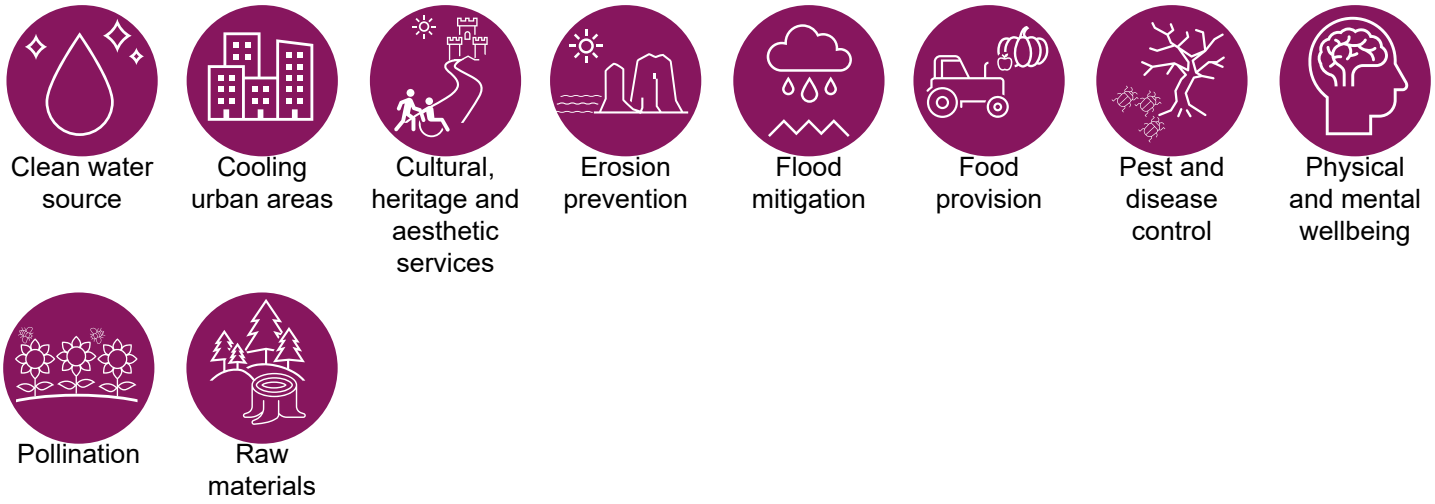
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species barbastelle bat are identified using the code SPM34. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Trees Outside of Woodland

Trees in hedgerows, roadsides, and fields provide habitats, support landscape connectivity, stabilise soil, capture carbon, and enhance rural and urban character.



Pedunculate oak
Quercus robur

Table 30a. Trees Outside of Woodland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Pedunculate oak *Quercus robur*	• Use for planting programmes in appropriate soils and within appropriate locations (use Ecological Site Classification (ESC) profiles). • Collect and cultivate seed from noteworthy specimens of Pedunculate oak in Suffolk.

Table 30b. Trees Outside of Woodland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Field maple	• Use for planting programmes using species appropriate to soil type, climate and location (use Ecological Site Classification (ESC) profiles). • Collect and cultivate local origin seed in order to preserve and foster local genetic diversity.
Sweet chestnut	See 'Field maple'
Rowan	See 'Field maple'
Yew	See 'Field maple'
Hornbeam	See 'Field maple'
Black poplar	Select damp condition species for creating habitats near ditches and floodplains, linked to wetland creation. Plant specimens following genetic DNA profiling programme established via propagation and clone bank of locally sourced saplings.
Elms	• Plant native clones of Ulmus species that are disease-resistant.
White letter hairstreak	• Control of Dutch Elm Disease.
Golden hoverfly	• Maintain veteran specimens to support associated species. • Protect existing habitat by ensuring that rot holes are available and not filled.
Beech	See 'Golden hoverfly'.

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Table 30c. Trees Outside of Woodland assemblage additional species or groups benefiting from conservation actions

Species	Potential Measures
Other lichens and fungi	• Thin trees selectively to reduce overstocking. • Control regeneration to keep woodlands open, potentially by reintroducing grazing, considering wild herbivore pressure. • Clear dense growth around veteran trees, creating glades across one-third of the area with varied age and size. • Retain trees important for valuable plant and fungi species. • Expand suitable areas for species or plant trees near existing locations for species to boost populations. • Control deer populations, remove grazing animals, limit scrub/ bramble spread, and consider fencing if needed. • Avoid mowing during peak fruiting/flowering and control competing vegetation. • Protect soils in hotspots by avoiding use of fire, fertilisers, and heavy machinery. • Ensure continuity of suitable trees from saplings to veterans through planting or natural regeneration and appropriate management techniques.

Additional species or groups benefiting from conservation actions:

- Other veteran trees
- Bryophytes
- Bats

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

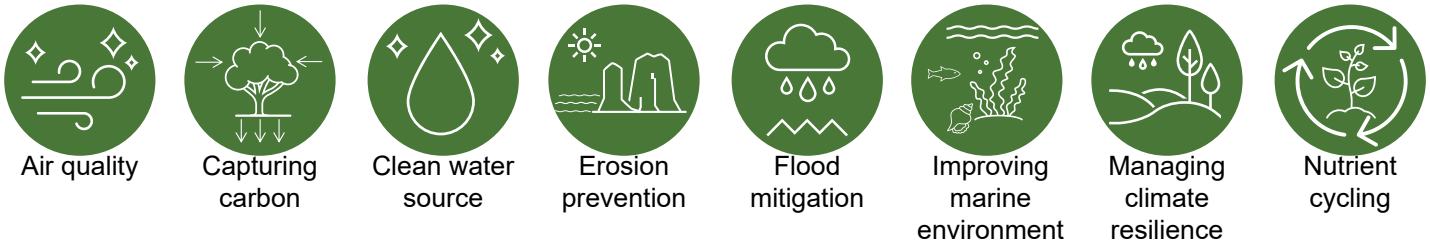
- PM5-6
- PM12-13
- PM50

As well as in the existing APIB where the relevant habitat types occur and as unmapped measures across various locations. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Urban and Built
- Invasive Species and Diseases

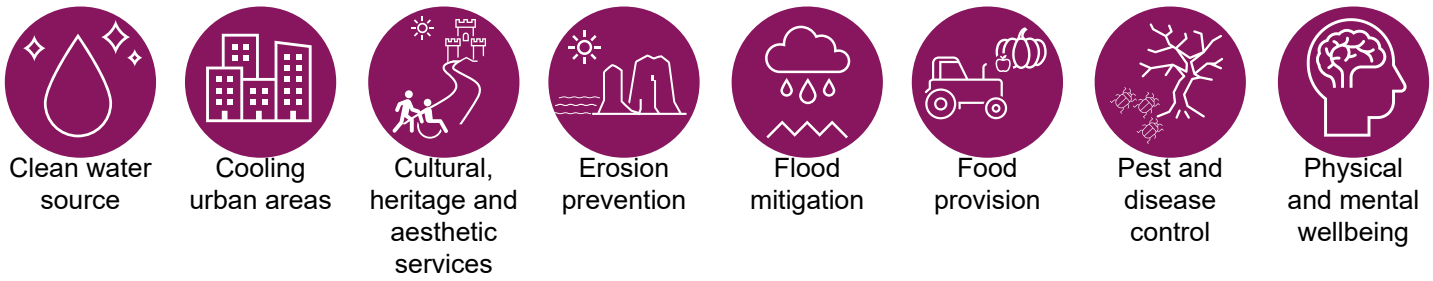
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These measures are considered to support the following wider environmental benefits:





These measures are considered to support the following co-benefits:





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Scrub and Mosaic

Scrub includes all growth stages of native shrubs, from scattered bushes to closed canopy vegetation. Good scrub has a diverse structure with different heights, though it's usually less than 5 metres tall. Scrub and scrub mosaics are valuable in areas dominated by arable land and agriculturally improved grassland, where food and shelter for wildlife are in short supply.



Nightingale
Luscinia megarhynchos

Table 31a. Scrub and Mosaic assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Nightingale *Luscinia megarhynchos*	• Manage scrub habitats to maximise growth at the thicket stage, and include a range of ages and stages of scrub succession. • Cut scrub in reasonable blocks rather than in many small, widely dispersed patches, encouraging dense layers of scrub to develop, including bramble. • Implement appropriate coppicing practices, within appropriate regulations and restrictions, to maintain all stages of the coppice lifecycle within the woodland, with sequentially coppiced coupes adjacent to each other on rotation. • Manage deer populations to sustainable levels to promote a diverse vegetation structure. • Connect existing suitable habitats with tall, thick hedges. • Promote wet woodland restoration via riparian management techniques to enhance invertebrate presence.

Table 31b. Scrub and Mosaic assemblage shortlisted species showing recovery potential

Species	Potential Measures
Red-backed shrike	• Actively create, restore, and manage habitats. • Decrease habitat fragmentation by creating corridors, such as hedgerows, buffer strips, raised banks, and set-aside land, to facilitate species movement. • Enhance recolonisation potential for both species by providing suitable habitats, such as low-input, structurally diverse grasslands, to support healthy populations of prey.
Adder	Maximise connectivity of habitats, maintain and expand range to allow natural colonisation, including scrub cover and dedication hibernation areas. Manage predator threats, reduce recreational disturbance, minimise fire risks, and increase public awareness and appreciation.

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Additional species or groups benefiting from conservation actions:

- Other lichens and fungi
- Bryophytes
- Invertebrates
- Bats
- Small birds, including farmland birds
- Other reptile species, eg grass snake, slow worm and common lizard

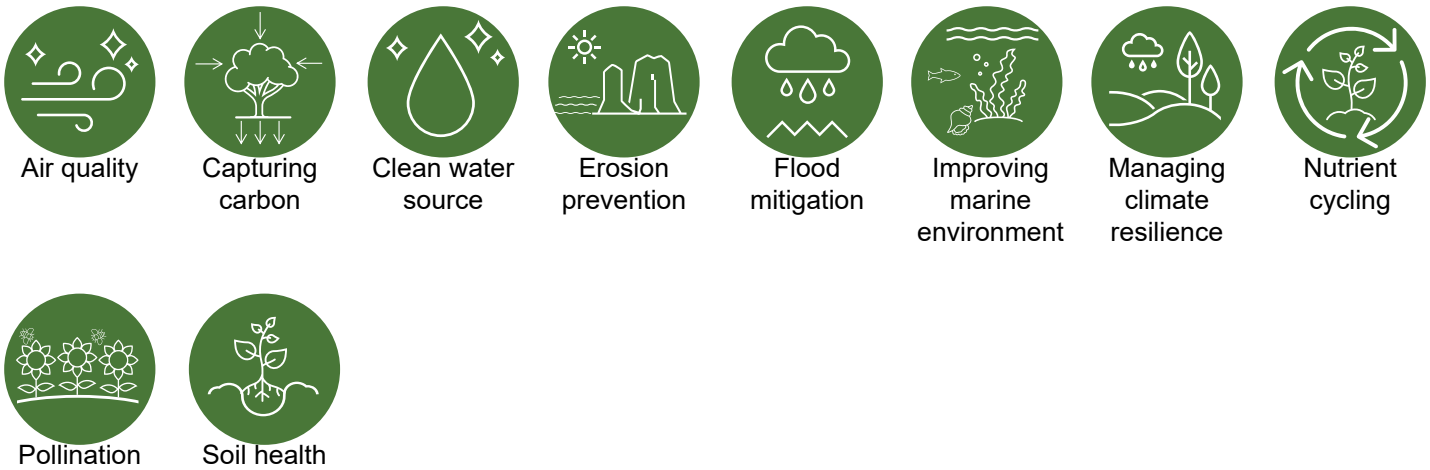
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM07-08
- PM27-28

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species nightingale are identified using the code SPM35. These measures could offer solutions to address pressures in:

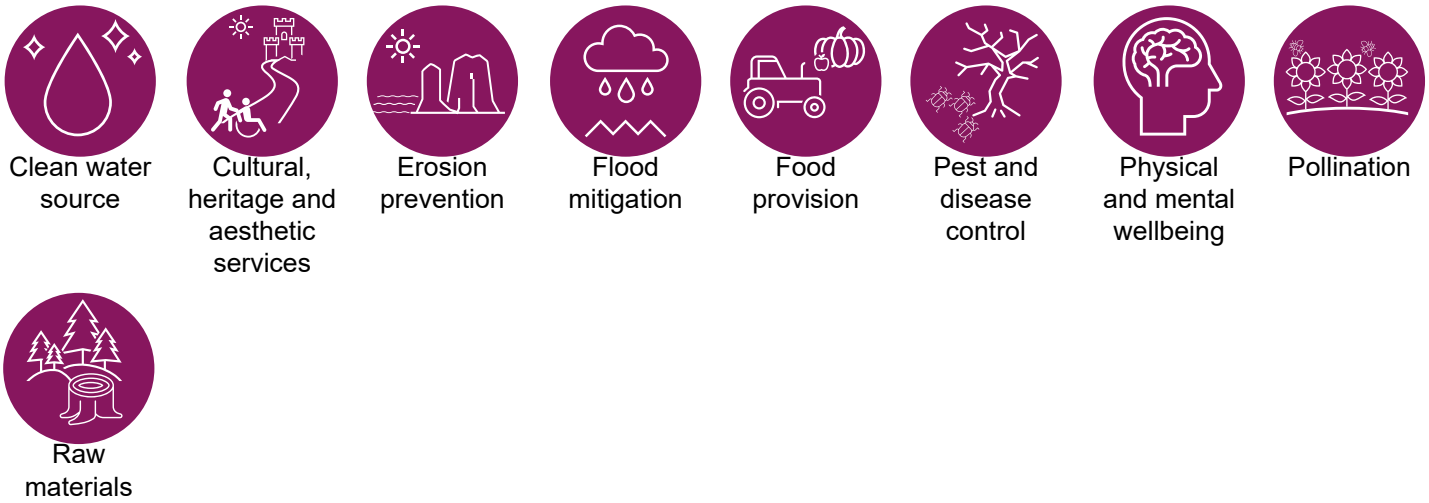
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:



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Still Waters

Lakes, ponds, gravel pits, and reservoirs provide vital habitats for aquatic plants, invertebrates, and animals, supporting biodiversity, enhancing Suffolk's scenic beauty, and offering recreational opportunities.



Great Crested Newt
Triturus cristatus

Table 32a. Still Waters assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Great Crested Newt *Triturus cristatus*	• Create high-quality terrestrial habitats nearby to support foraging and hibernation, including undisturbed areas with deadwood or stones to serve as hibernacula. • Increase connectivity between known metapopulation by providing a range of habitats eg seasonal and permanent ponds, those which are shaded and those which are open • Establish or maintain large, predominantly fish-free ponds, ideally located within 1 km of other ponds suitable for Great Crested Newts. • Ensure ponds have gently sloping entrances to allow easy access for newts and other wildlife. • Refer to appropriate district level licensing schemes

Table 32b. Still Waters assemblage shortlisted species showing recovery potential

Species	Potential Measures
Common toad	Create nearby high-quality terrestrial habitat eg loose soil, leaf litter and rocks or logs.
Ribbon leaved water plantain	• Conduct habitat disturbance (deweeding and desilting) and restore site hydrology. • Re-introduce the species in locations where there is a suitable habitat.
Opposite-leaved pondweed	See 'Ribbon leaved water plantain'.
Zircon reed beetle	• Ensure marginal sedges are present as needed. • Protect sedge-dominated emergent vegetation from excessive disturbance.
Stoneworts	Keep water clean and maintain mineral substrates.
Bewick's swan	Implement land management practices to ensure nearby safe feeding areas on farmland are available.
Whooper swan	See 'Bewick's swan'.
Frogbit	Maintain or improve marsh ditches and pools to create slow-moving, calcareous conditions.
Water-violet	See 'Frogbit'.

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Additional species or groups benefiting from conservation actions:

- Water beetles
- Aquatic macrophytes
- Odonata (dragonflies and damselflies)
- Other amphibians eg smooth newt and frog

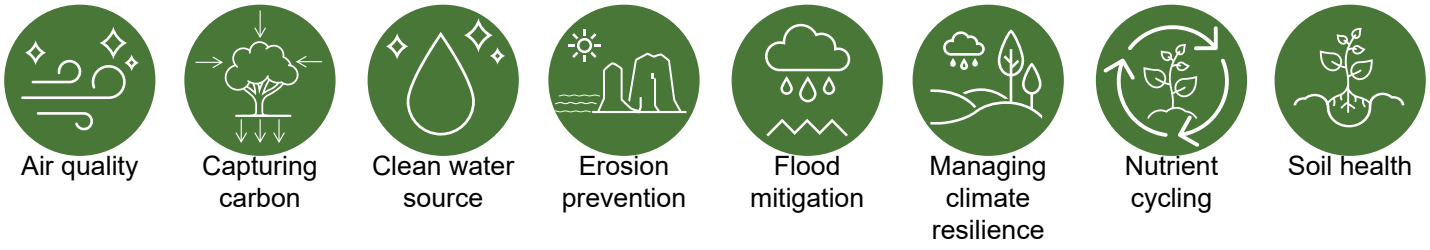
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM31-32

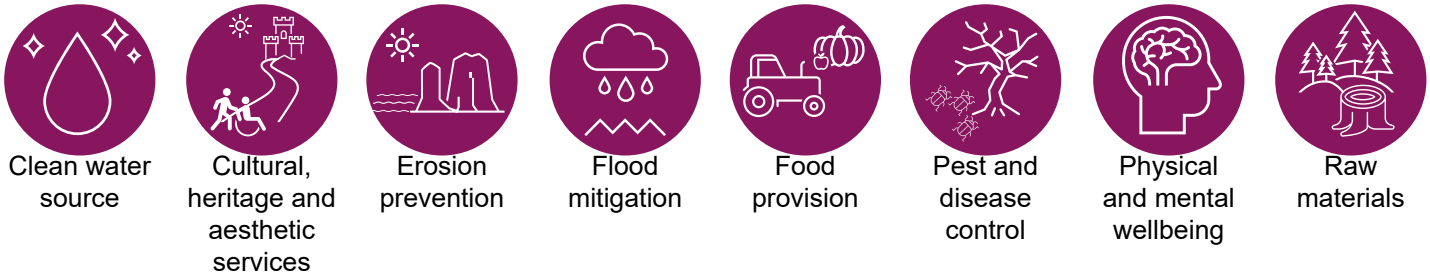
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species great crested newt are identified using the code SPM36. These measures could offer solutions to address pressures in:

- Farmland
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Rivers and Riverside Habitats

Rivers, chalk streams, riparian areas, and floodplains form dynamic ecosystems that support diverse wildlife, act as corridors and aid in water purification, flood management and water quality, benefiting biodiversity and human communities.



Kingfisher
Alcedo atthis

Table 33a. Rivers and Riverside Habitats iconic flagship species indicating habitat health

Species	Potential Measures
Kingfisher *Alcedo atthis*	Improve water quality and create wetland habitat and riparian tree planting.

Table 33b. Rivers and Riverside Habitats assemblage shortlisted species showing recovery potential

Species	Potential Measures
Spined loach	• Employ suitable substrate and vegetation management regimes. • Conduct riparian tree planting to enhance shading of river channels and mitigate the effects of increased temperatures.
Brook lamprey	As above
Depressed river mussel	• Removal of invasive species where possible and implement additional biosecurity measures. Improve overall water quality. • Support the creation of well vegetated water.
Desmoulin's whorl snail	• Enhance calcareous water sources, ensuring the presence of marginal reed grasses and sedges. • Support restoration of hydrology on protected sites.
Beaver	• Follow IUCN guidelines for reintroductions into fenced enclosures, accompanied by long-term monitoring and a management plan. Additionally, follow Natural England guidance for licensing wild release, managing the existing wild beaver populations, and developing long-term management plans for beavers in England. Natural England can issue licences to projects wanting to reintroduce beavers into the wild, where these projects demonstrate clear benefits and where risks can be avoided, mitigated or managed [30]. • Ensure access to freshwater habitats, ideally wooded, slow-flowing, and in broad river valley bottoms. Freshwater areas of sufficient size, with adjacent foraging resources, will support natural restoration of river and wetland ecosystems, aiming to increase habitat diversity.

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Additional species or groups benefiting from conservation actions:

- Molluscs
- Aquatic macrophytes
- Otters
- Water shrews

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM29-30

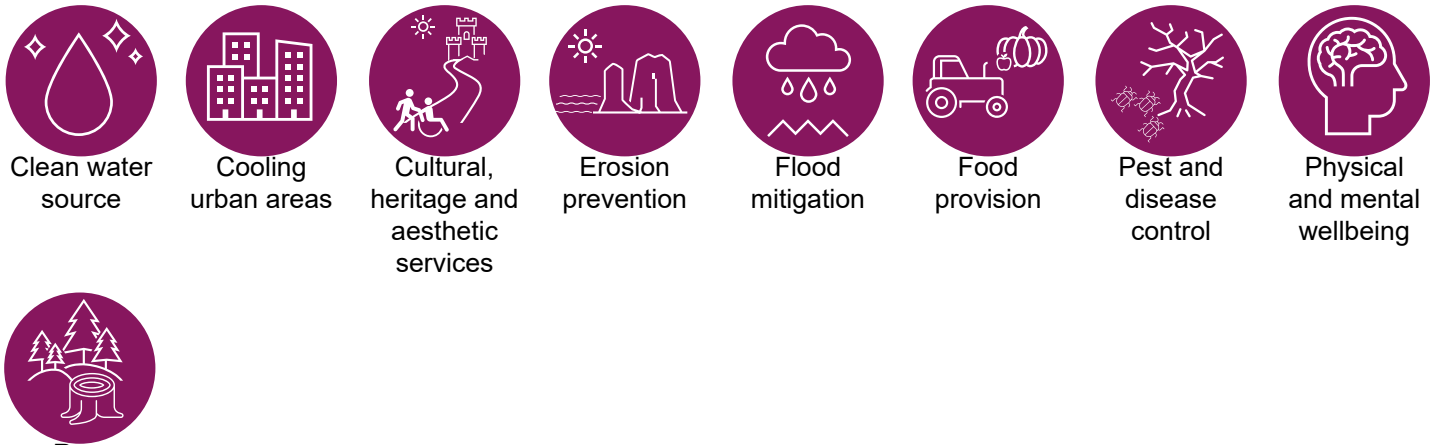
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species kingfisher are identified using the code SPM37. These measures could offer solutions to address pressures in:

- Farmland
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Lowland Fen

Lowland fens, peatlands, river valleys, and fen edges with waterlogged, peat-forming ecosystems support rare plants, birds, and insects. Vital for carbon storage, water purification, and flood control, they are key for biodiversity and ecosystem services.



Fen orchid
Liparis loeselii

Table 34a. Lowland Fen assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Fen orchid *Liparis loeselii*	Restore and create calcareous fens and wet meadows to promote connectivity, incorporating management techniques like disturbance and appropriate cutting and grazing regimes. Reduce numbers and the pressure of deer in fens using sustainable techniques.

Table 34b. Lowland Fen assemblage shortlisted species showing recovery potential

Species	Potential Measures
Marsh fragrant-orchid	See 'Fen orchid', **Table 34a.**
Early marsh orchid (cream flowered form)	See 'Fen orchid', **Table 34a.**
Greater water parsnip	Translocation of appropriate specimens to prepared and appropriately managed areas of habitat incorporating implications of threats of disease
Milk parsley	• See 'Greater water parsnip'. • Protect and maintain current populations from pressures such as poor water quality, trampling, grazing, theft, etc
Fen ragwort	• Manage wetlands and river margins to ensure seasonal flooding and support habitat health. • Reduce numbers and the pressure of Chinese water deer in fens. • Reduce the pressure of increasing winter water levels by implementing flood alleviation measures.
Swallowtail	• See 'Fen ragwort' • Research the potential impacts of sea level rise and increased salinisation on sites where swallowtail are currently found. • Research other potentially suitable habitats and introduction techniques for the larval foodplants. • Research the hybridisation risk of influx and future spread of the gorganus subspecies. • Maximise measures to protect and establish milk parsley due to it being an essential food plant.
Pashford pot beetle	• Lowland Fen and wet heathland habitat creation and restoration. • Translocations of individuals to new sites with suitable habitat if a large population can be found.

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Species	Potential Measures
Devil's bit scabious	Maintenance of fen habitats to prevent shading and promote growth
Hygrolycosa rubrofasciata	For fen and fen carr, maintain water table levels and apply "re-wetting" techniques to enhance spider habitats.
Gongylidiellum murcidum	See '*Hygrolycosa rubrofasciata'.*
Neon valentulus	• Maintain sedge beds by leaving litter in place and managing water levels to support spider habitats. • Maintain open habitat by scrub control through appropriate grazing, mowing, and or removal regimes. • Take all appropriate measure to safeguard and restore natural hydrology (such as internal sluices/dams, infilling channel, and review of abstraction and drainage consents).
Hygrolycosa rubrofasciata	For fen and fen carr, maintain water table levels and apply "re-wetting" techniques to enhance spider habitats.
Gongylidiellum murcidum	• See '*Hygrolycosa rubrofasciata'.* • Restore areas of lowland fen to encourage populations to return to the habitat.
Swollen spire snail	• In appropriate areas, implement appropriate cutting regimes to encourage reed sweetgrass (*Glyceria maxima*) dominance over phragmites. Alternatively, create areas within water treatment system reedbeds where the snail can be translocated to. • Restore areas of lowland fen to encourage populations to return to these habitats.
Fen mason-wasp	• Create and enhance specific habitats, including creating soil banks and south facing slopes, and ensuring areas of bare ground are included. • Sympathetic management of existing water courses and key aquatic plants. • Creation of new water courses to aid connectivity and create larger, more stable populations.
Baryphyma gowerense spider	• Conduct scrub clearance and maintain sedge beds through cutting. • Maintain tussocky vegetation structure of fen vegetation, balancing this need against any requirement for scrub control to maintain open habitat.

Additional species or groups benefiting from conservation actions:

- Fungi
- Orchids

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

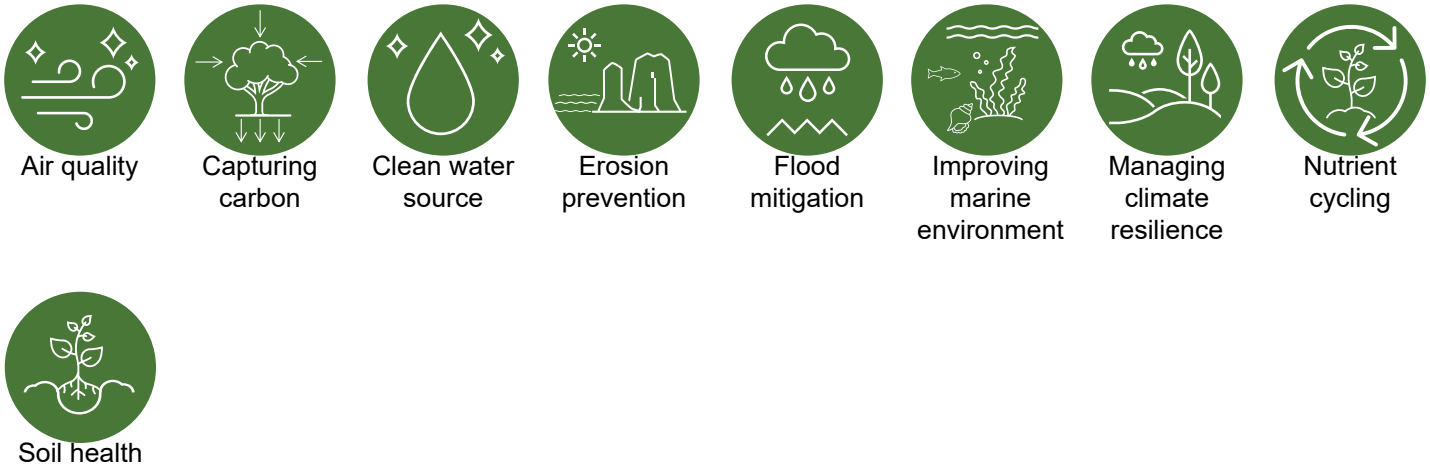
- PM23-26
- PM29-30
- PM33-34

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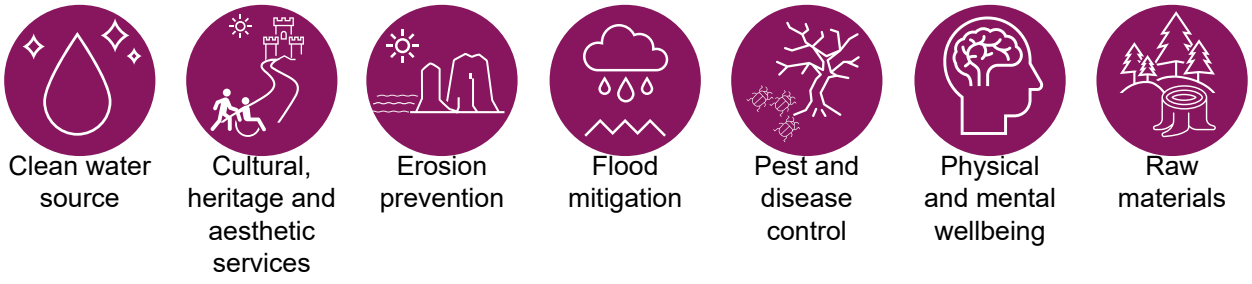
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species fen orchid are identified using the code SPM38. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Chalk Grassland

Suffolk's chalk grasslands, on shallow, chalky soils, support a unique diversity of wildflowers and rare invertebrates. These nutrient-poor habitats foster specialised plant communities, making them a priority for restoration and protection.



Rockrose
Helianthemum nummularium

Table 35a. Chalk Grassland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Rockrose *Helianthemum nummularium*	Appropriate grazing regimes, sustainable agricultural practices, control of scrub and improve and create chalk grassland areas to provide new habitat.

Table 35b. Chalk Grassland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Field gentian	Maintain grassland at a mean height of 3-5 cm, with approximately 5% bare soil at the end of the grazing period; cattle grazing is preferred.
Firedot lichen	• Enhance habitats with ecological research and monitoring to better understand species requirements. • Use improved grazing techniques with traditional breeds, controlled hay-cutting, and scrub clearance.
Spotted cat's-ear	As above
Military orchid	Improve management of road verges, escarpment, old chalk pits, scrub edge and dune slacks on suitable soils.
Man orchid	Manage road verges, escarpments, old chalk pits, limestone quarries, scrub edges, and dune slacks on suitable soils.
Fly orchid	Apply grazing management, excluding livestock during the spring and early summer flowering periods, and consider the existing pressure from wild herbivores.
Juniper	Manage areas to regenerate juniper and associated species by creating scrapes down to bare soil for seed establishment, and exclude rabbits, deer, and sheep from these areas.
Yellow vetchling	Improve management of road verges, waysides, waste ground, railway embankments, docks, sheltered undercliffs on suitable soils.

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Additional species or groups benefiting from conservation actions:

- Horseshoe vetch
- Grassland bee species
- Grassland butterfly species eg Chalkhill blue
- Crickets/grasshoppers
- Other bat species

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

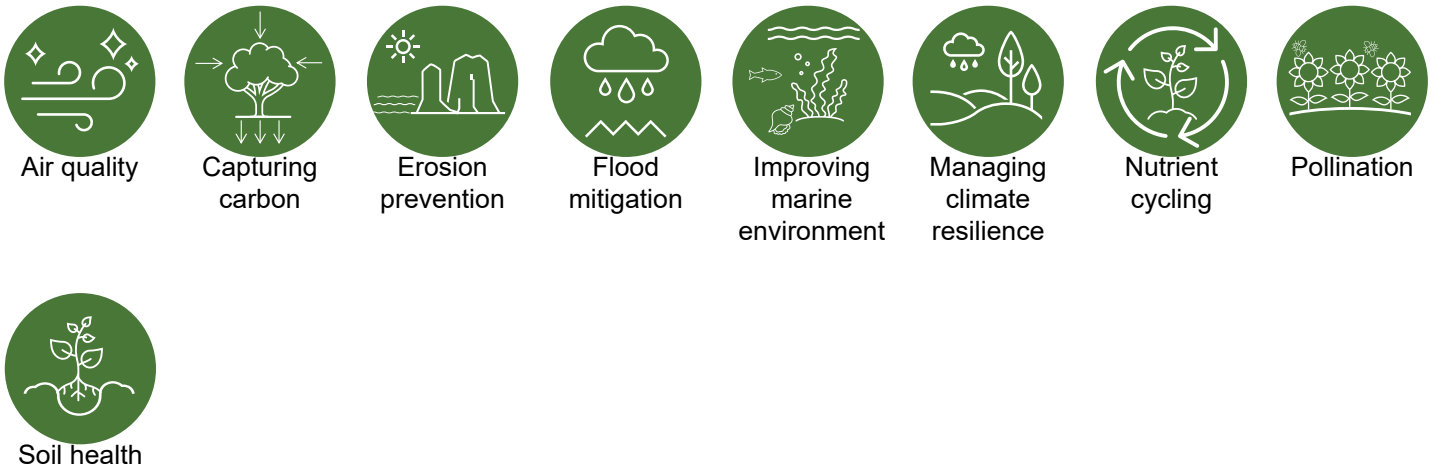
- PM21-22

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species rock-rose are identified using the code SPM39.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:


Cultural, heritage and aesthetic services


Erosion prevention


Flood mitigation


Food provision


Pest and disease control


Physical and mental wellbeing


Pollination

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Brecks Grass Heath

The Brecks open heathlands and sandy soils are home to rare, specialised species like the stone-curlew. This unique, dry, nutrient-poor landscape is culturally and ecologically significant, making it a conservation priority and is the driving force behind the presence of a number of species.



Stone-curlew *Burhinus oedicnemus*

Table 36a. Brecks Grass Heath assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Stone-curlew *Burhinus oedicnemus*	• Key measures within arable habitats are: ○ safeguarding nest sites from agricultural operations ○ creating plots within cereal crops to provide late and early season breeding habitats ○ creating and maintaining cultivated margins to support cover for chicks. • Key measures on existing Brecks grass heath are: ○ predator control ○ reducing recreational disturbance ○ re-establishing semi-natural processes to create ground disturbance through encouraging rabbit populations ○ a range of periodic ground disturbance techniques to create a range of successional stages from bare ground through to closed over turf.

Table 36b. Brecks Grass Heath assemblage shortlisted species showing recovery potential

Species	Potential Measures
Woodlark	In Brecks and forest clearings, restore and maintain a network of open spaces within forestry plantations and connect lowland heaths.
Fingered speedwell	Maintain appropriate arable margins using low-input methods and introduce species where necessary.
Grey carpet	Maintain or improve agri-environment options promoting herb-rich arable margins.
Interrupted brome	Reintroduce in appropriate areas.
Spring speedwell	Use livestock and rabbit grazing to create habitats and disturb soil with low-input arable methods to establish appropriate arable margins.
Prostrate perennial knawel	See 'Spring speedwell'
Bur medick	See 'Spring speedwell'
Seaside pansy	See 'Spring speedwell'
Sand catchfly	Employ favourable grazing regimes and use low-input methods to disturb soil, creating suitable arable margins.

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Species	Potential Measures
Lycoperdina succincta beetle	Recreate connected habitats by applying grazing techniques and removing invasive species.
Verrucaria xyloxena lichen	See '*Lycoperdina succincta* beetle'
Sheet-weaver spider *(Agyneta fuscipalpa)*	• See '*Lycoperdina succincta* beetle'. • Maintain and/or instate rotational areas of broken ground/turf stripping to create patches of persistent bare ground.
Field wormwood/ Breckland mugwort	• In Brecks and open mosaics, maintain open grassland on sandy soil, control grazing regimes, remove invasive species, and increase the population of field wormwood. • Introduce Field wormwood plants cultivated off-site in locations that will link current beetle populations'
Proliferous pink	See 'Field wormwood/Breckland mugwort'
Wormwood moonshiner	See 'Field wormwood/Breckland mugwort'

Additional species or groups benefiting from conservation actions:

- Rock rose
- Horseshoe vetch
- Grassland bee species
- Grassland butterfly species
- Crickets/grasshoppers
- Other bat species
- Eurasian Curlew
- Inland invertebrates who are localised to this area and habitat type

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

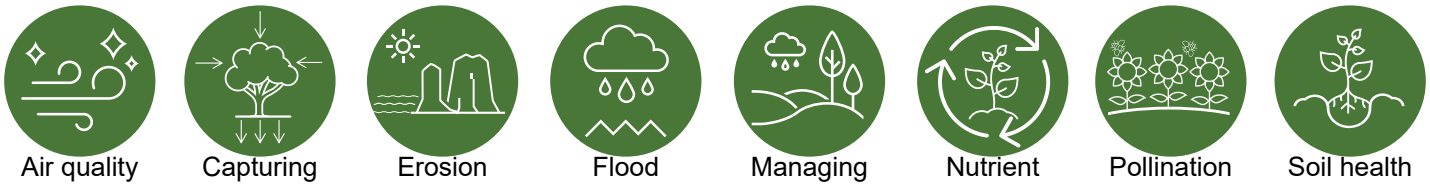
- PM2
- PM7-10
- PM27-28

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species stone curlew are identified using the code SPM40. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

Back to start of section

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Acid Grassland and Heathland

Nutrient-poor acid grasslands and heathlands, with fewer flower species than calcareous grasslands, provide habitats for specialised species like heathland birds and invertebrates. They are crucial for carbon storage, water regulation, and biodiversity across Suffolk's landscapes.



Nightjar
Caprimulgus europaeus

Table 37a. Acid Grassland and Heathland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Nightjar *Caprimulgus europaeus*	• Recreate, manage and restore key heathland habitats, alongside implementation of effective rotational forestry management. • Incorporate recreational disturbance management where appropriate.

Table 37b. Acid Grassland and Heathland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Heath-dog violet	Employ effective habitat control and restoration to create hydrological profile required.
Dolichopus migrans fly	• Open up habitats through management practices like grazing. • Where applicable prevent encroachment of scrub and bracken from areas outside of protected sites (that may not be grazed for instance).
Grayling butterfly	• Improve habitat management by ensuring the inclusion of essential foodplant species. • Restore and enhance habitat patches to help buffer any potential climate change effects and potentially help increase resilience of both coastal and inland populations.
Silver studded blue	• Maintain a mosaic of heathland in different stages, with bare soil and early successional vegetation, including heather, to support populations of symbiotic ants. • Undertake targeted management (scrapes, cutting, small scale burns) across most landscapes where it occurs to restore early successional habitat within existing sites and on new suitable sites.
Cylindrical whorl snail	• Restore appropriate habitats by improving agricultural practices to minimise agrochemical pollutants. • Maintenance of grazing regimes on known sites.
Great sundew	Create new areas of suitable habitat and relocate plants where necessary.
Roundleaf sundew	See 'Great sundew'
Bell heather	Apply appropriate management techniques, such as grazing, cutting, and habitat restoration, to increase the overall area of habitat.

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Additional species or groups benefiting from conservation actions:

- Heathland bee species
- Heathland butterfly species
- Adder
- Common lizard
- Woodlark
- Heathland invertebrates, such as green tiger beetles

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

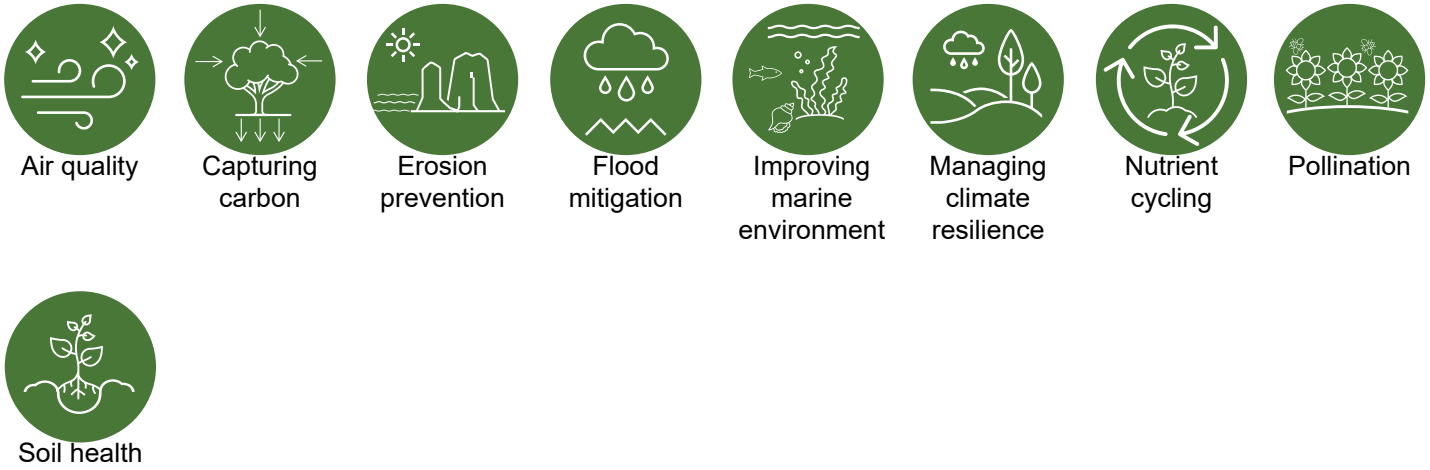
- PM15-18 (where appropriate)

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species nightjar are identified using the code SPM41.

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:


Cultural, heritage and aesthetic services


Erosion prevention


Flood mitigation


Food provision


Pest and disease control


Physical and mental wellbeing


Pollination

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Urban, Built and Garden Environments



Hedgehog
Erinaceus europaeus

Urban green spaces - parks, gardens, and street trees - are vital wildlife refuges that aid nature recovery, improve air quality, and enhance residents' wellbeing.

Table 38a. Urban, Built and Garden Environments assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Hedgehog *Erinaceus europaeus*	• Create quality semi-natural habitats and integrate artificial features in urban, built, and garden areas. • Create edge habitats and habitat buffers. • Add 13x13 cm "hedgehog highways" at fence bases and provide hedgehog houses. • Include undergrowth, shrubs, hedges, deadwood, woodland, and grassland in gardens. • Practice wildlife-friendly gardening with wildflowers and scrub habitats for insects. • Reduce or eliminate artificial fertilisers and pesticides; promote regenerative farming. • Manage garden and park grass to create long grass, short turf, open soil, and tussocks. • Let dense vegetation grow via compost, log, and leaf piles in gardens. • Boost insect numbers and therefore foraging areas with wildflowers, ponds, and less mowing. • Avoid pesticides to support insects; encourage organic, low-herbicide gardening and farming. • Raise awareness of hazards like landscaping injuries, pond drownings, and net entanglements. • Train greenspace managers and landscapers on hazard mitigation, habitat clearance timing, and wildlife-friendly features. • Install small mammal road signs at key roadkill hotspots, especially near town and village speed limits.

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Table 38b. Urban, Built and Garden Environments assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Starling	• See 'Hedgehog'. • Install nest boxes, use building eaves, and preserve nesting sites, including on new build homes and via retro-fitting initiatives within ecologically relevant distances. • Developments should include integrated nest boxes (commonly known as swift bricks) and artificial nest cups for house martins where possible, with the general aim across a development of a minimum of one nest box per unit. • Encourage wildlife gardening for food, roosting, and nesting spaces.
House martin	See 'Starling'.
House sparrow	See 'Starling'.
Swift	See 'Starling'.
Swallow	See 'Starling'.
Greenfinch	See 'Starling'.

Additional species or groups benefiting from conservation actions:

- Heathland bee species
- Heathland butterfly species

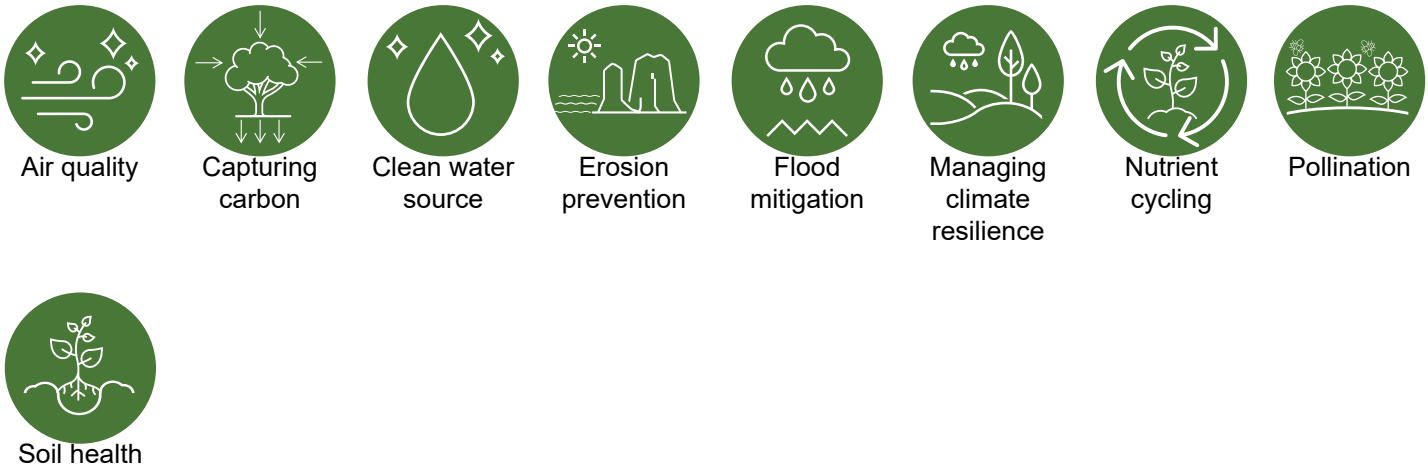
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM01-02
- PM11-14
- PM19-20
- PM27-28
- PM31-32

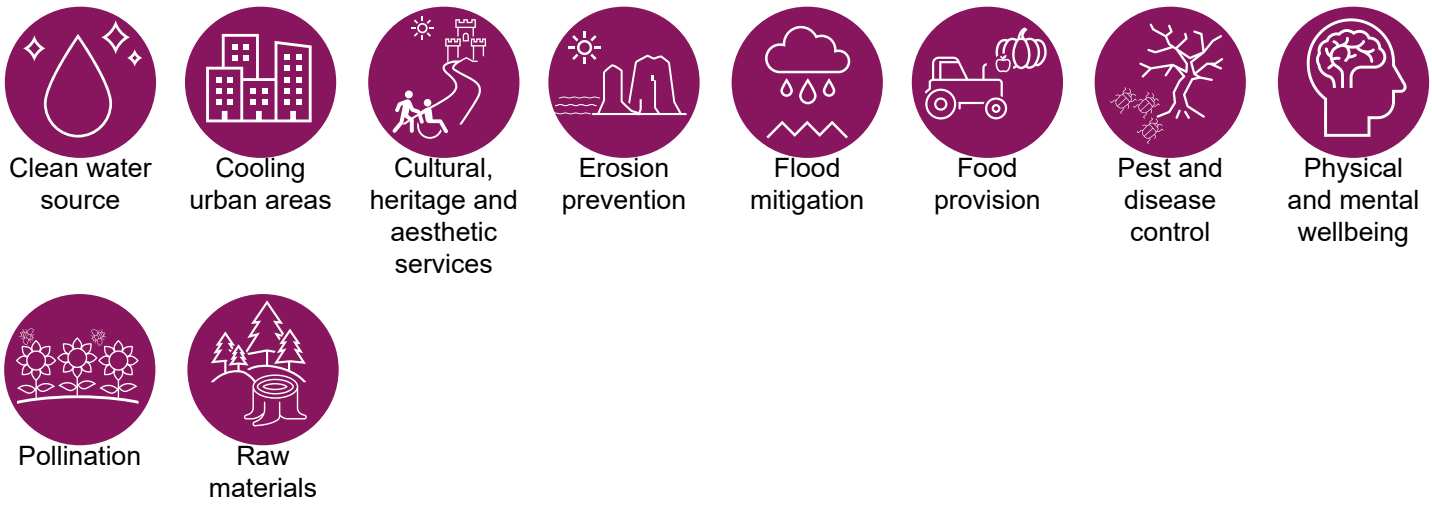
As well as in the existing APIB where the relevant habitat types occur and as unmapped measures across various locations. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Bolstering rare species: Suffolk Native Black Poplar Project

Because of land and timber use changes over the past two centuries, Black Poplars now very rarely naturally regenerate and the species is dependent on human intervention for its survival. There are presently only approximately 150 known clones in the UK, placing it at serious risk from pests and diseases.

The Suffolk Native Black Poplar ('NBP') Project aims to:

- assist in the development and diversification of the existing Dedham Vale NL and Nowton Park NBP clone banks and support the new clone bank at Jimmy's Farm.
- propagate new male and female saplings from cuttings from clone trees
- distribute those saplings county-wide for wetland/riparian planting projects
- update the existing Suffolk Biodiversity Information Service (SBIS) database by (re-)surveying known mature trees and recording newly-discovered and newly-planted trees.

Who's involved?

The lead organisation for the project is the Suffolk Tree Warden Network ('STWN'), which coordinates the clone bank development work, the nursery work for the production of saplings, the distribution of saplings to planting projects, the recording of all new saplings on the SBIS database, and the (re-) surveying of known mature trees.

Key project partners are Dedham Vale NL, West Suffolk Council at Nowton Park, and SBIS, for implementation of project elements. Apart from past partial SCC funding, the project has yet to secure any key funders.

What have they achieved?

The project has, in the 3 years since initiation, grown and distributed over 800 saplings to planting projects across Suffolk.

Project volunteers have also (re-) surveyed more than 40 trees and implemented selected DNA testing via Forest Research to improve the SBIS database.

A black poplar nursery facility has been established at Nowton Park nursery, where volunteers assist in propagation and maintenance. Upgrading and diversification of the clone banks is in hand, which involves significant volunteer engagement.

The Suffolk project has been instrumental in setting up the East Anglian Black Poplar Project; in leading in the establishment of a national Black Poplar project; and in developing a whole genome sequencing project (involving Forest Research, Wellcome Sanger Institute and the University of Udine, Italy) of approx. 200 UK black poplars which will improve understanding of the genetic history and variability of current national black poplar population, in a European-wide context.

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The Black poplar at Butley, Suffolk

How do they do it?

Central to the widespread species reintroduction in wetland/riparian habitats has been engagement.

The project has reached out to private landowners (many through STWN's own marketing presence at public events and through volunteer Tree Warden community engagement), farm clusters, SWT reserves, the National Trust, the EA, the Little Ouse Headwater Project, the River Waveney Trust and other environmental groups.

What's next?

The long-term project aims are to:

- diversify the existing Suffolk clone banks with new clones introduced from across the UK
- establish a permanent dedicated nursery
- identify new clones from continued surveying and DNA testing
- support breeding of new clones by partner organisations (such as Kew).

These aims will require funding to cover costs, and the ongoing support of STWN, Dedham Vale NL, West Suffolk Council at Nowton Park, and SBIS.

Find out more by visiting www.suffolktreewardens.org.uk/community-tree-nursery

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Protecting breeding waders: Trimley Marshes Breeding Wader Project

Wading birds including avocets, redshanks and lapwings nest on the ground and are very vulnerable to predators such as foxes and badgers.

This project involved the installation of 1.2km of permanent in-dyke fencing at Trimley Marshes to protect the eggs, chicks and breeding waders. The new fencing provided a solution to a problem posed by a temporary 9-line electric fence which only provided very limited protection to the wildlife rich lagoons.

Who's involved?

The two main organisations involved are the Suffolk Wildlife Trust (SWT) and the Suffolk & Essex Coast & Heaths National Landscape. SWT own and manage the Trimley Marshes Nature Reserve and the SECHNL secured £29,256 from the Farming In Protected Landscapes fund to pay for the work.

What have they achieved?

1.2km of permanent in-dyke fencing was successfully installed. A suite of habitat creation and restoration work was also successfully carried out:

- 1km of new foot drain habitat was created and restored.
- 2km of dyke habitat was restored.
- 2 outlets were restored.
- 2 breeding wader islands were created.
- 1 breeding wader island was reprofiled.

This will significantly help to provide breeding and feeding opportunities for key target wader species such as redshank, lapwing and avocet. It will also help wintering waterfowl such as wigeon and teal.

The restored habitat will also help tackle climate change through carbon sequestration and storage.



Wetland creation, Trimley Marshes

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Wetland creation, Trimley Marshes

How did they do it?

The new 1.2km fence is made of high-tensile netting installed on a Versalok post system with metal strainers, turners, and intermediate posts. The straining posts are box-type, with intermediate posts measuring 2.7m and strainers and turners at 3.3m.

The fence was built at the base of the slope, partially in the water, with slight angle turns to keep it in shallow areas of the dyke for easier installation.

A vibrating head on a 5-tonne tracked excavator drove the posts, and the netting was positioned at a height to ensure a stock-proof barrier.

What's next?

Regular bird surveys will be conducted by reserve staff and volunteers to monitor any changes in breeding and wintering bird numbers.

The site is also being used as a demonstration site to show other landowners and nature reserve managers the benefits of anti-predator fencing and habitat creation work.

Find out more by visiting the Trimley Marshes case study on the Suffolk & Essex Coast & Heaths website.

Key species

The LNRS prioritisation process identified 21 key species representing Suffolk's most pressing conservation needs. These include mammals, reptiles and amphibians, fish, lichens and fungi, vascular and non-vascular plants, invertebrates and birds. Species represented inhabit all areas of the county, both rural and urban. Collaboration with biodiversity experts and stakeholders ensured a balanced selection across taxonomic groups while reflecting public priorities.

Other organisations and partnership members may produce their own priority species lists, for example Buglife's Important Invertebrate Areas or Plantlife's Important Plant Areas, which may also be a source of reference for stakeholders.

Below, each species is showcased with profiles outlining conservation measures, habitats and broader ecological benefits. This highlights the interdependence of species and habitats, offering a roadmap for action to safeguard Suffolk's natural heritage.

Each of these species is profiled in this section (**Table 39-59**), detailing their primary conservation measures, suitable habitats and the broader biodiversity benefits of their protection. Within the profile, the most relevant habitat measures that have been mapped within the Local Habitat Map are indicated. Relevant habitat measures that overlap with areas where there are species records have been indicated in the mapping with a relevant species code (for example SPM01). This is intended to highlight areas where nature-recovery actions could support these species, however the final decision making processes on any intended work must involve specific assessment of the detailed ecological requirements and bespoke conservation needs. The identified areas for species are intended to link the habitat-based measures to areas with known species distributions (see **Figure 11 and 12**). This process is designed to represent an opportunity for nature recovery in the right places, whilst taking into account the sensitivity of vulnerable areas and species. However, it does not represent and must not replace suitability modelling of individual species requirements.

The 21 key species for Suffolk are:

- Bark sulphur firedot
- Basil-thyme case-bearer
- Crested cow-wheat
- Dwarf eelgrass
- Eurasian curlew
- European eel
- Fen raft spider
- Hazel dormouse
- Kittiwake
- Lapwing
- Little whirlpool ramshorn snail
- Narrow-mouthed whorl snail
- Orange-fruited elm lichen
- Rossers sac spider
- Scarce vapourer
- Serotine bat
- Starlet sea anemone
- Suffolk lungwort
- Tassel stonewort
- Water vole
- White-clawed crayfish

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Bark-sulphur firedot

Caloplaca flavorubescens



Bark-sulphur firedot can be found on *Fraxinus wayside* and parkland trees, particularly in limestone areas, and *Populus tremula*.

Table 39a. Bark-sulphur firedot primary measure

Primary measure	Primary measure detail
Habitat enhancement	Manage existing mature trees to provide the next generation of veterans - such as Sycamore, Norway Maple, Sallows, Hazel, Aspen and Field Maple (as appropriate to the location). Alternatively, plant suitable host tree species and encourage the planting / replacement of pasture and wayside trees to ensure continuity of suitable habitat. Planting regimes should follow ESC profiles.

Table 39b. Bark-sulphur firedot other relevant measures

Other relevant measures	Other relevant measures detail
Species-specific action	Mitigate ash-dieback impact. Ensure veteran ash trees are not felled even if infected (evidence suggests that old ash trees die more slowly) and provide ongoing sympathetic management for any infected hosts.
Land management advice and techniques	Ensure existing/potential host trees are kept free of scrub and ivy.
Pollution reduction & mitigation	Ensure wayside trees are kept free of fertilisers, manure and slurry through the implementation of agri-environment schemes.

These measures could also offer solutions to address pressures in these habitats:

- Farmland
- Woodland
- Trees and Scrub
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Trees outside of woodland
- Native Woodland
- Farmed Landscapes

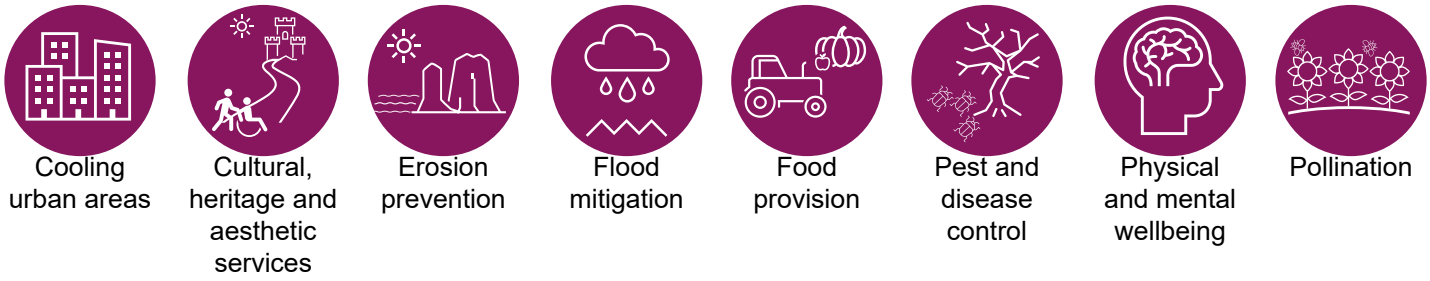
The mapped measures for wood pasture and parkland [PM05-06], with appropriate tree species, are potentially relevant for bark-sulphur firedot.

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These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:





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Basil-thyme case-bearer

Coleophora tricolor



This species of moth is a Brecks specialist, unknown anywhere outside of the Brecks. Basil-thyme, the sole food source of the basil-thyme case-bearer, thrives in ruderal areas and sparsely vegetated ground. It is commonly found on unimproved Breck grassland where open conditions support its growth. Additional habitats include disused airfields with cracking hard surfaces and the edges of tracks and rides within conifer plantations established on former heathland.

Table 40a. Basil-thyme case-bearer primary measure

Primary measure	Primary measure detail
Habitat Management	• Large areas of land and connected populations are likely required for the species and its foodplant. • Promote early successional stages to encourage the foodplant, with limited ground disturbance (eg rotovation).

Table 40b. Basil-thyme case-bearer other relevant measures

Other relevant measures	Other relevant measures detail
Grazing Control	Manage sheep and rabbit grazing, as well as deer access, in areas where the foodplant is present to prevent overgrazing.
Ground Disturbance	Expand the creation of disturbed bare ground strips using a harrow to break up soil and reduce dense grass along forest corridors and rides.

These measures could also offer solutions to address pressures in these habitats:
- Farmland
- Grassland and Heathlands

Other linked assemblages that would benefit from these measures are:
- Brecks Grass Heath
- Acid grassland and heathland

The mapped measures for Calcareous grassland [PM21-22], especially linked to foodplant records, are potentially relevant for Basil-thyme case-bearer. Specific habitat measures relevant to this species are identified on the LHM as SPM02.

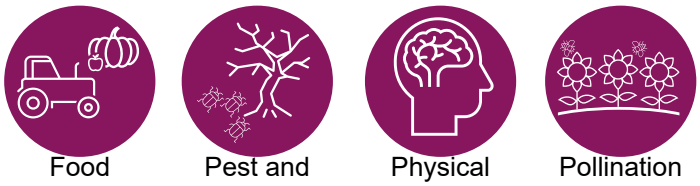
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These measures are considered to support the following wider environmental benefits:



Air quality | Managing climate resilience | Nutrient cycling | Pollination | Soil health

These measures are considered to support the following co-benefits:



Food provision | Pest and disease control | Physical and mental wellbeing | Pollination

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Crested cow-wheat

Melampyrum cristatum



The suitable habitats for Crested cow-wheat are margins, rides, and glades within ancient oak woodland, as well as associated field hedgebanks and scrubby roadside verges.

Table 41a. Crested cow-wheat primary measure

Primary measure	Measure detail
Species-Specific Action	• Maintain appropriate woodland habitats through keeping rides and glades open. • Implement road verge management, ensuring arisings are removed, re-introducing specimens where appropriate on suitable soils. • Prevent spray drift onto potentially suitable habitat near populations.

Table 41b. Crested cow-wheat other relevant measures

Other relevant measures	Measure detail
Habitat Creation, Expansion, and Connectivity	Expand woodlands to reconnect fragmented sites and increase suitable habitat by translocation through seed or the use of green hay.

These measures could offer solutions to address pressures in:
- Farmland
- Woodland
- Trees and Scrub

Other linked assemblages that would benefit from these measures are:
- Native Woodland
- Trees out of woodland
- Farmed landscapes

The mapped measures for Arable Field Margins [PM09-10] and roadside verges [PM 19 - 20] are potentially relevant for Crested cow-wheat. Specific habitat measures relevant to this species are identified on the LHM as SPM04.

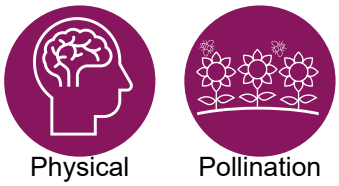
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These measures are considered to support the following wider environmental benefits:



Air quality | Capturing carbon | Managing climate resilience | Nutrient cycling | Pollination | Soil health

These measures are considered to support the following co-benefits:



Physical and mental wellbeing | Pollination

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Dwarf eelgrass

Zostera noltei



Dwarf eelgrass is typically found in shallow marine environments on intertidal mudflats. These habitats are characterised by brackish or fully saline waters, often in sheltered coastal locations.

Table 42a. Dwarf eelgrass primary measure

Primary measure	Primary measure detail
Relocation and Replanting Projects	• Collect eelgrass seeds from healthy populations, ensuring permits and permissions are in place. • Prepare and propagate seeds before planting directly into restoration sites using appropriate methods. • Monitor and maintain planted populations to ensure successful establishment.

Table 42b. Dwarf eelgrass other relevant measures

Other relevant measures	Other relevant measures detail
Sustainable Farming Practices	Manage grazing, mowing, fertiliser, pesticide, and slurry use. Implement buffer zones and improve planting to minimise impacts from freshwater inputs and terrestrial run-off, reducing sedimentation.
Water Pollution Reduction and Mitigation	• Implement measures to reduce urban and industrial pollutants entering coastal waters, eg use of buffer strips to reduce agricultural run off, improve stormwater management, increase water quality testing to monitor levels. • Focus on reducing sedimentation from coastal erosion to protect sensitive habitats – this can be achieved via soft engineering using sand nourishment and sandscaping.
Recreational Disturbance Reduction and Mitigation	• Strategically deploy eco-moorings to minimise human disturbance in sensitive areas. • Access management. • Engagement with both bait diggers and watercraft users such as boat users, kayakers and paddleboarders.
Fisheries Management	• Reduce pump-scoop fishing in vulnerable locations. • Promote plans to reduce sedimentation caused by coastal engineering and dredging activities eg via alternative sustainable methods and infrastructure.

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These measures could offer solutions to address pressures in:

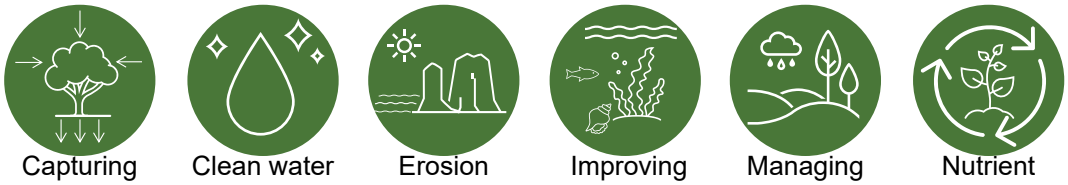
- Freshwater
- Coastal

Other linked assemblages that would benefit from these measures are:

- Saltmarshes and Lagoons

The mapped measures for Saltmarsh and Mudflat [PM37-40] are potentially relevant for Dwarf eelgrass where they align with appropriate intertidal zone areas. Specific habitat measures relevant to this species are identified on the LHM as SPM05.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Eurasian curlew

Numenius arquata



Eurasian curlew are found in open lowland environments. Breeding populations are confined to the Brecks dry acid grassland and heathland. Freshwater wetland areas and lowland measures and pastures are used for feeding habitats, throughout the year, alongside coastal habitats and farmland for wintering areas.

Table 43a: Eurasian curlew measures

Primary measure	Measure detail
Habitat Creation and Restoration	• Address habitat loss from land use changes, drainage, and degradation by creating and expanding Brecks grass heath habitats suitable for year-round foraging activity and wet habitats, suitable for nesting adults, eggs,and chicks. Winter foraging areas may also be utilised by curlew as suitable breeding areas. • Recreational disturbance management

Table 43b. Eurasian curlew other relevant measures

Other relevant measures	Measure detail
Nest Protection	Employ measures like electric fencing and emerging technologies to protect nests and improve the success rate of hatching chicks.
Predator Management	Manage problematic species (including invasive non-native species, pests, and diseases). Predation impacts vary depending on habitat quality, configuration, and other factors; trial methods should focus on reducing predation impacts and actively protecting nests.
Sustainable Farming Practices	Reduce pressures by managing grazing, mowing, fertiliser, pesticide, and slurry application. Employ appropriate agri-environment scheme designs and promote the adoption of relevant prescriptions in suitable areas.

These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Reedbeds and Freshwater Wetlands
- Lowland Meadows and Pasture
- Farmed Landscapes

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The mapped measures for breeding in dry habitats of heathland [PM15-18] and wet grassland habitats for foraging [PM25-26] are potentially relevant for Eurasian curlew. Specific habitat measures relevant to this species are identified on the LHM as SPM06.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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European eel

Anguilla anguilla



European eel inhabits rivers, chalk rivers, active shingle rivers, saline lagoons, saltmarshes, intertidal mudflats, coastal floodplains, and marine environments. Born in the marine environment, they migrate into rivers and wetland habitats to mature into adulthood. The species requires good water quality and clear migratory routes along rivers. Primarily nocturnal, they spend the day hidden, buried in mud, or sheltering under logs and rocks within the water.

Table 44a. European eel primary measure

Primary measure	Primary measure detail
Habitat Creation, Expansion, and Improved Connectivity	Remove barriers where possible. Where barriers cannot be removed, eel pass installations or nature-like fish passes should be considered to provide access to upstream habitats.

Table 44b. European eel other relevant measures

Other relevant measure	Other relevant measures detail
Habitat Restoration and Enhancement	Improve the quality and quantity of refuge and foraging habitats to increase survival rates. In rivers, promote protective elver cover, such as bankside tree cover, tree roots, and woody debris, through rewilding techniques. Restoration measures that reinstate the natural river channel form (such as re-meandering) are beneficial. In lakes, focus on reinstating marginal woody debris and bankside vegetation.

These measures could offer solutions to address pressures in:

- Freshwater
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Rivers and Riverside Habitats
- Saltmarshes and Lagoons

The mapped measures for Riparian habitat connecting to saltmarshes and marine environments [PM29-30, 37-40] are potentially relevant for European eel, where appropriate. Specific habitat measures relevant to this species are identified on the LHM as SPM07.

These measures are considered to support the following wider environmental benefits:



Capturing carbon | Clean water source | Erosion prevention | Flood mitigation | Improving marine environment | Managing climate resilience | Nutrient cycling

These measures are considered to support the following co-benefits:



Clean water source | Cultural, heritage and aesthetic services | Erosion prevention | Flood mitigation | Physical and mental wellbeing

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Fen raft spider

Dolomedes plantarius



Fen raft spiders rely on saw-sedge (Cladium mariscus), particularly around small pools formed in old peat cuttings. (Pools dominated by fine-leaved grasses such as Molinia are not favoured. Young spiders hatching in early summer likely mature the following year, while those hatching in late summer typically spend two winters as juveniles).

Table 45a. Fen raft spider primary measure

Primary measure	Primary measure detail
Population Establishment	Continue establishing new populations and implement translocation to suitable sites.

Table 45b. Fen raft spider other relevant measures

Other relevant measures	Other relevant measures detail
Habitat Restoration	Restore arable farmland to fen and grazing marshes around ancient fen remnants, creating new habitat to support species recovery.
Incorporate Key Vegetation	Include water soldiers (Stratoides aloides) in management plans to enhance feeding and nesting opportunities. Need to balance the water soldiers presence with native flora and take caution over its introduction into new sites

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

- Still Waters
- Reedbeds and Freshwater Wetlands
- Lowland Fen

The mapped measures for appropriate fresh and still water habitats [PM45-48; 49-52; 54-55; 57-59] are potentially relevant for Fen raft spider. Specific habitat measures relevant to this species are identified on the LHM as SPM08.

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These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Hazel dormouse

Muscardinus avellanarius



New growth woodland is the preferred habitat for hazel dormouse. They have a preference for coppice woodland, or woodland managed through ride widening or thinning. The species can also be found in scrub and hedgerows. Deciduous woodland with well-developed shrub layer, overgrown hedgerows, scrub and plantations where the shrub layer is suitable.

Table 46a. Hazel dormouse primary measure

Primary measure	Primary measure detail
Habitat Restoration and Enhancement: Connect Habitats	Over the past two decades, numerous projects have sought to restore dormouse habitat and to connect fragments of habitats that are isolated. Targeted habitat management includes: • bring woodlands into appropriate management, such as coppicing • manage the canopy to reduce understory shading • control deer populations to sustainable levels to reduce browsing pressure • facilitate the development of a connected, shrub species rich and structurally complex, woodland understory • increase permeability in the urban and wider environment, for example green bridges, suitable underpasses • bring hedgerows into lifecycle management including periodic rejuvenation • establish more hedgerow trees • establish species rich hedgerows • 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 ensures another lifecycle • promote the importance of field margins to maximise their benefits for terrestrial mammals • promote reduced, targeted and responsible use of pesticides and herbicides • coppicing roadside diverse scrub verges on long rotations (10-15 years) increases suitability of habitat for dormice • new road developments should aim to establish a diverse roadside wooded habitat, particularly if the road is adjacent to suitable dormouse habitat or dormouse records exist within the area • allow hedgerows to spread into field margins, establishing wider corridors of scrubby habitat connecting woodlands.

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Table 46b. Hazel dormouse other relevant measures

Other relevant measures	Other relevant measures detail
Species-specific action: Support for reintroduction	Follow a planned programme for reintroduction to improve genetic diversity; dormice are released at two or more sites in close proximity, so that populations can bolster each other.
Species-specific action: Managing woodlands for dormice.	• Selective felling, coppicing and ride management to increase the extent, diversity and connectivity of understory in woodlands. Maintain and improve woodland rides and woodland edges by opening the canopy, to limit over-shading • Sustainable management of deer populations, which can inhibit understory development due to browsing. • Hazel layering, which can create excellent woodland understorey habit.

These measures could offer solutions to address pressures in:
- Farmland
- Woodland
- Trees and Scrub

Other linked assemblages that would benefit from these measures are:
- Native Woodland
- Trees Outside of Woodlands
- Farmed Landscapes

The mapped measures for appropriate woodland and hedgerow habitats [PM01-02; 11-12], maximising connectivity, are potentially relevant for hazel dormouse. Specific habitat measures relevant to this species are identified on the LHM as SPM09.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Kittiwake

Rissa tridactyla



Kittiwake nests on maritime cliffs and buildings close to the coast.

Table 47a. Kittiwake primary measure

Primary measure	Primary measure detail
Species Specific Action	• Build purpose-built structures in coastal locations (in close proximity to existing colonies) on which birds can nest (aka 'kittiwake hotels'). Continue to investigate the efficacy and potential of these structures. • In urban locations, work with local communities to preserve historic nest sites and sub-colonies; recognise the high value of these as favoured breeding locations and existing epicentres of colony growth.

Table 47b. Kittiwake other relevant measures

Other relevant measures	Other relevant measures detail
Air pollution reduction & mitigation and offshore wind turbines or tidal energy projects - energy infrastructure	Enhance habitats important for kittiwakes (using the SeaMaST tool for example) and build on the compensation measures being implemented for offshore wind farm developments.
Removing conflict within habitats	Minimise disturbance of birds breeding in urban environments and discourage the use of inappropriate and harmful deterrents by building owners. Where there are conflicts of interest, encourage building owners to consult with the local authority.
Fisheries Management	• Where possible within the scope of the LNRS, protect important populations of sand eels, clupeids (sprat and herring) from over exploitation.* • Encourage and contribute to research on food availability pressures acting on local populations, especially in relation to climate change.

These measures could offer solutions to address pressures in:

- Coastal

Other linked assemblages that would benefit from these measures are:

- Coastal Shingle and Dunes
- Urban and Built Environment

*This can be supported by similar measures offshore, which would be considered outside of the scope of the current LNRS.

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These measures are considered to support the following wider environmental benefits:



Erosion prevention

Improving marine environment

Managing climate resilience

Nutrient cycling

These measures are considered to support the following co-benefits:



Erosion prevention

Food provision

Physical and mental wellbeing

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Lapwing

Vanellus vanellus



Breeding lapwing in England prefer wet grasslands, marshes, and farmland with short vegetation for nesting and foraging, including areas with spring crops, cultivated exposed soil, or sparse heathland grassland. In marginal upland areas, they use short, wet, unimproved grassland or pasture.

Table 48a. Lapwing primary measure

Primary measure	Primary measure detail
Sustainable Farming Practices to Reduce Pressures	• Manage grazing, mowing, fertiliser use, pesticides, slurry, and buffers in a way that provides suitable nesting/feeding habitat and reduces disturbance or the destruction of nests. • Implement agri-environment schemes tailored to meet breeding Lapwing requirements at an appropriate scale. Actions include: ○ creation of Lapwing plots in arable fields ○ growing spring cereals instead of autumn cereals ○ delaying or adjusting mowing, grazing, or crop cultivation timings ○ restoring wet grassland features and habitats (such as scrapes and footdrains) and instigating suitable water level management regimes ○ maintaining short swards on wet pastures through grazing and cutting regimes outside of the breeding season ○ investigate a range of measures to reduce predation of breeding birds. • Additional considerations: ○ ensure field operations do not destroy or remove nests ○ create bare ground patches across landscapes during autumn and winter for nesting and feeding ○ minimise or avoid cattle grazing between mid-March and May to prevent nest trampling. ○ Recreational disturbance management ○ Monitoring of invertebrate food may be required in areas where there is poor productivity to inform management adjustments that may be required to support Lapwing and other breeding waders. ○ Ensure that active planting of trees close to areas supporting or with potential to support Lapwing is avoided.

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Table 48b. Lapwing other relevant measures

Other relevant measures	Other relevant measures detail
Maintenance of Existing Habitat	Protect habitats within areas around protected sites, ensuring the conservation of vital wintering sites.
Arable, Grassland, and Wetland Expansion	Maintain and expand wetland and grassland habitats through targeted recreation schemes for wetland birds, ensuring their functionality as core conservation areas.
Predator Management	Manage problematic species (including invasive non-native species, pests, and diseases). Predation impacts vary depending on habitat quality, configuration, and other factors; trial methods should focus on reducing predation impacts and actively protecting nests.

These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands

Other linked assemblages that would benefit from these measures are:

- Farmed Landscapes
- Reedbeds and Freshwater Wetlands
- Lowland Meadows and Pasture

The mapped measures for Wet grassland measures and appropriate farmed landscape actions, including unmapped measures [PM25-26] are potentially relevant for lapwing. Specific habitat measures relevant to this species are identified on the LHM as SPM12.

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:


Cultural, heritage and aesthetic services


Flood mitigation


Food provision


Physical and mental wellbeing


Raw materials

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Little whirlpool ramshorn snail

Anisus vorticulus



Little whirlpool ramshorn snail is found in coastal floodplains, lowland fens, and ponds with high water quality, fen vegetation, and stable water levels. Prefers drainage channels in traditionally managed grazing marshes with a high diversity of aquatic plants at late successional stages. Thrives in unpolluted, calcareous waters within marsh drains that support dense aquatic flora and favours ditches with diverse flora but minimal emergent vegetation.

Table 49a. Little whirlpool ramshorn snail measures

Primary measure	Primary measure detail
Habitat Creation and Existing Population Management	• Create new habitats, including ditch systems, and remove fish species such as carp that increase turbidity. These areas must be calcareous and unpolluted water sources. • Specific protocols must be followed to manage occupied ditches eg remedial management and trimming waterside vegetation, and a licence obtained due to European Protected Species status

Table 49b. Little whirlpool ramshorn snail other relevant measures

Other relevant measures	Other relevant measures detail
Population Establishment	Establish additional populations within large wetland ecosystems, including through translocation.
Agricultural Management	• Manage drainage and irrigation operations and associated infrastructure to minimise impacts. • Reduce diffuse pollution entering surface or groundwater from agricultural activities.
Transport Impact Reduction	Mitigate the impacts of transport operations and infrastructure on surrounding ecosystems, aiming to manage and divert run off to minimise impacts on ditches alongside routes. Examples include installation of buffer strips, barriers, silt traps, increased planting of appropriate species and bund creation.

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These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

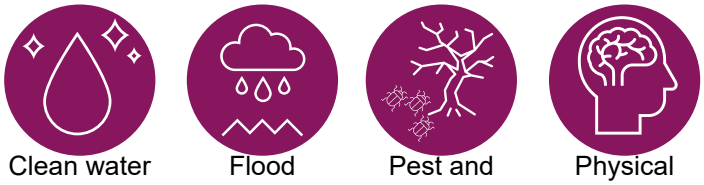
- Still waters
- Reedbeds and Freshwater Wetlands
- Lowland Fen

The mapped measures for wet grassland [PM25-26] and appropriate river and ditch habitat measures [PM29] are potentially relevant for Little whirlpool ramshorn snail. Specific habitat measures relevant to this species are identified on the LHM as SPM14.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Narrow-mouthed whorl snail

Vertigo angustior



Narrow-mouthed whorl snails are typically found in calcareous wetlands bordering lakes, rivers, or fens, with calcareous fen being the species' most common habitat. Due to its specific microhabitat requirements, the species is often confined to a narrow zone around wetlands, spanning only a few metres in width.

Table 50a. Narrow-mouthed whorl snail primary measure

Primary Measure	Primary measure detail
Habitat Improvement	Prevent afforestation to maintain open habitat conditions suitable for the species.

Table 50b. Narrow-mouthed whorl snail other relevant measures

Other Relevant Measures	Other relevant measures detail
Habitat Maintenance	• Avoid drainage and implement re-wetting strategies to preserve wetland areas. • Use controlled grazing techniques to manage vegetation and sustain habitat quality.
Water Pollution Mitigation	• Address eutrophication, a primary threat to the species, which degrades water quality in coastal seepages. Reduce nutrient runoff to prevent further deterioration.

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

- Still waters
- Reedbeds and Freshwater Wetlands
- Rivers and riverside habitats
- Lowland Fen

The mapped measures for unmanaged habitat including wet grassland [PM25-26], fen and wetland [PM33-34] alongside coastal ditches [PM37-38] are potentially relevant for narrow-mouthed whorl snail. Specific habitat measures relevant to this species are identified on the LHM as SPM15.

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These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Orange-fruited elm lichen

Cerothallia luteoalba/Gyalolechia flavorubescens



Orange-fruited elm lichen is a species associated with well-lit, dry trees with rough, basic bark. It typically occurs on bark or exposed lignum, particularly in the wound tracks of old, injured trunks in parklands. It is usually found near the base of the trunk, where the bark or wood is enriched with nutrients. Occasionally, it can also be found on soft, calcareous stone (eg chalk pebbles) or mortar. Before Dutch Elm Disease, elm was its primary host tree. In recent years, it has occasionally been recorded on sycamore, field maple, and ash.

Table 51a. Orange-fruited elm lichen primary measures

Primary Measure	Primary measure details
Land Management Techniques	• Manage veteran and ancient trees to benefit this species. • Identify younger suitable trees (such as field maple, sycamore, disease resistant elms) to serve as future veteran replacements, ensuring light conditions meet the species' requirements. • Where suitable trees are absent, plant future veteran trees near existing populations but not so close as to cause shading or competition issues. • Allow successive generations of trees to age naturally, enabling natural damage to create niches. • Plant disease-resistant elm to support population recovery.

Table 51b. Orange-fruited elm lichen other relevant measures

Other Relevant	Other relevant measures details
Habitat Restoration and Enhancement	• Implement positive woodland management to maintain open conditions around host trees and create glades. • Reintroduce sensitive grazing to control shrub encroachment and maintain suitable light levels.

Air Pollution Reduction and Mitigation	• Reduce locally generated atmospheric pollutants by:
	  ○ lowering excessive stocking levels
	  ○ limiting fertilisation of nearby grasslands.
	• Ensure wayside trees are free from fertilisers, manure, and slurry through agri-environment schemes.

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These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

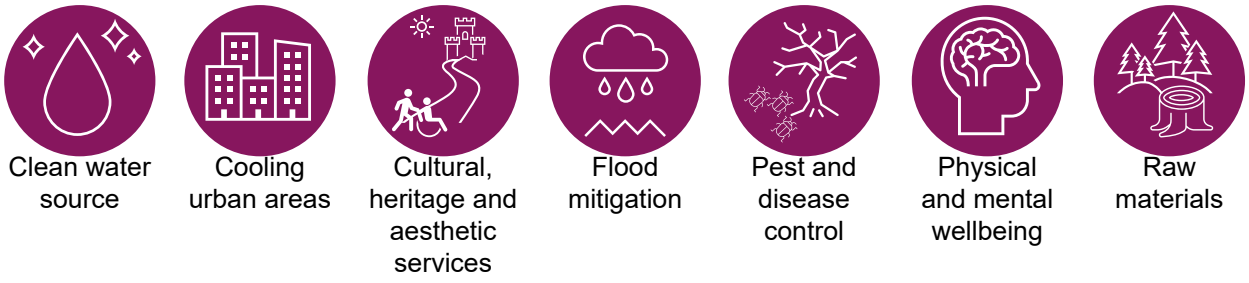
- Native trees
- Trees outside of woodlands

Mapped specific woodland planting schemes [PM01-02, 05-06] and measures for veteran trees [PM50] are potentially relevant for orange-fruited elm lichen. Specific habitat measures relevant to this species are identified on the LHM as SPM19.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Rosser's Sac-spider

Clubiona rosserae



Rosser's Sac-spiders are confined to fens. In fens it is found among cut sedge and reeds and in sedge tussocks.

Table 52a. Rosser's Sac-spider primary measures

Primary Measure	Primary measure details
Land Management practices	Maintain a high ground water table using soil and water management, minimising inappropriate drainage.

Table 52b. Rosser's Sac-spider other relevant measures

Other Relevant	Other relevant measures details
Land Management Practices	Prevent carr woodland encroaching on open sedge beds by a regime of annual mowing and grazing.
Improve habitat connectivity	Wetland links needed between remnant fen blocks to reduce hydrological vulnerability and increase the chances of long-term recolonisation.

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

- Lowland Fens

Mapped specific fen and wetland measures [PM33-34] are potentially relevant for Rosser's sac-spider. Specific habitat measures relevant to this species are identified on the LHM as SPM20.

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:



Clean water source | Flood mitigation | Improving marine environment | Managing climate resilience | Nutrient cycling | Soil health

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Scarce vapourer

Orgyia recens



Scarce vapourer typically occurs in lowland sandy heaths, wet woodlands, fens, bogs, and hedgerows.

Table 53a. Scarce vapourer primary measure

Primary Measure	Primary measure detail
Hedgerow Management	• Manage hedgerows on a rotation of at least three years to maintain biodiversity and habitat health. • Avoid managing all hedgerows on a site within the same year. • Undertake management in sections, ensuring cuts or trims are distributed across the hedgerow.

Table 53b. Scarce vapourer other relevant measures

Other Relevant Measures	Other relevant measures detail
Translocation/ Reintroduction	• Introduction of populations to appropriate habitat areas, including where possible additional research into distribution limitations.
Planting of Habitat Trees	• Ensure planting of deciduous trees such as hawthorn, pedunculate oak, and sessile oak, which serve as essential feeding sites for larvae during the winter months.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub
- Grassland and Heathlands

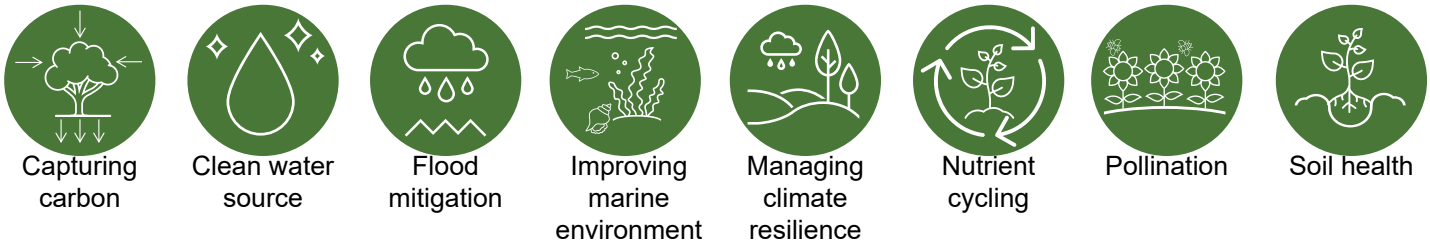
Other linked assemblages that would benefit from these measures are:

- Farmed Landscapes
- Acid Grassland and Heathland Native Woodland
- Lowland Fen

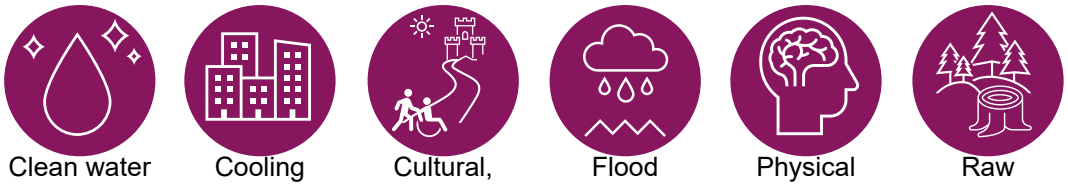
Varied mapped habitat measures across arable, grassland, hedgerow, woodland and fen landscapes [PM01-03, 11-12, 15-26, 33-34] are potentially relevant for Scarce vapourer. Specific habitat measures relevant to this species are identified on the LHM as SPM21.

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These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Serotine bat

Eptesicus serotinus



The serotine bat prefers building roosts and forages in open areas across diverse habitats, such as woodland edges, small-scale farmland, over lakes and rivers, and around streetlights. Benefits from organic, cattle-grazed pasture.

Table 54a: Serotine bat primary measure

Primary Measure	Primary Measure detail
Habitat Restoration and Enhancement: Creation of Corridors	Artificial lighting at night can form a barrier to movement across the landscape. Therefore, it is important to reestablish, enhance and/or create new 'dark commuting corridors' of appropriate habitat between roosting and foraging areas. In contrast, artificial illumination should be provided if necessary in foraging areas, to maximise feeding opportunities.

Table 54b: Serotine bat other relevant measures

Other Relevant Measures	Other Relevant Measures detail
Habitat Restoration and Enhancement: Role of Grazing Land and Feeding Habitat	• This species benefits from organic livestock management practices, including winter grazing, particularly in the absence of treatments that effect parasitic worm populations (eg ivermectin). • Provision of a variety of improved feeding habitats where large invertebrates can be found eg creation of woodlands and hedgerows, riparian planting and enhancement of aquatic areas to ensure year round provision. • Protection of existing roost sites.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub
- Grassland and Heathlands
- Urban and Built

Other linked assemblages that would benefit from these measures are:

- Native Woodland
- Trees Outside of Woodlands
- Urban, Built and Garden Environments
- Farmed Landscapes
- Lowland Measures and Pastures

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The mapped potential measures which focus on the creation of varied habitat types and increased connectivity, in addition to associated unmapped measures in urban and built landscapes, are potentially relevant for the serotine bat. Specific habitat measures relevant to this species are identified on the LHM as SPM22.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Starlet sea anemone

Nematostella vectensis



Starlet sea anemone are found in isolated or semi-isolated brackish pools within saltmarshes and lagoons, as well as in ditches and on mudflats in saltmarshes and shallow estuaries at or above the high-water mark. Typically associated with mud, muddy sand, and muddy shingle, but can also occur on vegetation.

Table 55a: Starlet sea anemone primary measure

Primary Measure	Primary measure detail
Habitat Creation and Connectivity	• Reduce the isolation of brackish pools to minimise habitat fragmentation and enhance ecological connections. • Promote natural processes to ensure lagoon formation is facilitated and shingle barriers remain as a protective barrier. • Create new lagoons near to existing populations to allow colonisation and spread from existing sites.

Table 55b: Starlet sea anemone other relevant measures

Other Relevant Measures	Other relevant measures detail
Habitat Restoration and Protection	• Maintain and enhance lagoons and other sheltered brackish water habitats. • Mitigate damaging factors, including pollution and drainage, to ensure long-term habitat viability. Promote alternative run off pathways and sustainable agricultural practices to minimise salinity changes.
Translocation	Relocate individuals to expansive, unmanaged open marshes free from human influence, allowing for natural population spread and sustainability.

These measures could offer solutions to address pressures in:
- Freshwater
- Coastal

Other linked assemblages that would benefit from these measures are:
- Saltmarshes and Lagoons
- Coastal shingle and dunes

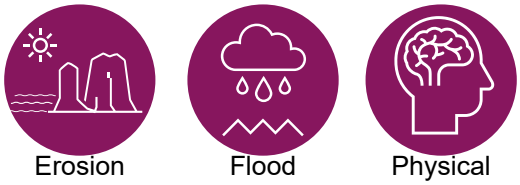
The habitat measures that have been mapped within coastal habitats [PM37-40] are additionally potentially relevant for starlet sea anemone. Specific habitat measures relevant to this species are identified on the LHM as SPM23.

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These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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Suffolk lungwort

Pulmonaria obscura



Suffolk lungwort is an understorey plant typically found in woodlands, growing beneath the main canopy of trees. The understory consists of smaller trees, shrubs, and herbaceous plants that thrive in the dappled light and sheltered conditions provided by the overhead canopy. It is also found in rides and areas of coppiced woodland.

Table 56a. Suffolk lungwort primary measure

Primary measure	Primary measure details
Species-Specific Action	• Continue coppice management to maintain suitable habitat conditions. • Employ developed plant propagation techniques and establish re-introduced populations at appropriate locations.

Table 56b. Suffolk lungwort other relevant measures

Other relevant measures	Other relevant measures details
Landscape Habitat Creation, Expansion, and Connectivity	• Improve woodland connectivity to link fragmented habitats. • Buffer existing sites to enhance their ecological resilience. • Ensure existing sites are managed appropriately

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub

Other linked assemblages that would benefit from these measures are:

- Native woodland
- Trees outside of woodland

The habitat measures that have been mapped within woodlands to create appropriate habitat and buffer zones [PM01-04] are potentially relevant for Suffolk lungwort. Specific habitat measures relevant to this species are identified on the LHM as SPM24.

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These measures are considered to support the following wider environmental benefits:



Capturing carbon | Improving marine environment | Managing climate resilience | Nutrient cycling | Soil health

These measures are considered to support the following co-benefits:



Physical and mental wellbeing | Raw materials

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Tassel stonewort

Tolypella intricata



Tassel stonewort are found in shallow water such as pools, ditches and semi-permanent puddles which dry up in summer. Tassel stonewort thrives in clear, unpolluted water and likes to root into bare mineral sediments like clay, sand or fine gravel.

Table 57a. Tassel stonewort primary measure

Primary measure	Primary measure details
Water Quality and Pollution Control	• Implement offsite remedial actions to tackle diffuse pollution. • Reduce water quality pressures using sustainable agricultural practices, reduction in run off, use of nature-based solutions and improved water treatment practices, as poor water quality has driven most declines in stonewort populations.

Table 57b. Tassel stonewort other relevant measures

Other relevant measures	Other relevant measures details
Habitat Management	Improve habitat topography, maintain open conditions by removing vegetation regularly and using cattle grazing at core sites to enhance suitability for stoneworts.
Monitoring	Monitor known sites regularly, including regular monitoring of nutrient levels. Nutrient levels to be reduced if necessary.

These measures could offer solutions to address pressures in:

- Freshwater

Other linked assemblages that would benefit from these measures are:

- Still Waters

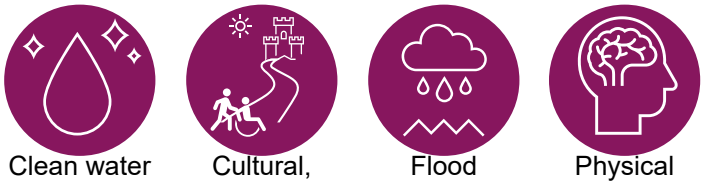
The mapped measures for appropriate brackish shallow lake habitats [PM31-32] are potentially relevant for tassel stonewort. Specific habitat measures relevant to this species are identified on the LHM as SPM25.

These measures are considered to support the following wider environmental benefits:



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These measures are considered to support the following co-benefits:



Clean water source

Cultural, heritage and aesthetic services

Flood mitigation

Physical and mental wellbeing

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Water vole

Arvicola amphibius



Water voles can be found in coastal floodplains, lowland fens, reedbeds, raised bogs, lakes, ponds, rivers, and chalk rivers. The species favours riparian habitats, including streams, ditches, rivers, canals, reedbeds, and upland systems. Optimal habitats have slow-flowing water and densely vegetated banks 2–5 metres from the water's edge.

Table 58a. Water vole primary measure

Primary measure	Primary measure details
Management of Problematic Invasive Species: Mink Control	• Monitor mink occurrence and maintain monitoring of traps to ensure they do not recolonise from other counties, to mitigate their impact on native wildlife. • Monitoring to understand how water vole populations respond to a reduction in mink is also important, along with helping understanding of other pressures on the species that may limit their recovery. • Coordinate sustained efforts with landowners to eradicate mink across large landscapes and river catchments. • Use appropriately designed mink rafts for effective monitoring and humane trapping. Remote devices can manage multiple rafts efficiently across wide areas.

Table 58b. Water vole other relevant measures

Other relevant measures	Other relevant measures details
Habitat Restoration and Enhancement: Restore watercourses and marginal vegetation to their natural state.	Sympathetic management of river banks: • fence buffer zones (2m+) from water's edge to reduce trampling. Provide off-stream watering points • manage trees and scrub to avoid excessive shading and support diverse vegetation • rotate bankside cutting every two years (or longer), leaving one bank uncut. Cut from late September • de-silt ditches every five years, avoiding damage to fragile banks • ensure that fish and crayfish traps are legally compliant by having adequate guards to prevent water vole from drowning in traps
Habitat Creation, Expansion, and Connectivity: Create waterbodies with marginal vegetation to enhance habitat.	Increase Water vole habitat: • establish grassy buffer strips (4-6m) along watercourses, ditches, and ponds, particularly near intensive farmland • remove artificial bank revetments to support burrowing and vegetation growth • restore or create wetlands (ponds, scrapes, ditches) linked to existing habitats to promote movement.

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Other relevant measures	Other relevant measures details
Hydrology Restoration on Protected Sites	Remove land drainage to raise water table levels and restore natural hydrology.
Water Pollution Reduction and Mitigation	Reduce water pollution and eutrophication, which harm water voles through contamination and habitat degradation.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub
- Freshwater

Other linked assemblages that would benefit from these measures are:

- Still Waters
- Rivers and Riverside Habitats
- Lowland Fen
- Reedbeds and Freshwater Wetlands

The habitat measures that have been mapped within freshwater wetland, fen, reedbed and riparian areas [PM29-36] are potentially relevant for water voles. Specific areas identified for measures for this species are identified on the LHM as SPM26

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



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White-clawed crayfish

Austropotamobius pallipes



White-clawed crayfish are found in lakes, ponds, rivers, chalk rivers, and potentially brownfield sites. Prefers clean water with abundant refuges such as tree roots, rocks, and stable riverbanks. Thrives in clean aquatic habitats, particularly hard-water streams and rivers, but may also inhabit canals, reservoirs, lakes, and water-filled quarries. Within Suffolk, this species has been significantly affected by disease introduced with the non-native crayfish and population monitoring is essential.

Table 59a. White-clawed crayfish primary measure

Primary Measure	Primary Measure detail
Habitat Creation and Creating In-Water Refuges	Establish trees such as alder and willow along riverbanks to create shaded areas and exposed root systems suitable for crayfish colonisation. Place cobbles, boulders or wood along riverbanks and margins to provide shelter.

Table 59b. White-clawed crayfish other relevant measures

Other Relevant Measures	Other Relevant Measures details
Catchment Management	Maintain high levels of water quality and improve water quality by implementing buffer strips, restricting cattle access, and other sustainable practices.
Captive Breeding Programme	Support population recovery through captive breeding initiatives, establishing ark sites to maintain the number of populations and incorporate eDNA sampling as appropriate.
Population maintenance	Explore techniques for the active management and removal of invasive species to help safeguard populations within historical range and promote or apply appropriate biosecurity measures. Refer to the Crayfish Conservation Manual as required [31].

These measures could offer solutions to address pressures in:

- Freshwater
- Woodland
- Trees and Scrub
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Still Waters
- Rivers and Riverside Habitats

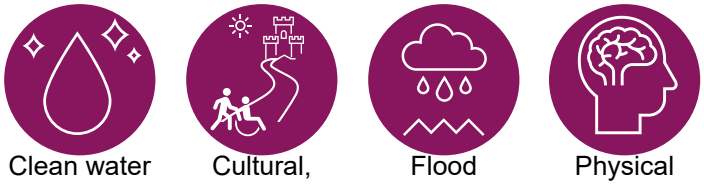
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The habitat measures that have been mapped within freshwater habitats, but specifically chalk streams and rivers, including ark habitat sites [PM29-32] are potentially relevant for white-clawed crayfish. Specific habitat measures relevant to this species are identified on the LHM as SPM27.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:

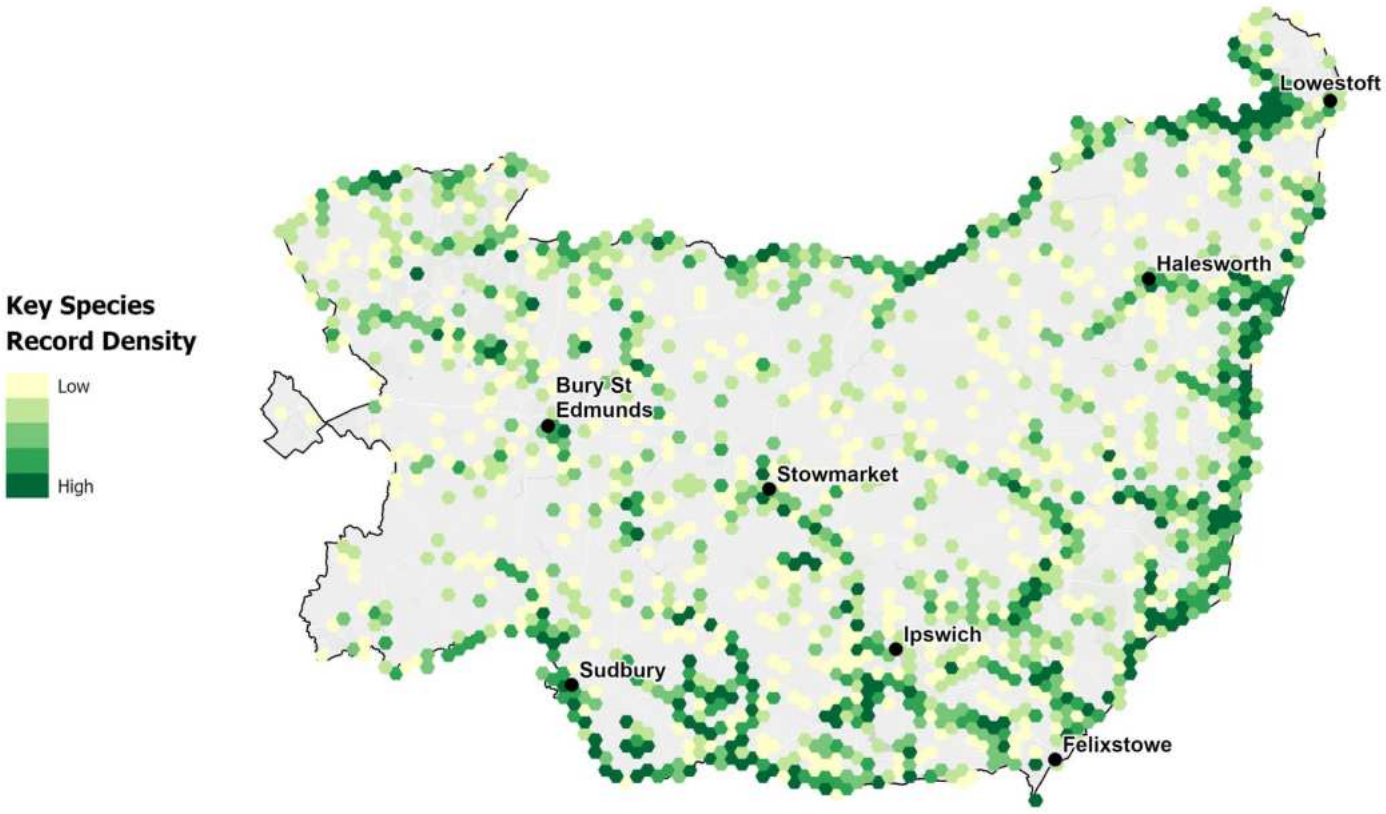


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Locations of key species across Suffolk

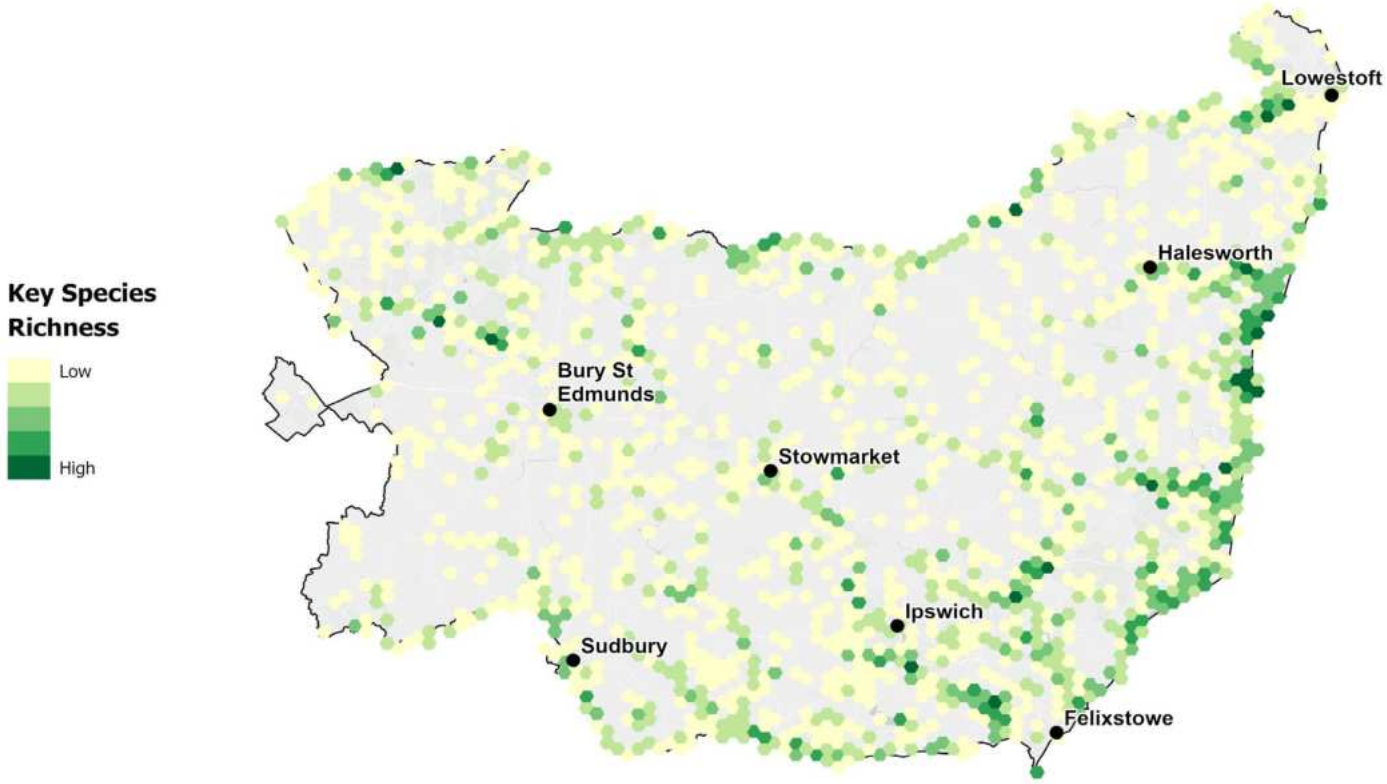
To support identification of potential measures within the spatial strategy, data on the recorded locations of the key species, provided by SBIS (Suffolk Biodiversity Information Service) has been reviewed through the creation of the Local Habitat Map (see **Part D: Locations for Action**). The maps below demonstrate the species density (**Figure 11**) and species richness (**Figure 12**) across the county for the combined records and counts for those individuals. This data is intended to highlight the most important areas for population numbers and variety of species found, to support the identification of the areas identified for nature recovery actions.

Figure 11. A map demonstrating where the key species indicated in the LNRS can be found across Suffolk in terms of numbers of records



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Figure 12. A map demonstrating how many of the key species indicated in the LNRS can be found in locations across Suffolk – the species richness.



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Wider priorities

Some measures are not specifically designed to create or enhance habitats, and therefore **Table 60** identifies Wider Priorities designed to apply widely across locations, stakeholders and land parcels. These link to key spatial, environmental or nature-based processes which do not have a defined location focus. These can be adopted across the county (eg within the unmapped areas or 'white space') to bolster the specific actions determined within the species and habitat prioritisation process, creating benefits across ecosystems.

Table 60. Wider Priorities

Outcomes	Relevant potential and existing measures/actions/projects for on the ground delivery
Reduce impacts on nature from pesticide use (including insecticides, herbicides and fungicides)	• Promote the reduced, targeted, and responsible use of pesticides (insecticides, herbicides, and fungicides) in farms, parks, streets, and gardens. • Implement regenerative farming practices to impact soil biodiversity and carbon capture.
Reduce flood risk through nature-based solutions	• Use of SuDS including reedbeds, green roofs, swales, rain gardens, permeable paving, water butts etc. • Re-connect river channels with their floodplains. • Slow down overland flows through woodland and meadow creation. • Leave wood debris in the upper reaches of river channels to slow flood flows.
Reduce air pollution pressures on nature from all sources	• Promote reduced emissions of damaging air pollutants from all sources. • Use of shelterbelts of trees to reduce nitrogen and filter out particles from the air.
Reduce water pollution pressures on nature from all sources	• Reduce emissions of damaging water pollutants from all sources. • Implement in-field measures to reduce run-off • Raise community awareness about catchment management, including septic tanks and domestic treatment plants. • Benefit the marine environment by improving the quality of the freshwater entering it.
Reduce water use pressures on nature from all sources	• Promote reduced water use from all sources. • Ensure that water abstraction across catchments is sustainable. • Improve storage of water during winter months so it can be used in the summer to reduce the need for abstraction from watercourses and from groundwater.

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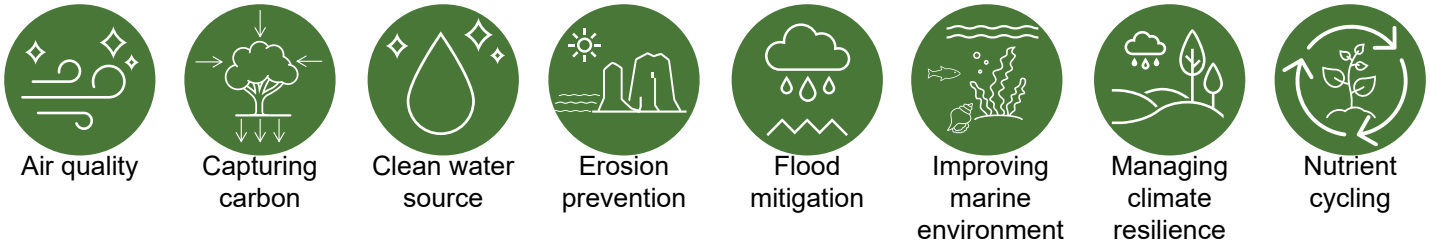
Outcomes	Relevant potential and existing measures/actions/projects for on the ground delivery
Reduce recreational pressures on nature from all sources	• Promote responsible recreational practices (with links to strategic solutions mitigating impacts on sensitive sites eg Suffolk Coast RAMS). • Manage areas around campsites and recreational sites using low-impact tree and forestry management systems. • Encourage schemes to promote protection of nesting birds, especially in coastal areas. • Reduce light pollution from recreational sources and promote dark skies. • Provision of 'Suitable Alternative Natural Greenspaces' (SANG) close to where people live in order to decrease recreational pressures on more sensitive sites for nature.
Improving soil quality in all areas	• Implement sustainable agroforestry, horticultural and agricultural practices. • Keep soil covered throughout the year using cover crops. • Preserve and improve soil structure via minimum tillage. • Avoid soil compaction. • Increase or maintain soil organic matter.
Creating large scale mosaic habitats	Implement habitat creation in terms of continuous and dynamic mosaics of at least 100 hectares (ideally approximately 5000 to 12000 hectares) in any location, not specifically those identified in the ACB. Follow recommendations in the Nature Networks Evidence Handbook [32]. This could also incorporate free-roaming herbivores introduced to encourage natural ecological processes.
Enabling future action	• Measures to support the creation of new local wildlife groups, community action and the natural history recorders of the future. • The creation of new jobs, apprenticeships and skills connected to nature, especially in traditional methods.

These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Urban and Built
- Invasive Species and Diseases

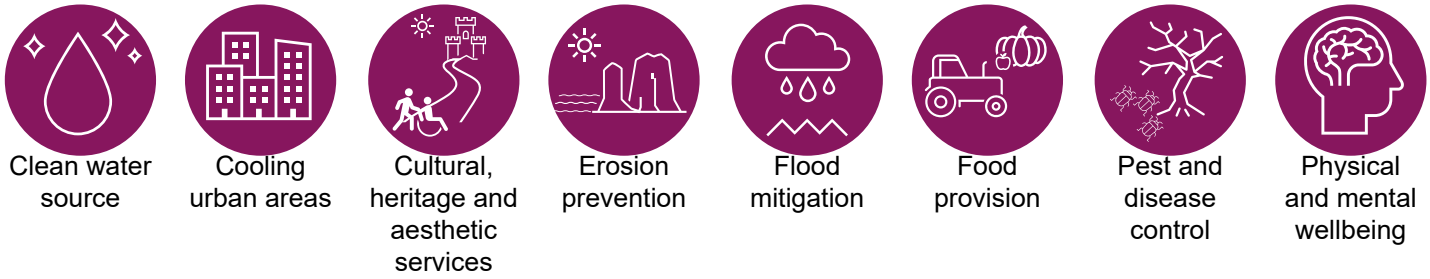
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These measures are considered to support the following wider environmental benefits:





These measures are considered to support the following co-benefits:





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Securing a species future: Fen Raft Spider translocation programme

The Fen Raft Spider, Dolomedes plantarius, is listed as Vulnerable to extinction on the global and British Red Lists. Translocation is one element in its national recovery programme, aiming to reduce the extinction risk of this large, elegant and superbly adapted wetland spider by increasing the number of populations from three natural remnants to at least twelve.

Who's involved?

- Natural England (instigator, and host to one new population)
- Suffolk Wildlife Trust (donor population, and host to two new populations)
- Sussex Wildlife Trust (donor population)
- RSPB (host to one new population)
- BIAZA (13 British Zoos and Collections contributed to captive rearing work in 2011-13)

Funding contributions came from:

- Natural England
- the Broads Authority
- the BBC Wildlife Fund
- Love the Broads
- Suffolk Wildlife Trust
- RSPB.

Research was undertaken by PhD and Masters students at The Universities of East Anglia and Nottingham.

Hundreds of volunteers have monitored the populations on behalf of the project and host sites managers.

What have they achieved?

The number of Fen Raft Spiders populations in Britain has increased from three to seven since 2010, substantially reducing the threat of extinction.

Translocations have focussed on the Broads where new populations now thrive on river-side grazing marshes on a 5km stretch of the lower Waveney, a 6 km stretch of the mid-Yare, and 2km of the Thurne.



Adult female Fen Raft Spider

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Volunteers training to monitor new Fen Raft Spider Populations

How did they do it?

The programme followed international (IUCN) guidelines for conservation translocations. Each potential site we evaluated for over 3 years and assessed the genetics of the source population.

The first three translocation sites were populated with spiders from remnant populations at Redgrave and Lopham Fen, Norfolk, and the Pevensey Levels, East Sussex.

The Redgrave and Lopham Fen population was very small, so spiderlings were individually captive-reared for the first three months of life, greatly increasing their survival compared with that in the wild. Because spiderling survival is naturally low, the numbers introduced were large – over 30,000 across the four sites.

The first new population established so rapidly that it was able to supply the spiderlings needed for the fourth translocation; there was no longer any need to remove spiders from the natural populations or to undertake very labour-intensive captive rearing.

What's next?

The programme now includes a new phase, evaluating potential translocation sites beyond the Broads, initially in the East Anglian Fen Basin. Research on the impacts of climate change on this relatively immobile species suggests that its climatic range is shifting and that translocations are likely to remain an important element in its conservation.

Regular monitoring remains essential to understanding how the populations vary in extent and abundance between years and over longer periods. This information underpins routine site management and informs the potential need for additional interventions.

Genetic monitoring is also being introduced to help inform the most appropriate choice of parental stock for future translocations.

New research is now investigation the possibility of developing eDNA methods for monitoring this species, potentially making it much easier to detect future range changes.

Find out more by visiting
www.dolomedes.org.uk

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Part D: Locations for Action



Ancient oak trees in Staverton Thicks

Where possible, the potential measures from the Statement of Biodiversity Priorities have been mapped onto the LNRS Local Habitat Map. Those which are mapped are indicated within the table in **Part C: Suffolk's Priority Habitats, Assemblages and Measures**. The purpose of mapping the measures is to create a shared vision of locations where habitat action could be focused by land owners, local people and organisations to create a connected network of nature and achieve the local biodiversity priorities. Whilst many measures could be carried out in a variety of locations, the map shows the locations where these measures could have the greatest impact on achieving the priorities and would achieve greater connectivity of biodiverse habitats across the landscape. These sites require verification before projects are implemented, as detailed in **Part C**. A summary map of those areas identified that could become of particular importance for biodiversity (ACB) is given in **Figure 13**.

Spatial analysis has been used to identify these landscape level priority areas based on the Lawton principle of more, bigger, better and more joined. Whole land parcels within the landscape have been selected as priority 'in scope' areas for the mapping of appropriate measures.

These mapped measures also indicate where wider environmental benefits will be recognised using nature-based solutions delivering for example, flood risk mitigation and improved water quality.

By mapping specific locations to take such actions, the LNRS aims to drive delivery and funding towards achieving nature recovery in these areas. All mapping methodology is outlined in **Appendix 4**.

As indicated in the document and in the tables above, not all of the measures are mapped onto the Local Habitat Map. All of the potential measures detailed could be delivered across various places in the county and there is not always complete data about where all of the habitats are or could be. However, it was possible to map focused locations for delivering the majority of the measures.

As part of the engagement process, we requested input from stakeholders for suggestions of suitable locations for nature recovery actions, based on their expertise and knowledge of the area and on-going or upcoming projects. These inputs were reviewed during the production of the Local Habitat Map and have enabled some of the prioritisation of potential measures. **Table 61** below indicates the proportion of these stakeholder inputs which overlap with the APIB and ACB areas presented. This aims to show that we are identifying the correct areas for potential nature recovery.

In addition, the species density of the key species identified through the prioritisation process was assessed in relation to the APIB and ACB areas. This data is summarised in **Table 62** below and indicates that by creating and enhancing habitat in the areas identified, these species will be able to benefit as they will have more, bigger and more connected areas to utilise

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Table 61. Proportion of stakeholder mapping inputs which overlap with APIB and ACB areas.

Overlap %	Stakeholder measures overlapping with APIB areas	Stakeholder measures overlapping with ACB areas	Stakeholder measures overlapping with APIB and ACB areas
Large (>50%)	14.4%	42.6%	57%
Moderate (>10%)	25.5%	31.7%	28.9%
Low (less than 10%)	60.1%	25.8%	14.2%

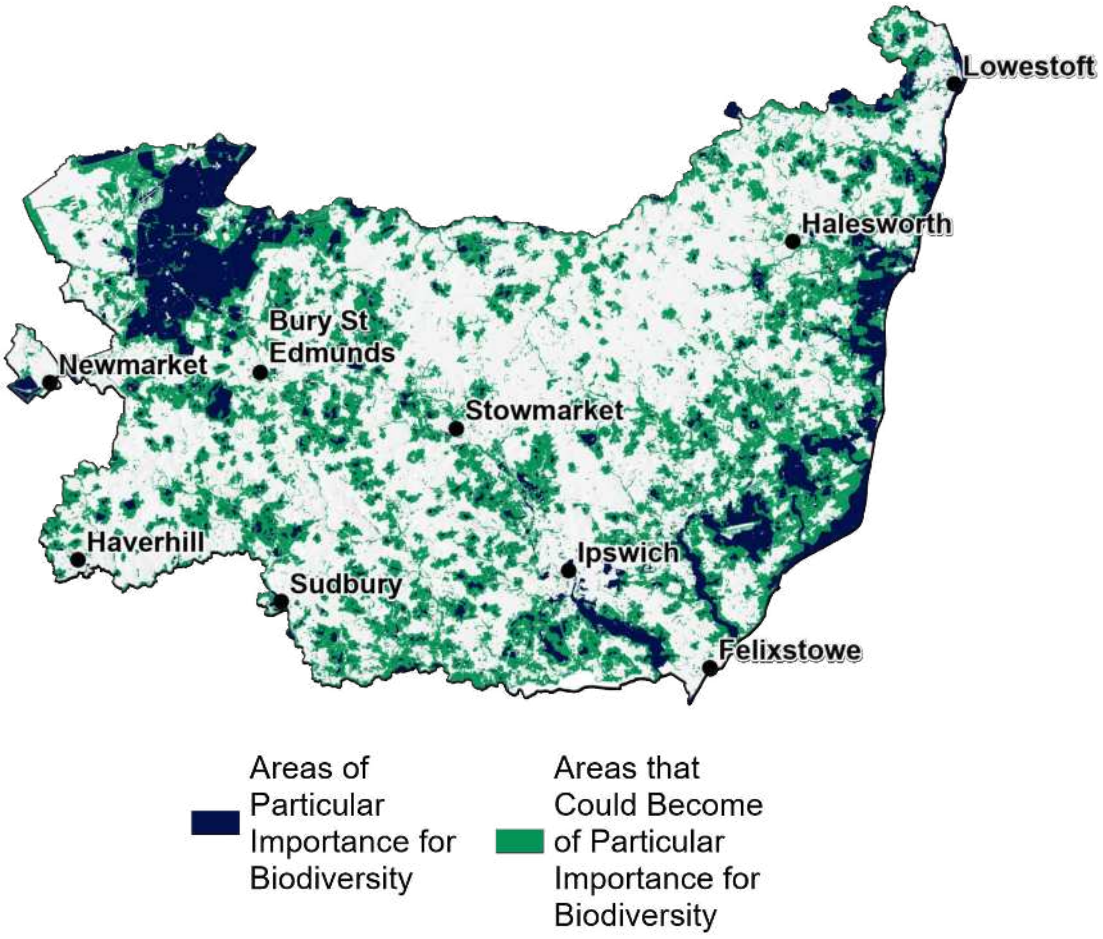
Table 62. Species distribution in relation to identified APIB and ACB areas.

Species	% of records within 50m of APIB area	% of records within 50m of ACB area	% of records within 50m of APIB or ACB
Basil-thyme case-bearer	90	6	98
Crested cow-wheat	49	83	89
Curlew	68	38	89
Dwarf eelgrass	92	69	98
Eel	33	94	99
Fen raft spider	100	7	100
Hazel dormouse	76	52	98
Lapwing	64	44	93
Narrow-mouthed whorl snail	94	57	100
Orange-fruited elm-lichen	35	86	92
Little Whirlpool ramshorn snail	70	68	99
Scarce vapourer	100	0	100
Serotine	36	64	83
Starlet sea anemone	96	13	100
Tassel stonewort	11	63	74
Water vole	60	66	94
White-clawed crayfish	48	79	79
Total	66	51	93

The unmapped measures and actions should be conducted in suitable places after a site is identified as being appropriate to achieve their relevant priorities (eg nature-friendly farming, especially hedgerow restoration or creation, pond restoration or creation, measures for gardens, towns and cities). The details within the LNRS are not designed to restrict nature recovery ambitions of any stakeholder and therefore the unmapped measures are key to facilitate initiation of projects and can also provide a basis for incorporating measures focused on the improvement of existing sites, in contrast to creation of new habitat.

It is recognised that there is the potential for overlap of land areas identified for alternative uses within other documentation, for example local and neighbourhood plans. At the current time, there is limited guidance available to determine how these are integrated into the strategic opportunities. Therefore, in the context of this LNRS it is considered that by identifying areas of opportunity for nature recovery actions, factors to improve biodiversity and give wider environmental benefits within those sites can be incorporated.

Figure 13. Suffolk's Areas that Could Become of Particular Importance for Biodiversity



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As part of the analysis of the mapping data, it has been possible to identify the proportions across the districts in the county that are already designated (APIB) and those which are areas that could become of importance (ACB). It has also been possible to link this information to the coverage across the Protected Landscapes areas, ie the Broads National Park and the Dedham Vale and Suffolk & Essex Coasts & Heaths National Landscapes. This is shown in **Table 63** below. This analysis has also identified that the mapped measures indicated within this LNRS have the potential to allocate 29% of the county in total to nature recovery activities.

It has also been possible to determine the allocation across mapped habitat priority areas, supporting the ecological demand of the landscape. This also links to the output of engagement activities, reflecting which habitats are important to demonstrate the ambition and potential of the LNRS. This data is shown in **Table 64**.

Table 63. Proportions of Suffolk districts and Protected Landscapes allocated to APIB and ACB.

District	APIB as % of total district area	ACB as % of total district area
Babergh	6%	35%
East Suffolk	14%	32%
Ipswich	9%	7%
Mid Suffolk	3%	24%
West Suffolk	20%	28%
Suffolk total	12%	29%
Dedham Vale National Landscape	6%	56%
Suffolk & Essex Coasts & Heaths National Landscape	34%	36%
The Broads National Park	31%	56%

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Table 64. Proportions of habitat areas allocated to Suffolk's ACB (not including habitat area within APIB).

Habitat	Habitat in ACB as % of total habitat area in county
Coastal Habitats	2%
Deciduous Woodland	36%
Habitats in Farmed Landscapes	31%
Fen Habitats	19%
Grassland (Neutral and Calcareous)	44%
Heathland and Acid Grassland	15%
Orchards	27%
Reedbeds and Other Wetlands	25%
Rivers and Streams	25%
Scrub	33%
Still Water Habitats	28%
Wet Grassland and Coastal Grazing Marsh	72%

As indicated in the document and in the **Tables 4-23**, not all of the measures are mapped onto the Local Habitat Map. All of the potential measures detailed could be delivered across various places in the county and there is not always complete data about where all of the habitats are or could be. However, it was possible to map focused locations for delivering the majority of the measures.

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Nature as a respite: Healing woods

In 2021, recognising how access to nature and greenspace had helped people's mental health and wellbeing during the Covid-19 lockdowns, Suffolk County Council launched its 'Healing Woods' initiative.

Healing Woods aimed to:

- Improve the health and wellbeing of people through access to woodland and natural greenspace
- Create spaces that encourage nature and help people to experience it, as a positive legacy from the impact of the pandemic
- Increase access to woodland and natural greenspace where it is most needed.

An initial public survey showed there was appetite for the project - over 90% of the 500 responses were in support.

The Council invited expressions of interest from communities across Suffolk and chose four to work with to test the approach and generate learning to help with potential scaling up of the project.

Who's involved?

The four Healing Wood projects are at Hopton, Eye, Little Finborough, and Howard Community Academy, Bury St Edmunds.

Each project has been community led, and involved a range of local groups, businesses, the landowners and volunteers from the community.

The county council provided seed-corn funding to each project, which have also been able to access funds and support from a variety of other local sources. The Woodland Trust and Suffolk Tree Warden Network have also provided invaluable support.



Children, staff, community members, volunteers and councillors help to plant trees at Howard Community Academy, Bury St Edmunds.

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What have they achieved?

Each Healing Wood project has employed a range of approaches to delivering its aims. They have all been community-led, which will be essential to their long-term management and success. SCC will be using the lessons learned to help similar projects across the county.

Hopton

Hopton Community Woodland Group has transformed a former rubbish tip into a small oasis for wildlife and people. 0.4ha of woodland and 130m of hedging has been planted by local volunteers and school children, with access improvements including 2 benches.

Eye

The Eye Town Moors Woodland Society and Eye Outdoors Group have enhanced an existing area of woodland and created a new Way of Healing to connect existing public footpaths in the village and provide a selection of circular walks. 5.6 ha of woodland has been enhanced for community access, including removal of diseased ash trees, replanting new trees, and adding picnic tables, benches and notice boards.

Oaks Meadow, Little Finborough

A 4-acre former arable field has been developed into a nature-based community hub with sensory gardens, and an orchard, allotment, wildlife pond, playground and toilet facilities.

The Oaks Meadow Trust has brought together local volunteers, community groups, Suffolk Rural College students, and groups that aim to boost confidence and enhance the well-being of vulnerable young girls through social action. 0.4ha of woodland and 225m of hedgerow have been planted.

Howard Community Academy

Over a 3-year period, around 3,000 trees have been planted on a 1.84-hectare unused school playing field to create a community woodland in the heart of a Bury St Edmunds housing estate.

Howard Primary School staff and pupils, working with Abbeycroft Leisure, The Woodland Trust, Bury Town Council and other local sponsors and supporters have come together to realise an area for nature and quiet enjoyment that will provide an educational and community resource for many decades to come.



Tree planting at Howard Community Academy

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What are the next steps and how can you be involved?

While the LNRS itself provides a targeted, data-driven framework to prioritise nature recovery actions across Suffolk, it also recognises that everyone has a role to play. Nature recovery can happen everywhere, from private gardens and urban green spaces to farmland and community projects. By encouraging all contributions, whether through volunteer groups, schools, businesses or individual actions, the LNRS aims to inspire collective effort and show that small-scale changes are as valuable as large-scale interventions. This inclusive approach ensures the vision of nature recovery extends across the county, with the LNRS guiding and focusing efforts where they can make the greatest impact. It is worth noting that a specific site specific review should be carried out to determine the suitability of any nature recovery actions. Where applicable, this would include expert advice and input eg hydrological surveys or reviews of the historic environment.

Throughout the engagement processes conducted in generating the LNRS, it has been clear that partners and stakeholders across the county have a high level of motivation to contribute to the process of nature recovery.

Examples of potential involvement and opportunities generated are listed here.

For individuals, communities and groups

- Collaborative projects to promote habitat restoration and creation, wildlife monitoring and species specific actions, tree planting etc.
- Participation in citizen science projects.
- Links to the Norfolk and Suffolk Nature Recovery Partnership to maximise opportunities and information available.
- Creation of inclusive volunteer programmes to support nature recovery.

For land managers

- Adoption of defined measures for priority species and habitats where possible.
- Participation in collaborative groups eg farm clusters.
- Implementation and adjustment of appropriate land management practices and techniques, such as regenerative agriculture.
- Involvement in agri-environmental schemes or large-scale restoration projects.
- Engagement with other relevant stakeholders and providing opportunities of support where appropriate.

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For eNGOs and ecologists

- Participation in collaborative projects and facilitated partnerships to link to priority species and habitats.
- Maximise engagement with community groups.
- Provision of scientific knowledge, expertise and experience to inform and support all stakeholders.
- Promote monitoring of species and data gathering to support research and identify future nature recovery focus areas.
- Engagement with a range of stakeholders to identify contribution to nature recovery and funding schemes.
- Collaborate with appropriate bodies to maximise work both in urban and rural areas, alongside implementation and promotion of nature-based solutions.
- Link to prioritisation of key sites and habitat areas to minimise impact and maximise contribution towards biodiversity targets.
- Development of green infrastructure projects.
- Enhanced reflection of the needs of nature recovery within the spatial plans of the future as they take account of the contents of the LNRS, including plans at all scales eg Local and Neighbourhood.

For businesses and the recreation sector

- Participation and support of local nature recovery projects, using a collaborative approach with other stakeholders.
- Implementation of projects on owned land.
- Promotion of local products and sustainable practices, including reduction in pollution.
- Investment in appropriate infrastructure projects.
- Supporting evidence to maximise alignment of recreational targets with nature recovery priorities – linking to appropriate access levels, promotion and land use.

As detailed above, the LNRS identifies multiple opportunities for a wide range of stakeholders, but this should not be considered to limit the scope of impact. We want the LNRS to stimulate conversations and collaborations that will deliver the nature recovery measures and actions highlighted in this strategy. The Norfolk and Suffolk Nature Recovery Partnership will maintain momentum and maximise engagement across both counties, increasing involvement with new groups, organisations and individuals.

Together, we can recover nature in Suffolk.

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Appendices



Grey Heron perched on a post in The Broads. This is one of the species on the Suffolk Long List.

Appendix 1: Legislative context and analysis of existing strategies and documents

Overview

Local Nature Recovery Strategies (LNRSs) must take account of and adhere to national regulations and plans, as well as contributing to national objectives where possible.

25 Year Environment Plan

The 25 Year Environment Plan (25YEP) sets out the Government's goals for improving the environment over a 25-year period. It contains comprehensive and long-term goals to leave the environment in a better state and protect it for the next generation. Suffolk and Norfolk's LNRSs contribute to the 25YEP by considering how proposed measures can deliver additional benefits for the environment.

Environmental Improvement Plan 2023

The Environmental Improvement Plan 2023 (EIP) is the Government's delivery plan for the environment, building a green, more prosperous country. The 10 Goals of the EIP provide the overarching basis for LNRSs, which include:

- Goal 1: Thriving plants and wildlife
- Goal 2: Clean air
- Goal 3: Clean and plentiful water
- Goal 4: Managing exposure to chemicals and pesticides
- Goal 5: Maximise our resources, minimise our waste
- Goal 6: Using resources from nature sustainably
- Goal 7: Mitigating and adapting to climate change
- Goal 8: Reduced risk of harm from environmental hazards
- Goal 9: Enhancing biosecurity
- Goal 10: Enhanced beauty, heritage, and engagement with the natural environment

The Suffolk LNRS supports several of the main commitments made in the EIP 2023, such as to 'protect 30% of our land and sea for nature through the Nature Recovery Network (NRN)'. By focusing on key habitats and species to create, enhance and support across the county, the LNRS will contribute to the development of the NRN and the protection of 30% of land and sea for nature. The strategy also contributes to other commitments including providing a framework for guiding decisions around farming friendly practices, to support the goal to transform 70% of the countryside through the adoption of nature friendly farming practices. LNRSs will also contribute to climate change mitigation and adaptation, increasing carbon capture through habitat creation and providing increased opportunities for natural flood management. The strategy presents a key opportunity to engage across multiple sectors of society, providing an opportunity for individuals, organisations, businesses and others to support nature recovery and to see the impact of their work through increased access and improved landscapes.

Environment Act 2021

The Environment Act 2021 (EA 2021) contains legislation that will protect and enhance our environment for future generations. The Act sets out directions for cleaning up the country's air, restoring

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natural habitats, increasing biodiversity, reducing waste and making better use of our resources. The EA 2021 introduced Local Nature Recovery Strategies and requires these to be taken account of within the planning process.

Local context

Local Nature Recovery Strategies must reflect and support local priorities and strategies for nature recovery. To ensure local consistency, the LNRS delivery team, reviewed and analysed 301 relevant plans and strategies across Suffolk and Norfolk to draw out key policies, measures or recommendations considered relevant to delivering nature recovery for habitats and/or species. Over 1,600 existing nature recovery actions and priorities were identified from a range of sources, such as planning documents, ecological audits and management plans, among others. **Table 65** gives an overview of the types and number of documents analysed.

Process of analysis

As each document was reviewed, any policy, measure or recommendation outlining a specific nature recovery action for habitats and/or species was recorded. After drawing out these key nature recovery actions for habitats and/or species, each policy, measure or recommendation was translated into a 'nature recovery priority'. This allowed actions to be categorised into more specific themes based around what precisely the action is seeking to deliver. Depending on the level of detail for each action, the nature recovery priority could vary in terms of how broad or narrow its scope was.

The next stage was to assign each action/priority an overarching 'nature recovery principle', specifying whether the action/priority was targeting habitats and/or species.

Habitats were assigned a nature recovery principle based on whether the action/priority was focused on creating more new habitats, making existing habitats bigger, making existing habitats better, and/or making habitats more joined-up.

Species were assigned a nature recovery principle based on recovering those present, reintroducing/translocating those no longer present or controlling those present that impede nature recovery such as invasive non-native species. In some cases, an action/priority could sit under more than one principle. **Table 66** gives an example of how one action was categorised into a priority and then assigned to an overarching nature recovery principle.

Any additional information included in a policy, measure or recommendation, such as any specific locations, wider environmental benefits (for example improving air quality) or non-environmental co-benefits (such as improving health and wellbeing) were also recorded.

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Table 65a. Type and number of documents analysed for nature recovery measures.

Number	Document Type
35	Local Plan documents (includes associated Green Infrastructure Strategies, Biodiversity Strategies, other nature-related supplementary planning documents, etc.)
136	Neighbourhood Plans (70 Suffolk, 66 Norfolk)
1	Network Rail Nature Strategy
1	National Highways Nature Strategy
160	**Total planning documents**

Table 65b. Type and number of climate strategies analysed for nature recovery measures.

Number	Document Type
2	County Climate Plans/Strategies
2	**Total climate strategy documents**

Table 65c. Type and number of ecological audits, plans and strategies analysed for nature recovery measures.

Number	Document Type
3	Biodiversity Audits
43	Biodiversity Action Plans (21 Suffolk, 22 Norfolk)
2	Marine Plans
5	Internal Drainage Board Biodiversity Action Plans
16	Local tree and woodland strategies, including Community Forest plans
4	Environmental NGO Nature Recovery Strategies/lists
5	National Landscapes and National Parks Nature Recovery Plans
1	Natural Capital Evidence Compendium
12	Farm cluster strategic priority lists
95	**Total ecological audits, plans and strategy documents**

Table 65d. Type and number of management plans and strategies analysed for nature recovery measures.

Number	Document Type
5	Shoreline Management Plans
3	Flood Risk Management Plans and Strategies
1	River Basin Management Plan
6	Catchment Management Plans
5	Estuary Strategies
2	Minerals and Waste Plans
5	Water resource strategies (including water company biodiversity strategies)
95	**Total management plans and strategy documents**

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How the analysis fed into the wider LNRS process

Drawing out the key actions and then categorising them into specific nature recovery priorities and principles allowed for the identification of the most common themes from across the 301 documents which were reviewed. Having this data was crucial as it directly fed into the LNRS process by giving an indication as to which actions should be considered, and potentially included, in the LNRS list of measures and priorities for each county.

Table 66. Example of action, nature recovery priority and overarching nature recovery principle

Measure/Practical Action	Nature Recovery Priority	Overarching Nature Recovery Principle Habitats: More, bigger, better, joined up Species: Recover, reintroduce/ translocate, control
Maintain the existing extent of wood pasture and parkland to ensure no net loss	Make existing wood pasture and parkland better (restore and enhance)	Better existing habitats

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Appendix 2: Methodology - Species and habitat priority generation

The draft Statement of Biodiversity Priorities was produced from a cumulation of stakeholder inputs, expert advice and defined criteria. This aimed to create the focus for those species and habitats which were geographically and ecologically relevant to the area.
On a national scale, it is important that the lists developed within this LNRS contribute towards the Government's species ambitions and environmental objectives. These are legally binding targets introduced by the Environment Act (2021) designed to:

- restore or create in excess of 500,000 hectares of wildlife-rich habitat outside of protected sites by 2042, compared to 2022 levels
- halt the decline of species abundance by 2030, ensuring 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 2022
- increase total tree and woodland cover from 14.5% of land area to 16.5% by 2050
- improve water quality and availability – reduce nitrogen, phosphorus and sediment pollution by at least 40% by 2038.

The LNRS must also work towards national environmental objectives (NEOs) linked to the wider targets to encourage coherent actions across England in order to recover and enhance biodiversity. These include:

- work to ensure that everyone in England lives within 15 minutes' walk of a green or blue space
- restore approximately 280,000 hectares of peatland in England by 2050
- restore 75% of our water bodies to good ecological status
- protect 30% of land and sea in the UK for nature's recovery by 2030
- support farmers to create or restore 30,000 miles of hedgerows by 2037 and 45,000 miles of hedgerows by 2050
- manage our woodlands for biodiversity, climate and sustainable forestry
- restore 75% of SSSIs to favourable condition by 2042
- ensure delivery and management of actions and policies that contribute towards our goals are suitable and adaptive to a changing climate
- make sure LNRSs include proposals for nature-based solutions which improve flood risk management where appropriate
- achieve good environmental status for our seas
- reduce emissions of nitrogen oxides by 73% and ammonia by 16% by 2030 relative to 2005 levels
- reducing the rates of introduction and establishment of invasive non-native species by at least 50%, by 2030.

Within Suffolk and Norfolk, there are several Protected Landscapes (the Broads National Park and the National Landscape areas of Norfolk Coast, Suffolk & Essex Coast & Heaths National Landscape and the Dedham Vale National Landscape).

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These areas are assigned non-statutory targets to which the LNRS will aim to align and contribute to where possible:

- restore or create more than 250,000 hectares of a range of wildlife-rich habitats within Protected Landscapes, outside protected sites by 2042 (from a 2022 baseline)
- bring 80% of SSSIs within Protected Landscapes into favourable condition by 2042
- for 60% of SSSIs within Protected Landscapes assessed as having 'actions on track' to achieve favourable condition by 31 January 2028
- continuing favourable management of all existing **Priority Habitat** already in favourable condition outside of SSSIs (from a 2022 baseline) and increasing to include all newly restored or created habitat through agri-environment schemes by 2042
- ensuring at least 65% to 80% of land managers adopt nature friendly farming on at least 10% to 15% of their land by 2030
- reduce net greenhouse gas emissions in Protected Landscapes to net zero by 2050 relative to 1990 levels
- restore approximately 130,000 hectares of peat in Protected Landscapes by 2050
- increase tree canopy and woodland cover (combined) by 3% of total land area in Protected Landscapes by 2050 (from 2022 baseline).

The interaction between these ambitions and environment targets is detailed in **Appendix 3**. The priorities identified within this process are listed against the targets to demonstrate how the strategy will link to their achievement and how this supported the prioritisation process as outlined in **Figure 14**.

Creation of Biodiversity and Habitat Priorities

The stages, processes and inputs required to generate the habitat-based priorities for Norfolk and Suffolk (illustrated in **Figure 14**) began with the analysis of 288 existing documents, including strategies, policies, and plans. In parallel, insights were gathered from themed working groups, which provided expert input such as group visions and practical measures, aligned with National Character Areas. Additionally, survey results captured stakeholder priorities from both the public and land managers.

From these three sources, approximately 1,700 actions were identified. Only those actions directly related to habitat creation or improvement were taken forward. These actions were then reviewed and collated in two ways. First, they were grouped into 20 habitat areas, with priorities mapped and linked to nature recovery principles. Second, they were sorted into 13 general priority areas, which focused on enhancing a wide range of habitats and ecological processes across the region, irrespective of location.

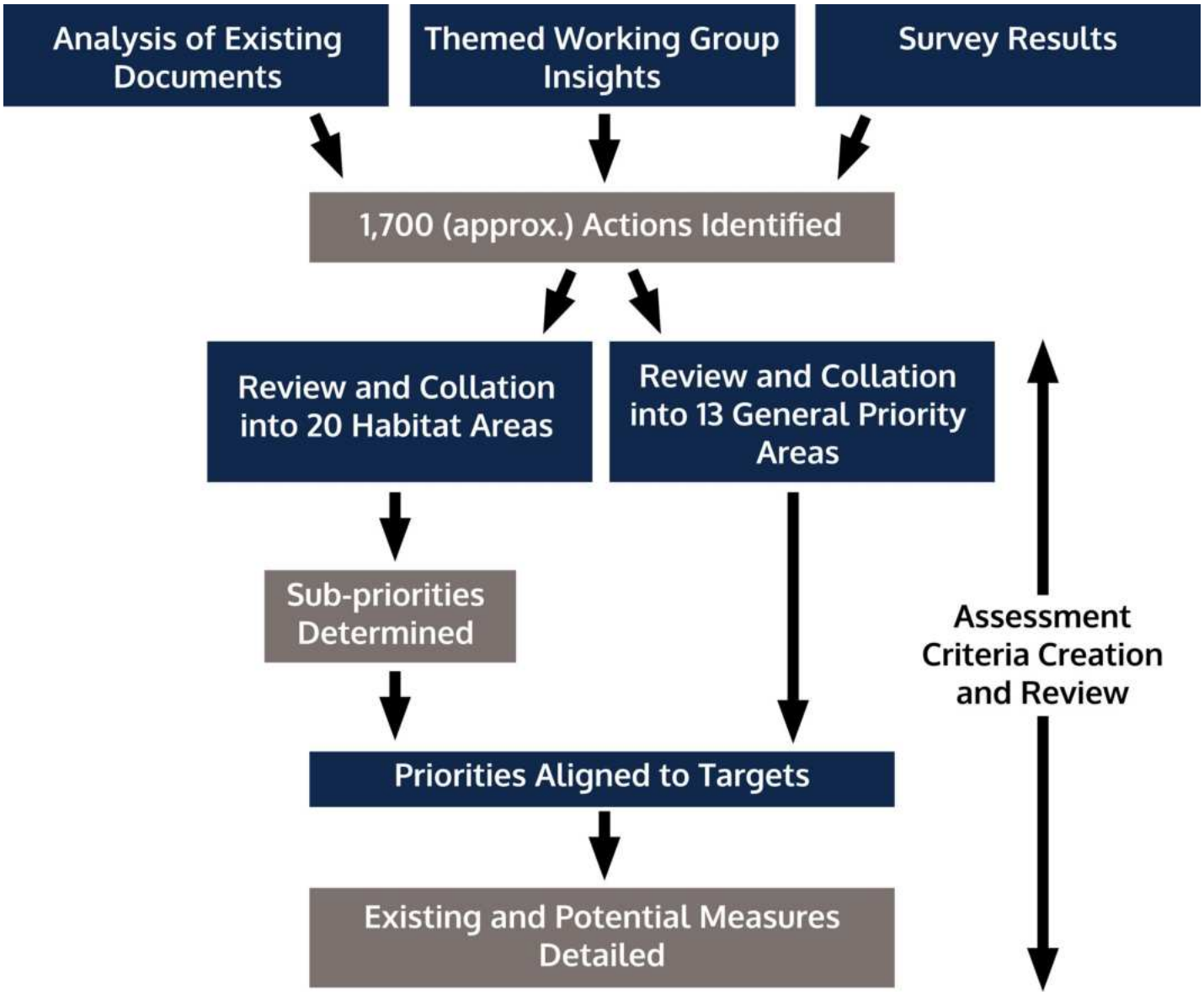
Following this, potential measures were determined, linking the actions to specific, practical activities. These priorities were then aligned to targets and assessed using a RAG (Red, Amber, Green) rating system.

Supporting existing and potential measures were detailed, including specific locations or references to relevant reviewed documents.

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Throughout the process, the assessment criteria were scrutinised and tested with both the themed working groups and the steering group to ensure relevance and robustness.

Figure 14. Processes and inputs for Habitat-Based Priorities



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Species Priorities

The stages, processes, and inputs required to generate the species-based long list and short list, along with related priority measures for Norfolk and Suffolk, are outlined in the flow diagram (**Figure 15**).

The short listed species, split into key species and assemblage species, are detailed in **Tables 67-69**.

The process began with data provided by Local Record Centres (NBIS and SBIS), supported by county recorders. Species were selected based on a range of criteria, including:

- native species assessed as Red List Threatened or Near Threatened (IUCN)
- species likely to meet Threatened status but not formally assessed, with supporting evidence (Natural England)
- nationally extinct species that were re-establishing or rediscovered
- species identified by Natural England for conservation translocation or requiring scaled-up translocation efforts for success

Additional species inputs were drawn from:

- National Landscape and Broads Authority Strategy Focus Species
- Natural England National Character Area Priority Species Lists.

Stakeholder contributions were also gathered through public and land manager surveys, online workshops, and themed working group outputs. These were complemented by species lists from environmental NGOs, including:

- Norfolk Wildlife Trust
- Suffolk Wildlife Trust
- RSPB
- Bat Conservation Trust
- Amphibian and Reptile Conservation Trust

This was supported by a document review process which analysed approximately 300 documents.

From all these sources, more than 1,600 species were identified across Suffolk and Norfolk, creating the Long List for each county. Each inclusion was justified based on IUCN status, conservation importance, and local significance. Information and resources utilised are detailed in the reference and resources section [28-43]. These species then underwent individual assessment using a criteria-based system. Species progressed to the next phase only if they were supported by expert input or Natural England's Species Evidence Base.

The focus was narrowed to species with:

- IUCN status of Near Threatened or higher
- High or Medium Conservation Priority

Species were also screened for suitability under the LNRS using Natural England's Appropriate Species Action Categories, which included:

- (B) Targeted habitat management
- (C) Environmental improvements
- (D) Bespoke, complex conservation

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A shortlist of over 260 species was then quantitatively assessed and ranked. Each species was scored based on the following factors:

- **Urgency:** Risk of local extinction or need to stabilise populations.
- **Deliverability:** Feasibility of required conservation actions.
- **National Significance:** Importance of local populations for species conservation.
- **Co-benefits:** Positive impacts on other species or environmental goals (e.g. carbon storage, water management, nature engagement).
- **Climate Impact:** Vulnerability to climate change.
- **Recent Gains:** Benefits from past conservation work and potential for further progress.

All species were then assigned a priority level of ‘Urgent,’ ‘High,’ ‘Medium,’ or ‘Low’ based on their total score. Species assessed as ‘Urgent’ or ‘High’ were designated as priority species or into assemblages:

- **Priority Species:** With individual measures detailed in the LNRS (21 Suffolk-based, 23 Norfolk-based)
- **Assemblage Members:** Grouped by primary habitat requirements, forming 15 assemblages. Each assemblage included a flagship species to serve as a public engagement symbol and a success indicator for conservation efforts.

For each of these, appropriate measures and supporting evidence were detailed, including location data and relevant documentation.

The longlist of species was produced for each county using all available online data. Species on this list were expected to benefit from LNRS actions through the creation or enhancement of high-quality habitats in suitable areas. While medium- and low-priority species were not included in the final strategy, those likely to receive significant conservation support via other mechanisms were also highlighted.

These species-based priorities are presented within the Statement of Biodiversity Priorities and linked to the strategic opportunity mapping where appropriate.

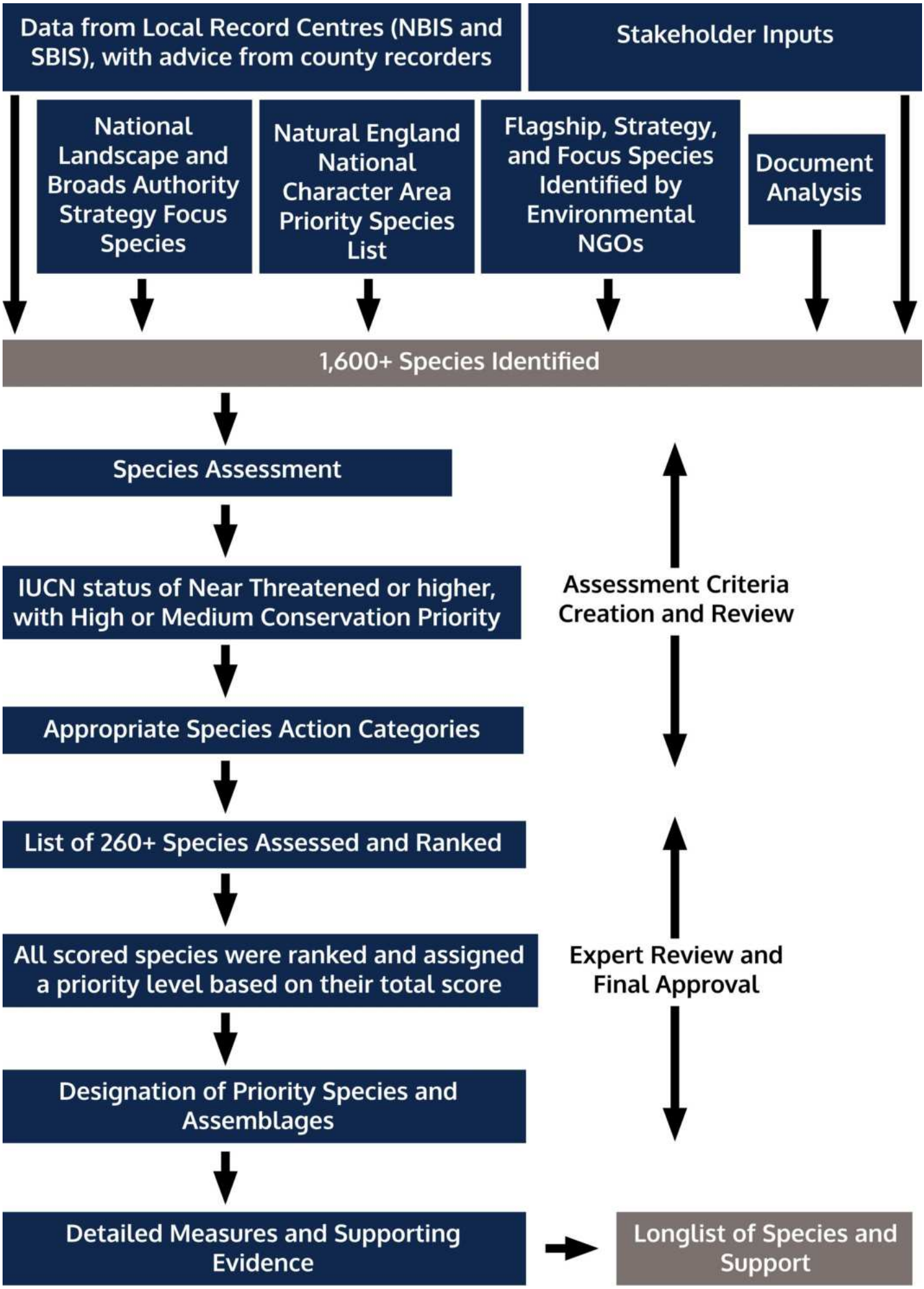
Further information on the assessment criteria and scoring system employed is available at www.nsnrp.org.

Disclaimer: Gathering data on Suffolk and Norfolk's rare and threatened species is challenging. The LNRS has been supported by the Norfolk and Suffolk Biodiversity Information Services (NBIS and SBIS) and county recorders.

At the time of production of the LNRS, these actions were expected to be the most suitable nature recovery techniques to support these species based on the information available. However, expected changes to climate patterns may be unpredictable and the actions to support species should be adapted to the latest understanding of how species and habitats are also being affected by the changing climate when information and evidence is available and during LNRS review.

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Figure 15. Species longlist and prioritisation process



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Full Suffolk species shortlist

Table 67. Key Species

Common Name(s)	Scientific Name	Taxon Group
Basil-thyme Case-bearer	Coleophora tricolor	Invertebrates
Bark Sulphur-firedot	Caloplaca flavorubescens	Lichen and Fungi
Crested cow-wheat	Melampyrum cristatum	Vascular Plants
Dwarf eelgrass	Zostera noltei	Vascular Plants
Eurasian Curlew	Numenius arquata	Birds
European Eel	Anguilla anguilla	Fish
Fen Raft Spider	Dolomedes plantarius	Invertebrates
Hazel Dormouse	Muscardinus avellanarius	Mammals
Kittiwake	Rissa tridactyla	Birds
Lapwing	Vanellus vanellus	Birds
Little Whirlpool Rams-horn Snail	Anisus (Disculifer) vorticulus	Invertebrates
Narrow-mouthed Whorl Snail	Vertigo angustior	Invertebrates
Orange-Fruited Elm-lichen	Caloplaca luteoalba	Lichen and Fungi
Rosser's sac-spider	Clubiona roserae	Invertebrates
Scarce Vapourer	Orgyia recens	Invertebrates
Serotine	Eptesicus serotinus	Mammals
Starlet Sea Anemone	Nematostella vectensis	Invertebrates
Suffolk lungwort	Pulmonaria obscura	Vascular Plants
Tassel stonewort	*Tolypella intricata*	Non Vascular Plants
Water Vole	Arvicola amphibius	Mammals
White clawed crayfish	Austropotamobius pallipes	Invertebrates

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Table 68. Assemblage Species

Common Name(s)	Scientific Name	Taxon Group
A beetle	*Lycoperdina succincta*	Invertebrates
A firedot lichen	*Caloplaca virescens*	Lichen and Fungi
A fly	*Erioptera bivittata*	Invertebrates
A jumping spider	*Neon valentulus*	Invertebrates
A lichen	*Wadeana minuta*	Lichen and Fungi
A lichen	*Verrucaria xyloxena*	Lichen and Fungi
A spider	*Rhysodromus fallax*	Invertebrates
A spider	*Baryphyma maritimum*	Invertebrates
A spider	*Clubiona frisia*	Invertebrates
Adder	*Vipera berus*	Reptiles and Amphibians
Arctic Tern	*Sterna paradisaea*	Birds
Atlantic salmon	*Salmo salar*	Fish
Barbastelle Bat	*Barbastella barbastellus*	Mammals
Barberry Carpet	*Pareulype berberata*	Invertebrates
Beaver	*Castor fiber*	Mammal
Beech	*Fagus sylvatica*	Vascular Plants
Bell Heather	*Erica cinerea*	Vascular Plants
Bittern	*Botaurus stellaris*	Birds
Black poplar	*Populus nigra subsp. betulifolia*	Vascular Plants
Borrers Saltmarsh-grass	*Puccinellia fasciculata*	Vascular Plants
Broad-fruited Cornsalad	*Valerianella rimosa*	Vascular Plants
Broads Long-legged Fly	*Dolichopus laticola*	Invertebrates
Brook lamprey	*Lampetra planeri*	Fish
Brown Hairstreak	*Thecla betulae*	Invertebrates
Bullfinch	*Pyrrhula pyrrhula*	Birds
Bur Medick	*Medicago polymorpha*	Vascular Plants
Chalk Hill Blue	*Polyommatus coridon*	Invertebrates
Chamomile	*Chamaemelum nobile*	Vascular Plants
Common Cuckoo	*Cuculus canorus*	Birds
Common eelgrass	*Zostera marina*	Vascular Plants
Common Swift	*Apus apus*	Birds
Common Tern	*Sterna hirundo*	Birds
Common toad	*Bufo bufo*	Reptiles and Amphibians
Corn Bunting	*Emberiza calandra*	Birds
Creeping Marshwort	*Apium repens*	Vascular Plants
Cylindrical Whorl Snail	*Truncatellina cylindrica*	Invertebrates
Dark Crimson Underwing	*Catocala sponsa*	Invertebrates
Depressed river mussel	*Pseudanodonta complanata*	Invertebrates
Deptford Pink	*Dianthus armeria*	Vascular Plants
Desmoulin's Whorl Snail	*Vertigo moulinsiana*	Invertebrates

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Common Name(s)	Scientific Name	Taxon Group
Devil's-bit Scabious	*Succisa pratensis*	Vascular Plants
Dingy Skipper	*Erynnis tages*	Invertebrates
Divided Sedge	*Carex divisa*	Vascular Plants
Drab Wood-soldierfly	*Solva marginata*	Invertebrates
Eagle's claws lichen	*Anaptychia ciliaris*	Lichen and Fungi
Early Marsh-orchid (cream-flowered)	*Dactylorhiza incarnata*	Vascular Plants
Fen Mason-wasp	*Odynerus simillimus*	Invertebrates
Fen orchid	*Liparis loeselii*	Vascular Plants
Fen Ragwort	*Jacobaea paludosa*	Vascular Plants
Fenn's Wainscot	*Protarchanara brevilinea*	Invertebrates
Field gentian	*Gentianella campestris*	Vascular Plants
Field Maple	*Acer campestre*	Vascular Plants
Field Wormwood/Breckland Mugwort	*Artemisia campestris*	Vascular Plants
Fingered speedwell	*Veronica triphyllos*	Vascular Plants
Fly Orchid	*Ophrys insectifera*	Vascular Plants
Frog Orchid	*Coeloglossum viride*	Vascular Plants
Frogbit	*Hydrocharis morsus-ranae*	Vascular Plants
Golden Hoverfly	*Callicera spinolae*	Invertebrates
Grass snake	*Natrix helvetica*	Reptiles and Amphibians
Grass-poly	*Lythrum hyssopifolia*	Vascular Plants
Grayling Butterfly	*Hipparchia semele*	Invertebrates
Great Crested Newt	*Triturus cristatus*	Reptiles and Amphibians
Great sundew	*Drosera anglica*	Vascular Plants
Greater Butterfly-orchid	*Platanthera chlorantha*	Vascular Plants
Greater Water Parsnip	*Sium latifolium*	Vascular Plants
Green winged orchid	*Anacamptis morio*	Vascular Plants
Greenfinch	*Chloris chloris*	Birds
Grey Carpet	*Lithostege griseata*	Invertebrates
Grey Hair Grass	*Corynephorus canescens*	Vascular Plants
Grey Partridge	*Perdix perdix*	Birds
Ground-pine	*Ajuga chamaepitys*	Vascular Plants
Hawfinch	*Coccothraustes coccothraustes*	Birds
Heath Dog-violet	*Viola canina*	Vascular Plants
Hedgehog	*Erinaceus europaeus*	Mammals
Hen Harrier	*Circus cyaneus*	Birds
Hornbeam	*Carpinus betulus*	Vascular Plants
House Martin	*Delichon urbicum*	Birds
House Sparrow	*Passer domesticus*	Birds
Interrupted Brome	*Bromus interruptus*	Vascular Plants
Juniper	*Juniperus communis*	Vascular Plants
Kestrel	*Falco tinnunculus*	Birds

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Common Name(s)	Scientific Name	Taxon Group
Kingfisher	*Alcedo atthis*	Birds
Large Marsh Grasshopper	*Stethophyma grossum*	Invertebrates
Large-mouthed Valve Snail	*Valvata macrostoma*	Invertebrates
Lesser Spotted Woodpecker	*Dryobates minor comminutus*	Birds
Linnet	*Linaria cannabina*	Birds
Little Tern	*Sternula albifrons*	Birds
Man Orchid	*Orchis anthropophora*	Vascular Plants
Marsh Tit	*Poecile palustris subsp. palustris/dresseri*	Birds
Military Orchid	*Orchis militaris*	Vascular Plants
Milk Parsley	*Thysselinum palustre*	Vascular Plants
Native Elm	*Ulmus serrata*	Vascular Plants
Native oyster	*Ostrea edulis*	Invertebrates
Natterjack toad	*Epidalea calamita*	Reptiles and Amphibians
Nightingale	*Luscinia megarhynchos*	Birds
Nightjar	*Caprimulgus europaeus*	Birds
Oak Polypore	*Piptoporus quercinus*	Lichen and Fungi
Opposite-leaved pondweed	*Groenlandia densa*	Vascular Plants
Orange-horned Green Colonel	*Odontomyia angulata*	Invertebrates
Oystercatcher	*Haematopus ostralegus*	Birds
Pashford Pot Beetle	*Cryptocephalus exiguus*	Invertebrates
Pedunculate Oak	*Quercus robur*	Vascular Plants
Pedunculate Sea-purslane	*Atriplex pedunculata*	Vascular Plants
Prickly Saltwort	*Salsola kali subsp. kali*	Vascular Plants
Proliferous Pink	*Petrorhagia prolifera*	Vascular Plants
Prostrate Perennial Knawel	*Scleranthus perennis subsp. prostratus*	Vascular Plants
Purple Emperor	*Apatura iris*	Invertebrates
Red-backed Shrike	*Lanius collurio*	Birds
Redpoll	*Acanthis cabaret*	Birds
Redshank	*Tringa totanus*	Birds
Red Tipped Cudweed	*Filago lutescens*	Vascular Plants
Ribbon-leaved Water-plantain	*Alisma gramineum*	Vascular Plants
Ringed Plover	*Charadrius hiaticula*	Birds
Rock rose	*Helianthemum nummularium*	Vascular Plants
Round leaved sundew	*Drosera rotundifolia*	Vascular Plants
Rowan	*Sorbus aucuparia*	Vascular Plants
Sand catchfly	*Silene conica*	Vascular Plants
Sandwich Click Beetle	*Melanotus punctolineatus*	Invertebrates
Scarce emerald damselfly	*Lestes dryas*	Invertebrates

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Common Name(s)	Scientific Name	Taxon Group
Scarce Pug	*Eupithecia extensaria subsp. oc-cidua*	Invertebrates
Sea Barley	*Hordeum marinum*	Vascular Plants
Sea-heath	*Frankenia laevis*	Vascular Plants
Seaside Pansy	*Viola tricolor subsp. curtisii*	Vascular Plants
Sheet weaver spider	*Agyneta fuscipalpa*	Invertebrates
Shepherd's-needle	*Scandix pecten-veneris*	Vascular Plants
Silver Studded Blue	*Plebejus argus*	Invertebrates
Skylark	*Alauda arvensis*	Birds
Slender Tare	*Vicia parviflora*	Vascular Plants
Small Cord-grass	*Spartina maritima*	Vascular Plants
Small Leaved LIme	*Tilia cordata*	Vascular Plants
Small-flowered Catchfly	*Silene gallica*	Vascular Plants
Spider	*Centromerus semiater*	Invertebrates
Spider	*Gongylidiellum murcidum*	Invertebrates
Spined Loach	*Cobitis taenia*	Fish
Spiny Restharrow	*Ononis spinosa*	Vascular Plants
Spotted Cat's-ear	*Hypochaeris maculata*	Vascular Plants
Spotted Flycatcher	*Muscicapa striata*	Birds
Spring Speedwell	*Veronica verna*	Vascular Plants
Starfruit	*Damasonium alisma*	Vascular Plants
Starling	*Sturnus vulgaris*	Birds
Stone curlew	*Burhinus oedicnemus*	Birds
Stoneworts	*Chara species*	Non-Vascular Plants
String of Sausages Lichen	*Usnea articulata*	Lichen and Fungi
Sulphur Clover	*Trifolium ochroleucon*	Vascular Plants
Swallow	*Hirundo rustica*	Birds
Swallowtail	*Papilio machaon*	Invertebrates
Sweet Chestnut	*Castanea sativa*	Vascular Plants
Swollen Spire Snail	*Mercuria tachoensis*	Invertebrates
Tansy Beetle	*Chrysolina graminis*	Invertebrates
Thorned Yellow Splay	*Erioptera meijerei*	Invertebrates
Tree Sparrow	*Passer montanus*	Birds
Turtle Dove	*Streptopelia turtur*	Birds
Twayblade	*Neottia ovata*	Vascular Plants
Water Dock Case Bearer	*Coleophora hydrolapathella*	Invertebrates
Water violet	*Hottonia palustris*	Vascular Plants
White Admiral	*Limenitis camilla*	Invertebrates
White Letter Hairstreak	*Satyrium w-album*	Invertebrates
Whooper swan	*Cygnus cygnus*	Birds
Wild Pansy	*Viola tricolor*	Vascular Plants
Wild Service Tree	*Sorbus torminalis*	Vascular Plants
Willow Tit	*Poecile montanus*	Birds
Wolf Spider	*Hygrolycosa rubrofasciata*	Invertebrates

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Common Name(s)	Scientific Name	Taxon Group
Woodlark	*Lullula arborea*	Birds
Wormwood moonshiner	*Amara fusca*	Invertebrates
Yellow Vetchling	*Lathyrus aphaca*	Vascular Plants
Yellow Wagtail	*Motacilla flava*	Birds
Yellowhammer	*Emberiza citrinella*	Birds
Yellow-vetch	*Vicia lutea*	Vascular Plants
Yew	*Taxus baccata*	Vascular Plants
Zircon Reed Beetle	*Donacia aquatica*	Invertebrates

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Table 69. Species expected to benefit from proposed LNRS measures

Common Name(s)	Scientific Name	Taxon Group
A beetle	*Pseudotriphyllus suturalis*	Invertebrates
A lichen	*Bellicidia incompta*	Lichen and Fungi
A lichen	*Calicium notarisii*	Lichen and Fungi
A lichen	*Cladonia rei*	Lichen and Fungi
A lichen	*Cliostomum corrugatum*	Lichen and Fungi
A lichen	*Gyalecta flotovii*	Lichen and Fungi
A lichen	*Lecanora sublivescens*	Lichen and Fungi
A lichen	*Porina rosei*	Lichen and Fungi
A lichen	*Psora decipiens*	Lichen and Fungi
A lichen	*Ramonia chrysophaea*	Lichen and Fungi
A lichen	*Roccella phycopsis*	Lichen and Fungi
A lichen	*Thalloidima physaroides*	Lichen and Fungi
A long toed water beetle	*Dryops anglicanus*	Invertebrates
Bewick's Swan (Tundra Swan)	*Cygnus columbianus bewickii*	Birds
Common Cudweed	*Filago vulgaris*	Vascular Plants
Coot	*Fulica atra*	Birds
Corn Spurrey	*Spergula arvensis*	Vascular Plants
Cross-leaved Heath	*Erica tetralix*	Vascular Plants
Divided Sedge	*Carex divisa*	Vascular Plants
Dwarf Stonewort	*Nitella tenuissima*	Non-Vascular Plants
Eurasian Red Squirrel	*Sciurus vulgaris*	Mammal
Field Mouse-ear	*Cerastium arvense*	Vascular Plants
Fine-leaved Sandwort	*Minuartia hybrida*	Vascular Plants
Flat-sedge	*Blysmus compressus*	Vascular Plants
Fritillary	*Fritillaria meleagris*	Vascular Plants
Frogbit Smut	*Tracya hydrocharidis*	Lichen and Fungi
Goldeneye	*Bucephala clangula*	Birds
Grape-hyacinth	*Muscari neglectum*	Vascular Plants
Gypsy Moth	*Lymantria dispar*	Invertebrates
Harebell	*Campanula rotundifolia*	Vascular Plants
Heath Milkwort	*Polygala serpyllifolia*	Vascular Plants
Heath Speedwell	*Veronica officinalis*	Vascular Plants
Hoary Plantain	*Plantago media*	Vascular Plants
Jumping spider	*Marpissa radiata*	Invertebrates
Large Copper	*Lycaena dispar*	Invertebrates
Least Lettuce	*Lactuca saligna*	Vascular Plants
Maiden Pink	*Dianthus deltoides*	Vascular Plants
Moorhen	*Gallinula chloropus*	Birds
Mousetail	*Myosurus minimus*	Vascular Plants

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Common Name(s)	Scientific Name	Taxon Group
Osprey	*Pandion haliaetus*	Birds
Oxlip	*Primula elatior*	Vascular Plants
Pillwort	*Pilularia globulifera*	Non-Vascular Plants
Ragged-Robin	*Silene flos-cuculi*	Vascular Plants
Rare Spring-sedge	*Carex ericetorum*	Vascular Plants
Red-breasted Merganser	*Mergus serrator*	Birds
Sainfoin	*Onobrychis viciifolia*	Onobrychis viciifolia
Sanicle	*Sanicula europaea*	Vascular Plants
Scaly Breck-Lichen	*Squamarina lentigera*	Lichen and Fungi
Scarlet Malachite Beetle	*Malachius aeneus*	Invertebrates
Scrambled egg lichen	*Fulgensia fulgens*	Lichen and Fungi
Set-aside Downy-back	*Ophonus laticollis*	Invertebrates
Shepherd's Cress	*Teesdalia nudicaulis*	Vascular Plants
Shingle spider	*Neon pictus*	Invertebrates
Small Blue	*Cupido minimus*	Invertebrates
Small Cudweed	*Filago minima*	Vascular Plants
Small Heath	*Coenonympha pamphilus*	Invertebrates
Smooth Cat's-ear	*Hypochaeris glabra*	Vascular Plants
Spider	*Pelecopsis radicicola*	Invertebrates
Spider	*Phaeocedus braccatus*	Invertebrates
Spider	*Trichoncus hackmani*	Invertebrates
Tiny Earthstar	*Geastrum minimum*	Lichen and Fungi
Tormentil	*Potentilla erecta*	Vascular Plants
Whinchat	*Saxicola rubetra*	Birds
Witches' Whiskers Lichen	*Usnea florida*	Lichen and Fungi
Wolf Spider	*Arctosa fulvolineata*	Invertebrates
Wryneck	*Jynx torquilla*	Birds

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Appendix 3: Priorities associated to environmental objectives

To demonstrate how the priorities identified within this strategy deliver against the appropriate ambitions and environmental objectives, the following tables **(Tables 71-91)** list the considered alignment between measures, benefits and targets. Each benefit or target is assigned a code eg WEB1 within the tables below, and were ranked in terms of their considered relevance.

Table 70 summarises the habitats that would have the potential to impact these wider environmental and co-benefits to the highest (key) and to a lesser extent. This information could link to decision making and prioritisation within project design for nature recovery actions in specific areas.

For each habitat area, the priorities were assessed against:

- Wider Environmental Benefits (see **Part B**)
    - Climate change mitigation (WEB1)
    - Improvement in water quality (WEB2)
    - Increasing water quantity (WEB3)
    - Improving air quality (WEB4)
    - Improving soil quality and health (WEB5)
    - Reduction in flood risk (WEB6)

Environment Act (2021) targets:

- restore or create in excess of 500,000 hectares of wildlife-rich habitat outside of protected sites (EA1)
- halt the decline of species abundance (EA2)
- reduce the risk of species' extinction (EA3)
- increase total tree and woodland cover (EA4)
- improve water quality and availability (EA5).

National Environmental Objectives (NEOs):

- work to ensure that everyone in England lives within 15 minutes' walk of a green or blue space (NEO1)
- restore approximately 280,000 hectares of peatland (NEO2)
- restore 75% of our water bodies to good ecological status (NEO3)
- protect 30% of land and sea for nature's recovery (NEO4)
- support farmers to create or restore 30,000 miles of hedgerows (NEO5)
- manage our woodlands for biodiversity, climate and sustainable forestry (NEO6)
- restore 75% of Sites of Special Scientific Interest to favourable condition by 2042 (NEO7)
- ensure delivery and management of actions and policies that contribute towards our goals are suitable and adaptive to a changing climate (NEO8)

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- make sure LNRSs include proposals for nature-based solutions which improve flood risk management where appropriate (NEO9)
- achieve Good Environmental Status for our seas (NEO10)
- reduce emissions of nitrogen oxides by 73% and ammonia by 16% (NEO11)
- reducing the rates of introduction and establishment of invasive non-native species by at least 50%, (NEO12).

- Protected Landscapes non-statutory targets:

  - restore or create more than 250,000 hectares of a range of wildlife-rich habitats (PL1)
  - bring 80% of SSSIs into favourable condition (PL2)
  - for 60% of SSSIs assessed as having ‘actions on track’ to achieve favourable condition (PL3)
  - continuing favourable management of all existing Priority Habitat already in favourable condition and increasing to include all newly restored or created habitat through agri-environment schemes (PL4)
  - ensuring at least 65% to 80% of land managers adopt nature friendly farming on at least 10% to 15% of their land (PL5)
  - reduce net greenhouse gas emissions to net zero (PL6)
  - restore approximately 130,000 hectares of peat (PL7)
  - increase tree canopy and woodland cover (combined) by 3% of total land area (PL8)

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Table 70. Identification of habitats with potential to deliver key wider environmental benefits

Habitat	Key wider environmental benefit	Lesser wider environmental benefit
Mixed Deciduous Woodland	• Air quality • Capturing carbon • Clean water source • Flood mitigation	• Improving marine environment • Managing climate resilience • Soil health
Wet Woodland	• Air quality • Capturing carbon • Clean water source	• Improving marine environment
Wood Pasture and Parkland	• Air quality • Capturing carbon	• Managing climate resilience • Soil health
Scrub	• Air quality • Clean water source	• Improving marine environment
Habitats in Farmed Landscapes	• Clean water source • Flood mitigation • Pollination	• Capturing carbon • Improving marine environment • Managing climate resilience • Soil health
Traditional Orchards	Not applicable	• Capturing carbon • Managing climate resilience • Soil health
Habitats in Urban, Built and Garden Environments	• Flood mitigation • Pollination	• Clean water source • Managing climate resilience • Soil health
Heathland and Acid Grassland	• Pollination	• Air quality • Capturing carbon • Improving marine environment • Soil health
Neutral and Calcareous Grassland	• Clean water source • Pollination	• Air quality • Capturing carbon • Improving marine environment • Soil health
Wet Grassland	• Clean water source • Pollination	• Air quality • Capturing carbon • Improving marine environment • Soil health
Rivers and Streams	• Clean water source • Flood mitigation • Improving marine environment	Not applicable
Still Water Habitats	• Water quantity	• Capturing carbon • Flood mitigation
Fen Habitats	• Capturing carbon • Clean water source	• Flood mitigation
Reedbeds	Clean water source	• Flood mitigation • Managing climate resilience

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Habitat	Key wider environmental benefit	Lesser wider environmental benefit
Coastal Saltmarsh and Intertidal Mudflats	• Clean water source • Flood mitigation • Improving marine environment	• Air quality • Managing climate resilience
Coastal Sand Dunes	• Flood mitigation • Improving marine environment	• Capturing carbon • Clean water source • Managing climate resilience
Coastal Vegetated Shingle	Flood mitigation	• Improving marine environment • Managing climate resilience
Maritime Cliffs and Slopes	Not applicable	• Flood mitigation • Managing climate resilience
Saline Lagoons	Capturing carbon	• Improving marine environment • Managing climate resilience

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Table 71. Mixed Deciduous Woodland delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new deciduous woodland	M	M	N	M	Y	M	EA4 EA1	NEO6 NEO9 NEO8	PL8
Enlarge and expand existing deciduous woodland	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO9 NEO8 NEO4	PL8
Connect deciduous woodland areas	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO4 NEO8	PL8
Restore and enhance existing deciduous woodland	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO4 NEO9 NEO12 NEO7	PL8

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 72. Wet Woodland delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new wet woodland where feasible	M	M	M	M	Y	M	EA4 EA1	NEO6 NEO9 NEO8	PL8
Enlarge and expand existing wet woodland	Y	M	M	M	Y	M	EA4 EA1	NEO6 NEO9 NEO8 NEO4	PL8
Connect wet woodland areas	Y	M	M	M	Y	M	EA4 EA1	NEO6 NEO9 NEO8 NEO4	PL8
Restore and enhance existing wet woodland	Y	M	M	M	Y	M	EA4 EA1	NEO6 NEO4 NEO9 NEO12 NEO8	PL8

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 73. Scrub delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new scrub where feasible and desirable	Y	N	M	M	Y	M	EA1 EA3	NEO4 NEO8	NA
Enlarge and expand existing scrub	Y	N	M	M	Y	M	EA1 EA3	NEO4 NEO8	NA
Connect scrub areas	Y	N	M	M	Y	M	EA1 EA3	NEO4 NEO8	NA
Restore and enhance existing scrub	Y	N	M	M	Y	M	EA1 EA3	NEO4 NEO12 NEO8 NEO7	NA

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 74. Habitats in Farmed Landscapes delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Enlarge and expand existing arable field margins	M	M	N	M	Y	M	EA1 EA3	NEO4 NEO8	PL5
Connect arable field margins	Y	M	N	M	Y	M	EA1 EA3	NEO4 NEO8	PL5
Restore and enhance existing arable field margins	Y	M	N	M	Y	M	EA1 EA3	NEO4 NEO12 NEO8 NEO7	PL5
Create new hedgerows using appropriate native species	M	M	N	M	Y	M	EA1 EA3	NEO5 NEO8	PL5
Restore and enhance existing hedgerows	M	M	N	M	Y	M	EA1 EA3	NEO5 NEO12 NEO8 NEO7	PL5
Establish more hedgerow tress	Y	M	N	M	Y	M	EA1 EA3	NEO5 NEO8	PL5

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 75. Wood Pasture and Parkland delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new wood pasture where feasible	M	M	N	M	Y	M	EA4 EA1	NEO6 NEO8	PL8
Enlarge and expand existing wood pasture	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO8 NEO4	PL8
Connect wood pasture areas	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO8 NEO4	PL8
Restore and enhance existing wood pasture	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO8 NEO4	PL8
Restore, enhance and re-create existing and former parkland	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO4 NEO12 NEO8 NEO7	PL8

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 76. Traditional Orchards delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new traditional orchards where feasible	M	M	N	M	Y	M	EA4 EA1	NEO6 NEO8	PL8
Enlarge and expand existing traditional orchards	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO8 NEO4	PL8
Restore and enhance existing traditional orchards	Y	M	N	M	Y	M	EA4 EA1	NEO6 NEO12 NEO8 NEO7	PL8

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 77. Habitats in Urban, Built and Garden Environments delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Improve the condition of the existing urban tree estate	Y	M	N	Y	M	M	EA4 EA1	NEO6 NEO8 NEO4	PL8
Increase urban tree cover	Y	M	N	Y	M	M	EA4 EA1	NEO6 NEO8 NEO4	PL8
Identify focus areas for improved garden connectivity and wildlife friendly management practices	M	M	M	Y	Y	M	EA1 EA2	NEO6 NEO1 NEO12 NEO8	PL8
Identify areas suitable for creation of community gardens	M	M	N	Y	Y	M	EA1 EA2	NEO1 NEO8 NEO4	NA
Create green crossings over roads or railway lines that fragment blocks of habitat	M	M	N	M	Y	M	EA1 EA2	NEO8 NEO4 NEO6	NA
Create or enhance areas of appropriate habitat alongside existing railway network or new infrastructure	M	M	N	M	Y	M	EA1 EA2	NEO8 NEO4 NEO6	NA
Create new habitats through drainage features on development sites	Y	Y	M	M	Y	M	EA1 EA5	NEO9 NEO8 NEO4	NA

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 78. Heathland and Acid Grassland delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new heathland areas where feasible and desirable	M	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Enlarge and expand existing heathland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Restore and enhance existing heathland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO12 NEO8	PL4
Create new acid grassland where feasible and desirable	M	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Enlarge and expand existing acid grassland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Restore and enhance existing acid grassland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 79. Grassland Habitat delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new grassland areas where feasible and desirable	M	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Enlarge and expand existing grassland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Connect grassland areas	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Restore and enhance existing grassland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO12 NEO8	PL4
Create new calcareous grassland areas where feasible and desirable	M	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Enlarge and expand existing calcareous grassland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Connect calcareous grassland areas	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Restore and enhance existing calcareous grassland	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO12 NEO8	PL4
Create new lowland meadows and pastures where feasible and desirable	M	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Enlarge and expand existing lowland meadows and pastures	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4

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Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Connect lowland meadow and pasture areas	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO8	PL4
Restore and enhance existing lowland meadows and pastures	Y	M	N	M	Y	M	EA1 EA2	NEO7 NEO4 NEO12 NEO8	PL4

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 80. Wet Grassland delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new wet grassland and grazing marshes where feasible and desirable	M	M	M	M	Y	M	EA1 EA2	NEO4 NEO8	PL4
Enlarge and expand existing wet grassland and grazing marshes where feasible and desirable	Y	M	M	M	Y	M	EA1 EA2	NEO4 NEO8	PL4
Connect wet grassland and grazing marshes areas where feasible	Y	M	M	M	Y	M	EA1 EA2	NEO4 NEO8	PL4
Restore and enhance existing wet grassland and grazing marshes	Y	M	M	M	Y	M	EA1 EA2	NEO4 NEO12 NEO8 NEO7	PL4

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 81. Open Mosaic Habitat delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new open mosaic habitat where feasible and desirable	M	M	M	M	Y	M	EA1 EA2	NEO8	PL4
Enlarge and expand existing open mosaic habitat where feasible	Y	M	M	M	Y	M	EA1 EA2	NEO8	PL4
Improve and enhance existing open mosaic habitat	Y	M	M	M	Y	M	EA1 EA2	NEO12 NEO8 NEO7	PL4

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 82. Rivers and Streams delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Restore and enhance existing rivers, streams and ditches	Y	Y	Y	M	M	M	EA5	NEO3 NEO12 NEO8 NEO7	PL3
Improve management of water resources through nature-based solutions	Y	Y	Y	M	M	M	EA5	NEO9 NEO8	PL3
Strengthen mosaic of wetland habitats along river channels	Y	Y	Y	M	M	M	EA1 EA5	NEO3 NEO12 NEO8	PL3
Improve river, riparian and floodplain habitat	Y	Y	Y	M	M	M	EA5	NEO3 NEO12 NEO8	PL3
Restore and enhance chalk stream habitats	M	Y	Y	M	M	M	EA5	NEO3 NEO12 NEO8 NEO7	PL3

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 83. Still Water Habitats delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new still water habitats where feasible and desirable	M	Y	Y	M	M	M	EA5	NEO3 NEO8	PL3
Restore appropriate pond habitats	Y	Y	Y	M	M	M	EA5	NEO3 NEO12 NEO8 NEO7	PL3
Enhance existing pond habitats	Y	Y	Y	M	M	M	EA5	NEO3 NEO12 NEO8 NEO7	PL3
Restore, maintain and enhance lake and broad habitats	Y	Y	Y	M	M	M	EA5	NEO3 NEO12 NEO8	PL3

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 84. Fen Habitats delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new fen habitats and multi use wetlands	Y	Y	M	M	Y	M	EA1 EA5	NEO8	PL3
Enlarge, expand and connect existing fen habitats	Y	Y	M	M	Y	M	EA1 EA5	NEO8	PL3
Retore and enhance existing fen habitats	Y	Y	M	M	Y	M	EA1 EA5	NEO4 NEO2 NEO12 NEO8 NEO7	PL7

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 85. Reedbeds delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new reedbed habitat	M	Y	M	M	Y	M	EA1 EA5	NEO8	PL3
Enlarge, expand and connect existing reedbed habitat	Y	Y	M	M	Y	M	EA1 EA5	NEO8	PL3
Retore and enhance existing reedbed	Y	Y	M	M	Y	M	EA1 EA5	NEO4 NEO2 NEO12 NEO8 NE7	PL7

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 86. Coastal Saltmarsh and Intertidal Mudflats delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Create new saltmarsh where feasible and desirable	M	Y	M	M	Y	M	EA1 EA2	NEO8 NEO10	PL1
Enlarge and expand existing saltmarsh	Y	Y	M	M	Y	M	EA1 EA2	NEO8 NEO10	PL1
Restore and enhance existing saltmarsh	Y	Y	M	M	Y	M	EA1 EA2	NEO4 NEO12 NEO8 NEO12 NEO7	PL1
Create new intertidal mudflats where feasible and desirable	Y	Y	M	M	Y	M	EA1 EA2	NEO8 NEO10	PL1
Enlarge and expand existing intertidal mudflats	Y	Y	M	M	Y	M	EA1 EA2	NEO8 NEO10	PL1
Retore and enhance existing intertidal mudflats	Y	Y	M	M	Y	M	EA1 EA2	NEO4 NEO12 NEO8 NEO10 NEO7	PL1

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 87. Coastal Sand Dunes delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Facilitate the formation of new coastal sand dunes	M	M	N	M	M	M	EA1 EA2	NEO8	PL1
Enlarge and expand existing coastal sand dunes	Y	M	N	M	M	M	EA1 EA2	NEO8	PL1
Retore and enhance existing coastal sand dunes	Y	M	N	M	M	M	EA1 EA2	NEO4 NEO12 NEO8 NEO7	PL1

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 89. Coastal Vegetated Shingle delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Facilitate the formation of new coastal vegetated shingle	Y	M	N	M	M	M	EA1 EA2	NEO8	PL1
Enlarge and expand existing coastal vegetated shingle	Y	M	N	M	M	M	EA1 EA2	NEO8	PL1
Retore and enhance existing coastal vegetated shingle	Y	M	N	M	M	M	EA1 EA2	NEO4 NEO12 NEO8 NEO7	PL1

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 90. Maritime Cliffs and Slopes delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Facilitate the formation of new maritime cliffs and slopes	M	M	N	M	M	M	EA1 EA2	NEO8	PL1
Enlarge and expand existing maritime cliffs and slopes	Y	M	N	M	M	M	EA1 EA2	NEO8	PL1
Retore and enhance existing maritime cliffs and slopes	Y	M	N	M	M	M	EA1 EA2	NEO8	PL1

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Table 91. Saline Lagoons delivery against objectives for Wider Environmental Benefits (WEB), Environment Act targets (EA), National Environmental Objectives (NEO), and non-statutory targets for Protected Landscapes.

Potential Measure	WEB 1	WEB 2	WEB 3	WEB 4	WEB 5	WEB 6	EA	NEO	PL
Facilitate the formation of new saline lagoons	M	M	N	M	N	M	EA1	NEO3 NEO8 NEO10	PL1
Enlarge and expand existing saline lagoons	Y	M	N	M	N	M	EA1	NEO3 NEO8 NEO10	PL1
Retore and enhance existing saline lagoons	Y	M	N	M	N	M	EA1	NEO4 NEO12 NEO8 NEO10 NEO7	PL1

Green (Y) shows a major effect, orange (M) shows a minor effect, and grey (N) means no effect. NA means none applicable to the targets.

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Appendix 4: Methodology - Mapping

Overview

The mapped aspect of the LNRS is described in the statutory guidance as the 'Local Habitat Map'. This habitat map must consist of two main components:

- a map of areas of particular importance to biodiversity (APIB)
- a map of areas that could become of particular importance for biodiversity (ACB), which also details where potential nature recovery measures could be taken.

As well as these two main outputs, other data layers created to support the LNRS include a habitat basemap, used to classify the current extent of different habitats, and a broad map of strategic areas. This appendix provides an overview of the approach taken to create the Local Habitat Map layers, however a full technical methodology and list of data inputs can be found in the 'Technical Documentation' report, accessible from the NSNRP website.

The Local Habitat Map provides indicative suitable locations for nature recovery opportunities, however it does not place restrictions on what actions can take place and where. Additionally, the ACBs do not restrict other land-uses for any given location, and where an existing or planned land-use impacts a particular measure, caveats have been applied to the mapped opportunities.

The methods to create these three mapped components are detailed below, and consisted of a combination of stakeholder input and geospatial analysis, or 'rules-based mapping'. Whilst every effort has been made to ensure the accuracy of the mapping, the analysis undertaken has not been subject to ground-truthing and relies on a range of input datasets which may result in errors in classification for some parcels of land. The suitability of any site for proposed measures would require further assessment as detailed in **Part C**, which would include identification of any recent land use changes to ensure the most up to date information is included. It is expected that individual site surveys and feasibility studies will be undertaken prior to actioning any of the opportunities detailed in the map.

Part I. Identify areas of particular importance for biodiversity (APIB)

The APIB map shows areas that are currently recognised as important for biodiversity through various local, national and international designations.

The primary purpose of mapping potential measures is to identify areas that could become of particular importance for biodiversity (ACBs) and therefore the majority of measures are not being mapped to APIBs, which are already recognised for their importance to nature.

The types of sites that can be included in the APIB map are clearly defined in the LNRS Statutory Guidance. The purpose of these guidelines is to ensure that the APIB mapping is consistent across all LNRS areas, and so additional sites and other Priority Habitat areas could not be included at this stage. The types of sites and designations within the APIB map are described below.

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Irreplaceable habitat
- Ancient woodland
- Veteran trees
- Coastal sand dunes
- Lowland fen
- Spartina saltmarsh swards and Mediterranean saltmarsh scrub

Local Designations
- County Wildlife Sites
- Local Nature Reserves

National Designations
- National Nature Reserves
- Sites of Special Scientific Interest
- Marine Conservation Zones (MCZ) (MCZs fall outside of the LNRS strategy boundary but are still included)

International Designations
- Special Protection Areas
- Special Areas of Conservation
- Ramsar Sites

Part II. Classification of existing habitats

A habitat basemap was produced which represents the best estimate of current habitat extents across the strategy area. This layer provided a baseline of habitat information on which the rest of the LNRS mapping was based. A 'best-guess' approach which combined the most accurate sources of data for different habitat types was used, as it was not feasible to carry out detailed surveying across the two strategy areas.

The habitat basemap combines data from the Ordnance Survey, Natural England Priority Habitats Inventory, Rural Payments Agency, and National Forest Inventory, amongst others. Habitats were classified under the industry standard UKHabs system, with additional land use information being incorporated to highlight areas which act as greenspace sites, allotments and playgrounds, for example.

Part III. Identify strategic areas

To help identify ACBs, a number of separate components were combined. Multiple different datasets were considered and assessed with expert stakeholder input, to determine which best represent areas of strategic significance for nature recovery. The components were then merged, and suitable land parcels within them were extracted, representing the total extent of ACBs. Each component representing an area of strategic significance is detailed below:

- '**Lawton Zones'**: A 250m buffer around existing APIB (with addition of Roadside Nature Reserves) representing the Lawton principles of bigger (where habitats could be expanded) and more joined (where new linkages between APIB could be created). The buffer was extended to 500m in places where this allowed two buffers to join up.
- **Churchyards**: A 250m buffer around churchyards, which can provide small stepping-stones of semi natural or natural habitat across the strategy areas.
- **Roadside Nature Reserves**: A 250m buffer around these sites which provide important wildlife corridors.
- **Veteran Trees**: A 30m buffer around tree point locations.
- **Deep peaty soils**: The extent of deep peat represents important fenland areas in Norfolk and Suffolk, as well as areas with the potential for associated

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carbon storage.

- **Natural England Habitat Networks Expansion Zone 1** (including Priority Habitat Inventory): The NE habitat networks show where existing priority habitats could be made better, bigger and more joined. Use of the habitat networks means priority habitats outside of APIB designations can be captured and buffered within the ACB.
- **Rivers** (including chalk rivers): A 50m buffer around all main rivers, which offer vital habitat and connectivity through the landscape.

Land parcels at least 33% within these areas were then extracted from a habitat basemap to form the final ACB map. These also formed the baseline of candidate sites to which potential measures could be assigned.

Part IV: Mapping Potential Measures (PMs) and areas that could become of particular importance for biodiversity (ACBs)

A dual approach of stakeholder inputs and geospatial analysis was taken to assign suitable measures to land parcels within the strategic areas, based on the wide range of habitats identified in the statement of biodiversity priorities.

The potential measures identified within the local habitat map have been designed to highlight opportunities for nature recovery, and do not represent an exhaustive list of the types of actions that will be suitable in any given location. The map is based on a desk-based analysis, and so it is expected that more detailed site surveys should be undertaken to confirm the feasibility of suggested measures. As with all parcels shown as ACB, the suitability of any site for proposed measures would require assessment to confirm the specific biodiversity opportunities for these areas.

Geospatial Rules-based Mapping of Measures

An analytical approach to mapping allowed specific measures for of each habitat type to be assigned consistently within any suitable areas across the strategy area. Suitability criteria specific to each habitat type were used to the candidate land parcels within the ACBs, with the relevant measure assigned to all suitable parcels. Suitability was assessed on factors such as:

- **Soil type**: Some habitats such as grassland, wetlands and heathlands require specific soil conditions which would limit habitat creation opportunities.
- **Proximity to floodplain:** Wetland habitats were restricted to floodplain areas, whilst for other habitats this was used to exclude unsuitable areas.
- **Existing Land Use:** Candidate land parcels were filtered based on the suitability of the existing land use/ habitat type (e.g. excluding urban infrastructure).
- **Proximity to target habitat fragments:** Targeting parcels close to existing areas of habitat helps to make them ‘bigger’ and ‘more joined up’.
- **Landscape Character Type:** Using character areas to prioritise habitat creation ensures that efforts align with the unique ecological, cultural, and physical characteristics of each area.
- **Suitability for delivering environmental benefits:** Some habitat creation opportunities were assigned where they intersect

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with watercourses or overland flow pathways, in order to show where measures may deliver wider environmental benefits.

- **Suitability identified by external models and datasets**: Certain habitats have detailed suitability models already available, and so these datasets were incorporated where possible.

Additional caveat information was then added to highlight a need for further consideration where potential measures intersect certain land-uses. More detailed assessment of these caveated sites is recommended to identify if measures can be adapted to enhance existing land-uses and negate potential negative impacts.

Habitat Mosaics

In many areas of the local habitat map, multiple potential measures overlap within the same land parcels. Some of these overlaps provide an opportunity to create diverse, transitional landscapes through the development of habitat mosaics.

To support this, habitat mosaic measures have been applied to parcels identified as suitable for establishing two or more habitats that follow natural succession patterns (for example Other Neutral Grassland – Scrub – Mixed Deciduous Woodland).

An indicative proportion for each habitat within a mosaic has been given specifically to assist with Biodiversity Net Gain assessments. To determine the percentage contribution of each habitat within a mosaic, a weighting score was assigned based on its Biodiversity Net Gain distinctiveness category. These proportions are not intended to restrict the type of mosaic that may be most suitable in a given location, and are indicative for BNG purposes only.

Wider Environmental Benefits

Measures that may offer wider environmental benefits or nature-based solutions have been highlighted by extracting suitable measures that intersect with some of the regional NbS models completed by Water Resources East, and the Working with Natural Process (WWNP) layers developed by the Environment Agency.

Additionally, specific measures relating to riparian enhancement have been generated adjacent to watercourses, and opportunities for arable field margins have been identified based on proximity to some overland flow pathways (areas where water moves across the surface). These measures represent locations which may offer benefits such as a reduction in the flow of water and rate of agrochemicals entering rivers and streams.

Linking measures for key and flagship species

The key species identified within the statement of biodiversity priorities were mapped using records from the Norfolk Biodiversity Information Service (NBIS). Overlaying species occurrences onto the ACBs helped to validate the map, by establishing to what extent species are supported by these areas.

Species records were then used to highlight the locations where mapped habitat measures may have particular relevance to key and flagship species. Relevant habitat measures that overlap with known distributions of each species have been identified and marked in the mapping with an additional species

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code (for example SPM01). The process used to link habitat measures to key and flagship species was as follows:

- the most relevant habitat measures for each species were determined
- species records were used to extract the relevant habitat measures in areas with existing populations
- external suitability models were also included where available, for instance water vole and great crested newt opportunity areas from Natural England were used to highlight additional areas for these species.
- the extracted habitat measures were assigned an additional species code to link these to the relevant parts of the strategy document.

The measures identified as having links to key and flagship species are indicative only, representing relevant opportunities to improve habitat for known populations. Measures marked with a species code do not represent a detailed model of individual species requirements, and must not replace more detailed ecological assessment of species needs.

Stakeholder Mapping of Measures

Stakeholders provided additional mapped measures through input into an online mapping tool and through submission of spatial data files. Each stakeholder measure was evaluated manually to determine if the suggestion aligned with the measures and strategic areas identified within the LNRS, or whether there was ecological justification for inclusion of the suggested measures outside of the strategic areas. Suitable suggestions were then added to the ACB map layer.

Unmapped Measures

It is not possible to map all of the measures detailed within the strategy, as some can be applied widely across many different areas, or would require more detailed surveying to select suitable sites. A large amount of unmapped measures occur within urban locations, where the available data is less able to define suitable locations due to the complexity of the urban environment. It is recommended that the full range of unmapped measures are considered alongside those represented on the local habitat map.

LNRS Mapping Caveats

The LNRS mapping is based on geospatial analysis of existing datasets, and it has not been possible to ground-truth any of the outputs within the development of the LNRS. Therefore, whilst every effort has been made to ensure the accuracy of the mapping, there is potential for errors to be present in the outputs. It is recommended that a thorough site-specific assessment is carried out prior to implementing any of the actions suggested within the Local Habitat Map.

Input Datasets

While the England Peat Map (NERR149) presents the most accurate picture of England peat resources to date, it is acknowledged in the report that there remain uncertainties and limitations in the models. Some areas of peat will have been missed, and there will be places where the map predicts peat where it may not actually occur. In addition, predictions for extent and depth are weaker in lowland areas due to limited survey data availability and there is an aim to address this in future updates.

As a predictive model, the England Peat Map should not be used as a stand-

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alone justification for action at a given site. This does not mean that the outputs should be disregarded for specific sites, or in lowland environments, but instead viewed as indicative at this scale (as should the corresponding LNRS mapped measures). Site surveys are therefore recommended at the project-level where there are uncertainties about the status of the peaty soils and where peat is thought to be a consideration. This will be especially important in the Broads where the situation is complex, with buried peat often layered under other soil types. See the TIN226 England Peat Map User Guide for further information.

The Natural England Priority Habitats Inventory has also been used to identify certain habitat types. This may include misclassification of habitats in some areas, and inaccurate mapping of habitat boundaries, and so it is recommended that more detailed habitat surveying is undertaken where needed. Whilst measures are mapped to a whole land parcel level of detail, in many cases the proposed action may not be suitable to apply across the whole extent of the parcel.

Land-use Change

All measures mapped within the Local Habitat Map are indicative suggestions based on the best available information, and it is ultimately the responsibility of the landowner to determine the suitability of a suggested measure based on site-specific information. The LNRS does not place any restriction on potential land-uses.

Areas with potentially conflicting land-uses such as amenity greenspaces, historic sites and planned developments have been included within the mapping, as some measures may be suitable for these types of sites. Caveats are applied to these locations, and it is recommended that any proposed actions are considered alongside existing land-use plans to assess their suitability. Those seeking to action potential measures in these areas should contact the relevant local authorities for further guidance.

Measures linked to species

Mapped species information and measures with species codes applied are indicative only, and represent where existing mapped habitat measures may have additional benefits to known populations of key and flagship species within the LNRS. The information within the LHM does not represent a comprehensive map of every location where a species may be present or may benefit from nature recovery actions, and should not be used in place of more detailed suitability modelling.

The species records used to identify existing populations are likely to contain outdated records, and in some areas records may be absent due to a lack of recorder effort, rather than confirmed species absence. For locations where each species is present, the most relevant existing habitat measures have been identified in the LNRS mapping to provide contextual information to link habitat measures to the key and flagship species within the LNRS. However, this does not represent a model of suitability for any particular species, and it is advised that further habitat suitability modelling is carried out for all actions looking to target particular species, as a range of other site-specific factors will impact the suitability of particular

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measures.

The mapped areas for species are also limited to within 1km of existing populations (apart from where nationally available suitability models have been used). In some cases the likely dispersal distance from a species will be greater than 1km, meaning measures outside of the mapped areas may also be applicable. For some species, translocation to new suitable sites may also be preferable, and information on this can be found within the LNRS strategy document. It has not been possible to map new suitable areas for translocation within the LNRS.

Impacts on the Historic Environment

Any planned nature-recovery actions should take account of historic features in order to mitigate against potential negative impacts. Within the Local Habitat Map, sites such as registered parks and gardens and scheduled monuments have had caveats applied. Deciduous woodland measures have not been applied to these areas as these were deemed to have the greatest potential to negatively impact historic features. There are many other historic sites as detailed in the SHINE inventory which may be impacted by proposed measures, but which it was not possible to map. For this reason it is recommended that the relevant Historic Environment Record Centre is contacted for further advice.



Mapping in action at a Themed Working Group workshop in March 2024

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Appendix 5: Partnership overview

The Norfolk and Suffolk Nature Recovery Partnership (NSNRP) brings together approximately 80 local organisations with a shared vision for protecting and restoring nature in East Anglia. It is convened by Norfolk and Suffolk County Councils.

The Partnership was created to develop the Norfolk and Suffolk 25 Year Environment Plan and has worked with the University of East Anglia to create a comprehensive inventory of nature in both counties, The Natural Capital Evidence Compendium.

Now, because of the significant advantages of working closely with neighbouring counties to develop Local Nature Recovery Strategies, the Partnership's main focus throughout 2025 has been the development of a strategy for each county. Moving forward from publication, the focus will be on delivery and implementation under relevant guidance.

Oversight

Supporting Authorities provided oversight for each strategy. These include 12 district and borough councils, the Broads Authority and Natural England.

The Partnership LNRS Steering Group represented a broad membership of key stakeholder organisations and provided guidance and advice on strategy development.

Evidence and Expertise

The Steering Group operated in conjunction with six specialist Themed Working Groups and other sector experts, providing a wide range of experience, expertise and representation.

Delivery

The Nature Recovery Partnership Manager co-ordinated delivery teams from each County Council who were responsible for delivering a wide-ranging programme of face-to-face and online engagement, data analysis to inform the strategy and creating the strategy document.



Suffolk Planning Themed Working Group meeting.

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Appendix 6: Glossary

ACB: areas that could become of particular importance for biodiversity – those areas identified to be of strategic significance and present opportunities for nature recovery.

APIB: areas of particular importance for biodiversity - the locations of the important and diverse habitats that make up the ecological network across the county.

Abstraction (in context of water resources): The removal of water from natural sources like rivers or groundwater for human use.

Access to nature for people: The LNRS seeks to ensure inclusive and equitable access to nature for everyone, regardless of age, ability, or background.

Ancient woodland: Woodland that has existed continuously since 1600 or before in England and Wales.

Aquifers: Underground layers of water-bearing permeable rock, rock fractures or unconsolidated materials.

Arable: any land capable of being ploughed and used to grow crops.

Assemblage: Within this LNRS, this refers to a group of species that co-exist within a specific habitat type, such as grassland, woodland or urban environment. A flagship species has been selected for each assemblage to symbolise conservation efforts and engage the public.

Biodiversity: The variety of plant and animal life in a particular habitat or on Earth generally.

Biodiversity Net Gain (BNG): An approach to development that leaves biodiversity in a better state than before. Developers and Local Planning Authorities must deliver a BNG of 10%. The LNRS plays a role in BNG by determining the 'strategic significance' multiplier within the biodiversity metric. This mechanism means that there is an incentive for developers to align with the LNRS in their area when choosing the location of off-site BNG units.

Calcareous: Containing, consisting of, or resembling calcium carbonate; typically used to describe rocks, soils, or biological structures that are rich in lime or chalk.

Carbon capture: The process of collecting or trapping carbon dioxide (CO2) from large sources, such as power plants or industrial facilities, or directly from the atmosphere. This is typically the first step in managing CO2 emissions.

Carbon sequestration (sequestering): The long-term storage of captured carbon dioxide, either naturally through processes like photosynthesis in plants and absorption by oceans, or artificially through various technological methods. This is the end goal of removing CO2 from the atmosphere to mitigate climate change.

Climate resilience: The ability of a system, community, or ecosystem to anticipate, prepare for, respond to and recover from the impacts of climate change, including extreme weather events and long-term environmental changes.

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Coastal squeeze: The loss of natural coastal habitats due to rising sea levels and coastal defences.

Connectivity: The degree to which landscapes allow species to move freely and ecological processes to function.

Corridors: Wildlife corridors are linear features in the landscape that can be used for movement of wildlife. They offer the possibility of linking habitats and reducing the isolation of populations.

Coppicing: A traditional method of woodland management where trees are cut down to ground level, promoting new growth from the stumps.

Countryside Stewardship: A scheme that provides financial incentives for farmers and land managers to look after the environment.

Critically endangered: A species facing an extremely high risk of extinction in the wild.

Disturbance susceptibility: how effectively ecosystems respond to changes linked to biological and non-biological factors.

East Atlantic Flyway: A major bird migration route that extends from the Arctic to Africa.

Ecosystem services: The benefits people obtain from ecosystems, such as clean air, water, food and recreation.

Ecotones: Transition areas between two different habitats or ecosystems.

Endangered: A species facing a very high risk of extinction in the wild.

Environmental Impact Assessments: a process to protect the environment by ensuring that a local planning authority takes into account the environmental impacts of granting planning permission.

Environmental Land Management Scheme (ELMS): An agricultural policy for England that pays farmers for environmental benefits.

Farming in Protected Landscapes (FiPL): A UK government-funded grant programme for farmers and land managers in National Parks and National Landscapes (formerly Areas of Outstanding Natural Beauty) to deliver projects that enhance the environment, mitigate climate change, support cultural heritage, and improve landscape character.

Flood mitigation: The strategies and measures implemented to reduce the ACB impact of flooding on communities and the environment. It includes techniques such as enhancing drainage systems, restoring natural floodplains and constructing levees and flood walls. This aims to prevent flood damage and improve resilience against flood events.

Flood risk management: The assessment and reduction of the risk of flooding to people and property.

Fragmentation: The process by which large areas of habitat are broken up into smaller, isolated patches.

Freeze-thaw cycles: occur when air temperature drops low enough to freeze water then increases enough for it to thaw again. They usually occur most frequently in the wintertime, though have the potential to occur at any time of year.

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Geospatial analysis: The process of creating and analysing spatial information to understand patterns, relationships and trends.

Green and blue spaces: Areas of vegetation and water in urban environments.

Green infrastructure: A network of natural and semi-natural spaces and corridors in urban and rural areas, designed to provide environmental and quality of life benefits.

Green investment: Funding directed towards environmental and climate-related projects.

Habitat: The natural home or environment of an animal, plant, or other organism.

Habitat creation: The process of establishing new areas suitable for wildlife to live and thrive.

Heritage assets: An item that has value because of its contribution to a nation's society, knowledge and/or culture. They can be physical or non-physical, and generally have cultural, environmental or historical significance.

Hydrological surveys: investigations into the water-bearing levels of rocks and their capability for filtration under the ground surface within a particular area.

Intertidal mudflats: Coastal wetlands that form when mud is deposited by tides or rivers.

Invasive non-native species: Plants or animals that have been introduced to an area where they do not naturally occur and cause harm to the environment.

Landscape character: the way the physical components come together and can be defined as "a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another".

Landscape recovery schemes: Large-scale projects to support long-term environmental changes.

Land management: The process of managing the use and development of land resources.

Loam: A soil type composed of mostly sand, with some silt and clay.

Local authorities: Administrative bodies responsible for providing local government services and facilities within a specific area, such as counties, districts, or boroughs. They oversee various functions including planning, education, housing, transport and environmental management, playing a crucial role in implementing policies and initiatives that impact their communities.

Local and neighbourhood plans: Documents that set out local planning policies and identify how land is used.

Local Nature Recovery Strategies: Plans developed by local authorities in England to map and improve nature in their areas.

Material consideration: a matter that should be taken into account in deciding a planning application or on an appeal against a planning decision

Monocropping: the practice of growing a single crop year after year on the same land

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National Character Areas (NCAs): England has 159 National Character Areas, each representing an area of distinct and recognisable character at the national scale. Their boundaries follow natural lines in the landscape, not county or district boundaries.

National site network: A network of protected sites across the UK that are important for conserving various species and habitats. This aims to ensure the conservation of habitats and species that are of European significance, contributing to the overall conservation objective of the UK.

Natural flood management: The use of natural processes to reduce the risk of flooding and coastal erosion.

Nature recovery: The process of helping nature and wildlife return to areas where they have declined.

Nature Recovery Network (NRN): A national network of wildlife-rich places to help nature thrive.

Nature-based solutions (Nbs): Actions to protect, manage, and restore ecosystems that address societal challenges.

Near threatened: A species close to qualifying for or likely to qualify for a threatened category in the near future.

Norfolk and Suffolk Nature Recovery Partnership (NSNRP): A collaboration of organisations working to improve nature in Norfolk and Suffolk.

Nutrient cycling: The movement and exchange of materials derived from inorganic (non-living) and organic (living) matter eg carbon, water or nitrogen. The cyclical pathways comprise cells, organisms and ecosystems.

Open Mosaic Habitat (OMH): A mix of bare ground, pioneer communities and more established grassland and scrub.

Paludiculture: or ‘farming with high water tables’ - system of agriculture for the profitable production of wetland crops by raising the water table whilst reducing greenhouse gas emissions.

Planning authorities: local government agencies empowered to develop policies and proposals related to land use – they have responsibility for development planning and management and making decisions on planning applications.

‘Post-glacial’ rebound: The rise of land masses, caused by the melting of ice sheets and loss of their great weight following the last ice age.

Potential measures: Possible actions that could be taken to achieve a specific goal.

Priorities: the outcomes which the strategy aims to achieve to benefit biodiversity.

Priority Habitats: Habitats identified as being the most threatened and requiring conservation action.

Public bodies: a formally established organisation that is publicly funded to deliver a public or government service, though not as a ministerial department

Regenerative agriculture: Farming practices that focus on improving soil health, increasing biodiversity and enhancing ecosystem services.

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Sites of Special Scientific Interest (SSSI): SSSIs are protected areas which contain specific features - either biological or geological - of particular interest to science. These features of interest can range from specific species all the way to whole landscapes of national importance.

Natural England are the responsible authority for designating and monitoring SSSIs, which are protected under the Wildlife and Countryside Act 1981.

Special Areas of Conservation (SAC): SACs are protected areas of habitats and species listed within international conventions to which the UK Government is a signatory. They provide protection for types of species and habitat most in need of conservation at an international scale.

Saline intrusion: The movement of saltwater into freshwater aquifers.

Saltmarshes: Coastal wetlands that are flooded and drained by salt water brought in by the tides.

Sedimentary rock: types of rock that are formed by the accumulation or deposition of mineral or organic particles at Earth's surface.

Shoreline Management Plans: Strategic documents that outline how to manage coastal areas to reduce risks from flooding and erosion. Available at: https://www.gov.uk/guidance/shoreline-management-plans.

Silt: granular material of a size between sand and clay and composed mostly of broken grains of quartz, a hard crystalline mineral

Stepping stones: anything that will help wildlife to move between isolated fragments of habitat

Strategic significance multiplier: the tool used to calculate the increased relationship between habitat creation and enhancement in areas identified within the LNRS as suitable for mapping measures

Successional or transition zones: the areas that serve as a boundary between two different regions or ecosystems, where characteristics of each intermingle as the process of species within a community change over time

Sustainable agriculture: Farming practices that meet society's food needs while preserving the environment.

Sustainable Drainage Systems (SuDS): drainage systems that manage surface water that take into account water quantity and quality (flooding and pollution) as well as biodiversity and amenity

The Department for Environment, Food and Rural Affairs (Defra): The UK Government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities.

Urban expansion: The growth and spread of urban areas into surrounding rural or natural land.

Veteran trees: Trees that are old relative to others of the same species and are of particular value to wildlife due to their age, size or condition.

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Vulnerable (in context of species conservation): A species facing a high risk of extinction in the wild in the medium-term future.

Water bodies: a significant accumulation of water on the surface of the planet eg oceans, lakes and ponds.

Water management: The strategic planning, development, distribution, and management of water resources to ensure their sustainability and quality, including conserving water, controlling flooding, maintaining water quality, and ensuring access to clean water.

Wetlands: Areas where water covers the soil or is present at or near the surface for varying periods of time during the year.

Wood-pastures: Areas of land that combine trees with grazing animals.

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The following are direct references and sources of information used within the creation of the LNRS content and processes, or within this document.

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Appendix 9: Acknowledgements

Suffolk County Council and the Norfolk and Suffolk Nature Recovery Partnership are very grateful for the generosity and insight of everyone who helped shape this plan, including:

- Public survey and public consultation respondents
- Suffolk County, District, Borough and Town and Parish Councils and Councillors who helped shape the strategy with us
- Our Supporting Authorities, including staff from Suffolk's District and Borough Councils.
- Natural England, the Environment Agency, Forestry Commission and Defra
- Experts from our Nature Recovery Partnership and its steering group. In addition, members of our Themed Working Groups who participated in surveys, workshops and other engagement events
- Farmer survey respondents and workshop participants, as well as farm advisory businesses, local farm clusters, independent farms, and estates, including NFU, CLA, Suffolk FWAG, Blyth Valley Farm Cluster, Norfolk & Suffolk Farm Clusters Group, Upper Deben Farm Cluster, Breckland Farmers Wildlife Network, High Suffolk Farm Clusters, Jimmy's Farm and Wildlife Park, Sotterley Estate, Orwell Park Estate, Kenton Hall Estate, and Crown Estate.
- Our local environmental charities large and small, who provided specialist support including the Suffolk Wildlife Trust, RSPB, National Trust, Buglife, Plantlife, Essex and Suffolk Rivers Trust, Water Resource East, and many more
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- Staff from the Suffolk & Essex Coasts & Heaths and Dedham Vale National Landscape and the Broads Authority
- Staff from the Geospatial Insight Team at Norfolk County Council who produced the Local Habitat Map
- The Suffolk Biodiversity Information Service and Norfolk Biodiversity Information Service who provided data for the mapping
- Those who previously worked on and helped to produce the Norfolk and Suffolk Natural Capital Evidence Compendium, particularly to the University of East Anglia who carried out the research
- All those who provided case studies and photographs
- Community groups and Town and Parish Councils
- Schools and colleges
- Organisations from the Health, Wellbeing and Access and Business sectors
- Everyone else who generously shared their time and knowledge to help shape this Strategy.

The organisations who are represented within the Norfolk and Suffolk Nature Recovery Partnership:

- ADAS Environmental Services
- Anglia Ruskin University
- Anglian Water
- Arcadis
- Aspen Ecology
- Babergh and Mid Suffolk District Councils
- BarleyBird CIC
- Baxter Environmental

- Blyth Valley Farm Cluster
- Borough Council of King's Lynn and West Norfolk
- Breckland District Council
- Breckland Farmers Wildlife Network (BFWN)
- Brecks and Fen Edge River Partnership (BFER)
- British Arachnological Society
- British Association for Shooting and Conservation (BASC)
- British Trust for Ornithology (BTO)
- Broads Authority
- Coastwise
- Common Nature
- Consensus Power
- Country Land and Business Association (CLA)
- Crown Estate
- Dairy Farm Office
- Dedham Vale National Landscape
- East Suffolk Council
- Eco Fund Partners
- Edible Eats Group
- Environment Agency
- Environment Bank
- Essex and Suffolk Rivers Trust
- Flagship Group
- Forestry Commission
- Forestry England
- Forncett Nature Matters
- Great Yarmouth Borough Council
- GroundWork Gallery
- High Suffolk Farm Clusters
- Historic England
- Holkham Estate
- Ipswich Borough Council
- J&C Farms (Gayton)
- Jimmys Farm and Wildlife Park
- Kenton Hall Estate
- Langley Abbey Estate
- Little Ouse Headwaters Project (LOHP)
- M Group Highways
- Marine Management Organisation (MMO)
- Middlesex University
- Ministry Of Defence
- National Farmers' Union (NFU)
- National Trust
- Nattergal
- Natural England
- Network Rail
- Norfolk and Norwich Naturalists' Society
- Norfolk and Suffolk Farm Clusters Group
- Norfolk Biodiversity Information Service (NBIS)
- Norfolk Coast National Landscape
- Norfolk County Council
- Norfolk Diocese
- Norfolk Farming and Wildlife Advisory Group (FWAG)
- Norfolk Geodiversity Partnership
- Norfolk Green Care Network
- Norfolk Pond Project
- Norfolk Resilience Forum
- Norfolk Rivers Trust
- Norfolk Wildlife Trust
- North Norfolk District Council
- Northumbrian Water Group
- Nortons Dairy
- Norwich City Council
- Opergy Net Zero Ltd
- Orwell Park Estate
- Oxygen Conservation
- Plantlife
- River Glaven Conservation Group
- River Lark
- Royal Society for the Protection of Birds (RSPB)
- Rymer Trees Ltd
- Shimpling Park Farm
- Sizewell C
- Sotterley Estate
- South Norfolk and Broadland Council
- Suffolk and Essex Coast and Heaths National Landscape
- Suffolk Biodiversity Information Service (SBIS)
- Suffolk County Council

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- Suffolk Farming and Wildlife Advisory Group (FWAG)
- Suffolk Garden’s Trust
- Suffolk Naturalists' Society
- Suffolk New College
- Suffolk Tree Wardens
- Suffolk Wildlife Trust
- The Great Collaboration
- The Green Partnership
- The Otter Trust
- The Rivers Trust
- The Wash and North Norfolk Marine Partnership (WNNMP)
- The Wash Landscape Partnership
- Thetford Town Council
- University College London (UCL)
- University of East Anglia (UEA)
- Upper Deben Farms
- Visit East of England
- Water Management Alliance (WLMA)
- Water Resources East (WRE)
- Wendling Beck
- Wensum Farmer Group (Cluster)
- West Norfolk Nature Network
- West Suffolk Council
- Wild East
- Wild Ken Hill
- WildFowl and Wetland Trust
- Wingfield Barns
- Wiveton Parish Council
- Woodland Trust
- World Wide Fund for Nature (WWF)

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Suffolk County Council exists to represent and serve the people of Suffolk, linking to four ambitions.

To look after our health and wellbeing, to strengthen our local economy, to protect and enhance our environment and to provide value for money for our residents.

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